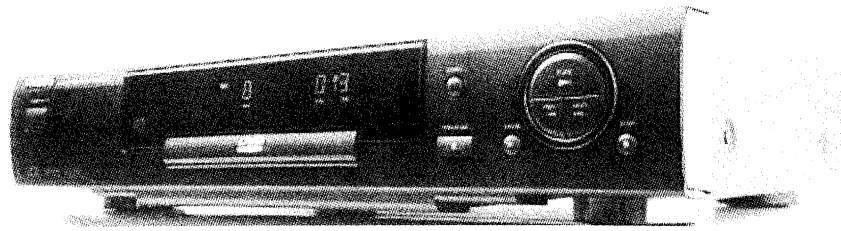
DVD-Video Player V26467

DVD 701

DVD 701/002

Service
Service
Service



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Service Manual

CLASS 1
LASER PRODUCT

DVD VIDEO

COMPACT disc DIGITAL VIDEO

COMPACT disc DIGITAL AUDIO

Contents

Published by MW 0067 Service PaCE Printed in the Netherlands Subject to modification GB 3122 785 10880

PHILIPS

1. Technical specifications

Specifications

PLAYBACK SYSTEM
DVD-Video
Video CD
CD (CD-R and CD-RW)

OPTICAL READOUT SYSTEM

Lasertype	Semiconductor AlGaAs	
Numerical Aperture	0.60 (DVD)	
	0.45 (VCD/CD)	
Wavelength	650 nm (DVD)	
	780 nm (VCD/CD)	

DVD DISC FORMAT

Medium	Optical Disc	
Diameter	12cm (8cm)	
Playing time	One layer	2.15 h*
(12cm)	Dual layer	4 h*
	Two side	4.30 h*
	Single layer	
	Two side	8 h*
	Dual layer	

TV STANDARD	EUROPE	USA
	(PAL/50Hz)	(NTSC/60Hz)
Number of lines	625	525
Playback	Multistandard	(PAL/NTSC)

VIDEO FORMAT

DA Converter	10 bits
Signal handling	Components
Digital Compression	MPEG2 for DVD, MPEG1 for VCD

DVD

Horiz. Resolution	720 pixels**	720 pixels**
Vertical Resolution	576 lines	480 lines

VCD

Horiz. Resolution	352 pixels	352 pixels
Vertical Resolution	288 lines	240 lines

VIDEO PERFORMANCE

Video output	1 Vpp into 75 ohm
S-Video output	Y: 1 Vpp into 75 ohm
	C: 0.3 Vpp into 75 ohm
RGB output	1 Vpp into 75 ohm
Black Level Shift	On/Off
Video Shift	Left/Right

AUDIO FORMAT

Digital	MPEG	Compressed Digital
	DTS/AC-3	
	PCM	16, 20, 24 bits
		fs, 44.1, 48, 96 kHz

Analog Sound Stereo
Dolby Pro Logic downmix from AC-3 multi-channel sound
3D Sound for virtual 5.1 channel sound on 2 speakers

AUDIO PERFORMANCE

DA Converter	24 bits	
DVD	fs 96 kHz	4 Hz - 44 kHz
	fs 48 kHz	4 Hz - 22 kHz
Video CD	fs 44.1 kHz	4 Hz - 22 kHz
CD	fs 44.1 kHz	4 Hz - 20 kHz
Signal-Noise (1kHz)		103 dB
Dynamic Range (1kHz)		98 dB
Crosstalk (1kHz)		115 dB
Distortion and Noise (1kHz)		95 dB

CONNECTIONS

SCART	SCART 2x
Video Output	Cinch (yellow)
Audio L+R output	Cinch (white/red)
Digital Output	1 coaxial
	IEC958 for CDDA / LPCM
	IEC1937 for MPEG1/2 ,AC-3 and DTS

CABINET

Dimensions(w x h x d)	435 x 92 x 320 mm
Weight	Approx. 4 Kg

PACKAGE CONTENTS
DVD-Video Player
Remote Control & Batteries
AC Power cord
Instruction for use
SCART cable
Audio/Video cable

GENERAL FUNCTIONALITY
Stop / Play / Pause
Fast Forward / Backward
Time search
Step Forward / Backward
Slow
Title / Chapter / Track Select
Skip Next / Skip Previous
Repeat (Chapter / Title / All) or (Track / All)
A-B Repeat
Shuffle
Enhanced ease of use graphical interface
Perfect Still with digital multi-tap filter
Zoom (x1.33, x2, x4) with picture enhancement
3D Sound
Virtual jog shuttle
Audio and video bit rate indicator

DVD FUNCTIONALITY
Multi-angle Selection
Audio Selection (1 out of max. 8 languages)
Subtitles Selection (1 out of max. 32 languages)
Aspect Ratio conversion (16:9, 4:3 Letterbox, 4:3 Pan Scan)
Parental Control and Disk Lock
Disc Menu support (Title Menu and Root Menu)
Resume (5 discs) after stop / standby
Screen Saver (Dim 75% after 15 min.)
Programming Titles/chapters with Favorite Selection

VIDEO CD FUNCTIONALITY
Playback Control for VCD 2.0 discs
Parental Control and Disc lock
Resume (5 discs) after stop / standby
Screen Saver (Dim 75% after 15 min.)
Programming Tracks with Favorite Selection

AUDIO CD FUNCTIONALITY
Time Display (Total / Track / Remaining Track Time)
Full audio functionality with remote control
Programming with Favorite Track Selection

* *typical playing time for movie with 2 spoken languages and 3 subtitle languages.*

** *equivalent to 500 lines on your TV*

Specifications subject to change without prior notice

2. Warnings and Laser safety instructions

(GB) **WARNING**

All ICs and many other semi-conductors 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 wrist wrap with resistance.
Keep components and tools also at this potential.

ESD

(NL) **WAARSCHUWING**

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

(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 a 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 a ce que les composants ainsi que les outils que l'on utilise soient également a ce potentiel.

(D) **WARNUNG**

Alle IC und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD).
Unsorgfältige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern.
Sorgen sie dafür, das 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 longevita potrebbe essere fortemente ridatta in caso di non osservazione della piu grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

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

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt terug gebracht en dat onderdelen, identiek aan de gespecifieerde worden toegepast.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten.
Der Originalzustand des Gerats darf nicht verandert werden.
Fur Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago idetici a quelli specificati.

(F)

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

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 return to user/customer.
Ref.UL Standard NO.1492.

NOTE ON SAFETY:

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

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

LASER SAFETY

This unit employs a laser. Only a qualified service person should remove the cover or attempt to service this device, due to possible eye injury.

LASER DEVICE UNIT

Type:	SemiconductorlaserGaAlAs
Wave length:	650 nm (DVD)
	780 nm (VCD/CD)
Output Power:	7 mW (DVD)
	10 mW (VCD/CD)
Beam divergence:	60 degree

CLASS 1
LASER PRODUCT

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURE OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

AVOID DIRECT EXPOSURE TO BEAM

WARNING

The use of optical instruments with this product will increase eye hazard.
Repair handling should take place as much as possible with a disc loaded inside the player

WARNING LOCATION: INSIDE ON LASER COVERSHIELD

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARNING SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
VARO! AVATT AESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

Warning for powersupply on position 1005

The primary side of the powersupply including the heatsink carries live mains voltage when the player is connected to the mains even when the player is swiched off !
This primary area is not shielded so it is possible to touch copper tracks and/or components when servicing the player. Service personnel have to take precautions to prevent touching this area or components in this area .
The primary side of the powersupply has been indicated with a lightning stroke and a stripe-marked printed on the printed wiring board

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060700

2.1 Notes

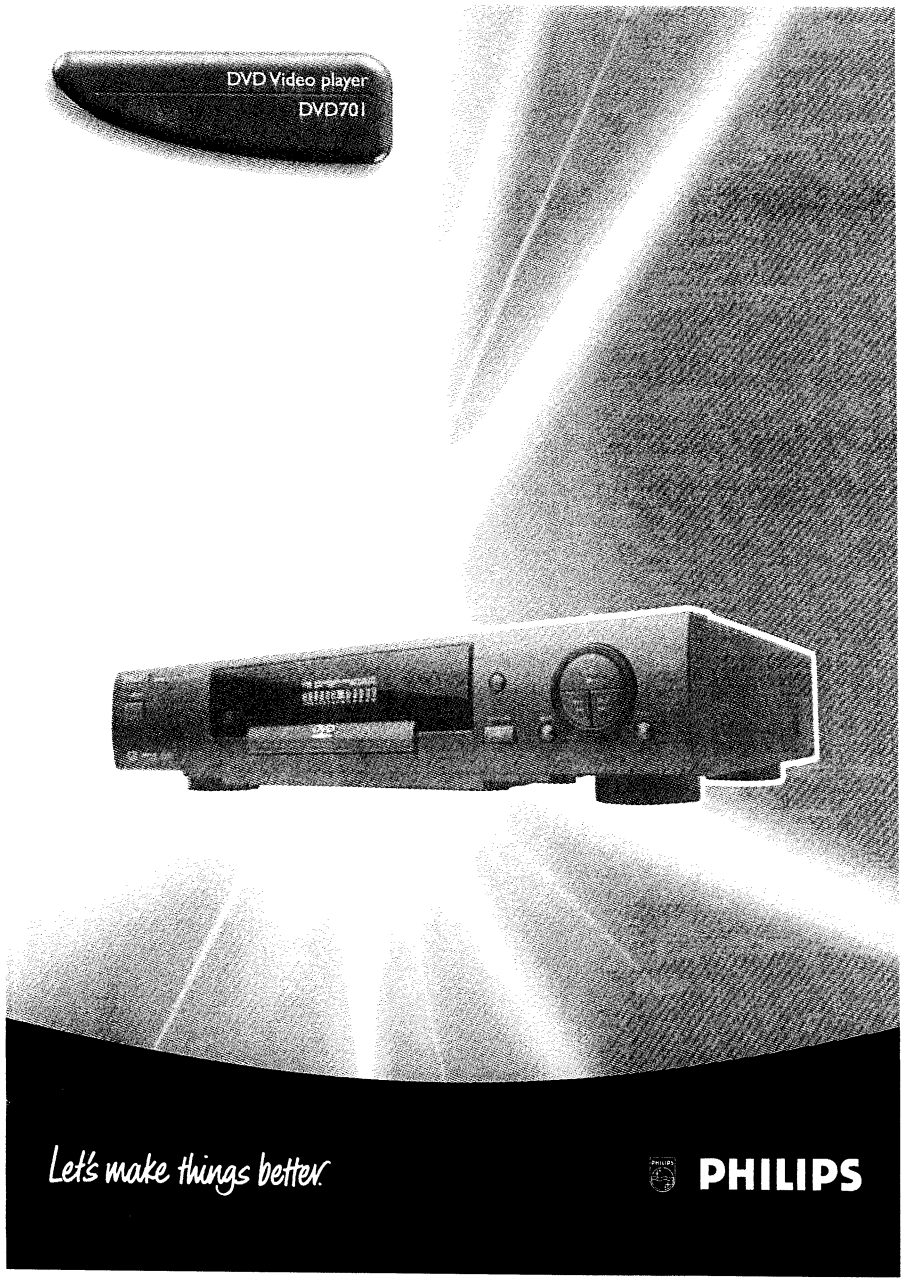
2.1.1 DVD-Module

For repair of the DVD-module ASD1, the service manual 3122 785 10840 has to be used.

2.1.2 Compair

For assistance with the repair process of the monoboard an electronic Fault finding guidance has been developed , this program is called COMPAIR.
This COMPAIR program is available on CDROM.
The Version of the CDROM for repair of the monoboard is V1.3 and can be ordered with codenumber : 4822 727 21637.
This is an update CDROM , so when the COMPAIR CDROM is used for the first time , one has to install the COMPAIR ENGINE CDROM V1.2 first.
The V1.2 CDROM can be ordered with codenumber 4822 727 634 and has to registered after installation , the procedure for registration is explained in the help file of the program and in the booklet from the CDROM.
The cable to connect the monoboard with a PC can be ordered with codenumber 3122 785 90017.
All the hardware and software requirements of the systems necessary for working with COMPAIR is described on the CDROM.

3. Directions for use



Important Note

DK

Advarsel:

Laserrudstråling ved åbning når sikkerhesafbrydere er ude af funktion. Undgå u tsættelse for stråling.

Bemærk:

Netafbryderen POWER er sekundært indkoblet og afbryder ikke strømmen fra nette. Den indbyggede netdel er derfor tilsluttet til lysnettet så længe netstikket sidder i stikkontakten.

N

Observer:

Nettbryteren POWER er sekundert innkoplet. Den innebygdenetdelen er derfor ikke frakoplet nettet så lenge apparatet er tilsluttet nettkontakten.

S

Klass 1 laserapparat

Varning!

Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kann användaren utsättas för laserstrålning, som översjruder gränsen för läserklass 1.

Observera!

Strömbrytaren POWER är sekundärt kopplad och inte bryter strömmen fråan natet Den inbyggda nätdelen är därför ansluten till elnätet sa länge stickproppen sitter i v ägguttaget.

SF

Luokan 1 laserlaite + Klass 1 laserapparat

Varoitus!

Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle lasersäeiilille.

Huom.

Toiminnanvalitsin POWER on kytketty toisiopuolelle, eikä se kytke laitetta irti sähköverkosta. Sisäänrakennettu verkko-osa on kytkettyna sähköverkkoon aina silloin, kun pistoke on pistorasiassa.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

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Important Note for Users in the UK

Mains plug

This apparatus is fitted with an approved 13 Amp plug. To change a fuse in this type of plug proceed as follows:

1. Remove fuse cover and fuse.
2. Fix new fuse which should be a BS1362 5 Amp, A.S.T.A. or BSI approved type.
3. Refit the fuse cover.

If the fitted plug is not suitable for your socket outlets, it should be cut off and an appropriate plug fitted in its place.
If the mains plug contains a fuse, this should have a value of 5 Amp. If a plug without a fuse is used, the fuse at the distribution board should not be greater than 5 Amp.

Note: The severed plug must be disposed of to avoid a possible shock hazard should it be inserted into a 13 Amp socket elsewhere.

How to connect a plug

The wires in the mains lead are coloured with the following code: blue = neutral (N), brown = live (L).

As these colours may not correspond with the colour markings identifying the terminals in your plug, proceed as follows:

- Connect the blue wire to the terminal marked N or coloured black.
- Connect the brown wire to the terminal marked L or coloured red.
- Do not connect either wire to the earth terminal in the plug, marked E (or e) or coloured green (or green and yellow).

Before replacing the plug cover, make certain that the cord grip is clamped over the sheath of the lead - not simply over the two wires.

Copyright in the U.K.
Recording and playback of material may require consent. See Copyright Act 1956 and The Performer's Protection Acts 1958 to 1972.

Index

The region code for this set is 2.

Since it is usual for DVD movies to be released at different times in different regions of the world, all players have region codes and discs can have an optional region code. If you load a disc of a different region code to your player, you will see the region code notice on the screen. The disc will not play and should be unloaded.

NOTE:
PICTURES SHOWN MAYBE DIFFERENT BETWEEN COUNTRIES.

NEVER MAKE OR CHANGE CONNECTIONS WITH THE POWER SWITCHED ON.

CAUTION

VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM (WARNING LOCATION: INSIDE ON LASER COVERSHIELD OR THE BACKPLATE OF SET)

General information

Laser safety

This unit employs a laser. Due to possible eye injury, only a qualified service person should remove the cover or attempt to service this device.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

LASER

Type	Semiconductor laser GaAlAs
Wave length	650 nm (DVD) 780 nm (VCD/CD)
Output Power	7 mW (DVD) 10 mW (VCD/CD)
Beam divergence	60 degree

The DVD-VIDEO player is in conformity with the EMC directive and low-voltage directive.

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL SYNLIG OG USYNLIG LASERSTRALING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
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VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEOFFNET NICHT DEM STRAHL AUSSETSEN
DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

For Customer Use:

Read carefully the information located at the bottom of your DVD-VIDEO player and enter below the Serial No.Retain this information for future reference.

Model No. DVD-VIDEO
Serial No. _____

Contents

Introduction

Functional overview

On-screen display information

Preparation

Operation

Before requesting service

Specifications

Introduction

Entertainment for the new millennium

Video was never like this before! Digital video discs provide perfect digital, studio-quality pictures; three dimensional digital, multi-channel audio; story sequences screened from your choice of camera angle; sound tracks in as many as eight languages; and up to 32 subtitles (if available on disc). Whether you watch DVD-Video on wide-screen or regular TV, you always see it the way it was meant to be.

Digital video

DVD-Video uses state-of-the-art MPEG2 data compression technology to register an entire movie on a single 5-inch disc. DVD's variable bitrate compression, running at up to 9.8 Mbits/second, captures even the most complex pictures in their original quality.
The crystal-clear digital pictures have a horizontal resolution of over 500 lines, with 720 pixels (picture elements) to each line. This resolution is more than double that of VHS, superior to Laser Disc, and entirely comparable with digital masters made in recording studios.
DVD-Video discs conform to either the PAL or NTSC video standard. This player can play both PAL and NTSC discs, presenting them in the best possible way on your multi-standard TV screen.
As the universal video system of the future, DVD-Video offers optimal pictures on any TV screen.

Introduction

Your Philips DVD-Video player will play digital video discs conforming to the universal DVD-Video standard. With it, you will be able to enjoy full-length movies with true cinema picture quality, as well as stereo or multi-channel sound (depending on the disc and your playback setup). The unique features of DVD-Video, such as selection of sound track, subtitle languages and different camera angles (again depending on the disc), are all included. What's more, Philips Child Lock lets you decide which discs your children will be able to see.
In addition to DVD-Video discs, you will be able to play all Video CDs and Audio CDs (including finalized CD Recordable and CD Rewritable).
You will find the On-Screen Display, player display, and remote control make the player easy to use. This manual provides all the information you will need, so read on!

DVD-Video

You will recognize DVD-Video discs by the logo shown on left.
Depending on the material on the disc (a movie, video clips, a drama series, etc.) the disc may have one or more Titles. Each Title may have one or more Chapters. To make playback easy and convenient, your player lets you select Titles and playback Chapters.

Video CD

You will recognize Video CDs by the logo shown at left.
Depending on the material on the disc (a movie, video clips, a drama series, etc.) the disc may have one or more tracks. Tracks may have one or more indexes, as indicated on the disc case. To make playback easy and convenient, your player lets you select tracks and indexes.

Super VCD

SVCD discs based on the Super VCD IO Standard based on the Standard of the Electronics Industry of the People's Republic of China.

Audio CD

Audio CDs contain music tracks only.
You will recognize Audio CDs by their logo which is shown at left.
You can play them in conventional style through a stereo system, using the keys on the remote control and/or front panel, or via the TV using the On-Screen Display (OSD).

Unpacking

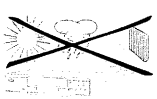
First check and identify the contents of your DVD-Video player package.
You should have the following items.

- DVD-Video player
- Remote Control with batteries
- AC power cord
- Audio/Video cable
- SCART cable
- Instructions for use

If any item is damaged or missing, contact your retailer or Philips.

Keep the packaging materials; you may need them to transport your player in the future.

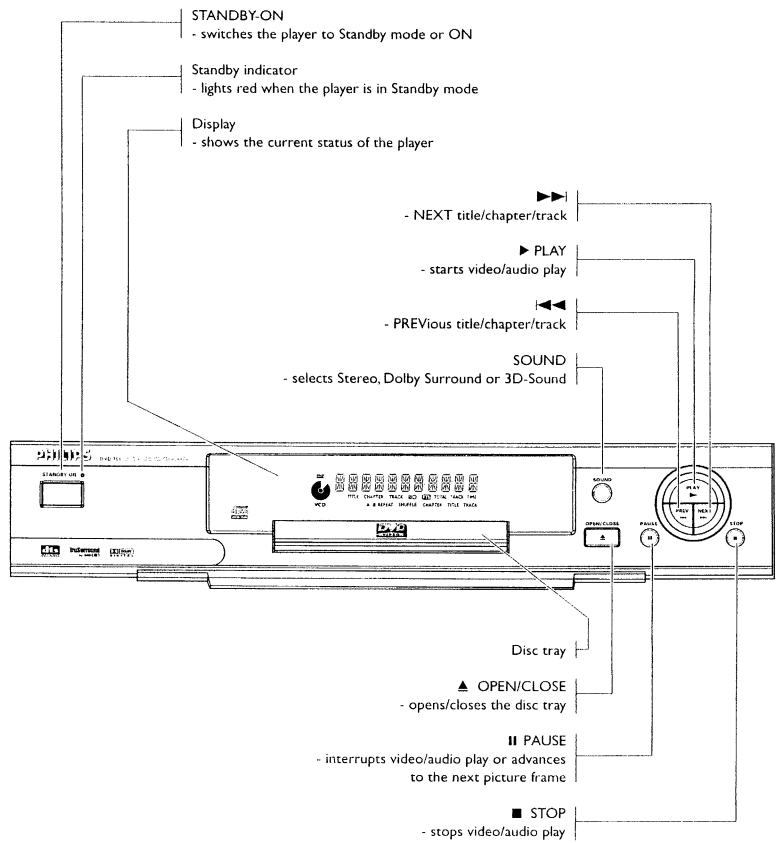
Placement



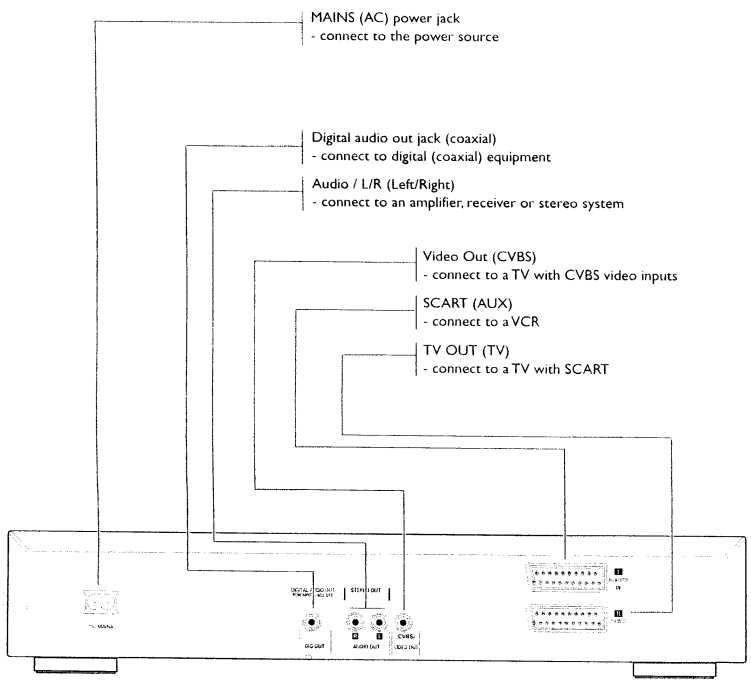
- Place the player on a firm, flat surface.
- Keep the player away from domestic heating equipment and direct sunlight.
- In a cabinet, allow about 2.5 cm (1 inch) of free space all around the player for adequate ventilation.
- If the DVD-Video player cannot read CDs/DVDs correctly, use a commonly available cleaning CD/DVD to clean the lens before taking the DVD-Video player to be repaired. Other cleaning methods may destroy the lens. Always keep the tray closed to avoid dust on the lens.
- The lens may cloud over when the DVD-Video player is suddenly moved from cold to warm surroundings. Playing a CD/DVD is not possible then. Leave the DVD-Video player in a warm environment until the moisture evaporates.

Functional overview

Front panel

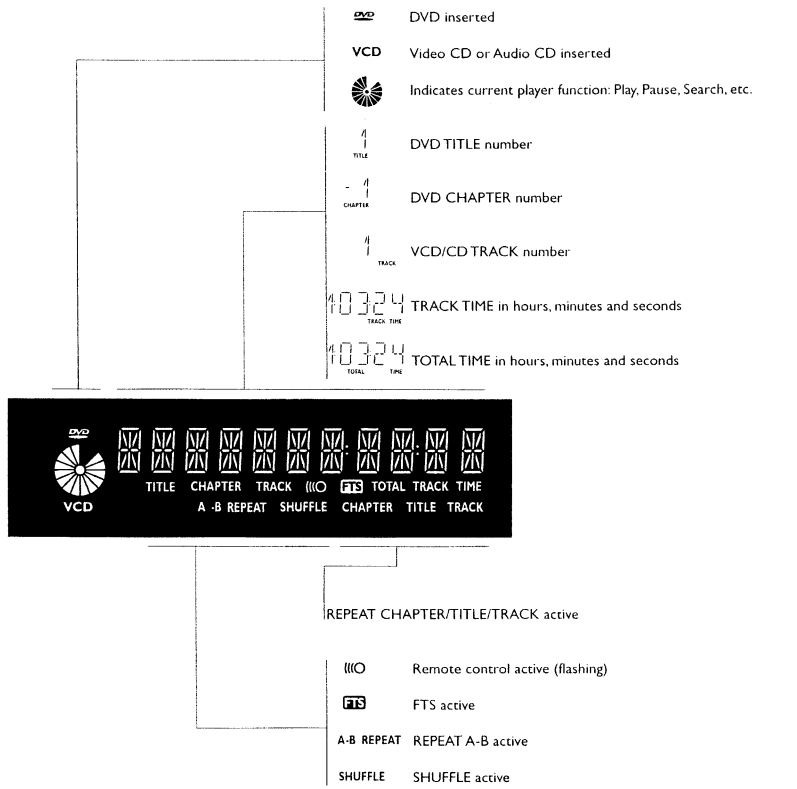


Rear panel

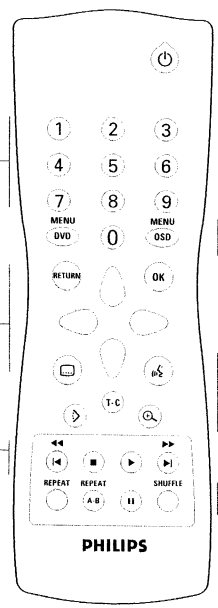


Caution: Do not touch the inner pins of the jacks on the rear panel connectors. Electrostatic discharge may cause permanent damage to the unit.

Display



Remote control



0-9 numerical key pad

RETURN
- go back to previous menu

OK
- acknowledge menu selection

< > ▽ △
- (left/right/up/down) cursor movement

◀◀ |◀
- search backward* / previous chapter or track

■
- stop

▶
- play

▶▶ ▶|
- search forward* / next chapter or track

STANDBY-ON (ON/OFF)

MENU DVD
- access menu of a DVD

MENU OSD
- access or remove On-screen display
- bit rate indicator*

- subtitle language selector
- audio language selector
- select title
- select chapter
- enlarge video image
- select DVD camera angle

REPEAT
- repeat chapter, track, title, disc

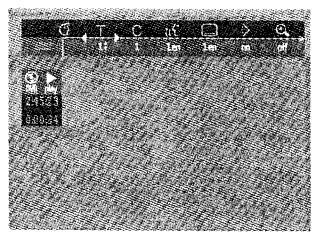
REPEAT A-B
- repeat sequence

SHUFFLE
- playback tracks in random order

II
- pause playback temporarily / frame-by-frame playback

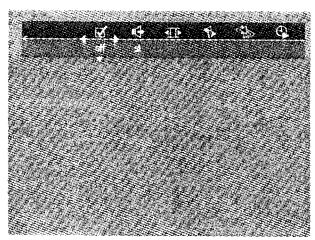
* Press key for about 2 seconds

On screen display information



Menu bar/Status window

- Personal Preferences
- Title/Track
- Chapter/Index
- Audio language
- Subtitle language
- Angle
- Zoom
- Video Program
- Sound
- Picture by Picture
- Slow motion
- Fast motion
- Time search



Status window icons

The status window displays the current status of the player and appears with the first part of the menu bar. (You must activate this in the Features Menu - see Personal Preferences for details).

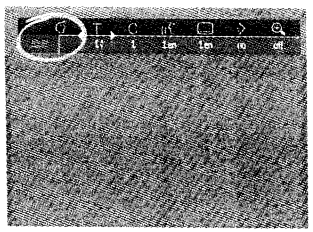
General

Disc type

Tray status

Default screen

The default screen is displayed when the player is in STOP mode.
It may contain a 'Status Window' and a 'Temporary Feedback Field'. This gives information concerning prohibited actions, playback modes, available angles, etc.



Temporary Feedback Field icons

- Repeat All
- Repeat Title
- Repeat Track
- Repeat Chapter
- Shuffle
- Shuffle Repeat
- Repeat A to end
- Repeat A-B
- Angle
- Child Lock On
- Child Safe
- Resume
- Action prohibited

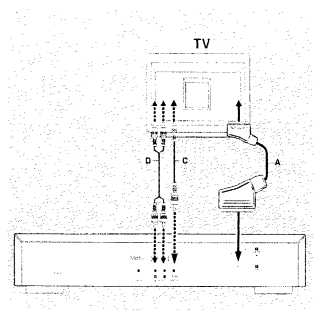
Preparation

General notes

- Depending on your TV and other equipment you wish to connect, there are various ways you could connect the player. Possible connections are shown in the following drawings.
- Please refer to the manuals of your TV, VCR, Stereo System or other devices as necessary to make the best connections.
- Do not connect your DVD-player via your VCR. The video quality could be distorted by the copy protection system.
- For better sound reproduction, connect the player's audio out jacks to the audio in jacks of your amplifier, receiver, stereo or A/V equipment. See 'Connecting to optional equipment'.

Caution: Do not connect the player's audio out jack to the phono in jack of your audio system.

Connecting to a TV



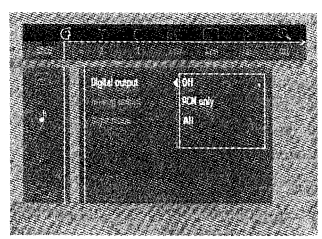
- Connect the SCART to the corresponding connector on the TV using the SCART cable supplied *(A)*.

If your TV is not equipped with a SCART you can select one of the following alternative connections:

Video CVBS connection

1 Connect the Video out (CVBS) jack to the video in jack on the TV using the video cable supplied *(C)*.
2 Connect the audio Left and Right out jacks to the audio left/right in jacks on the TV *(D)*.

Connecting to optional equipment

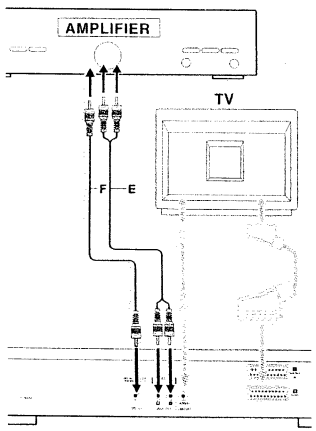


Connecting to an amplifier equipped with two channel analog stereo or Dolby Surround

- Connect the audio Left and Right out jacks of the DVD player to the audio left and right in jack on your amplifier, receiver or stereo system, using an audio cable *(E)*.

Connecting to an amplifier equipped with two channel digital stereo (PCM)

1 Connect the player's digital audio out jack (coaxial *F*) to the corresponding in jack on your amplifier.
Use an optional digital coaxial cable.
2 You will need to activate the player's digital output (see 'Personal Preferences').



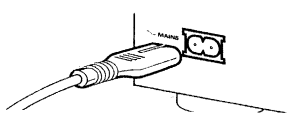
Connecting to an A/V receiver equipped with a multi-channel decoder (Dolby Digital™(AC-3), MPEG 2 and DTS)

Digital Multi-channel sound
Digital multi-channel connection provides the best sound quality. For this you need a multi-channel A/V receiver that supports one or more of the audio formats supported by your DVD player (MPEG 2, Dolby Digital™(AC-3), AC3 and DTS). Check the receiver manual and the logos on the front of the receiver.

1 Connect the DVD player's digital audio output to the corresponding input on the receiver using an optional digital audio cable.
2 You will need to activate the player's digital output (see 'Personal Preferences').

Note:
If the audio format of the digital output does not match the capabilities of your receiver, the receiver will produce a strong, distorted sound or no sound at all. The selected audio format of the DVD is displayed in the Status Window when the Menu OSD is activated or Audio button is activated.
Six Channel Digital Surround Sound via digital connection can only be obtained if your receiver is equipped with a Digital Multi-channel decoder.
To see the selected audio format of the current DVD in the Status Window, press the MENU OSD or the Audio Language selector button.

Connecting the power cord



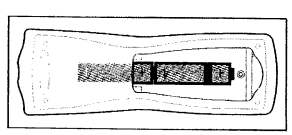
1 Plug the female end of the supplied power cord into the Mains (AC) jack on the rear of the player.
2 Connect the other end of the cord to an AC outlet.

Note: When the player is in the "STANDBY" mode, it is still consuming some power. If you wish to disconnect your player completely from the power, unplug the power cord from the AC outlet.

Caution: Only qualified service personnel should remove the cover or attempt to service this device.

Remote control battery installation

Loading the batteries



1 Open the battery compartment cover.
2 Insert batteries as indicated inside the battery compartment.
3 Close the cover.

Caution: Do not mix old and new batteries. Never mix different types of batteries (standard, alkaline, etc.).

NTSC/PAL Settings

You can switch the NTSC/PAL setting of the DVD player to match the video signal of your TV. This setting only affects the television's on-screen display that shows the stop and setup modes. You may select either NTSC or PAL. To change the DVD player setting to PAL or NTSC, follow the steps below.

1 Unplug the DVD player from the mains.
2 Press and hold ■ and ►►I on the front of the DVD player. While holding ■ and ►►I plug in the mains.
3 After PAL or NTSC appears on the display panel of the DVD player, release ■ and ►►I at the same time. The PAL or NTSC that appears on the display panel indicates the current setting.
4 To change the setting, press ►►I within three seconds. The new setting (PAL or NTSC) will appear on the display panel.

General explanation

About this manual

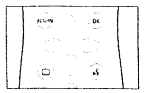
This manual gives the basic instructions for operating this DVD player. Some DVDs require specific operation or allow only limited operation during playback. In these cases, the player may not respond to all operating commands. When this occurs, please refer to the instructions contained with the DVD. When the symbol ╳ appears on the TV screen, the operation is not permitted by the player or the disc.

Remote control operation

- Unless otherwise stated, all operations can be carried out with the remote control. Always point the remote control directly at the player, making sure there are no obstructions in the path of the infrared beam.
  When there are corresponding keys on the front panel of the player, they can also be used.

Menu bar operation

- A number of operations can be carried out via the menu bar on the screen. The menu bar can be accessed by pressing any of the following keys on the remote control: MENU OSD, T-C, Angle, Audio Language, Subtitle Language and Zoom.
- The following functions are available via the menu bar:
  - Personal Preferences
  - Title/Track
  - Chapter/Index
  - Audio language
  - Subtitle language
  - Angle
  - Zoom
  - Video Program
  - Sound
  - Picture by Picture
  - Slow motion
  - Fast motion
  - Time search



- The various items can be selected by pressing the MENU OSD button, then the ▽/△ keys or by pressing relevant keys on the remote control.
- Pressing MENU OSD while the menu bar is displayed will clear the menu bar from the screen.
- When selecting an item in the menu bar, the selected item will be highlighted and the appropriate cursor keys to operate this item will be displayed below the icon.
- < or > indicates that more items are available at the left/right of the menu bar. Press ◁ or ▷ to select these items.

Turning On the power

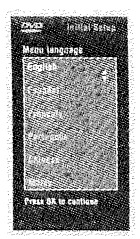
1 Switch on the TV and select the video input channel for your DVD-Video player.
2 Press STANDBY-ON button.

Initial Setup (Virgin Mode)

General

In 'Initial Setup' you may have to set your preferences for some of the player's features.

Operation

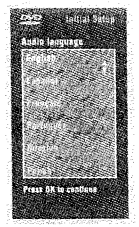


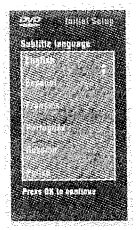
After switching on the player for the very first time, the 'Initial Setup Screen' will appear.
The menu for the first item to be set is displayed and the first option is highlighted.

