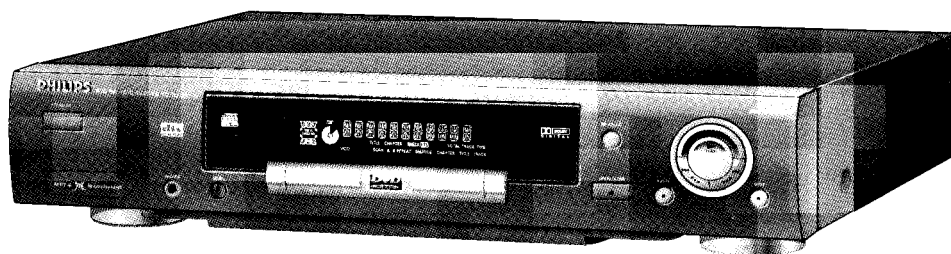
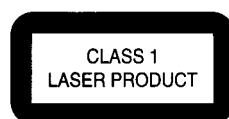


Service
Service
Service



Service Manual



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PHILIPS

1. Technical specifications

1.1 General:

Mains voltage	: 230V (196 - 263V AC)
Mains frequency	: 50 Hz -60Hz
Power consumption	: 20W
Power consumption standby	: <10W (≤5W for low power standby; without P50)

1.2 Audio performance

Test equipment	: Audio Precision
Testdiscs	: CDDA: Philips audio signal testdisc 1
	: VCD: Philips A/V testdisc & ABEX A/V testdisc
	: DVD: Philips LVP09.00 audio testdisc

1.3 Line output

1.3.1 'Normal' mode (stereo)

Output voltage	:
2 channel mode	: 2Vrms +/- 1.5dB
5.1 channel Dolby	: 1.41 +/- 1.5 dB
Channel unbalance (1kHz)	: <0.85dB
Crosstalk	:
1kHz	: >105dB
20Hz-20kHz	: > 95dB
Frequency response	:
20Hz- 12kHz	: +/- 0.1dB max
Signal to noise ratio	: >100 dB
Dynamic range	:
1kHz	: >90dB
20Hz-20kHz	: >88dB
Distortion and noise	:
1kHz	: >90dB
20Hz-20kHz	: >80dB
Intermodulation distortion	: >87dB
Phase non linearity	: +/- 1° max.
Level non linearity	: +/- 0.5dB max.
Mute (spin-up, pause, access)	: >100dB
Outband attenuation	: > 50dB above 25kHz

1.3.2 'Center on' mode (mono)

Output voltage	: 2Vrms typ
Channel unbalance (1kHz)	: <0.85dB
Crosstalk:	: mono
Frequency response(20Hz- 12kHz)	: 0.1dB max
Signal to noise ratio	: >85 dB
Dynamic range 20Hz-20kHz	: >85 dB
Distortion and noise 20Hz-20kHz	: >80 dB
Intermodulation distortion	: >87 dB
Phase non linearity	: not applicable
Level non linearity	: +/- 1 dB
Mute (spin-up, pause, access)	: >100dB
Outband attenuation	: > 50dB above 25kHz
Centerdelay adjusting	: 0-5 msec (steps 1 msec)

1.6 Video performance

1.4 6-channel output

1.4.1 Front Line out(channel 1 and 2)

fully according to PQR class III	
Output voltage	:
channel mode	: 1.41Vrms +/- 1.5dB
5.1 channel Dolby	: 1.41V +/- 1.5 dB
Channel unbalance (1kHz)	: <0.85dB
Crosstalk	:
1kHz	: >105dB
20Hz-20kHz	: > 95dB
Frequency response 20Hz- 12kHz	: +/- 0.1dB max
Signal to noise ratio	: >100 dB
Dynamic range	:
1kHz	: >90dB
20Hz-20kHz	: >88dB
Distortion and noise	:
1kHz	: >90dB
20Hz-20kHz	: >80dB
Intermodulation distortion	: >87dB
Phase non linearity	: +/- 1° max.
Level non linearity	: +/- 0.5dB max.
Mute (spin-up, pause, access)	: >100dB
Outband attenuation	: > 50dB above 25kHz

1.4.2 Surround channels (channel 3,4,5 and 6)

Surround channels are according to dolby group C products (*1)	
Testequipment: audio precision (*2)	
LFE + Center + Rear line out	
Output voltage	:
2 channel mode	: muted
5.1 channel Dolby	: 1.41Vrms +/-1.5dB
	: Adjustable 0.7V-2.82 V
	: (+/- 6dB to front channels)
Channel unbalance	: <0.85 dB
Signal to noise ratio	: >100 dB (A-weighted)
Dynamic range	: >85 dB
Distortion and noise	: >80 dB (90 typical)
Crosstalk:	: >95 dB (*3)
*1	: referenced to dolby digital licensee information manual version 2.0
*2	: measured in normal mode and with balance control neutral
*3	: crosstalk from channels 1,3,5(channel 1 is ref) to 2,4,6(measured channels)

1.5 Headphone output

According PQR1 IMS
30mW at 32 Ohm load.
Headphone impedance: 8-2000 Ohm

VCD testdisc : Philips A/V disc & ABEX A/V disc

DVD testdisc : Philips MPTD PAL
CVP0213 / Philips
LVP10.00 video
testdisc

1.6.1 CVBS

Fully according PQR3 IMS
Video output : 1Vpp(0.1V into 75
Ohm)

1.6.2 S-video (Y/C)

Fully according PQR3 IMS
1 - GND
2 - GND
3 - Y 1Vpp +/- 0.1V into 75 Ohm
4 - C burst 300mVpp +/-4dB into 75
Ohm
Aspect ratio switching by DC on C(pin4).
Connector type : 4 pin mini- DIN

1.7 Scart

Fully according PQR3 IMS
Connector implementation according EN50049-1; color =
black; dual SCART
Fully according to prEN1057-2-1
Signal switching is P50 controlled; supported features of mode
3 see survey of applicable standards.

1.7.1 SCART II (connected to TV)

Pin signals:
1 - Audio R 1.8V RMS
2 - Audio R
3 - Audio L 1.8V RMS
4 - Audio GND
5 - Blue/Chroma GND
6 - Audio L
7 - Blue out/
Chroma in 0.7Vpp +/- 0.1V into 75 Ohm (*)
8 - Function
switch <2V = TV
>4.5V / <7V = asp. ratio 16:9 DVD
>9.5V / <12V = asp. ratio 4:3 DVD
9 - Green GND
10- Nc
11- Green 0.7Vpp +/- 0.1V into 75 Ohm (*)
12- Nc
13- Red/Chroma GND
14- Fast switch GND
15- Red out/
Chroma out 0.7Vpp +/- 0.1V into 75 Ohm (*)
+/- 3dB 0.3Vpp in case of Chroma
16- Fast switch
RGB/ CVBS or Y <0.4V into 75 Ohm = CVBS
>1V / <3V into 75 Ohm = RGB
17- Y/CVBS GND
18- Fast
switching GND
19- CVBS/Y/RGB
sync 1Vpp +/- 0.1V into 75 Ohm (*)
20- CVBS/Y
21- Shield

1.7.2 SCART I (connected to AUX)

Pin signals:
1 - Audio R 1.8V RMS

2 - Audio R
3 - Audio L 1.8V RMS
4 - Audio GND
5 - Blue/Chroma GND
6 - Audio L
7 - Blue in/
Chroma out +/- 3dB 0.3vpp Chroma (burst)
8 - Function
switch
9 - Green GND
10- P50 Control
11- Green
12- Nc
13- Red/Chroma GND
14- Fast switch GND
15- Red in/
Chroma in
16- Fast switch
RGB/ CVBS
or Y
17- CVBS GND
18- Fast
switching GND
19- CVBS/Y/RGB
sync 1Vpp +/- 0.1V into 75 Ohm (*)
20- CVBS/Y
21- Shield
(* for 100% white

1.8 Digital output

1.8.1 Coaxial

CDDA/ LPCM (incl MPEG1) : According IEC958
MPEG2, AC3 audio : According IEC1937
Remark:
DTS audio output mode is only available on "digital out"

1.8.2 Optical

Identical to coaxial

1.9 Dimensions and weight

Place and height of feet : acc. to Philips
Harmonisation line
Apparatus tray closed : WxDxH: 435 x 315x
75/88
Apparatus tray open : WxDxH: 435 x 442 x
75/88
Weight without packaging : ca. 4 Kg
Weight in packaging : ca. 6 Kg

1.10 Laser output power & wavelength

1.10.1 DVD

Output power : 7mW
Wavelength : 650nm

1.10.2 CD

Output power : 10mW
Wavelength : 785nm

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 à leur manipulation.

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

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

D WARNUNG

Alle IC und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD).

Unvorsorgfältige 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 gespecificeerde worden toegepast.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerats darf nicht verändert werden. Für 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 ricambiaggio idetici a quelli specificati.

F

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

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 of fire or electrical shock hazard.

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



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 NÅR 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 AUSSETZEN
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 switched 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

Note:

The screws on the basic Engine (position 82 in on the exploded view drawing) may never be touched removed or re-adjusted.

Handle the Basic engine with care when the unit has to be exchanged!

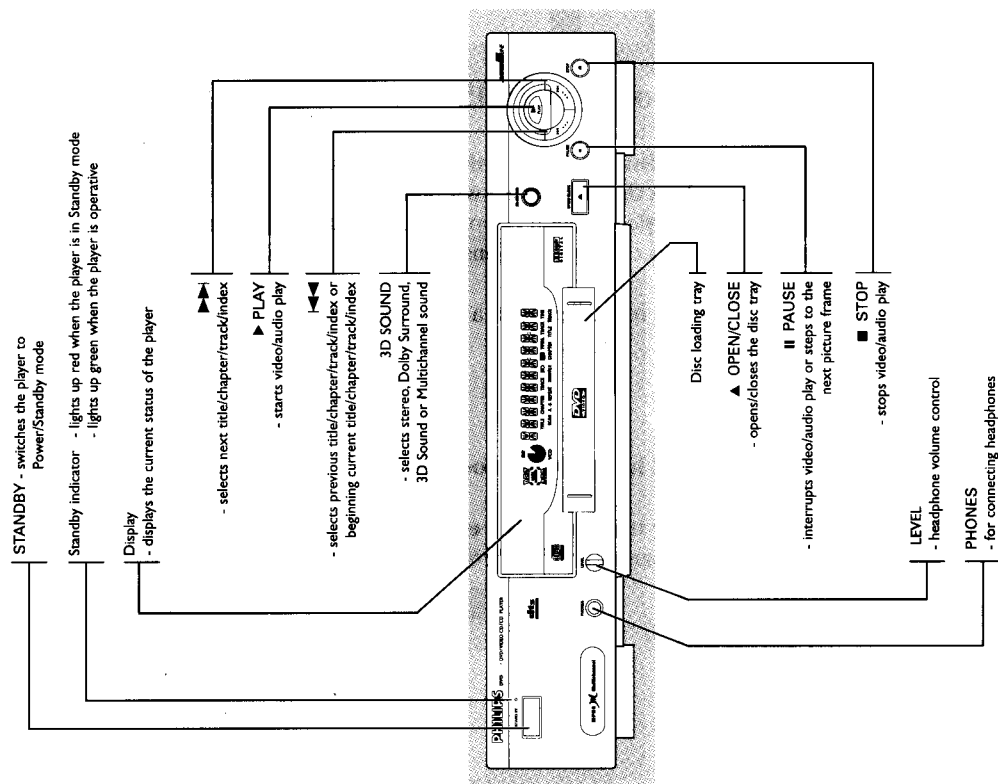
The mechanism of the basic engine is very sensitive for dropping or shocks

3. Directions for use

Functional overview

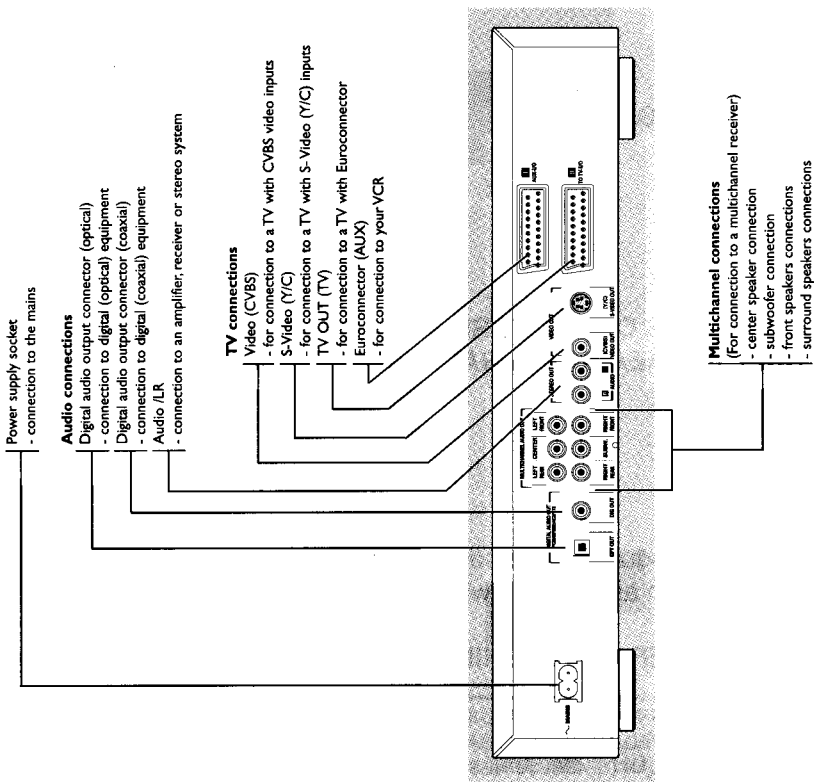
English

Front of player



Rear of player

English



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

English

Display

- Front (left and right) speakers active
- Center speaker active
- Test tone active
- Active audio format
- Surround (left and right) speakers active
- Subwoofer active
- DVD disc inserted
- (V)CD disc inserted
- Indicates current player function: Play, Pause, Search, etc.
- DVD TITLE number
- DVD CHAPTER number
- VCD/CD TRACK number
- TRACK TIME in hours, minutes and seconds
- TOTAL TIME in hours, minutes and seconds



- REPEAT CHAPTER/TITLE/TRACK active
- Remote control active (flashing)
- FTS active
- SCAN active
- A-B REPEAT REPEAT A-B active
- SHUFFLE SHUFFLE active

Remote control

TV MUTE

- DVD-mode: selects Stereo, Dolby Surround, 3D Sound or Multi Channel reproduction
- TV-mode: mute ON/OFF

DVD/TV switch

- DVD mode/TV mode selector

0-9 numerical key pad

RETURN

- go back to previous menu step

OK

- acknowledge menu selection

Left/Right Arrow

- search backward / previous chapter or track

Up/Down Arrow

- search forward / next chapter or track

Play

- play

Pause

- pause or still frame /step frame

Stop

- stop

Slow Motion

- slow motion

STANDBY

REPEAT

- repeat chapter, track, title, disc

REPEAT A-B

- repeat sequence

SHUFFLE

- playback in random order

SCAN

- playback of the first 10 seconds of each chapter, within a title (DVD) or the first 10 seconds of each track on a disc (VCD/CD)

DVD MENU

- select DVD-defined menu

MENU OSD

- (On-Screen Display) on/off

PROG +/-

- DVD mode: up/down cursor movement
- TV mode: Program up/down

VOL +/-

- DVD mode: left/right cursor movement
- TV mode: Volume up/down

Subtitle

- subtitle language selector

Audio

- audio language selector

T

- select title

C

- select chapter

FTS

- activate FTS

Camera

- select DVD camera angle

Enlarge

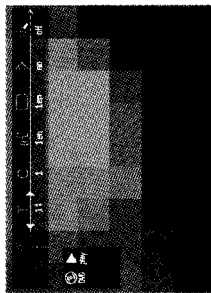
- enlarge video image

English

On screen display information

Menu bar/Status window

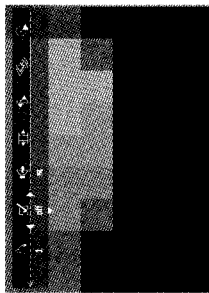
- ⏮ User preference
- ⏪ Title/Track
- ⏴ Chapter/Index
- ⏵ Audio language
- ⏶ Subtitle language
- ⏸ Angle
- ⏷ Zoom
- ⏹ Colour
- ⏺ Video FTS
- ⏻ Sound
- ⏼ Picture by Picture
- ⏽ Slow motion
- ⏾ Fast motion
- ⏿ Time search



Status window icons

The status window displays the current status of the player and is displayed together with the first part of the menu bar, if activated in the Features menu (see Personal Preferences).

- General
- VCD
- DVD
- VCD+DVD
- Disc type
- Tray status



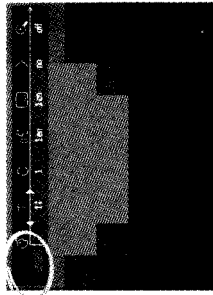
Default screen

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



Temporary Feedback Field icons

- Scan
- 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



English

Preparation

General notes

- Depending on your TV and other equipment you wish to connect, there are various ways you could connect the player. These are shown in the following drawing. Please refer to your TV, VCR, Stereo System and any other User Manual(s) as necessary to make the optimal connections.
- Do not connect your DVD-player via your VCR, because the video quality could be distorted by the copy protected system.
- For better sound reproduction you can connect the player audio outputs to your amplifier, receiver, stereo system or AV equipment. For this see 'Connecting to audio equipment' and 'Multi-Channel sound connections' on the next page.

Caution: Do not connect the player's audio output to the phono input of your audio system.

Connect to a TV

- Connect the Euroconnector to the corresponding connector on the TV using the Euroconnector cable supplied (1).

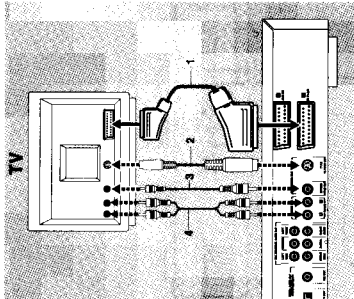
If your TV is not equipped with a Euroconnector you can select one of the following alternative connections:

S-Video (Y/C) connection

- 1 Connect the S-Video socket to the corresponding socket on the TV using an optional S-Video cable (2).
- 2 Connect the audio Left and Right output sockets to the corresponding sockets on the TV using the audio cable supplied (4).

Video CVBS connection

- 1 Connect the Video socket to the corresponding socket on the TV using the video cable supplied (3).
- 2 Connect the audio Left and Right output sockets to the corresponding sockets on the TV using the audio cable supplied (4).



Connecting to optional equipment

Connecting to an amplifier equipped with two channel analog stereo

- Connect the audio Left and Right output sockets to the corresponding sockets on your amplifier, receiver or stereo system. For this use the audio cable supplied (5).

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

- 1 Connect the player's digital audio output (optical 7 or coaxial 6) to the corresponding input on your amplifier. For this use an optional digital (optical 7 or coaxial 6) audio cable. You will need to activate the player's digital output (see 'Personal Preferences').

Connecting to an AV receiver with multi-channel decoder (Dolby, MPEG 2 and DTS)

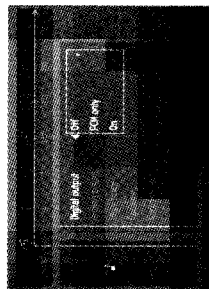
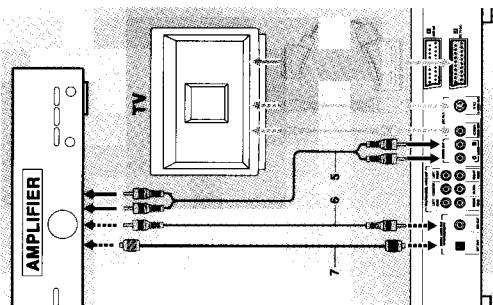
Digital Multi channel sound

Digital multi channel connection provides the optimum sound quality. For this you need a multichannel AV receiver that supports one or more of the audio formats supported by your DVD player (MPEG 2, Dolby Digital (AC3) and DTS). For this you can check the receiver manual and the logos on the front of the receiver.

- 1 Connect the player's digital audio output (optical 7 or coaxial 6) to the corresponding input on the receiver using an optional digital (optical 7 or coaxial 6) audio cable. You will need to activate the player's digital output (see 'Personal Preferences').
- 2

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. The audio format of the DVD disc in play is displayed in the Status Window, when changing the language.

6 Channel Digital Surround Sound via digital connection can only be obtained if your receiver is equipped with a Digital Multichannel decoder. If your receiver does not contain a decoder, you can make the analog connections as described in the next chapter ('Connecting to a multichannel AV receiver with 6 channel connectors') to obtain 6 Channel Digital Surround Sound.



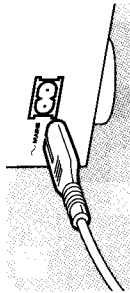
English

Connecting the power supply

- 1 Plug the female end of the power cable supplied into the Power connector on the rear of the player.
- 2 Plug the male end of the cord into an AC outlet.

Note: The player automatically adjusts to the local mains voltage. When the player is in the "STANDBY/OFF" position, it is still consuming some power. If you wish to disconnect your player completely from the mains, withdraw the plug from the AC Outlet.

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

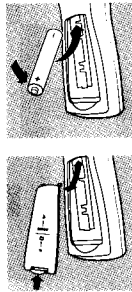


Infra red remote control

Loading the batteries

- 1 Open the battery compartment cover.
- 2 Insert two 'AA' (LR-6) batteries as indicated inside the battery compartment.
- 3 Close the cover.

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



Analog connection to a multichannel A/V receiver with 6 CH connectors

This DVD player contains a multichannel decoder. This enables playback of DVDs recorded in Multichannel Surround without the need for an optional decoder.

Connect the audio outputs for Center speaker and Subwoofer connection (9) to the corresponding inputs on your receiver.

Note: If the subwoofer is equipped with its own amplifier, the Subwoofer connection should be connected to the subwoofer directly.

Connect the audio Left and Right outputs for Front speaker connection (8) to the corresponding input sockets on your receiver.

Connect the audio Left and Right outputs for Surround speaker connection (10) to the corresponding inputs on your receiver. Make the appropriate Sound settings for Analog Output and Speaker Settings in the Personal Preferences menu.

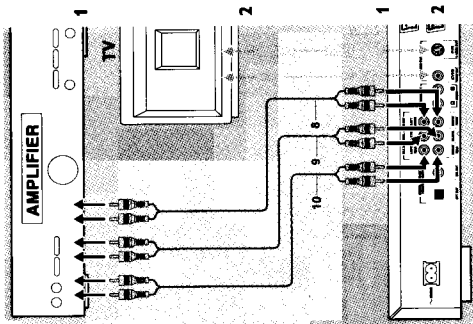
Connecting to an amplifier equipped with Dolby Surround™

Dolby Surround sound

Connect the player to the TV and connect the player's audio Left and Right output sockets to the corresponding inputs on the Dolby Surround™ Audio/Video receiver, using the audio cable supplied (4). Make the appropriate Sound settings for Analog Output in the Personal Preferences menu.

If your amplifier is equipped with a Dolby Digital™ decoder
Connect the player as described in chapter "Connecting to an A/V receiver with multi channel decoder".

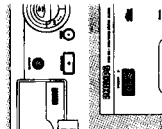
If your TV set is equipped with a Dolby Surround™ decoder
Connect the player to the TV as described in chapter "Connecting to a TV".



English

Switching on

1 Switch on the TV and select the video input for your DVD-Video player.



2 Press **STANDBY**.

► The player display lights up, and the 'Virgin Mode Screen' appears. The 'Virgin Mode' will only occur after the very first start up of the player; in 'Virgin Mode' you may have to set your personal preferences for some of the player's most relevant items. See 'Virgin Mode' in the following.

Virgin Mode

General:

In 'Virgin Mode' you may have to set your preferences for some of the player features. Depending on the kind of TV, settings will have to be made manually or they will be taken over automatically from the TV. When the DVD-player is connected to a Home Cinema system, settings will also be taken over automatically.

Manual operation:

After switching on the player for the very first time the 'Virgin Mode Screen' will appear (see 'Switching On'). 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 select the next menu.

Automatic setting:

When settings will be taken over from your TV or Home Cinema system, the message 'Auto configuring in process' will appear. Menus for which no settings are available will be displayed. They have to be set manually.

Note: Preferences have to be set in the order in which the item menus will appear on the screen. The 'Virgin Mode' will only be cancelled after the settings for the last item have been confirmed.

If any other keys 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.



General explication

About this manual

This manual gives the basic instructions for operating this DVD player. Some DVD discs however are produced in a way that requires specific operation or allows 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 in the disc inlay. When a **■** 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, they can also be used.

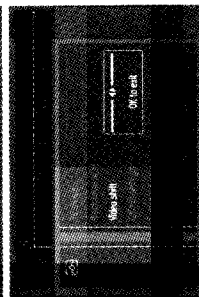
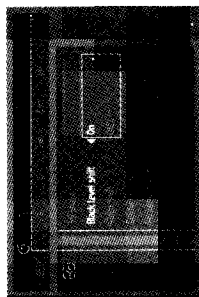
Menu bar operation

- A number of operations can also be carried out via the menu bar on the screen. The menu bar can be called up by pressing any of the following keys on the remote control: MENU OSD, T, C, Angle, Audio Language, Subtitle Language, Zoom and FTS.
- The following functions can be operated via the menu bar:
 - Personal Preferences;
 - Title/track selection;
 - Chapter/Index selection;
 - Audio language;
 - Subtitle language;
 - Angle;
 - Zoom;
 - Colour;
 - Video FTS;
 - Sound;
 - Picture by picture;
 - Slow motion;
 - Fast motion;
 - Time search.
- The various items can be selected with the **▼/▲** keys or by pressing the relevant keys on the remote control.
- By pressing **MENU OSD** the menu bar will disappear from the screen.
- When selecting an item in the menu bar, the selected item will be highlighted and the cursor keys (on the remote control), to operate this item are displayed below the icon.
- **<** or **>** indicates that more items are available at the left/right hand side of the menu bar. Press **<** or **>** to select these items.

English

- Black level shift (NTSC only)

Adapts the colour dynamics to obtain richer contrasts. Select ON or OFF.



- Video shift

Factory setting is such that the video will be centered on your screen. Use this setting to personalize the position of the picture on your TV by scrolling it to the left or right.

- Colour settings

You can select one of five predefined sets of colour settings and one set (Personal) which you can define yourself.

- Personal colour

Allows you to fine-tune the selected colour settings saturation, brightness and contrast.

- Sound

- Digital output
Factory setting ON 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). Both coaxial and optical outputs are then switched on. (See appendix)

- Analog output

Select Stereo, Dolby Surround, 3D Sound or Multi Channel. (See appendix)

- Night Mode

Optimizes the dynamics of the sound with low volume playback.

- Speaker settings

Allows you to select speaker settings, volume balance and delay time and to test the speaker settings. Speaker settings are only active on the Analog Multi Channel Output. (See appendix)

- Karaoke vocal

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

- Language

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

The following items may have to be set in Virgin Mode:

Menu language

The On Screen Menu will be displayed in the language you choose. You can choose from 8 different languages.

Audio language

The sound will be in the language you choose provided this is available on the disc. In play, if not, speech will revert to the first spoken language on the disc. You can choose from 16 different languages.

Subtitle language

The subtitles will be in the language you choose provided this is available on the disc. In play, if not, subtitles will revert to the first subtitle language on the disc. You can choose from 16 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.

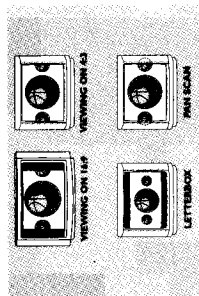
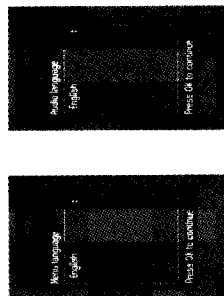
In this case you can also select between:

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 is used as input for the 'Parental Control' feature. (see 'Access Control')

Note: All these items may have to be set after first start up ('Virgin Mode'). After that they can always be adapted in the Personal Preferences Menu.



Personal preferences

In this mode you can set your personal preferences for some of the player features.

General operation:

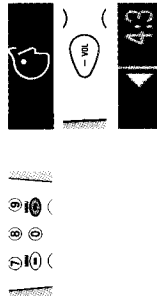
- Press **MENU OSD** on the remote control.
- Select **⊙** in the menu bar.
- ▶ The Personal Preferences menu appears.
- Use the **<** **>** **Δ** **∇** keys to toggle through the menus, sub menus and submenu options.
- ▶ When a menu item is selected, the cursor keys (on the remote control) to operate 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 'Virgin Mode'



English

English

Deauthorizing discs

- Insert the disc. See 'Loading a disc' in the following.
- ▶ Playback starts automatically.
- Press **■** while **⊙** is visible.
- ▶ The 'child protect' dialog will appear. 'Play always' is highlighted.
- If **▶** is pressed, playback continues and the disc is NOT deauthorized.
- Press **△** to select 'Play Once'.
- ▶ The disc is now deauthorized.

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 DVD discs containing Parental Control information. (see 'Access Control')

- Status Window

Displays the current status of the player and is displayed together with the menu bar. In STOP mode it is displayed together 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.



Access control; child lock (DVD and VCD)

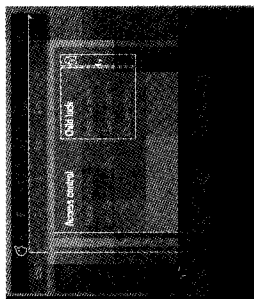
Activating/deactivating the child lock

- 1 In Stop mode, select **ACCESS CONTROL** in the Features menu using the **▽/△** keys.
- 2 Enter a 4-digit PIN code of your own choice.
- 3 Enter the code a second time.
- 4 Move to Child lock using the **▽/△** keys.
- 5 Move to **ON** / **OFF** using the **▷** key.
- 6 Select **ON** using the **▽/△** keys.
- 7 Press **OK** to confirm or **◀** to confirm and press **◀** again to exit the menu.
 - ▶ Now unauthorized discs will not be played unless the 4-digit code is entered.
- 8 Select **OFF** to deactivate the Child Lock.

Note: Reconfirmation of the 4-digit PIN 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');

Both Child Lock and Parental Control are switched Off and the code is requested.

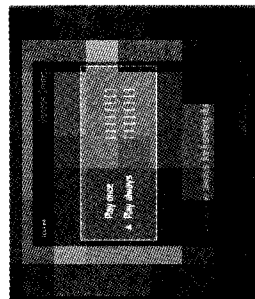


Authorizing discs

- Insert the disc. See 'Loading a disc' in the following.
 - ▶ 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 in the ON position. 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 DVD discs may have a different ID for each side. In order to make the disc 'child safe', each side has to be authorized.
 Multi volume VCD disc may have a different ID for each volume. In order to make the complete set 'child safe', each volume has to be authorized.



English

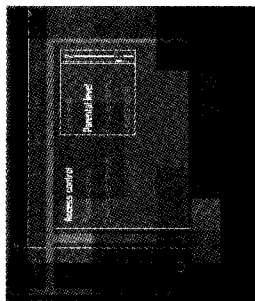
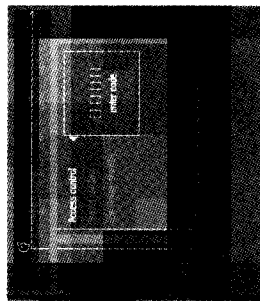
Operation

Access control; Parental control (DVD-Video only)

Movies on DVD discs may contain scenes not suitable for children. Therefore discs 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

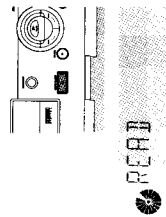
- In Stop mode, select **ACCESS CONTROL** in the Features menu using the ∇/Δ keys.
 - Enter your 4-digit PIN code. If necessary enter the code a second time.
 - Move to Parental Control using the ∇/Δ keys.
 - Move to **VALUE ADJUSTMENT** (1-8) using the \triangleright key.
 - Then use the ∇/Δ keys or 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.
- Press **OK** or \triangleleft to confirm and press \triangleleft again to exit the menu.



English

Loading discs

- Press **OPEN/CLOSE** on the front of the player. The disc loading tray opens.
 - Lay your chosen disc in the tray, label side up (also when a double sided DVD disc is inserted). Make sure it is sitting properly in the correct recess.
 - Gently push the tray or press **OPEN/CLOSE** to close the tray. 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 PIN code must be entered and/or the disc has to be authorized. (see 'Access Control')*



3D-Sound

See Appendix.

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 ∇/Δ , $\triangleleft/\triangleright$ keys to highlight your selection, and 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 **3D-SOUND** key to select Stereo, Dolby Surround, 3D-Sound or Multichannel reproduction. Play may stop at the end of the Title, this can result in return to menu. To go on to the next title, press \triangleright .
 - To stop play at any other time, press \blacksquare .
 - The default screen will then appear, giving information about the current status of the player.
- You can resume play from the point at which you stopped. Press \triangleright and when you see the Resume icon \blacktriangle on the screen, press \triangleright 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, press \triangleright and when you see the Resume icon \blacktriangle on the screen, press \triangleright 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 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.



Country

- In Stop mode, select **ACCESS CONTROL** in the Features menu using the ∇/Δ keys.
- Enter the old code.
- Move to **CHANGE COUNTRY** using the ∇ key.
- Press the \triangleright key.
- Select a country using ∇/Δ .
- Press **OK** or \triangleleft to confirm and press \triangleleft again to exit the menu.

Changing the 4-digit code

- In Stop mode, select **ACCESS CONTROL** in the Features menu using the ∇/Δ keys.
- Enter the old code.
- Move to **CHANGE CODE** using the ∇ key.
- Press the \triangleright key.
- Enter the new 4-digit PIN code.
- Enter the code a second time and reconfirm with **OK**.
- Press \triangleleft to exit the menu.

Note: If you forget your code, it can be cancelled by pressing \blacksquare four times in the 'child protect' dialog. You can then enter a new code (twice) as described above.

English

Deauthorizing discs

- Insert the disc. See 'Loading a disc' in the following.
- ▶ Playback starts automatically.
- Press **■** while **Ⓢ** is visible.
- ▶ The 'child protect' dialog will appear. 'Play always' is highlighted.
- If **▶** is pressed, playback continues and the disc is NOT deauthorized.
- Press **△** to select 'Play Once'.
- ▶ The disc is now deauthorized.

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 DVD discs containing Parental Control information. (see 'Access Control')
- **Status Window**
 Displays the current status of the player and is displayed together with the menu bar. In STOP mode it is displayed together 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.

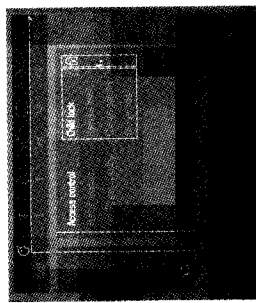


English

Access control; child lock (DVD and VCD)

Activating/deactivating the child lock

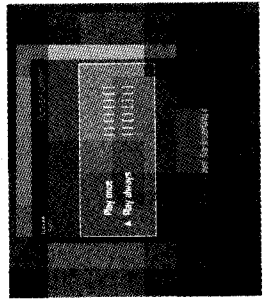
- 1 In STOP mode, select **ACCESS CONTROL** in the Features menu using the **▽/△** keys.
- 2 Enter a 4-digit PIN code of your own choice.
- 3 Enter the code a second time.
- 4 Move to Child lock using the **▽/△** keys.
- 5 Move to **ON/OFF** using the **▷/◁** keys.
- 6 Select **ON** using the **▽/△** keys.
- 7 Press **OK** to confirm or **◁** to confirm and press **△** again to exit the menu.
- 8 ▶ Now unauthorized discs will not be played unless the 4-digit code is entered.



Note: Reconfirmation of the 4-digit PIN 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');
 Both Child Lock and Parental Control are switched Off and the code is requested.

Authorizing discs

- Insert the disc. See 'Loading a disc' in the following.
- ▶ 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 in the ON position. 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 DVD discs may have a different ID for each side. In order to make the disc 'child safe', each side has to be authorized.
 Multi volume VCD disc may have a different ID for each volume. In order to make the complete set 'child safe', each volume has to be authorized.