- Use the ▽ △ keys to go through the options in the menu.
  The icon of the selected option will be highlighted.
- Use OK to confirm your selection and to go to the next menu.

Note: Preferences have to be set in the order in which the item menus will appear on the screen.
The 'Initial Setup' screen will only disappear after the settings for the last item have been confirmed.
If any keys other than ▽ △ or OK are pressed ╳ will appear on the screen.
If the player is switched off while setting personal preferences, all preferences have to be set again after switching the player on again.

The following items may have to be set in Initial Setup:
Menu language
The On Screen Menus will be displayed in the language you choose.
You can choose from different languages.





Audio language
The sound will be in the language you choose if it is available on the disc in play. If the language you select is not available, speech will revert to the first spoken language on the disc. You can choose from different languages.

Subtitle language
The subtitles will be in the language you choose if it is available on the disc in play. If the language you select is not available, subtitles will revert to the first subtitle language on the disc. You can choose from different languages.

TV Shape
If you have a wide screen (16:9) TV, select 16:9.
If you have a regular (4:3) TV, select 4:3.
If you have a 4:3 TV, you can also select between:
Letterbox for a 'wide-screen' picture with black bars top and bottom, or Pan Scan, for a full-height picture with the sides trimmed. If a disc has Pan Scan, the picture then moves (scans) horizontally to keep the main action on the screen.

Country
Select your country. This also is used as input for the 'Parental Control' feature (see 'Access Control').

Note: All these items may have to be set during 'Initial Setup'. After that, they can always be changed in the Personal Preferences Menu.

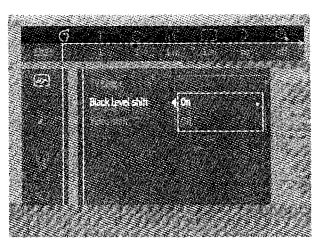
Personal Preferences

You can set your personal preferences for some of the player features.

General operation:

- Press MENU OSD on the remote control.
- Select ◌ in the menu bar.
  ➤ The Personal Preferences menu appears.
- Use the ◁ ▷ ▽ △ keys to toggle through the menus, submenus and submenu options.
  ➤ When a menu item is selected, the cursor keys (on the remote control) to operate the item are displayed next to the item.
- Press **OK** to confirm and return to the main menu.

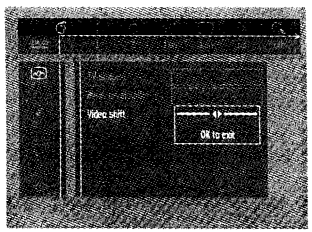
The following items can be adapted:



Picture

-TV Shape
See 'Initial Setup'

- Black level shift (NTSC only)
Select ON for adapting the color dynamics to obtain richer contrasts.



- Video shift
The factory centers the video on your screen. Use this setting to personalize the position of the picture on your TV by scrolling it to the left or right.

Sound
- Digital output
Factory setting: ALL. This means that both coaxial and optical outputs are switched on. If you are not connecting equipment with a digital input, change the setting to OFF.
If your equipment doesn't include a digital multi-channel decoder, set the digital output to PCM (Pulse Code Modulation).

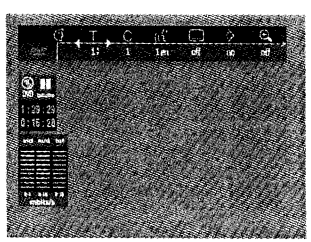
- Analog output
Select Stereo, Dolby Surround or 3D sound.

- Night Mode
Optimizes the dynamics of the sound with low volume playback.

- Karaoke vocal
Put this setting to ON only when a multi-channel karaoke DVD disc is being played. The karaoke channels on the disc will then mixed to a normal stereo sound.

Language
Select the required Menu, Audio and Subtitle language. See 'Initial Setup'. Audio language and Subtitle language can also be adapted via the Menu bar on the screen.

Features
- Access Control
Access Control contains the following features:
Child Lock - When Child Lock is set to ON, a 4-digit code needs to be entered in order to play discs.
Parental control - Allows the conditional presentation of DVDs containing Parental Control information (see 'Access Control').

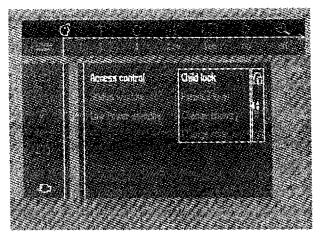


- Status Window
Displays the current status of the player and is displayed with the menu bar. When disc playback is stopped, it is displayed with the 'Temporary Feedback Field' in the default screen. See 'On-Screen Display information;
Factory setting is ON. Select OFF to suppress display of the Status Window.

- Bit Rate Indicator
When activated, the bit rate for video, audio as well as total bit rate is displayed. This is only applicable during playback of DVD & SVCD discs.

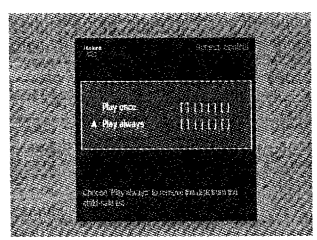
Access control; child lock (DVD and VCD)

Activating/deactivating the child lock



1 When disc playback is stopped, select Access Control in the features menu using the ▽/△ keys.
2 Enter a 4-digit code of your own choice.
3 Enter the code a second time.
4 Move to "Child Lock" using the ▽/△ keys.
5 Move to LOCK/UNLOCK using the ▷ key.
6 Select LOCK using the ▽/△ keys.
7 Press OK or ◁ to confirm, then press ◁ again to exit the menu.
➤ Now unauthorized discs will not be played unless the 4-digit code is entered.
8 Select UNLOCK to deactivate the Child Lock.

Note: Confirmation of the 4-digit code is necessary when:
- The code is entered for the very first time (see above).
- The code is changed (see 'Changing the 4-digit code').
- The code is cancelled (see 'Changing the 4-digit code').



Authorizing discs

- Insert the disc. See 'Loading disc'.
  ➤ The 'child protect' dialog will appear.

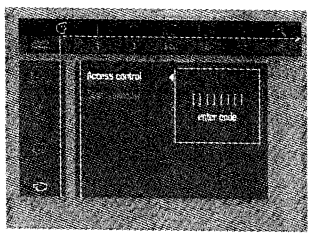
You will be asked to enter your secret code for 'Play Once 'or 'Play Always.' If you select 'Play Once', the disc can be played as long as it is in the player and the player is ON. If you select 'Play Always', the disc will become child safe (authorized) and can always be played, even if the Child Lock is set to ON.

Notes: The player memory maintains a list of 50 authorized ('Child safe') disc titles. A disc will be placed in the list when 'Play Always' is selected in the 'child protect' dialog. Each time a 'child safe' disc is played, it will be placed on top of the list. When the list is full and a new disc is added, the last disc in the list will be removed from the list.
Double sided DVDs may have a different ID for each side. In order to make the disc 'child safe', each side has to be authorized.
Multi-volume VCDs may have a different iD for each volume. In order to make the complete set 'child safe', each volume has to be authorized.

Deauthorizing discs

- insert the disc. See 'Loading disc'.
  ➤ Playback starts automatically.
- Press ■ while ☺ is visible.
  ➤ The ☹ will appear and the disc is now deauthorized.

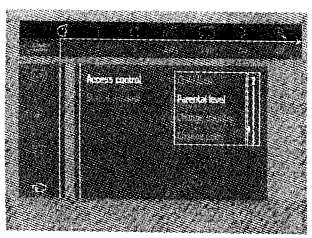
Access control; Parental control (DVD-Video only)



Movies on DVDs may contain scenes not suitable for children. Therefore, disc may contain 'Parental Control' information which applies to the complete disc or to certain scenes on the disc. These scenes are rated from 1 to 8, and alternative, more suitable scenes are available on the disc. Ratings are country dependent. The 'Parental Control' feature allows you to prevent discs from being played by your children or to have certain discs played with alternative scenes.

Activating/Deactivating Parental Control

1 When disc playback is stopped, select Access Control in the features menu using the ▽/△ keys.
2 Enter your 4-digit code. If necessary, enter the code a second time.
3 Move to Parental Control using the ▽/△ keys.
4 Move to Value Adjustment (1-8) using the ▷ key.
5 Then use the ▽/△ keys or the numerical keys on the remote control to select a rating from 1 to 8 for the disc inserted.



Rating 0 (displayed as '- -'):
Parental Control is not activated. The Disc will be played in full.

Ratings 1 to 8:
The disc contains scenes not suitable for children. If you set a rating for the player, all scenes with the same rating or lower will be played. Higher rated scenes will not be played unless an alternative is available on the disc. The alternative must have the same rating or a lower one. If no suitable alternative is found, play will stop and the 4-digit code has to be entered.
6 Press OK or ◁ to confirm, then press ◁ again to exit the menu.

Country

1 When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the ▽/△ keys.
2 Enter the 4-digit code.
3 Move to **CHANGE COUNTRY** using the ▽ key.
4 Press the ▷ key.
5 Select a country using ▽/△.
6 Press OK or ◁ to confirm, then press ◁ again to exit the menu.

Changing the 4-digit code

1 When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the ▽/△ keys.
2 Enter the old code.
3 Move to **CHANGE CODE** using the ▽ key.
4 Press the ▷ key.
5 Enter the new 4-digit code.
6 Enter the code a second time and reconfirm by pressing OK.
7 Press ◁ to exit the menu.

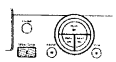
Note: If you forget your 4 digit code, it can be cancelled by pressing ■ four times in the 'Access Control' dialog. You can then enter a new code (twice!) as described above.

Parental Control Disclaimer

This DVD player features the PARENTAL CONTROL system which is intended to activate when playing DVD discs furnished with certain software coding. This is according to technical standards adopted by the set maker and disc content industries.
Please note that the PARENTAL CONTROL system will not operate a DVD disc which is not furnished with the appropriate software coding. Also note that at the time of release of this DVD player, certain aspects of the technical standards had not been settled between set makers and the disc industries. On this basis Philips cannot guarantee functioning of the PARENTAL CONTROL system and denies any liability associated with unintended watching of disc content.
If in doubt, please make sure the disc plays according to your PARENTAL CONTROL settings before you allow children access.

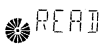
Operation

Loading discs



1 Press **OPEN/CLOSE** on the front of the player. The disc tray opens.
2 Load your chosen disc in the tray, label side up (also when a double sided DVD is inserted). Make sure it is sitting properly in the correct recess.
3 Press **OPEN/CLOSE**, to close the tray.

➤ READ appears in the status window and on the player display, and playback starts automatically.



Note: If 'Child Lock' is set to ON and the disc inserted is not in the 'child safe' list (not authorized), the 4-digit code must be entered and/or the disc must be authorized (see 'Access Control').

Playing a DVD-video disc

Playing a title

➤ After inserting the disc and closing the tray, playback starts automatically and the status window and the player display show the type of disc loaded, as well as information about the disc's contents and playing time.

The disc may invite you to select an item from a menu. If the selections are numbered, press the appropriate numerical key; if not, use the ▽/△, ◁/▷ keys to highlight your selection, then press OK.

➤ The currently playing title and chapter number are displayed in the menu bar and the player display.

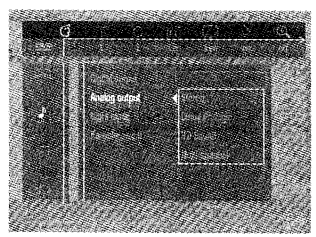
The elapsed playing time is shown in the status window and the player display.

- If required, you can use the **Sound** key to select Stereo, Dolby Surround or 3D-Sound.
  Play may stop at the end of the Title, and the player may return to the DVD menu. To go on to the next title, press ▶.
- To stop play at any other time, press ■.
  ➤ The default screen will appear, giving information about the current status of the player.
- You can resume play from the point at which you stopped play. Press ▶; when you see the Resume icon ▶ on the screen, press ▶ again.
  ➤ The **RESUME** feature applies not only to the disc in the player, but also to the last four discs you have played. Simply reload the disc and press ▶; when you see the Resume icon ▶ on the screen , press ▶ again.

Note: Since it is usual for DVD movies to be released at different times in different regions of the world, all players have region codes. Discs can have an optional region code. If you load a disc of a different region code into your player, you will see the region code notice on the screen. The disc will not play and should be removed from the player.

Playing a Video CD

Playing a disc



- After inserting the disc and closing the tray, playback starts automatically and the status window and the player display show the type of disc loaded, as well as information about the disc's contents and playing time.
- The disc may invite you to select an item from a menu. If the selections are numbered, press the appropriate numerical key.
- The currently playing track number is displayed in the menu bar and the player display. The elapsed playing time is shown in the status window and the player display.

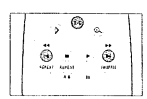
- If required, you can use the **SOUND** key to select Stereo, Dolby Surround or 3D-Sound.
- To stop play at any time, press ■.
  ➤ The default screen will then appear.
- You can resume play from the point at which you stopped play. Press ▶; when you see the Resume icon on the screen ▶, press ▶ again.

The resume feature applies not only to the disc in the player, but also to the last four discs you have played. Simply reload the disc and press ▶; when you see the Resume icon ▶ on the screen, press ▶ again.

General features

Note: Unless stated otherwise, all operations described are based on remote control operation. A number of operations can also be carried out via the menu bar on the screen (see 'Menu bar operation').

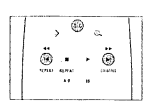
Moving to another title/track



When a disc has more than one title or track (which you can see from both the menu bar and the player display), you can move to another title as follows:

- Press T-C (title/chapter), then press ▶I briefly during play to select the next title/track.
- Press T-C (title/chapter), then press I◀ briefly during play to return to the beginning of the current title/track. Press I◀ **twice** briefly to step back to the previous title/track.

Moving to another chapter/index

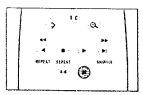


When a title on a disc has more than one chapter or a track has more than one index (which you can see from the player display and on the menu bar), you can move to another chapter/index as follows:

- Press ▶I briefly during play to select the next chapter/index.
- Press I◀ briefly during play to return to the beginning of the current chapter/index. Press I◀ **twice** briefly to step back to the previous chapter/index.
- To go directly to any chapter or index, select T-C (title/chapter), then enter the chapter/index number using the numerical keys (0-9).

Note: If the number has more than one digit, press the keys in rapid succession

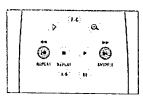
Still Picture and Frame-by-frame playback



- Select ◄▯► (picture by picture) in the menu bar.
- Use the ▽ key to enter the picture by picture menu.
  ➤ The player will now go into PAUSE mode.
- Use the cursor keys ◁ ▷ to select the previous or next picture frame.
- To exit Picture by picture mode, press ▶ or △.

You can also step forward by pressing **II** repeatedly on the remote control.

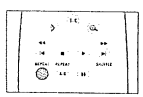
Search



- Select (Fast motion) in the menu bar.
- Use the ▽ keys to enter the Fast Motion menu.
- Use the ◁ ▷ keys to select the required speed: -32, -8 or -4 (backward), or +4, +8, +32 (forward).
- Select 1 to play at normal speed again.
- To exit Fast Motion mode, press ▶ or △.

To search forward or backward through different speeds, you can also hold down ◄◄ or ►►.

Repeat



CHAPTER REPEAT TITLE REPEAT REPEAT TRACK REPEAT REPEAT

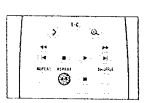
DVD-Video Discs - Repeat chapter/title/disc

- To repeat the currently playing chapter, press **REPEAT**.
  ➤ REPEAT CHAPTER appears on the player display.
- To repeat the title currently playing , press **REPEAT** a second time
  ➤ REPEAT TITLE appears on the display.
- To repeat the entire disc, press **REPEAT** a third time
  ➤ REPEAT appears on the display.
- To exit Repeat mode, press **REPEAT** a fourth time.

Video CDs - Repeat track/disc

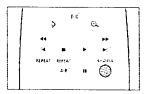
- To repeat the track currently playing , press **REPEAT**.
  ➤ REPEAT TRACK appears on the player display.
- To repeat the entire disc, press **REPEAT** a second time.
  ➤ REPEAT appears on display and screen.
- To exit Repeat mode, press **REPEAT** a third time.

Repeat A-B



To repeat a sequence in a title:

- Press **REPEAT A-B** at your chosen starting point;
  ➤ A- appears briefly on the screen.
- Press **REPEAT A-B** again at your chosen end point;
  ➤ A-B REPEAT appears briefly on the display, and the repeat sequence begins (A-B REPEAT is displayed on the front panel of the player).
- To exit the sequence, press **REPEAT A-B**.



SHUFFLE

Shuffle

DVD-Video discs

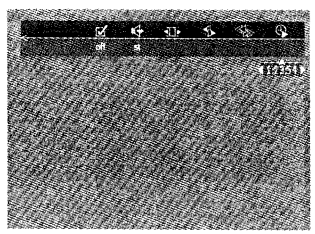
This shuffles the playing order of chapters within a title, if the title has more than one.

- Press **SHUFFLE** during play.
  ➤ SHUFFLE appears on the screen for about 2 seconds.
- To return to normal play, press **SHUFFLE** again.

Video CDs

This shuffles the playing order of the tracks, if the disc has more than one.

- Press **SHUFFLE** during play.
  ➤ SHUFFLE appears on the screen for about 2 seconds.
- To return to normal play, press **SHUFFLE** again.

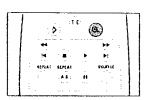


Time search

The Time Search function allows you to start playing at any chosen time on the disc.

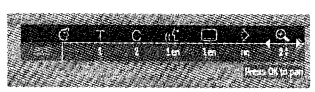
- Select (Time Search) in the menu bar.
- Press ▽.
  ➤ The player will now go into **PAUSE** mode.
  ➤ A time edit box appears on the screen, showing the elapsed playing time of the current disc.
- Use the digit keys to enter the required start time. Enter hours, minutes and seconds from left to right in the box.
  ➤ Each time an item has been entered, the next item will be highlighted.
- Press **OK** to confirm the start time.
  ➤ The time edit box will disappear and play starts from the selected time position on the disc.

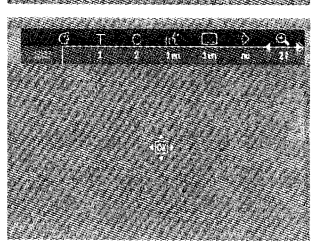
Zoom

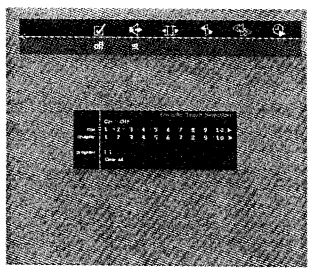


The Zoom function allows you to enlarge the video image and to pan through the enlarged image.

- Select (Zoom) in the menu bar.
- Press ▽/△ to activate the ZOOM function and select the required zoom factor: 1.33 or 2 or 4.
  ➤ The player will go into Pause mode.
  ➤ The selected zoom factor appears below the Zoom icon in the menu bar and *'Press OK to pan'* appears below the menu bar.
  ➤ The picture will change accordingly.
- Press **OK** to confirm the selection.
  ➤ The panning icons appear on the screen: △ ▽ ◁ ▷ and **OK**.
- Use the △ ▽ ◁ ▷ keys to pan across the screen.
- When **OK** is pressed only the zoomed picture will be shown on the screen.
- If you wish to zoom at any moment, press (Zoom) and select the required zoom factor as described above.
- To exit Zoom mode:
  – Press ▶.
  ➤ Playback will resume.
  – Press **STOP, MENU OSD**.







FTS-Video

- The FTS-Video function allows you to store your favorite titles and chapters (DVD) and favorite tracks and indexes (VCD) for a particular disc in the player memory.
- Each FTS program can contain 20 items (titles, chapters).
- Each time an FTS program is played it will be placed on top of the list. When the list is full and a new program is added, the last program in the list will be removed from the list.
- The selections can be called up and played at any time.

Storing a FTS-Video Program

- In STOP mode, select **Video FTS** ☑ in the menu bar.
- Press ▽ to open the menu.
  ➤ The **Video FTS** menu appears.
- Press ◁ or ▷ or **FTS** to select **ON** or **OFF**.

Storing titles/tracks

- Press ▽ to select **TITLES**.
- Use ◁ or ▷ to select the required title.
- Press **OK** if you wish to store the entire title.
  ➤ The title number will be added to the list of selections.

Storing chapters/indexes

- Press ▽ on the selected title number.
  ➤ The title number will be marked and the highlight moves to the first available chapter number for this title.
- Use ◁ or ▷ to select the required chapter number.
- Press **OK** to confirm the selection.
  ➤ The title/chapter selection will be added to the list of selections.
- Press **MENU OSD** to exit the **Video FTS** ☑ menu.

Erasing a FTS-Video Program

- In STOP mode, select **Video FTS** ☑ in the menu bar.
- Use ▽ to select **PROGRAM**.
- Use ◁ or ▷ to select the required selection number.
- Press **OK** to erase the selection.
- Press **MENU OSD** to exit.

If you wish to erase all selections:

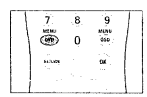
- In STOP mode, select **Video FTS** ☑ in the menu bar.
- Use ▽ to select **CLEAR ALL**.
- Press **OK**.
  ➤ All selections will now be erased.
- Press **MENU OSD** to exit.

Special DVD features

Checking the contents of DVD-Video discs: Menus

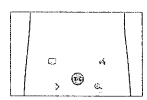
For titles and chapters, selection menus may be included on the disc. The DVD's menu feature allows you to make selections from these menus. Press the appropriate numerical key; or use the ▽, △, ▷, ◁ keys to highlight your selection, then press **OK**.

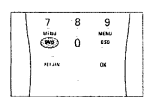
Title menus



- Press **MENU DVD**.
  ➤ If the current title has a menu, the menu will appear on the screen. If no menu is present in the title, the disc menu will be displayed.
- The menu can list camera angles, spoken language and subtitle options, and chapters for the title.
- To remove the title menu, press **MENU DVD** again.

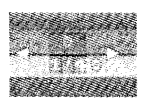
Disc menu





- Press T-C then press **MENU DVD**.
  ➤ The disc menu is displayed.
- To remove the disc menu, press T-C, then press **MENU DVD**.

Camera Angle



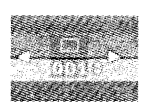
If the disc contains sequences recorded from different camera angles, the angle icon appears, showing the number of available angles and the angle being shown currently. You can then change the camera angle if you wish.

- Use the ▽/△ keys to select the required angle in the angle icon.
  ➤ After a small delay, play changes to the selected angle. The angle icon remains displayed until multiple angles are no longer available.

Changing the audio language

- Select (Audio) in the menu bar.
- Press or ▽/△ repeatedly to see the different languages.

Subtitles

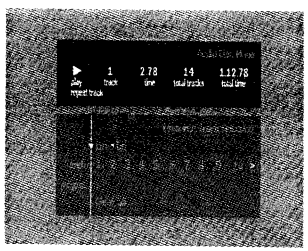


- Select (Subtitle) in the menu bar.
- Press or ▽/△ repeatedly to see the different subtitles.

Special VCD-Features

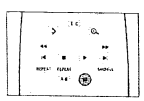
Playback Control (PBC)

- Load a Video CD with PBC and press ▶.
- Go through the menu with the keys indicated on the TV screen until your chosen passage starts to play. If a PBC menu consists of a list of titles, you can select a title directly.
- Enter your choice with the numerical keys (0-9).
- Press **RETURN** to go back to the previous menu.
- You may also set the PBC OFF under Personal Preferences menu.



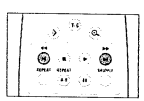
Playing an audio CD

- After loading the disc, playback starts automatically.
- If the TV is on, the Audio CD screen appears.
- The number of tracks and the total playing time will be shown on the screen.
- During play, the current track number and its elapsed playing time will be shown on the screen and on the player display.
- Playback will stop at the end of the disc.
- To stop play at any other time, press ■.



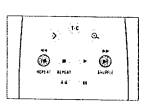
Pause

- Press **II** during play.
- To return to play, press ▶.



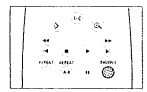
Search

- To search forward or backward through the disc at four times normal speed, hold down ◀◀ or ▶▶ for about one second during play.
  ➤ Search begins, and sound is partially muted.
- To step up to eight times the normal speed, press ◀◀ or ▶▶ again.
  ➤ Search goes to eight times the speed, and the sound is muted.
- To return to four times the normal speed, press ◀◀ or ▶▶ again.
- If the TV is on, search speed and direction are indicated on the screen each time ◀◀ or ▶▶ is pressed.
- To end the search, press ▶ to resume playback or ■ to stop.



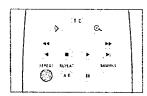
Moving to another track

- Press ▶I briefly during play to go to the next track.
- Press I◀ briefly during play to return to the beginning of the current track. Press I◀ **twice** briefly to step back to the previous track.
- To go directly to any track, enter the track number using the numerical keys **(0-9)**.



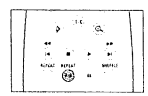
Shuffle

- Press **SHUFFLE** during play.
  ➤ The order of the tracks is changed.
- To return to normal play, press **SHUFFLE** again.



Repeat track/disc

- To repeat the track currently playing , press **REPEAT**.
  ➤ REPEAT TRACK appears on the display.
- To repeat the entire disc, press **REPEAT** a second time.
  ➤ REPEAT appears on the display.
- To exit Repeat mode, press **REPEAT** a third time.



Repeat A-B

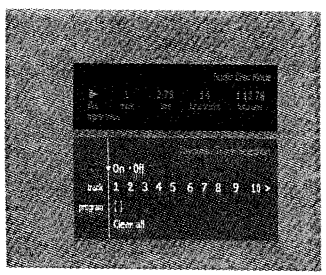
To repeat a sequence:

- Press **REPEAT A-B** at your chosen starting point;
  ➤ A- appears on the player display.
- Press **REPEAT A-B** again at your chosen end point;
  ➤ A-B appears on the display, and the sequence begins to play repeatedly.
- To exit the sequence, press **REPEAT A-B** again.

FTS Program

- FTS Program allows you to store your favorite tracks for a particular disc in the player memory.
- Each FTS Program can contain 20 tracks.

Storing an FTS Program



1 Load a disc and stop playback.
2 Use ▽ to go to the list of available tracks.
3 Use ◁ or ▷ to select tracks from the list.
To go directly to any track, enter the track number using the numerical keys **(0-9)**.
4 Store each track by pressing **OK**.
➤ The track numbers will be added to the list of selected tracks.
➤ The number of tracks and the playing time of the program will be shown on the screen and the player display.

When your FTS Program is complete, press ▶ to start play, or △ to go back to Stop mode. In either case, the FTS Program will be automatically memorized.

Switching FTS ON/OFF
1 Use △/▽ to move to the top.
2 Use ◁ or ▷ to select either ON or OFF.

Erasing a track from an FTS Program
1 Use ▽ to go to the list of selected tracks.
2 Use ◁ or ▷ to select the track number you wish to erase.
3 Press **OK**.
➤ The track number will be erased from the list of selected tracks.

Erasing the complete program
- Use ▽ to select Clear All, then press **OK**.
➤ The complete FTS Program for the disc will be erased.

Before requesting service

If it appears that the DVD-Video player is faulty, first consult this checklist. It may be that something has been overlooked. Under no circumstances attempt to repair the system yourself; this will invalidate the warranty.

Look for the specific symptom(s). Then perform only the actions listed to remedy the specific symptom(s).

Symptom	Remedy
No power	Make sure the AC cord is properly connected. Check if there is power at the AC outlet by plugging in another appliance.
No picture	Check if the TV is switched on. Check the video connection.
Distorted picture	Check the disc for fingerprints and clean with a soft cloth, wiping from center to edge. Sometimes a small amount of picture distortion may appear .This is not a malfunction.
Completely distorted picture or no color with player menu.	If the picture is distorted completely or if the picture rolls vertically, make sure the NTSC/PAL setting at the DVD player matches the video signal of your television. If your TV video signal is NTSC, select the NTSC setting at the DVD player. If your video signal is PAL, select the PAL setting - see **NTSC/PAL SETTINGS**.
Distorted or Black/White picture with DVD or Video CD.	The disc format does not match your TV's video signal (PAL/NTSC).
No sound	Check audio connections. If you are using a HiFi amplifier, try another sound source.
Distorted sound from HiFi amplifier.	Check to make sure that no audio connections are made to the amplifier phono input.
No audio at digital output.	Check the digital connections. Check the settings menu to make sure the digital output is set to ALL or PCM. Check if the audio format of the selected audio language matches your receiver capabilities.
Disc can't be played.	Ensure the disc label is facing up. Clean the disc. Check if the disc is defective by trying another disc. Check to see if the disc is defective, badly scratched or warped (not flat)
No return to start-up screen when disc is removed.	Reset by switching the player off, then on again. Check to see if the program requires another disc to be loaded.
The player does not respond to the remote control.	Aim the remote control directly at the sensor on the front of the player. Remove any obstacles between the player and the remote control. Inspect or replace the batteries in the remote control.
Buttons do not work.	In order to completely reset the player, unplug the AC cord from the AC outlet for a few seconds.
Player does not respond to all operating commands during playback.	Operations are not permitted by the disc. Refer to the instructions of the disc.
DVD-Video player cannot read CDs/DVDs correctly.	Use a commonly available cleaning CD/DVD to clean the lens before taking the DVD-Video player to be repaired.

Cleaning discs

Some problems occur because the disc inside the player is dirty. To avoid these problems clean your discs regularly, in the following way:

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.

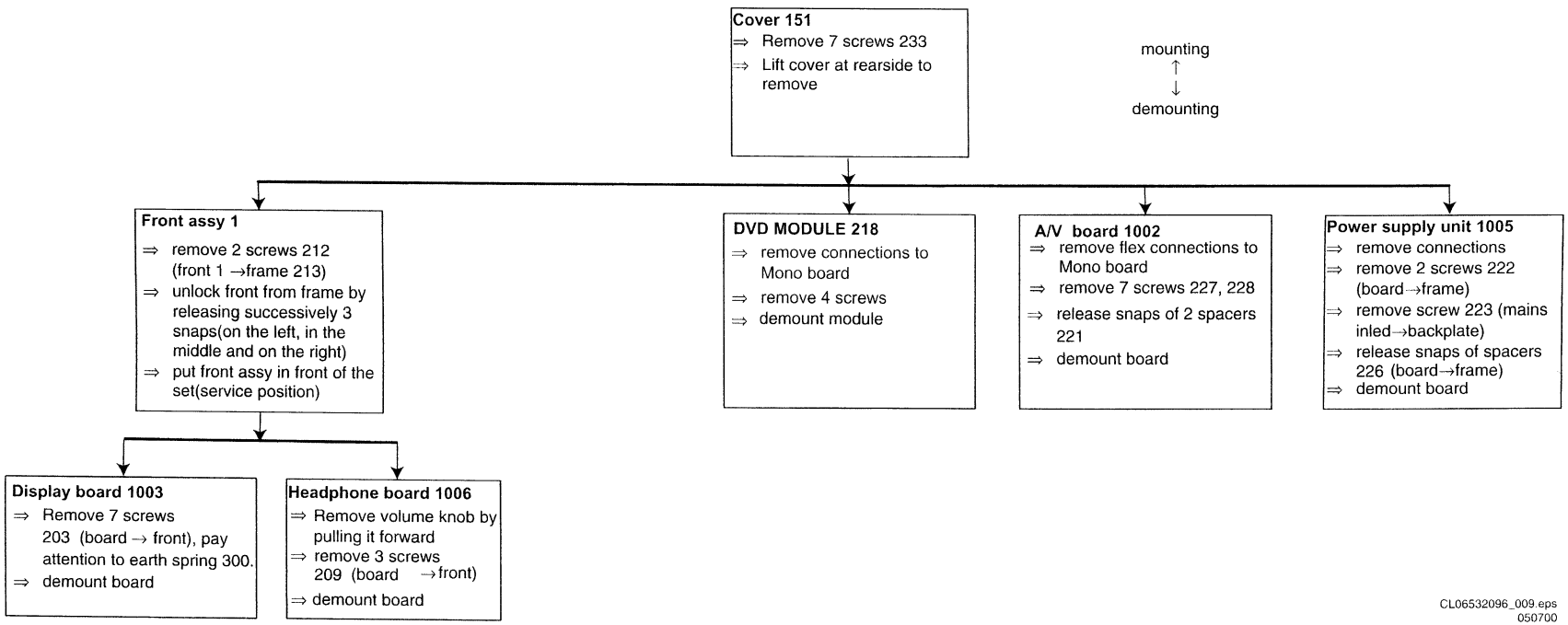
Caution: Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for analog discs.

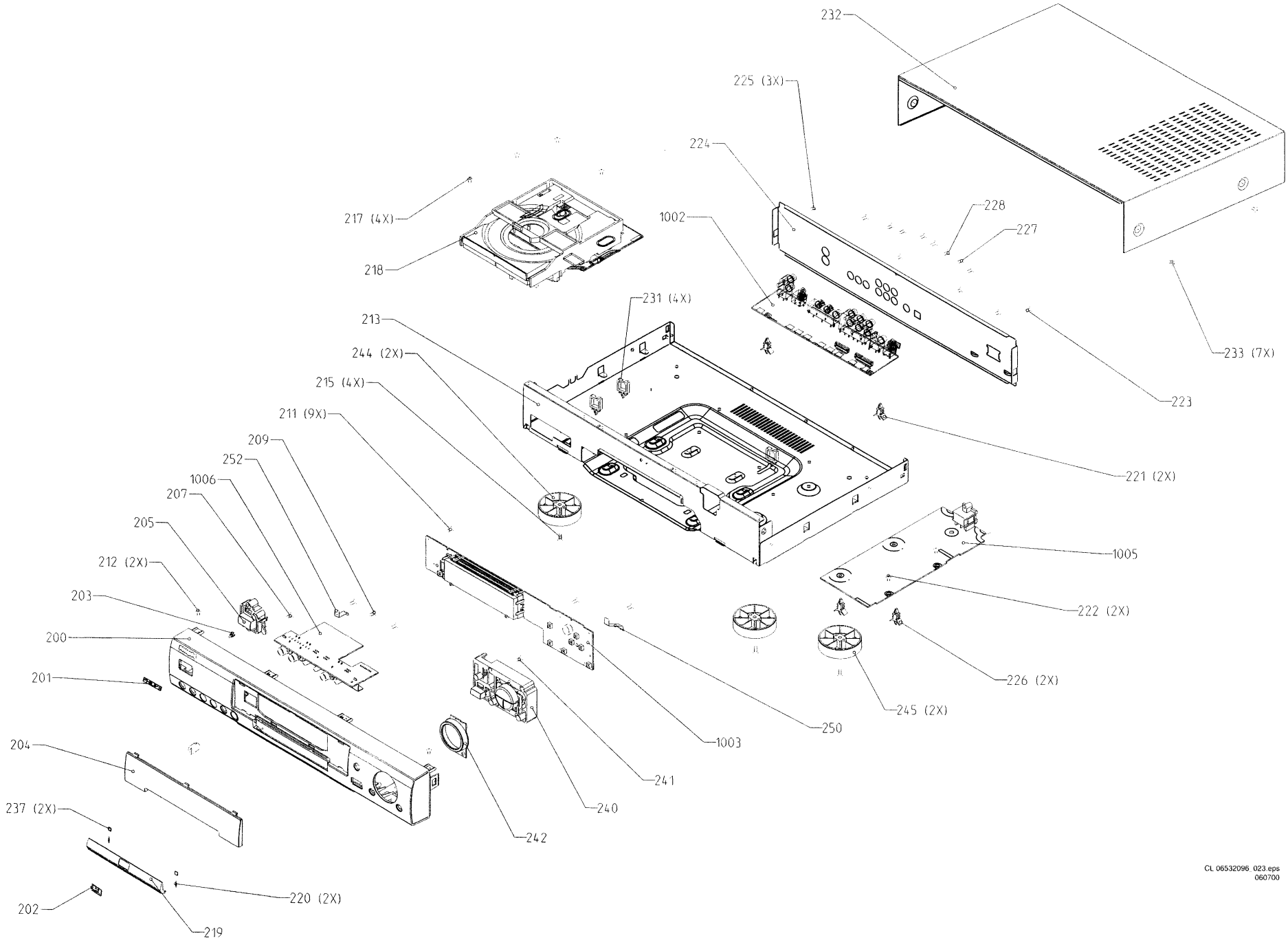
Personal notes:

4. Dismantling instructions and exploded view

DISMANTLING INSTRUCTIONS

See exploded view for item numbers





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5. Diagnostic software descriptions and troubleshooting

5.1 Dealerscript V1.1

5.1.1 Purpose of Dealer Script

The dealer script can give a diagnosis on a standalone DVD player; no other equipment is needed to perform a number of hardware tests to check if the DVD player is faulty. The diagnosis is simply a "error" or "pass" message; no indication is given of faulty hardware modules. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

5.1.2 Contents of Dealer Script

The dealer script executes all diagnostic nuclei that do not need any user interaction and are meaningful on a standalone DVD player.
The nuclei called in the dealer script are the following (the number after each nucleus name corresponds with the number being on the local display when the nucleus is executed during the dealer script):

Nucleus		Description
VideoColSetupComm	7	Checks the I2C interface with the RGB video processor on the Audio/Video board (only for DVD players with RGB video processor).
PapChksFl	6	Calculate and verify checksum of FLASH memory.
PapI2cDisp	5	Checks the I2C interface with the slave processor on the display PCB.
PapS2bEcho	4	Checks the I2C interface to the basic engine.
PapI2cNvram	3	Checks the I2C interface with the NVRAM.
PapNvramWrR	2	Pattern test of all locations in the NVRAM
CompSdramWrR	1	Pattern test of all locations in the SDRAM(s).

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Figure 5-1

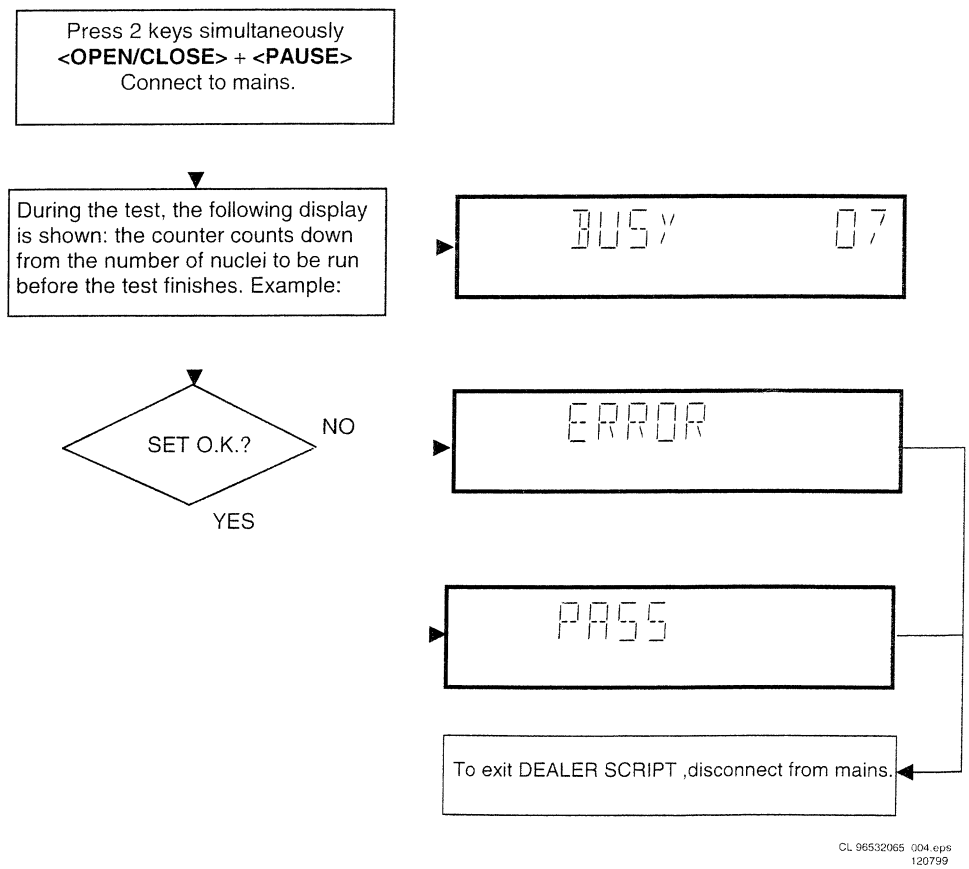

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Figure 5-2

5.2 PLAYER SCRIPT

5.2.1 Purpose of Player Script

The Player script will give the opportunity to perform a test that will determine which of the DVD player's modules are faulty, to read the error log and error bits and to perform an endurance loop test. To successfully perform the tests, the DVD player must be connected to a tv set to check the output of a number of nuclei. For DVDv2b a multi-channel amplifier, a set of 6 boxes and an external video source are necessary to test. To be able to check results of certain nuclei, the player script expects some interaction of the user (i.e. to approve a test picture or a test sound). Some nuclei (e.g. nuclei that test functionality of the Basic Engine module) require that the DVD player itself is opened, to enable the user to observe moving parts and approve their movement visually. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

5.2.2 Contents of Player Script

The player script contains all nuclei that are useful on a DVD player that is connected to a tv-set and help to determine which module of the DVD player is faulty, as well as to read out the contents of the error logs.

5.2.3 Structure of Player Script

The player script consists of a set of nuclei testing the three hardware modules in the DVD player: the Display PWB, the Digital PWB and the Basic Engine.
Nuclei run by the player test need some user interaction; in the next paragraph this interaction is described. The player test is done in two phases:

1. Interactive tests: this part of the player test depends strongly on user interaction and input to determine nucleus results and to progress through the full test. Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player.
2. The loop test will perform the same nuclei as the dealer test, but it will loop through the list of nuclei indefinitely.

5.2.4 Survey

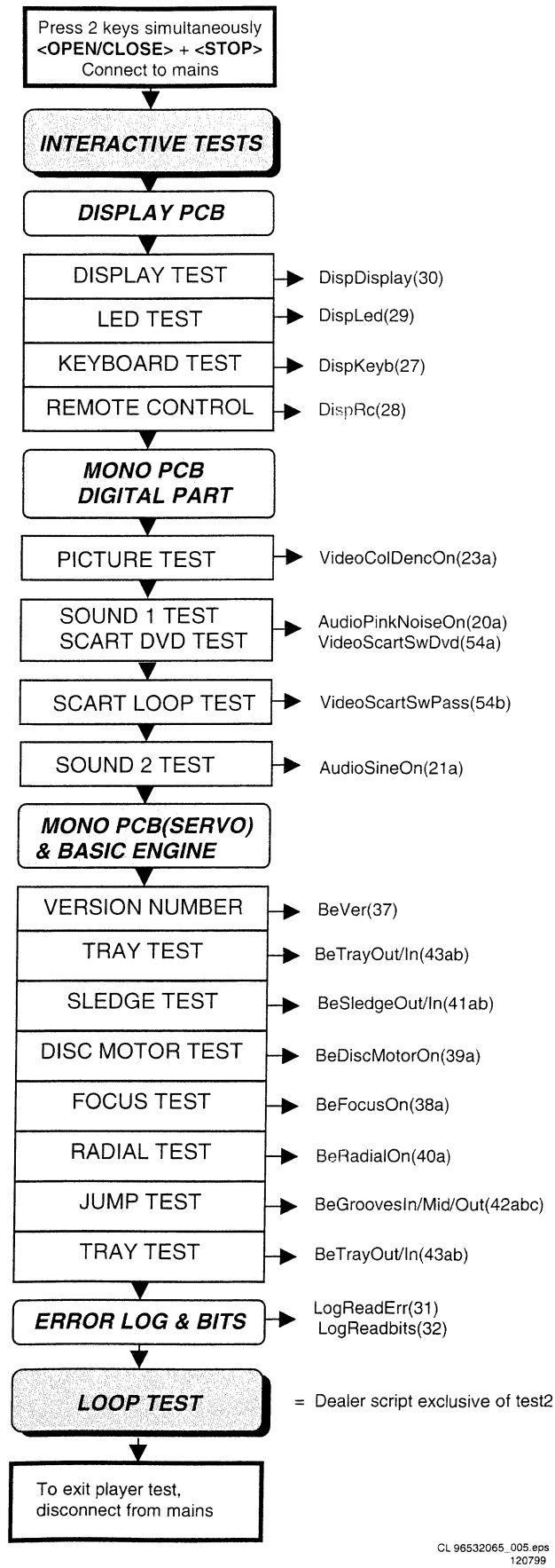

Figure 5-3

5.3 DISPLAY PCB

5.3.1 DISPLAY TEST

The display test is performed by nucleus DispDisplay. By putting a series of test patterns on the local display, the local display is tested. To step through all different patterns, the user must either press PLAY (pattern is ok) or PAUSE (pattern was incorrect) to proceed to the next pattern. The display of patterns is continued in a cyclic manner until the user presses NEXT. If the user presses NEXT before all display patterns are tested, the DispDisplay nucleus will return TRUE (display test successful).

5.3.2 LED TEST

The LED(s) on the DVD player is (are) tested by nucleus DispLed. The user must check if the LED(s) is (are) lighted; if it is, press PLAY, if it is not, press PAUSE. By pressing NEXT the script will proceed to the next test. If the user presses NEXT before PLAY or PAUSE, the DispLed nucleus will return TRUE (LED test successful).

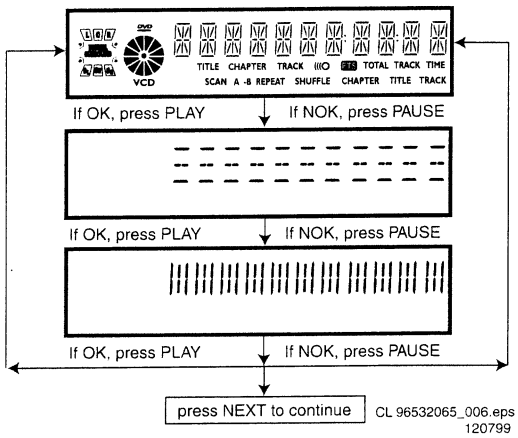

Figure 5-4

5.3.3 KEYBOARD TEST

The keyboard of the DVD player is tested by nucleus DispKeyb. The user is expected to press all keys on the local keyboard once. The code of the key pressed is shown on the local display (1 hexadecimal digit) immediately followed by a (hexadecimal) number indicating how many times that key has been pressed. Example of the local display during this test:

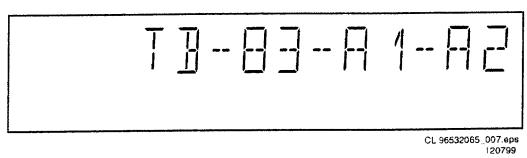

Figure 5-5

The key-codes displayed on the local display will scroll from right to left when the display gets full, the text "tb-" will remain on display.

key id.	key
0	PLAY
1	NEXT
2	PREVIOUS
3	PAUSE
4	STOP
5	OPEN/CLOSE
6	3D-SURROUND
7	KEY- (Mic Control)
8	Once More (Mic Control)
9	KEY+(Mic Control)
A	FORWARD
B	STAND BY

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050700

Figure 5-6

If any keys are detected more than once (due to hardware error), the key-code is displayed twice (or more), with the second digit increased by 1.
If the user does not press all keys minimally once (in any order), the DispKeys nucleus will return FALSE and cause an error in the overall result of the player script.
The test will also pass if all buttons, except the microphone key buttons, are pressed.
The user can leave the keyboard test by pressing the NEXT key on the local display of the DVD player for at least one full second.
The result of the keyboard test is shown on local display as follows:

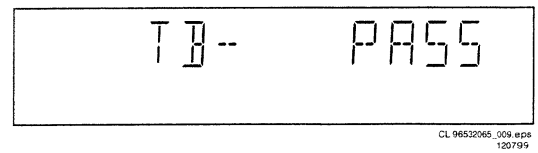

Figure 5-7

Or

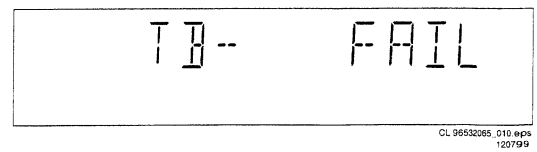

Figure 5-8

Pressing NEXT on the local keyboard again will proceed to the next text.

5.3.4 REMOTE CONTROL TEST

The remote control of the DVD player is tested by nucleus DispRc. The user must press any key on the remote control just once. The codes of the key pressed will be shown on the local display in hexadecimal format. Example:

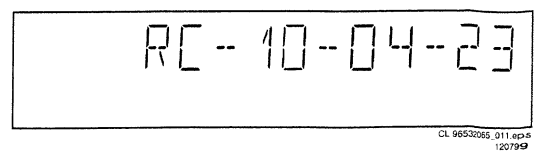

Figure 5-9

In this example 23 is the hexidecimal code of the pressed RC key. The user can leave the remote-control test by pressing

NEXT on the local keyboard of the DVD player. The remote control test is successful if a code was received before the user pressed the NEXT key; pressing the NEXT key before pressing a key on the remote control gives an error in the remote control test (note that the remote control test will also fail if a key on the remote control was pressed but no code was received). The remote control test does not check upon the contents of the received code, that is it will not be checked if the received code matches the key pressed. If desired, the user can manually check this code by using a code-table for the remote control key-codes.

C Key id	Hexadecimal code
STANDBY	0C
STOP	31
PLAY	2C
PLAY BACKWARD	2D
PAUSE	30
STEP FORWARD	F6
STEP BACKWARD	F5
FORWARD	28
FORWARD 4X	DF
FORWARD 8X	E0
BACKWARD	29
BACKWARD 4X	DE
BACKWARD 8X	DD
SLOW	22
SLOW 2	D9
SLOW BACKWARD	23
SLOW BACKWARD 2	DA
NEXT	20
PREVIOUS	21
CURSOR UP	58
CURSOR DOWN	59
CURSOR LEFT	5A
CURSOR RIGHT	5B
OK	5C
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
TOGGLE	C8
ANGLE	85
AUDIO	4E
SUBTITLES	4B
SUBTITLE ON/OFF	E3
ROOT MENU	54
TITLE MENU	71
MENU	D1
SETUP MENU	82
OSD ON/OFF	F
RETURN	83
RESUME	D7
SCAN	2A
SHUFFLE	1C
REPEAT	1D
A/B REPEAT	3B
TOGGLE SCART	43
OPEN/CLOSE	42
FTS	FB
KARAOKE	E4
OPTION	FA

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050700

Figure 5-10

After pressing NEXT, the result of the remote control test is displayed on the local display of the DVD player as follows:

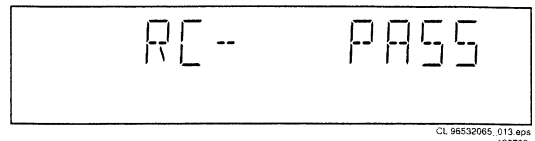

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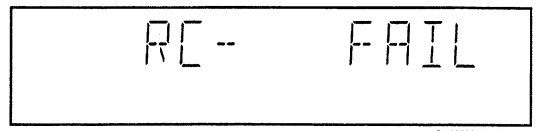
Figure 5-11

Or



CL 96532065_014.eps
120799

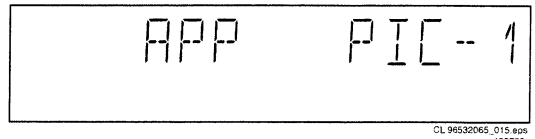
Figure 5-12

Pressing NEXT on the local keyboard again will proceed to the next test.

5.4 MONO PCB DIGITAL PART

5.4.1 PICTURE TEST

The picture test is performed by putting a predefined picture (colour bar) on the display (nucleus VideoColDencOn) and asking the user for confirmation. The display will show the following message:



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120799

Figure 5-13

By pressing PLAY the user confirms the test, pressing PAUSE will indicate the picture was invisible or incorrect. Pressing NEXT will proceed to the next test

5.4.2 SOUND 1 & SCART DVD TEST

The first soundtest is performed by starting a pink noise sound that needs confirmation from the user (nucleus AudioPinkNoiseOn); the display will show the following message very shortly:

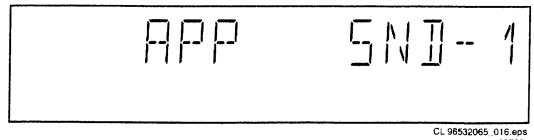

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Figure 5-14

This sound will only be audible from version cut3.1 of Sti5505(item7503 on mono board) onwards. After starting up sound 1, SCART loop-trough will be simultaneously active during this test. SCART loop-trough will be measured with the aid of an external video source.
When entering the SCART loop-trough, the local display indicates:

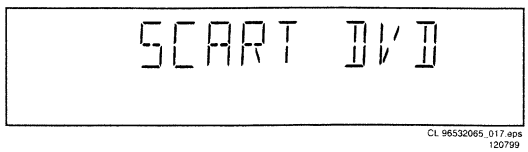

Figure 5-15

On the TV screen a colour bar (generated by nucleus VideoColDencOn) is visual and the internally generated pinknoise is audible. By pressing PLAY the user confirms the test, pressing PAUSE will indicate the sound was inaudible or incorrect. Pressing NEXT will proceed to the next test; if the user presses NEXT without pressing PLAY or PAUSE first, the result of this test will be TRUE (sound ok). By pressing the NEXT button there will be switched over to the external source, this must become now visible on the TV screen (using the SCART). The local display indicates:

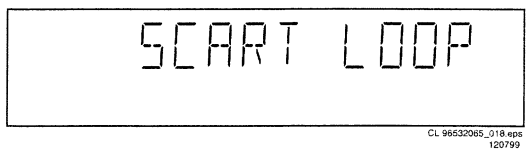

Figure 5-16

The internally generated colour bar is still available on the CVBS and Y/C outputs. And the pinknoise-signal is still available on the cinch audio outputs. By pressing the PREV button, the internal generated colour bar becomes visual again.
The test can be left by pressing the NEXT key for more than one second.

5.4.3 SOUND 2 TEST

The second soundtest is performed by producing a sine sound (nucleus AudioSineOn). The signal can be stopped by pressing the STOP-key. The display will show the following message:

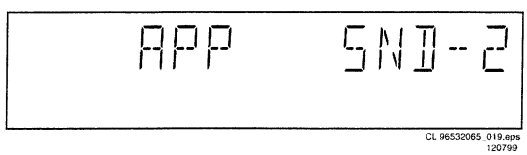

Figure 5-17

By pressing PLAY the user confirms the test, pressing PAUSE will indicate that something went wrong. Pressing NEXT will proceed to the next; if the user presses NEXT without pressing PLAY or PAUSE first, the result of this test will be TRUE (sound ok).

5.4.4 Colour setup test

The colour setup test is performed by putting the internally generated colour bar in different settings on the TV screen. The first colour bar will be displayed in setting 1. the display will show the following message:

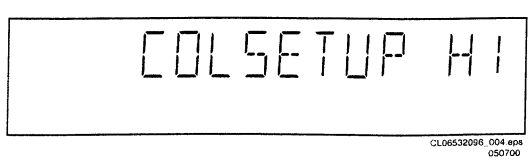

Figure 5-18

By pressing the NEXT button, you can go to the second setting. The local display indicates:

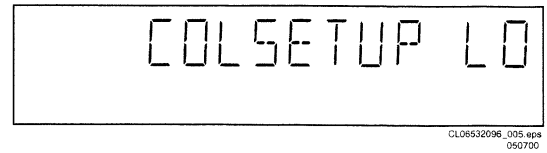

Figure 5-19

By pressing the PREVIOUS button, the colour bar with the first setting becomes visual again.
By pressing PLAY the user confirms the test, pressing PAUSE will indicate that something went wrong.
The test can be left by pressing the NEXT key for more than one second; if the user presses NEXT without pressing PLAY or PAUSE first, the result of the test will be TRUE)colour set up ok).

5.5 BASIC ENGINE

5.5.1 VERSION NUMBER

In the basic engine tests, the version number of the Basic Engine will be shown first, as the following example:

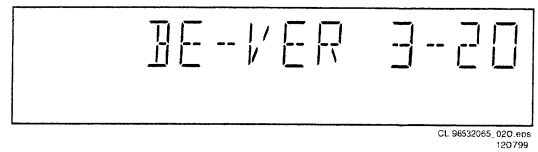

Figure 5-20

By pressing the NEXT key, the Basic Engine tests are started.

5.5.2 TRAY TEST

First, the tray is tested. The purpose of this test is also to give the user the opportunity to put a disc in the tray of the DVD player. Some tests on the Basic Engine require that a disc(e.g. DVD MPTD test disc) is present in the player. At the end of the Basic Engine tests this tray test will be repeated solely to enable the user to remove the disc in the tray. The local display will look as follows:

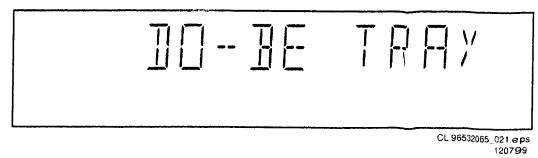

Figure 5-21

By pressing PLAY or PAUSE the user can toggle the position of the tray. Note that this test will not contribute to the test result of the Basic Engine. Pressing NEXT will proceed to the next test, after the tray has been closed (by the software) if it was open.

5.5.3 SLEDGE TEST(visual test)

The second Basic Engine test tests the sledge; the user can move the sledge as many times as desired by using PLAY (nucleus BeSledgeOut) and PAUSE (nucleus BeSledgeIn). Pressing NEXT on the local keyboard proceeds to the next test. Note that this test will not contribute to the test result of

the Basic Engine. The local display will look as follows during the sledge test:

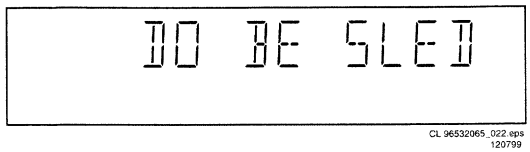

Figure 5-22

5.5.4 DISC MOTOR TEST(visual test)

The third Basic Engine test tests the disc motor (nucleus BeDiscMotorOn); the local display looks as follows:

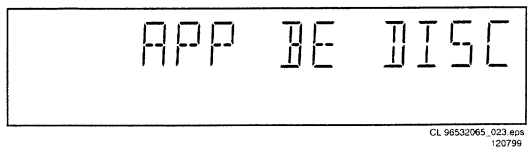

Figure 5-23

By pressing PLAY the user confirms that the disc motor is running; pressing PAUSE indicates the disc motor does not work. Pressing NEXT proceeds to the next test, after a reset of the disc motor (nucleus BeDiscMotorOff). If the user presses NEXT before pressing PLAY or PAUSE, the result of this test will be TRUE (disc motor is running).

5.5.5 FOCUS TEST(visual test)

The fourth Basic Engine test tests the focussing; first focussing is turned on by calling nucleus BeFocusOn. The display will look as follows:

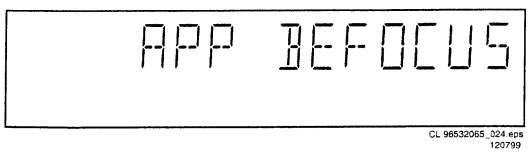

Figure 5-24

By pressing PLAY the user confirms that the focussing was succesful; pressing PAUSE indicates a focussing failure. Pressing NEXT proceeds to the next test after a reset of the focussing (nucleus BeFocusOff); if NEXT is pressed before PLAY or PAUSE, the result of this test will be TRUE (focus successful).

5.5.6 RADIAL TEST(visual & listening test)

The fifth Basic Engine test tests the radial functionality (nucleus BeRadialOn); the local display looks as follows:

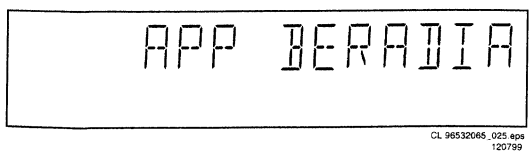

Figure 5-25

By pressing PLAY the user confirms that the radial function worked; pressing PAUSE indicates the function does not work. Pressing NEXT proceeds to the next test, after a reset of the radial (nucleus BeRadialOff). If the user presses NEXT before pressing PLAY or PAUSE, the result of this test will be TRUE (radial successful).

5.5.7 JUMP TEST(listening test)

The sixth and last Basic Engine test tests the jumping by calling nuclei BeGroovesIn, BeGroovesMid and BeGroovesOut. During this test, the local display looks as follows:

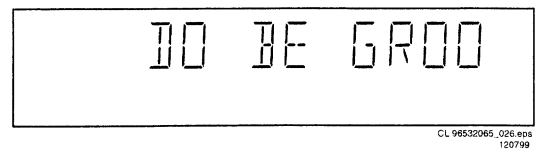

Figure 5-26

The user can switch between the three different types of groove settings by pressing PLAY (forward to next nucleus in the list In-Mid-Out) or PAUSE (backward in the list In-Mid-Out). This is done in a cyclic manner; note that this test will not contribute to the test result of the Basic Engine. Pressing NEXT proceeds to the next test, after the disc motor has been shut off with a call to nucleus BeDiscMotorOff.

5.5.8 TRAY TEST

As a last action for the Basic Engine tests, the tray test is repeated. The local display will look as follows:

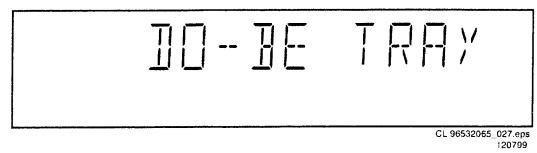

Figure 5-27

This test is meant to give the user the opportunity to remove the disc in the tray. The tray position can be toggled using the PLAY and PAUSE key. The tray will be closed (by the software, if it is open) before proceeding to the next test when the user presses the NEXT key.

5.5.9 ERROR LOG (see table on page 32)

Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player. Reading the error log is done by nucleus LogReadErr. The display during the errorlog readout looks as follows :

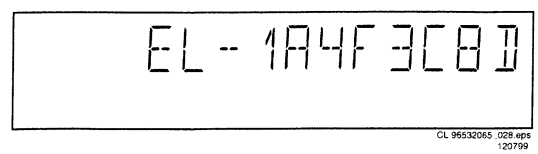

Figure 5-28

By pressing PLAY or PAUSE the user can move forward or backward (respectively) through the logged error codes. The highlighted number indicates which errorcode is currently on display (in the example above, errorcode number 4 is displayed). If "0000" is displayed at all positions, the error log is empty. Display of the logged errors is done in a cyclic manner. The errorcode with the lowest highlighted number is the most recent. By pressing NEXT on the local keyboard, the user can proceed to the next test.

5.5.10 ERROR BITS (see table on page 32)

Reading the error bits is done by nucleus LogReadBits. The display during the errorbits readout looks as follows:

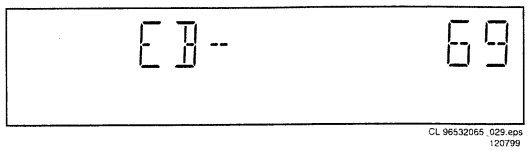

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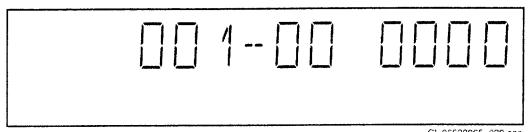
Figure 5-29

Only the set errorbits will be shown by their (decimal) number. Refer to the appropriate documentation for the explanation of each bit number. If the display only shows "EB-0", no error bits were set. By pressing NEXT the user can continue to the next test.

5.6 LOOP TEST (see table below)

At the start of the loop test, the display will show the result of the interactive player test:



CL 96532065_030.eps
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Figure 5-30

The left side of the display contains a 3-digit code, which can have a value between 000 and 111. These values are to be interpreted as follows:

Displayed Value	Indication for each module		
	Basic Engine	Mono PCB	Display PCB
000	ok	ok	ok
001	ok	ok	faulty
010	ok	faulty	ok
011	ok	faulty	faulty
100	faulty	ok	ok
101	faulty	ok	faulty
110	faulty	faulty	ok
111	faulty	faulty	faulty

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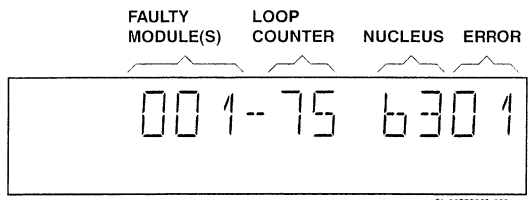
120799

Figure 5-31

The loop test will perform the same nuclei as the dealer test, but it will loop through the list of nuclei indefinitely. The display of the DVD player will display not only the three digits indicating correct/faulty modules and the last found error code (as mentioned, faults are detected as far as they can be within the scope of the diagnostic software), but also a loop counter indicating how many times the loop has been gone through. Example:



CL 96532065_032.eps
120799

Figure 5-32

The number after the hyphen indicates the number of times the loop test has been performed; the 4 digits at the right side of the display show the last error that was found when running the loop test: the leftmost two digits of this code indicate which nucleus resulted in a fault; the rightmost two digits refer to the faultcode within that nucleus. For further explanation of this error code, see list of error codes below.

ERROR CODES LOOP TEST

ERROR CODE	NUCLEUS NUMBER	ERROR DESCRIPTION
0601	6	Calculated checksum of FLASH is not correct
1101	11	I2C bus busy before start
1102		NVRAM access time-out
1103		No NVRAM Acknowledge
1104		NVRAM reply time-out
1201	12	I2C bus busy
1202		I2C bus not working
1203		Slave controller not responding
1204		Slave response is not correct
1301	13	Parity error from basic engine to serial
1302		Parity error from serial to basic engine
1303		No communication between serial and basic engine
1304		Communication time-out error
1601	16	The SDRAM is faulty
5201	52	I2C bus busy
5202		Error sending I2C command to COLOR SETUP IC
5203		Colour setup IC not responding
5204		Colour setup IC response is not correct
5401	54	I2C bus busy
5402		Error sending I2C command to SCART SWITCH IC
5403		SCART Switch is not responding
5403		SCART Switch response is not correct

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Figure 5-33

Error log / bits table	Read ERROR LOG in player script	Read ERROR BITS in player script
Basic engine errors	Value:	Value:
Command to the Basic Engine not allowed in this state or unknown command	150101	8
Parameter(s) from the command to the Basic Engine is not valid	150102	7
Sledge could not be moved to the inner home position	150103	6
Focus failure	150104	5
Turntable motor speed could not be reached within timeout	150105	4
Radial servo could not get on track on the disc	150106	3
PLL could not lock in the accessing or tracking state	150107	2
Subcode or sector information could not be read	150108	1
requested subcode could not be found	150109	16
Tray could not be closed or opened completely	15010A	15
TOC could not be read within timeout	15010B	14
The requested seek on the disc could not be executed	15010C	13
A requested lead-in is not on the disc	15010D	12
A non existing burst cutting area is requested	15010E	11
S2b communication error	1501F0	10
S2b communication error	1501F1	9
S2b communication error	1501F3	24
S2b communication error	1501F4	23
S2b communication error	1501F5	22
Digital PWB errors		
Communication error with the Sti 5505	90000	32
Communication error with the Sti 5505	90001	31
Disply processor errors		
Communication error with the display processor	190000	40

5.6.1 Servicing DVD loader

The DVD Loader / mechanism, VAL6011, has to be exchanged completely in case of failure. A new mechanism can be ordered with codenumber 9305 023 61101.

5.6.2 Reprogramming of new mono boards.

Caution

This information is confidential and may not be distributed. Only a qualified service person should reprogram the mono board.

After reset of NV-memory or repair of the mono board, all the customer settings and also the region code will be lost.
Reprogramming of the mono board will put the player back in the state in which it has left the factory, i.e. with the default settings and the allowed region code.
Reprogramming is limited to 25 times
When the counter reaches 25, reprogramming is not possible anymore
Reprogramming will be done by way of the remote control.
Put the player in stop mode, no disc loaded.
Press the following keys on the remote control:
<***PLAY***> followed by numerical keys ***<1> <5> <9>***
The display shows: "- - - - - - - - - - - -"
Press now successively the following keys :

for DVD701/002 : ***<0><5><3> <0><0><0><0><0><0><0><0><0>***

Press <***PLAY***> again.
The TV screen will become BLUE during a short time to confirm that the mono board has been reprogrammed, then the set goes to standby mode.

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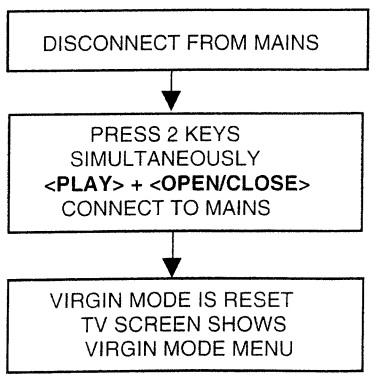
070700

Figure 5-34

5.6.3 Reset of Virgin Mode

After the player has been powered up for test by the dealer, it would have gone through the Virgin Mode. It is possible to reset the settings made during that mode before the delivery of player to the customer. This can be done as shown in the following diagram:

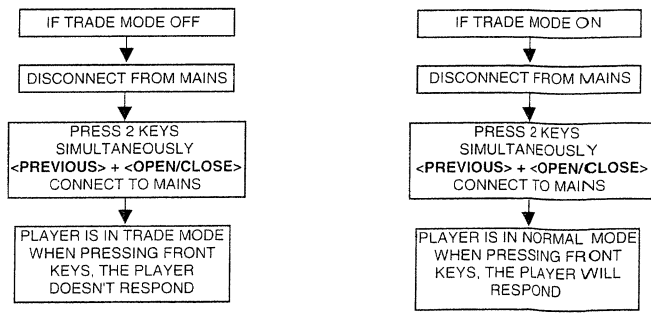


CL 96532065_034.eps
070700

Figure 5-35

TRADE MODE

When the player is in Trade Mode, the player cannot be controlled by means of the front key buttons, but only by means of the remote control.



C06532096_008.eps
050700

Figure 5-36

5.7 Test instructions Display board

5.7.1 Introduction

These test instructions are written for all versions of the display PCB 3104 123 42230.
The contents of the PCB can be split up into next blocks:

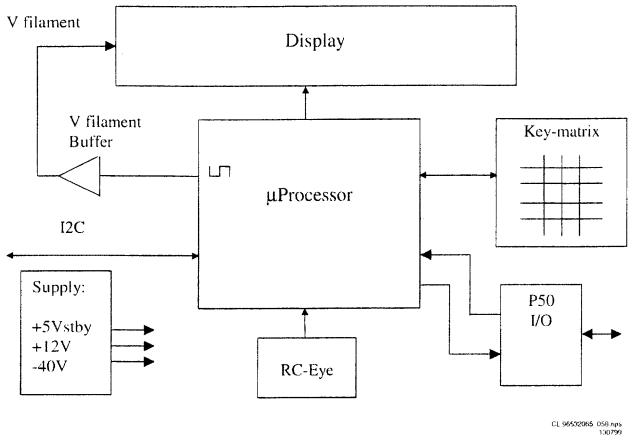


Figure 5-37

5.7.2 Functionality description:

The essential component of the display PCB is the µP (slave). This slave works on an 8MHz resonator and has a reset circuit that is triggered by the +5Vstby. After the reset pulse, the standby control line will release the reset of the host µP. This host µP will then initialise the slave. In addition, when going to stand-by, the slave will put the host µP in reset. When the slave receives the right IR or key code to leave the standby mode, the reset of the host µP will be released.
Other slave functions are:

- Square signal generator to generate the filament voltage, which is required for an AC FTD.
- Generates the grid and segment scanning for the FTD.
- Generates a scanning grid for the keys (separated from display scanning).
- Has inputs for RC (RC5 and RC6) and P50 (P50 controller is built in).