Operation

Access control; Parental control (DVD-Video only)

Movies on DVD discs may contain scenes not suitable for children. Therefore discs 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

- In Stop mode, select **ACCESS CONTROL** in the Features menu using the ∇/Δ keys.
- Enter your 4-digit PIN code. If necessary enter the code a second time.
- Move to **Parental Control** using the ∇/Δ keys.
- Move to **VALUE ADJUSTMENT** (1-8) using the \triangleright key.
- Then use the ∇/Δ 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.

- Press **OK** or \triangleleft to confirm and press \triangleleft again to exit the menu.

Country

- In Stop mode, select **ACCESS CONTROL** in the Features menu using the ∇/Δ keys.
- Enter the old code.
- Move to **CHANGE COUNTRY** using the ∇ key.
- Press the \triangleright key.
- Select a country using ∇/Δ .
- Press **OK** or \triangleleft to confirm and press \triangleleft again to exit the menu.

Changing the 4-digit code

- In Stop mode, select **ACCESS CONTROL** in the Features menu using the ∇/Δ keys.
- Enter the old code.
- Move to **CHANGE CODE** using the ∇ key.
- Press the \triangleright key.
- Enter the new 4-digit PIN code.
- Enter the code a second time and reconfirm with **OK**.
- Press \triangleleft to exit the menu.

Note: If you forget your code, it can be cancelled by pressing \blacksquare four times in the 'child protect' dialog. You can then enter a new code (twice) as described above.

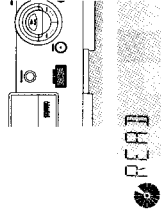
English

Loading discs

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

- Gently push the tray, or press **OPEN/CLOSE**, to close the tray. \blacktriangleright **READY** 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 PIN code must be entered and/or the disc has to be authorized. (see 'Access Control')



3D-Sound

See Appendix.

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 ∇/Δ , $\triangleleft/\triangleright$ keys to highlight your selection, and 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 **3D-SOUND** key to select Stereo, Dolby Surround, 3D-Sound or Multichannel reproduction.
- Play may stop at the end of the Title, this can result in return to menu. To go on to the next title, press \blacktriangleright .
- The default screen will then appear, giving information about the current status of the player.
- You can resume play from the point at which you stopped. Press \blacktriangleright and when you see the Resume icon \blacktriangleright on the screen, press \blacktriangleright 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, press \blacktriangleright and when you see the Resume icon \blacktriangleright on the screen, press \blacktriangleright 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 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.



English

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 **3D-SOUND** key to select Stereo, Dolby Surround, 3D-Sound or Multichannel reproduction.
- To stop play at any time, press **■**.
- The default screen will then appear.
- You can resume play from the point at which you stopped. Press **▶** and 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, press **▶** and 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** (title), then press **▶** briefly during play to select the next title/track.
- Press **T** (title), then press **◀** briefly during play to return to the beginning of the current title/track. Press **◀** briefly to step back to the previous title/track.
- To go directly to any title or track, select **T** (title), then enter the title number using the numerical keys **(0-9)**.

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

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

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

English

Slow Motion

- Select **Ⓢ** (Slow motion) in the menu bar.
- Use the **▽** keys to enter the Slow Motion menu.
- The player will now go into PAUSE mode.
- Use the **◀ ▷** keys to select the required speed: **-1, -1/2, -1/4** or **-1/8** (backward); **+1/8, +1/4, +1/2** or **+1** (forward).
- Select **1** to play at normal speed again.
- If **■** is pressed, the speed will be set to **0**.
- To exit slow motion mode, press **▶** or **△**.

You can also select Slow Motion speeds by using the **▷** button on the remote control.

Still Picture and Step Frame

- 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 **◀ ▷** keys to select previous or next picture.
- To exit Picture by picture mode, press **▶** or **△**.

You can also step forward by using the **■** 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); **+4, +8, +32** (forward).
- Select **1** to play at normal speed again.
- To exit Fast Motion mode, press **▶** or **△**.

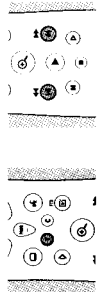
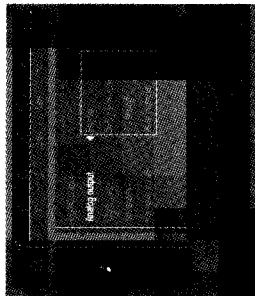
To search forward or backward through different speeds, you can also hold down **◀◀** or **▶▶**.

Repeat

- 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 currently playing title, 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 currently playing track, 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.



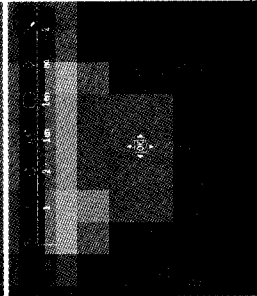
English

English

Zoom

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

- Select **Z** (Zoom) in the menu bar.
- Press **V/Z** 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: Δ ∇ \triangleleft \triangleright and **OK**.
- Use the Δ ∇ \triangleleft \triangleright keys to pan all over 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 **Z** (Zoom) and select the required zoom factor as described above.
- To exit Zoom mode:
 - Press \triangleright
 - Playback will resume
 - Press **STOP, MENU OSD**.



Repeat A-B

To repeat or loop a sequence in a title:

- Press **REPEAT A-B** at your chosen starting point;
- **A-B** appears on the screen;
- Press **REPEAT A-B** again at your chosen end point;
- **A-B REPEAT** appears on the display, and the repeat sequence begins.
- To exit the sequence, press **REPEAT A-B**.

A-B REPEAT

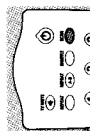


Scan

Plays the first 10 seconds of each chapter/index on the disc.

- Press **SCAN**.
- To continue play at your chosen chapter/index, press **SCAN** again or press \triangleright .

SCAN



Shuffle

DVD-Video discs

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

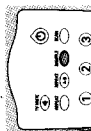
- Press **SHUFFLE** during play.
- The **SHUFFLE** icon appears on the screen for about 2 seconds.
- To return to normal play, press **SHUFFLE** again.

Video CDs

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

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

SHUFFLE



FTS-Video

The FTS-Video function allows you to store your favourite titles and chapters (DVD) and favourite 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 \triangleleft or \triangleright or **FTS** to select **ON** or **OFF**.

Storing titles/tracks

- Press ∇ to select **TITLES**.
- Use \triangleright and \triangleleft 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.

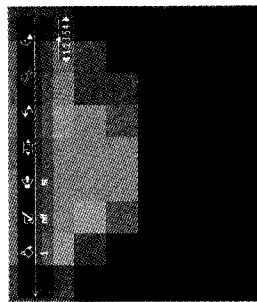
Storing chapters/indexes

- 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 \triangleright and \triangleleft 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 **OK** or **MENU OSD** to exit the **Video FTS** menu.

Time search




The Time Search function allows you to start playing at any chosen time stamp.

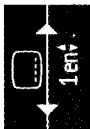
- Select **T** (Time Search) in the menu bar.
- Press ∇ .
- The player will now go into PAUSE mode.
- A time edit box appears on the screen showing the elapsed playing time of the current disc.
- Use the digit keys to enter the required start time. Enter hours, minutes and seconds from right to left 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.



English


Subtitles

- Select  (Subtitle) in the menu bar.
- Press  or  repeatedly to step through the different subtitles.
- You can enter the required subtitle number directly using the numerical keys (0-9).




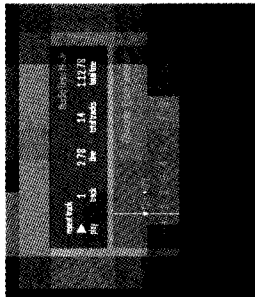
Special VCD-Features

Playback Control (PBC)



- Load a Video CD with PBC and press .
- The PBC menu appears on the TV screen. 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.

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 and the player display.
- During play, the current track number and its elapsed playing time will be shown on the screen and the player display.
- Playback will stop at the end of the disc.
- To stop play at any other time, press .

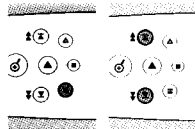


Pause




- Press  during play.
- To return to play, press .

Search


- To search forwards or backwards through the disc at 4x normal speed, hold down  or  for about 1 second during play.
- Search begins, and sound is partially muted.
- To step up to 8x normal speed, press  or  again.
- Search goes to 8x speed, and the sound is muted.
- To return to 4x 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  or  as desired.



Erasing a FTS-Video Program





- In STOP mode, select **Video FTS** in the menu bar.
- Use  to select **PROGRAM**.
- Use  and  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 **FTS Video** 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, and press **OK**.

Title menu

- Press **DVD MENU**.
 - If the current title has a menu, this now appears 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 **DVD MENU** again.




Disc menu

- Press **T**, followed by **DVD MENU**.
 - The disc menu is displayed.
- To remove the disc menu, press **T** again followed by **DVD MENU**.






Camera Angle

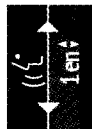
If the disc contains sequences recorded from different camera angles, the angle icon appears, showing the number of available angles, and the angle being shown. You can then change the camera angle if you wish.

- Use the  keys to select the required angle in the angle icon.
- To go to any angle directly, enter the angle number using the numerical keys (0-9).
- 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 step through the different languages.
- You can enter the required language number directly using the numerical keys (0-9).



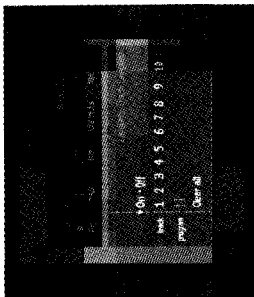
English

FTS (Favourite Track Selection)

- The FTS feature allows you to store your favourite tracks for a particular disc in the player memory.
- Each FTS program can contain 20 tracks.
- 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 an FTS-program

- 1 Load a disc and go to **STOP** mode.



- 2 Press **FTS** or use the \triangleleft \triangleright keys to set FTS to **ON**.
- 3 Use ∇ to go to the list of available tracks.
- 4 Use \triangleleft and \triangleright to select tracks from the list.
To go directly to any track, enter the track number using the numerical keys (0-9).
- 5 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 audio screen and the player display.

When your FTS program is complete, press \blacktriangleright to start play, the FTS program will be automatically memorized.

Erasing a track from an FTS-program

- 1 Use ∇ to go to the list of selected tracks.
 - 2 Use \triangleleft and \triangleright to select the track number you wish to erase.
To go directly to any track, enter the track number using the numerical keys (0-9).
 - 3 Press **OK**.
 - ▶ The track number will be erased from the list of selected tracks.
- Erasing the complete program
- Use ∇ to select **Clear All** and press **OK**.
 - ▶ The complete FTS program for the disc will be erased.

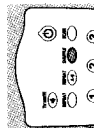
Moving to another track

- Press \blacktriangleright briefly during play to step forward to the next track.
- Press \blacktriangleleft briefly during play to return to the beginning of the current track. Press \blacktriangleright briefly again to step back to the previous track.
- To go directly to any track, enter the track number using the numerical keys (0-9).



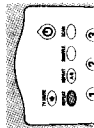
Shuffle

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



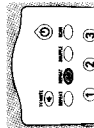
Repeat track/disc

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



Repeat A-B

- To repeat or loop 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 repeat sequence begins.
 - To exit the sequence, press **REPEAT A-B** again.



Scan

- Plays the first 10 seconds of each track on the disc.
- Press **SCAN**.
- To continue play at your chosen track, press **SCAN** again or press \blacktriangleright .



English

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

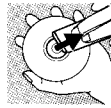
No power	Check if both plugs of the mains cord are properly connected. Check if there is power at the AC outlet by plugging in another appliance.
No picture	Check if the TV is switched on. Check the video connection.
Distorted picture	Check the disc for fingerprints and clean with a soft cloth, wiping from centre to edge. Sometimes a small amount of picture distortion may appear. This is not a malfunction.
Completely distorted picture with player menu	NTSC/PAL switch in wrong status, hold down the STOP button and press the NEXT button.
No colour in picture with player menu	NTSC/PAL switch in wrong status, hold down the STOP button and press the NEXT button.
Disc can't be played	Ensure the disc label is upwards. Clean the disc. Check if the disc is defective by trying another disc.
No sound	Check audio connections. If using a HiFi amplifier, try another sound source.
Distorted sound from HiFi amplifier	Check to make sure that no audio connections are made to amplifier phono input.
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 Avoid all obstacles which may interfere with the signal path. Inspect or replace the batteries.
Distorted or B/W picture with DVD or Video CD disc	The disc format is not according to the TV-set used (PAL/NTSC)
No audio at digital output	Check the digital connections Check the settings menu to make sure that the digital output is set to on. Check if the audio format of the selected audio language matches your receiver capabilities.
Buttons do not work	Set the player in standby by using the STANDBY button on the front of the player. Press standby again to set the player back to ON.
Player does not respond to all operating commands during playback	Operations are not permitted by the disc. Refer to the instructions in the disc inlay

English

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 centre out.



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

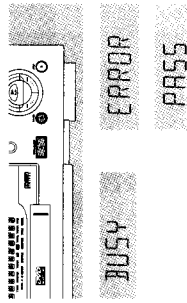
Diagnostic program

If the player is still faulty you can start the Diagnostic Program in the player.

How does the Diagnostic Program work: you can operate the Diagnostic Program by following the instructions step by step.

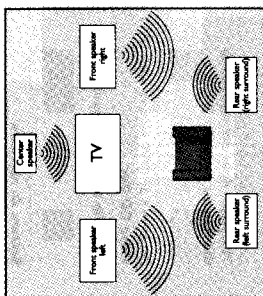
Instructions

- Unplug the power cord of the player.
- Press the **OPEN/CLOSE** and **II** button simultaneously and keep them pressed while you plug the player.
 - On the display the message **BUSY** appears together with a counter. This counter indicates the termination of the test when zero is reached.
- After a few minutes the message on the local display changes over from **BUSY** to **ERROR** or to **PASS**.
 - If the message **ERROR** appears on the display, there is apparently a failure in your player and your player should be repaired. Consult your dealer or the Philips Customer Care Centre for the nearest Service Repair Shop in your country. The phone number is given in your warranty booklet.
- If the message **PASS** appears on the display, there is apparently no failure in your player; in this case the failure can be caused by incorrect interpretation of the operating instructions or a wrong disc is used or your player is not correctly connected. In this case you should consult your dealer or the Philips Customer Care Centre for further assistance in solving the problem.
- If the problem remains, then go to point 3 of this instruction to find the nearest repair shop.
- Unplug the power cord of the player.
- Replug the power cord in the AC outlet.



Speaker settings

6 Channel settings



Front speaker

L (Large): When the front speakers can reproduce low frequency signals below 120Hz
 S (Small): When the front speakers cannot produce low frequency signals below 120Hz

Center Speaker*

L (Large): When the center speaker can reproduce low frequency signals below 120Hz
 S (Small): When the center speaker cannot produce low frequency signals below 120Hz
 Off : When the center speaker is not connected

Surround speakers

L (Large): When the surround speakers can reproduce low frequency signals below 120Hz
 S (Small): When the surround speakers cannot produce low frequency signals below 120Hz
 Off : When the surround speakers are not connected

Subwoofer

On : When you connect a subwoofer
 Off : When a subwoofer is not connected

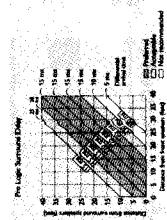
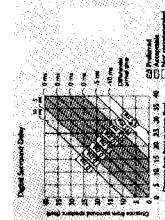
* You can use your TV as center speaker. When center speaker is turned on, the audio L/R as well as the audio from the start will contain the center speaker audio.

Delay times

The DVD player is set to reproduce correctly synchronized Digital Surround Sound in a listening area where the surround speakers are about 150cm nearer to the listening position than the front speakers, and the center speaker is in line with the front speakers. To adjust for other listening area arrangements, adapt delay times according to the following:

Digital Surround

Measure the distances in centimeters from the front speaker plane and from the surround speaker plane to the listening positioning plane. Subtract the surround distance from the front distance and divide by 30. The result is the required Surround Channel delay time in milliseconds. If the center speaker is on the front speaker plane, no center speaker delay is needed. If, however, it is nearer the listening position, measure the distance in centimeters between the front and center speaker planes, and divide by 30. The result is the required Center Channel delay time in milliseconds.



Dolby Surround
 Add 15 milliseconds to the Surround Channel delay time calculated for Digital Surround.
 If the Center Channel in Digital Surround mode is set, add 15 milliseconds to the Center Channel delay time.

Digital and Analog output Settings

English

Connected audio system	Digital out	Analog out
Amplifier or TV with two channel analog stereo	Off	Stereo
Amplifier or TV with Dolby Surround	Off	Dolby Surround
Amplifier with two channel digital stereo	PCM only	Stereo
AV receiver with multi-channel decoder (Dolby AC-3, MPEG, DTS)	On	Stereo or Dolby Surround
Multichannel AV receiver with 6-ch connectors	Off	Multi channel

3D Sound

In a setup without rear speakers (analog stereo output), 3D Sound remixes the six channels of digital surround (AC-3/MPEG-2) into a two speaker output, while retaining all of the original audio information. The result is the listening sensation of being surrounded by multiple speakers.

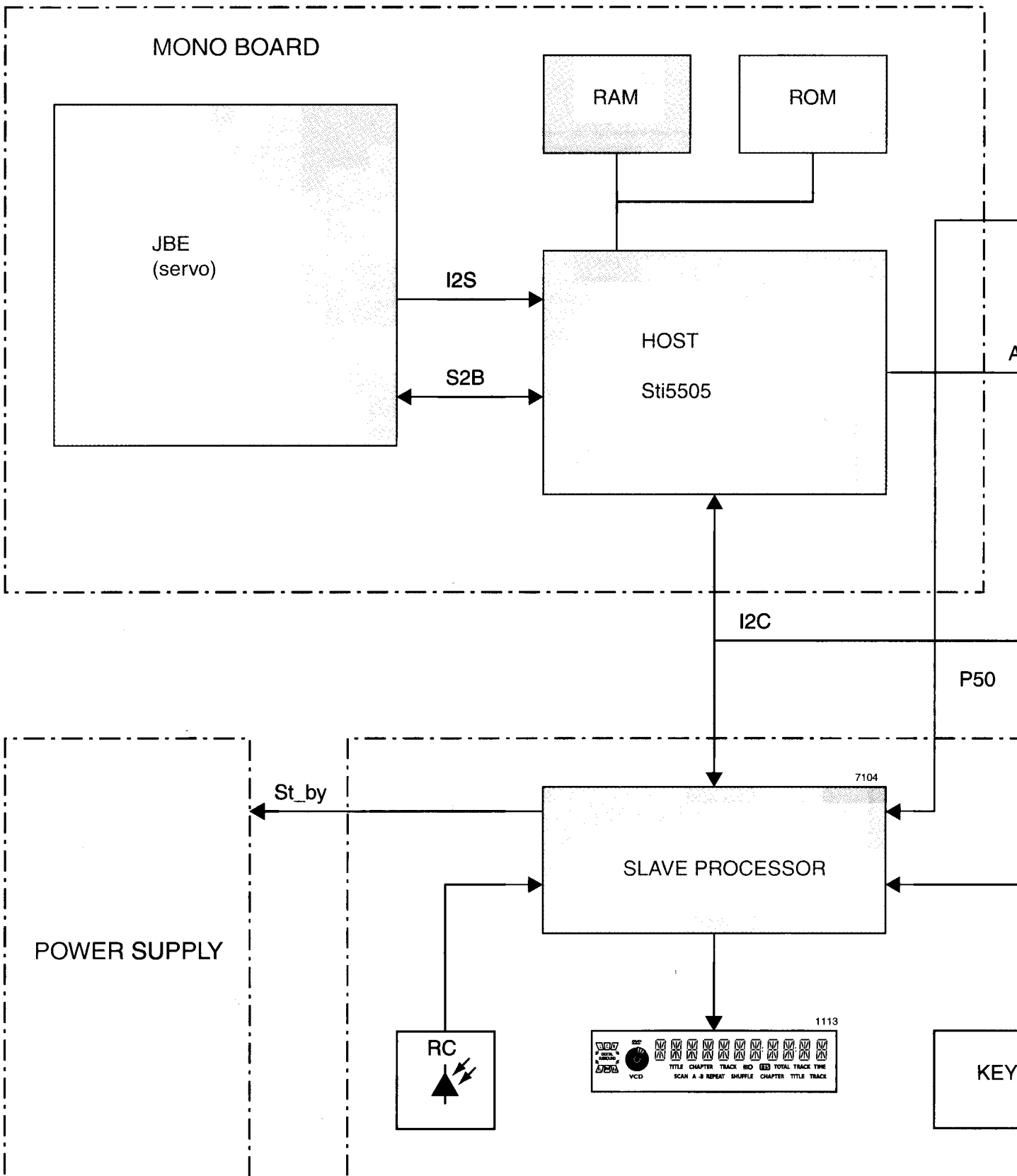
4. Service hints

The DVD module(Basic Engine and the mono board) has to be exchanged completely in case of failure. A new module for can be ordered with codenumber 3104 129 52560.

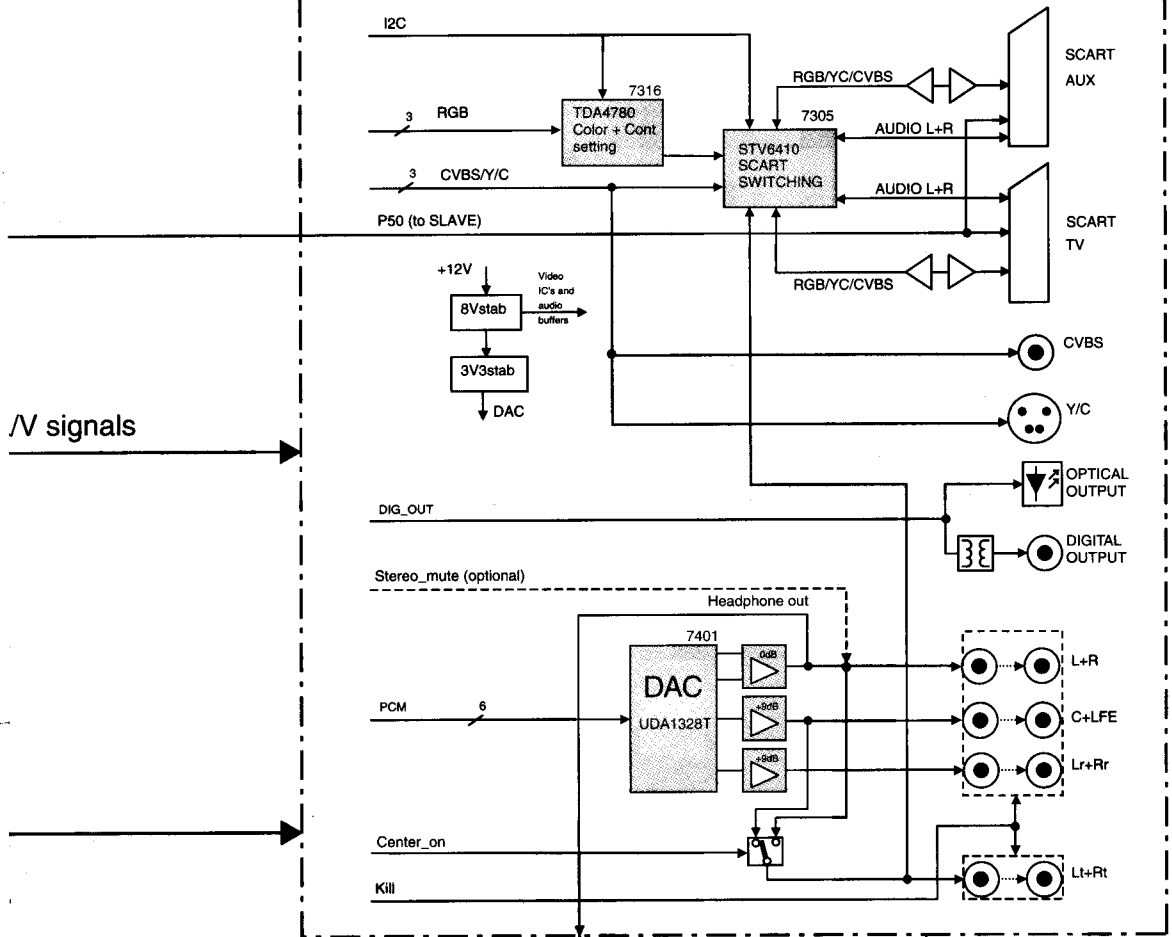
Return the defective unit complete assembled in original package to Philips Consumer Service in Eindhoven

5. Block and wiringdiagram, dismantling, exploded view and oscillograms

Blockdiagram



AUDIO/VIDEO BACKEND



IV signals

Stereo_mute (optional)

Headphone out

BOARD

HEADPHONE

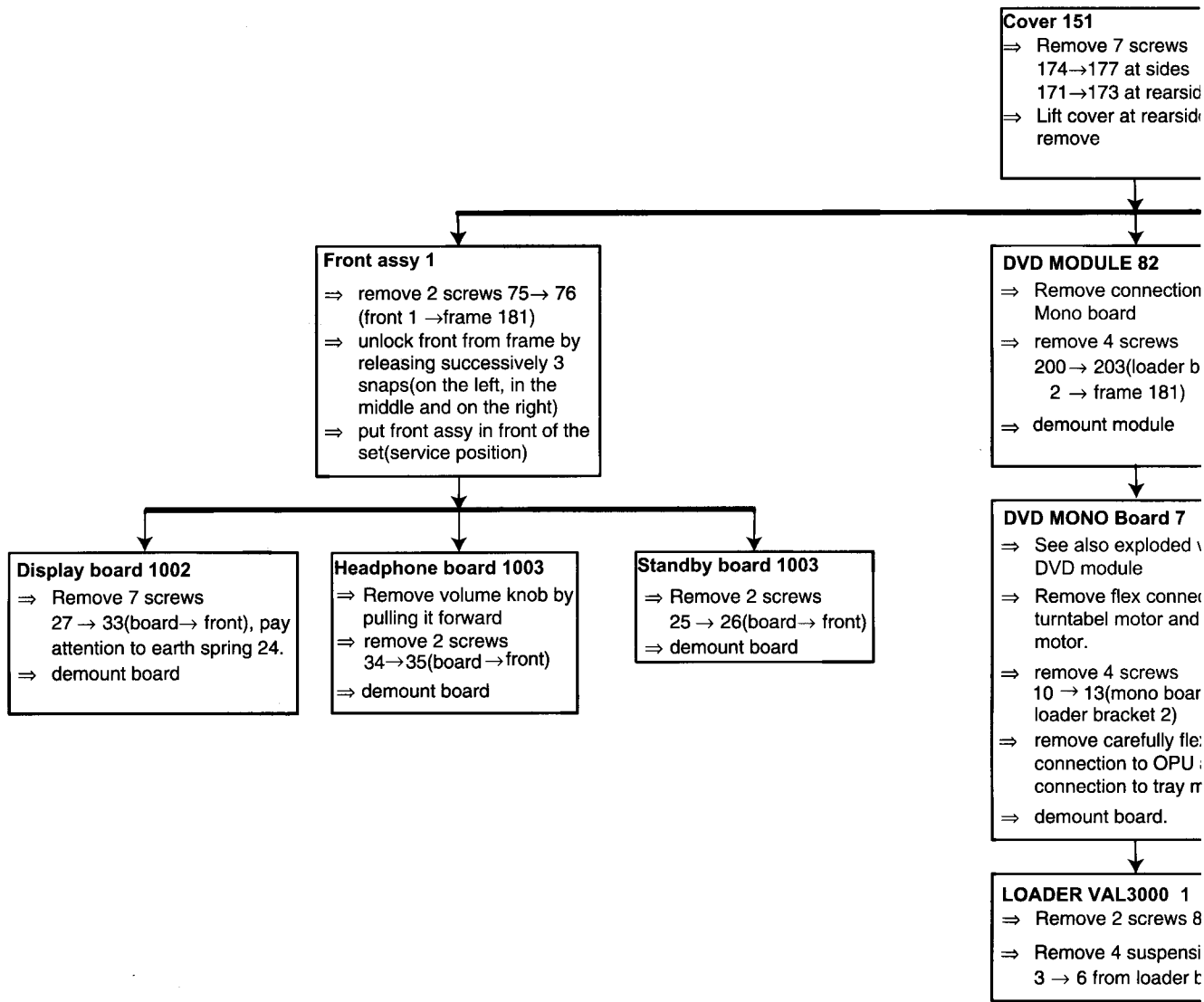
MICRO
(only DVD955 KARAOKE)

MICRO control

Dismantling instructions

DISMANTLING INSTRUCTIONS

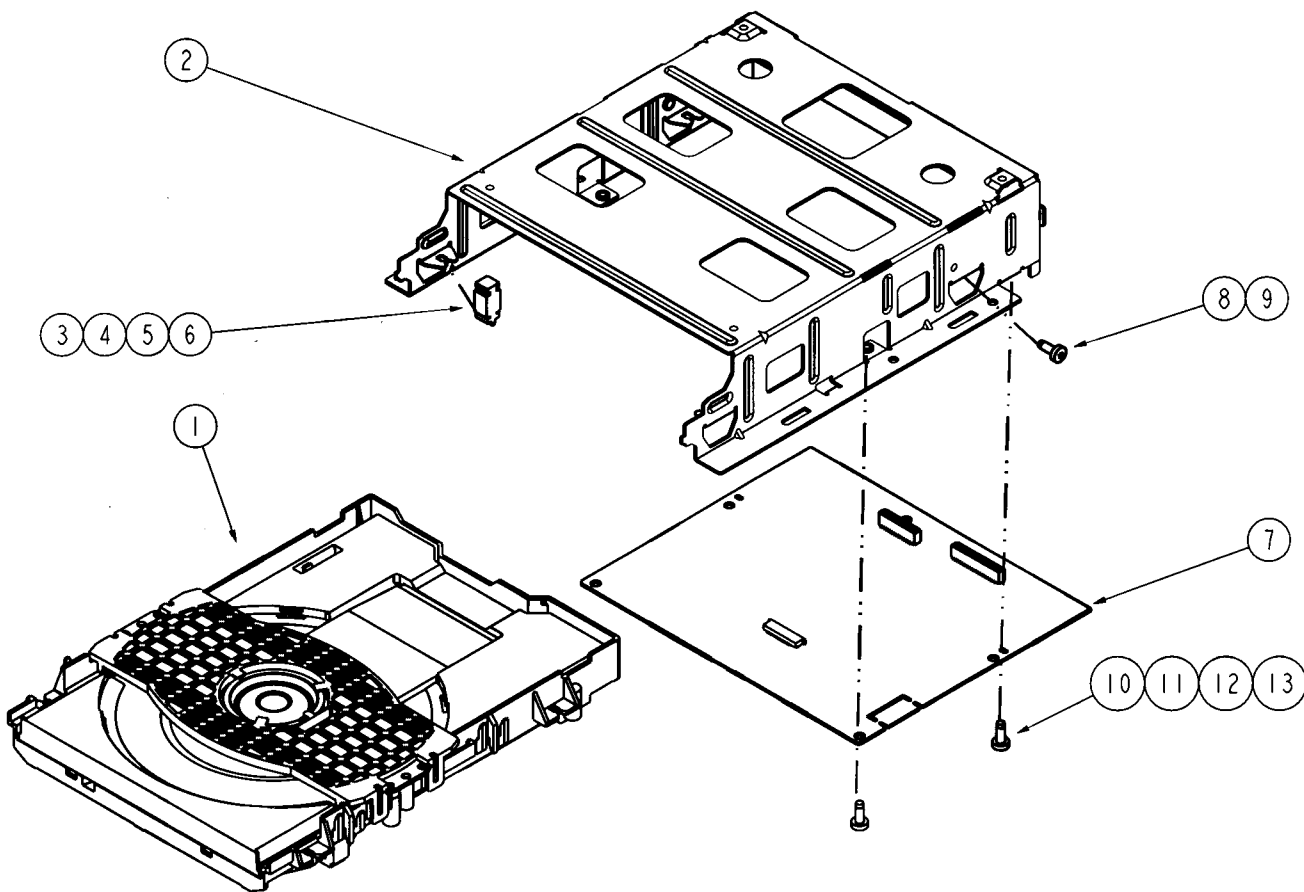
See exploded view for item numbers



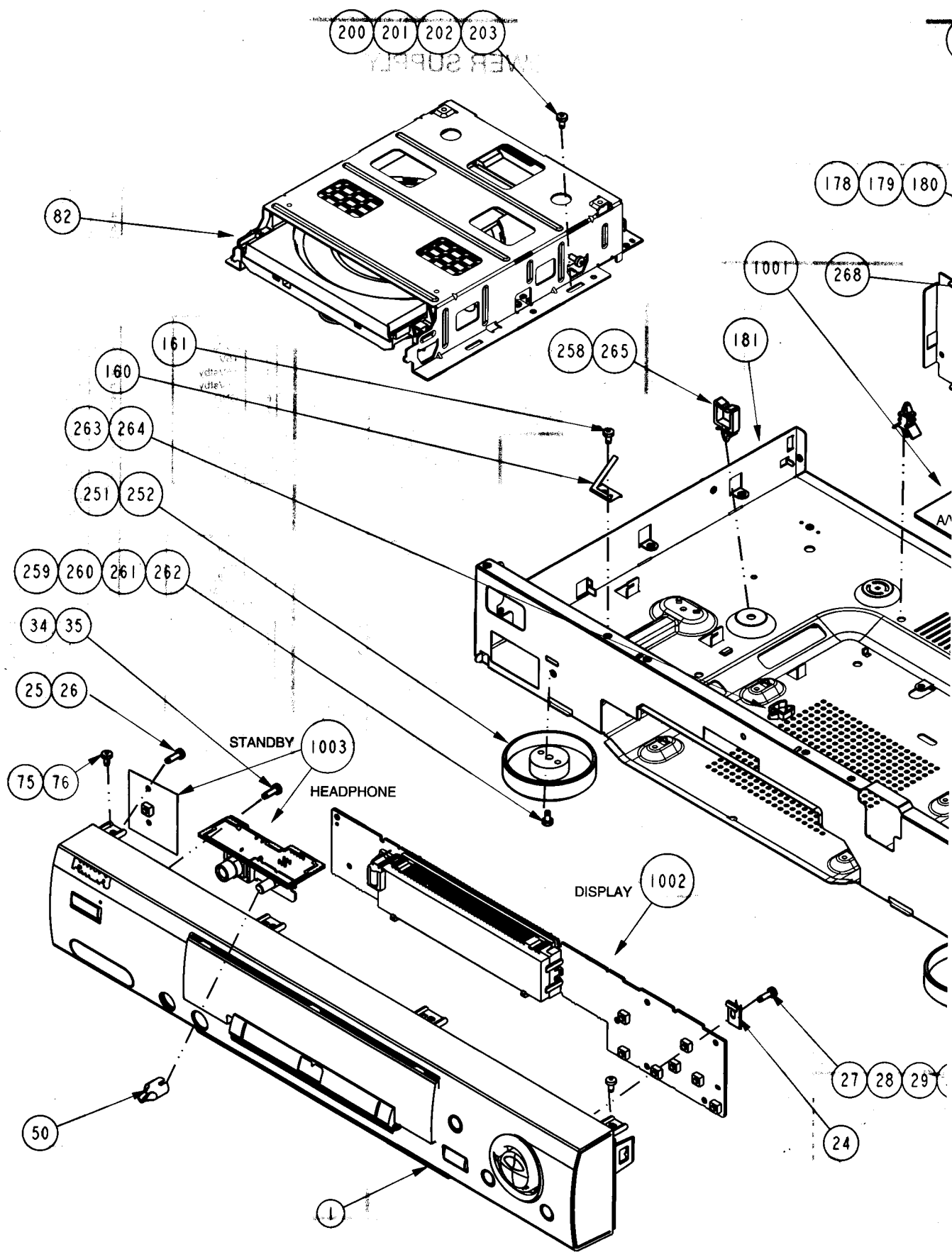
mounting
 ↑
 ↓
 demounting

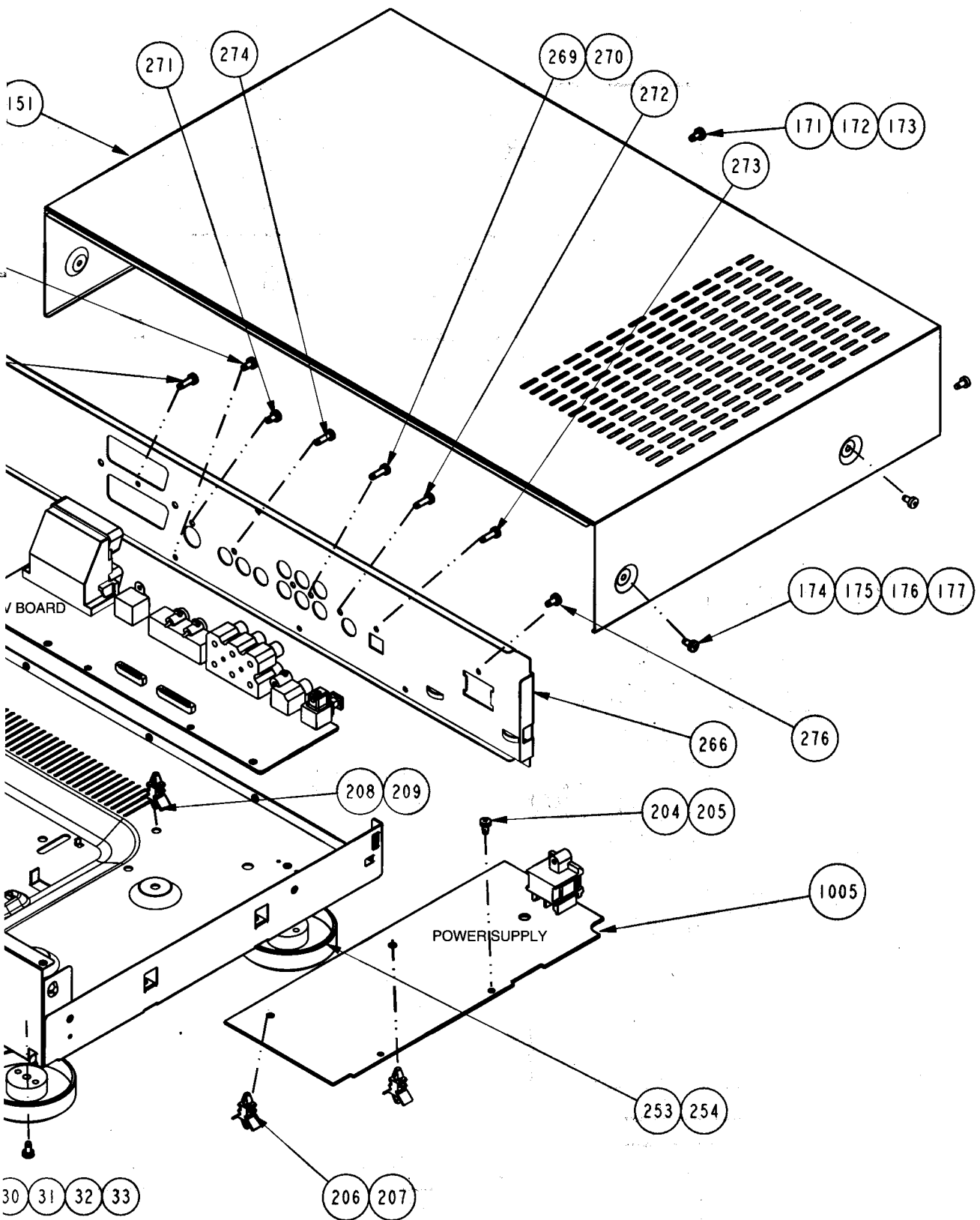
- A/V board 1001**
- ⇒ remove flex connections to Mono board
 - ⇒ remove 1 screw 268 (scart→backplate 266)
 - ⇒ remove 2 screws 271 and 274 (cinches→backplate)
 - ⇒ remove 2 screws 272 and 273 (digital and optical out)
 - ⇒ release snaps of 2 spacers 208 and 209 (board → frame)
 - ⇒ demount board