5.7.3 General

- Oscilloscope measurements have been carried out using a Philips PM3392A.
- Impedance of measuring-equipment should be > 1MΩ.
- To do correct measurements we recommend to use supply 3122 427 21370, which is used in all "second generation B" DVD-players. Make sure that the main 3.3V has a 0.7A load.

5.7.4 Reset

Check next reset timing with an oscilloscope at pin 10 of the microprocessor.

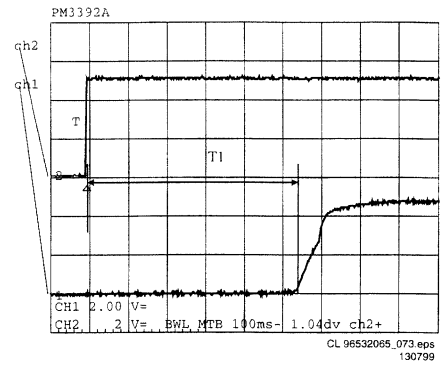


Figure 5-38

Timing: 400msec < T1 > 700msec.
CH1: +5Vstby voltage at power on.
CH2: Voltage at pin 10.

5.7.5 Display steering

Check next timing and level for all grid-lines (G1 r G14).

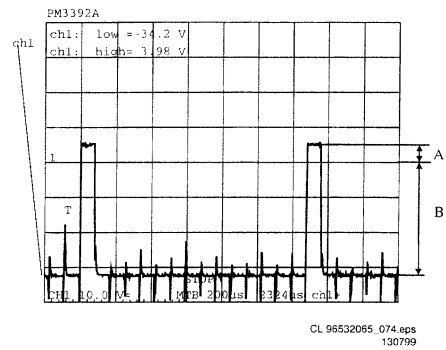


Figure 5-39

1. Check level A: +4V5 +/-10% for grid lines 1 => 11
2. Check level A: +4V0 +/-10% for grid lines 12 => 14
3. Check level B: -33V +/-10%
4. Check timing and levels of segment-lines P1 => P10:

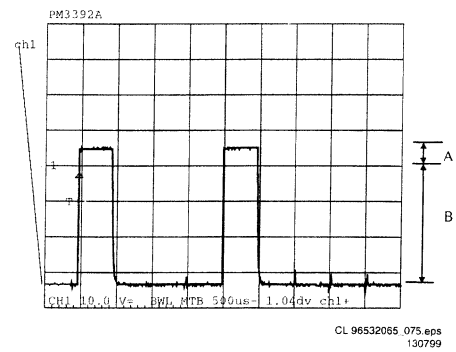


Figure 5-40

Level A:+4V5 +/-10%
Level B:-33V +/-10%
The data on these segment lines depend on the characters that are displayed.
The characters can be set by sending I2C commands to the display.

See the Slave URS how to send a display command.

5.7.6 Key-matrix

Connect a extra 10kΩ pull-up to pin 36 en 37 of the µP and check next matrix scanning at these pins.

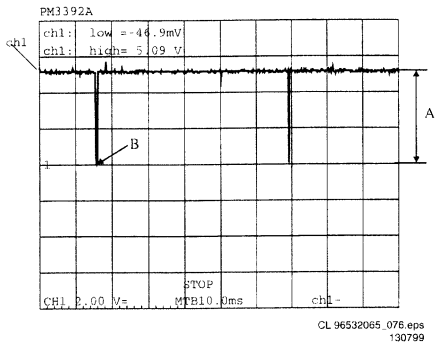


Figure 5-41

Level A: 5.0V +/-7%
Level B: 0V +/-200mV
Check matrix scanning from pin 26 until 33 of the µP.
The results should be the same as the diagram above.

5.7.7 I.R. receiver

Check at pin 23 of the µP if this line switches from low (< 0.3V) to high (> 4.5V), while pressing a key on a Philips RC5 or RC6 remote control.

5.7.8 Karaoke interface

The karaoke interface (4 lines) is a single direction communication.
This means that it consists of four µP output lines.
The interface can be checked by setting or resetting these output-ports via the I2C bus.
Send next command via the I2C bus:

Address	:	0x70
Command byte	:	0x24
Data byte	:	xxxxabcd
Where	:	a = Karaoke reset.
	:	b = Karaoke data.
	:	c = Karaoke clock.
	:	d = Karaoke strobe.

5.7.9 P50 interface

P50 is a bi-directional serial interface, which is used for communication between video equipment. For European sets, this communication goes via pin 10 of the scart-bus. In other regions, it can be a cinch bus at the back of the set.

1. Keep the µP in reset by short-circuiting emitter and collector of transistor 7108, via resistor 3100 and 3104 transistor 7101 is switched on.
2. Check the voltage at the P50 output connector 1118-5: < 200mV.

When the reset is released the µP output-pin becomes low and transistor 7101 is switched off.

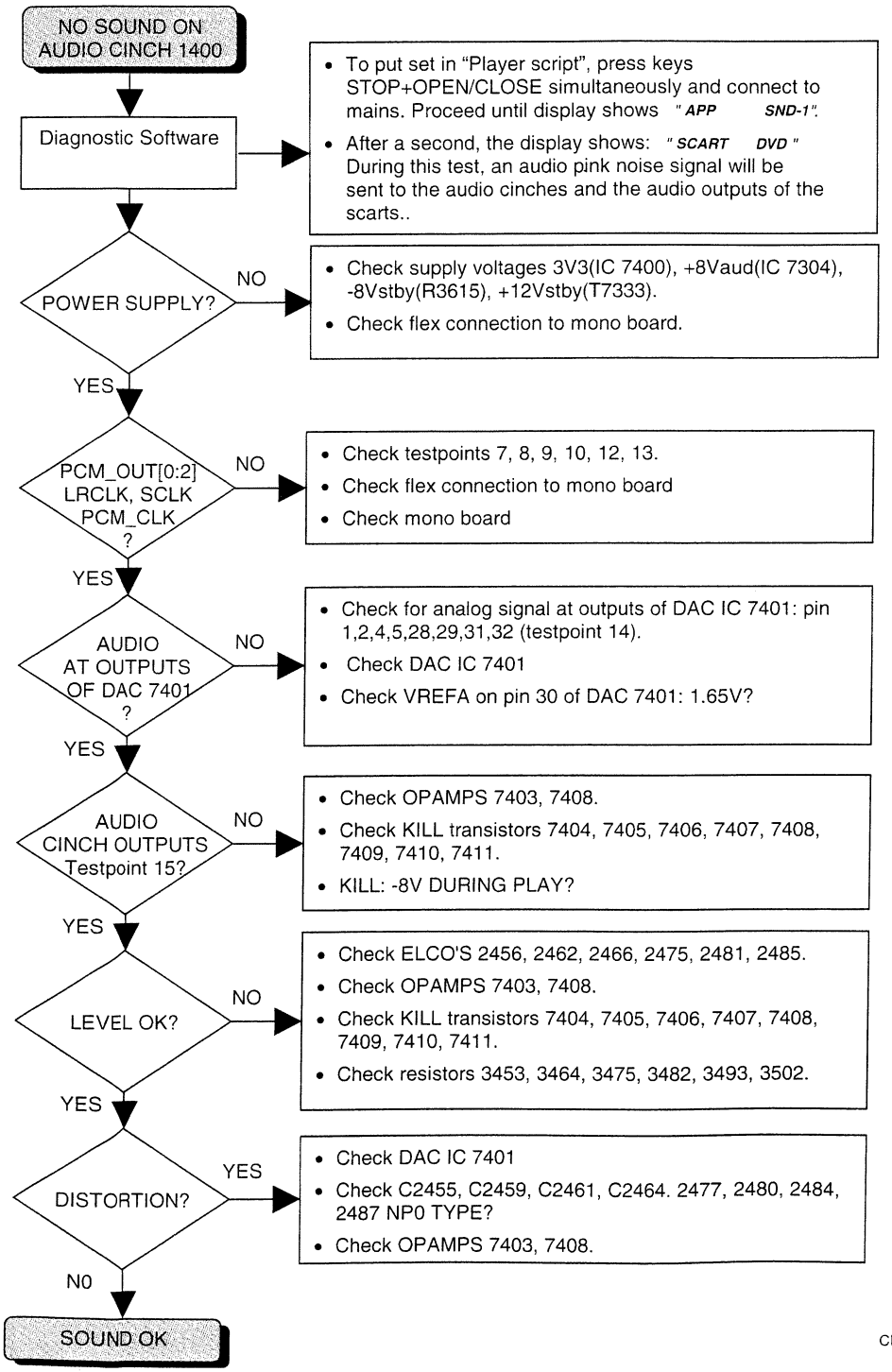
1. Check the voltage at the P50 output connector 1118-5: 4V9 +/-5%.
2. Check also the µP P50 input (µP pin 20): 5V +/-5%.
3. Connect the P50 line (connector 1118-5) to ground.
4. Check again the µP P50 input (µP pin 20): <0V3.

5.8 Troubleshooting

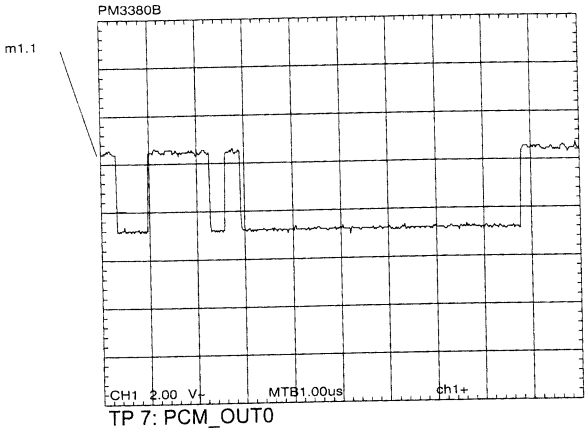
TROUBLESHOOTING A/V BOARD

Testing of A/V board can be done using diagnostic software "Player script".
Mono board is used to generate a sound with the sound tests SND-1 and SND-2 or a VIDEO signal with the picture test PIC-1. Functional control of scart switching and RGB video processing is also possible. See description in chapter "Diagnostic Software: Script Interfaces"

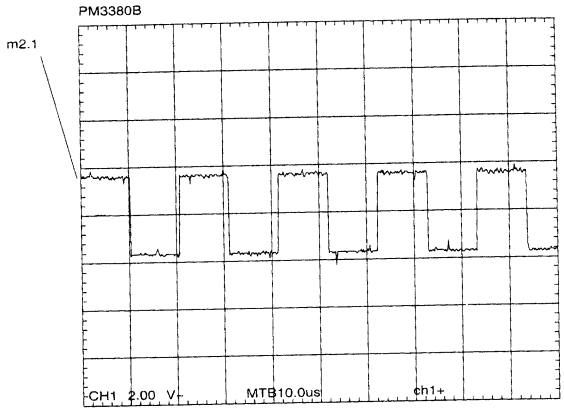
AUDIO PART



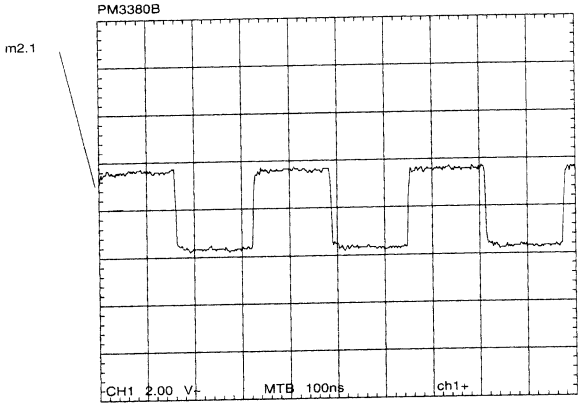
CL96532126_002.eps
261099



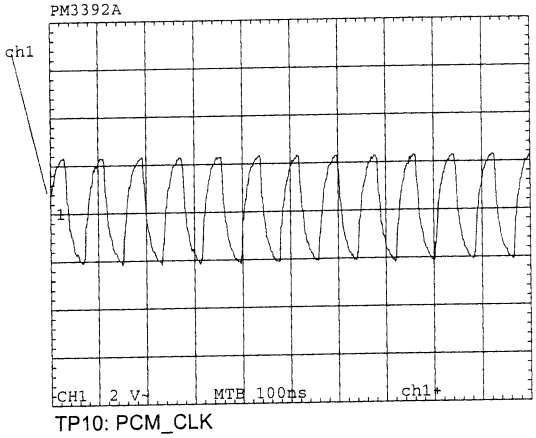
TP 7: PCM_OUT0



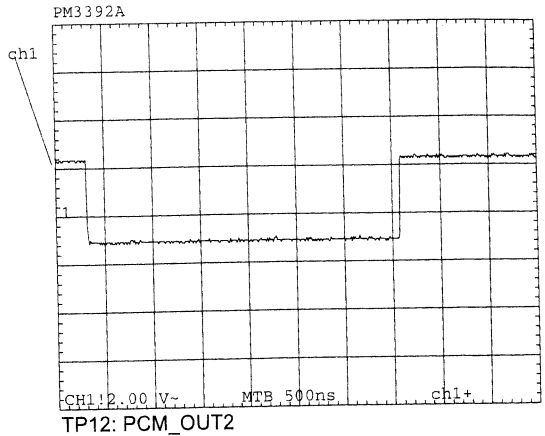
TP8: LRCLK



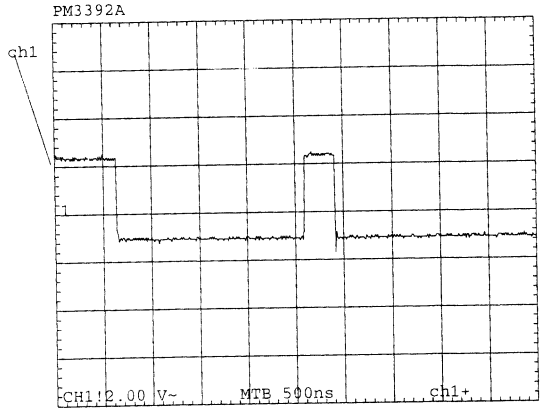
TP9: SCLK



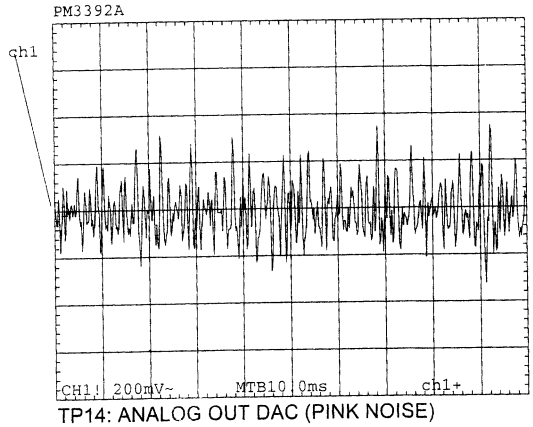
TP10: PCM_CLK



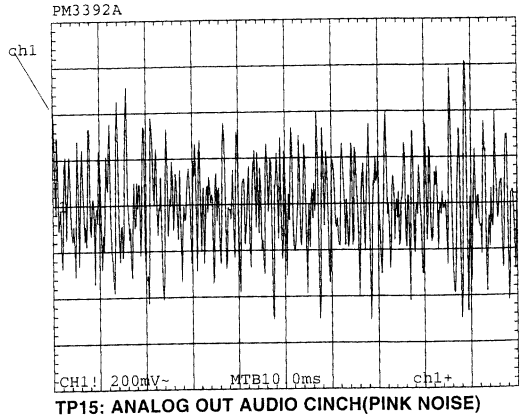
TP12: PCM_OUT2



TP13: PCM_OUT1

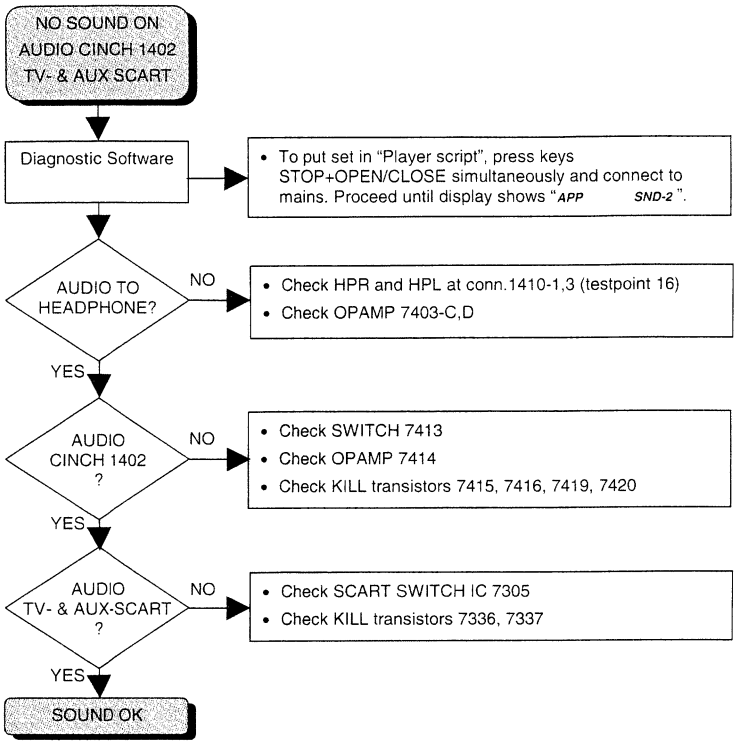


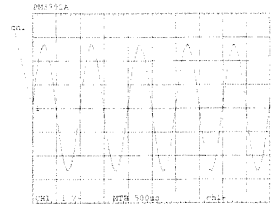
TP14: ANALOG OUT DAC (PINK NOISE)

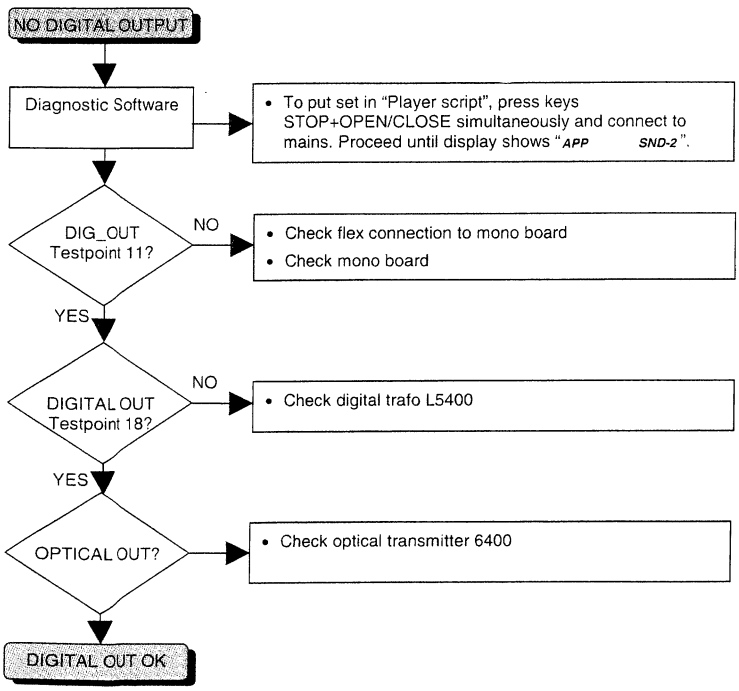


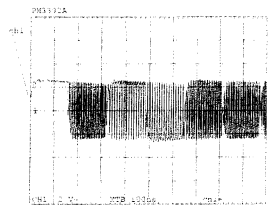
TP15: ANALOG OUT AUDIO CINCH(PINK NOISE)

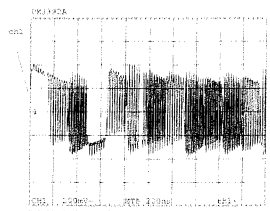
CL06532096_021.eps
060700




TP 16 : ANALOG OUTPUT AUDIO HP_R & HP_L

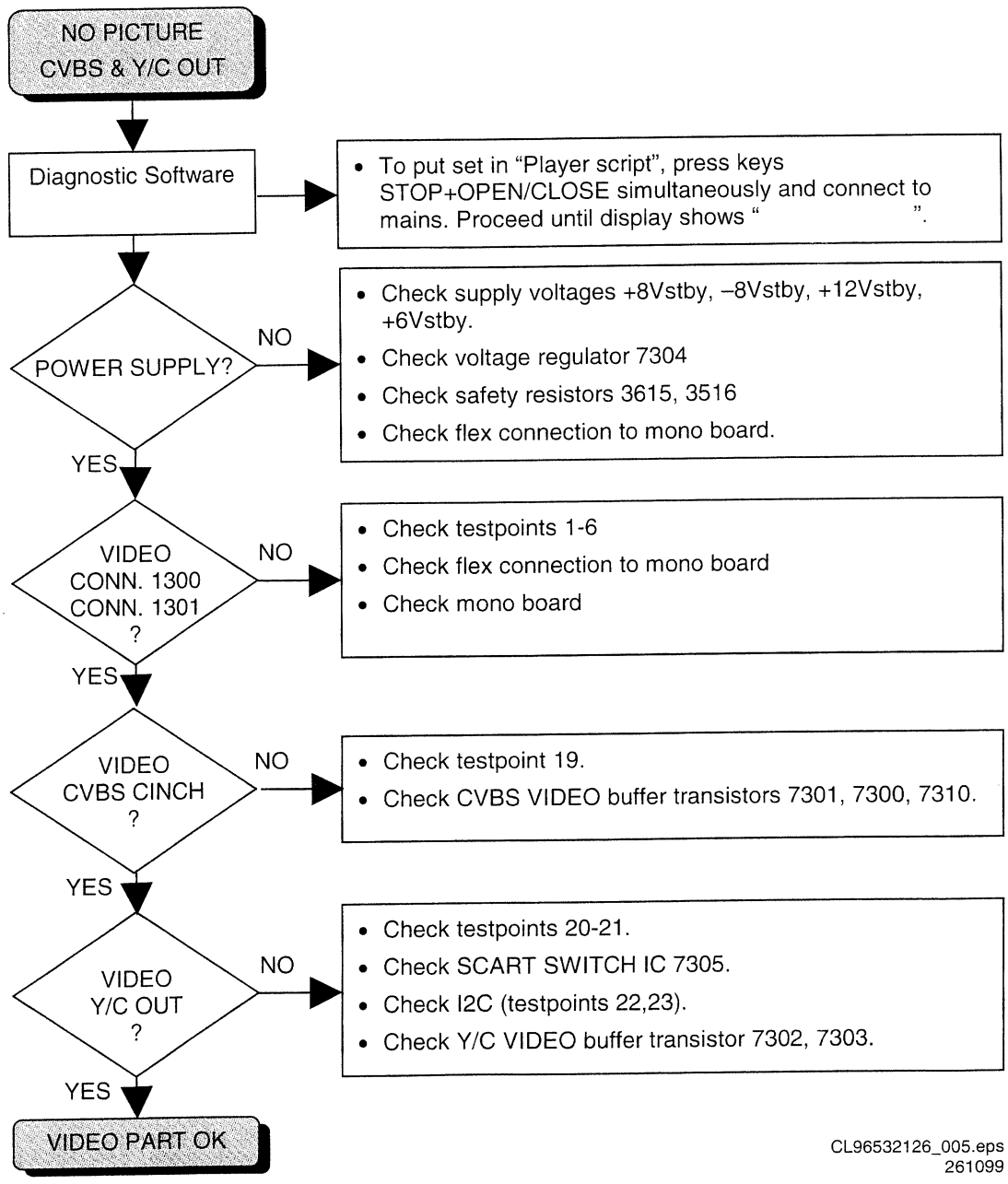



TP 11: DIG_OUT

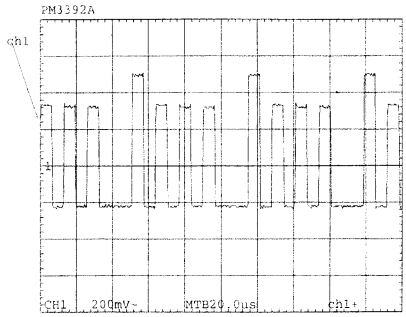

TP 18: DIGITAL OUT

CL96532126_004.eps
261099

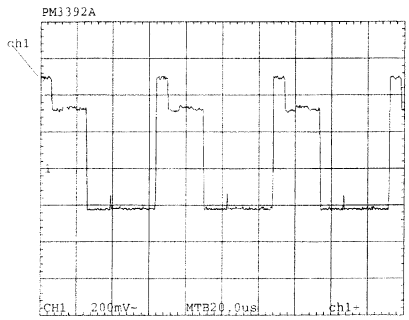
VIDEO PART



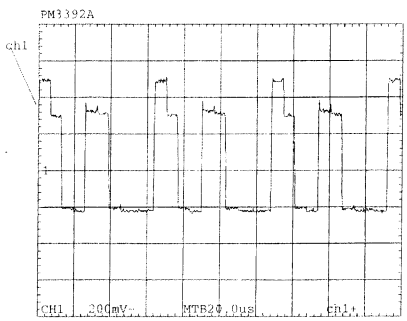
CL96532126_005.eps
261099



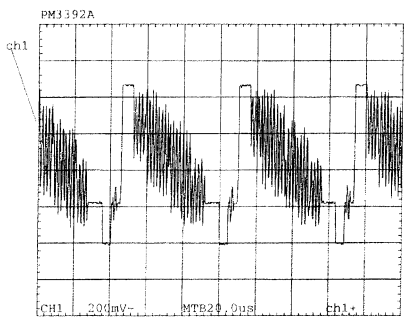
TP 1 : video B



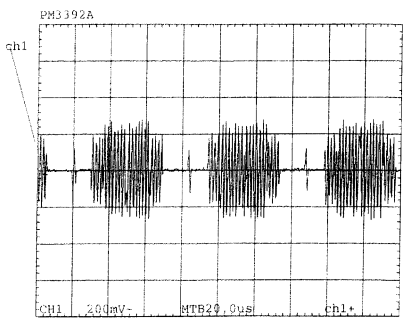
TP 2 : video G



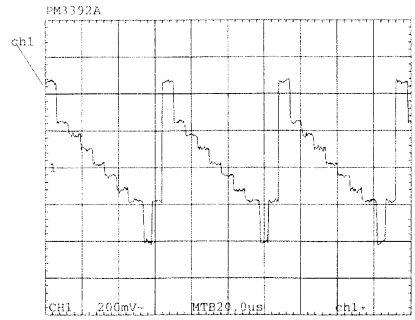
TP 3 : video R



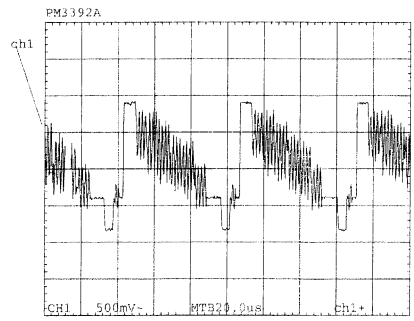
TP 4 : CVBS



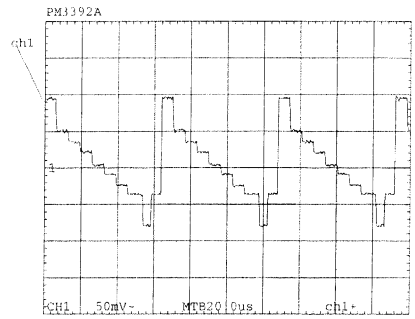
TP 5 : C_ENC



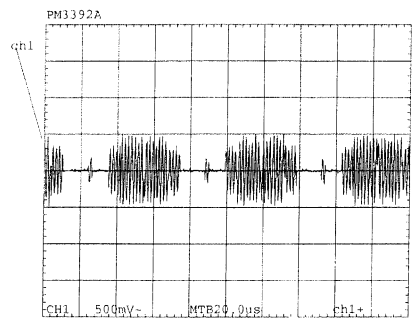
TP 6 : Y_ENC



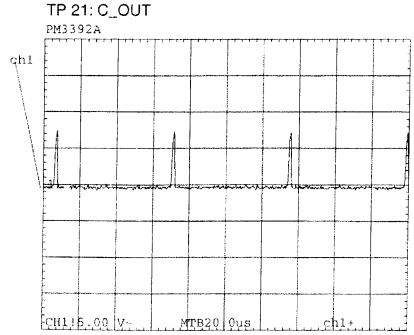
TP 19 : CVBS_OUT



TP20: Y_OUT



TP 21: C_OUT



TP24: HSYNC

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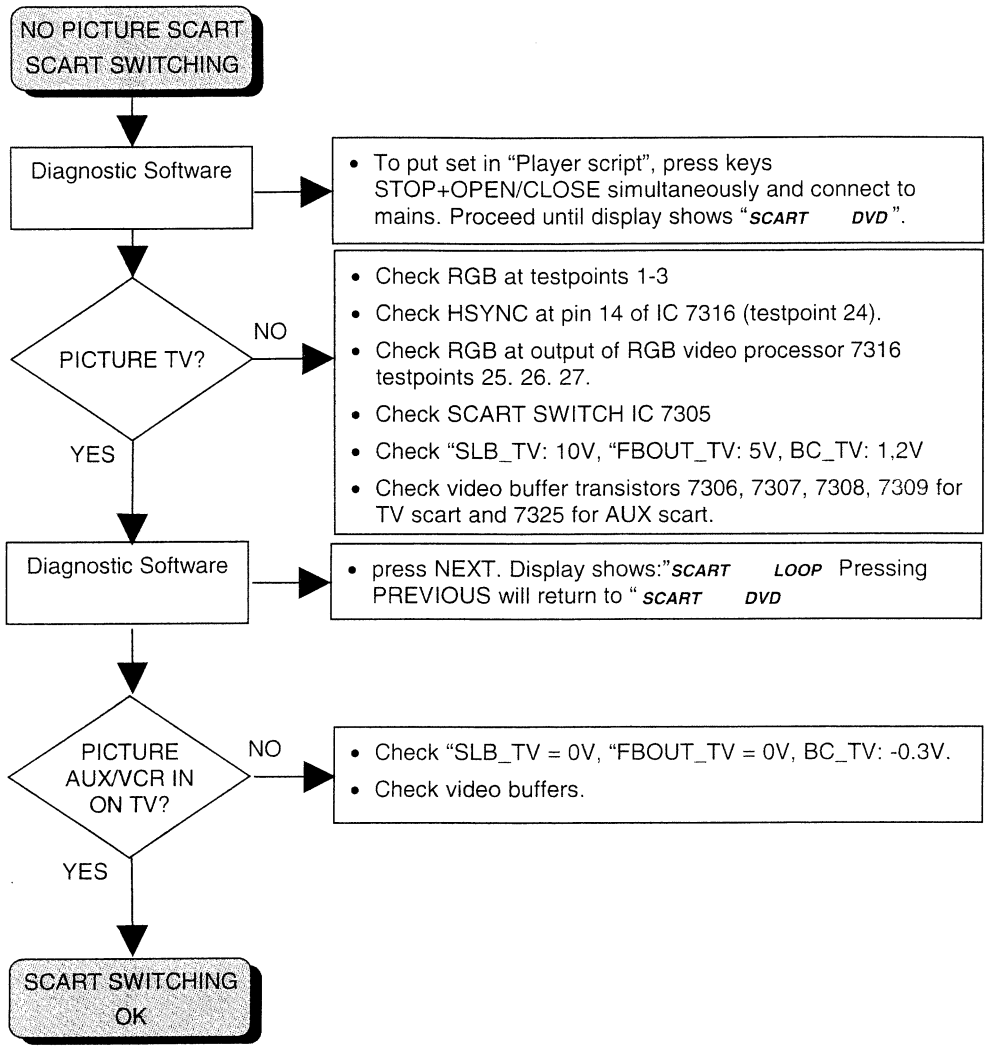
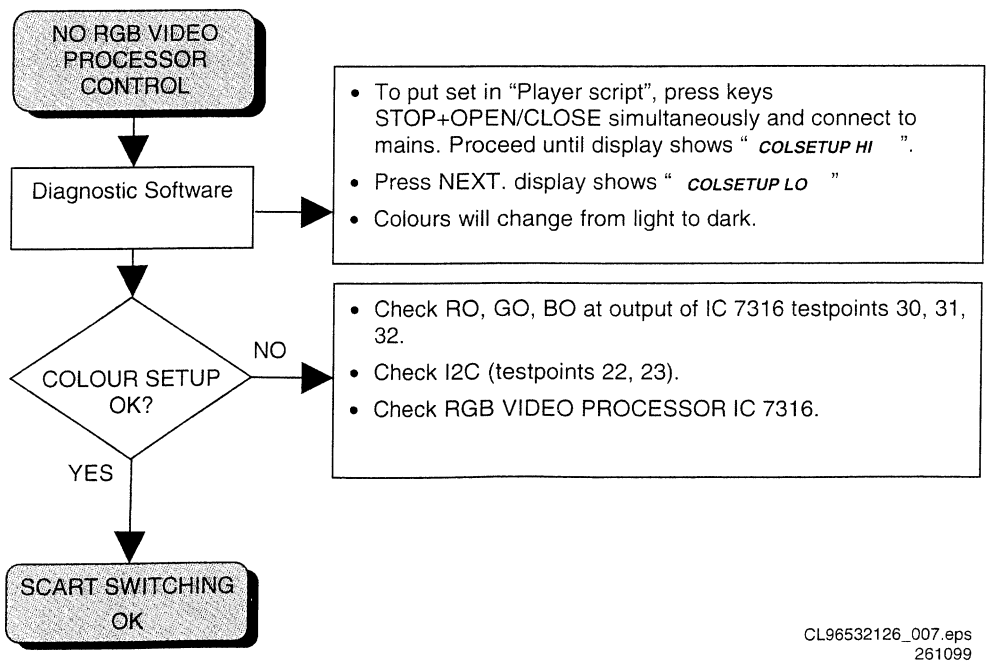
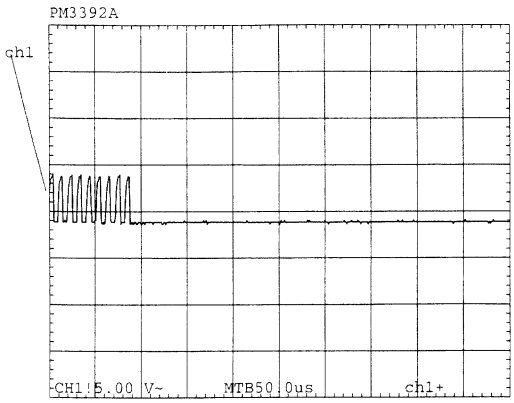
261099

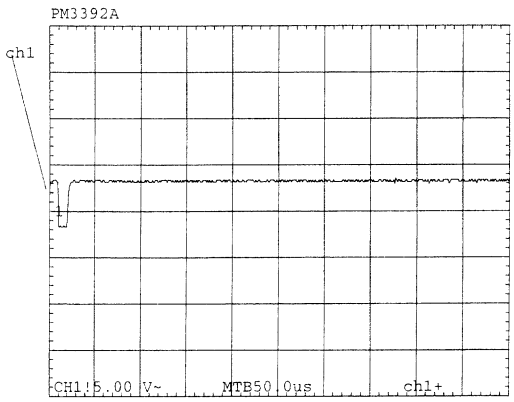




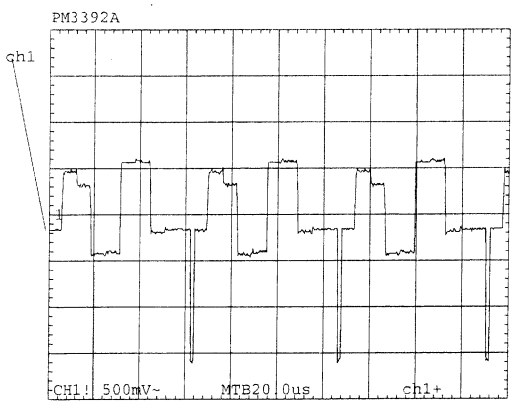
CL96532126_007.eps
261099



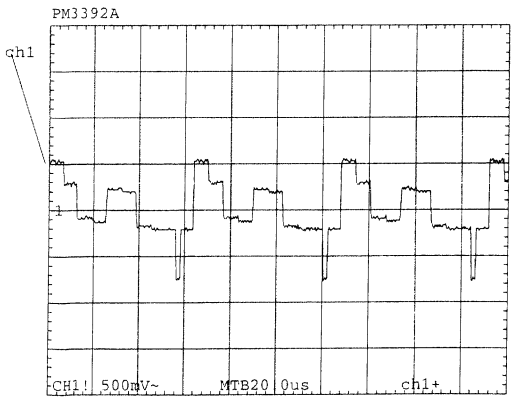
TP22: SCL(I2C)



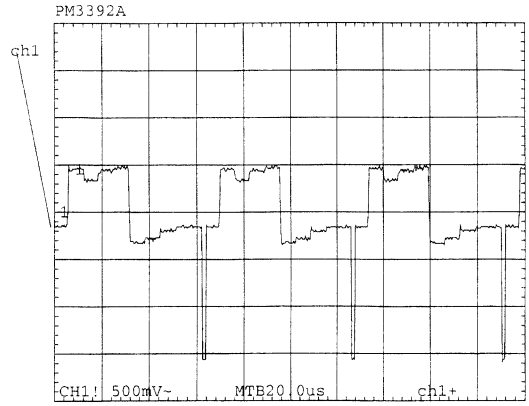
TP23: SDA(I2C)



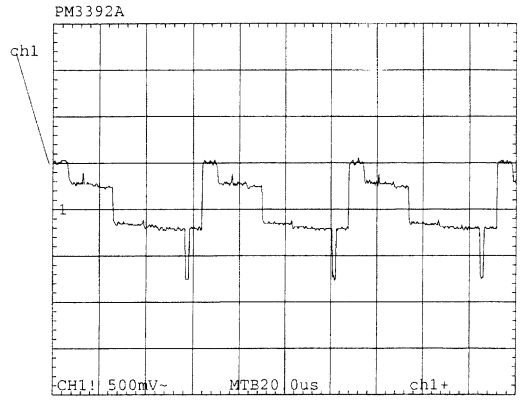
TP25: RO (COLOURSETUP HI)



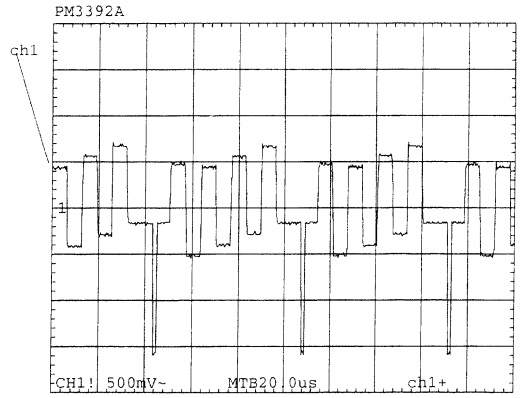
TP25: RO (COLOURSETUP LO)



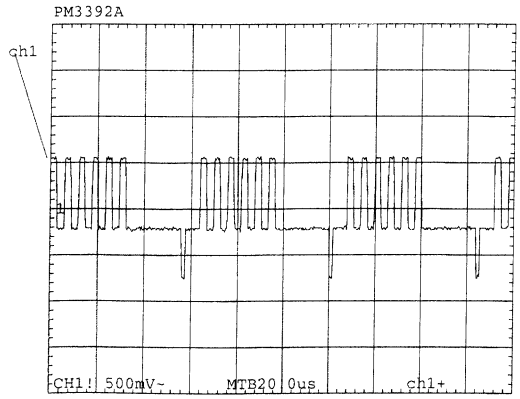
TP26: GO (COLOURSETUP HI)



TP 26: GO (COLOURSETUP LO)



TP27: BO (COLOURSETUP HI)



TP27: BO (COLOURSETUP LO)

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261099

TROUBLESHOOTING POWER SUPPLY UNIT 20PS223

START

Check DC voltages
+12V, +5Vstdby, -8Vstdby, +5V,+3V3

OK → Power Supply OK

NOK

Disconnect the power supply from the MAIN Board
Connect dummy load resistors 10W (min 5W) :
10 ohm at +3V3, 15 ohm at +12V and ground

Check DC voltages
+12V, +5Vstdby, -8Vstdby, +5V, +3V3
These voltages will be somewhat higher than specified

OK → Power Supply OK
Check : Mono Board
A/V Mux Board
Display Board

NOK

Check the +3V3 and +12V

OK → Check the path of the faulty voltages:
T7233, T7236, T7237, D6250,L5223
Standy circuit

NOK

Check +12V path : D6241, C2240, L5240
Check +3V3 path : D6210, C2210, L5210

OK

Connect the mains inlet to a mains isolated variac

Turn input voltage up and check across C2121
the voltage should be
+/-1.41 X Vin AC

NOK → Check the functionality of the following components:
F1120, R3122, L5120, D6120, C2121

OK

Is power supply ticking?

YES → Check the load on the secondary output
Check overvoltage protection:
D6141, R3139, T7141, T7150, R3150
Check oscillator voltage on pin 4 of IC7145
Check R3146,C2157 and replace IC7145
Check drive circuit : gate voltage of Mosfet 7125,
components R3111, R3140, R3156,R3125,D6140
Check working of regulation circuit :
T7131,T7201,R3201,R3202,R3203,R3204,R3205,
R3206,R3207,R3208,R3153,R3154,R3262,C2201,
C2202,C2203

NO

Check supply voltage on pin 7 of IC7145
Vcc within 10V - 16V (typical)

NOK → Check start-up circuit and Vcc supply circuitry
Replace IC7145

OK

Power Supply Unit
OK

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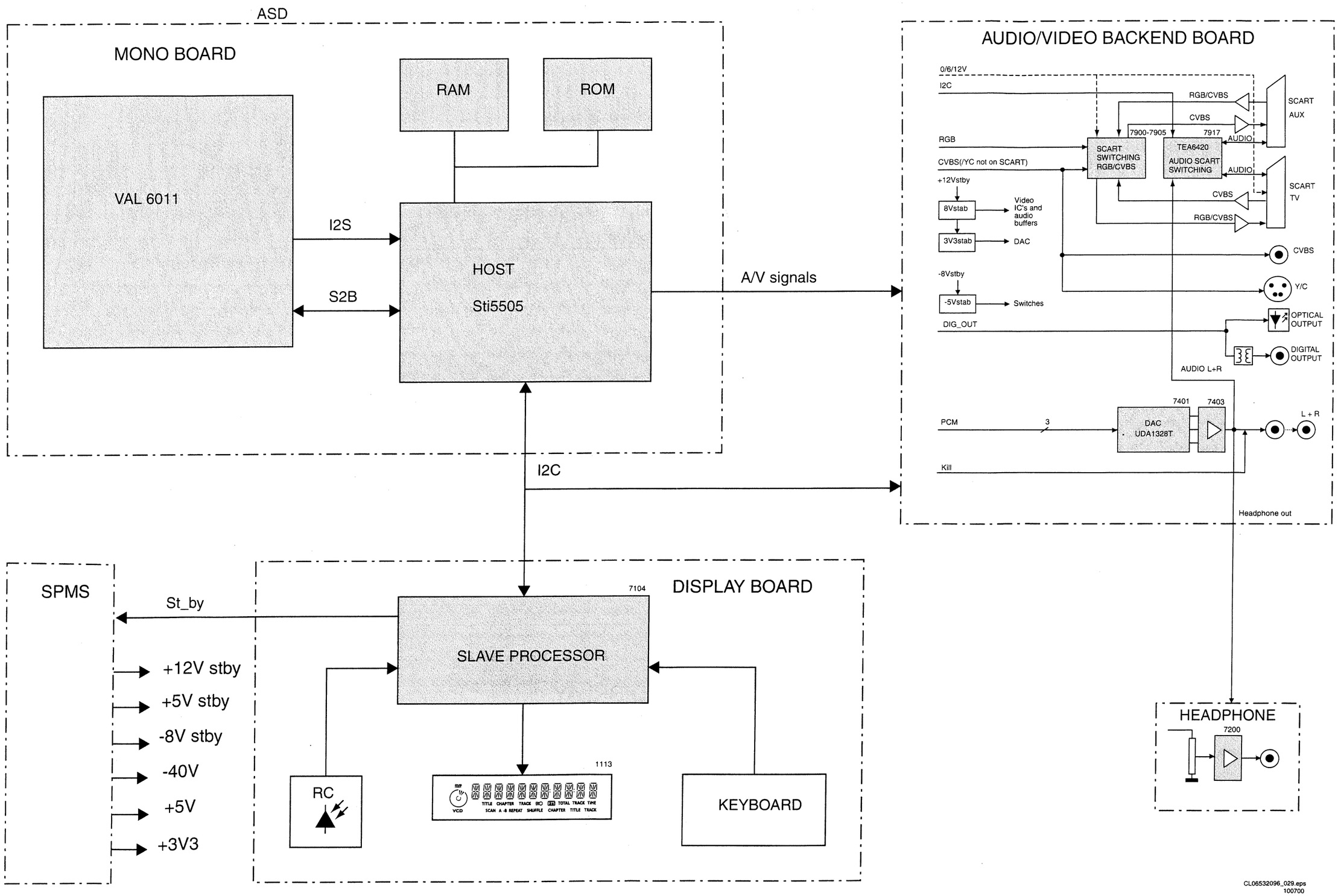
060700

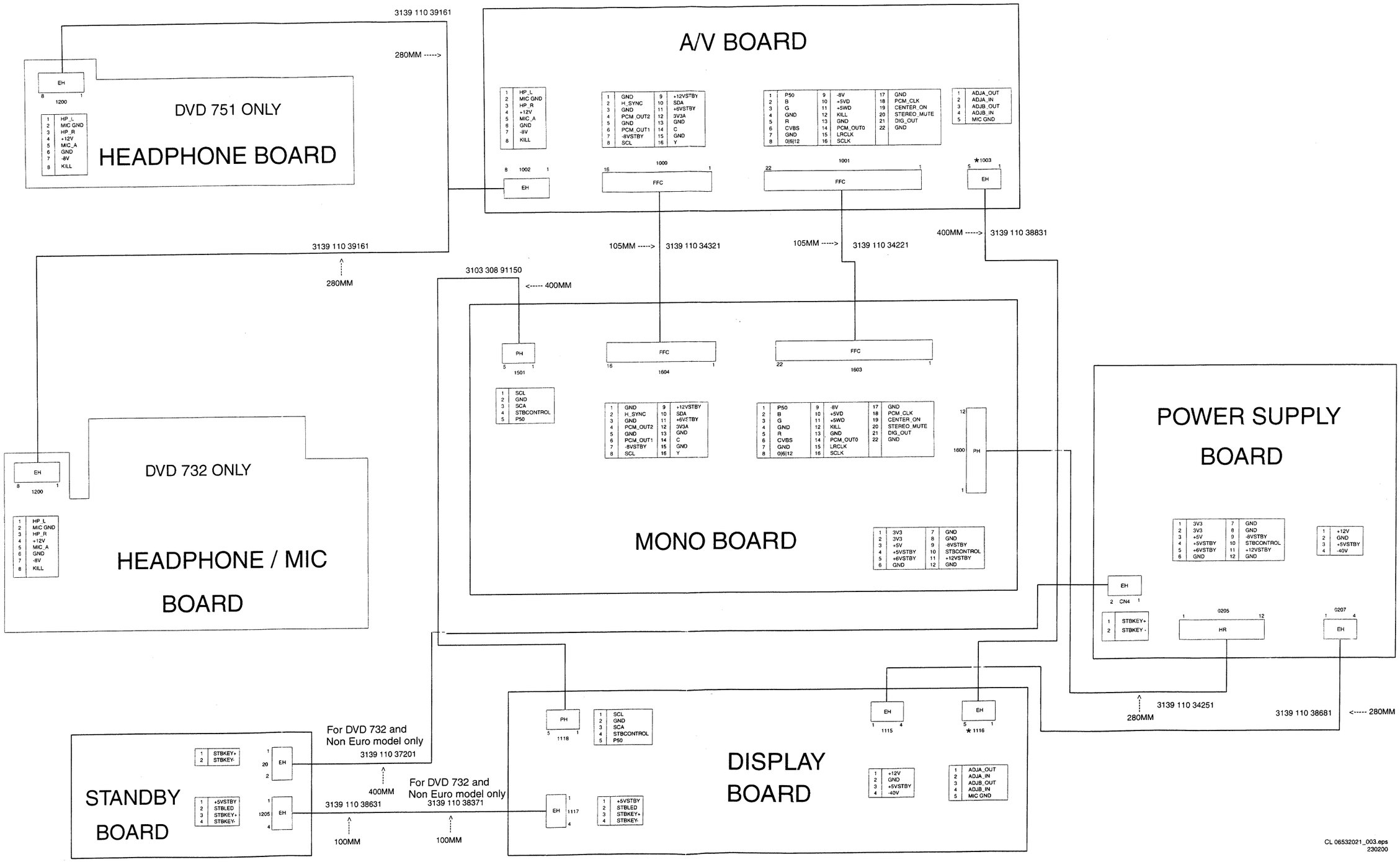
Personal notes:

6. Block- and wiringdiagram.

Blockdiagram

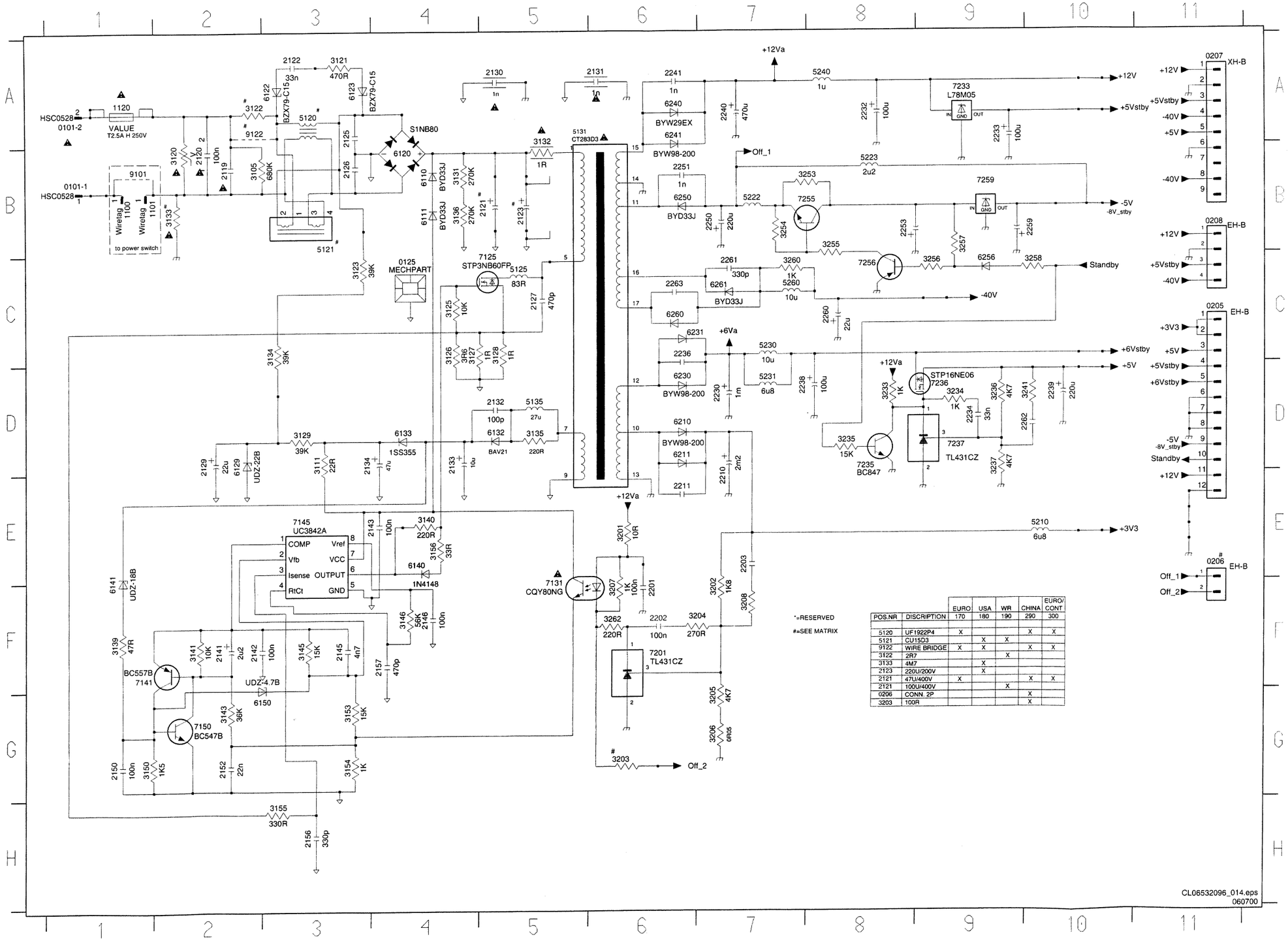


Wiringdiagram



7. Electrical diagrams and Print-layouts

Power supply 20PS223

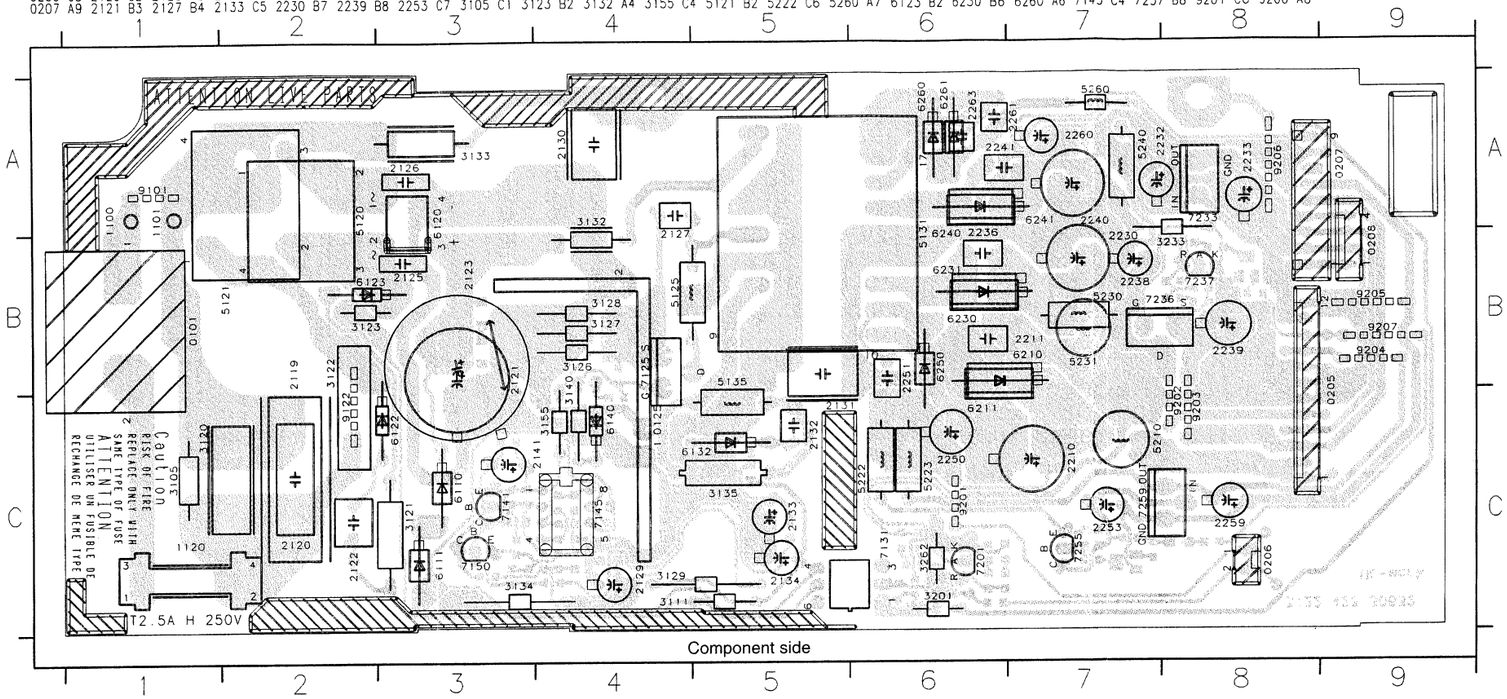


POS.NR	DISCRIPTION	EURO 170	USA 180	WR 190	CHINA 290	EURO/ CONT 300
5120	UF1922P4	X			X	X
5121	CU15D3		X	X		
9122	WIRE BRIDGE	X	X		X	X
3122	2R7			X		
3133	4M7		X			
2123	220U/200V		X			
2121	47U/400V	X			X	X
2121	100U/400V			X		
0206	CONN. 2P				X	
3203	100R				X	

0101-1	B1	3241	D10
0101-2	A1	3253	B8
0125	C4	3254	B7
0205	C11	3255	B8
0206	E11	3256	C9
0207	A11	3257	B9
0208	B11	3258	C10
1100	B1	3260	C7
1101	B1	3262	F6
1120	A1	5120	A3
2119	B2	5121	B3
2120	B2	5125	C5
2121	B5	5131	A5
2122	A3	5135	D5
2123	B5	5210	E10
2125	A3	5222	B7
2126	B3	5223	B8
2127	C5	5230	C7
2129	D2	5231	D7
2130	A5	5240	A8
2131	A6	5260	C7
2132	D5	6110	B4
2133	D4	6111	B4
2134	D3	6120	B4
2141	F2	6122	A3
2142	F2	6123	A3
2143	F4	6129	D2
2145	F3	6132	D5
2146	F4	6133	D4
2150	G1	6140	E4
2152	G2	6141	E1
2156	H3	6150	G2
2157	F4	6210	D6
2201	F6	6211	D6
2202	F6	6230	D6
2203	E7	6231	C6
2210	E7	6240	A6
2211	E6	6241	A6
2230	D7	6250	B6
2232	A8	6256	C9
2233	A9	6260	C6
2234	D9	6261	C7
2236	C6	7125	C5
2238	D7	7131	F5
2239	D10	7141	F1
2240	A7	7145	E3
2241	A6	7150	G2
2250	B7	7201	F6
2251	B6	7232	A8
2253	B8	7235	D8
2259	B10	7236	D9
2260	C8	7237	D9
2261	C7	7255	B7
2262	D10	7256	C8
2263	C6	7259	B9
3105	B2	9101	B1
3111	D3	9122	A2
3120	B2		
3121	A3		
3122	A2		
3123	C3		
3125	C4		
3126	C4		
3127	C4		
3128	C5		
3129	D3		
3131	B4		
3132	A5		
3133	B2		
3134	C3		
3135	D5		
3136	B4		
3139	F1		
3140	E4		
3141	F2		
3143	G2		
3145	F3		
3146	F4		
3150	G1		
3153	G3		
3154	G3		
3155	H3		
3156	E4		
3201	E6		
3202	F7		
3203	G6		
3204	F6		
3205	G7		
3206	G7		
3207	F6		
3208	F7		
3233	D8		
3234	D9		
3235	D8		
3236	D9		
3237	D9		

Power supply 20PS223

0101 B1 0208 B9 2122 C2 2129 C4 2134 C5 2232 A7 2240 A7 2259 C8 3111 C4 3126 B4 3133 A3 3201 C6 5125 B4 5223 C6 6110 C3 6132 C5 6231 B6 6261 A6 7150 C3 7255 C7 9202 C8 9207 B9
0125 C4 1120 C1 2123 B3 2130 A4 2141 C4 2233 A8 2241 A6 2260 A7 3120 C1 3127 B4 3134 C3 3233 B8 5131 B6 5230 B7 6111 C3 6140 C4 6240 B6 7125 B4 7201 C6 7259 C7 9203 C8
0205 C9 2119 B2 2125 B3 2131 C5 2210 C7 2236 B6 2250 C6 2261 A7 3121 C3 3128 B4 3135 C5 3262 C6 5135 B5 5231 B7 6120 A3 6210 B7 6241 A7 7131 C6 7233 A8 9101 A1 9204 B9
0206 C8 2120 C2 2126 A3 2132 C5 2211 B7 2238 B7 2251 B6 2263 A6 3122 B2 3129 C4 3140 B4 5120 A2 5210 C7 5240 A7 6122 C3 6211 C6 6250 B6 7141 C3 7236 B7 9122 C2 9205 B9
0207 A9 2121 B3 2127 B4 2133 C5 2230 B7 2239 B8 2253 C7 3105 C1 3123 B2 3132 A4 3155 C4 5121 B2 5222 C6 5260 A7 6123 B2 6230 B6 6260 A6 7145 C4 7237 B8 9201 C6 9206 A8



2142 A3 2146 A4 2156 A4 2202 A6 2262 B8 3136 B3 3143 A3 3150 A3 3156 A4 3204 A6 3207 A6 3235 B8 3241 B8 3255 A7 3258 A8 4202 C7 6141 A5 7235 B8
2143 A4 2150 A3 2157 A4 2203 A6 3125 B4 3139 A4 3145 A3 3153 A4 3202 A6 3205 A6 3208 A6 3236 B8 3253 A7 3256 A7 3260 C7 6129 A4 6150 A3 7256 A7
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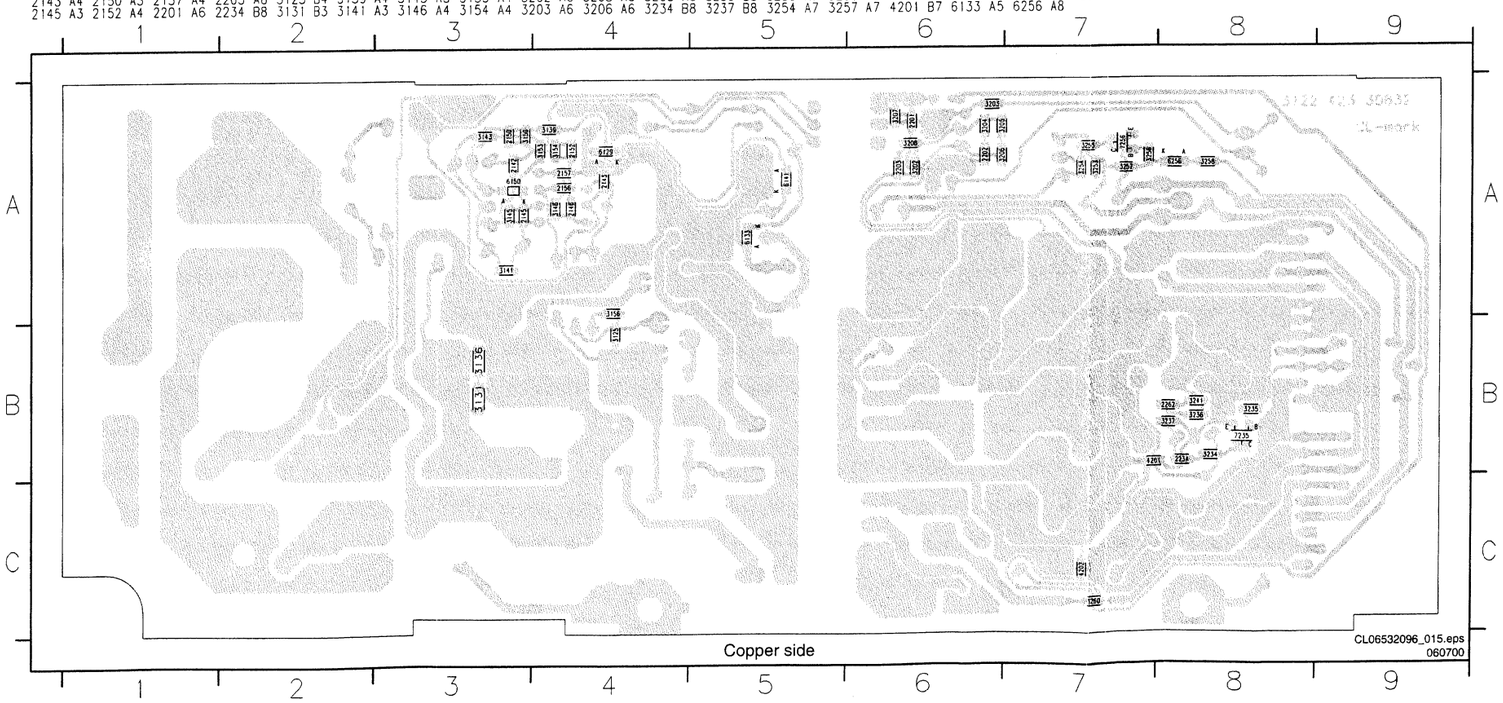
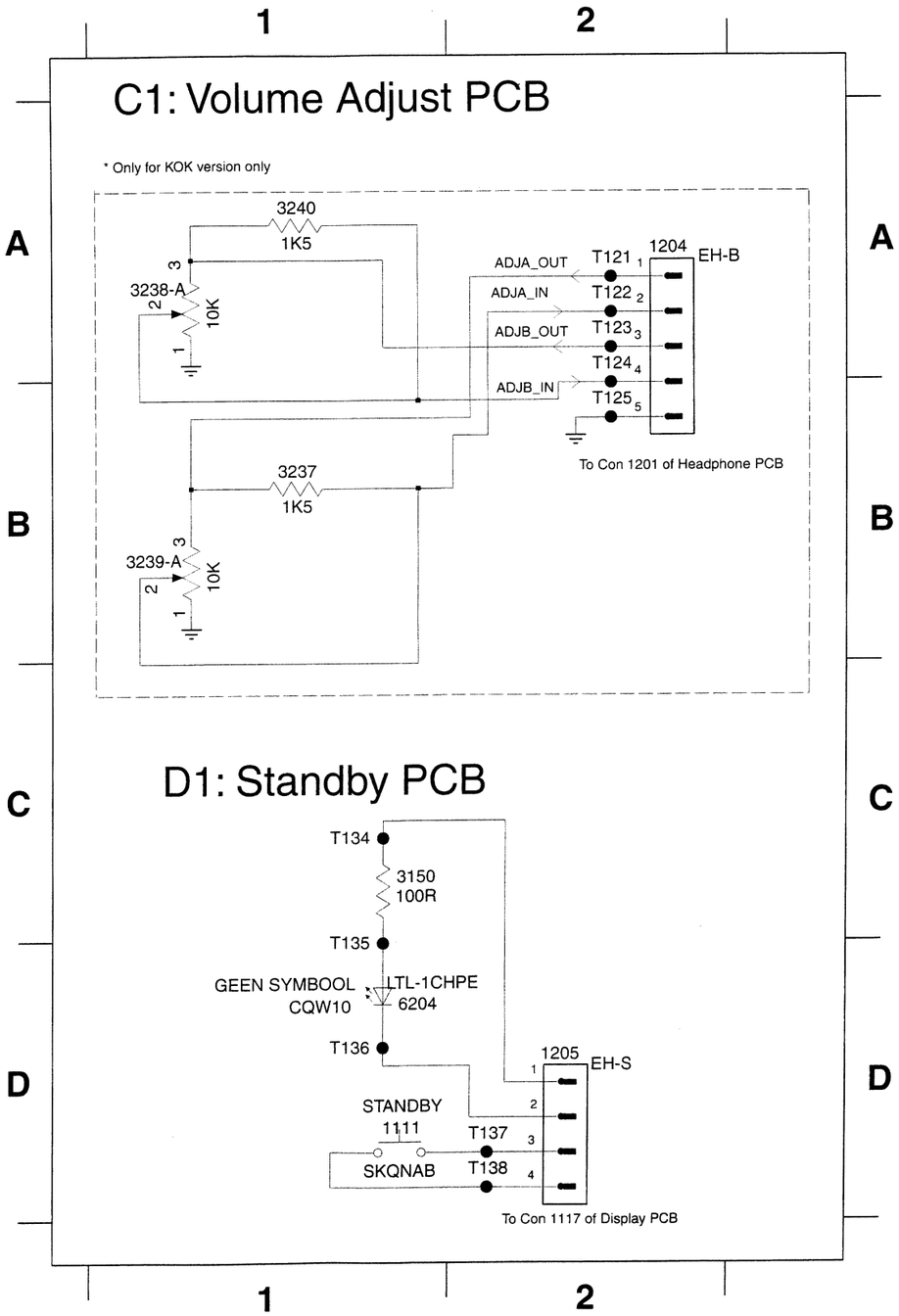


Volume / Standby PWB



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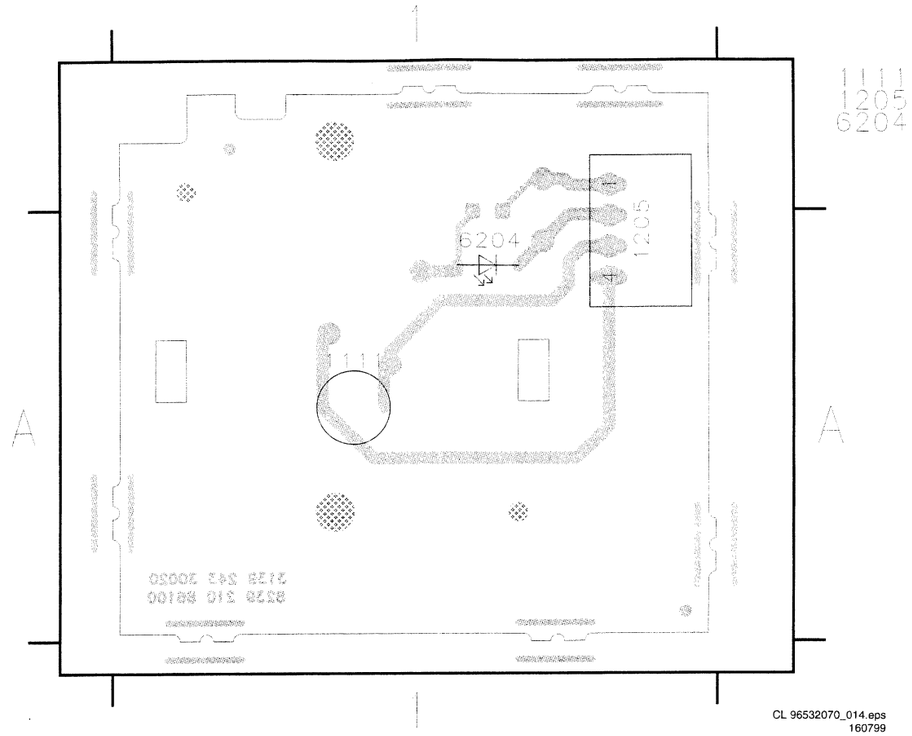
160799

1111 D1
1204 A2
1205 D2
3150 C1
3237 B1
3238-A A1
3239-A B1
3240 A1
6204 D1
T121 A2
T122 A2
T123 A2
T124 A2
T125 B2
T134 C1
T135 D1
T136 D1
T137 D2
T138 D2