- Power supply unit 1005**
- ⇒ remove connections
 - ⇒ remove 2 screws 204 and 215 (board→frame)
 - ⇒ remove screw 276 (mains inled→backplate)
 - ⇒ release snaps of spacers 206 and 207 (board→frame)
 - ⇒ demount board



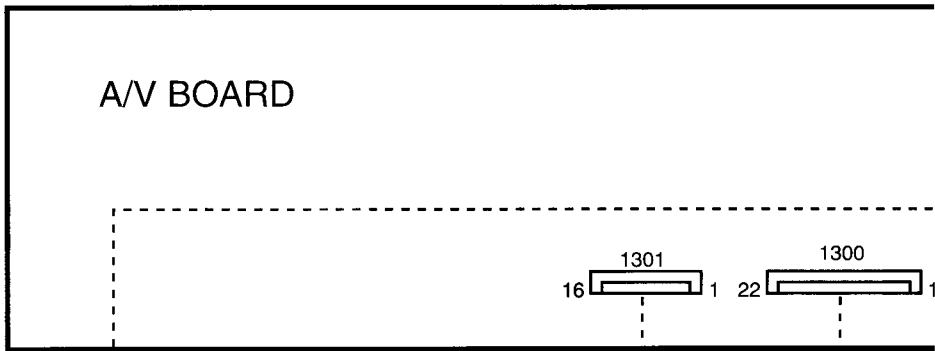
Exploded view





Wiringdiagram

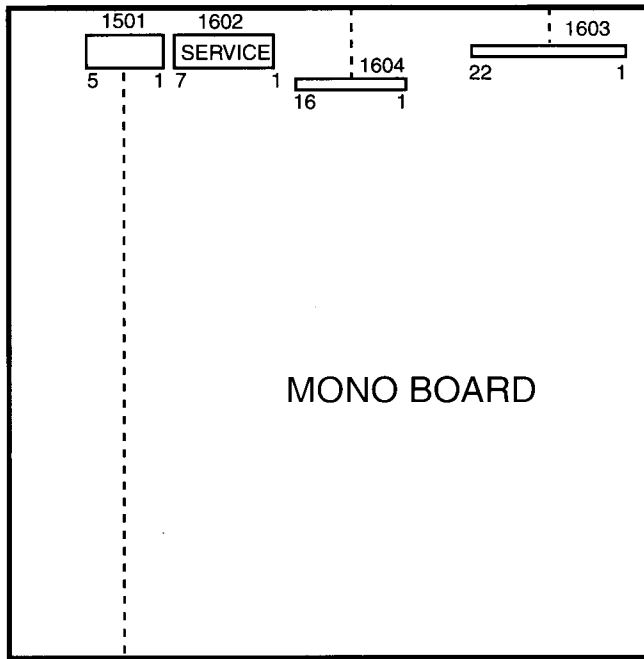
WIRING DIAGRAM



8003

8007

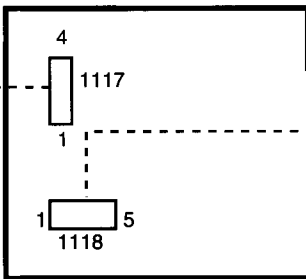
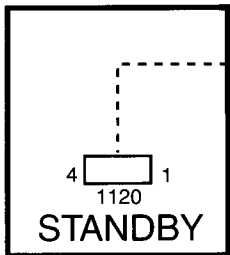
8006



8004

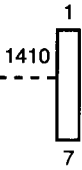


8001



8001

POWER SUPPLY



8001	
1	LED+
2	LED-
3	STBKEY+
4	STBKEY-

8002	
1	+12V
2	GND
3	+5Vstb
4	-40V

8003	
1	HP_L
2	GND
3	HP_R
4	+8Vaud
5	GND
6	GND
7	-8Vstby

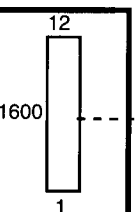
8004	
1	SCL
2	GND
3	SDA
4	STB_CONT
5	P50

8005	
1	+3V3
2	+3V3
3	+5V
4	+5Vstby
5	+6Vstby
6	GND
7	GND
8	GND
9	-8Vstby
10	STB_CONT
11	+12Vstby
12	GND

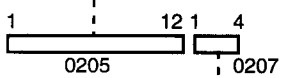
8006	
1	(P50)
2	B
3	G
4	GND
5	R
6	CVBS
7	GND
8	0/6/12V
9	-8Vstby
10	+5V
11	+5V
12	KILL
13	GND
14	PCM_OUT0
15	LRCLK
16	SCLK
17	GND
18	PCM_CLK
19	STANDBY
20	(CENTER_ON)
21	(STEREO_MUTE)
22	DIG_OUT
22	GND

8007	
1	GND
2	(HSYNC)
3	GND
4	(PCM_OUT2)
5	GND
6	(PCM_OUT1)
7	NC
8	SCL
9	12Vstby
10	SDA
11	+6V
12	NC
13	GND
14	C_ENC
15	GND
16	Y_ENC

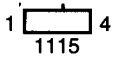
PIN NAMES BETWEEN BRACKETS () ONLY USED IN DVD950



CL 96532065_003.eps
120799



8002

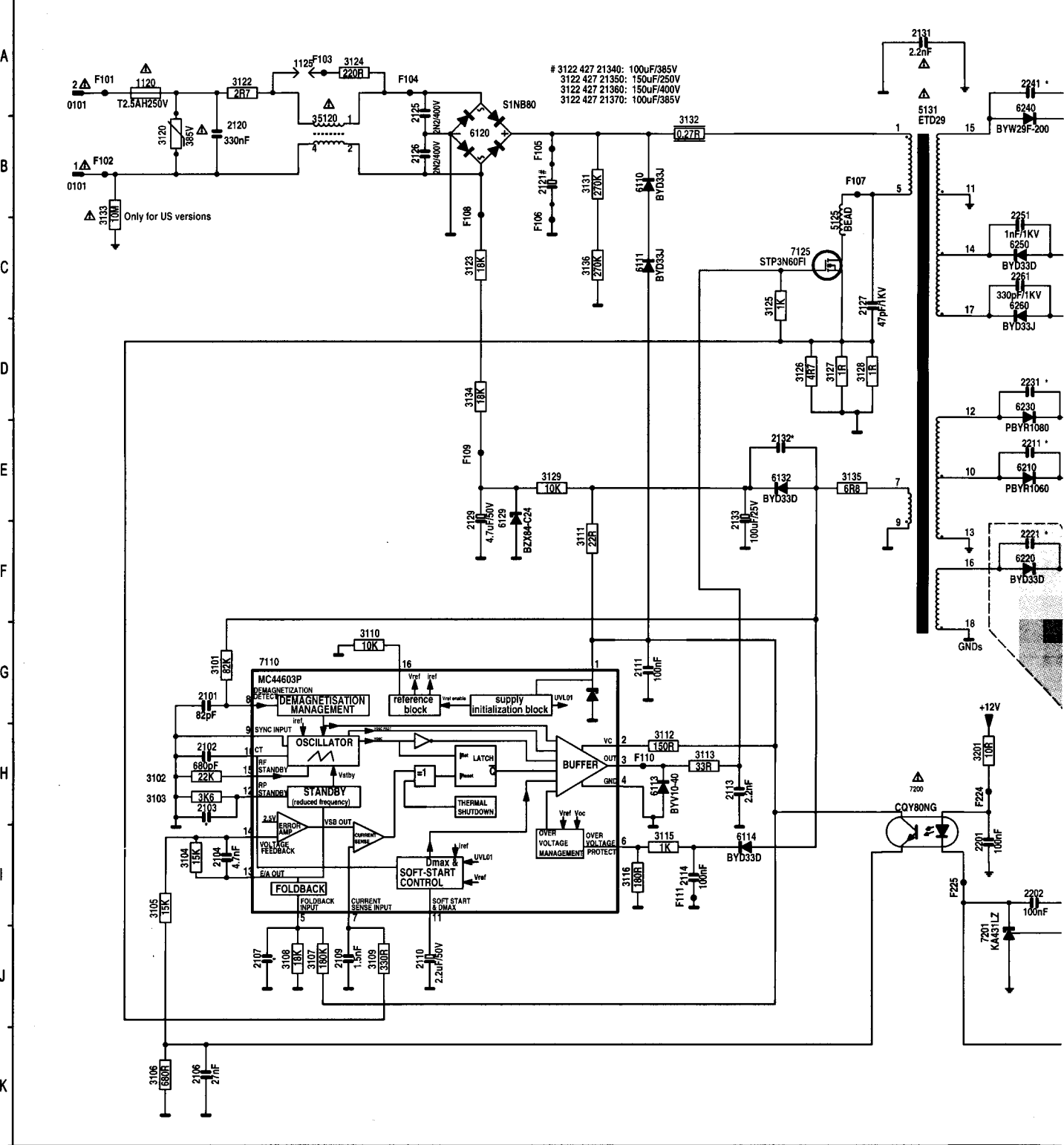


6. Electrical diagrams and Print-layouts

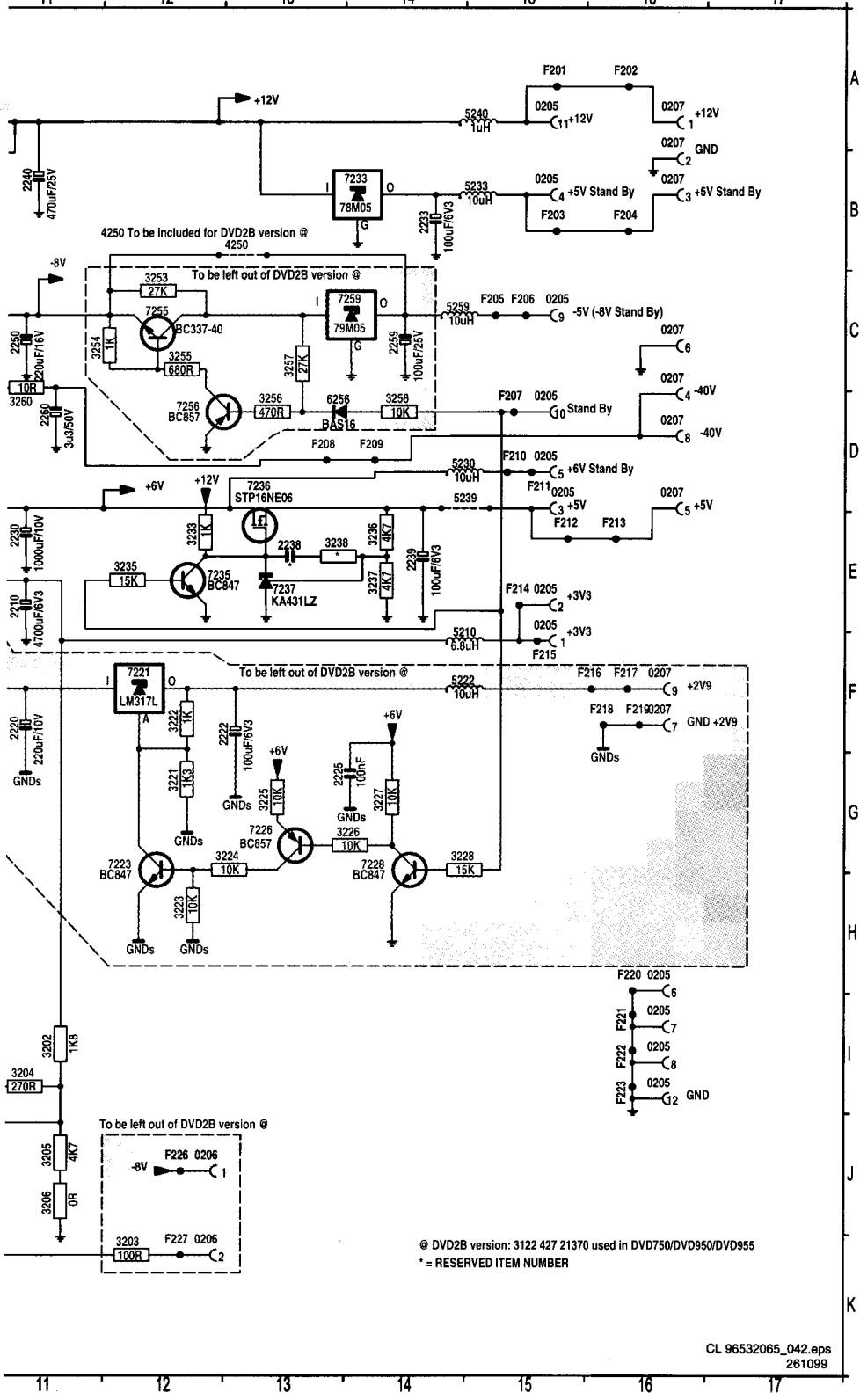
Power supply

POWER SUPPLY 30PS203

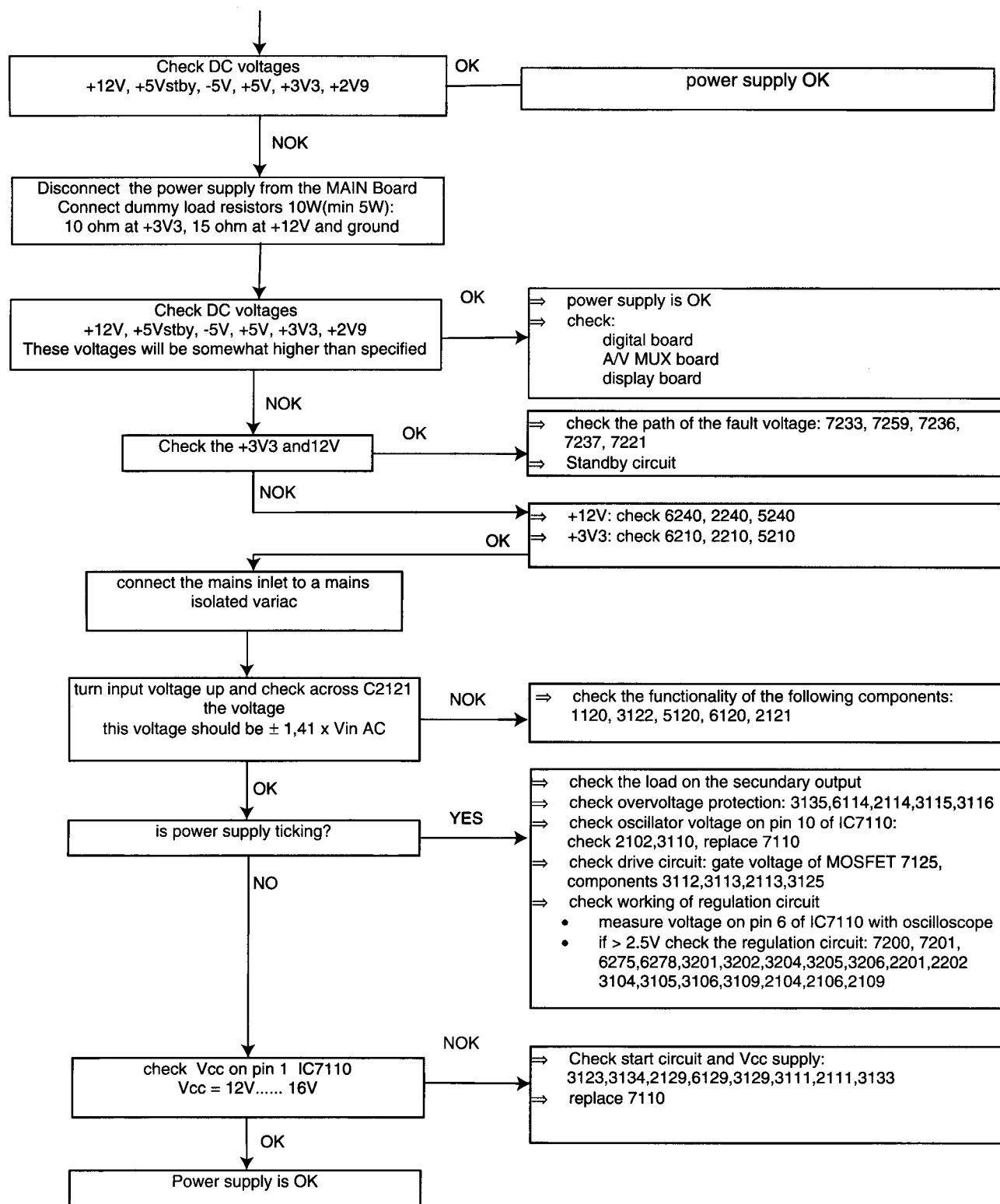
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0101 A.1	0205 H16	0206 J13	0207 F16	2103 H2	2113 M7	2128 C9	2211 F10	2233 B4	2259 C14	3106 L3	3112 H7	3124 A4	3133 B7	3203 K12	3224 G13
0205 H16	0205 H16	0207 A16	0207 F16	2104 K2	2114 M7	2129 C9	2212 F11	2236 B4	2269 C14	3107 L3	3113 H7	3124 A4	3134 B7	3204 H11	3225 G14
0205 H16	0205 H16	0207 B16	0207 F16	2105 K2	2115 M7	2130 C9	2213 F11	2239 B4	2270 C14	3108 L4	3114 H7	3125 A4	3135 B7	3205 H11	3226 G14
0205 H16	0205 H16	0207 C16	0207 F16	2106 K2	2116 M7	2131 C9	2214 F11	2240 B4	2280 C14	3109 L4	3115 H7	3126 A4	3136 B7	3206 H11	3227 G14
0205 H16	0205 H16	0207 D16	0207 F16	2107 J4	2117 M7	2132 C9	2215 F11	2241 A10	2290 C14	3110 L4	3116 H7	3127 A4	3137 B7	3207 H11	3228 G14
0205 H16	0205 H16	0207 E16	0207 F16	2108 J4	2118 M7	2133 C9	2216 F11	2242 A10	2295 C14	3111 L4	3117 H7	3128 A4	3138 B7	3208 H11	3229 G14
0205 H16	0205 H16	0207 F16	0207 F16	2109 G2	2119 M7	2134 C9	2217 F11	2243 A10	2300 C14	3112 L4	3118 H7	3129 A4	3139 B7	3209 H11	3230 G14
0205 H16	0205 H16	0207 G16	0207 F16	2110 J4	2120 M7	2135 C9	2218 F11	2244 A10	2305 C14	3113 L4	3119 H7	3130 A4	3140 B7	3210 H11	3231 G14
0205 H16	0205 H16	0207 H16	0207 F16	2111 G2	2121 M7	2136 C9	2219 F11	2245 A10	2310 C14	3114 L4	3120 H7	3131 A4	3141 B7	3211 H11	3232 G14
0205 H16	0205 H16	0207 I16	0207 F16	2112 J4	2122 M7	2137 C9	2220 F11	2246 A10	2315 C14	3115 L4	3121 H7	3132 A4	3142 B7	3212 H11	3233 G14
0205 H16	0205 H16	0207 J16	0207 F16	2113 J4	2123 M7	2138 C9	2221 F11	2247 A10	2320 C14	3116 L4	3122 H7	3133 A4	3143 B7	3213 H11	3234 G14
0205 H16	0205 H16	0207 K16	0207 F16	2114 J4	2124 M7	2139 C9	2222 F11	2248 A10	2325 C14	3117 L4	3123 H7	3134 A4	3144 B7	3214 H11	3235 G14
0205 H16	0205 H16	0207 L16	0207 F16	2115 J4	2125 M7	2140 C9	2223 F11	2249 A10	2330 C14	3118 L4	3124 H7	3135 A4	3145 B7	3215 H11	3236 G14
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0205 H16	0205 H16	0207 N16	0207 F16	2117 J4	2127 M7	2142 C9	2225 F11	2251 A10	2340 C14	3120 L4	3126 H7	3137 A4	3147 B7	3217 H11	3238 G14
0205 H16	0205 H16	0207 O16	0207 F16	2118 J4	2128 M7	2143 C9	2226 F11	2252 A10	2345 C14	3121 L4	3127 H7	3138 A4	3148 B7	3218 H11	3239 G14
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0205 H16	0205 H16	0207 S16	0207 F16	2122 J4	2132 M7	2147 C9	2230 F11	2256 A10	2365 C14	3125 L4	3131 H7	3142 A4	3152 B7	3222 H11	3243 G14
0205 H16	0205 H16	0207 T16	0207 F16	2123 J4	2133 M7	2148 C9	2231 F11	2257 A10	2370 C14	3126 L4	3132 H7	3143 A4	3153 B7	3223 H11	3244 G14
0205 H16	0205 H16	0207 U16	0207 F16	2124 J4	2134 M7	2149 C9	2232 F11	2258 A10	2375 C14	3127 L4	3133 H7	3144 A4	3154 B7	3224 H11	3245 G14
0205 H16	0205 H16	0207 V16	0207 F16	2125 J4	2135 M7	2150 C9	2233 F11	2259 A10	2380 C14	3128 L4	3134 H7	3145 A4	3155 B7	3225 H11	3246 G14
0205 H16	0205 H16	0207 W16	0207 F16	2126 J4	2136 M7	2151 C9	2234 F11	2260 A10	2385 C14	3129 L4	3135 H7	3146 A4	3156 B7	3226 H11	3247 G14
0205 H16	0205 H16	0207 X16	0207 F16	2127 J4	2137 M7	2152 C9	2235 F11	2261 A10	2390 C14	3130 L4	3136 H7	3147 A4	3157 B7	3227 H11	3248 G14
0205 H16	0205 H16	0207 Y16	0207 F16	2128 J4	2138 M7	2153 C9	2236 F11	2262 A10	2395 C14	3131 L4	3137 H7	3148 A4	3158 B7	3228 H11	3249 G14
0205 H16	0205 H16	0207 Z16	0207 F16	2129 J4	2139 M7	2154 C9	2237 F11	2263 A10	2400 C14	3132 L4	3138 H7	3149 A4	3159 B7	3229 H11	3250 G14



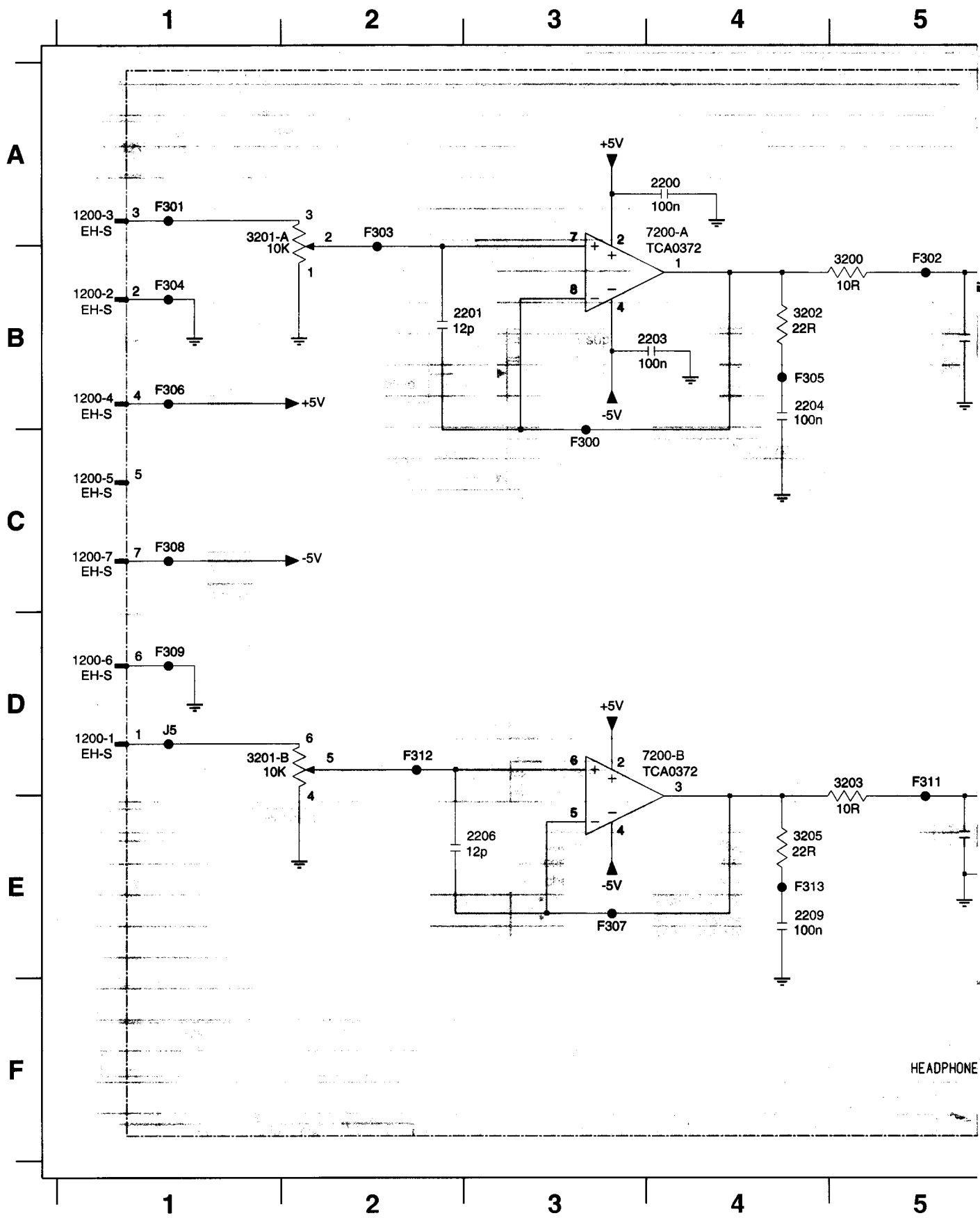
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3237 F14	3258 D14	5212 F17	5213 F18	6220 F10	7125 C 8	7228 G14	
3238 F15	3259 D11	5213 D15	5214 D16	6230 D10	7200 H 9	7229 G14	
3239 F16	3260 B13	5214 D17	5215 D18	6240 A10	7210 F10	7230 G14	
3240 F17	5125 C 8	5215 D19	5216 D20	6250 C10	7211 F11	7231 G14	
3241 F18	5125 C 8	5216 D21	5217 D22	6256 D13	7212 F12	7232 G14	
3242 F19	5125 C 8	5217 D23	5218 D24		7213 F13	7233 G14	
3243 F20	5125 C 8	5218 D25	5219 D26		7214 F14	7234 G14	
3244 F21	5125 C 8	5219 D27	5220 D28		7215 F15	7235 G14	
3245 F22	5125 C 8	5220 D29	5221 D30		7216 F16	7236 G14	
3246 F23	5125 C 8	5221 D31	5222 D32		7217 F17	7237 G14	
3247 F24	5125 C 8	5222 D33	5223 D34		7218 F18	7238 G14	
3248 F25	5125 C 8	5223 D35	5224 D36		7219 F19	7239 G14	
3249 F26	5125 C 8	5224 D37	5225 D38		7220 F20	7240 G14	
3250 F27	5125 C 8	5225 D39	5226 D40		7221 F21	7241 G14	
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3252 F29	5125 C 8	5227 D43	5228 D44		7223 F23	7243 G14	
3253 F30	5125 C 8	5228 D45	5229 D46		7224 F24	7244 G14	
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3255 F32	5125 C 8	5230 D49	5231 D50		7226 F26	7246 G14	
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3257 F34	5125 C 8	5232 D53	5233 D54		7228 F28	7248 G14	
3258 F35	5125 C 8	5233 D55	5234 D56		7229 F29	7249 G14	
3259 F36	5125 C 8	5234 D57	5235 D58		7230 F30	7250 G14	
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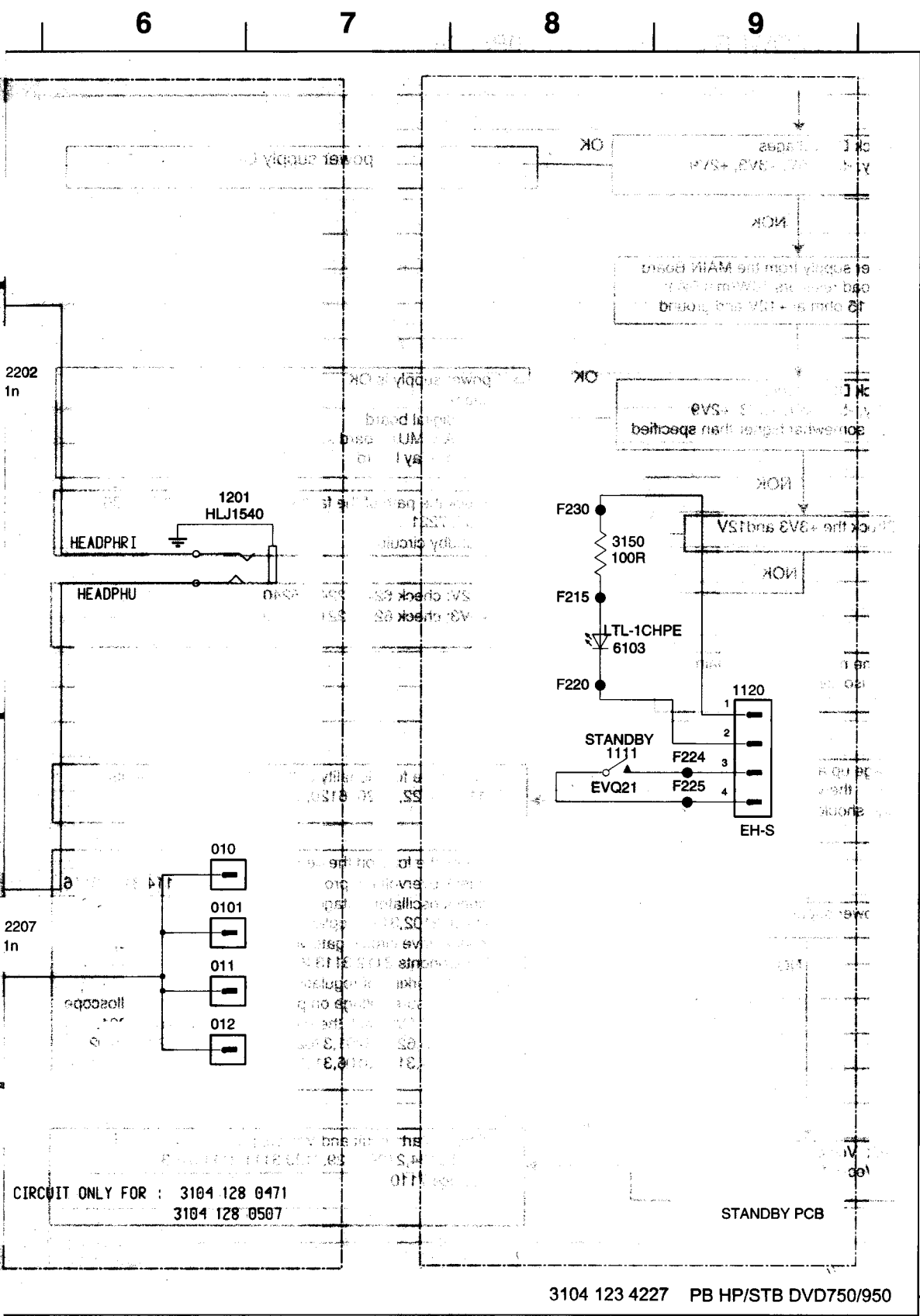


TROUBLESHOOTING POWER SUPPLY UNIT 30PS203



Headphone panel and standby PWB





- 0100 D6
- 0101 E6
- 0102 E6
- 0103 E6
- 1111 D8
- 1120 D9
- 1200-1 D1
- 1200-2 B1
- 1200-3 A1
- 1200-4 B1
- 1200-5 C1
- 1200-6 D1
- 1200-7 C1
- 1201 C6
- 2200 A4
- 2201 B3
- 2202 B5
- 2203 B4
- 2204 B4
- 2206 E3
- 2207 E5
- 2209 E4
- 3150 C8
- 3200 B5
- 3201-A A1
- 3201-B D1
- 3202 B4
- 3203 D5
- 3205 E4
- 6103 C8
- 7200-A A3
- 7200-B D3
- F215 C8
- F220 D8
- F224 D9
- F225 D9
- F230 C8
- F300 C3
- F301 A1
- F302 B5
- F303 A2
- F304 B1
- F305 B4
- F306 B1
- F307 E3
- F308 C1
- F309 D1
- F310 D1
- F311 D5
- F312 D2
- F313 E4