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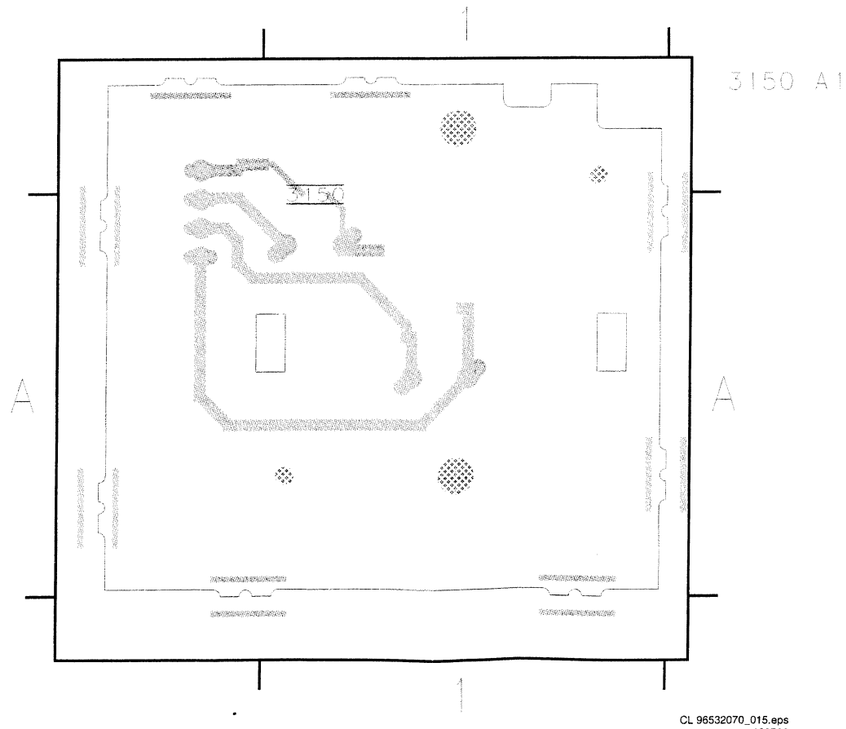

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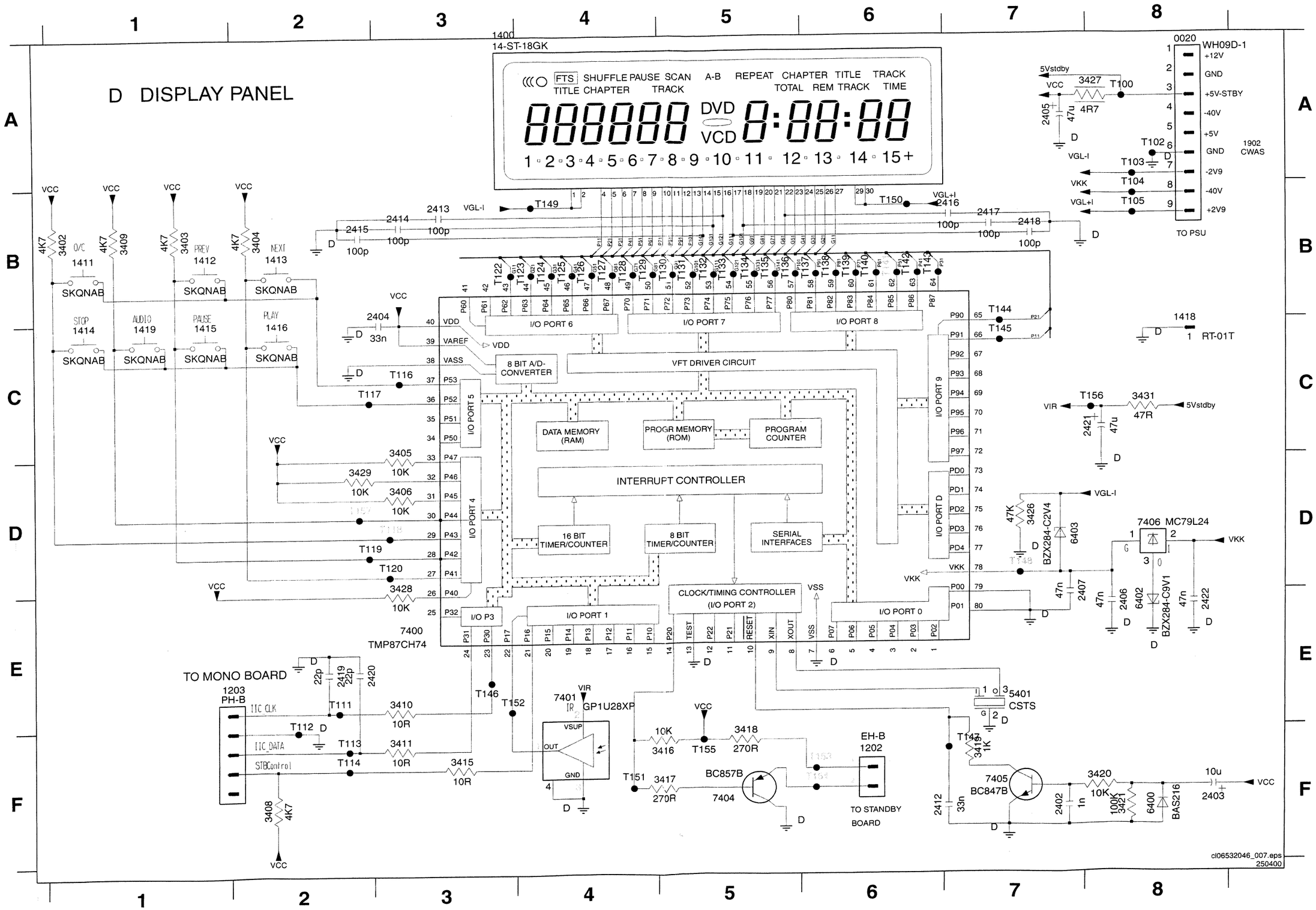
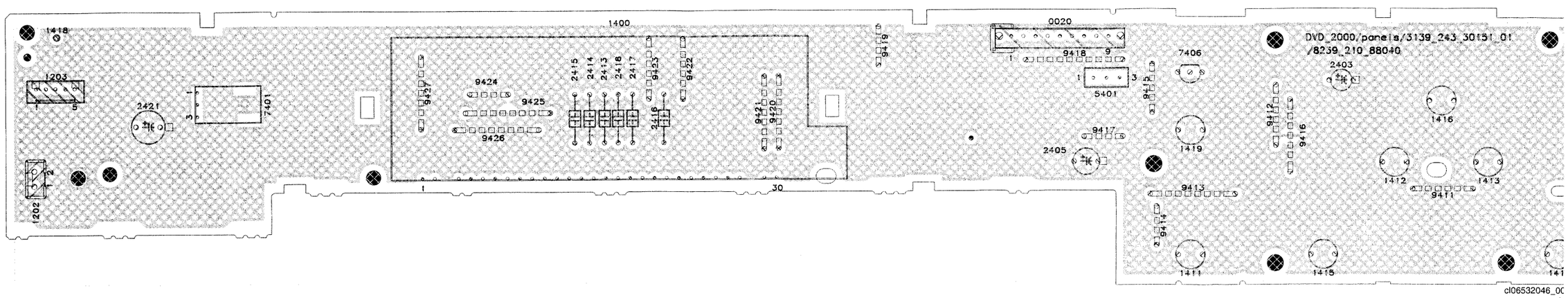
Display panel



Layout Display panel (component side)



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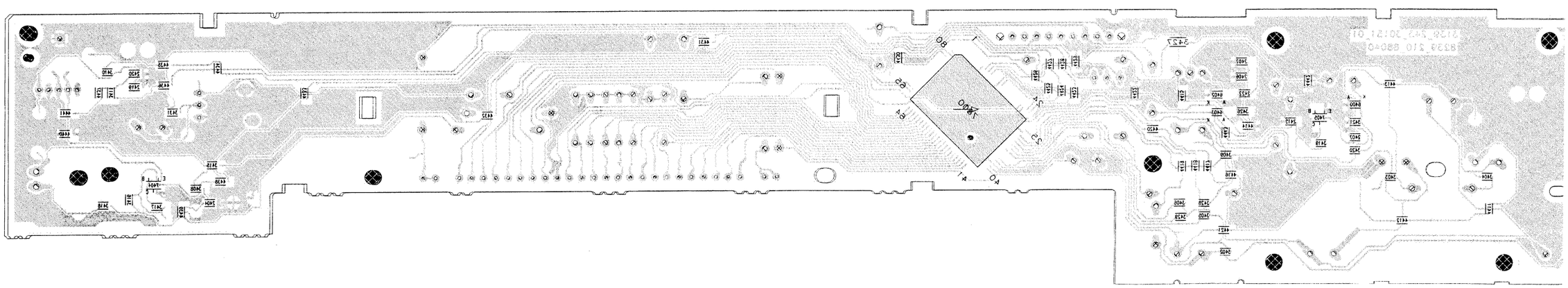
2

Layout Display panel (copper side)



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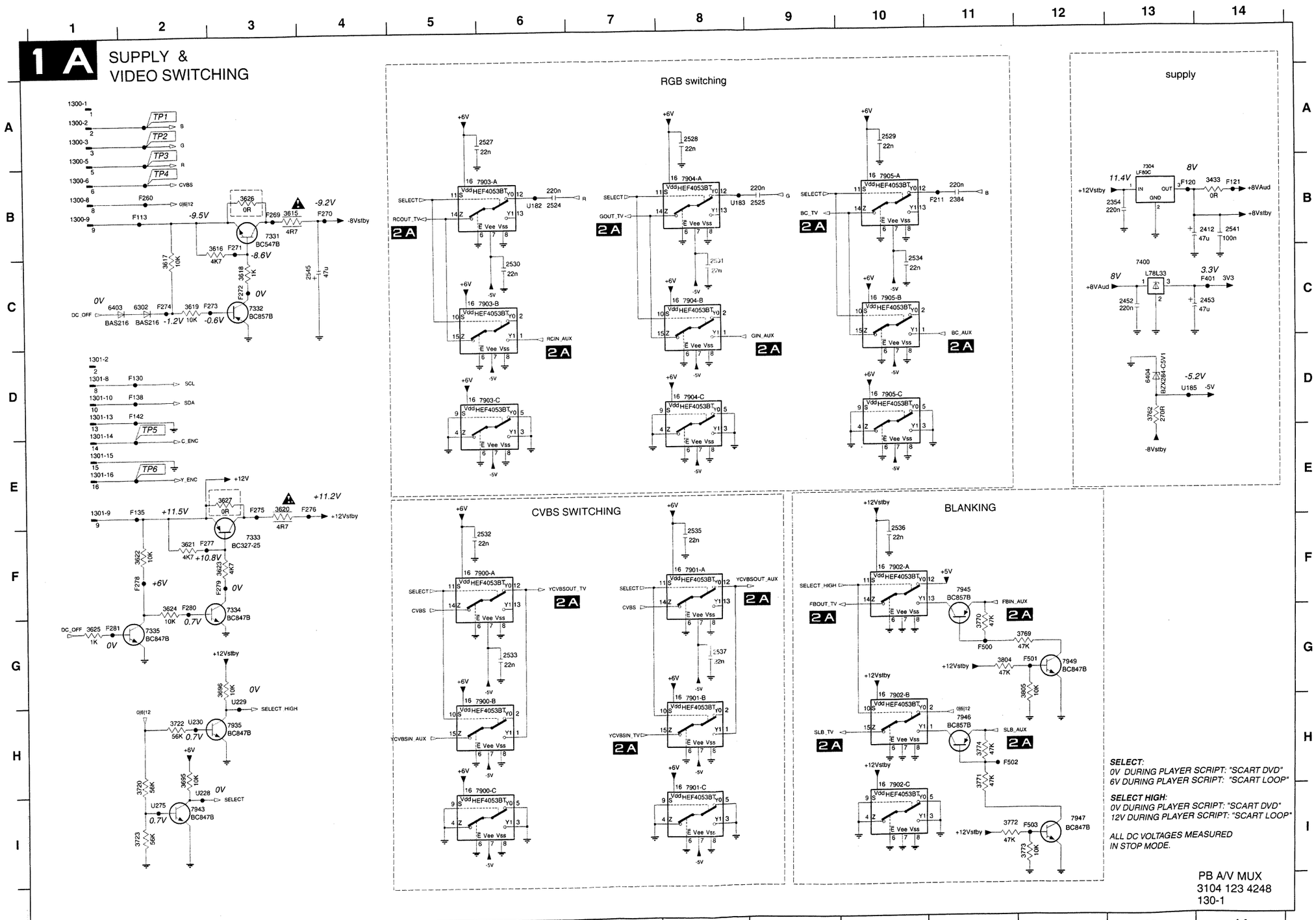
21(

AV Board (Supply and video switching)



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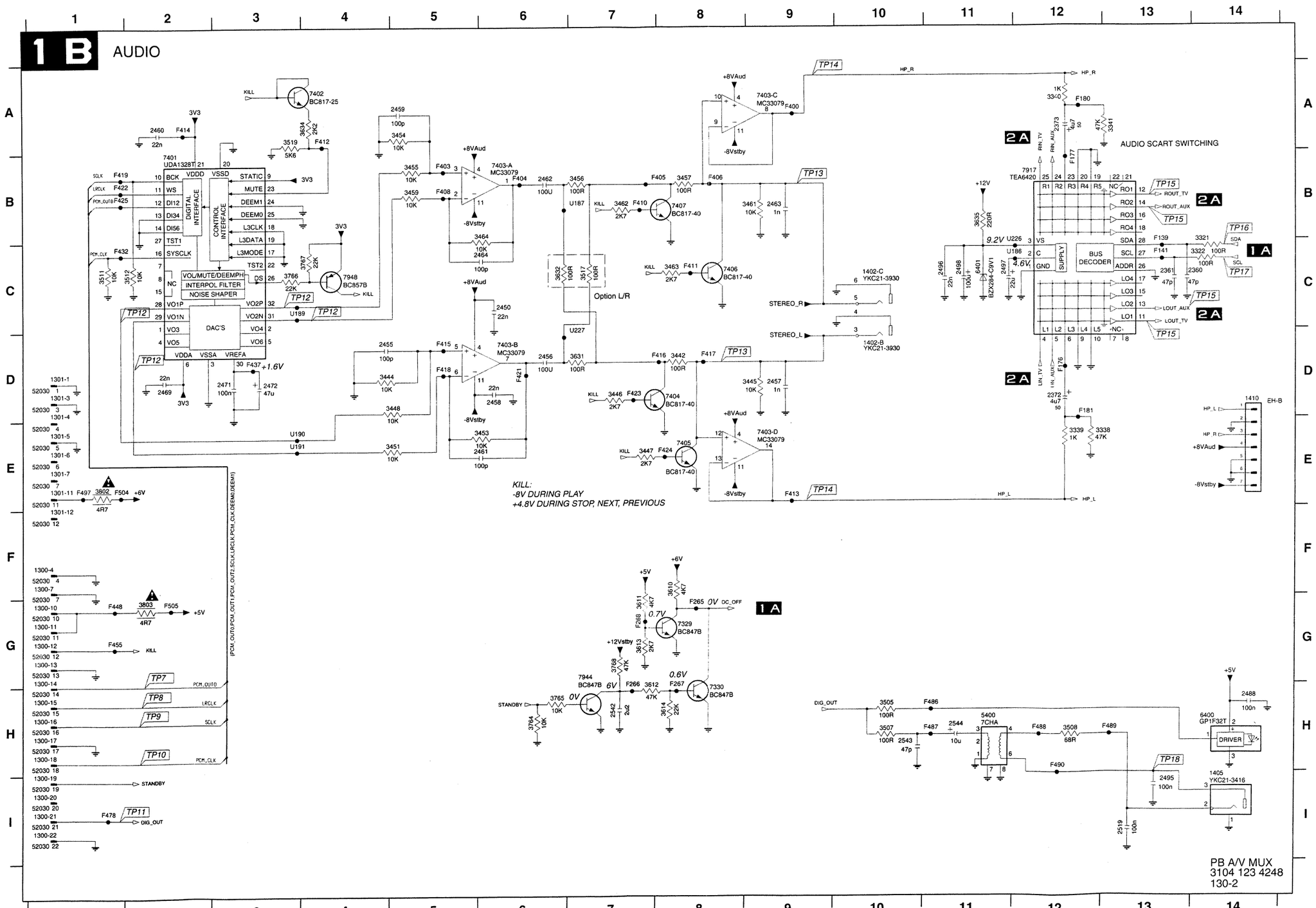
AV Board (Audio)



1300-10 G1
1300-11 G1
1300-12 G1
1300-13 G1
1300-14 G1
1300-15 H1
1300-16 H1
1300-17 H1
1300-18 H1
1300-19 I1
1300-20 I1
1300-21 I1
1300-22 I1
1300-4 F1
1300-7 F1
1301-1 D1
1301-11 E1
1301-12 F1
1301-3 D1
1301-4 D1
1301-5 E1
1301-6 E1
1301-7 E1
1402-B D10
1402-C C10
1405 I14
1410 D14
2360 C14
2361 C13
2372 D12
2373 A12
2450 C6
2455 D4
2456 D6
2457 D9
2458 D6
2459 A5
2460 A2
2461 E6
2462 B6
2463 B9
2464 C6
2469 D2
2471 D3
2472 D3
2488 H14
2495 I13
2496 C11
2497 C11
2498 C11
2519 I13
2542 H7
2543 H10
2544 H11
3321 C14
3322 C14
3338 E13
3339 E12
3340 A12
3341 A13
3442 D8
3444 D4
3445 D9
3446 D7
3447 E7
3448 D5
3451 E5
3453 E6
3454 A5
3455 B5
3456 B7
3457 B8
3459 B5
3461 B9
3462 B7
3463 C8
3464 B6
3505 H10
3507 H10
3508 H12
3511 C1
3512 C2
3517 C7
3519 A3
3610 F8
3611 G7
3612 H7
3613 G7
3614 H8
3631 D7
3632 C6
3634 A4
3635 B11
3764 H6
3765 H6
3766 C3
3767 C4
3768 G7
3802 E1
3803 G2
5400 H11
6400 H14
6401 C11
7329 G8
7330 H8
7401 B2
7402 A4
7403-A B6
7403-B D6
7403-C A9
7403-D E9
7404 D8
7405 E8
7406 C8
7407 B8
7917 B12
7944 G7
7948 C4
F139 C13
F141 C13
F176 D12
F177 B12
F180 A12
F181 D12
F265 G8
F266 H7
F267 H8
F268 G7
F400 A9
F403 B5
F404 B6
F405 B8
F406 B8
F408 B5
F410 B7
F411 C8
F412 A4
F413 E9
F414 A2
F415 D5
F416 D8
F417 D8
F418 D5
F419 B1
F421 D6
F422 B1
F423 D7
F424 E8
F425 B1
F432 C1
F437 D3
F448 G1
F455 G1
F478 I1
F486 H11
F487 H11
F488 H12
F489 H13
F490 H12
F497 E1
F504 E1
F505 G2
U186 C12
U187 B7
U188 C3
U189 C3
U190 E3
U191 E3
U226 C12
U227 D7

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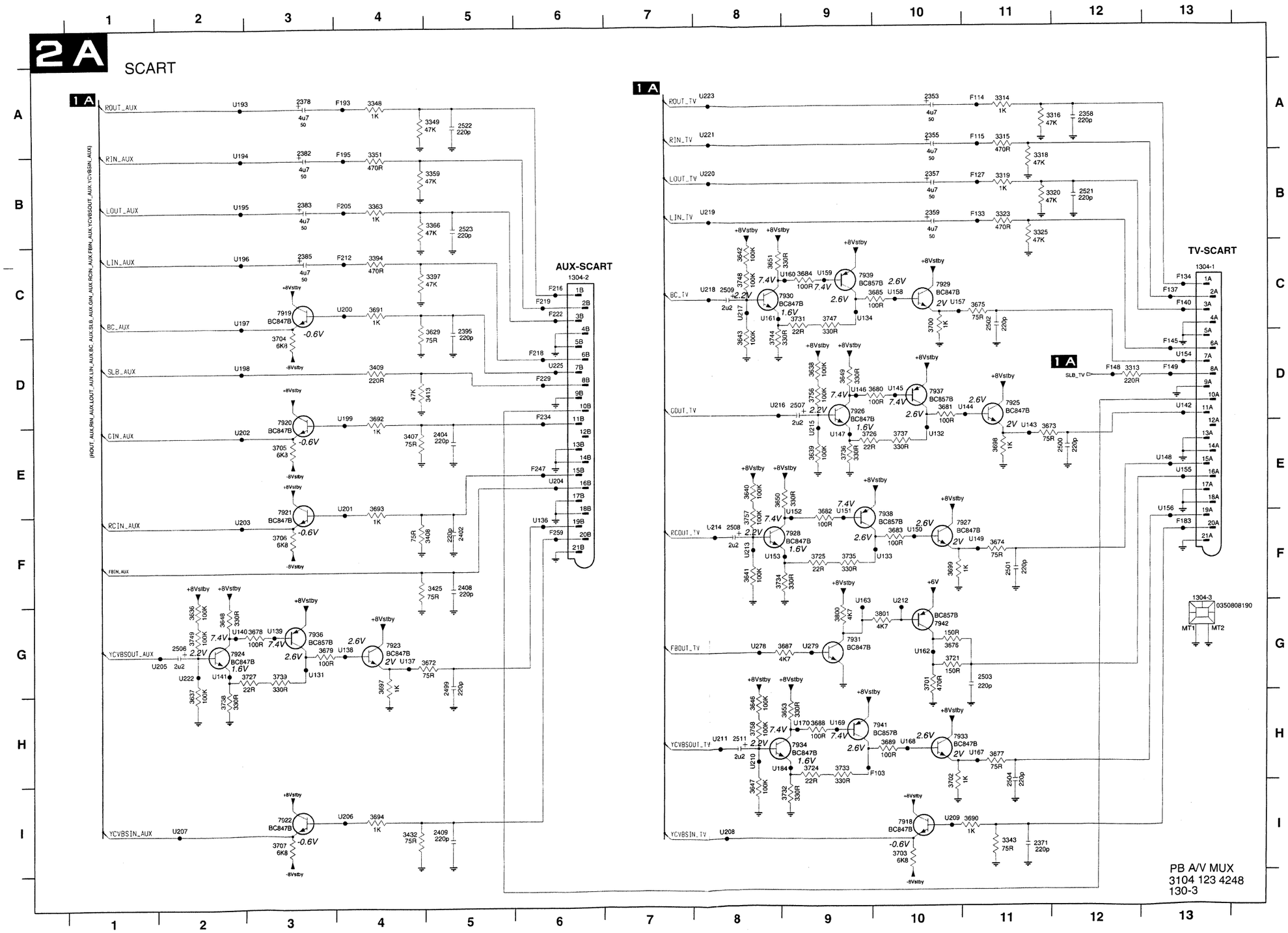
AV Board (Scart)



1304-1 C13	3737 E10	U214 F8
1304-2 C6	3738 H2	U215 D9
1304-3 G13	3739 G3	U216 D8
2353 A10	3744 D8	U217 C8
2355 A10	3747 C9	U218 C8
2357 B10	3748 C8	U219 B8
2358 A12	3749 G2	U220 B8
2359 B10	3756 D9	U221 A8
2371 I11	3757 F8	U222 G2
2378 A3	3758 H8	U223 A8
2382 A3	3800 G9	U225 D6
2383 B3	3801 G10	U278 G8
2385 C3	7918 I10	U279 G9
2395 C5	7919 C3	
2402 F5	7920 D3	
2404 E5	7921 E3	
2408 F5	7922 I3	
2409 I5	7923 G4	
2499 G5	7924 G2	
2500 E12	7925 D11	
2501 F11	7926 D9	
2502 C11	7927 F10	
2503 G11	7928 F9	
2504 H11	7929 C10	
2506 G2	7930 C8	
2507 D9	7931 G9	
2506 F8	7933 H10	
2509 C8	7934 H9	
2511 H8	7936 G3	
2521 B12	7937 D10	
2522 A5	7938 F10	
2523 B5	7939 C9	
3313 D12	7941 H9	
3314 A11	7942 G10	
3315 A11	F103 H10	
3316 A12	F114 A11	
3318 B11	F115 A11	
3319 B11	F127 B11	
3320 B12	F133 B11	
3323 B11	F134 C13	
3325 B11	F137 C13	
3343 I11	F140 C13	
3348 A4	F145 D13	
3349 A5	F148 D12	
3351 B4	F149 D13	
3359 B5	F183 F13	
3363 B4	F193 A4	
3366 B5	F195 B4	
3394 C4	F205 B4	
3397 C5	F212 C4	
3407 E5	F216 C6	
3408 F4	F218 D6	
3409 D4	F219 C6	
3413 D4	F222 C6	
3425 F5	F229 D6	
3432 I4	F234 D6	
3629 C5	F247 E6	
3636 G2	F259 F6	
3637 G2	U131 G3	
3638 D9	U132 E10	
3639 E9	U133 F10	
3640 E8	U134 C9	
3641 F8	U136 F6	
3642 C8	U137 G4	
3643 D8	U138 G4	
3646 H8	U139 G3	
3647 I8	U140 G2	
3648 G2	U141 G2	
3649 D9	U142 D13	
3650 E8	U143 E11	
3651 C8	U144 D11	
3653 H9	U145 D10	
3672 G5	U146 D9	
3673 E11	U147 E9	
3674 F11	U148 E13	
3675 C11	U149 F11	
3676 G10	U150 F10	
3677 H11	U151 F9	
3678 G3	U152 F9	
3679 G3	U153 F8	
3680 D10	U154 D13	
3681 D10	U155 E13	
3682 F9	U156 F13	
3683 F10	U157 C10	
3684 C9	U158 C10	
3685 C10	U159 C9	
3687 G9	U160 C9	
3688 H9	U161 C8	
3689 H10	U162 G10	
3690 I11	U163 G9	
3691 C4	U167 H11	
3692 D4	U168 H10	
3693 E4	U169 H9	
3694 I4	U170 H9	
3697 G4	U184 H8	
3698 E11	U193 A2	
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3702 I10	U197 C2	
3703 I10	U198 D2	
3704 D3	U199 D4	
3705 E3	U200 C4	
3706 F3	U201 E4	
3707 I3	U202 E2	
3721 G10	U203 F2	
3724 H9	U204 E6	
3725 F9	U205 G2	
3726 E9	U206 I4	
3727 G3	U207 I2	
3731 C9	U208 I8	
3732 I9	U209 I10	
3733 H9	U210 H8	
3734 F8	U211 H8	
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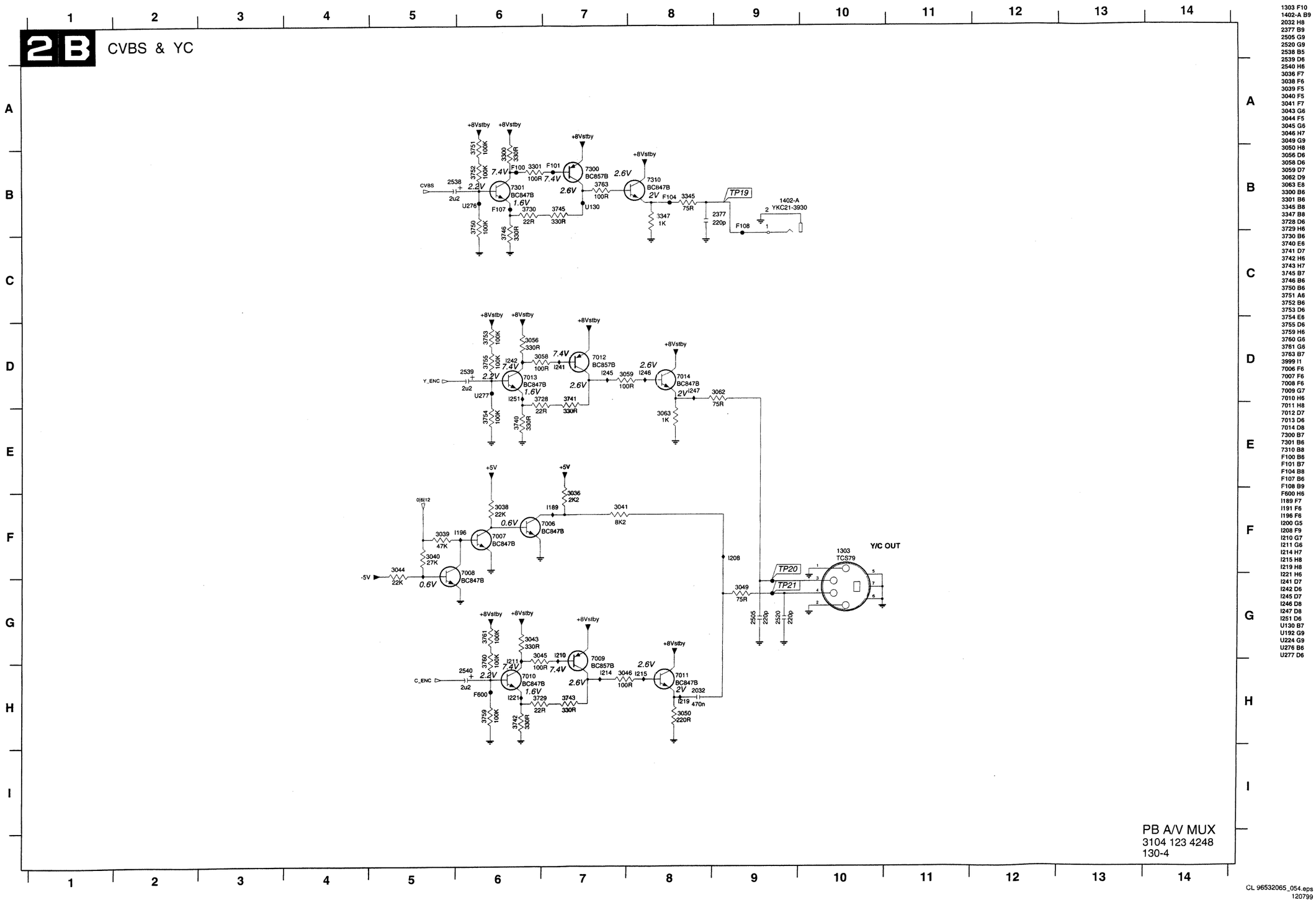
AV Board (CVBS / YC)



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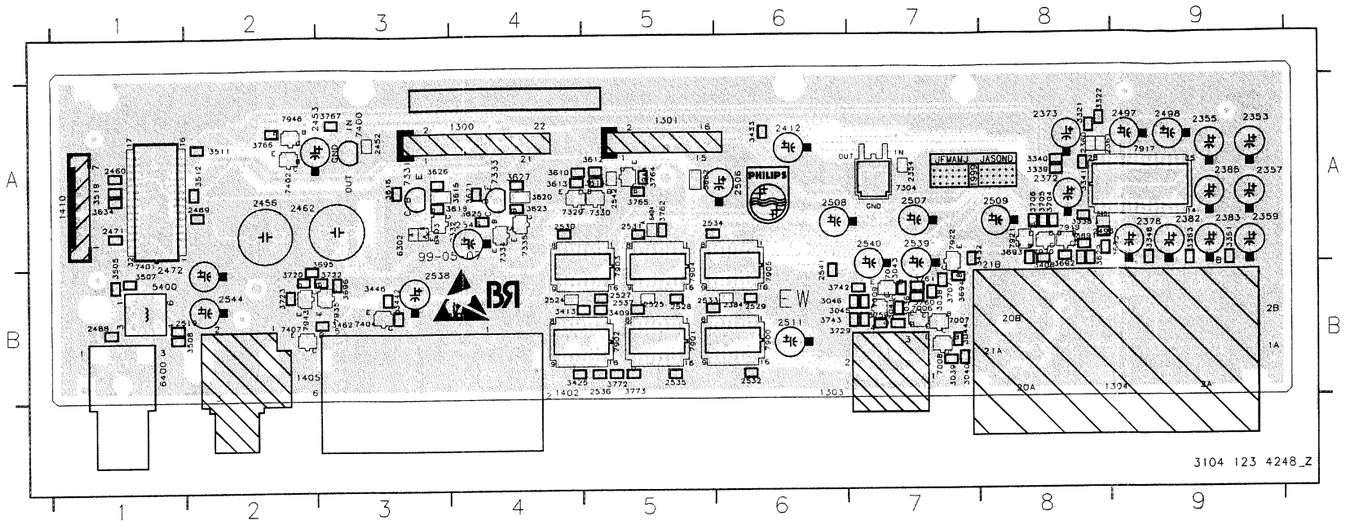
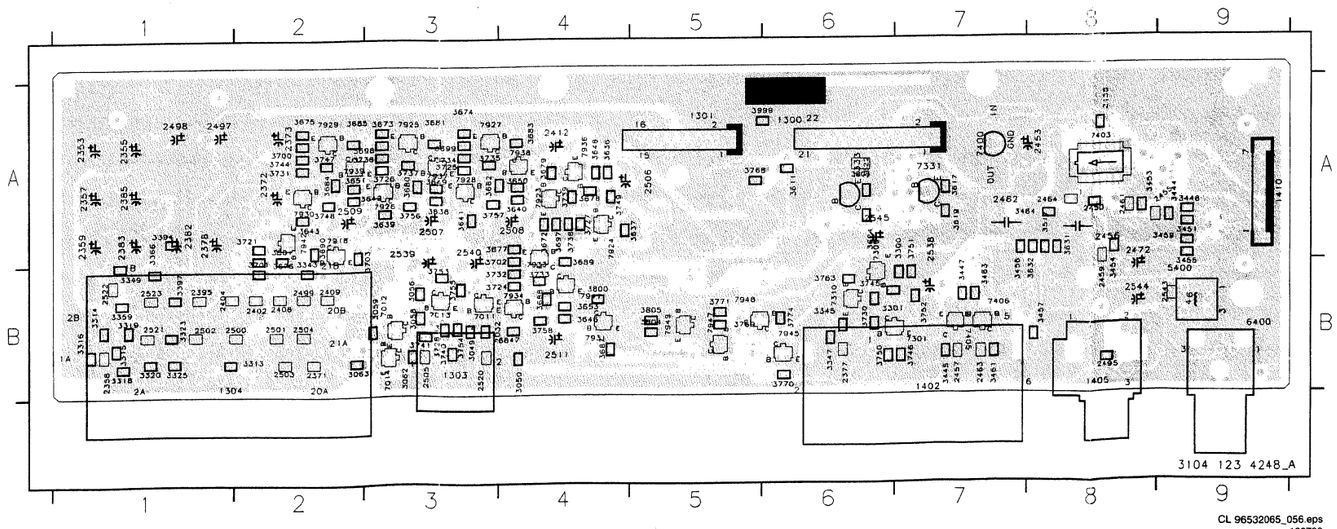
3038 F6
3039 F5
3040 F5
3041 F7
3043 G6
3044 F5
3045 G6
3046 H7
3049 G9
3050 H8
3056 D6
3058 D6
3059 D7
3062 D9
3063 E8
3300 B6
3301 B6
3345 B8
3347 B8
3728 D6
3729 H6
3730 B6
3740 E6
3741 D7
3742 H6
3743 H7
3745 B7
3746 B6
3750 B6
3751 A6
3752 B6
3753 D6
3754 E6
3755 D6
3759 H6
3760 G6
3761 G6
3763 B7
3999 I1
7006 F6
7007 F6
7008 F6
7009 G7
7010 H6
7011 H8
7012 D7
7013 D6
7014 D8
7300 B7
7301 B6
7310 B8
F100 B6
F101 B7
F104 B8
F107 B6
F108 B9
F600 H6
I189 F7
I191 F6
I196 F6
I200 G5
I208 F9
I210 G7
I211 G6
I214 H7
I215 H8
I219 H8
I221 H6
I241 D7
I242 D6
I245 D7
I246 D8
I247 D8
I251 D6
U130 B7
U192 G9
U224 G9
U276 B6
U277 D6

Layout AV Board

1300 A4	2357 A9	2385 A9	2488 B1	2524 B4	2535 B5	3036 B7	3322 A8	3409 B5	3508 B1	3618 A3	3691 A8	3720 B2	3764 A5	6401 A8	7330 A5	7407 B2	7921 A8
1301 A5	2359 A9	2412 A6	2496 A8	2525 B5	2536 B5	3038 B7	3338 A8	3413 B5	3511 A2	3620 A4	3692 A8	3722 B3	3765 A5	6403 A3	7331 A3	7900 B6	7922 A7
1303 B7	2360 A8	2452 A3	2497 A9	2527 B5	2537 B5	3039 B7	3339 A8	3425 B4	3512 A2	3621 A4	3693 A8	3723 B2	3766 A2	6404 A5	7332 A3	7901 B5	7935 B3
1304 B9	2361 A8	2453 A2	2498 A9	2528 B5	2538 B3	3040 B7	3340 A8	3432 A7	3519 A1	3623 A4	3694 B7	3729 B7	3767 A3	7006 B7	7333 A4	7902 B4	7943 B2
1402 B3	2372 A8	2456 A2	2506 A6	2529 B6	2539 A7	3041 B7	3341 A8	3433 A6	3610 A4	3625 A4	3695 B2	3742 B7	3772 B5	7007 B7	7334 A4	7903 B4	7944 A5
1405 B2	2373 A8	2460 A1	2507 A7	2530 A4	2540 A7	3043 B7	3348 A9	3442 B3	3612 A5	3626 A3	3696 B3	3743 B7	3773 B5	7008 B7	7335 A4	7904 B5	7948 A2
1410 A1	2378 A9	2462 A3	2508 A6	2531 A5	2541 B6	3044 B7	3351 A9	3446 B3	3613 A4	3627 A4	3704 A8	3759 B7	3802 A5	7009 B7	7400 A3	7905 B6	
2353 A9	2382 A9	2469 A2	2509 A8	2532 B6	2542 A5	3045 B7	3363 A9	3462 B3	3614 A5	3629 A8	3705 A8	3760 B7	5400 B1	7010 B7	7401 A1	7917 A9	
2354 A7	2383 A9	2471 A1	2511 B6	2533 B5	2544 B2	3046 B7	3407 A8	3505 B1	3615 A3	3634 A1	3706 A8	3761 B7	6302 A3	7304 A7	7402 A2	7919 A8	
2355 A9	2384 B6	2472 B2	2519 B1	2534 A5	2545 A4	3321 A8	3408 A8	3507 B1	3616 A3	3635 A8	3707 B7	3762 A5	6400 B1	7329 A4	7404 B3	7920 A8	



2032 B3	2504 B2	3323 B1	3464 A8	3653 B4	3701 B2	3746 B7	3805 B5	7934 B4									
2358 B1	2505 B3	3325 B1	3517 A8	3672 A4	3702 A4	3747 A2	3999 A6	7936 A4									
2371 B2	2520 B3	3343 B2	3611 A6	3673 A3	3703 A2	3748 A2	7011 B3	7937 A3									
2377 B6	2521 B1	3345 B6	3617 A7	3674 A3	3721 A2	3749 A4	7012 B3	7938 A4									
2395 B1	2522 B1	3347 B6	3619 A7	3675 A2	3724 B4	3750 B6	7013 B3	7939 A2									
2402 B2	2523 B1	3349 B1	3622 A6	3676 A2	3725 A3	3751 B7	7014 B3	7941 B4									
2404 B1	2543 B9	3359 B1	3624 A6	3677 A4	3726 A3	3752 B7	7300 B6	7942 A2									
2408 B2	3049 B3	3366 B1	3631 A8	3678 A4	3727 A4	3753 B3	7301 B6	7945 B6									
2409 B2	3050 B4	3394 A1	3632 A8	3679 A4	3728 B3	3754 B3	7310 B6	7946 B5									
2450 A8	3056 B3	3397 B1	3636 A4	3680 A3	3730 B6	3755 B3	7403 A8	7947 B5									
2455 A8	3058 B3	3444 A9	3637 A4	3681 A3	3731 A2	3756 A3	7405 B7	7949 B5									
2457 B7	3059 B3	3445 B7	3638 A3	3682 A4	3732 B4	3757 A3	7406 B7										
2458 A8	3062 B3	3447 B7	3639 A3	3683 A4	3733 B4	3758 B4	7918 A2										
2459 A8	3063 B2	3448 A9	3640 A4	3684 A2	3734 A3	3763 B6	7923 A4										
2461 A8	3300 B7	3451 A9	3641 A3	3685 A2	3735 A3	3768 A5	7924 A4										
2463 B7	3301 B6	3453 A8	3642 A2	3687 B4	3736 A3	3769 B5	7925 A3										
2464 A8	3313 B1	3454 A8	3643 A2	3688 B4	3737 A3	3770 B6	7926 A3										
2495 B8	3314 B1	3455 A9	3646 B4	3689 A4	3738 A4	3771 B5	7927 A3										
2499 B2	3315 B1	3456 A7	3647 B4	3690 A2	3739 A4	3774 B6	7928 A3										
2500 B2	3316 B1	3457 B8	3648 A4	3697 A4	3740 B3	3800 B4	7929 A2										
2501 B2	3318 B1	3459 A9	3649 A3	3698 A3	3741 B3	3801 A2	7930 A2										
2502 B1	3319 B1	3461 B7	3650 A4	3699 A3	3744 A2	3803 A6	7931 B4										
2503 B2	3320 B1	3463 B7	3651 A2	3700 A2	3745 B6	3804 B5	7933 A4										



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8. Alignments

No electrical alignments available

9. Circuit descriptions and list of abbreviations

9.1 Current mode Power Supply 20Ps223

9.1.1 Introduction

The switch mode power supply (SPMS) is mains isolated. The control IC 7145 (UC 3842A) produces pulses to drive the power switch, Mosfet 7125.
Power supply regulation is achieved by using duty cycle control at fix frequency ,of approximately 58KHz ,determined by the RC timing components.