A

B

C

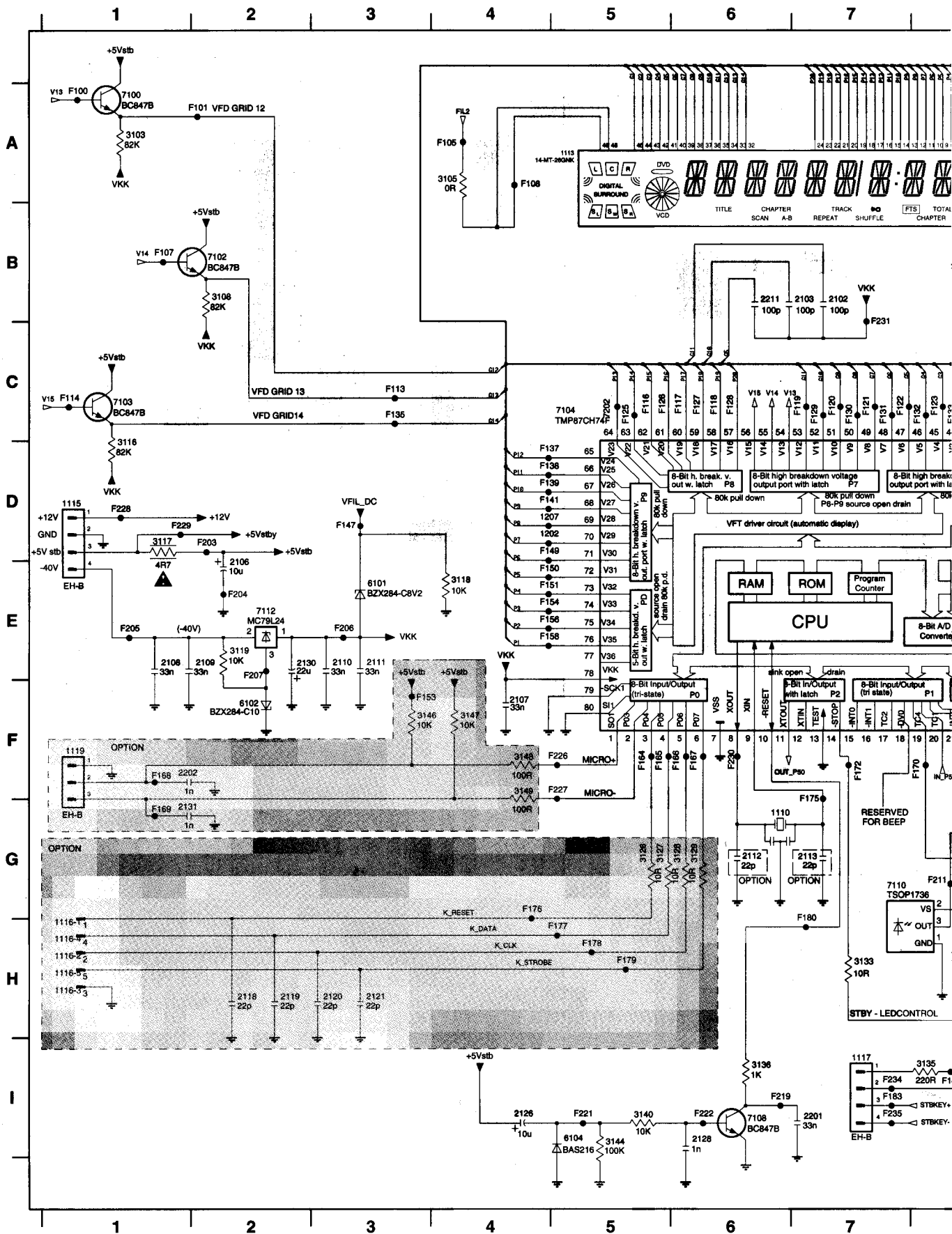
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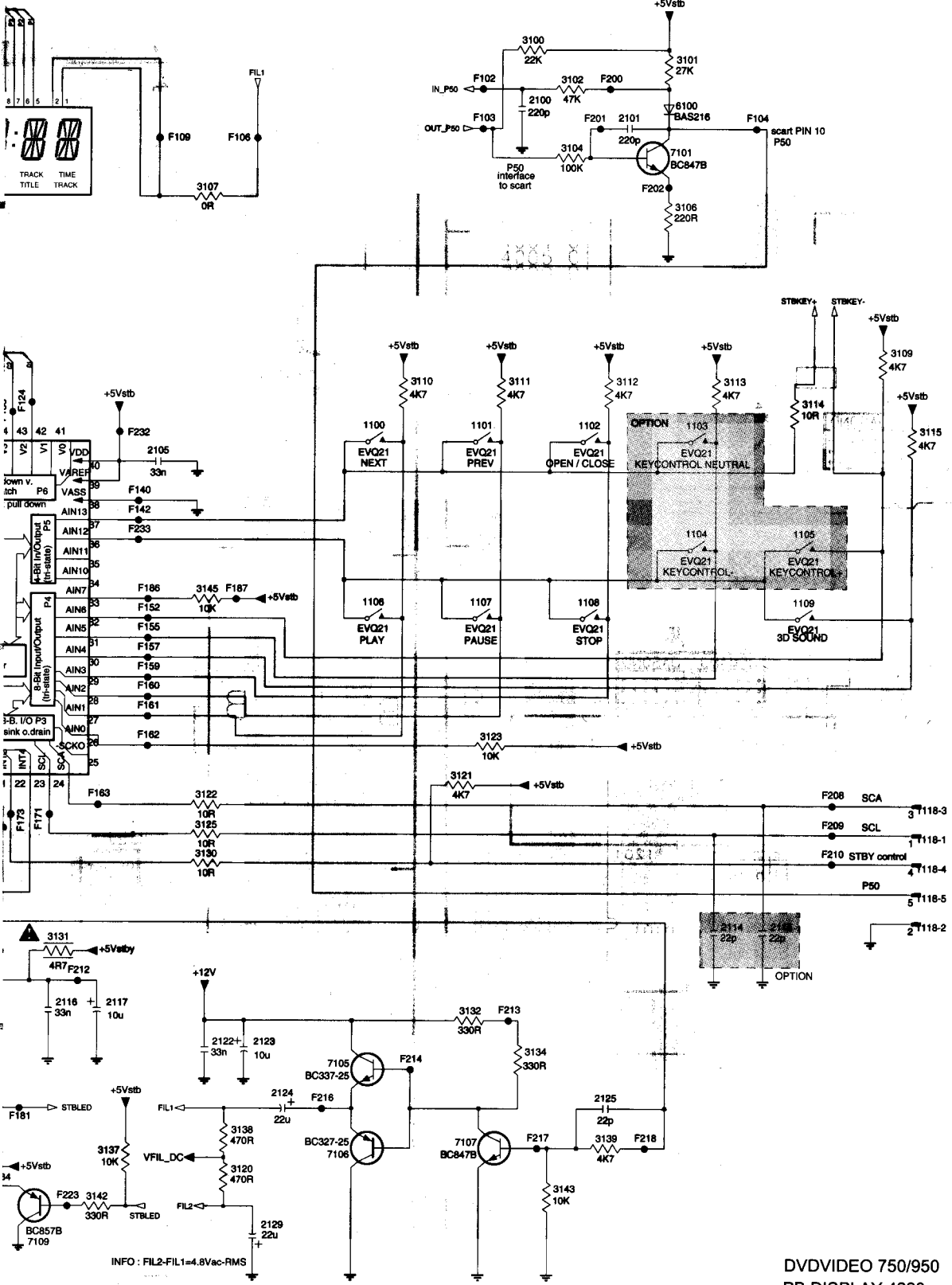
E

F

3104 123 4227 PB HP/STB DVD750/950

Display

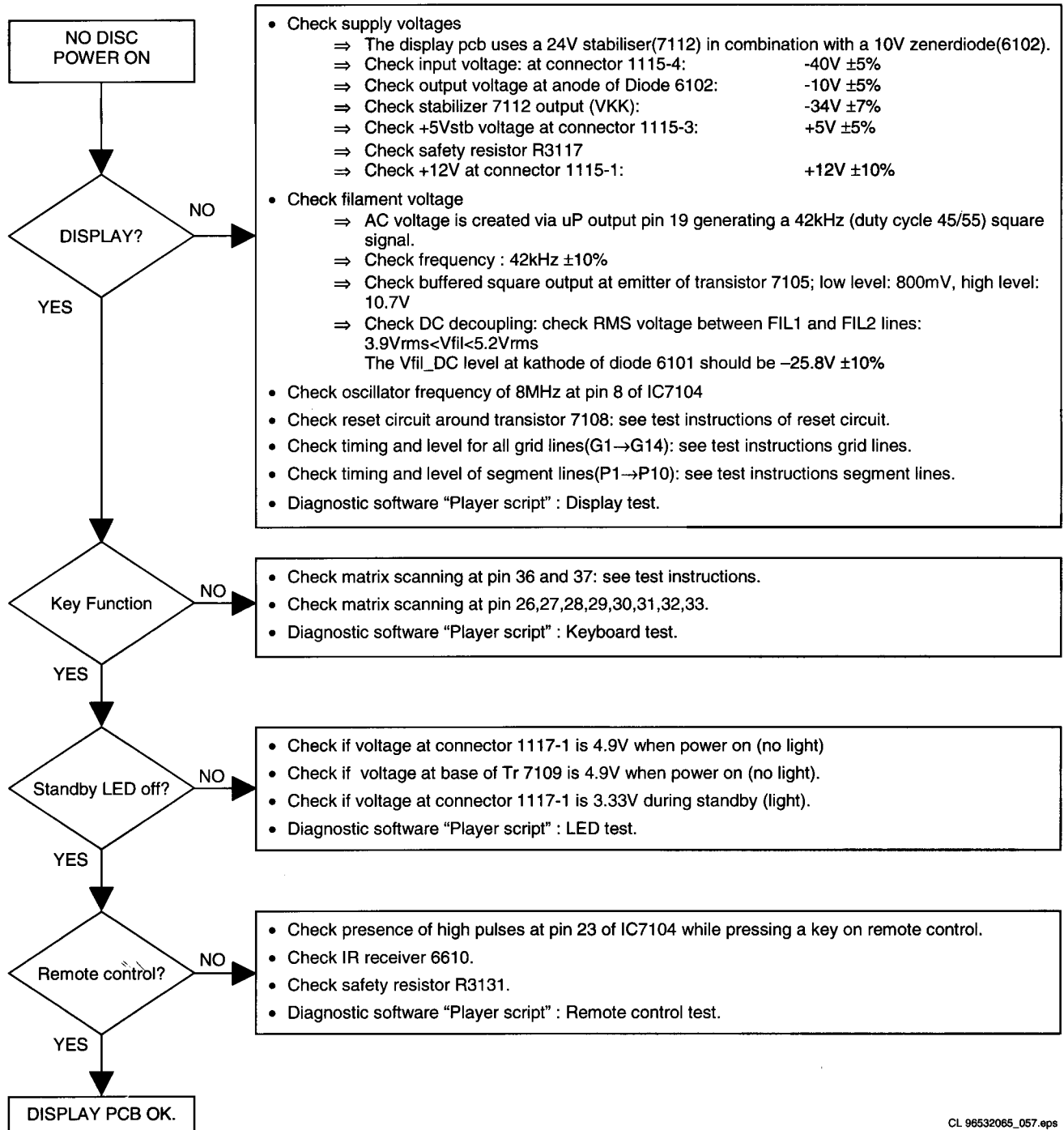




- 1100 C11
- 1101 C11
- 1102 C12
- 1103 C13
- 1104 D13
- 1105 D14
- 1106 E11
- 1107 E11
- 1108 E12
- 1109 E14
- 1110 G6
- 1113 A5
- 1115 D1
- 1116-1 H1
- 1116-2 H1
- 1116-3 H1
- 1116-4 H1
- 1116-5 H1
- 1117 I7
- 1118-1 F14
- 1118-2 G14
- 1118-3 F14
- 1118-4 G14
- 1118-5 G14
- 1119 F1
- 1202 D4
- 1207 D4
- 2100 A12
- 2101 A12
- 2102 B7
- 2103 B7
- 2105 D9
- 2106 E2
- 2107 F4
- 2108 E1
- 2109 E2
- 2110 E3
- 2111 E3
- 2112 G6
- 2113 G7
- 2114 G13
- 2115 G14
- 2116 H8
- 2117 H9
- 2118 H2
- 2119 H2
- 2120 H3
- 2121 H3
- 2122 H9
- 2123 H10
- 2124 H10
- 2125 H12
- 2126 I4
- 2128 I6
- 2129 I10
- 2130 E2
- 2131 G1
- 2201 I7
- 2202 F1
- 2211 B6
- 3100 A12
- 3101 A13
- 3102 A12
- 3103 A1
- 3104 A12
- 3105 A4
- 3106 B13
- 3107 B9
- 3108 B2
- 3109 C14
- 3110 C11
- 3111 C12
- 3112 C12
- 3113 C13
- 3114 C14
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- 3117 D1
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- 3125 F9
- 3126 G5
- 3127 G5
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- 3130 G9
- 3131 G8
- 3132 H11
- 3133 H7
- 3134 H12
- 3135 I8
- 3136 I6
- 3137 I9
- 3138 H10
- 3139 I12
- 3140 I5
- 3142 I9
- 3143 I12
- 3144 I5
- 3145 E9
- 3146 F3
- 3147 F4
- 3148 F4
- 3149 F4
- 6100 A13
- 6101 E3
- 6102 F2
- 6104 I5
- 7100 A1
- 7101 A13
- 7102 B2
- 7103 C1
- 7104 C5
- 7105 H10
- 7106 H10
- 7107 H11
- 7108 I6
- 7109 I8
- 7110 G7
- 7112 E2
- 7202 C5
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- F101 A2
- F102 A11
- F103 A11
- F104 A13
- F105 A4
- F106 A10
- F107 B1
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- F109 A9
- F110 C3
- F111 C4
- F112 C7
- F113 C7
- F114 C7
- F115 C7
- F116 C7
- F117 C7
- F118 C7
- F119 C7
- F120 C7
- F121 C7
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- F123 C8
- F124 C8
- F125 C8
- F126 C7
- F127 C7
- F128 C7
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- F130 C7
- F131 C7
- F132 C8
- F133 C8
- F134 C8
- F135 C3
- F136 D4
- F137 D4
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- F143 D9
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- F166 F6
- F167 F6
- F168 F1
- F169 G1
- F170 F8
- F171 F8
- F172 F7
- F173 F8
- F174 G7
- F175 G4
- F176 G4
- F177 H5
- F178 H5
- F179 H5
- F180 H7
- F181 H8
- F182 I7
- F183 I7
- F184 I8
- F185 E9
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- F188 I9
- F189 I9
- F190 I9
- F191 I9
- F192 I9
- F193 I9
- F194 I9
- F195 I9
- F196 I9
- F197 I9
- F198 I9
- F199 I9
- F200 A12
- F201 A12
- F202 B13
- F203 D2
- F204 E2
- F205 E1
- F206 E3
- F207 E2
- F208 F14
- F209 F14
- F210 G14
- F211 G8
- F212 G8
- F213 H12
- F214 H11
- F215 H10
- F216 H10
- F217 H12
- F218 I13
- F219 I6
- F220 I5
- F221 I6
- F222 I6
- F223 I8
- F224 F5
- F225 F5
- F226 D1
- F227 D1
- F228 D1
- F229 D1
- F230 F6
- F231 C7
- F232 C9
- F233 D9
- F234 I7
- F235 I7

DVDVIDEO 750/950
PB DISPLAY 4223
3104 123 4223

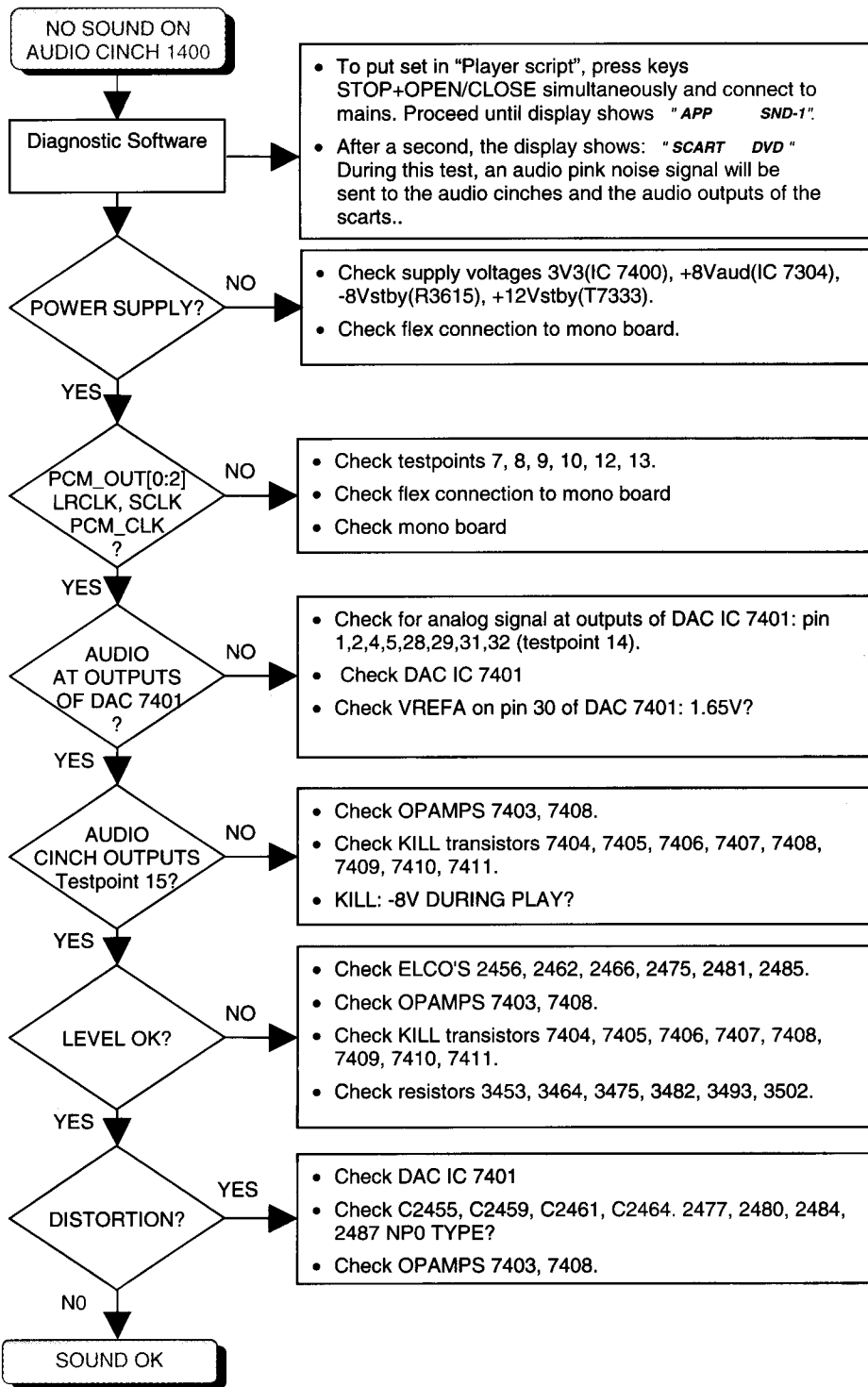
TROUBLESHOOTING DISPLAY BOARD



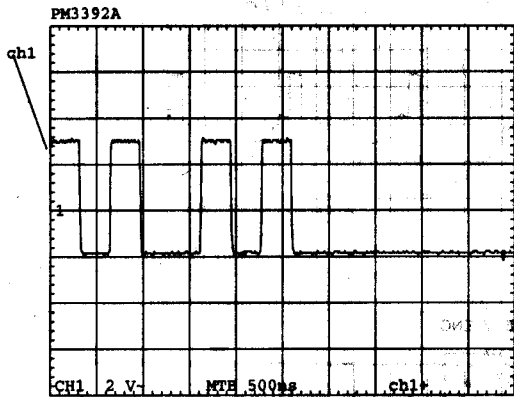
TROUBLESHOOTING A/V BOARD

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"

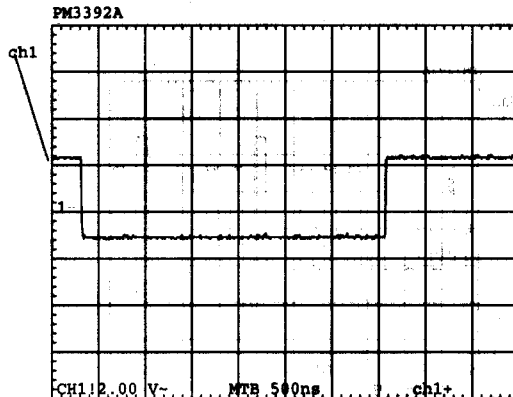
AUDIO PART



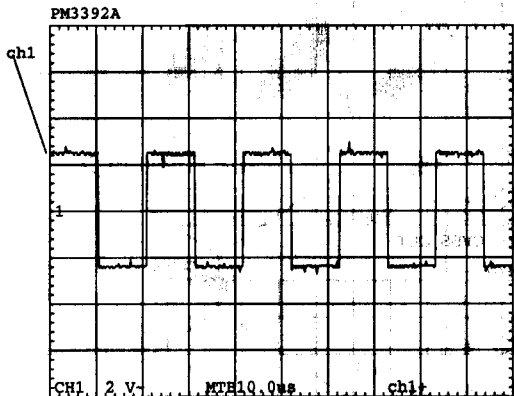
Audio-1



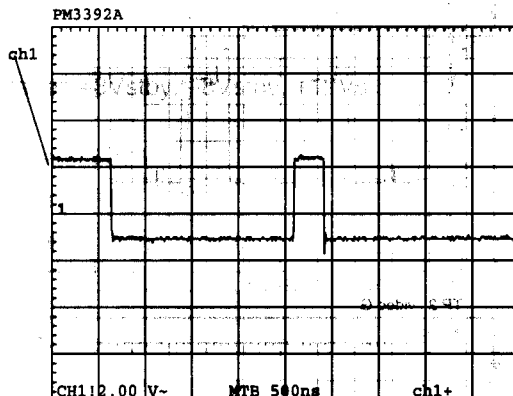
TP 7: PCM_OUT0



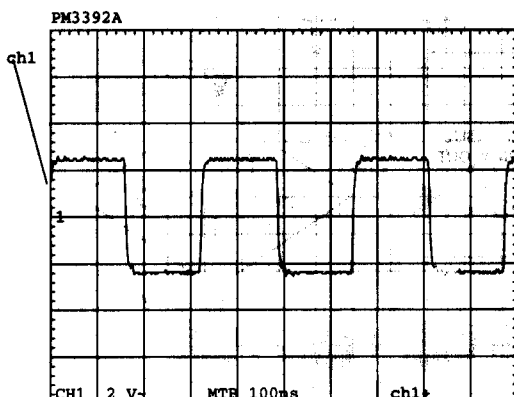
TP12: PCM_OUT2



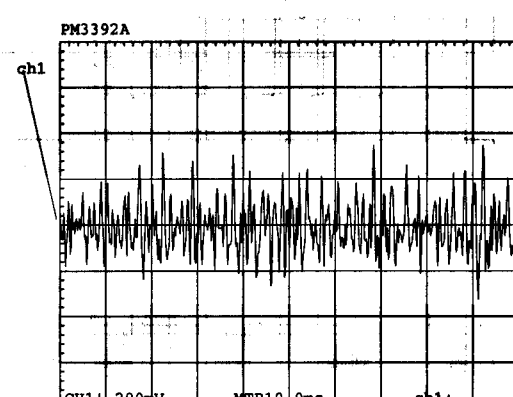
TP8: LRCLK



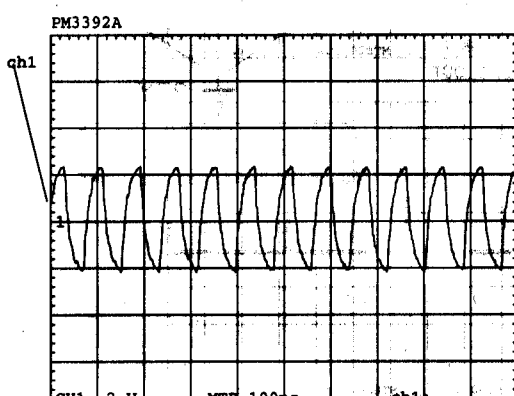
TP13: PCM_OUT1



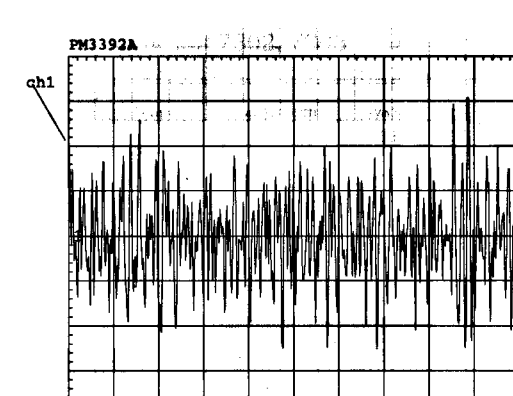
TP9: SCLK



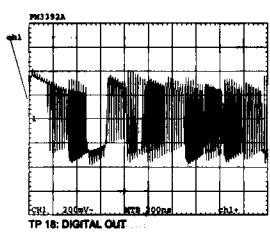
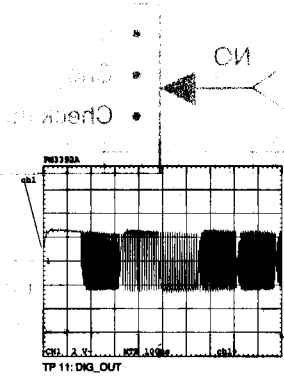
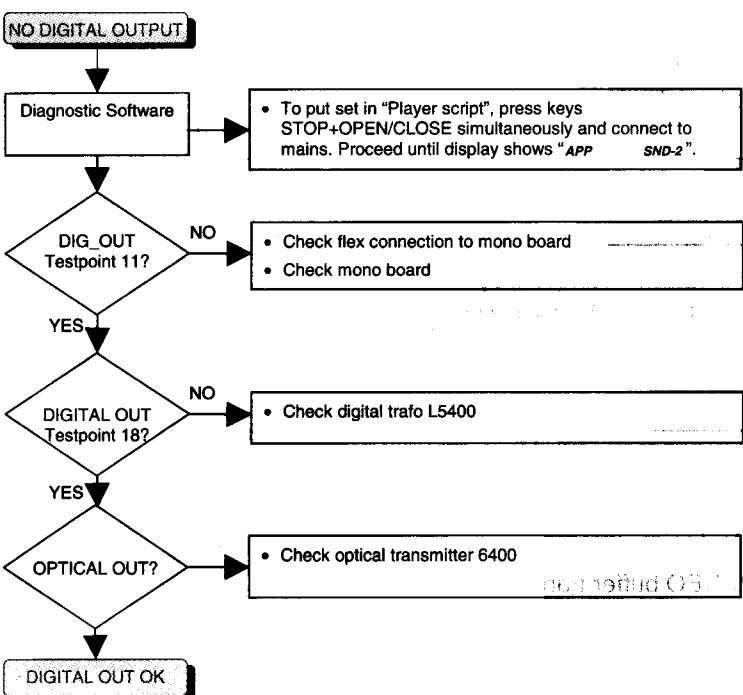
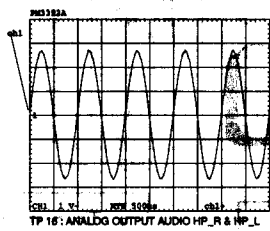
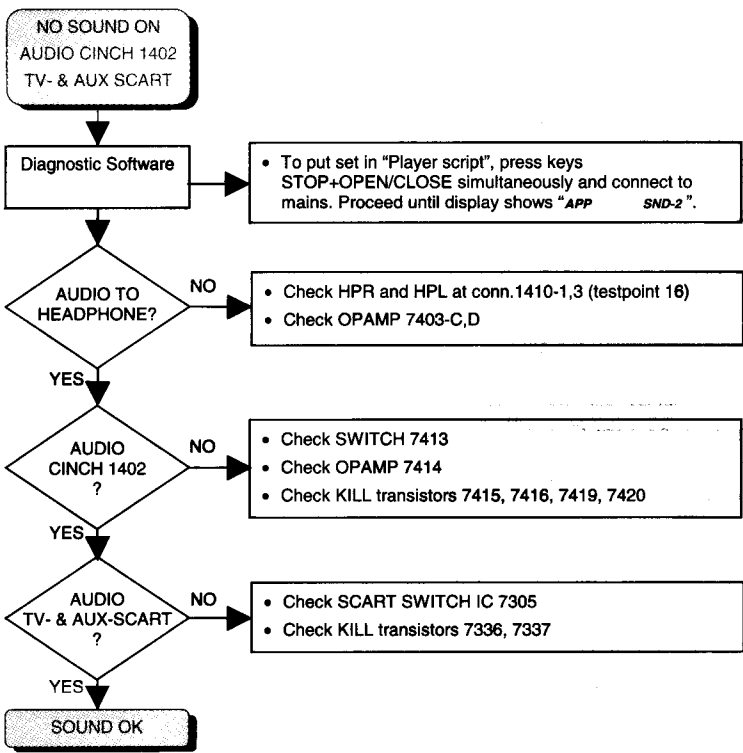
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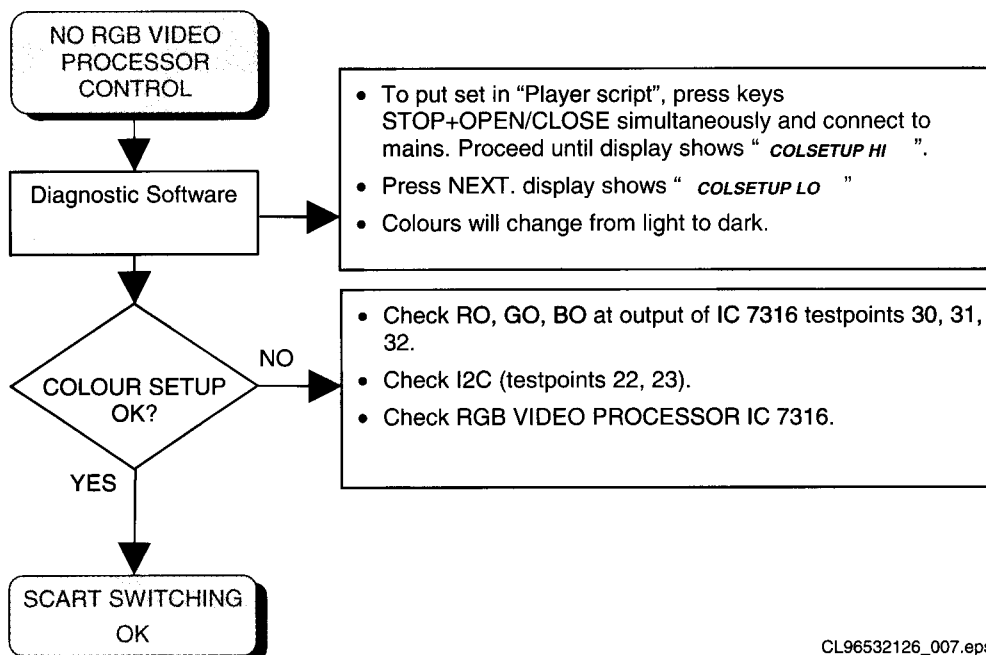
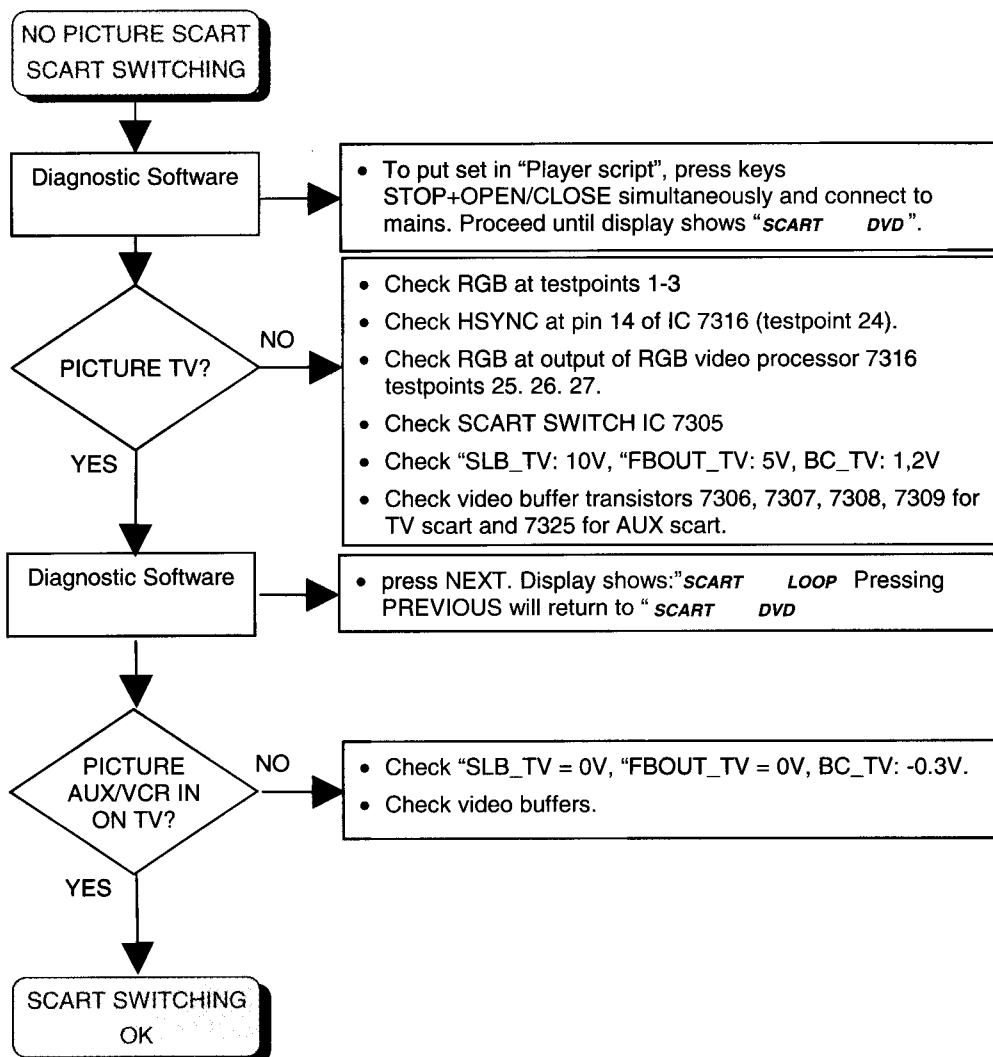


TP10: PCM_CLK

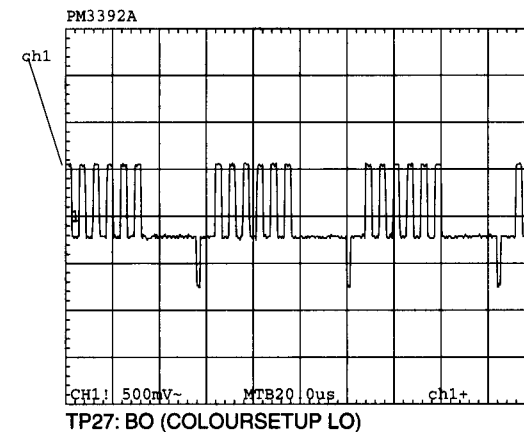
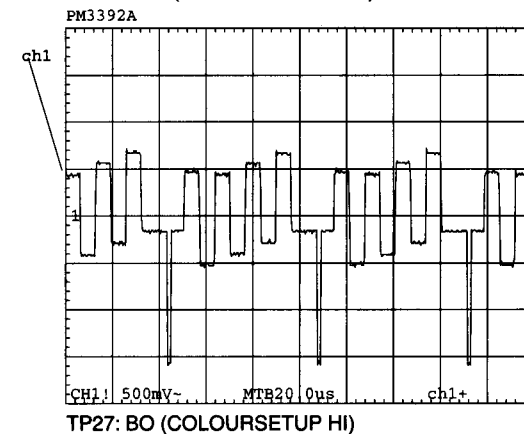
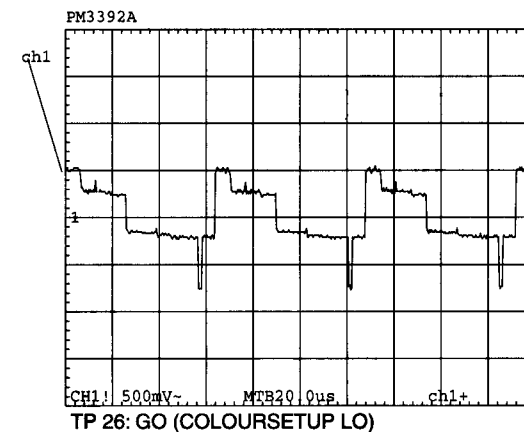
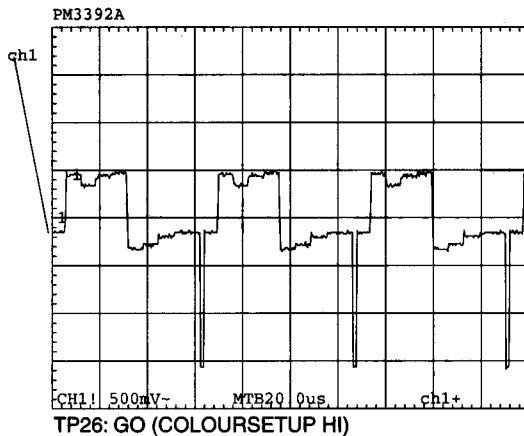
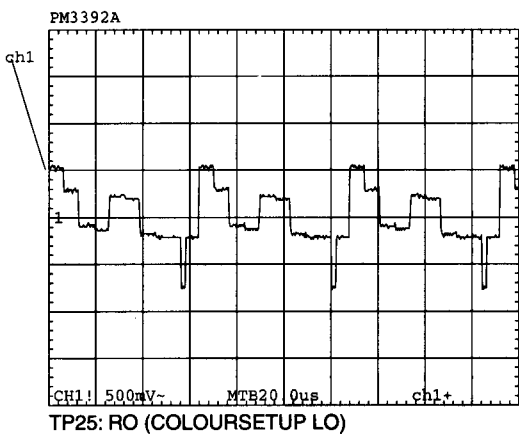
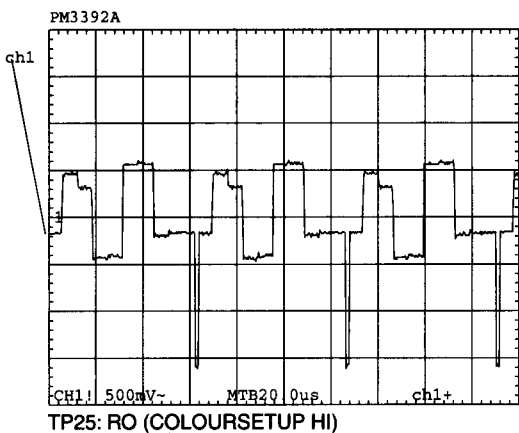
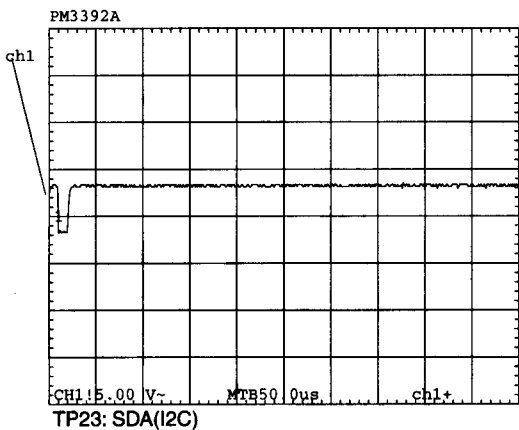
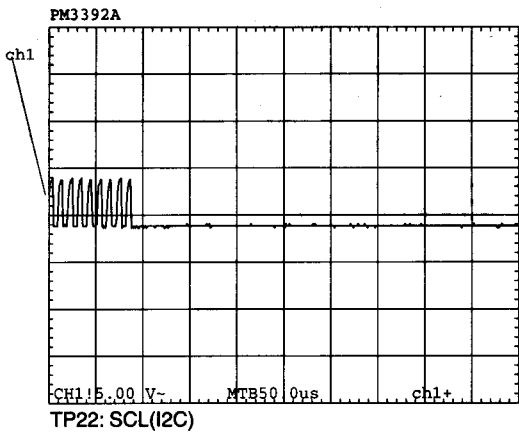


TP15: ANALOG OUT AUDIO CINCH (PINK NOISE)



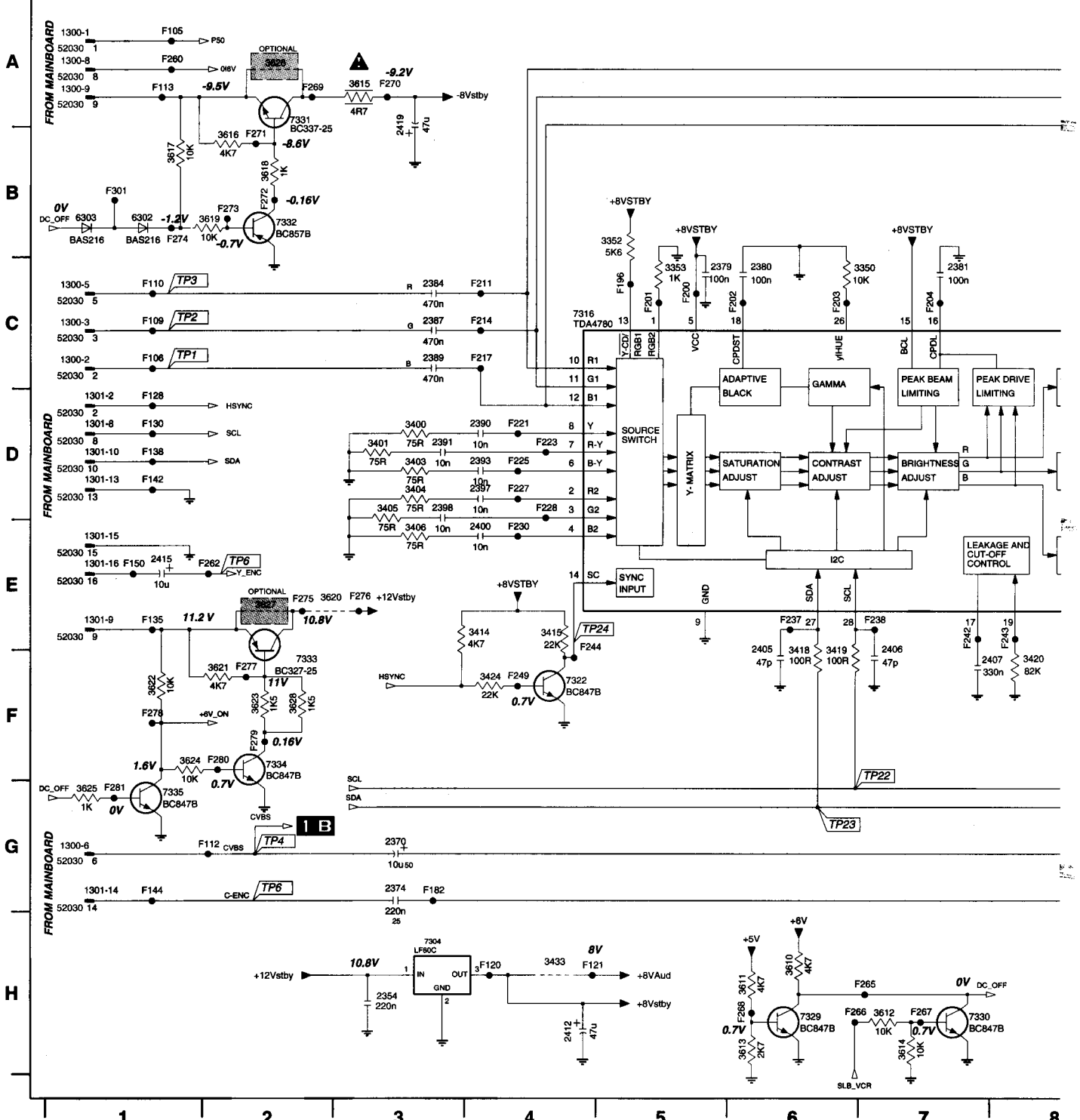


Video-2



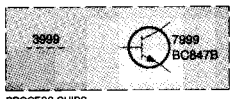
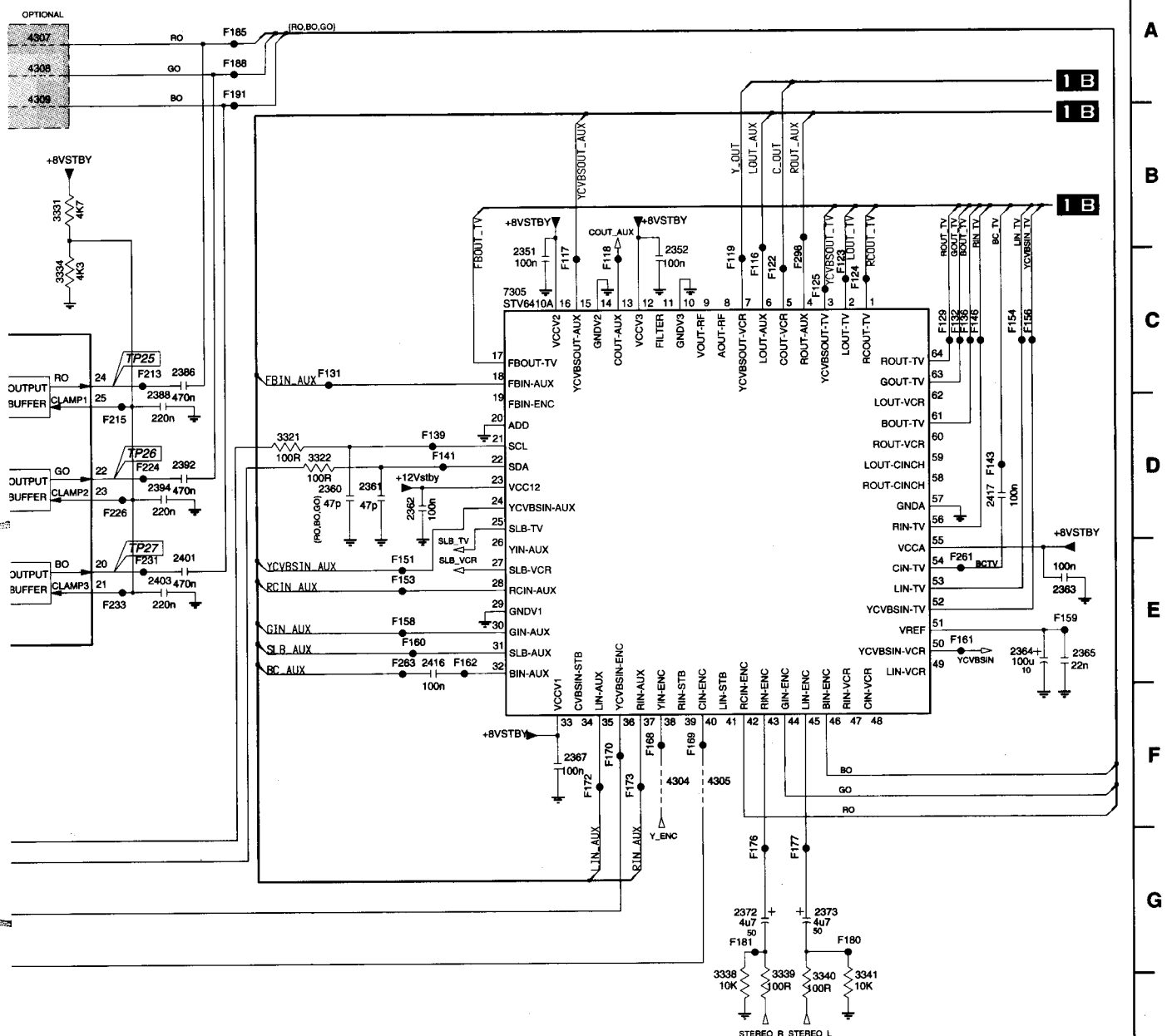
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1300-2 C1	1301-15 E1	2361 D11	2374 G3	2390 D4	2403 E9	3321 D10	3352 B5	3415 E4	3613 H6	3622 F1	4305 F13	7322 F4	F105 A
1300-3 C1	1301-16 E1	2362 D11	2375 C5	2391 D3	2405 F6	3322 D10	3353 C5	3416 F6	3614 H7	3623 F2	4307 A8	7329 H6	F106 C
1300-5 C1	1301-2 D1	2363 E15	2380 C6	2392 D9	2406 F7	3331 B8	3400 D3	3419 F6	3615 A3	3624 F1	4308 A8	7330 H7	F109 C
1300-6 G1	1301-8 D1	2364 E15	2381 C7	2393 D4	2407 F8	3334 C8	3401 D3	3420 F8	3616 B2	3625 G1	4309 A8	7331 A2	F110 C
1300-8 A1	1301-9 E1	2365 E15	2384 C3	2394 D9	2412 H4	3338 H13	3403 D3	3424 F4	3617 B1	3626 A2	6302 B1	7332 B2	F112 G
1300-9 A1	2351 C12	2367 F12	2386 C9	2397 D4	2415 E1	3339 H13	3404 D3	3433 H4	3618 B2	3627 E2	6303 B1	7333 F2	F113 A
1301-10 D1	2352 C13	2370 G3	2387 C3	2398 D3	2416 E11	3340 H14	3405 D3	3610 H6	3619 B2	3628 F2	7304 H3	7334 F2	F116 C
1301-13 D1	2354 H3	2372 G13	2388 D9	2400 E4	2417 D15	3341 H14	3406 E3	3611 H6	3620 E2	3999 H9	7305 C11	7335 G1	F117 C

1A VIDEO CONTROL & SCART SWITCH



10	F118 C12	F129 C15	F142 D1	F158 E11	F173 F12	F196 C5	F215 D9	F230 E4	F260 A1	F270 A3	F279 F2
1	F119 C13	F130 D1	F143 D15	F159 E15	F176 G13	F200 C5	F225 D9	F231 E9	F261 E15	F271 B2	F280 F2
1	F120 H4	F131 C10	F144 G1	F160 E11	F177 G13	F201 C5	F221 D4	F232 E9	F262 E2	F272 B2	F281 G1
1	F121 H4	F132 C15	F146 C15	F161 E15	F180 G14	F202 C6	F223 D4	F237 E6	F263 E11	F273 B2	F298 C14
1	F122 C13	F135 E1	F150 E1	F162 E11	F181 G13	F203 C6	F224 D9	F238 E7	F265 H7	F274 B1	F301 B1
2	F123 C14	F136 C15	F151 E11	F168 F12	F182 G3	F204 C7	F225 D4	F242 E7	F266 H6	F275 E2	
1	F124 C14	F138 D1	F153 E11	F169 F13	F185 A10	F211 C9	F226 D9	F243 E8	F267 H7	F276 E2	
13	F125 C14	F139 D11	F154 C15	F170 F12	F188 A10	F213 C9	F227 D4	F244 F4	F268 H6	F277 F2	
12	F128 D1	F141 D11	F156 C15	F172 F12	F191 A10	F214 C4	F228 D4	F249 F4	F269 A2	F278 F1	

9 10 11 12 13 14 15

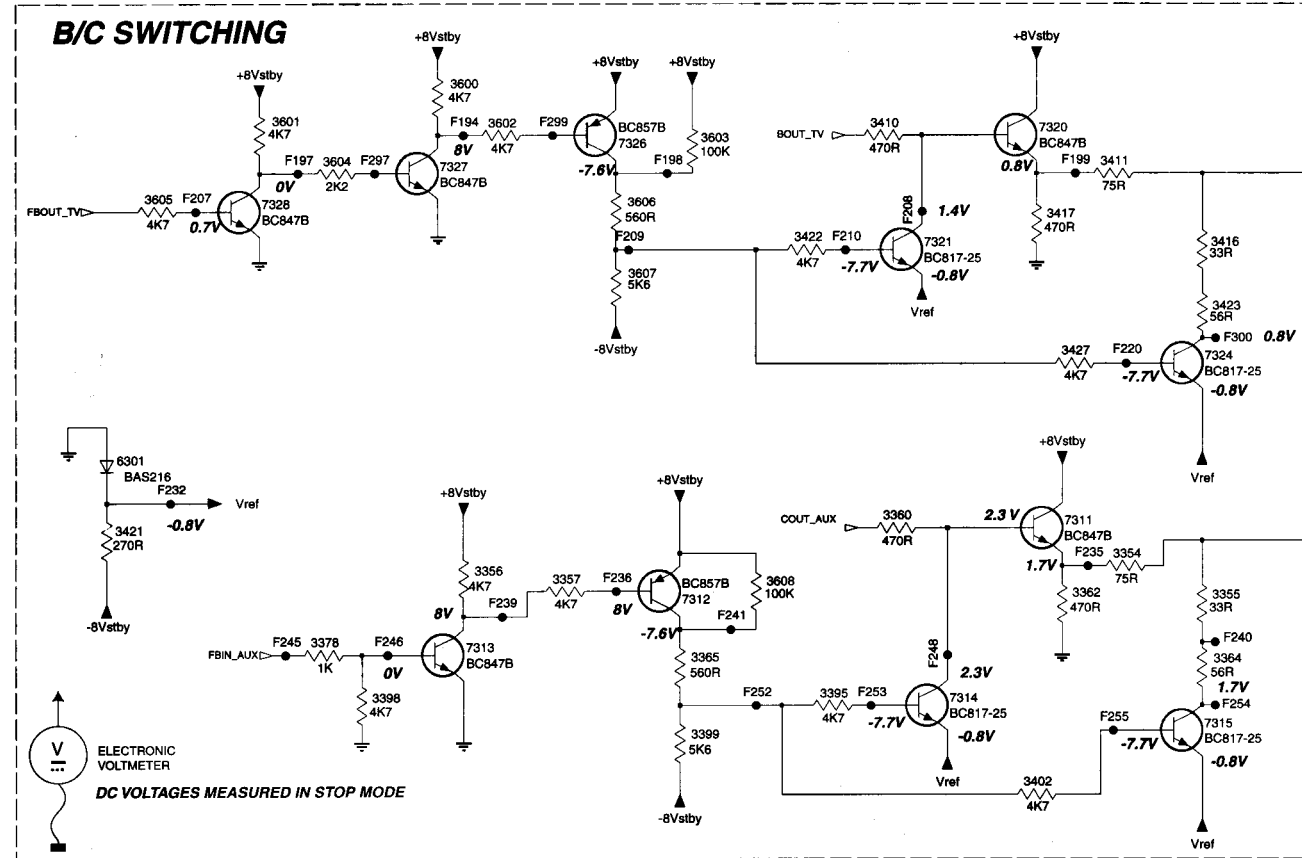
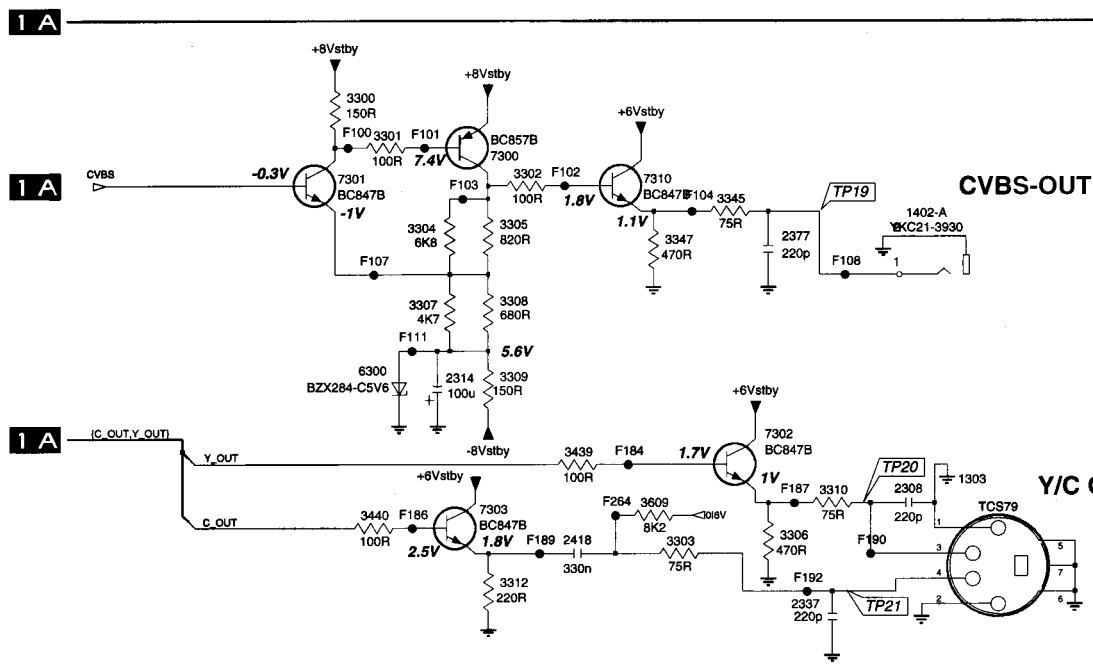


ELECTRONIC VOLTMETER DC VOLTAGES MEASURED IN STOP MODE

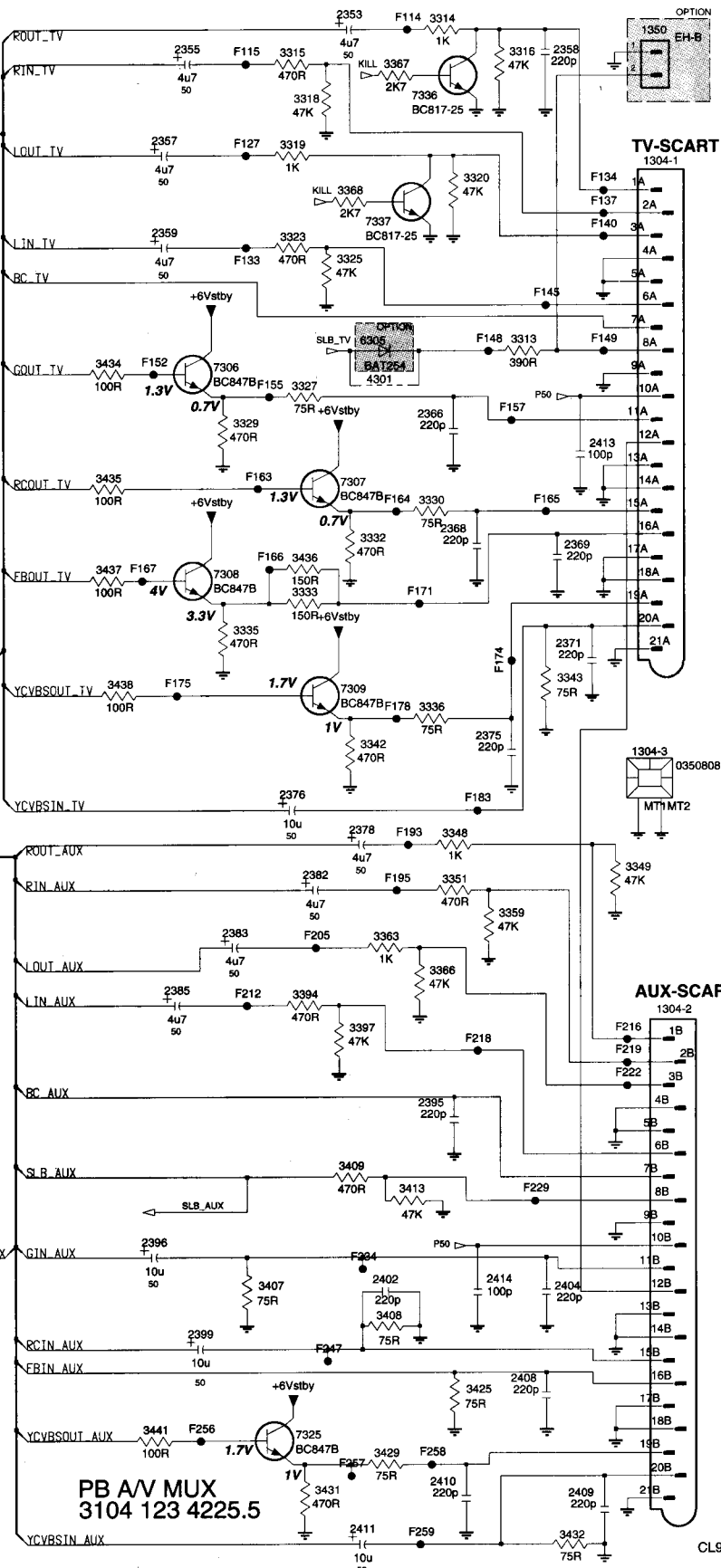
PB A/V MUX
3104 123 4225.5

9 10 11 12 13 14 15

1 B VIDEO OUT



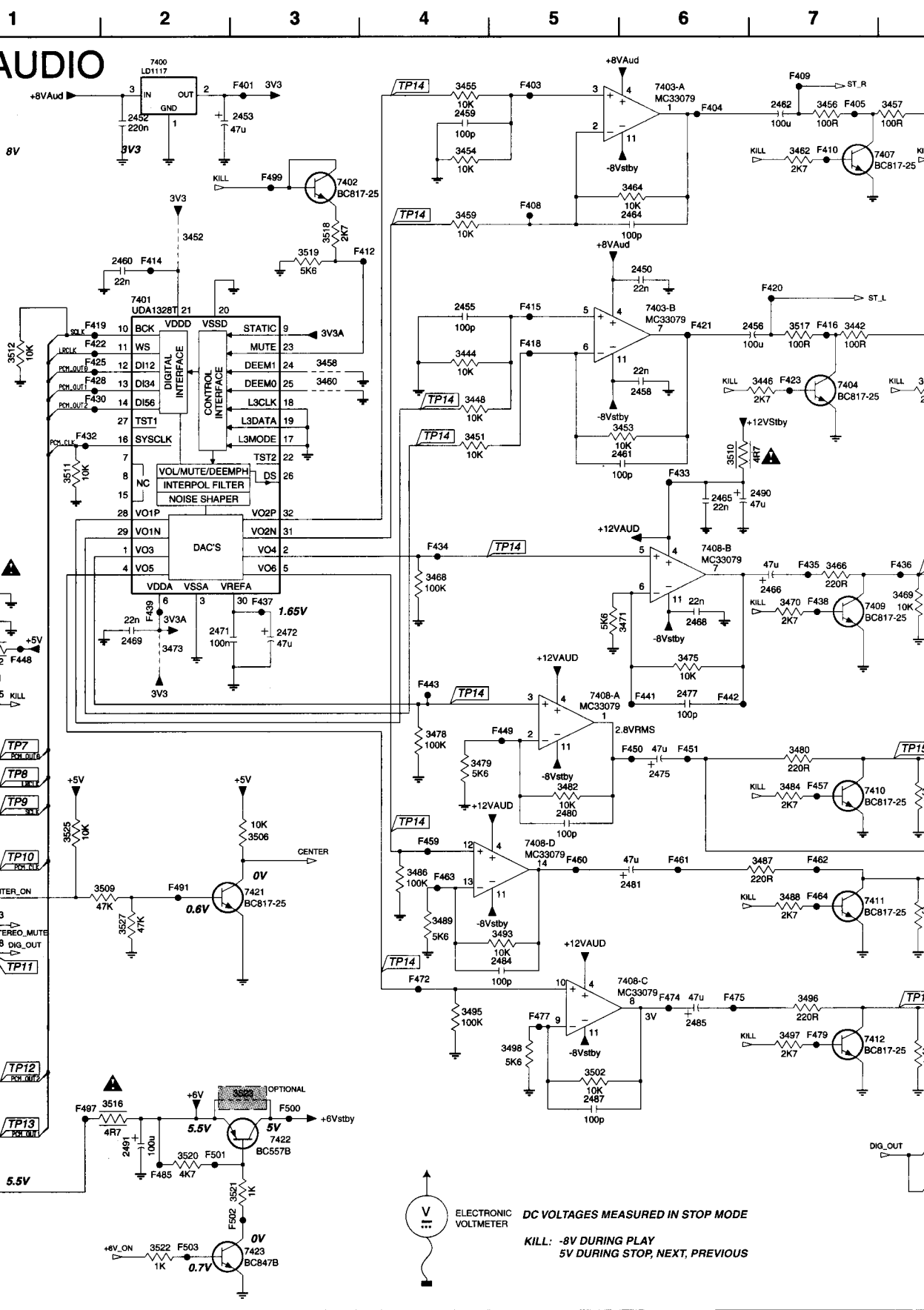
- 1303 D6
- 1304-1 A13
- 1304-2 F13
- 1304-3 E13
- 1350 A13
- 1402-A B6
- 2308 D6
- 2314 C3
- 2337 D5
- 2353 A12
- 2355 A11
- 2357 A10
- 2358 A13
- 2359 B10
- 2366 C12
- 2368 C12
- 2369 C13
- 2371 D13
- 2375 E12
- 2376 E11
- 2377 B5
- 2378 E12
- 2382 F11
- 2383 F11
- 2385 F10
- 2395 F12
- 2396 H10
- 2399 H11
- 2402 H12
- 2404 H13
- 2408 I13
- 2408 I13
- 2410 I12
- 2411 I12
- 2413 C13
- 2414 H12
- 2418 D4
- 3300 A3
- 3301 B3
- 3302 B4
- 3303 D5
- 3304 B3
- 3305 B4
- 3306 D5
- 3307 C3
- 3308 C4
- 3310 D5
- 3312 D4
- 3313 B13
- 3314 A12
- 3315 A11
- 3316 A13
- 3318 A11
- 3319 A11
- 3320 A12
- 3323 B11
- 3325 B12
- 3327 C11
- 3329 C11
- 3330 C12
- 3333 D11
- 3334 D11
- 3335 D11
- 3336 D11
- 3337 D11
- 3338 D11
- 3339 D11
- 3340 D11
- 3341 D11
- 3342 D11
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- 3363 D11
- 3364 D11
- 3365 D11
- 3366 D11
- 3367 D11
- 3368 D11
- 3378 D11
- 3394 F11
- 3395 I5
- 3396 G12
- 3398 I3
- 3399 I5
- 3402 I7
- 3407 H11
- 3408 H12
- 3409 G12
- 3410 F6
- 3411 F7
- 3413 H12
- 3416 F8
- 3417 F7
- 3421 H2
- 3422 F5
- 3423 G8
- 3425 I12
- 3427 G7
- 3429 I12
- 3431 I11
- 3432 I13
- 3434 B10
- 3435 C10
- 3436 D11
- 3437 D10
- 3438 D10
- 3439 C4
- 3440 D3
- 3441 I10
- 3600 E3
- 3602 F4
- 3603 F5
- 3604 F3
- 3605 F2
- 3606 F4
- 3607 F4
- 3608 H5
- 3609 D4
- 4301 C12
- 6300 C3
- 6301 H2
- 6305 B12
- 7300 B4
- 7301 B3
- 7302 C5
- 7303 D3
- 7306 B11
- 7307 C11
- 7308 D11
- 7309 D11
- 7310 B4
- 7311 H7
- 7312 H5
- 7313 I3
- 7314 I6
- 7315 I8
- 7320 F7
- 7321 F6
- 7324 G8
- 7325 I11
- 7326 F4
- 7327 F3
- 7328 F2
- 7336 A12
- 7337 B12
- F100 B3
- F101 B3
- F102 B4
- F103 B3
- F104 B5
- F107 B3
- F108 B6
- F111 C3
- F114 A12
- F115 A11
- F116 A11
- F117 B11
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- F137 A13
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- F299 A13
- F300 A13