9.1.2 General Description of UC 3842A

The UC 3842 is a high performance fixed frequency current mode controller that is specifically designed for off-line and DC-to-DC converter application. This integrated circuit feature a trimmed oscillator for precise duty cycle control, a temperature compensated reference, high gain error amplifier, current sensing comparator and a high current totem pole output ideally suited for driving a power MOSFET. Also included are protective features consisting of input and reference undervoltage lockouts each with hysteresis, cycle by cycle current limiting, programmable output deadtime and a latch for single pulse metering.

A representative Block diagram and Pin function description is shown in Fig 1 and Fig 2 respectively.

9.1.3 BLOCK DIAGRAM

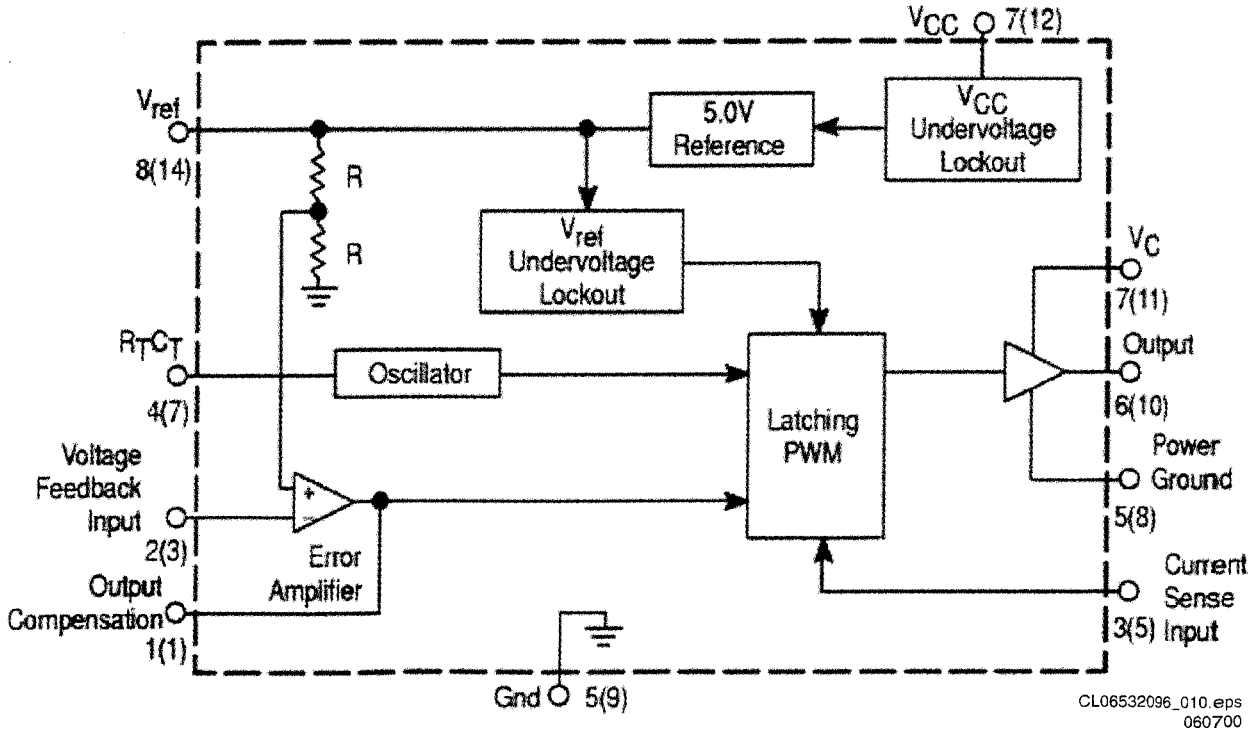

Figure 9-1

9.1.4 Pin function description

Pin		Function	Description
8-Pin	14-Pin		
1	1	Compensation	This pin is Error Amplifier output and is made available for loop compensation.
2	3	Voltage Feedback	This is the inverting input of the Error Amplifier. It is normally connected to the switching power supply output through a resistor divider.
3	5	Current Sense	A voltage proportional to inductor current is connected to this input. The PWM uses this information to terminate the output switch conduction.
4	7	R_T/C_T	The Oscillator frequency and maximum Output duty cycle are programmed by connecting resistor R_T to V_{ref} and capacitor C_T to ground. Operation to 500 kHz is possible.
5	–	Gnd	This pin is the combined control circuitry and power ground (8-pin package only).
6	10	Output	This output directly drives the gate of a power MOSFET. Peak currents up to 1.0 A are sourced and sunk by this pin.
7	12	V_{CC}	This pin is the positive supply of the control IC.
8	14	V_{ref}	This is the reference output. It provides charging current for capacitor C_T through resistor R_T.
–	8	Power Ground	This pin is a separate power ground return (14-pin package only) that is connected back to the power source. It is used to reduce the effects of switching transient noise on the control circuitry.
–	11	V_C	The Output high state (V_{OH}) is set by the voltage applied to this pin (14-pin package only). With a separate power source connection, it can reduce the effects of switching transient noise on the control circuitry.
–	9	Gnd	This pin is the control circuitry ground return (14-pin package only) and is connected back to the power source ground.
–	2,4,6,13	NC	No connection (14-pin package only). These pins are not internally connected.

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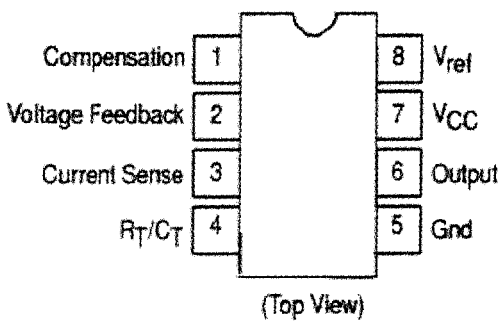
Figure 9-2

9.1.5 Pin connection



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060700

Figure 9-3

9.1.6 Output voltages

- +12V (For Display board, Monoboard, A/V board) created via D6241, C2240, L5240, C2232 (This voltage is also present during standby)
- +5V_ stdby (For Display board, Standby PCB, Monoboard) created from +12V via regulator 7233 and C2233 (This voltage is also present during standby)
- +6V_stdby (For A/V board) created from D6230, C2230, C2238, L5230,L5231 (This voltage is also present during standby)
- +5V (For Monoboard, A/V board) derive from +6V stdby by the loader-up circuit form by Mosfet 7236, reference components T7237, R3236, R3237, C2239 and it will be switch off via R3235, T7235 during Standby.
- -5V / -8V_stdby (For Monoboard,A/V board) -5V regulated by voltage regulator 7259 and will be switched off via D6256, T7256 and T7255 during standby (control signal STAND BY is high).When Coil L5223 is mounted instead of this circuit,a supply voltage -8V will be present at pin 9 of connector 0205. This -8V_stdby voltage is also present during standby
- 3V3 (For Monoboard, A/V board) The 3V3 power supply is regulated by the control loop comprising of 7201, 7131 and 7145 of the switch mode PSU. This voltage is also present during standby
- -40V (For Display board) created via D6261,R3260, L5260, C2260 This will not be present during standby

9.2 CONTROL CIRCUITRY

9.2.1 Mains input circuit

The mains voltage is rectified by bridge rectifier D6120 filter by either C2121 or C2123 . The DC voltage across C2121/ C2123 is the DC input voltage ,approximately 300V, is the DC input to pin 1 of transformer T5131.The mains input also consists of a lighting protection circuit and an EMI filter. The lighting protection comprises of R3120,D6122,D6123,C2122 and R3121.The EMI filter is formed by L5120,C2120,C2125 and C2126.The purpose of the EMI filter is to filter off inflow of noises into the mains.

9.2.2 Start-up and takeover circuitry

The start-up circuitry consist R3123,R3134,C2129 and with the mains voltage input, the C2129 will charge via R3123 and R3134. When the voltage at pin 7 of IC7145 reaches the start-up threshold of min 14.5V,
IC7145 will start-up and the control circuit start to operate. After start-up, the max sinking current of 17mA is required by IC7145 which is not able to be delivered by the start-up circuitry, so the takeover circuitry must be present.

If the takeover circuit does not occurred, the supply voltage at pin 7 will decrease gradually till it reaches the IC7145 minimal operating voltage of 8.5Vand the IC will switch off. The whole operation cycle will repeat itself with audible hiccup sound if takeover is not present.

The takeover circuit comprises of D6132, D6133, C2133, C2134. During the control circuit start-up, the voltage across winding pin 7 and 9 will gradually built up and charged C2134 via D6133, D6132, C2133,R3135 which will takeover the supply voltage of T7145 at pin 7.

9.2.3 Secondary voltage sensing

The secondary voltage regulating circuit comprise of the opto-coupler 7131 which isolate the error signal from the control IC7145 ,on the primary side, and a reference component 7201 (TL431). The 7201 can be represented by two components:

- A very stable and accurate reference diode
- A high gain amplifier

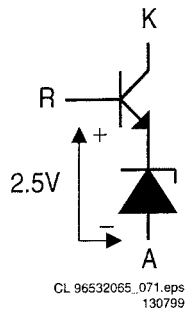

Figure 9-4

When the output voltage increases, due to a reduction in the load, the voltage across R3205 and R3206 increases to above the internal reference voltage of about 2.5V then TL431 conduct. The current through the opto-coupler 7131 will increase due to the fact that the series resistor in 7201 decreases. This result in a increase of voltage across C2152, which is connected to pin 2 of IC7145, thus reducing the on-time of FET 7125.
In the event of a decrease in output voltage (increase in load),the control circuit will operate in the opposite way to the explaination above.

9.2.4 Primary current sensing

The current through the FET 7125 resulting in a voltage drop across R3126,R3127,R3128 which is couple to pin 3 of IC7145,current sense input.The higher the input voltage, the more the primary current is limited. In this way the maximum output power of the power supply is limited.

9.2.5 Undervoltage protection

Two undervoltage lockout comparators have been incorporated to guarantee that the IC7145 is fully functional before the output stage is enable. The supply voltage at pin 7 and reference voltage at pin 8 of IC7145 are each monitored by separate comparators with built-in hysteresis. If the supply voltage at pin 7 of IC7145 drops below 10V (typical), due to a secondary voltage is short-circuit or excessive load, the drive pulse at pin 6 of IC7145 will be disabled and the controller will switch off the complete SMPS.
Remarks : In the event of the overvoltage situation remaining present, the SPMS will go in sequence of protection,start- up cycle, protection and the cycle repeats. This effect is highly audible.

9.2.6 Overvoltage protection

The overvoltage circuitry comprising of D6141,R3139, R3150, R3141,T7141, T7150 which is used to detect an over voltage situation on the secondary side of the transformer. After start-up, when the voltage across C2133 exceeds 18V,the overvoltage circuit will trigger the internal latch circuit, pin 1 of IC7145 and the output buffer is disabled and it goes into the overvoltage protection and a complete restart sequence is required.

9.3 List of abbreviations

B	Buffered Video input Blue from DVD monoboard
BC_AUX	Blue or Chroma input from AUX-scart
BC_TV	Blue or Chroma output to TV-scart
C_ENC	Buffered Chroma input from DVD monoboard
CVBS	Buffered Composite video input from DVD monoboard
DC_OFF	Control signal to switch off û8Vstby and +12Vstby during standby
DIG_OUT	Digital out
FBIN_AUX	Fast blanking input from AUX-scart
FBOUT_TV	Fast blanking output to TV-scart
G	Buffered Video input Green from DVD monoboard
GIN_AUX	Video input Green from AUX-scart
GOUT_TV	Video output Green to TV-scart
HP_L	Audio output left to headphone and audio scart switch TEA6420
HP_R	Audio output right to headphone and audio scart switch TEA6420
KILL	Kill control signal for audio outputs and for soft mute of DAC
LIN_AUX	Audio input left from AUX-scart
LIN_TV	Audio input left from TV-scart
LOUT_AUX	Audio output left to AUX-scart
LOUT_TV	Audio output left to TV-scart
LRCLK	Left/Right clock
PCM_CLK	Audio system clock for DAC
PCM_OUT0	Audio serial output data
R	Buffered Video input Red from DVD monoboard
RCIN_TV	Red or Chroma input from TV-scart
RCOUT_TV	Red or Chroma output to TV-scart
RIN_AUX	Audio input right from AUX-scart
RIN_TV	Audio input right from TV-scart
ROUT_AUX	Audio output right to AUX-scart
ROUT_TV	Audio output right to TV-scart
SCL	I2C bus clock
SCLK	Audio serial bit clock
SDA	I2C bus data
SELECT	Control signal for video scart switches; high = TV ,low = AUX
SELECT_HIGH	Control signal for switching fast blanking and slow blanking signals; high = TV,.low = AUX
SLB_AUX	Slow blanking control signal from AUX-scart
SLB_TV	Slow blanking control signal to TV-scart
STANDBY	Control signal from STI5505 used to swith off û8Vstby and +12Vstby during standby.
STEREO_L	Audio cinch output left
STEREO_R	Audio cinch output right
Y_ENC	Buffered Luma input from DVD monoboard
YCVBSIN_AUX	Luma or CVBS input from AUX-scart
YCVBSIN_TV	Luma or CVBS input from TV-scart
YCVBSOUT_AUX	Luma or CVBS output to AUX-scart
YCVBSOUT_TV	Luma or CVBS output to TV-scart
0/6/12	Scart switch control signal A/V board. 0V : loop through (AUX to TV), 6V : play 16:9 format, 12V : play 4:3 format

3720	4822 117 11148	56k 1% 0.1W
3721	4822 117 10353	150Ω 1% 0.1W
3722	4822 117 11148	56k 1% 0.1W
3723	4822 117 11148	56k 1% 0.1W
3724	4822 051 20229	22Ω 5% 0.1W
3725	4822 051 20229	22Ω 5% 0.1W
3726	4822 051 20229	22Ω 5% 0.1W
3727	4822 051 20229	22Ω 5% 0.1W
3730	4822 051 20229	22Ω 5% 0.1W
3731	4822 051 20229	22Ω 5% 0.1W
3732	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3733	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3734	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3735	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3736	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3737	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3738	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3739	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3744	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3745	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3746	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3747	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3748	4822 117 10837	100k 1% 0.1W
3749	4822 117 10837	100k 1% 0.1W
3750	4822 117 10837	100k 1% 0.1W
3751	4822 117 10837	100k 1% 0.1W
3752	4822 117 10837	100k 1% 0.1W
3756	4822 117 10837	100k 1% 0.1W
3757	4822 117 10837	100k 1% 0.1W
3758	4822 117 10837	100k 1% 0.1W
3762	4822 117 11504	270Ω 1% 0.1W
3763	4822 051 20101	100Ω 5% 0.1W
3764	4822 117 10833	10k 1% 0.1W
3765	4822 117 10833	10k 1% 0.1W
3768	4822 117 10834	47k 1% 0.1W
3769	4822 117 10834	47k 1% 0.1W
3770	4822 117 10834	47k 1% 0.1W
3771	4822 117 10834	47k 1% 0.1W
3772	4822 117 10834	47k 1% 0.1W
3773	4822 117 10833	10k 1% 0.1W
3774	4822 117 10834	47k 1% 0.1W
3800	4822 051 20472	4k7 5% 0.1W
3801	4822 051 20472	4k7 5% 0.1W
3802▲	4822 117 11152	4Ω7 5%
3803▲	4822 117 11152	4Ω7 5%
3804	4822 117 10834	47k 1% 0.1W
3805	4822 117 10833	10k 1% 0.1W
3999	4822 117 12842	

5400	4822 157 70601	100µH (920927085A)

6302	4822 130 83757	BAS216
6401	4822 130 11047	BZX284-C9V1
6403	4822 130 83757	BAS216
6404	4822 130 11383	BZX284-C5V1

7300	4822 130 60373	BC856B
7301	5322 130 60159	BC846B
7304	9322 134 86668	LF80C
7310	5322 130 60159	BC846B
7329	5322 130 60159	BC846B
7330	5322 130 60159	BC846B
7331	4822 130 40959	BC547B
7332	4822 130 60373	BC856B
7333	4822 130 41246	BC327-25
7334	5322 130 60159	BC846B
7335	5322 130 60159	BC846B
7400	9322 134 92676	L78L33
7401	4822 209 17423	UAD1328T
7402	4822 130 42804	BC817-25
7403	4822 209 32071	MC33079D
7404	4822 130 42615	BC817-40
7405	4822 130 42615	BC817-40
7406	4822 130 42615	BC817-40
7407	4822 130 42615	BC817-40
7900	5322 209 14481	HEF4053BT
7901	5322 209 14481	HEF4053BT
7902	5322 209 14481	HEF4053BT
7903	5322 209 14481	HEF4053BT
7904	5322 209 14481	HEF4053BT
7905	5322 209 14481	HEF4053BT
7917	4822 209 17512	TEA6420D
7918	5322 130 60159	BC846B
7919	5322 130 60159	BC846B
7920	5322 130 60159	BC846B
7921	5322 130 60159	BC846B
7922	5322 130 60159	BC846B
7923	5322 130 60159	BC846B
7924	5322 130 60159	BC846B
7925	5322 130 60159	BC846B
7926	5322 130 60159	BC846B
7927	5322 130 60159	BC846B
7928	5322 130 60159	BC846B
7929	5322 130 60159	BC846B
7930	5322 130 60159	BC846B
7931	5322 130 60159	BC846B
7933	5322 130 60159	BC846B
7934	5322 130 60159	BC846B
7935	5322 130 60159	BC846B
7936	4822 130 60373	BC856B
7937	4822 130 60373	BC856B
7938	4822 130 60373	BC856B
7939	4822 130 60373	BC856B
7941	4822 130 60373	BC856B
7942	4822 130 60373	BC856B
7943	5322 130 60159	BC846B
7944	5322 130 60159	BC846B
7945	4822 130 60373	BC856B
7946	4822 130 60373	BC856B
7947	5322 130 60159	BC846B
7949	5322 130 60159	BC846B

Front PCB

Various

0003	4822 256 92151	
0020	4822 267 10965	CONN. 9P
0024	2422 025 04849	CON BMT 2P
1202	2412 020 00724	CON BM V 2P M 2.50 EH B
1203	4822 267 10637	B5B-PH-K (5P)
1205	2422 025 12488	CON BM H 2P M 2.50 EH B
1400	4822 135 00156	14-ST-18GK
1411	4822 276 13775	SWITCH
1412	4822 276 13775	SWITCH
1413	4822 276 13775	SWITCH
1414	4822 276 13775	SWITCH
1415	4822 276 13775	SWITCH
1416	4822 276 13775	SWITCH
1419	4822 276 13775	SWITCH
1420	2422 128 02939	SWI PUSH 2P 100MA 30V SPEC12 B

2402	5322 122 31647	1nF 10% 63V
2403	4822 124 11947	10µF 20% 16V
2404	4822 126 12105	50V 33nF PM5
2405	4822 124 80483	47µF 20% 6.3V
2406	4822 126 13751	47nF 10% 63V
2407	4822 126 13751	47nF 10% 63V
2412	4822 126 12105	50V 33nF PM5
2413	4822 122 33195	100pF 10% 50V
2414	4822 122 33195	100pF 10% 50V
2415	4822 122 33195	100pF 10% 50V
2416	4822 122 33195	100pF 10% 50V
2417	4822 122 33195	100pF 10% 50V
2418	4822 122 33195	100pF 10% 50V
2419	5322 122 32658	22pF 5% 50V
2420	5322 122 32658	22pF 5% 50V
2421	4822 124 80483	47µF 20% 6.3V
2422	4822 126 13751	47nF 10% 63V

3402	4822 051 20472	4k7 5% 0.1W
3403	4822 051 20472	4k7 5% 0.1W
3404	4822 051 20472	4k7 5% 0.1W
3405	4822 117 10833	10k 1% 0.1W
3406	4822 117 10833	10k 1% 0.1W
3408	4822 051 20472	4k7 5% 0.1W
3409	4822 051 20472	4k7 5% 0.1W
3410	4822 051 20109	10Ω 5% 0.1W
3411	4822 051 20109	10Ω 5% 0.1W
3415	4822 051 20109	10Ω 5% 0.1W
3416	4822 117 10833	10k 1% 0.1W
3417	4822 117 11504	270Ω 1% 0.1W
3418	4822 117 11504	270Ω 1% 0.1W
3419	4822 051 10102	1k 2% 0.25W
3420	4822 117 10833	10k 1% 0.1W
3421	4822 117 10837	100k 1% 0.1W
3426	4822 117 10834	47k 1% 0.1W
3427	4822 117 11152	4Ω7 5%
3428	4822 117 10833	10k 1% 0.1W
3429	4822 117 10833	10k 1% 0.1W
3431	4822 051 20479	47Ω 5% 0.1W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5401	2422 540 98423	RES CER 8mH z CSTS*mH z 03

6400	4822 130 11397	BAS316
6401	4822 130 82978	LTL-16KPE-P
6402	9340 548 58115	PDZ9.1B
6403	9340 548 42115	PDZ2.4B

7400	3104 123 94761	ROM TMP87CH74
7401	4822 130 10165	GP1U28XP
7404	4822 130 60373	BC856B
7405	5322 130 60159	BC846B
7406	4822 209 31257	MC79L24ACP

VAL 6011

Various

0001	3139 197 60090	GENEVA LP LOADER ASSY
0002	9305 022 60101	VAM6001/01
0003	3139 194 00710	SUSPENSION
0004	3139 194 00710	SUSPENSION
0005	3139 194 00620	SUSPENSION
0006	3139 194 00620	SUSPENSION
0007	3139 197 60060	CLAMPER ASSEMBLY

Loader

Various

0004	4822 358 10266	
0009	3139 198 80010	
0010	4822 532 13097	TULE
0011	3139 194 00270	
0012	3139 197 50060	

Monoboard

Various

1104	2422 025 15963	CON BM H 24P F 0.50 FFC SMD R
1106	2422 025 16158	CON BM H 8P F 1.00 FFC 0.3 R
1205	2422 540 98428	RES CER SM 8M467 CSTCC8.46MHz R
1300	2422 540 98426	RES CER SM 6MHz CSTCC6.00MHz R
1301	4822 267 51454	CONN. 11P FEMALE
1603	2422 025 16389	CON BM V 22P F 1.00 FFC 0.3 R
1604	2422 025 16388	CON BM V 16P F 1.00 FFC 0.3 R

2100	4822 126 14305	100nF 10% 16V 0603
2101	4822 126 14305	100nF 10% 16V 0603
2103	4822 124 80151	47µF 16V
2104	4822 126 13193	4.7nF 10% 63V
2105	4822 122 33761	22pF 5% 50V
2107	4822 126 13956	68pF 5% 63V CASE 0603
2108	4822 126 14315	390pF 5% 50V 0603
2109	2020 552 95697	
2110	2222 861 15222	50V 2N2 PM5
2111	4822 126 14305	100nF 10% 16V 0603

10. Spare parts list

Mechanical

Various

0010	3139 247 52141	CAB FRONT DVD701/00X PPT
0015	4822 459 10887	
0025	3139 247 52321	BTN STANDBY DVD701/ 00X PPT
0030	3139 247 50900	WINDOW DVD711/17X PNT PRT
0035	3139 247 51080	RING DVD711 ML PNT PRT
0040	3139 247 52161	BTN CONTROL DVD701/ 00X PPT
0045	3139 240 00030	DVD LOGO DVD711
0050	3139 247 52171	DOOR DVD701/00X PPT
0060	3139 241 20110	DOOR SPRING
0200	3139 247 52131	FRONT COMPLETE DVD701/00X
0224	3139 247 52191	BACKPLATE DVD701/00X PPT
0232	3139 247 52181	COVER TOP DVD701/00X PPT
0244	3139 247 52201	FOOT ASSY DVD701/00X
0245	3139 247 51271	FOOT ASSY DVD711 EU
0333	4822 321 11357	AUDIO CORD SET
0336	4822 321 61579	
0382	4822 321 61847	SCART
0384	3139 228 85970	RC283207/01
0385▲	4822 321 10249	SBC1201 MAINS CABLE
0387	3139 246 10511	IFU DVD701/00X
1002	3139 248 80731	PCBAS AV DVD701 EU
1003	3139 248 80410	
1005▲	3122 427 22300	PSU DVD2B+ INEUR 20PS223
1014	3139 110 34220	FFC FOIL 22P/105/22P BD B
1015	3139 110 34230	FFC FOIL 16P/105/16P BD B

AV PCB

Various

1300	4822 265 11154	52030-2210 (22P)
1301	4822 265 11103	52030-1610 (16P)
1304	2422 033 00334	CON BM EURO H 42P F BK GRND-L
1402	4822 265 11566	3P YKC21-3930
1405	4822 267 31729	

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2353	4822 124 40769	4.7µF 20% 100V
2354	4822 126 14076	220nF 25V. P8020
2355	4822 124 40769	4.7µF 20% 100V
2357	4822 124 40769	4.7µF 20% 100V
2358	4822 122 33575	220pF 5% 63V CASE
2359	4822 124 40769	4.7µF 20% 100V
2360	4822 126 13692	47pF 1% 63V
2361	4822 126 13692	47pF 1% 63V
2371	4822 122 33575	220pF 5% 63V CASE
2372	4822 124 40769	4.7µF 20% 100V
2373	4822 124 40769	4.7µF 20% 100V
2377	4822 122 33575	220pF 5% 63V CASE
2378	4822 124 40769	4.7µF 20% 100V
2382	4822 124 40769	4.7µF 20% 100V
2383	4822 124 40769	4.7µF 20% 100V
2384	4822 051 20008	0R00 JUMP. ()
2385	4822 124 40769	4.7µF 20% 100V
2395	4822 122 33575	220pF 5% 63V CASE
2402	4822 122 33575	220pF 5% 63V CASE
2404	4822 122 33575	220pF 5% 63V CASE
2408	4822 122 33575	220pF 5% 63V CASE
2409	4822 122 33575	220pF 5% 63V CASE
2412	4822 124 40433	47µF 20% 25V
2450	5322 122 32654	22nF 10% 63V
2452	4822 126 14076	220nF 25V. P8020
2453	4822 124 40433	47µF 20% 25V
2455	5322 122 32531	100pF 5% 50V
2456	4822 124 22339	100UE 16V
2457	5322 126 10511	1nF 5% 50V
2458	5322 122 32654	22nF 10% 63V
2459	5322 122 32531	100pF 5% 50V
2460	5322 122 32654	22nF 10% 63V
2461	5322 122 32531	100pF 5% 50V
2462	4822 124 22339	100UE 16V
2463	5322 126 10511	1nF 5% 50V
2464	5322 122 32531	100pF 5% 50V
2469	5322 122 32654	22nF 10% 63V
2471	4822 126 14585	100nF 10% 50V
2472	4822 124 40433	47µF 20% 25V
2495	4822 126 14585	100nF 10% 50V
2496	5322 122 32654	22nF 10% 63V
2497	4822 124 81151	22µF 50V
2498	4822 124 41584	100µF 20% 10V
2499	4822 122 33575	220pF 5% 63V CASE
2500	4822 122 33575	220pF 5% 63V CASE
2501	4822 122 33575	220pF 5% 63V CASE
2502	4822 122 33575	220pF 5% 63V CASE
2503	4822 122 33575	220pF 5% 63V CASE
2504	4822 122 33575	220pF 5% 63V CASE
2506	4822 124 40763	2.2µF 100 V
2507	4822 124 40763	2.2µF 100 V
2508	4822 124 40763	2.2µF 100 V
2509	4822 124 40763	2.2µF 100 V
2511	4822 124 40763	2.2µF 100 V
2521	4822 122 33575	220pF 5% 63V CASE
2522	4822 122 33575	220pF 5% 63V CASE
2523	4822 122 33575	220pF 5% 63V CASE
2524	4822 051 20008	0R00 JUMP. ()
2525	4822 051 20008	0R00 JUMP. ()
2527	5322 122 32654	22nF 10% 63V
2528	5322 122 32654	22nF 10% 63V
2529	5322 122 32654	22nF 10% 63V
2530	5322 122 32654	22nF 10% 63V
2531	5322 122 32654	22nF 10% 63V
2532	5322 122 32654	22nF 10% 63V
2533	5322 122 32654	22nF 10% 63V
2534	5322 122 32654	22nF 10% 63V
2535	5322 122 32654	22nF 10% 63V
2536	5322 122 32654	22nF 10% 63V
2537	5322 122 32654	22nF 10% 63V
2538	4822 124 40763	2.2µF 100 V
2541	4822 126 14585	100nF 10% 50V
2542	4822 126 14491	2.2µF 10V
2543	4822 126 13692	47pF 1% 63V
2544	4822 124 40248	10µF 20% 63V
2545	4822 124 40433	47µF 20% 25V