PB A/V MUX
3104 123 4225.5

2 AUDIO

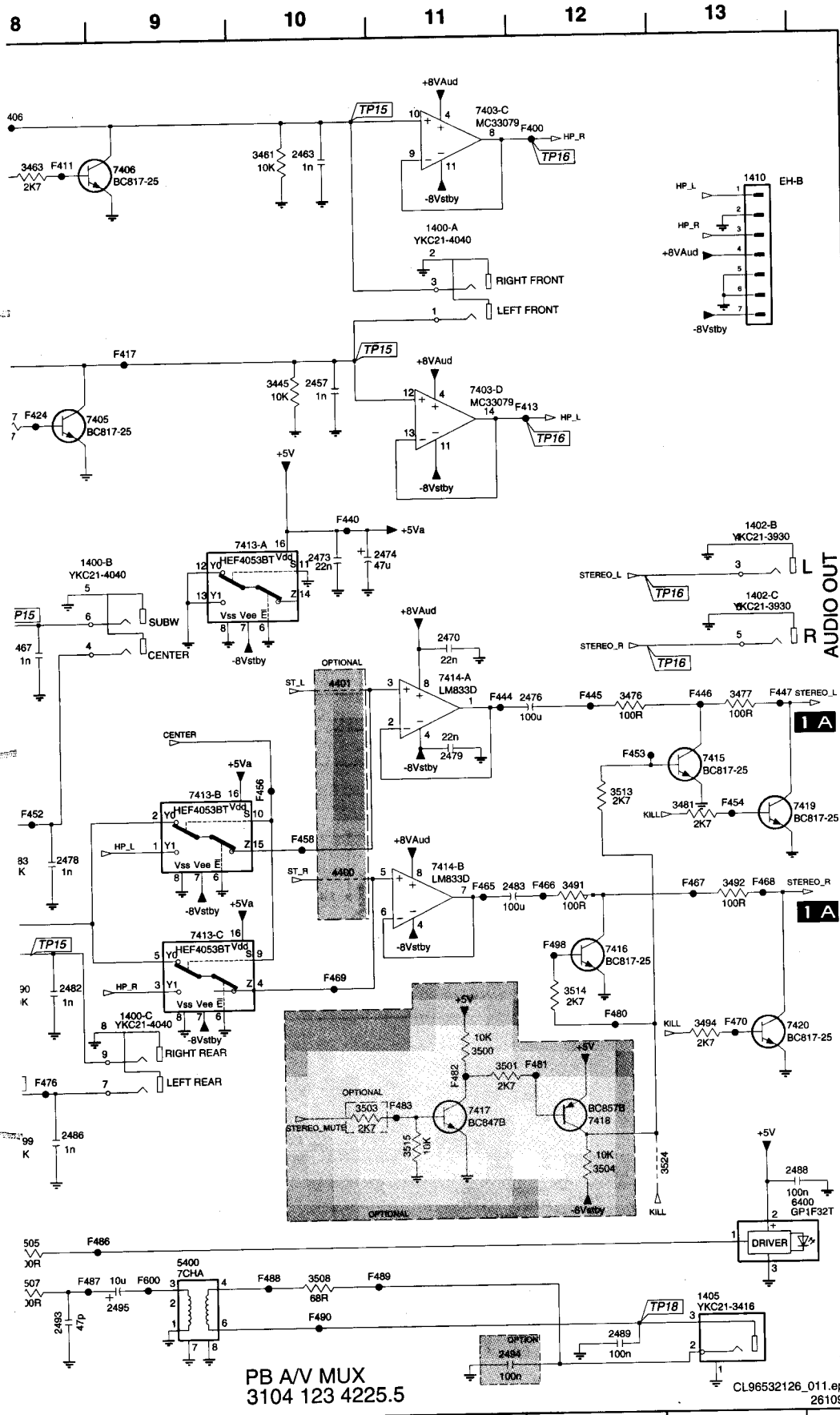
A
B
C
D
E
F
G
H
I



V
ELECTRONIC VOLT METER

DC VOLTAGES MEASURED IN STOP MODE

KILL: -8V DURING PLAY
5V DURING STOP, NEXT, PREVIOUS



PB A/V MUX
3104 123 4225.5

CL96532126_011.eps
261099

1300-10 E1	3493 G5	F452 F8
1300-11 E1	3494 G13	F453 E2
1300-12 E1	3495 H4	F454 F13
1300-13 E1	3496 H7	F455 E1
1300-14 F1	3497 H7	F456 E10
1300-15 F1	3498 H5	F457 F7
1300-16 F1	3499 H8	F458 F10
1300-17 F1	3500 G11	F459 F4
1300-18 F1	3501 G11	F460 F5
1300-19 G1	3502 H5	F461 F6
1300-20 G1	3503 H10	F462 F7
1300-21 G1	3504 H12	F463 G4
1300-22 G1	3505 I8	F464 G7
1300-4 D1	3506 F3	F465 F11
1300-7 E1	3507 I8	F466 F12
1301-1 H1	3508 I10	F467 F13
1301-11 I1	3509 G2	F468 F13
1301-12 I1	3510 C6	F469 G10
1301-3 H1	3511 C1	F470 G13
1301-4 H1	3512 C1	F471 G1
1301-5 H1	3513 F12	F472 G4
1301-6 I1	3514 G12	F473 G1
1301-7 I1	3515 H11	F474 H6
1301-A A11	3516 H2	F475 H6
1400-B D9	3517 B7	F476 H8
1400-C G9	3518 B3	F477 H5
1402-B D13	3519 B3	F478 G1
1402-C D13	3520 I2	F479 H7
1405 I13	3521 I3	F480 G12
1410 A13	3522 I2	F481 G12
2450 B6	3523 H3	F482 H11
2452 A2	3524 H13	F483 H11
2453 A3	3525 F1	F485 I2
2455 B4	3527 G2	F486 I8
2456 B7	4400 F10	F487 I8
2457 C10	4401 E10	F488 I10
2458 C6	5400 I9	F489 I10
2459 A4	6400 H13	F490 I10
2460 B2	7400 A2	F491 G2
2461 C6	7401 B2	F497 H1
2462 A7	7402 A3	F498 G12
2463 A10	7403-A A6	F499 A3
2464 A6	7403-B B6	F500 H3
2465 D6	7403-C A11	F501 I2
2466 D7	7403-D C11	F502 I3
2467 D8	7404 C7	F503 I2
2468 E6	7405 C8	F600 I9
2469 E2	7406 A9	F609 D7
2470 D11	7407 A7	7409 D7
2471 E2	7408-A E5	7410 F7
2472 E3	7408-B D6	7411 G7
2473 D10	7408-C G5	7412 H7
2474 D11	7408-D F5	7413-A D10
2475 F6	7409 D7	7413-B E9
2476 E12	7410 F7	7413-C F9
2477 E6	7411 G7	7414-A E11
2478 F8	7412 H7	7414-B F11
2479 E11	7413 A10	7414-E13
2480 F5	7413-B E9	7415 B13
2481 G6	7413-C F9	7415 E11
2482 G8	7414-A E11	7415-B F11
2483 F11	7414-B F11	7415 G12
2484 G5	7414-E13	7416 G12
2485 H6	7415 B13	7417 H11
2486 H8	7415 E11	7417 H12
2487 H5	7416 G12	7418 H12
2488 H13	7417 H11	7419 F13
2489 I2	7418 H12	7420 G13
2490 D7	7419 F13	7421 G3
2491 I2	7420 G13	7422 I3
2493 I8	7421 G3	7423 I3
2494 I2	7422 I3	F400 A12
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3444 C4	F401 A3	F402 A5
3445 C10	F402 A5	F403 A6
3446 C7	F403 A6	F404 A6
3447 C8	F404 A6	F405 A7
3448 C4	F405 A7	F406 A8
3449 C4	F406 A8	F407 A8
3450 C2	F407 A8	F408 A5
3451 C4	F408 A5	F409 A7
3452 B6	F409 A7	F410 A7
3453 C6	F410 A7	F411 A8
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3455 A4	F412 B4	F413 C12
3456 A7	F413 C12	F414 B2
3457 A8	F414 B2	F415 B5
3458 C3	F415 B5	F416 B7
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3460 C3	F417 B9	F418 B5
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3462 A7	F419 B1	F420 B7
3463 A8	F420 B7	F421 B6
3464 A6	F421 B6	F422 B1
3465 D7	F422 B1	F423 C7
3466 D7	F423 C7	F424 C8
3468 D4	F424 C8	F425 C1
3469 D8	F425 C1	F426 C1
3470 D7	F426 C1	F427 C1
3471 E6	F427 C1	F428 C1
3472 E1	F428 C1	F429 C6
3473 E2	F429 C6	F430 C1
3475 E6	F430 C1	F431 C1
3476 E12	F431 C1	F432 C1
3477 E13	F432 C1	F433 C6
3478 E4	F433 C6	F434 D4
3479 F4	F434 D4	F435 D7
3480 F7	F435 D7	F436 D8
3481 F13	F436 D8	F437 D3
3482 F5	F437 D3	F438 D7
3483 F8	F438 D7	F439 E2
3484 F7	F439 E2	F440 D10
3486 G4	F440 D10	F441 E6
3487 F7	F441 E6	F442 E6
3488 G7	F442 E6	F443 E4
3489 G4	F443 E4	F444 E11
3490 G8	F444 E11	F445 E12
3491 F12	F445 E12	F446 E13
3492 F13	F446 E13	F447 E13
	F447 E13	F448 E1
	F448 E1	F449 E5
	F449 E5	F450 F6
	F450 F6	F451 F6

7. DIAGNOSTIC SOFTWARE : SCRIPT INTERFACES

7.1 DEALER SCRIPT

7.1.2 Contents of Dealer Script

7.1.1 Purpose 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.

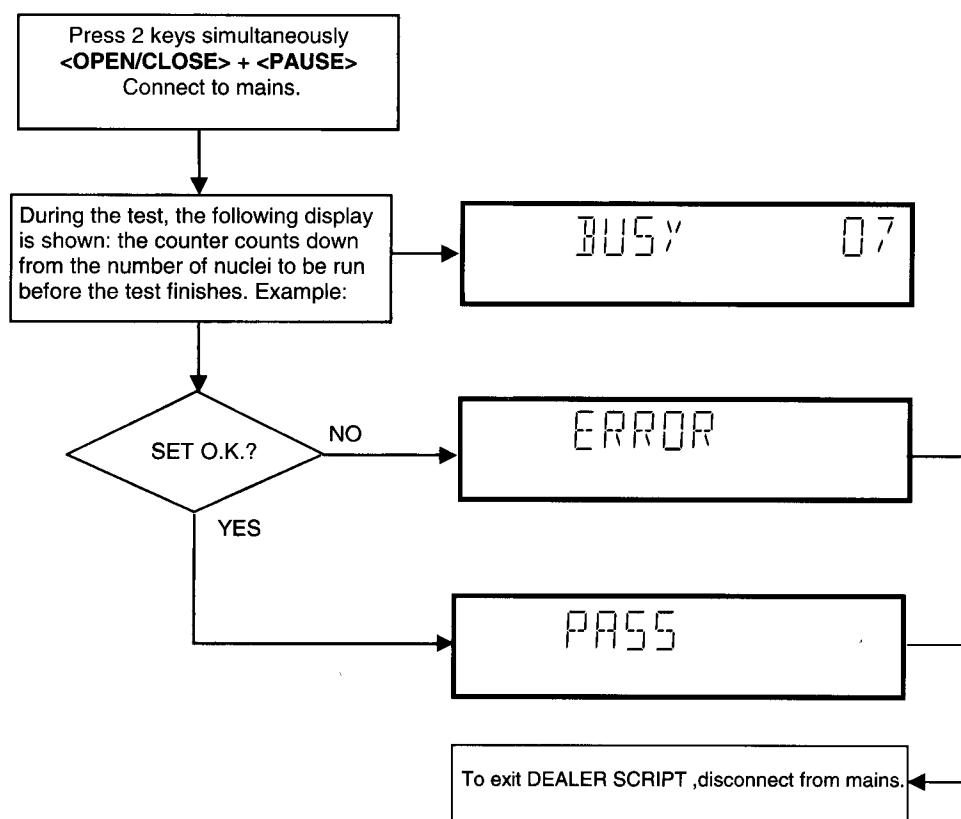
The nuclei called in the dealer script are the following (the number after each nucleus name corresponds with the number being on the local display when the nucleus is executed during the dealer script):

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.

Nucleus		Description
VideoColSetupComm	9	Checks the I2C interface with the RGB video processor on the Audio/Video board (only for DVD players with RGB video processor).
VideoScartSwComm	8	Checks the I2C interface with the scart switch on the Audio/Video board
PapChksFl	7	Calculate and verify checksum of FLASH memory.
PapDramWrR	6	Pattern test of all locations in the DRAM(s).
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).

CL 96532065_001.eps
120799

Figure 7-1



CL96532126_013.eps
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Figure 7-2

7.2 PLAYER SCRIPT

7.2.4 Survey

7.2.1 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.

7.2.2 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.

7.2.3 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.

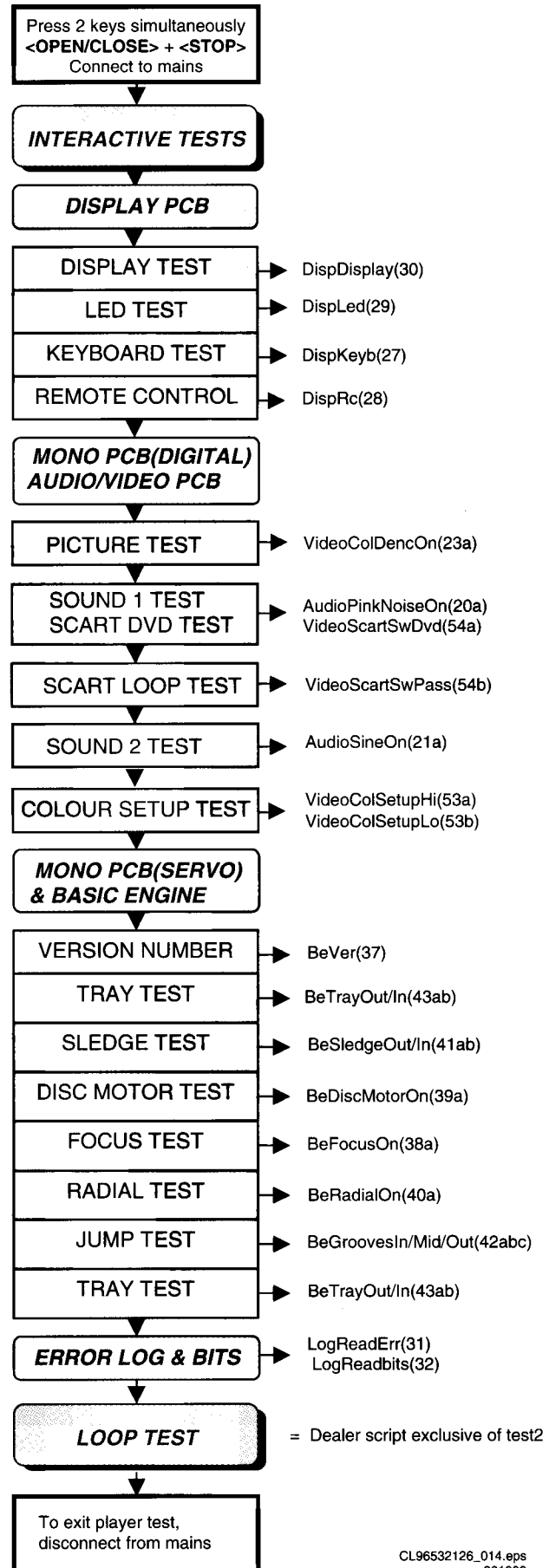


Figure 7-3

7.3 INTERACTIVE TESTS

7.3.1 DISPLAY PCB

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).

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).

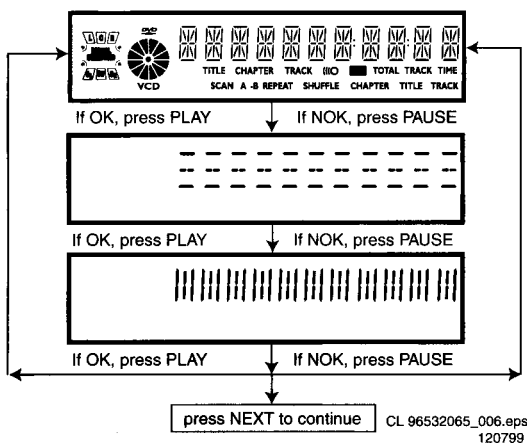
key id.	key
0	PLAY
1	NEXT
2	PREVIOUS
3	PAUSE
4	STOP
5	OPEN/CLOSE
6	3D-SOUND
A	STANDBY

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Figure 7-6

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 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:

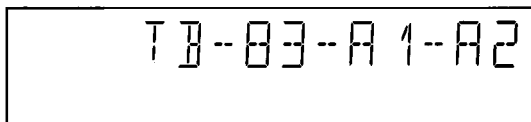


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Figure 7-4

KEYBOARD TEST

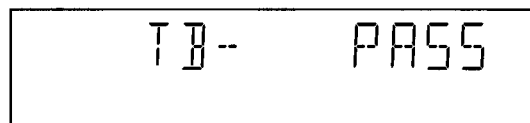
The keyboard of the DVD player is tested by nucleus DispKeyb. The user is expected to press all keys on the local keyboard once. The code of the key pressed is shown on the local display (1 hexadecimal digit) immediately followed by a (hexadecimal) number indicating how many times that key has been pressed.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



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Figure 7-5

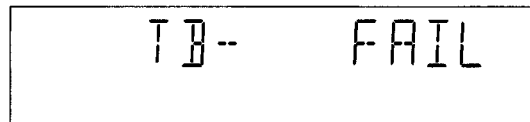
The key-codes displayed on the local display will scroll from right to left when the display gets full, the text "tb-" will remain on display.



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Figure 7-7

Or



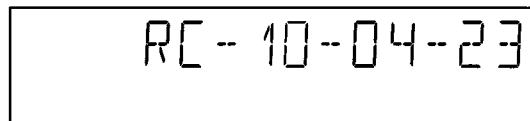
CL 96532065_010.eps
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Figure 7-8

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

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:



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Figure 7-9

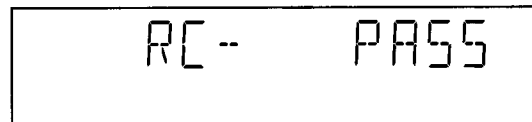
In this example 23 is the hexadecimal code of the pressed RC key. The user can leave the remote-control test by pressing NEXT on the local keyboard of the DVD player. The remote control test is successful if a code was received before the user pressed the NEXT key; pressing the NEXT key before pressing 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.

RC Key id	Hexadecimal code
STANDBY	C
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	D8
SLOW BACKWARD	23
SLOW BACKWARD 2	DB
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	3D
TOGGLE SCART	43
OPEN/CLOSE	42
FTS	FB
KARAOKE	E4
OPTION	FA

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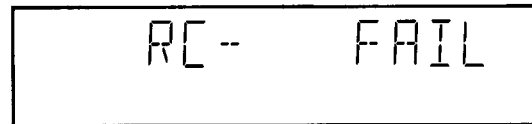
Figure 7-10



CL 96532065_013.eps
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Figure 7-11

Or



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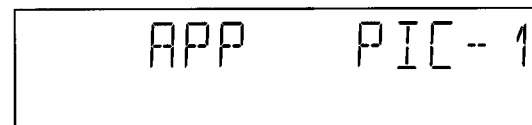
Figure 7-12

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

7.3.2 MONO PCB DIGITAL PART

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:



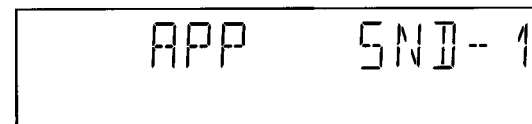
CL 96532065_015.eps
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Figure 7-13

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

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 7-14

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:

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



Figure 7-15

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:

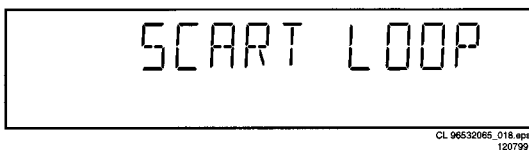


Figure 7-16

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.

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:

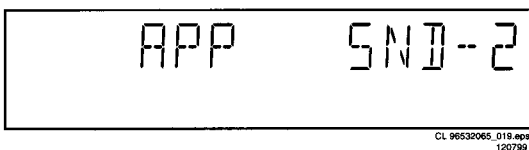


Figure 7-17

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).

Colour set-up test

The colour set-up 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:

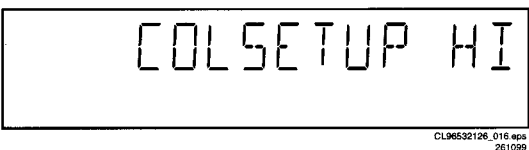


Figure 7-18

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

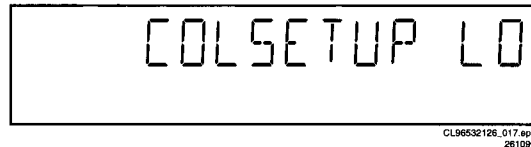


Figure 7-19

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 this test will be TRUE (colour set-up ok).

7.3.3 BASIC ENGINE

VERSION NUMBER

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

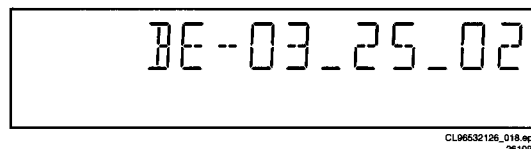


Figure 7-20

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

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:

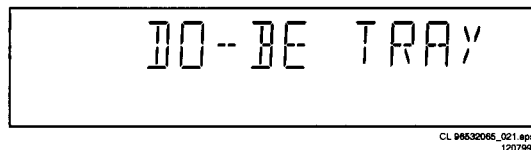
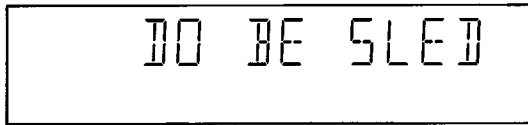


Figure 7-21

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.

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:

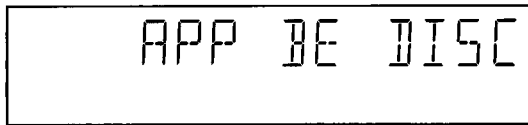


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Figure 7-22

DISC MOTOR TEST(visual test)

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



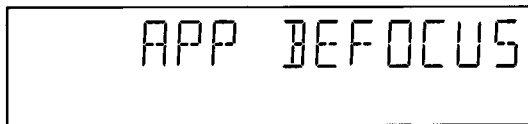
CL 96532065_023.eps
120799

Figure 7-23

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).

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:



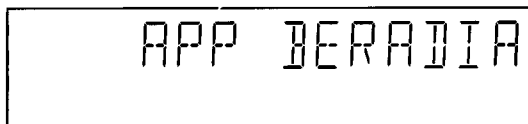
CL 96532065_024.eps
120799

Figure 7-24

By pressing PLAY the user confirms that the focussing was successful; 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).

RADIAL TEST(visual & listening test)

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



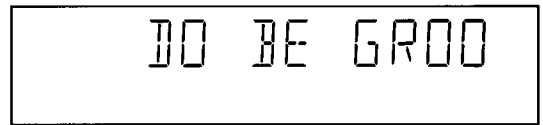
CL 96532065_025.eps
120799

Figure 7-25

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).

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:



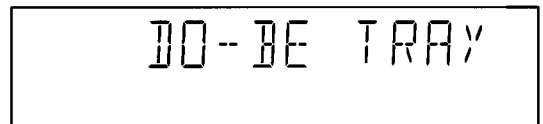
CL 96532065_026.eps
120799

Figure 7-26

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.

TRAY TEST

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



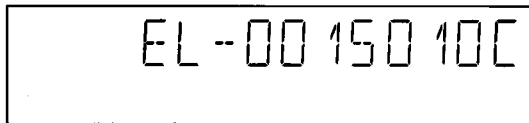
CL 96532065_027.eps
120799

Figure 7-27

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.

ERROR LOG

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 :



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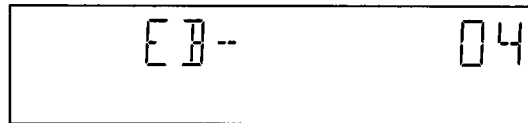
Figure 7-28

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.

ERROR BITS

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



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Figure 7-29

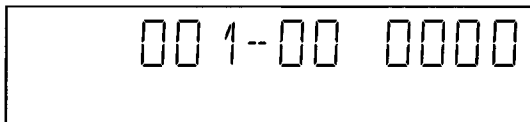
Only the set errorbits will be shown by their (decimal) number. Refer to the appropriate documentation for the explanation of each bit number. If the display only shows "EB-0", no error bits were set. By pressing NEXT the user can continue to the next test.

See table below:

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 could not be reached within timeout	150105	4
Radial servo could 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 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
Display processor errors		
Communication error with the display processor	190000	40

7.3.4 LOOP TEST

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



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Figure 7-30

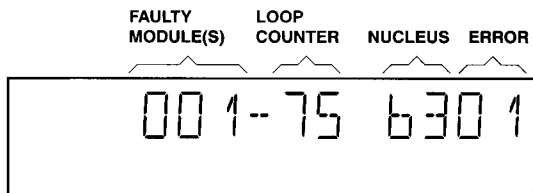
The left side of the display contains a 3-digit code, which can have a value between 000 and 111. These values are to be interpreted as follows:

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 7-31

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:



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Figure 7-32

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
0901	9	The DVD DRAM is faulty
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		I2c bus not working
5203		Colour setup controller not responding
5204		Colour setup controller response not correct
5401	54	I2c bus busy
5402		I2c bus not working
5403		Scart switch controller not responding
5404		Scart switch controller response not correct

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Figure 7-33

8. Servicing DVD module and MONO board

8.1 Replacing DVD module

The DVD module(Basic Engine and the mono board) has to be exchanged completely in case of failure. A new module for

DVD750/001 can be ordered with codenumber 3104 129 51980.

Return the defective unit complete assembled in original package to Philips Consumer Service in Eindhoven

8.2 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 replacement 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 : <0><0><1> <0><0><0><0><0><0><0><0><0>
 This is only valid for DVD950/001,DVD950/002, DVD955/002 and DVD956/002.

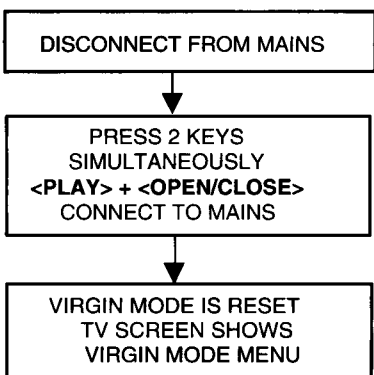
Press <PLAY> again.
 The TV screen will become BLUE during a short time to confirm that the digital board has been reprogrammed, then the set goes to standby mode.

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261099

Figure 8-1

8.3 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:

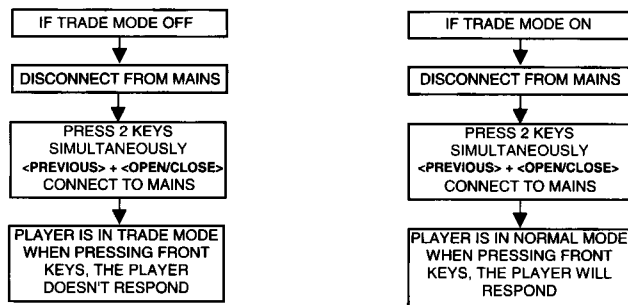


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Figure 8-2

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.



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261099

Figure 8-3

9. Test instructions Display board

9.1 Display board

9.1.1 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:

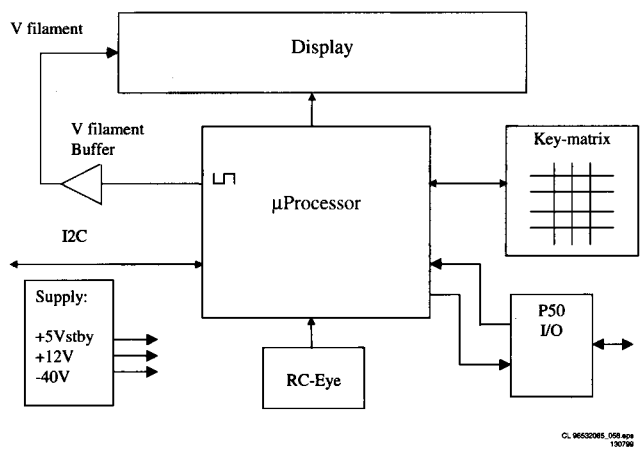


Figure 9-1

9.1.2 Functionality description:

The essential component of the display PCB is the uP (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 uP. This host uP will then initialise the slave. In addition, when going to stand-by, the slave will put the host uP in reset. When the slave receives the right IR or key code to leave the standby mode, the reset of the host uP 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).

9.1.3 General

- Oscilloscope measurements have been carried out using a Philips PM3392A.
- Impedance of measuring-equipment should be > 1M(.
- 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.

9.1.4 Reset

Check next reset timing with an oscilloscope at pin 10 (processor).

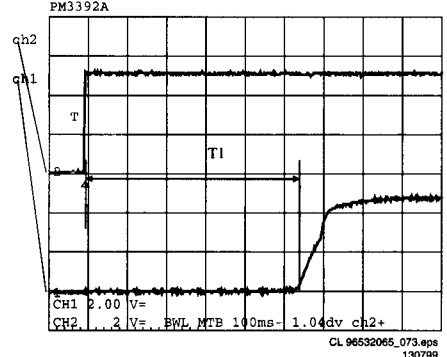


Figure 9-2

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

9.1.5 Display steering

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

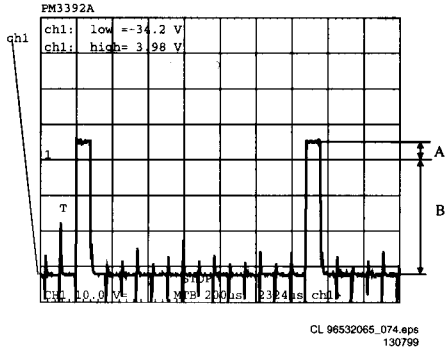


Figure 9-3

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 r P10:

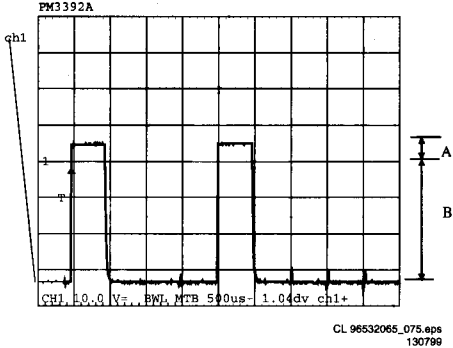


Figure 9-4

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.

9.1.6 Key-matrix

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

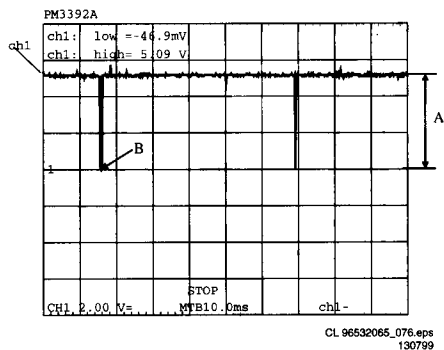


Figure 9-5

Level A: 5.0V (7%)

Level B: 0V (200mV)

Check matrix scanning from pin 26 until 33 of the (P.

The results should be the same as the diagram above.

9.1.7 I.R. receiver

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

9.1.8 Karaoke interface

The karaoke interface (4 lines) is a single direction communication.

This means that it consists of four uP 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	: xxxabcd
Wherea	: a = Karaoke reset.
	: b = Karaoke data.
	: c = Karaoke clock.
	: d = Karaoke strobe.

9.1.9 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.

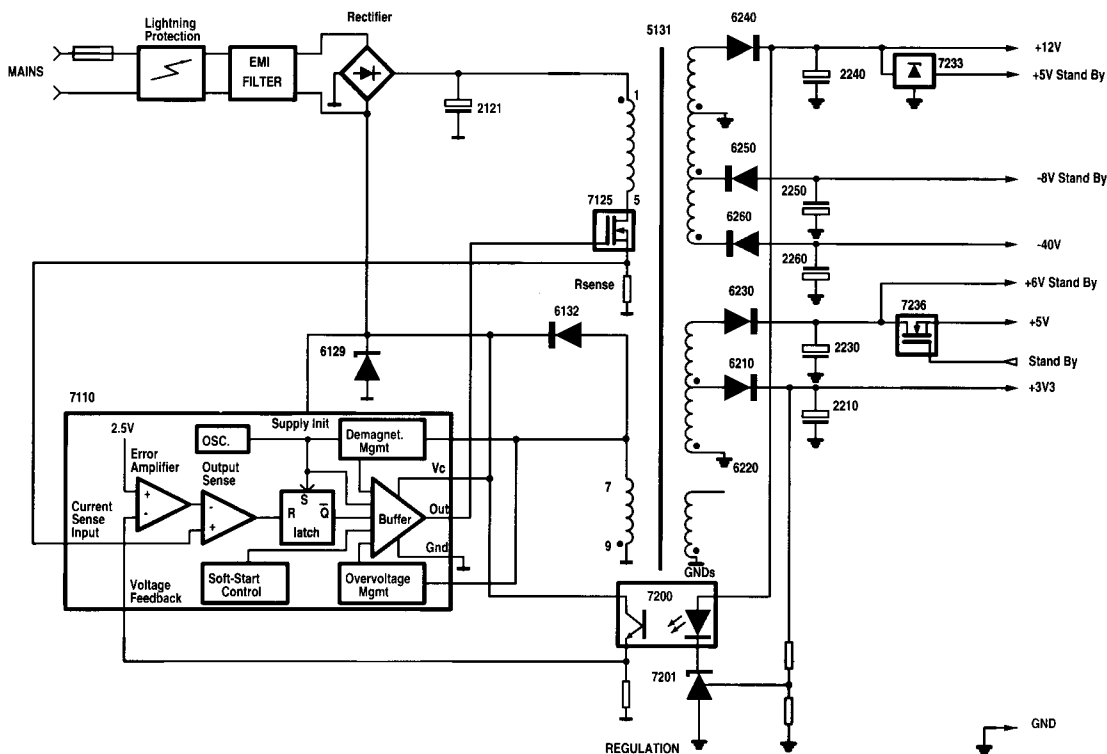
1. Keep the uP in reset by short-circuiting emitter and collector of transistor 7108, via resistor 3100 and 3104 transistor 7101 is switched on.
2. Check the voltage at the P50 output connector 1118-5: < 200mV.

When the reset is released the uP 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 uP P50 input (uP pin 20): 5V (5%).
3. Connect the P50 line (connector 1118-5) to ground.
4. Check again the uP P50 input (uP pin 20): <0V3.

10. Current mode power supply 30PS203

10.1 Blockdiagram



CL 96532065_064.eps
130799

Figure 10-1

10.1.1 Function description of the current mode power supply

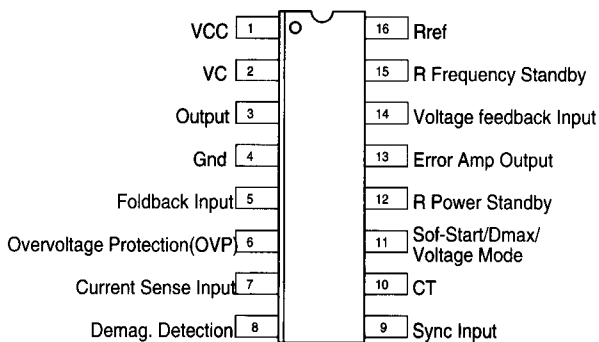
MOSFET 7125 is used as a power switch controlled by the controller IC 7110. When the switch is closed, energy is transferred from the mains into the transformer. This energy is then supplied to the load when the switch is opened. By control of the switched-on time, the energy transferred in each cycle is regulated so that the output voltages are independent of load or input voltage variations. The controlling device MC44603P is an integrated pulse width modulator. A clock signal initiates power pulses at a fixed frequency. The termination of each output pulse occurs when an analogue of the inductor current reaches a threshold established by the error signal. In this way the error signal actually controls the peak inductor current on cycle-by-cycle basis.

can also be used for driving a bipolar transistor in low power converters. It is optimised to operate in discontinuous mode but can also operate in continuous mode. Its advanced design allows use in current mode or voltage mode control applications.

10.2 General description of MC44603

The MC44603 is an enhanced high performance controller that is specifically designed for Off-line and dc-to dc converter applications. This device has the unique ability of automatically changing operating modes if the converter output is overloaded, unloaded, or shorted. The MC44603 has several distinguishing features when compared to conventional SMPS controllers. These features consist of a foldback facility for overload protection, a standby mode when the converter output is slightly loaded, a demagnetisation detection for reduced switching stresses on transistor and diodes, and a high current totem pole output ideally suited for driving a power MOSFET. It

10.3 Pin connections



CL 96532065_065.eps
281099

Figure 10-2

10.4 Blockdiagram of MC44603

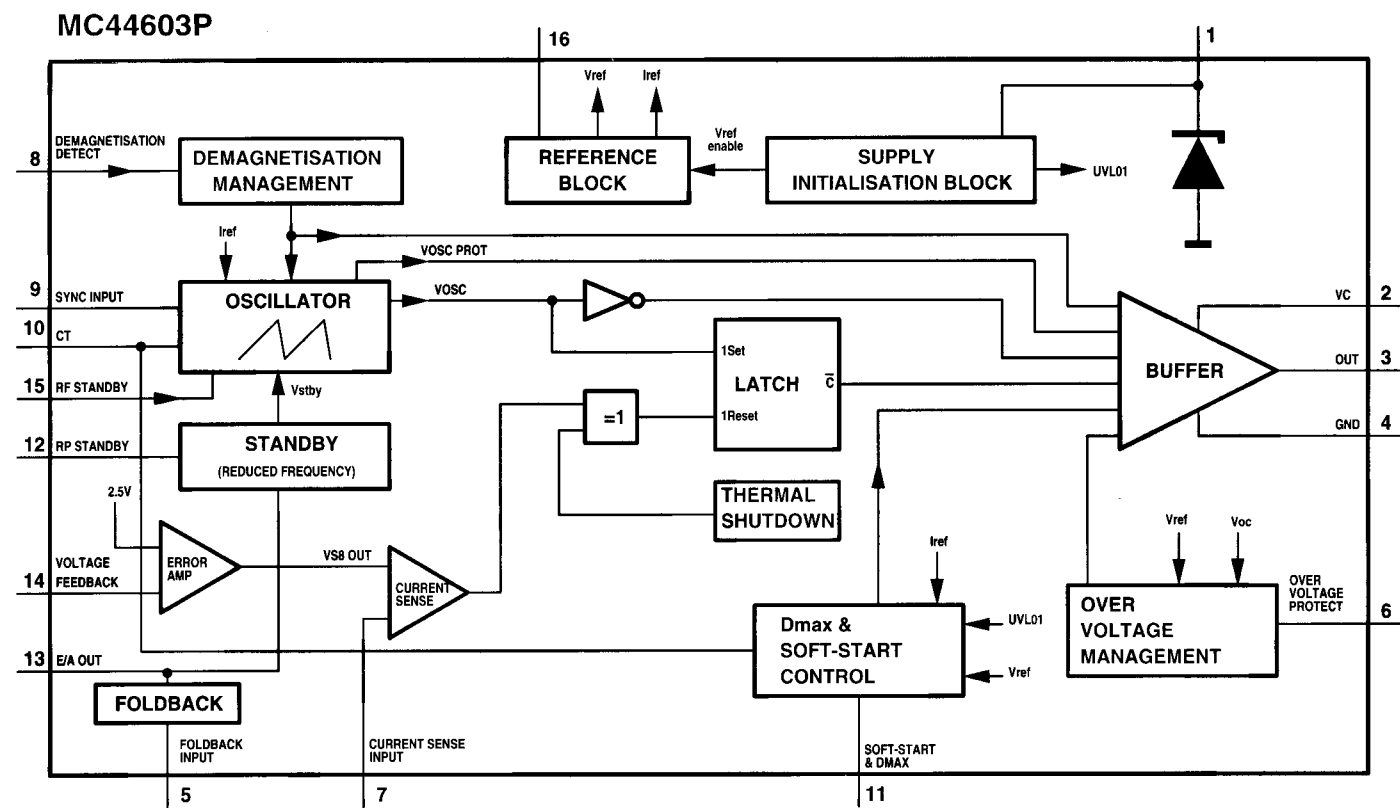
CL 96532065_066.eps
130799

Figure 10-3

10.5 Pin function description

Pin function description

Pin	Name	Description
1	VCC	This pin is the positive supply of the IC. The operating voltage range after start-up is 9.0 to 14.5 V.
2	VC	The output high state (VOH) is set by the voltage applied to this pin.
3	Output	Peak currents up to 750 mA can be sourced or sunk, suitable for driving either MOSFET or Bipolar transistors.
4	Gnd	The groundpin is a single return, typically connected back to the power source.
5	Foldback Input	The foldback function provides overload protection.
6	Oversvoltage Protection	When the oversvoltage protection pin receives a voltage greater than 2.5V, the device is disabled and requires a complete restart sequence.
7	Current Sense Input	A voltage proportional to the current flowing into the power switch is connected to this input.
8	Demagnetisation Detection	A voltage delivered by an auxiliary transformer winding provides to the demagnetisation pin an indication of the magnetisation state of the flyback transformer. A zero voltage detection corresponds to complete core saturation.
9	Synchronisation Input	The synchronisation input pin can be activated with either a negative pulse going from a level between 0.7V and 3.7V to Gnd or a positive pulse going from a level between 0.7V and 3.7V up to a level higher than 3.7V. The oscillator runs free when Pin 9 is connected to Gnd.
10	Cr	The normal mode oscillator frequency is programmed by the capacitor CT choice together with the Rref resistance value. CT, connected between Pin 10 and Gnd, generates the oscillator sawtooth.
11	Soft-Start/Dmax/Voltage-Mode	A capacitor, resistor or a voltage source connected to this pin limits the switching duty-cycle. This pin can be used as a voltage mode control input. By connecting Pin 11 to Ground, the MC44603 can be shut down.
12	RP Standby	A voltage level applied to the RP Standby pin determines the output power level at which the oscillator will turn into the reduced frequency mode of operation (i.e. standby mode). An internal hysteresis comparator allows to return in the normal mode at a higher output power level.
13	E/A Out	The error amplifier output is made available for loop compensation.
14	Voltage Feedback	This is the inverting input of the Error Amplifier. It can be connected to the switching power supply output through an optical (or other) feedback loop.
15	RF Standby	The reduced frequency or standby frequency programming is made by the RF Standby resistance choice.

Figure 10-4

10.6 Operating description

The input voltage V_{cc} (pin 1) is monitored by a comparator with hysteresis, enabling the circuit at 14.5V and disabling the circuit below 7.5V. The error amplifier compares a voltage V_{fb} (pin 14) related to the output voltage of the power supply, with an internal 2.5V reference. The current sense comparator compares the output of the error amplifier with the switch current I_{sense} (pin 7) of the power supply. The output of the current sense comparator resets a latch, which is set every cycle by the oscillator. The output stage is a totem pole, capable of driving a MOSFET directly.

10.6.1 Start-up sequence

t1: Charging the capacitor at V_{cc}

C2129 will be charged via R3123 and R3134, C2133 and C2111 via R3129. The output is switched off during t1.

t2: Charging of output capacitors

When the input voltage of the IC exceeds 14.5V, the circuit is enabled and starts to produce output pulses. The current consumption of the circuit increases to about 17mA, depending on the external loads of the IC. At first, the capacitor at the V_{cc} pin will discharge because the primary auxiliary voltage, coming from winding 7-9 is below the V_{cc} voltage. At some moment during t2, the primary auxiliary voltage reaches the same level as V_{cc} . The V_{cc} voltage is now determined by this primary auxiliary voltage.

t3: regulation

The output voltage of the power supply is in regulation

t4: overload

When the output is shortened, the supply voltage of the circuit will decrease and after some time drop below the lower threshold voltage. At that moment, the output will be disabled and the process of charging the V_{cc} capacitor starts again. If the output is still shorted at the next t2 phase, the complete start-and stop sequence will repeat. The power supply comes in a hiccup mode

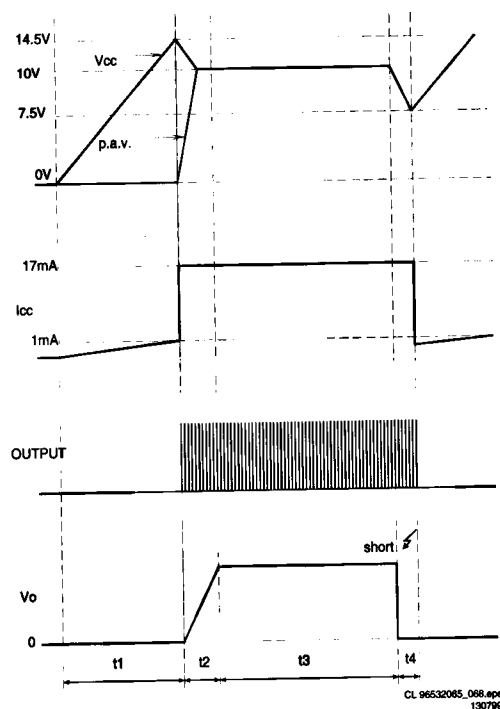


Figure 10-5 Start-up sequence

10.7 Regulation

Figure B shows the most relevant signals during the regulation phase of the power supply.

The oscillator voltage ramps up and down between V1 and V2. The voltage at the current sense terminal is compared every cycle with the output of the error amplifier V_{comp} . The output is switched off when the current sense level exceeds the level at the output of the error amplifier.

1. TimeON phase : A drain current will flow from the positive supply at pin 1 of the transformer through the transformer's primary winding, the MOSFET and R_{sense} to ground. As the positive voltage at pin 1 of the transformer is constant, the current will increase linearly and create a ramp dependent on the mains voltage and the inductance of the primary winding. A certain amount of energy is stored in the transformer in the form of a magnetic field. The polarity of the voltages at the secondary windings is such that the diodes are non-conducting.
2. TimeDIODE phase : When the MOSFET is switched off, energy is no longer supplied to the transformer. The inductance of the transformer now tries to maintain the current which has been flowing through it at a constant level. The polarity of the voltage from the transformer therefore becomes reversed. This results in a current flow through the transformer's secondary winding via the diodes, electrolytic capacitors and the load. This current is also ramp shaped but decreasing.
3. TimeDEAD phase : when the stored energy has been supplied to the load, the current in the secondary windings stops flowing. At this point the drain voltage of the MOSFET will drop to the voltage of C2121 with a ringing caused by the Drain-Source capacitance with the primary inductance.

The oscillator will start a next cycle which consists of the described three phases. The time of the different phases depends on the mains voltage and the load.

TimeDEAD is maximum at an input of 400VDC and minimum load, it will be zero at an input of 100VDC and overload.

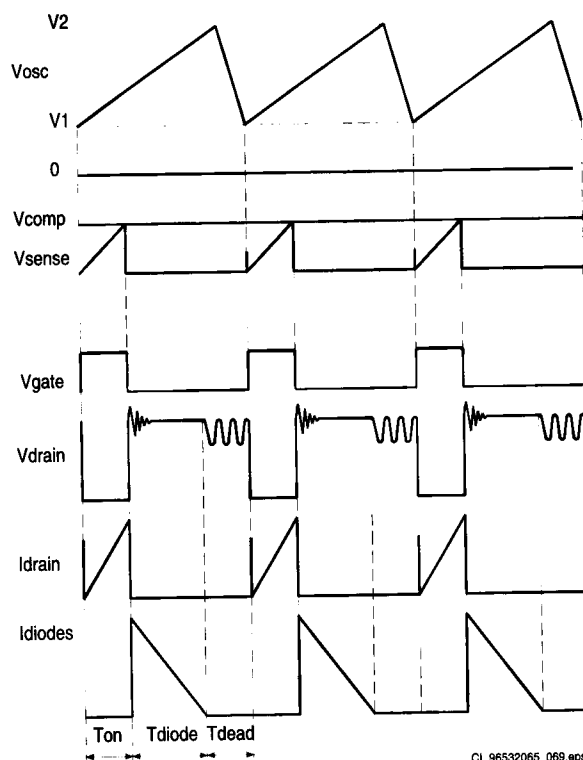
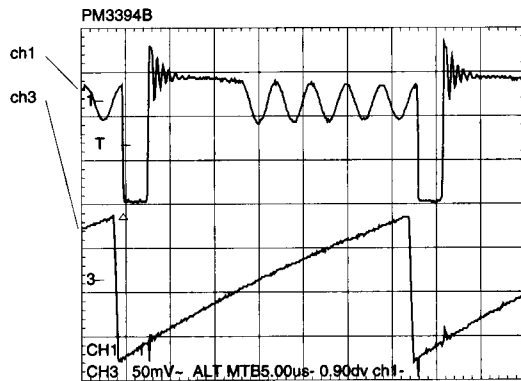


Figure 10-6 Regulation

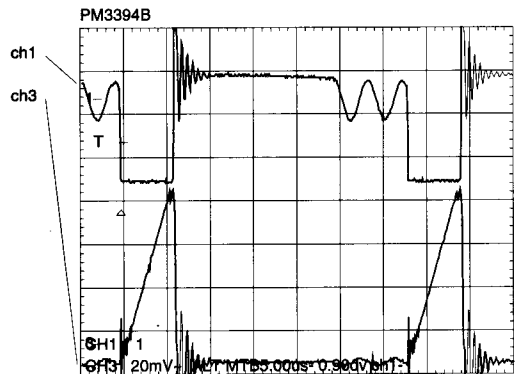
10.8 Oscillograms



ch1 : Drain voltage
 ch2 : Drain current
 ch3 : Gate voltage



ch1 : Drain voltage
 ch2 : Oscillator voltage



ch1 : Drain voltage
 ch3 : Sense voltage

Figure 10-7

10.9 Circuit description

10.9.1 Input circuit

The input circuit consists of a lightning protection circuit and an EMI filter.

The lightning protection comprises R3120, gasarrestor 1125 and R3124. The EMI filter is formed by C2120, L5120, C2125 and C2126. It prevents inflow of noises into the mains.

10.9.2 Primary rectifier/smoothing circuit

The AC input is rectified by rectifier bridge 6120 and smoothed into C2121. The voltage over C2121 is approximately 300V. It can vary from 100V to 390V.

10.9.3 Start circuit and Vcc supply

This circuit is formed by R3123, R3134, C2129, D6129, R3129, R3111, C2133 and C2111.

When the power plug is connected to the mains voltage, the stabilised voltage over D6129(24V) will charge C2133 via R3129. When the voltage reaches 14.5V across C2111, the control circuit of IC7110 is turned on and the regulation starts. During regulation, Vcc of IC7110 will be supplied by the rectified voltage from winding 7-9 via R3135, D6132 and C2133.

10.9.4 Control circuit

The control circuit exists of IC7110, C2102, 2104, 2107, 2109, 2110, R3102, 3103, 3104, 3107, 3108, 3109 and 3110. The frequency of the oscillator is defined by C2102 and R3110.

Power switch circuit

This circuit comprises MOSFET 7125, Rsense 3126, 3127 and 3128, R3125, C2127, L5125, R3112 and R3113. R3125 is a pull-down resistor to remove static charges from the gate of the MOSFET.

10.9.5 Regulation circuit

The regulation circuit comprises opto-coupler 7200 which isolates the error signal from the control IC on the primary side and a reference component 7201. The TL431(7201) can be represented by two components:

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

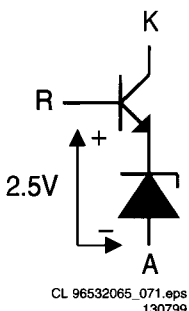


Figure 10-8

TL431 will conduct from cathode to anode when the reference is higher than the internal reference voltage of about 2.5V. If the reference voltage is lower, the cathode current is almost zero. The cathode current flows through the LED of the opto-coupler. The collector current of the opto-coupler flows through R3106, producing an error voltage, connected to voltage feedback pin 14 of IC7110.

10.9.6 Demagnetisation

The auxiliary winding (7-9) voltage is used to detect magnetic saturation of the transformer core and connected via R3101 to pin 8 of IC7110. During the demagnetisation phase, the output will be disabled.

10.9.7 Overvoltage protection circuit

This circuit consist of D6114, C2114, R3115 and R3116. When the regulation circuit is interrupted due to an error in the control loop, the regulated output voltage will increase (overvoltage). This overvoltage is sensed on the primary winding 7-9.

When an overvoltage longer than 2.0 (s is detected, the output is disabled until VCC is removed and then re-applied. The power supply will come in a hiccup mode as long as the error in the control loop is present.

10.9.8 Secondary rectifier/smoothing circuit

There are 5 rectifier/smoothing circuits on the secondary side. Each voltage depends on the number of windings of the transformer.

The +5Vstby power supply is derived from the +12Vstby by voltage regulator 7233, C2233 and L5233.

The -5V voltage is regulated by voltage regulator 7259 and will be switched off via D6256, T7256 and T7255 during standby (control signal STAND BY is high). When jumper 4250 is mounted instead of this circuit, a supply voltage -8Vstby will be present at pin 9 of connector 0205. -5V is used in DVD730 MK II, DVD 930 MK II and DVD710. -8Vstby is used in DVD750 and DVD950.

The +5V power supply is derived from +6Vstby by the loader-up circuit formed by MOSFET 7236, reference component 7237, R3236, R3237 and C2239. This voltage will be switched off during STAND BY via T7235.

The 3V3 power supply is regulated by the control loop (7201, 7200, 7110) of the switched mode PSU.

11. List of abbreviations

SIGNAL NAME	DESCRIPTION	Y_ENC	Buffered Luma input from DVD monoboard
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	Y_OUT	Luma output to S-Video output buffer
B	Buffered Video input Blue from DVD monoboard	YCVBSIN_AUX	Luma or CVBS input from AUX-scart
B/C SWITCHING	Circuit for bi-directional switching of Blue and Chroma on dual scart. Switches between virtual ground (75 ohm) and video output buffer.	YCVBSIN_TV	Luma or CVBS input from TV-scart
BC_AUX	Blue or Chroma input from AUX-scart	YCVBSOUT_AUX	Luma or CVBS output to AUX-scart
BC_TV	Blue or Chroma output to TV-scart	YCVBSOUT_TV	Luma or CVBS output to TV-scart
BO	Blue output from RGB video processor		
BOUT_TV	Blue output to TV-scart		
C_ENC	Buffered Chroma input from DVD monoboard		
C_OUT	Chroma output to S-Video output buffer		
CENTER	Control signal from monoboard to switch STEREO OUTPUT cinch to mono.		
CVBS	Buffered Composite video input from DVD monoboard		
DC_OFF	Control signal to switch off -8Vstby 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		
GO	Green output from RGB video processor		
GOUT_TV	Video output Green to TV-scart		
HP_L	Headphone left output		
HP_R	Headphone right output		
HSYNC	Horizontal synchronization for RGB video processor.		
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		
P50	Bi-directional interface used for communication between video equipment		
PCM_CLK	Audio system clock for DAC		
PCM_OUT[0:2]	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		
RO	Red output from RGB video processor		
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		
ST_L	Stereo left output (not used)		
ST_R	Stereo right output (not used)		
STEREO_L	Audio cinch output left		
STEREO_MUTE	Control signal from monoboard to switch on stereo mute circuit (option)		
STEREO_R	Audio cinch output right		

12. IC-descriptions



STV6410

AUDIO/VIDEO SWITCH MATRIX

- I²C BUS CONTROL
- STANDBY MODE

VIDEO SECTION

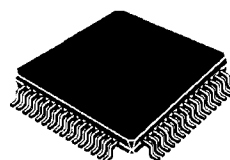
- 5 CVBS INPUTS, 4 CVBS OUTPUTS (ONE WITH SELECTABLE CHROMA TRAP FILTER)
- 5 Y/C INPUTS, 3 Y/C OUTPUTS
- 6dB GAIN ON ALL CVBS/Y AND C OUTPUTS
- 1 Y/C ADDER
- 2 RGB/FB INPUTS, 1 RGB/FB OUTPUT WITH 6dB ADJUSTABLE GAIN
- VIDEO MUTING ON ALL THE OUTPUTS
- 3 SLOW BLANKING INPUTS/OUTPUTS
- SYNC BOTTOM CLAMP ON ALL CVBS/Y AND RGB INPUTS, AVERAGE ON C INPUTS
- BANDWIDTH : 15MHz
- CROSSTALK : 60dB Typ.

AUDIO SECTION

- 5 STEREO INPUTS, 4 STEREO OUTPUTS (TWO WITH LEVEL ADJUSTMENT)
- MONO SOUND OUTPUT
- MONO SOUND CAPABILITY ON TV OUTPUTS
- AUDIO MUTING ON ALL THE OUTPUTS

DESCRIPTION

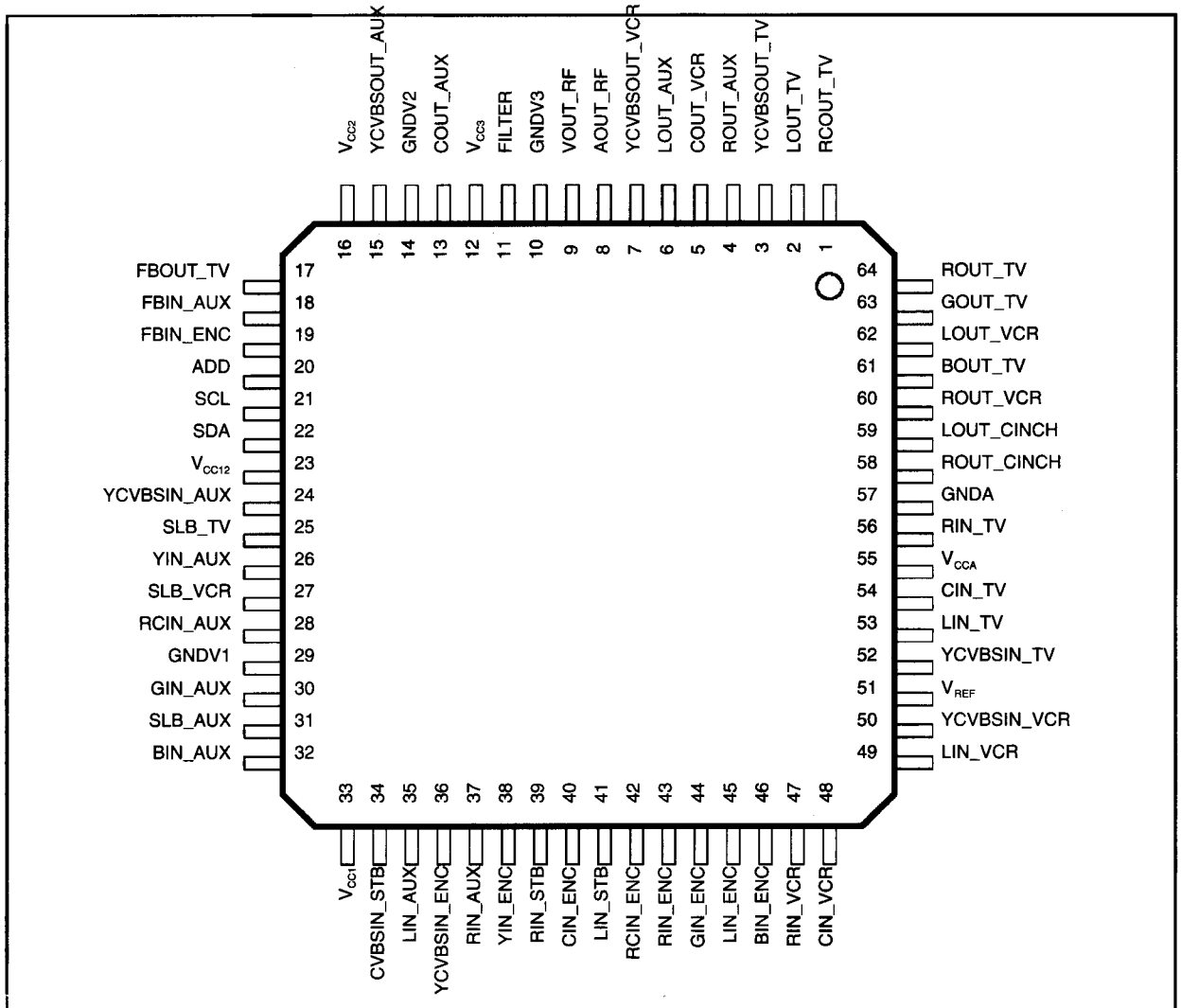
The STV6410 is a highly integrated I²C bus-controlled audio and video switch matrix, optimized for use in digital set-top box applications. It provides all the audio and video routings required in a full three scart set-top box design. It is also fully pin compatible with STV6411, the two scart version.



TQFP64
(Plastic Quad Flat Pack)

ORDER CODE : STV6410D

PIN CONNECTIONS



6410-01.EPS

PIN LIST

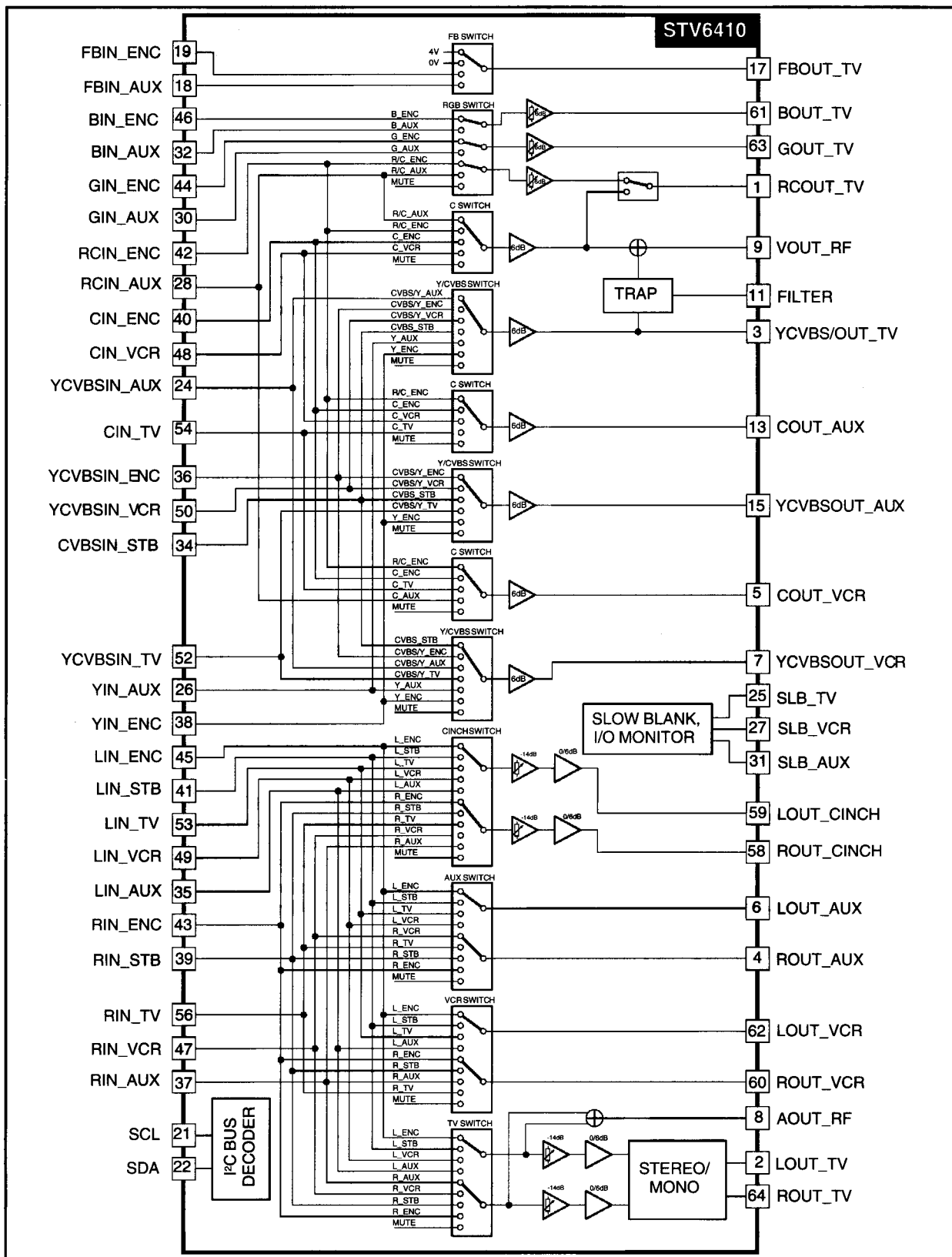
Pin Number	Symbol	Description
1	RCOUT_TV	Red/chroma Output, to TV Scart
2	LOUT_TV	Audio Left Output, to TV Scart
3	YCVBSOUT_TV	Y/CVBS Output, to TV scart
4	ROUT_AUX	Audio Right Output, to AUX Scart
5	COUT_VCR	Chroma Output, to VCR Scart
6	LOUT_AUX	Audio Left Output, to AUX Scart
7	YCVBSOUT_VCR	Y/CVBS Output, to VCR Scart
8	AOUT_RF	Audio (L+R) Output to RF Modulator
9	VOUT_RF	Video (CVBS) Output to RF Modulator
10	GNDV3	Video Switches Ground 3
11	FILTER	Chroma Trap Filter
12	V _{ccv3}	Video Switches Supply 3 (8V)
13	COUT_AUX	Chroma Output, to AUX Scart
14	GNDV2	Video Switches Ground 2
15	YCVBSOUT_AUX	Y/CVBS Output, to AUX Scart

6410-01.TBL

PIN LIST (continued)

Pin Number	Symbol	Description
16	V _{CCV2}	Video Switches Supply 2 (8V)
17	FBOU _T _TV	Fast Blanking Output, to TV Scart
18	FBIN _{AUX}	Fast Blanking Input, from AUX Scart
19	FBIN _{ENC}	Fast Blanking Input, from Encoder
20	ADD	I ² C Bus IC Address Programming
21	SCL	I ² C Bus Clock
22	SDA	I ² C Bus Data
23	V _{CC12}	Slow Blanking Power Supply (12V)
24	YCVBSIN _{AUX}	Y/CVBS Input from AUX Scart
25	SLB _{TV}	Slow Blanking Input/Output from TV
26	YIN _{AUX}	Y Input, from AUX Scart
27	SLB _{VCR}	Slow Blanking Input/Output from VCR
28	RCIN _{AUX}	Red/Chroma Input, from AUX Scart
29	GNDV1	Video Switches Ground 1
30	GIN _{AUX}	Green Input, from AUX Scart
31	SLB _{AUX}	Slow Blanking Input/Output from AUX
32	BIN _{AUX}	Blue Input, from AUX Scart
33	V _{CCV1}	Video Switches Supply 1 (8V)
34	CVBSIN _{STB}	CVBS Input from STB
35	LIN _{AUX}	Audio Left Input, from AUX Scart
36	YCVBSIN _{ENC}	Y/CVBS Input from Encoder
37	RIN _{AUX}	Audio Right Input, from AUX Scart
38	YIN _{ENC}	Y Input, from Encoder
39	RIN _{STB}	Audio Right Input, from STB
40	CIN _{ENC}	Chroma Input, from Encoder
41	LIN _{STB}	Audio Left Input, from STB
42	RCIN _{ENC}	Red/Chroma Input, from Encoder
43	RIN _{ENC}	Audio Right Input, from Encoder
44	GIN _{ENC}	Green Input, from Encoder
45	LIN _{ENC}	Audio Left Input, from Encoder
46	BIN _{ENC}	Blue Input, from Encoder
47	RIN _{VCR}	Audio Right Input, from VCR Scart
48	CIN _{VCR}	Chroma Input, from VCR Scart
49	LIN _{VCR}	Audio Left Input, from VCR
50	YCVBSIN _{VCR}	Y/CVBS Input from VCR Scart
51	V _{REF}	Voltage Reference Decoupling
52	YCVBSIN _{TV}	Y/CVBS Input, from TV Scart
53	LIN _{TV}	Audio Left Input, from TV Scart
54	CIN _{TV}	Chroma Input, from TV Scart
55	V _{CCA}	Audio Switches Supply (8V)
56	RIN _{TV}	Audio right input, from TV Scart
57	G _{NDA}	Audio Switches Ground
58	ROUT _{CINCH}	Audio Right Output, to CINCH
59	LOUT _{CINCH}	Audio Left Output, to CINCH
60	ROUT _{VCR}	Audio Right Output, to VCR sCart
61	BOU _T _TV	Blue Output, to TV Scart
62	LOUT _{VCR}	Audio Left Output, to VCR Scart
63	GOU _T _TV	Green Output, to TV Scart
64	ROUT _{TV}	Audio Right Output, to TV Scart

BLOCK DIAGRAM



RGB video processor with automatic cut-off control and gamma adjust

TDA4780

FEATURES

- Gamma adjust
- Dynamic black control (adaptive black)
- All input signals clamped on black-levels
- Automatic cut-off control, alternative: output clamping on fixed levels
- Three adjustable reference voltage levels via I²C-bus for automatic cut-off control
- Luminance/colour difference interface
- Two luminance input levels allowed
- Two RGB interfaces controlled by either fast switches or by I²C-bus
- Two peak drive limiters, selection via I²C-bus
- Blue stretch, selection via I²C-bus
- Luminance output for scan velocity modulation (SCAVEM)
- Extra luminance output; same pin can be used as hue control output e.g. for the TDA4650 and TDA4655
- Non standard operations like 50 Hz/32 kHz are also possible
- Either 2 or 3 level sandcastle pulse applicable
- High bandwidth for 32 kHz application
- White point adjusts via I²C-bus
- Average beam current and improved peak drive limiting
- Two switch-on delays to prevent discoloration during start-up
- All functions and features programmable via I²C-bus
- PAL/SECAM or NTSC matrix selection.

GENERAL DESCRIPTION

The TDA4780 is a monolithic integrated circuit with a luminance and a colour difference interface for video processing in TV receivers. Its primary function is to process the luminance and colour difference signals from a colour decoder which is equipped e.g. with the multistandard decoder TDA4655 or TDA9160 plus delay line TDA4661 or TDA4665 and the Picture Signal Improvement (PSI) IC TDA467X or from a feature module.



The required input signals are:

- Luminance and negative colour difference signals
- 2 or 3-level sandcastle pulse for internal timing pulse generation
- I²C-bus data and clock signals.

Two sets of analog RGB colour signals can also be inserted, e.g. one from a peritelevision connector (SCART plug) and the other one from an On-Screen Display (OSD) generator. The TDA4780 has I²C-bus control of all parameters and functions with automatic cut-off control of the picture tube cathode currents. It provides RGB output signals for the video output stages. In clamped output mode it can also be used as an RGB source.

The main differences with the sister type TDA4680 are:

- Additional features, namely gamma adjust, adaptive black, blue stretch and two different peak drive limiters
- The measurement lines are triggered by the trailing edge of the vertical component of the sandcastle pulse
- I²C-bus receiver only. Automatic white level control is not provided; the white levels are determined directly by the I²C-bus data.
- The TDA4780 is pin compatible (except pin 18) with the TDA4680. The I²C-bus slave address can be used for both ICs. When a function of the TDA4780 is not included in the TDA4680, the I²C-bus command is not executed. Special commands (except control bit FSWL) for the TDA4680 will be ignored by the TDA4780.

RGB video processor with automatic cut-off control and gamma adjust

TDA4780

BLOCK DIAGRAM

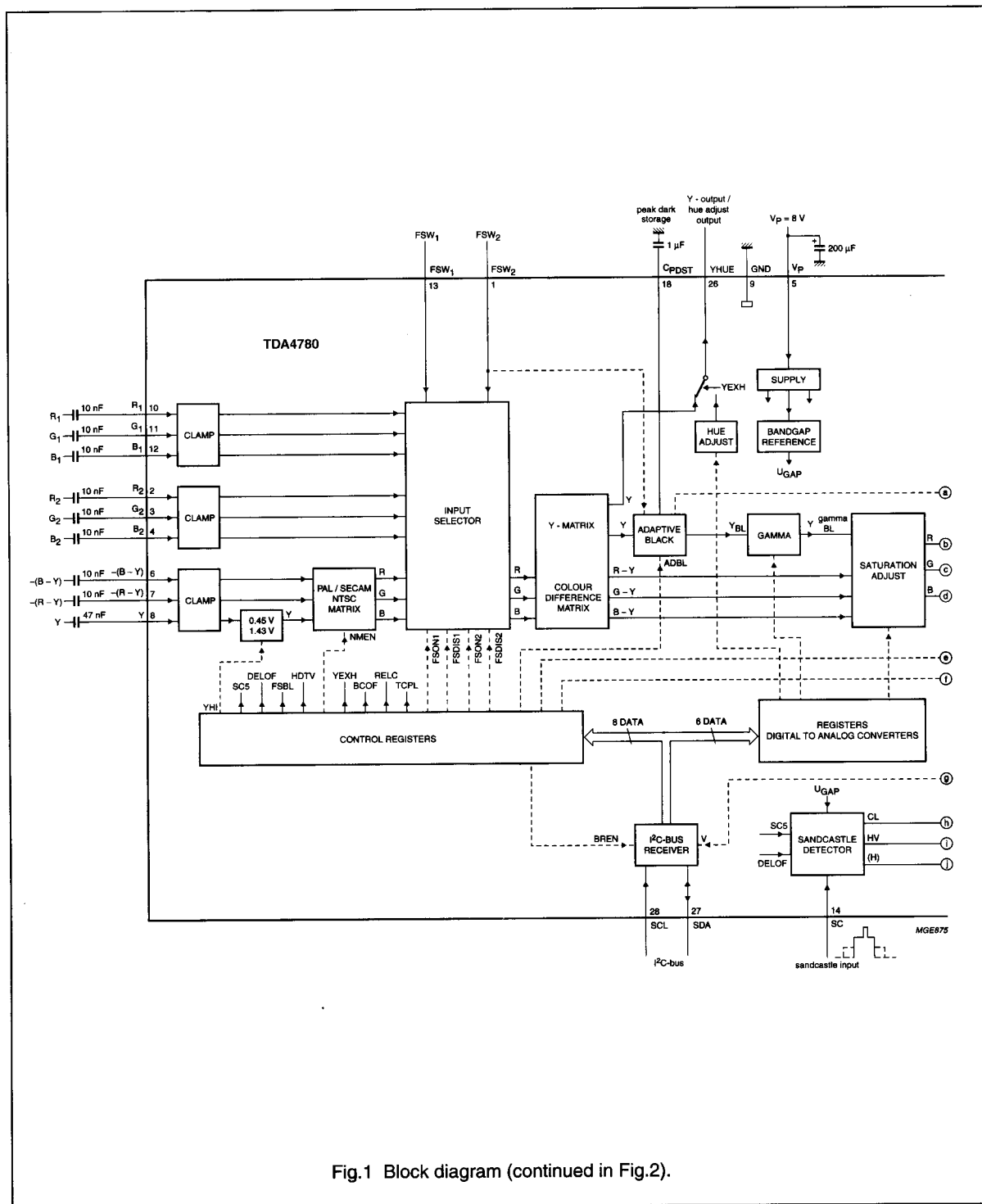


Fig.1 Block diagram (continued in Fig.2).