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3300	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3301	4822 051 20101	100Ω 5% 0.1W
3313	4822 117 11503	220Ω 1% 0.1W
3314	4822 051 10102	1k 2% 0.25W
3315	4822 051 20471	470Ω 5% 0.1W
3316	4822 117 10834	47k 1% 0.1W
3318	4822 117 10834	47k 1% 0.1W
3319	4822 051 10102	1k 2% 0.25W
3320	4822 117 10834	47k 1% 0.1W
3321	4822 051 20101	100Ω 5% 0.1W
3322	4822 051 20101	100Ω 5% 0.1W
3323	4822 051 20471	470Ω 5% 0.1W
3325	4822 117 10834	47k 1% 0.1W
3339	4822 051 10102	1k 2% 0.25W
3340	4822 051 10102	1k 2% 0.25W
3343	4822 117 11927	75Ω 1% 0.1W
3345	4822 117 11927	75Ω 1% 0.1W
3347	4822 051 10102	1k 2% 0.25W
3348	4822 051 10102	1k 2% 0.25W
3349	4822 117 10834	47k 1% 0.1W
3351	4822 051 20471	470Ω 5% 0.1W
3359	4822 117 10834	47k 1% 0.1W
3363	4822 051 10102	1k 2% 0.25W
3366	4822 117 10834	47k 1% 0.1W
3394	4822 051 20471	470Ω 5% 0.1W
3397	4822 117 10834	47k 1% 0.1W
3407	4822 117 11927	75Ω 1% 0.1W
3408	4822 117 11927	75Ω 1% 0.1W
3409	4822 117 11503	220Ω 1% 0.1W
3413	4822 117 10834	47k 1% 0.1W
3425	4822 117 11927	75Ω 1% 0.1W
3432	4822 117 11927	75Ω 1% 0.1W
3433	4822 051 20008	0Ω jumper . (0805)
3442	4822 051 20101	100Ω 5% 0.1W
3444	4822 117 10833	10k 1% 0.1W
3445	4822 117 10833	10k 1% 0.1W
3446	4822 117 12955	2k7 1% 0.1W 0805
3447	4822 117 12955	2k7 1% 0.1W 0805
3448	4822 117 10833	10k 1% 0.1W
3451	4822 117 10833	10k 1% 0.1W
3453	4822 117 10833	10k 1% 0.1W
3454	4822 117 10833	10k 1% 0.1W
3455	4822 117 10833	10k 1% 0.1W
3457	4822 051 20101	100Ω 5% 0.1W
3459	4822 117 10833	10k 1% 0.1W
3461	4822 117 10833	10k 1% 0.1W
3462	4822 117 12955	2k7 1% 0.1W 0805
3463	4822 117 12955	2k7 1% 0.1W 0805
3464	4822 117 10833	10k 1% 0.1W
3507	4822 051 20101	100Ω 5% 0.1W
3508	4822 117 12521	68Ω 1% 0.1W
3511	4822 117 10833	10k 1% 0.1W
3512	4822 117 10833	10k 1% 0.1W
3517	4822 051 20101	100Ω 5% 0.1W
3519	4822 051 20562	5k6 5% 0.1W 0805
3610	4822 051 20472	4k7 5% 0.1W
3611	4822 051 20472	4k7 5% 0.1W
3612	4822 117 10834	47k 1% 0.1W
3613	4822 117 12955	2k7 1% 0.1W 0805
3614	4822 051 20223	22k 5% 0.1W
3615	4822 117 11152	4Ω7 5%
3616	4822 051 20472	4k7 5% 0.1W
3617	4822 117 10833	10k 1% 0.1W
3618	4822 051 10102	1k 2% 0.25W
3619	4822 117 10833	10k 1% 0.1W
3620	4822 051 10008	0Ω 5% 0.25W
3621	4822 051 20472	4k7 5% 0.1W
3622	4822 117 10833	10k 1% 0.1W
3623	4822 051 20472	4k7 5% 0.1W
3624	4822 117 10833	10k 1% 0.1W
3625	4822 051 10102	1k 2% 0.25W
3629	4822 117 11927	75Ω 1% 0.1W
3632	4822 051 20101	100Ω 5% 0.1W
3634	4822 117 11449	2k2 5% 0.1W 0805
3635	4822 117 11503	220Ω 1% 0.1W
3636	4822 117 10837	100k 1% 0.1W
3637	4822 117 10837	100k 1% 0.1W
3638	4822 117 10837	100k 1% 0.1W
3639	4822 117 10837	100k 1% 0.1W
3640	4822 117 10837	100k 1% 0.1W
3641	4822 117 10837	100k 1% 0.1W
3642	4822 117 10837	100k 1% 0.1W
3643	4822 117 10837	100k 1% 0.1W
3646	4822 117 10837	100k 1% 0.1W
3647	4822 117 10837	100k 1% 0.1W
3648	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3649	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3650	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3651	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3653	4822 117 13577	330Ω 1% RC12H 0805 1.25W
3672	4822 117 11927	75Ω 1% 0.1W
3673	4822 117 11927	75Ω 1% 0.1W
3674	4822 117 11927	75Ω 1% 0.1W
3675	4822 117 11927	75Ω 1% 0.1W
3676	4822 117 10353	150Ω 1% 0.1W
3677	4822 117 11927	75Ω 1% 0.1W
3678	4822 051 20101	100Ω 5% 0.1W
3679	4822 051 20101	100Ω 5% 0.1W
3680	4822 051 20101	100Ω 5% 0.1W
3681	4822 051 20101	100Ω 5% 0.1W
3682	4822 051 20101	100Ω 5% 0.1W
3683	4822 051 20101	100Ω 5% 0.1W
3684	4822 051 20101	100Ω 5% 0.1W
3685	4822 051 20101	100Ω 5% 0.1W
3687	4822 051 20472	4k7 5% 0.1W
3688	4822 051 20101	100Ω 5% 0.1W
3689	4822 051 20101	100Ω 5% 0.1W
3690	4822 051 10102	1k 2% 0.25W
3691	4822 051 10102	1k 2% 0.25W
3692	4822 051 10102	1k 2% 0.25W
3693	4822 051 10102	1k 2% 0.25W
3694	4822 051 10102	1k 2% 0.25W
3695	4822 117 10833	10k 1% 0.1W
3696	4822 117 10833	10k 1% 0.1W
3697	4822 051 10102	1k 2% 0.25W
3698	4822 051 10102	1k 2% 0.25W
3699	4822 051 10102	1k 2% 0.25W
3700	4822 051 10102	1k 2% 0.25W
3701	4822 051 20471	470Ω 5% 0.1W
3702	4822 051 10102	1k 2% 0.25W
3703	4822 117 11507	6k8 1% 0.1W
3704	4822 117 11507	6k8 1% 0.1W
3705	4822 117 11507	6k8 1% 0.1W
3706	4822 117 11507	6k8 1% 0.1W
3707	4822 117 11507	6k8 1% 0.1W

3240	4822 051 30103	10k 5% 0.062W
3242	4822 051 30008	0Ω jumper
3243	4822 051 30008	0Ω jumper
3246	4822 051 30008	0Ω jumper
3247	4822 051 30008	0Ω jumper
3249	4822 051 30008	0Ω jumper
3250	4822 051 30008	0Ω jumper
3251	4822 051 30008	0Ω jumper
3252	4822 051 30008	0Ω jumper
3253	4822 051 30008	0Ω jumper
3254	4822 051 30008	0Ω jumper
3255	4822 051 30008	0Ω jumper
3256	4822 051 30008	0Ω jumper
3257	4822 051 30008	0Ω jumper
3258	4822 051 30008	0Ω jumper
3259	4822 117 11151	1Ω 5%
3260	4822 117 11151	1Ω 5%
3300	4822 117 11152	4Ω7 5%
3301	4822 051 30105	1M 5% 0.062W
3302	4822 051 30221	220Ω 5% 0.062W
3304	4822 051 30272	2k7 5% 0.062W
3305	4822 051 30272	2k7 5% 0.062W
3309	4822 051 30103	10k 5% 0.062W
3310	4822 051 30223	22k 5% 0.062W
3311	4822 051 30223	22k 5% 0.062W
3312	4822 051 30472	4k7 5% 0.062W
3313	4822 051 30472	4k7 5% 0.062W
3316	4822 051 20108	1Ω 5% 0.1W
3317	4822 051 20108	1Ω 5% 0.1W
3318	4822 051 30472	4k7 5% 0.062W
3319	4822 051 30479	47Ω 5% 0.062W
3320	4822 051 30472	4k7 5% 0.062W
3321	4822 051 30682	6k8 5% 0.062W
3322	5322 117 13026	4k7 1% 0.063W 0603 RC22H
3323	5322 117 13026	4k7 1% 0.063W 0603 RC22H
3324	4822 117 13632	100k 1% 0603 0.62W
3325	4822 051 30682	6k8 5% 0.062W
3326	4822 051 30479	47Ω 5% 0.062W
3327	4822 051 30682	6k8 5% 0.062W
3328	4822 051 30223	22k 5% 0.062W
3329	4822 051 30223	22k 5% 0.062W
3330	4822 051 30223	22k 5% 0.062W
3331	4822 051 30332	3k3 5% 0.062W
3332	4822 051 30332	3k3 5% 0.062W
3333	4822 051 30101	100Ω 5% 0.062W
3334	4822 051 30101	100Ω 5% 0.062W
3335	4822 051 30101	100Ω 5% 0.062W
3336	4822 051 30101	100Ω 5% 0.062W
3337	4822 051 30101	100Ω 5% 0.062W
3338	4822 051 30101	100Ω 5% 0.062W
3339	4822 051 30008	0Ω jumper
3340	4822 051 30008	0Ω jumper
3403	4822 051 30103	10k 5% 0.062W
3404	4822 051 30103	10k 5% 0.062W
3405	4822 051 30103	10k 5% 0.062W
3412	4822 051 30008	0Ω jumper
3414	4822 051 30008	0Ω jumper
3416	4822 051 30008	0Ω jumper
3500	4822 051 30332	3k3 5% 0.062W
3501	4822 051 30332	3k3 5% 0.062W
3502	4822 051 30223	22k 5% 0.062W
3503	4822 051 30103	10k 5% 0.062W
3504	4822 051 30103	10k 5% 0.062W
3505	4822 051 30103	10k 5% 0.062W
3506	4822 051 30103	10k 5% 0.062W
3507	4822 051 30472	4k7 5% 0.062W
3508	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3509	4822 051 30103	10k 5% 0.062W
3511	4822 051 30332	3k3 5% 0.062W
3512	4822 051 30332	3k3 5% 0.062W
3513	4822 051 30103	10k 5% 0.062W
3514	4822 051 30103	10k 5% 0.062W
3515	4822 051 30103	10k 5% 0.062W
3516	4822 051 30103	10k 5% 0.062W
3517	4822 051 30332	3k3 5% 0.062W
3519	4822 051 30103	10k 5% 0.062W
3520	4822 051 30103	10k 5% 0.062W
3521	4822 051 30103	10k 5% 0.062W
3522	4822 051 30103	10k 5% 0.062W
3523	4822 051 30332	3k3 5% 0.062W
3524	4822 051 30101	100Ω 5% 0.062W
3525	4822 051 30103	10k 5% 0.062W
3526	4822 051 30103	10k 5% 0.062W
3534	4822 051 30103	10k 5% 0.062W
3535	4822 051 30153	15k 5% 0.062W
3536	4822 051 30101	100Ω 5% 0.062W
3537	4822 051 30331	330Ω 5% 0.062W
3538	4822 051 30681	680Ω 5% 0.062W
3541	4822 051 30479	47Ω 5% 0.062W
3542	4822 051 30479	47Ω 5% 0.062W
3545	4822 051 30221	220Ω 5% 0.062W
3546	4822 051 30101	100Ω 5% 0.062W
3548	4822 051 30008	0Ω jumper
3549	4822 051 30008	0Ω jumper
3550	4822 051 30101	100Ω 5% 0.062W
3551	4822 051 30101	100Ω 5% 0.062W
3552	4822 051 30008	0Ω jumper
3554	4822 051 30008	0Ω jumper
3564	4822 051 30008	0Ω jumper
3566	4822 051 30008	0Ω jumper
3570	4822 051 30101	100Ω 5% 0.062W
3571	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3572	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3605	4822 051 30008	0Ω jumper
3606	4822 117 12925	47k 1% 0.063W 0603
3607	4822 117 13632	100k 1% 0603 0.62W
3608	4822 117 13632	100k 1% 0603 0.62W
3609	4822 117 13632	100k 1% 0603 0.62W
3610	4822 051 30103	10k 5% 0.062W
3611	4822 051 30103	10k 5% 0.062W
3612	4822 051 30103	10k 5% 0.062W
3613	4822 051 30103	10k 5% 0.062W
3614	4822 051 30103	10k 5% 0.062W
3615	4822 051 30103	10k 5% 0.062W
3616	4822 051 30103	10k 5% 0.062W
3618	4822 051 30223	22k 5% 0.062W
3619	4822 051 30223	22k 5% 0.062W
3620	4822 051 30101	100Ω 5% 0.062W
3621	4822 051 30101	100Ω 5% 0.062W
3622	4822 051 30101	100Ω 5% 0.062W
3623	4822 051 30101	100Ω 5% 0.062W
3624	4822 051 30101	100Ω 5% 0.062W
3625	4822 051 30101	100Ω 5% 0.062W
3626	4822 051 30102	1k 5% 0.062W
3627	4822 051 30471	470Ω 5% 0.062W
3628	4822 051 30471	470Ω 5% 0.062W
3629	4822 051 30472	4k7 5% 0.062W
3630	4822 051 30221	220Ω 5% 0.062W
3631	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3632	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3633	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3635	4822 051 30682	6k8 5% 0.062W
3636	4822 051 30682	6k8 5% 0.062W
3637	4822 051 30332	3k3 5% 0.062W
3642	4822 051 30103	10k 5% 0.062W
3647	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3648	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3651	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3654	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3655	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3656	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3657	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3658	4822 051 30102	1k 5% 0.062W
3659	4822 051 30102	1k 5% 0.062W
3660	4822 051 30102	1k 5% 0.062W
3661	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3662	4822 051 30102	1k 5% 0.062W
3663	4822 051 30102	1k 5% 0.062W
3664	2322 704 64301	RST SM 0603 RC22H 430Ω PM1 R
3665	4822 117 12139	22Ω 5% 0.062W
3667	4822 051 30331	330Ω 5% 0.062W
3669	4822 051 30008	0Ω jumper
3670	4822 051 30008	0Ω jumper
3671	4822 051 30223	22k 5% 0.062W
3672	4822 051 30479	47Ω 5% 0.062W
3673	4822 051 30101	100Ω 5% 0.062W
3677	4822 051 30008	0Ω jumper
3678	4822 051 30008	0Ω jumper
3679	4822 051 30008	0Ω jumper
3681	4822 051 30008	0Ω jumper
3683	4822 051 30008	0Ω jumper
3685	4822 051 30008	0Ω jumper
3686	4822 051 30223	22k 5% 0.062W
3687	4822 051 30223	22k 5% 0.062W
3688	4822 051 30472	4k7 5% 0.062W
3689	4822 051 30223	22k 5% 0.062W

5200	4822 157 11717	BLM31P500SPT
5300	4822 157 11717	BLM31P500SPT
5301	4822 157 11717	BLM31P500SPT
5402	4822 157 11499	BLM11P600SPT
5403	4822 157 11499	BLM11P600SPT
5501	4822 157 70299	2.2µH (NL322522T-2R2J)
5502	4822 157 70299	2.2µH (NL322522T-2R2J)
5503	4822 157 71206	BLM21A601SPT
5504	4822 157 71206	BLM21A601SPT
5600	4822 157 71206	BLM21A601SPT
5601	4822 157 11499	BLM11P600SPT
5602	4822 157 10547	15µH 5%
5603	4822 157 71206	BLM21A601SPT
5604	4822 157 10547	15µH 5%
5605	4822 157 10547	15µH 5%
5606	4822 157 10547	15µH 5%
5607	4822 157 10547	15µH 5%
5608	4822 157 10547	15µH 5%
5609	4822 157 11717	BLM31P500SPT
5610	4822 157 11717	BLM31P500SPT

6200	4822 130 11397	BAS316
6301	9322 128 69685	S1D
6302	9322 128 69685	S1D
6303	9322 128 69685	S1D
6600	4822 130 11528	1PS76SB10

7100	5322 130 42718	BFS20
7101	5322 130 42718	BFS20
7102	9352 637 37518	
7103	4822 209 17229	BA5938FM
7104	4822 209 30095	LM833D
7105	4822 209 32073	MC34072D
7106	5322 130 42718	BFS20
7109	4822 209 15083	AN78M09
7110	5322 130 60803	BST72A
7111	5322 130 60159	BC846B
7112	5322 130 60159	BC846B
7113	5322 130 60159	BC846B
7114	5322 130 60159	BC846B
7115	4822 130 60373	BC856B
7116	5322 130 60159	BC846B
7201	9351 869 80118	
7202	3104 123 95660	
7203	4822 130 60373	BC856B
7207	9352 636 60557	SAA7399HL/M2A
7304	4822 209 16877	BA6856FP
7310	4822 209 15899	CY7C199-15C
7311	9352 637 83557	IC SM SAA7335HL/E/M2 (PHSE) Y
7312	4822 130 60373	BC856B
7315	5322 130 60159	BC846B
7401	9322 132 01668	AM29LV160B
7404	9322 144 59668	IC SM MT48LC1M16A1TG-7S (MRN)R
7405	9322 144 59668	IC SM MT48LC1M16A1TG-7S (MRN)R
7501	5322 130 60159	BC846B
7503	9322 144 88671	STI5505EVB
7503	9322 151 16671	STI5505AVC
7504	4822 242 10838	27MHZ 120P FX0-31FT
7505	8204 056 05580	IC SM M24C32-WMN6TNKSA
7600	5322 209 71568	PC74HCT14T
7604	5322 130 60159	BC846B
7605	4822 209 17398	LD1117DT33
7607	5322 130 60159	BC846B
7608	4822 130 60373	BC856B
7609	4822 130 60373	BC856B
7610	5322 130 60159	BC846B
7611	9352 456 80115	
7612	5322 130 60159	BC846B
7613	5322 130 60159	BC846B
7614	5322 130 60159	BC846B
7615	5322 130 60159	BC846B
7616	4822 209 16062	MK2742-03S
7617	5322 130 60159	BC846B
7618	5322 130 60159	BC846B
7620	4822 130 60373	BC856B
7621	4822 130 42804	BC817-25

PSU 20PS223

Various

0025	4822 492 63524	FIX. TRANSISTOR
0101▲	4822 265 31015	
0120	4822 265 11253	FUSE HOLDER 2P

2112	5322 126 11578	1nF 10% 50V 0603
2113	4822 126 14305	100nF 10% 16V 0603
2114	4822 122 31765	100pF 2% 63V
2115	4822 126 14305	100nF 10% 16V 0603
2116	4822 126 14305	100nF 10% 16V 0603
2117	4822 126 14305	100nF 10% 16V 0603
2120	4822 126 14305	100nF 10% 16V 0603
2121	4822 126 13879	220nF 20% 16V
2123	4822 126 14305	100nF 10% 16V 0603
2124	4822 126 14305	100nF 10% 16V 0603
2125	4822 126 14305	100nF 10% 16V 0603
2126	4822 126 14305	100nF 10% 16V 0603
2127	4822 126 14305	100nF 10% 16V 0603
2128	4822 126 14508	180pF 5% 50V 0603
2129	4822 126 14508	180pF 5% 50V 0603
2130	4822 122 33761	22pF 5% 50V
2131	4822 126 14494	22nF 10% 25V 0603
2136	4822 126 14305	100nF 10% 16V 0603
2137	4822 126 14305	100nF 10% 16V 0603
2138	4822 126 14305	100nF 10% 16V 0603
2139	4822 126 14305	100nF 10% 16V 0603
2140	4822 126 14241	0603 50V 330P COL R
2141	4822 122 33761	22pF 5% 50V
2142	5322 126 11583	10nF 10% 50V 0603
2143	4822 126 13883	220pF 5% 50V
2144	4822 126 13883	220pF 5% 50V
2145	4822 126 13883	220pF 5% 50V
2203	4822 126 14305	100nF 10% 16V 0603
2204	4822 126 14305	100nF 10% 16V 0603
2205	4822 126 14305	100nF 10% 16V 0603
2206	4822 126 14549	33nF 16V O6O3
2207	5322 126 11578	1nF 10% 50V 0603
2208	4822 126 14305	100nF 10% 16V 0603
2209	4822 126 14305	100nF 10% 16V 0603
2210	5322 126 11578	1nF 10% 50V 0603
2212	4822 126 14305	100nF 10% 16V 0603
2213	4822 126 14305	100nF 10% 16V 0603
2215	4822 124 23237	22µF 6.3V
2216	5322 126 11578	1nF 10% 50V 0603
2226	4822 126 14305	100nF 10% 16V 0603
2227	4822 126 14305	100nF 10% 16V 0603
2228	4822 126 14305	100nF 10% 16V 0603
2300	4822 126 14305	100nF 10% 16V 0603
2301	4822 126 14305	100nF 10% 16V 0603
2302	4822 126 14305	100nF 10% 16V 0603
2303	4822 124 80349	47µF 20% 6.3V
2306	4822 124 23002	10µF 16V
2309	4822 126 14305	100nF 10% 16V 0603
2310	4822 126 14305	100nF 10% 16V 0603
2314	4822 126 14305	100nF 10% 16V 0603
2315	4822 126 14305	100nF 10% 16V 0603
2318	5322 122 33861	120pF 10% 50V
2319	4822 126 11669	27pF
2401	4822 126 14305	100nF 10% 16V 0603
2402	4822 126 14305	100nF 10% 16V 0603
2403	4822 126 14305	100nF 10% 16V 0603
2404	4822 126 14305	100nF 10% 16V 0603
2405	4822 126 14305	100nF 10% 16V 0603
2406	4822 126 14305	100nF 10% 16V 0603
2407	4822 126 14305	100nF 10% 16V 0603
2408	4822 126 14305	100nF 10% 16V 0603
2409	4822 126 14305	100nF 10% 16V 0603
2410	4822 126 14305	100nF 10% 16V 0603
2411	4822 126 14305	100nF 10% 16V 0603
2412	4822 126 14305	100nF 10% 16V 0603
2413	4822 126 14305	100nF 10% 16V 0603
2418	4822 124 12095	100µF 20% 16V
2419	4822 124 80349	47µF 20% 6.3V
2420	4822 124 80349	47µF 20% 6.3V
2500	4822 126 14305	100nF 10% 16V 0603
2502	3198 030 74780	EL SM 35V 4U7 PM20 COL R
2503	4822 126 14305	100nF 10% 16V 0603
2504	4822 122 31765	100pF 2% 63V
2505	4822 126 14494	22nF 10% 25V 0603
2506	4822 124 23002	10µF 16V
2507	4822 126 14305	100nF 10% 16V 0603
2508	5322 126 11579	3.3nF 10% 63V
2509	4822 126 14241	0603 50V 330P COL R
2510	4822 126 14305	100nF 10% 16V 0603
2511	4822 126 14305	100nF 10% 16V 0603
2512	4822 126 14305	100nF 10% 16V 0603
2513	4822 126 14305	100nF 10% 16V 0603
2514	4822 126 14305	100nF 10% 16V 0603
2515	4822 126 14305	100nF 10% 16V 0603
2516	4822 126 14305	100nF 10% 16V 0603
2517	4822 126 14305	100nF 10% 16V 0603
2518	4822 126 14305	100nF 10% 16V 0603
2519	4822 126 14305	100nF 10% 16V 0603
2520	4822 126 14305	100nF 10% 16V 0603
2521	4822 126 14305	100nF 10% 16V 0603
2522	4822 126 14305	100nF 10% 16V 0603
2523	4822 126 14305	100nF 10% 16V 0603
2524	4822 126 14305	100nF 10% 16V 0603
2525	4822 126 14305	100nF 10% 16V 0603
2526	4822 126 14305	100nF 10% 16V 0603
2527	4822 126 14305	100nF 10% 16V 0603
2528	4822 126 14305	100nF 10% 16V 0603
2529	4822 126 14305	100nF 10% 16V 0603
2530	3198 030 74780	EL SM 35V 4U7 PM20 COL R
2531	3198 030 74780	EL SM 35V 4U7 PM20 COL R
2532	4822 122 33777	47pF 5% 63V
2533	4822 122 33777	47pF 5% 63V
2534	5322 126 11578	1nF 10% 50V 0603
2535	5322 126 11578	1nF 10% 50V 0603
2600	4822 126 14494	22nF 10% 25V 0603
2601	4822 126 14247	0603 50V 1N5 COL R
2602	4822 126 14247	0603 50V 1N5 COL R
2603	4822 126 14305	100nF 10% 16V 0603
2604	4822 124 12095	100µF 20% 16V
2605	4822 126 14494	22nF 10% 25V 0603
2606	4822 124 12095	100µF 20% 16V
2607	4822 124 12095	100µF 20% 16V
2608	4822 124 23002	10µF 16V
2609	4822 124 80151	47µF 16V
2610	4822 126 14305	100nF 10% 16V 0603
2611	4822 124 12095	100µF 20% 16V
2614	4822 122 33777	47pF 5% 63V
2615	4822 122 33777	47pF 5% 63V
2616	4822 122 33777	47pF 5% 63V
2617	4822 122 33777	47pF 5% 63V
2618	4822 126 14305	100nF 10% 16V 0603
2619	4822 126 14305	100nF 10% 16V 0603
2620	4822 122 33777	47pF 5% 63V
2621	4822 122 33777	47pF 5% 63V
2622	4822 122 33777	47pF 5% 63V
2623	4822 122 33777	47pF 5% 63V
2624	4822 122 33777	47pF 5% 63V
2625	4822 122 33777	47pF 5% 63V
2626	4822 122 33777	47pF 5% 63V
2627	4822 122 33777	47pF 5% 63V
2632	4822 124 12095	100µF 20% 16V
2633	4822 124 12095	100µF 20% 16V
2634	4822 126 14305	100nF 10% 16V 0603
2635	4822 126 14305	100nF 10% 16V 0603
2636	4822 126 14305	100nF 10% 16V 0603
2637	4822 126 14305	100nF 10% 16V 0603
2638	4822 126 14305	100nF 10% 16V 0603
2639	4822 126 14305	100nF 10% 16V 0603

3100	4822 117 11152	4Ω7 5%
3102	5322 117 13034	1k5 1% 0.063W 0603 RC22H
3103	5322 117 13034	1k5 1% 0.063W 0603 RC22H
3104	5322 117 13062	390Ω 1% 0.063W 0603 RC22H
3105	4822 051 30103	10k 5% 0.062W
3106	4822 051 30479	47Ω 5% 0.062W
3107	4822 051 20228	2Ω2 5% 0.1W
3108	4822 051 20228	2Ω2 5% 0.1W
3110	4822 051 30479	47Ω 5% 0.062W
3111	5322 117 13058	150Ω 1% 0.063W 0603 RC22H
3112	5322 117 13021	47Ω 1% 0.063W 0603 RC22H
3114	4822 051 20228	2Ω2 5% 0.1W
3115	4822 051 20228	2Ω2 5% 0.1W
3116	5322 117 13042	3k9 1% 0.063W 0603 RC22H
3117	4822 051 30181	180Ω 5% 0.062W
3118	4822 051 30681	680Ω 5% 0.062W
3119	5322 117 13062	390Ω 1% 0.063W 0603 RC22H
3120	4822 051 30102	1k 5% 0.062W
3121	4822 051 30273	27k 5% 0.062W
3122	4822 051 30471	470Ω 5% 0.062W
3123	4822 051 30103	10k 5% 0.062W
3124	4822 051 30471	470Ω 5% 0.062W
3125	4822 051 30103	10k 5% 0.062W
3126	4822 051 30103	10k 5% 0.062W
3127	4822 051 30223	22k 5% 0.062W
3128	2322 704 69109	
3129	4822 051 30392	3k9 5% 0.063W 0603
3130	4822 051 20228	2Ω2 5% 0.1W
3131	4822 051 20228	2Ω2 5% 0.1W
3132	4822 051 20228	2Ω2 5% 0.1W
3133	4822 051 20228	2Ω2 5% 0.1W
3134	5322 117 13047	330Ω 1% 0.063W 0603 RC22H
3135	4822 117 13613	2Ω2 5% 0603
3137	4822 117 13613	2Ω2 5% 0603
3138	5322 117 13053	6k8 1% 0.063W 0603 RC22H
3139	4822 117 12917	1Ω 5% 0.062W CASE0603
3140	4822 051 30479	47Ω 5% 0.062W
3141	4822 117 11152	4Ω7 5%
3142	5322 117 13028	12k 1% 0.063W 0603 RC22H
3143	5322 117 13043	220Ω 1% 0.063W 0603 RC22H
3144	2322 704 69109	
3146	4822 051 30103	10k 5% 0.062W
3147	4822 051 30103	10k 5% 0.062W
3148	5322 117 13022	22k 1% 0.063W 0603 RC22H
3153	4822 117 12139	22Ω 5% 0.062W
3155	4822 051 30103	10k 5% 0.062W
3157	4822 051 30103	10k 5% 0.062W
3158	5322 117 13017	100Ω 1% 0.063W 0603 RC22H
3160	4822 051 30101	100Ω 5% 0.062W
3161	4822 117 13613	2Ω2 5% 0603
3162	4822 051 30101	100Ω 5% 0.062W
3163	4822 051 30273	27k 5% 0.062W
3164	4822 117 13613	2Ω2 5% 0603
3165	5322 117 13063	120Ω 1% 0.063W 0603 RC22H
3166	4822 051 30393	39k 5% 0.062W
3167	4822 051 30101	100Ω 5% 0.062W
3168	5322 117 13047	330Ω 1% 0.063W 0603 RC22H
3169	4822 051 30101	100Ω 5% 0.062W
3170	4822 051 30101	100Ω 5% 0.062W
3171	4822 051 30101	100Ω 5% 0.062W
3172	4822 117 13632	100k 1% 0603 0.62W
3173	4822 117 13632	100k 1% 0603 0.62W
3174	4822 117 11152	4Ω7 5%
3175	4822 117 13613	2Ω2 5% 0603
3176	4822 051 30153	15k 5% 0.062W
3178	4822 117 11151	1Ω 5%
3179	4822 051 30221	220Ω 5% 0.062W
3180	4822 117 13632	100k 1% 0603 0.62W
3181	4822 051 30561	560Ω 5% 0.062W
3182	5322 117 13018	1k0 1% 0.063W 0603 RC22H
3183	5322 117 13017	100Ω 1% 0.063W 0603 RC22H
3184	2322 704 61204	
3185	4822 117 11151	1Ω 5%
3187	4822 051 30273	27k 5% 0.062W
3189	4822 051 30008	0Ω jumper
3190	4822 051 30008	0Ω jumper
3191	4822 051 30008	0Ω jumper
3192	4822 051 30008	0Ω jumper
3193	4822 051 30008	0Ω jumper
3194	4822 051 30008	0Ω jumper
3195	4822 051 30008	0Ω jumper
3197	4822 051 30008	0Ω jumper
3198	5322 117 13049	470Ω 1% 0.063W 0603 RC22H
3199	5322 117 13042	3k9 1% 0.063W 0603 RC22H
3200	4822 051 30103	10k 5% 0.062W
3201	4822 117 11151	1Ω 5%
3202	4822 117 11151	1Ω 5%
3203	4822 051 30105	1M 5% 0.062W
3204	4822 051 30331	330Ω 5% 0.062W
3205	4822 051 30103	10k 5% 0.062W
3206	4822 051 30103	10k 5% 0.062W
3208	4822 051 30272	2k7 5% 0.062W
3209	4822 051 30472	4k7 5% 0.062W
3210	4822 051 30392	3k9 5% 0.063W 0603
3211	4822 051 30472	4k7 5% 0.062W
3212	4822 117 11152	4Ω7 5%
3213	4822 117 11152	4Ω7 5%
3214	4822 051 30392	3k9 5% 0.063W 0603
3215	4822 051 30103	10k 5% 0.062W
3219	4822 051 30103	10k 5% 0.062W
3220	4822 051 30103	10k 5% 0.062W
3221	4822 051 30103	10k 5% 0.062W
3224	4822 051 30151	150Ω 5% 0.062W
3225	2322 704 62004	
3226	4822 051 30103	10k 5% 0.062W
3227	4822 051 30472	4k7 5% 0.062W
3229	4822 051 30123	12k 5% 0.062W
3230	4822 051 30103	10k 5% 0.062W
3231	4822 051 30103	10k 5% 0.062W
3232	4822 117 13613	2Ω2 5% 0603
3234	4822 117 12902	8k2 1% 0.063W 0603
3235	4822 117 13632	100k 1% 0603 0.62W
3236	4822 051 30472	4k7 5% 0.062W
3237	4822 051 30103	10k 5% 0.062W
3238	4822 051 30103	10k 5% 0.062W
3239	4822 051 30008	0Ω jumper
3239	4822 051 30103	10k 5% 0.062W

1120▲	4822 253 30383	19181 (2,5A)

⊣⊢

2120▲	4822 121 10512	275V 220nF 20%
2121	8211 248 53120	C CHM YK 68M 400VM RUBYCOnF
2122	4822 121 70141	33nF 5% 400V
2127	4822 122 50116	470pF 10% 1KV
2130▲	4822 126 14572	100pF 10% 250V
2131▲	4822 126 14133	1nF 20% 250V
2133	4822 124 40248	10µF 20% 63V
2134	2020 012 93111	EL YK 35V S 47µF PM20 A
2141	4822 124 22652	2.2µF 20% 50V
2143	4822 126 14585	100nF 10% 50V
2145	5322 126 10223	4.7nF 10% 63V
2146	4822 126 14585	100nF 10% 50V
2150	4822 126 14585	100nF 10% 50V
2156	5322 122 31863	63V 330pF PM5
2157	5322 122 32268	470pF 10% 50V
2202	4822 126 13838	100nF 50V 20%
2210	2020 012 93728	EL YK 10V S 2200µF PM20 B
2230	4822 124 22779	1000µF 10V
2232	4822 124 81021	100µF 20% 16V
2233	4822 124 81021	100µF 20% 16V
2234	4822 126 12105	50V 33nF PM5
2238	4822 124 81021	100µF 20% 16V
2239	4822 124 81021	100µF 20% 16V
2240	4822 124 81147	470µF 20% YK 25V
2250	4822 124 41545	220µF 20% 16V
2260	4822 124 81151	22µF 50V

3105	4822 053 21684	680k 5% 0.5W
3111	4822 116 52186	22Ω 5% 0.5W
3120▲	4822 116 21217	1M A/423V 800V
3121	4822 117 12181	470Ω 20% 0.5W
3123	4822 116 83882	39k 5% 0.5W
3125	4822 117 10833	10k 1% 0.1W
3126	4822 050 24708	4Ω7 1% 0.6W
3127	4822 116 80176	1Ω 5% 0.5W
3128	4822 116 80176	1Ω 5% 0.5W
3129	4822 116 83882	39k 5% 0.5W
3134	4822 116 83882	39k 5% 0.5W
3135	4822 053 11159	15Ω 5% 2W
3139	4822 051 20479	47Ω 5% 0.1W
3140	4822 116 52191	33Ω 5% 0.5W
3141	4822 117 10833	10k 1% 0.1W
3143	4822 117 10834	47k 1% 0.1W
3145	4822 116 83933	15k 1% 0.1W
3146	4822 117 11148	56k 1% 0.1W
3150	4822 117 11139	1k5 1% 0.1W
3153	4822 116 83933	15k 1% 0.1W
3154	4822 051 10102	1k 2% 0.25W
3155	4822 116 52219	330Ω 5% 0.5W
3156	4822 051 20339	33Ω 5% 0.1W
3201	4822 116 52176	10Ω 5% 0.5W
3202	4822 117 11141	1k8 1% 0.1W
3204	4822 117 11504	270Ω 1% 0.1W
3205	4822 117 11145	4k7 1% 0.1W
3206	4822 051 20008	0Ω jumper . (0805)
3207	4822 051 10102	1k 2% 0.25W
3233	4822 050 11002	1k 1% 0.4W
3234	4822 051 10102	1k 2% 0.25W
3235	4822 116 83933	15k 1% 0.1W
3236	4822 051 20472	4k7 5% 0.1W
3237	4822 117 11145	4k7 1% 0.1W
3260	4822 051 20102	1k 5% 0.1W
3262	4822 116 83872	220Ω 5% 0.5W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5120▲	4822 157 11846	
5125	4822 157 11411	100mH z
5131▲	4822 146 10402	TRAFO CT395FANF/PVF
5210	4822 157 11722	6.8µH 20% 7.7X9.5
5223	4822 157 50963	2.2µH
5231	4822 157 11722	6.8µH 20% 7.7X9.5
5240	4822 157 51195	1 µH 20% 4X9.8MM AXIAL
5260	4822 157 11517	10µH 5% 2.3X3.4

6110	5322 130 34574	1N4004G
6111	5322 130 34574	1N4004G
6120	4822 130 83707	SINB80
6122	4822 130 34281	BZX79-B15
6123	4822 130 34281	BZX79-B15
6132	4822 130 42488	BYD33D
6133	4822 130 83649	1SS355
6140	4822 130 30621	1N4148
6141	4822 130 11152	UDZ18B
6150	4822 130 11148	UDZ4.7B
6210	4822 130 11584	BYW98-200-C1
6230	4822 130 11584	BYW98-200-C1
6241	4822 130 11584	BYW98-200-C1
6250	4822 130 42606	BYD33J
6261	4822 130 42606	BYD33J

7125	4822 130 11417	STP3NB60FP
7131▲	4822 130 91451	CQY80NG
7141	4822 130 44568	BC557B
7145	9322 145 88682	UC3842A
7150	4822 130 40959	BC547B
7201	4822 209 81397	TL431CLPST
7233	5322 209 86445	LM7805CT
7235	4822 130 42705	BC847
7236	4822 130 11578	STP16NE06
7237	4822 209 81397	TL431CLPST