RGB video processor with automatic cut-off control and gamma adjust

TDA4780

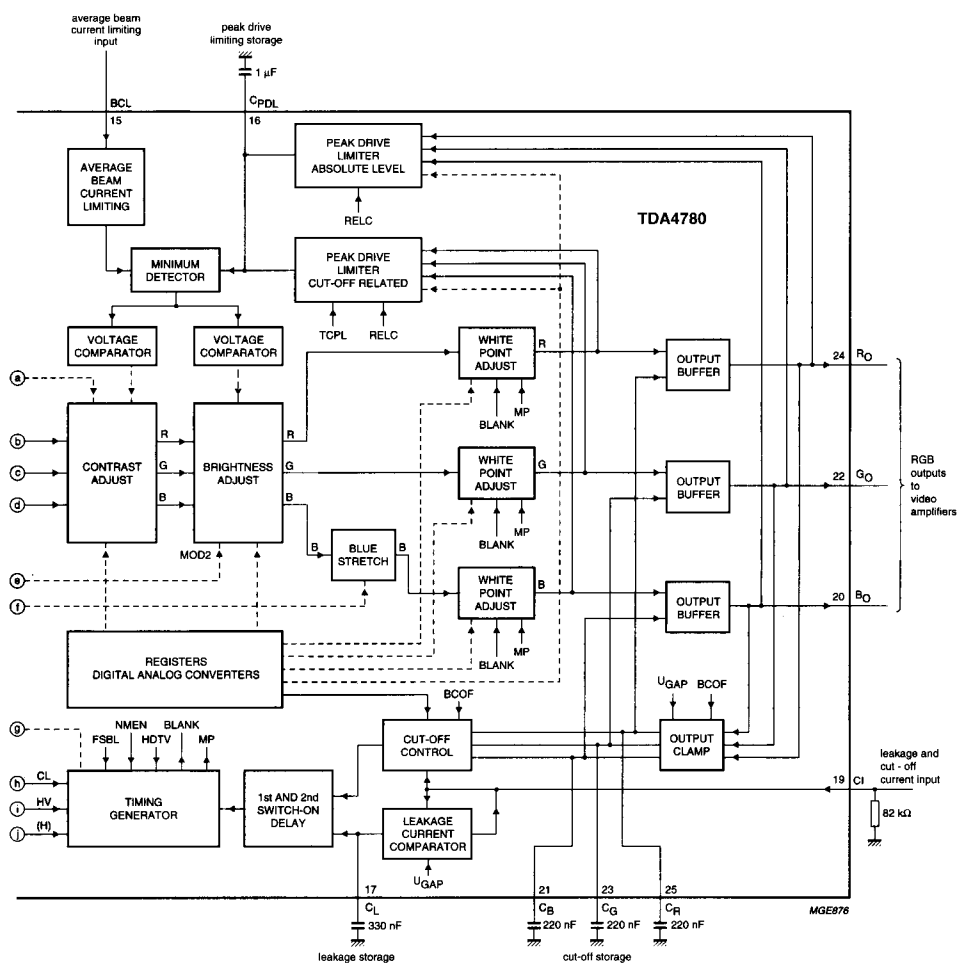


Fig.2 Block diagram (continued from Fig.1).

RGB video processor with automatic
cut-off control and gamma adjust

TDA4780

PINNING

SYMBOL	PIN	DESCRIPTION
FSW2	1	Fast switch 2 input
R2	2	Red input 2
G2	3	Green input 2
B2	4	Blue input 2
VP	5	Supply voltage
-(B - Y)	6	Colour difference input -(B - Y)
-(R - Y)	7	Colour difference input -(R - Y)
Y	8	Luminance input
GND	9	Ground
R1	10	Red input 1
G1	11	Green input 1
B1	12	Blue input 1
FSW1	13	Fast switch 1 input
SC	14	Sandcastle pulse input
BCL	15	Average beam current limiting input
CPDL	16	Storage capacitor for peak limiting
CL	17	Storage capacitor for leakage current compensation
CPDST	18	Storage capacitor for peak dark
CI	19	Cut-off measurement input
BO	20	Blue output
CB	21	Blue cut-off storage capacitor
GO	22	Green output
CG	23	Green cut-off storage capacitor
RO	24	Red output
CR	25	Red cut-off storage capacitor
YHUE	26	Y-output/hue adjust output
SDA	27	I2C-bus serial data input/acknowledge output
SCL	28	I2C-bus serial clock input

RGB video processor with automatic cut-off control and gamma adjust

TDA4780

FUNCTIONAL DESCRIPTION

Signal input stages

The TDA4780 contains 3 sets of input signal stages for:

1. Luminance/colour-difference signals:
 - a) Y: 0.45 V (p-p) VBS or 1.43 V (p-p) VBS, selectable via I²C-bus.
 - b) $-(R - Y)$: 1.05 V (p-p).
 - c) $-(B - Y)$: 1.33 V (p-p).

The capacitively coupled signals are matrixed to RGB signals by either a PAL/SECAM or NTSC matrix (selected via I²C-bus).

2. (RGB)₁ signals (0.7 V (p-p) VB), capacitively coupled (e.g. from external source).
3. (RGB)₂ signals (0.7 V (p-p) VB), capacitively coupled (e.g. videotext, OSD).

All input signals are clamped in order to have the same black levels at the signal switch input. Displayed signals must be synchronous with the sandcastle pulse.

Signal switches

Both fast signal switches can be operated by switching pins (e.g. SCART facilities) or set via the I²C-bus. With the pin FSW₁ the Y-CD signals or the (RGB)₁ signals can be selected, with pin FSW₂ the above selected signals or the (RGB)₂ signals are enabled. During the vertical and horizontal blanking time an artificial black level equal to the clamped black level is inserted in order to clip off the sync pulse of the luminance signal and to suppress hum during the cut-off measurement time and eliminate noise during these intervals.

Saturation, contrast and brightness adjust

Saturation, contrast and brightness adjusts are controlled via the I²C-bus and act on Y, CD as well as on RGB input signals. Gamma acts on the luminance content of the input signals.

Gamma adjust

The gamma adjust stage has a non-linear transmission characteristic according to the formula $y = x^{\text{gamma}}$, where x represents the input and y the output signal. If gamma is smaller than unity, the lower parts of the signal are amplified with higher gain.

Adaptive black (ADBL)

The adaptive black stage detects the lowest voltage of the luminance component of the internal RGB signals during the scanning time and shifts it to the nominal black level. In order to keep the nominal white level the contrast is increased simultaneously.

Blue stretch (BLST)

The blue stretch channel gets additional amplification if the blue signal is greater than 80% of the nominal signal amplitude. In the event the white point is shifted towards higher colour temperature so that white parts of a picture seem to be brighter.

Measurement pulse and blanking stage

During the vertical and horizontal blanking time and the measurement period the signals are blanked to an ultra black level, so the leakage current of the picture tube can be measured and automatically compensated for.

During the cut-off measurement lines (one line period for each R, G or B) the output signal levels are at cut-off measurement level.

The vertical blanking period is timed by the sandcastle pulse. The measurement pulses (leakage, R, G and B) are triggered by the negative going edge of the vertical pulse of the sandcastle pulse and start after the following horizontal pulse.

The IC is prepared for 2f_H (32 kHz) application.

Output amplifier and white adjust potentiometer

The RGB signals are amplified to nominal 2 V (p-p), the DC-levels are shifted according to cut-off control. The nominal signal amplitude can be varied by $\pm 50\%$ by the white point adjustment via the I²C-bus (individually for RGB respect).

RGB video processor with automatic cut-off control and gamma adjust

TDA4780

Automatic cut-off control

During leakage measurement time the leakage current is compensated in order to get a reference voltage at the cut-off measurement info pin. This compensation value is stored in an external capacitor. During cut-off current measurement times for the R, G and B channels, the voltage at this pin is compared with the reference voltage, which is individually adjustable via I²C-bus for each colour channel. The control voltages that are derived in this way are stored in the external feedback capacitors. Shift stages add these voltages to the corresponding output signals. The automatic cut-off control may be disabled via the I²C-bus. In this mode the output voltage is clamped to 2.5 V. Clamping periods are the same as the cut-off measurement periods.

Signal limiting

The TDA4780 provides two kinds of signal limiting. First, an average beam limiting, that reduces signal level if a certain average is exceeded. Second, a peak drive limiting, that is activated if one of the RGB signals even shortly exceeds a via I²C-bus adjusted threshold. The latter can be either referred to the cut-off measurement level of the outputs or to ground.

When signal limiting occurs, contrast is reduced, and at minimum contrast brightness is reduced additionally.

Sandcastle decoder and timer

A 3-level detector separates the sandcastle pulse into combined line and field pulses, line pulses, and clamping pulses. The timer contains a line counter and controls the cut-off control measurement.

Application with a 2-level 5 V sandcastle pulse is possible.

Switch on delay circuit

After switch on all signals are blanked and a warm up test pulse is fed to the outputs during the cut-off measurement lines. If the voltage at the cut-off measurement input exceeds an internal level the cut-off control is enabled but the signal remains still blanked. In the event of output clamping, the cut-off control is disabled and the switch on procedure will be skipped.

Y output and hue adjust

The TDA4780 contains a D/A converter for hue adjust. The analog information can be fed, e.g. to the multistandard decoder TDA4650 or TDA4655. This output pin may be switched to a Y output signal, which can be used for scan velocity modulation (SCAVEM). The Y output is the Y input signal or the matrixed (RGB) input signal according to the switch position of the fast switch.

I²C-bus

The TDA4780 contains an I²C-bus receiver for control function.

ESD protection

The Pins are provided with protection diodes against ground and supply voltage (see Chapter "Internal pin configurations"). I²C-bus input pins do not shunt the I²C-bus signals in the event of missing supply voltage.

EMC

The pins are protected against electromagnetic radiation.

13. Spare part list

MECHANICAL PARTS LIST

1	310412708790	FRONT ASSY DVD950/001/002
1	310412710100	FRONT ASSY DVD955/002
1	310412710080	FRONT ASSY DVD956/002
14	482245910887	BADGE PHILIPS ASSY
23	482245413252	DVD LOGO
50	310412405370	VOLUME KNOB 950/001/002
50	310412709960	VOLUME KNOB 955 & 956/002
82	310412952560	LOADER ASSY 2B Eu 3.1(SERVICE)
151	310412123920	COVER DVD950/001/002
151	310412709950	COVER DVD955/002
151	310412709940	COVER DVD956/002
251	482246211174	LEG SILVER DVD950/001/002
251	482246242159	LEG SILVER DVD955 & 956
252	482246211174	LEG SILVER DVD950/001/002
252	482246242159	LEG SILVER DVD955 & 956
253	482246211174	LEG SILVER DVD950/001/002
253	482246242159	LEG SILVER DVD955 & 956
254	482246211174	LEG SILVER DVD950/001/002
254	482246242159	LEG SILVER DVD955 & 956
301	482232110249	SBC1201 MAINS CABLE
309	310412523280	USER MANUAL DVD950/955/956
313	482232111357	AUDIO CORD SET
314	482232161847	21 SCART CABLE
316	482232161579	VIDEO CORD SET
318	312814711110	IRT ASSY PACKED
RC2550/01(DVD950)		
318	312814710550	IRT ASSY PACKED
RC2553/01(DVD955)		
318	312814710540	IRT ASSY PACKED
RC2552/01(DVD956)		

ELECTRICAL PARTS LIST

CONNECTIONS

8006	310415711190	CWAS FLEX DVD 22 130 32S
8007	310415711200	CWAS FLEX DVD 16 130 32S
POWER SUPPLY UNIT 30PS203/00		

Miscellaneous

0009	482226511253	FUSE HOLDER 2P
0101	482226531015	MAINS INLET
1120	482225330383	19181 (2,5A)
1125	482225260151	DSP-501N-A21F

Capacitors

2101	482212613695	82PF 1% NP0 63V
2102	532212610733	680PF 5% 50V
2104	532212610223	4,7NF10%X7R 63V
2106	482212233735	27NF10%X7R 63V
2109	532212231865	1,5NF10%X7R 63V
2110	482212422652	2,2UF20% 50V
2111	482212614585	100NF 10% X7R 0805 50V
2113	482212233127	2,2NF10%X7R 63V
2114	482212614585	100NF 10% X7R 0805 50V
2121	482212411907	100UF 20% 400V
2125	222237065222	2N2 10% 400V
2126	222237065222	2N2 10% 400V
2127	482212614525	47PF 5% 1KV
2129	482212423057	4,7UF 20% 50V
2131	482212614497	2,2NF 20% 250V
2133	482212440207	100UF20% 25V
2201	482212233496	100NF10%X7R 63V
2202	482212614585	100NF 10% X7R 0805 50V
2210	482212412343	4700UF 6.3V
2230	482212422779	1000UF 10V
2233	482212441584	100UF 20% 10V
2239	482212441584	100UF 20% 10V
2240	482212481147	470UF20% YK 25V
2250	482212441545	220UF20% 16V
2251	482212233799	1NF10% B 1KV
2260	482212480637	3,3UF20% 100V

Resistors

3101	482211652304	82K 5% 0,5W
3102	482205120223	22K00 5% 0,1W
3103	482205120362	3K60 5% 0,1W
3104	482211683933	15K 1% 0,1W

3105	482211683933	15K 1% 0,1W
3106	482211710361	680R 1% 0,1W
3107	482205120184	180K00 5% 0,1W
3108	482211710965	18K 1% 0,1W
3109	482211713577	330R 1% RC12H 0805 1,25W
3110	482211710833	10K 1% 0,1W
3111	482205120229	22R00 5% 0,1W
3112	482211710353	150R 1% 0,1W
3113	482205120339	33R00 5% 0,1W
3115	482205021002	1K00 1% 0,6W
3116	482211711448	180R 1% 0,1W
3120	482211621217	1MA/423V 800V
3122	482211713515	2R7 3W AC03 WW
3123	482211652251	18K 5% 0,5W
3124	482211683872	220R 5% 0,5W
3125	482205021002	1K00 1% 0,6W
3126	482211681753	4R7 5% 0,5W
3127	482211680176	1E 5% 0,5W
3128	482211680176	1E 5% 0,5W
3129	482205021003	10K00 1% 0,6W
3131	482205110274	270K00 2% 0,25W
3134	482211652251	18K 5% 0,5W
3135	482211713636	6R8 5% SFR16
3136	482205110274	270K00 2% 0,25W
3201	482205120109	10R00 5% 0,1W
3202	482211711141	1K80 1% 0,1W
3204	482211711504	270R 1% 0,1W
3205	482211711145	4K70 1% 0,1W
3206	482205120008	0R00 JUMP. (0805)
3233	482205021002	1K00 1% 0,6W
3235	482211652244	15K 5% 0,5W
3236	482211711145	4K70 1% 0,1W
3237	482211711145	4K70 1% 0,1W
3260	482205120109	10R00 5% 0,1W
4121	482205120008	0R00 JUMP. (0805)
4125	482205120008	0R00 JUMP. (0805)
4128	482205120008	0R00 JUMP. (0805)
4250	482205120008	0R00 JUMP. (0805)

Coils

5120	482215753348	FILTER CHOKE ASSY CU15D3
5125	482215711411	100MHZ
5131	482214611138	SWITCH MODE TRAF0
5210	482215711722	6,8UH 20% 7,7X9,5
5230	482215751462	10UH 10% 4X9,8MM LAL04T100K
5233	482215751462	10UH 10% 4X9,8MM LAL04T100K
5240	482215751195	1 UH 20% 4X9,8MM AXIAL
5259	482215751462	10UH 10% 4X9,8MM LAL04T100K

Diodes

6110	482213042606	BYD33J
6111	482213042606	BYD33J
6114	482213042488	BYD33D
6120	482213083707	SINB80
6129	532213080122	BZX84-C24
6132	482213042488	BYD33D
6210	482213011577	PBYR1080
6230	482213011577	PBYR1080
6250	482213042488	BYD33D
6260	482213042606	BYD33J

Transistors & IC's

7110	482220915684	MC44603AP
7125	482213063787	STP4NA60FI
7200	482213091451	CQY80NG
7201	482220917373	KA431LZTA
7233	532220986445	LM7805CT
7235	482213042705	BC847
7236	482213011578	STP16NE06
7237	482220917373	KA431LZTA

HEADPHONE & STANDBY PANEL

Miscellaneous

1111	482227613114	STANDBY SWITCH
1201	482226731453	HEADPHONE SOCKET

Capacitors

2200	482212614585	100NF 10% X7R 0805 50V
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2201	482212233926	12PF 50V
2202	532212231647	1NF10%X7R 63V
2203	482212614585	100NF 10% X7R 0805 50V
2204	482212614585	100NF 10% X7R 0805 50V
2206	482212233926	12PF 50V
2207	532212231647	1NF10%X7R 63V
2209	482212614585	100NF 10% X7R 0805 50V

Resistors

3150	482205120101	100R00 5% 0,1W
3200	482205120109	10R00 5% 0,1W
3201	482210121199	10KX2 20% 0,025W
3202	482205120229	22R00 5% 0,1W
3203	482205120109	10R00 5% 0,1W
3205	482205120229	22R00 5% 0,1W
4001	482205110008	0R00 5% 0,25W
4002	482205110008	0R00 5% 0,25W
4003	482205110008	0R00 5% 0,25W
4004	482205110008	0R00 5% 0,25W
4005	482205110008	0R00 5% 0,25W

Diodes

6103	482213082978	LED LTL-16KPE-P
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IC's

7200	482220962059	TCA0372DP1
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DISPLAY PANEL**Miscellaneous**

4	310412405420	FTD HOLDER
1100	482227613114	SWITCH, PUSH BUTTON
1101	482227613114	
1102	482227613114	
1106	482227613114	
1107	482227613114	
1108	482227613114	
1109	482227613114	
1110	242254098423	RES CER 8MHZ CSTS*MG03
1113	272217107167	VFD 14-MT-26GNK 121*17 (FTB0)B

Capacitors

2100	482212233575	220PF 5% NP0 63V CASE 0805
2101	482212233575	220PF 5% NP0 63V CASE 0805
2102	532212232531	100PF 5%NP0 50V
2103	532212232531	100PF 5%NP0 50V
2105	482212612105	CER2 0805 X7R 50V 33NF PM5
2106	482212411947	10UF 20% 16V
2107	482212612105	CER2 0805 X7R 50V 33NF PM5
2108	482212612105	CER2 0805 X7R 50V 33NF PM5
2109	482212612105	CER2 0805 X7R 50V 33NF PM5
2110	482212612105	CER2 0805 X7R 50V 33NF PM5
2111	482212612105	CER2 0805 X7R 50V 33NF PM5
2114	532212232658	22PF 5% 50V
2115	532212232658	22PF 5% 50V
2116	482212612105	CER2 0805 X7R 50V 33NF PM5
2117	482212411947	10UF 20% 16V
2122	482212612105	CER2 0805 X7R 50V 33NF PM5
2123	482212411947	10UF 20% 16V
2124	319802842290	ELCAP 5MM 35V 22U PM20 COL A
2125	532212232658	22PF 5% 50V
2126	482212411947	10UF 20% 16V
2128	532212231647	1NF10%X7R 63V
2129	319802842290	ELCAP 5MM 35V 22U PM20 COL A
2130	319802842290	ELCAP 5MM 35V 22U PM20 COL A
2201	482212612105	CER2 0805 X7R 50V 33NF PM5
2211	532212232531	100PF 5%NP0 50V

Resistors

3100	482205120223	22K00 5% 0,1W
3101	482205120273	27K00 5% 0,1W
3102	482211710834	47K 1% 0,1W
3103	482211711149	82K 1% 0,1W
3104	482211710837	100K 1% 0,1W
3105	482205120008	0R00 JUMP. (0805)
3106	482211711503	220R 1% 0,1W
3107	482205120008	0R00 JUMP. (0805)
3108	482211711149	82K 1% 0,1W
3109	482205120472	4K70 5% 0,1W

3110	482205120472	4K70 5% 0,1W
3111	482205120472	4K70 5% 0,1W
3112	482205120472	4K70 5% 0,1W
3113	482205120472	4K70 5% 0,1W
3114	482205120109	10R00 5% 0,1W
3115	482205120472	4K70 5% 0,1W
3116	482211711149	82K 1% 0,1W
3117	482211711152	4R7 5%
3118	482211710833	10K 1% 0,1W
3119	482211710833	10K 1% 0,1W
3120	482205120471	470R00 5% 0,1W
3121	482205120472	4K70 5% 0,1W
3122	482205120109	10R00 5% 0,1W
3123	482211710833	10K 1% 0,1W
3125	482205120109	10R00 5% 0,1W
3130	482205120109	10R00 5% 0,1W
3131	482211711152	4R7 5%
3132	482211713577	330R 1% RC12H 0805 1,25W
3133	482205120109	10R00 5% 0,1W
3134	482211713577	330R 1% RC12H 0805 1,25W
3135	482211711503	220R 1% 0,1W
3136	482205110102	1K00 2% 0,25W
3137	482211710833	10K 1% 0,1W
3138	482205120471	470R00 5% 0,1W
3139	482205120472	4K70 5% 0,1W
3140	482211710833	10K 1% 0,1W
3142	482211713577	330R 1% RC12H 0805 1,25W
3143	482211710833	10K 1% 0,1W
3144	482211710837	100K 1% 0,1W
3145	482211710833	10K 1% 0,1W

Diodes

6100	482213010654	BAT254
6101	482213011666	BZX284-C8V2
6102	482213010794	BZX284-C10
6104	482213083757	BAS216

Transistors & IC's

7100	482213060511	BC847B
7101	482213060511	BC847B
7102	482213060511	BC847B
7103	482213060511	BC847B
7104	310412394530	IC ROM SLAVE DVD950
7105	482213040855	BC337
7106	482213041246	BC327-25
7107	482213060511	BC847B
7108	482213060511	BC847B
7109	482213060373	BC856B
7110	482221230842	TSOP1736SB1
7112	482220931257	MC79L24ACP

AUDIO/VIDEO PANEL**Miscellaneous**

1300	482226511154	FLEX CONNECTOR (22P)
1301	482226511103	FLEX CONNECTOR (16P)
1303	482226710994	Y/C OUT SOCKET
1304	242203300334	SCART CONNECTOR 42P
1400	242202605015	MULTICHANNEL AUDIO OUT 6X
CINCH		
1402	482226511566	STEREO OUT CINCH SOCKET
1405	482226731729	DIGITAL OUT SOCKET

Capacitors

2308	482212233575	220PF 5% NP0 63V CASE 0805
2314	482212441584	100UF 20% 10V
2337	482212233575	220PF 5% NP0 63V CASE 0805
2351	482212614585	100NF 10% X7R 0805 50V
2352	482212614585	100NF 10% X7R 0805 50V
2353	482212440769	4,7UF20% 100V
2354	482212614076	220N 25V. P8020
2355	482212440769	4,7UF20% 100V
2357	482212440769	4,7UF20% 100V
2358	482212233575	220PF 5% NP0 63V CASE 0805
2359	482212440769	4,7UF20% 100V
2360	482212613692	47PF 1% NP0 63V
2361	482212613692	47PF 1% NP0 63V
2362	482212614585	100NF 10% X7R 0805 50V
2363	482212614585	100NF 10% X7R 0805 50V

2364	482212441584	100UF 20% 10V	2476	482212422339	100UE 16V
2365	532212232654	22NF10%X7R 63V	2477	532212232531	100PF 5%NP0 50V
2366	482212233575	220PF 5% NP0 63V CASE 0805	2478	532212610511	1NF 5%NP0 50V
2367	482212614585	100NF 10% X7R 0805 50V	2479	532212232654	22NF10%X7R 63V
2368	482212233575	220PF 5% NP0 63V CASE 0805	2480	532212232531	100PF 5%NP0 50V
2369	482212233575	220PF 5% NP0 63V CASE 0805	2481	482212440433	47UF20% 25V
2370	482212440248	10UF20% 63V	2482	532212610511	1NF 5%NP0 50V
2371	482212233575	220PF 5% NP0 63V CASE 0805	2483	482212422339	100UE 16V
2372	482212440769	4,7UF20% 100V	2484	532212232531	100PF 5%NP0 50V
2373	482212440769	4,7UF20% 100V	2485	482212440433	47UF20% 25V
2374	482212614076	220N 25V. P8020	2486	532212610511	1NF 5%NP0 50V
2375	482212233575	220PF 5% NP0 63V CASE 0805	2487	532212232531	100PF 5%NP0 50V
2376	482212440248	10UF20% 63V	2488	482212614585	100NF 10% X7R 0805 50V
2377	482212233575	220PF 5% NP0 63V CASE 0805	2489	482212614585	100NF 10% X7R 0805 50V
2378	482212440769	4,7UF20% 100V	2490	482212440433	47UF20% 25V
2379	482212614585	100NF 10% X7R 0805 50V	2491	482212441584	100UF 20% 10V
2380	482212614585	100NF 10% X7R 0805 50V	2493	482212613692	47PF 1% NP0 63V
2381	482212614585	100NF 10% X7R 0805 50V	2495	482212440248	10UF20% 63V
2382	482212440769	4,7UF20% 100V			
2383	482212440769	4,7UF20% 100V			
2384	482212614583	470NF 10% 16V XTR 0805			
2385	482212440769	4,7UF20% 100V			
2386	482212614583	470NF 10% 16V XTR 0805			
2387	482212614583	470NF 10% 16V XTR 0805			
2388	482212614076	220N 25V. P8020			
2389	482212614583	470NF 10% 16V XTR 0805			
2390	482212233177	10NF 20% X7R 50V			
2391	482212233177	10NF 20% X7R 50V			
2392	482212614583	470NF 10% 16V XTR 0805			
2393	482212233177	10NF 20% X7R 50V			
2394	482212614076	220N 25V. P8020			
2395	482212233575	220PF 5% NP0 63V CASE 0805			
2396	482212440248	10UF20% 63V			
2397	482212233177	10NF 20% X7R 50V			
2398	482212233177	10NF 20% X7R 50V			
2399	482212440248	10UF20% 63V			
2400	482212233177	10NF 20% X7R 50V			
2401	482212614583	470NF 10% 16V XTR 0805			
2402	482212233575	220PF 5% NP0 63V CASE 0805			
2403	482212614076	220N 25V. P8020			
2404	482212233575	220PF 5% NP0 63V CASE 0805			
2405	482212613692	47PF 1% NP0 63V			
2406	482212613692	47PF 1% NP0 63V			
2407	222278015656	330NF 10% 16V			
2408	482212233575	220PF 5% NP0 63V CASE 0805			
2409	482212233575	220PF 5% NP0 63V CASE 0805			
2410	482212233575	220PF 5% NP0 63V CASE 0805			
2411	482212440248	10UF20% 63V			
2412	482212440433	47UF20% 25V			
2413	532212232531	100PF 5%NP0 50V			
2414	532212232531	100PF 5%NP0 50V			
2415	482212440248	10UF20% 63V			
2416	482212614585	100NF 10% X7R 0805 50V			
2417	482212614585	100NF 10% X7R 0805 50V			
2418	222278015656	330NF 10% 16V			
2450	532212232654	22NF10%X7R 63V			
2452	482212614076	220N 25V. P8020			
2453	482212440433	47UF20% 25V			
2455	532212232531	100PF 5%NP0 50V			
2456	482212422339	100UE 16V			
2457	532212610511	1NF 5%NP0 50V			
2458	532212232654	22NF10%X7R 63V			
2459	532212232531	100PF 5%NP0 50V			
2460	532212232654	22NF10%X7R 63V			
2461	532212232531	100PF 5%NP0 50V			
2462	482212422339	100UE 16V			
2463	532212610511	1NF 5%NP0 50V			
2464	532212232531	100PF 5%NP0 50V			
2465	532212232654	22NF10%X7R 63V			
2466	482212440433	47UF20% 25V			
2467	532212610511	1NF 5%NP0 50V			
2468	532212232654	22NF10%X7R 63V			
2469	532212232654	22NF10%X7R 63V			
2470	532212232654	22NF10%X7R 63V			
2471	482212614585	100NF 10% X7R 0805 50V			
2472	482212440433	47UF20% 25V			
2473	532212232654	22NF10%X7R 63V			
2474	482212440433	47UF20% 25V			
2475	482212440433	47UF20% 25V			
			Resistors		
			3300	482211710353	150R 1% 0,1W
			3301	482205120101	100R00 5% 0,1W
			3302	482205120101	100R00 5% 0,1W
			3303	482211711927	75R 1% 0,1W
			3304	482211711502	6K8 1% 0,1W
			3305	482211711454	820R 1% 0,1W
			3306	482205120471	470R00 5% 0,1W
			3307	482205120472	4K70 5% 0,1W
			3308	482211710361	680R 1% 0,1W
			3309	482211710353	150R 1% 0,1W
			3310	482211711927	75R 1% 0,1W
			3312	482211711503	220R 1% 0,1W
			3313	482205120471	470R00 5% 0,1W
			3314	482205110102	1K00 2% 0,25W
			3315	482205120471	470R00 5% 0,1W
			3316	482211710834	47K 1% 0,1W
			3318	482211710834	47K 1% 0,1W
			3319	482205110102	1K00 2% 0,25W
			3320	482211710834	47K 1% 0,1W
			3321	482205120101	100R00 5% 0,1W
			3322	482205120101	100R00 5% 0,1W
			3323	482205120471	470R00 5% 0,1W
			3325	482211710834	47K 1% 0,1W
			3327	482211711927	75R 1% 0,1W
			3329	482205120471	470R00 5% 0,1W
			3330	482211711927	75R 1% 0,1W
			3331	482211711145	4K70 1% 0,1W
			3332	482205120471	470R00 5% 0,1W
			3333	482211710353	150R 1% 0,1W
			3334	482211710357	4K3 1% 0,2W
			3335	482205120471	470R00 5% 0,1W
			3336	482211711927	75R 1% 0,1W
			3338	482211710833	10K 1% 0,1W
			3339	482205120101	100R00 5% 0,1W
			3340	482205120101	100R00 5% 0,1W
			3341	482211710833	10K 1% 0,1W
			3342	482205120471	470R00 5% 0,1W
			3343	482211711927	75R 1% 0,1W
			3345	482211711927	75R 1% 0,1W
			3347	482205120471	470R00 5% 0,1W
			3348	482205110102	1K00 2% 0,25W
			3349	482211710834	47K 1% 0,1W
			3350	482211710833	10K 1% 0,1W
			3351	482205120471	470R00 5% 0,1W
			3352	482205120562	5K6 5% 0,1W 0805
			3353	482205110102	1K00 2% 0,25W
			3354	482211711927	75R 1% 0,1W
			3355	482205120339	33R00 5% 0,1W
			3356	482205120472	4K70 5% 0,1W
			3357	482205120472	4K70 5% 0,1W
			3359	482211710834	47K 1% 0,1W
			3360	482205120471	470R00 5% 0,1W
			3362	482205120471	470R00 5% 0,1W
			3363	482205110102	1K00 2% 0,25W
			3364	232273465609	RST SM 0805 RC12H 56R PM1 R
			3365	482205120561	560R00 5% 0,1W
			3366	482211710834	47K 1% 0,1W
			3367	482211712955	2K7 1% 0,1W 0805
			3368	482211712955	2K7 1% 0,1W 0805

3378	482205110102	1K00	2%	0,25W	3483	482211710833	10K	1%	0,1W
3394	482205120471	470R00	5%	0,1W	3484	482211712955	2K7	1%	0,1W 0805
3395	482205120472	4K70	5%	0,1W	3486	482211710837	100K	1%	0,1W
3397	482211710834	47K	1%	0,1W	3487	482211711503	220R	1%	0,1W
3398	482205120472	4K70	5%	0,1W	3488	482211712955	2K7	1%	0,1W 0805
3399	482205120562	5K6	5%	0,1W 0805	3489	482205120562	5K6	5%	0,1W 0805
3400	482211711927	75R	1%	0,1W	3490	482211710833	10K	1%	0,1W
3401	482211711927	75R	1%	0,1W	3491	482205120101	100R00	5%	0,1W
3402	482205120472	4K70	5%	0,1W	3492	482205120101	100R00	5%	0,1W
3403	482211711927	75R	1%	0,1W	3493	482211710833	10K	1%	0,1W
3404	482211711927	75R	1%	0,1W	3494	482211712955	2K7	1%	0,1W 0805
3405	482211711927	75R	1%	0,1W	3495	482211710837	100K	1%	0,1W
3406	482211711927	75R	1%	0,1W	3496	482211711503	220R	1%	0,1W
3407	482211711927	75R	1%	0,1W	3497	482211712955	2K7	1%	0,1W 0805
3408	482211711927	75R	1%	0,1W	3498	482205120562	5K6	5%	0,1W 0805
3409	482205120471	470R00	5%	0,1W	3499	482211710833	10K	1%	0,1W
3410	482205120471	470R00	5%	0,1W	3502	482211710833	10K	1%	0,1W
3411	482211711927	75R	1%	0,1W	3505	482205120101	100R00	5%	0,1W
3413	482211710834	47K	1%	0,1W	3506	482211710833	10K	1%	0,1W
3414	482205120472	4K70	5%	0,1W	3507	482205120101	100R00	5%	0,1W
3415	482205120223	22K00	5%	0,1W	3508	482211712521	68R	1%	0,1W
3416	482205120339	33R00	5%	0,1W	3509	482211710834	47K	1%	0,1W
3417	482205120471	470R00	5%	0,1W	3510	482211711152	4R7	5%	
3418	482205120101	100R00	5%	0,1W	3513	482211712955	2K7	1%	0,1W 0805
3419	482205120101	100R00	5%	0,1W	3514	482211712955	2K7	1%	0,1W 0805
3420	482211711149	82K	1%	0,1W	3516	482211711152	4R7	5%	
3421	482211711504	270R	1%	0,1W	3517	482205120101	100R00	5%	0,1W
3422	482205120472	4K70	5%	0,1W	3518	482211712955	2K7	1%	0,1W 0805
3423	232273465609	RST SM 0805 RC12H	56R	PM1 R	3519	482205120562	5K6	5%	0,1W 0805
3424	482205120223	22K00	5%	0,1W	3520	482205120472	4K70	5%	0,1W
3425	482211711927	75R	1%	0,1W	3521	482205110102	1K00	2%	0,25W
3427	482205120472	4K70	5%	0,1W	3522	482205110102	1K00	2%	0,25W
3429	482211711927	75R	1%	0,1W	3524	482205120008	0R00	JUMP.	(0805)
3431	482205120471	470R00	5%	0,1W	3525	482211710833	10K	1%	0,1W
3432	482211711927	75R	1%	0,1W	3527	482211710834	47K	1%	0,1W
3433	482205120008	0R00	JUMP.	(0805)	3600	482205120472	4K70	5%	0,1W
3434	482205120101	100R00	5%	0,1W	3601	482205120472	4K70	5%	0,1W
3435	482205120101	100R00	5%	0,1W	3602	482205120472	4K70	5%	0,1W
3436	482211710353	150R	1%	0,1W	3603	482211710837	100K	1%	0,1W
3437	482205120101	100R00	5%	0,1W	3604	482211711449	2K2	1%	0,1W
3438	482205120101	100R00	5%	0,1W	3605	482205120472	4K70	5%	0,1W
3439	482205120101	100R00	5%	0,1W	3606	482205120561	560R00	5%	0,1W
3440	482205120101	100R00	5%	0,1W	3607	482205120562	5K6	5%	0,1W 0805
3441	482205120101	100R00	5%	0,1W	3608	482211710837	100K	1%	0,1W
3442	482205120101	100R00	5%	0,1W	3609	482205120822	8K20	5%	0,1W
3444	482211710833	10K	1%	0,1W	3610	482205120472	4K70	5%	0,1W
3445	482211710833	10K	1%	0,1W	3611	482205120472	4K70	5%	0,1W
3446	482211712955	2K7	1%	0,1W 0805	3612	482211710833	10K	1%	0,1W
3447	482211712955	2K7	1%	0,1W 0805	3613	482211712955	2K7	1%	0,1W 0805
3448	482211710833	10K	1%	0,1W	3614	482211710833	10K	1%	0,1W
3451	482211710833	10K	1%	0,1W	3615	482211711152	4R7	5%	
3452	482205120008	0R00	JUMP.	(0805)	3616	482205120472	4K70	5%	0,1W
3453	482211710833	10K	1%	0,1W	3617	482211710833	10K	1%	0,1W
3454	482211710833	10K	1%	0,1W	3618	482205110102	1K00	2%	0,25W
3455	482211710833	10K	1%	0,1W	3619	482211710833	10K	1%	0,1W
3456	482205120101	100R00	5%	0,1W	3620	482205110008	0R00	5%	0,25W
3457	482205120101	100R00	5%	0,1W	3621	482205120472	4K70	5%	0,1W
3458	482205120008	0R00	JUMP.	(0805)	3622	482211710833	10K	1%	0,1W
3459	482211710833	10K	1%	0,1W	3623	482205120472	4K70	5%	0,1W
3460	482205120008	0R00	JUMP.	(0805)	3624	482211710833	10K	1%	0,1W
3461	482211710833	10K	1%	0,1W	3625	482205110102	1K00	2%	0,25W
3462	482211712955	2K7	1%	0,1W 0805	4301	482205120008	0R00	JUMP.	(0805)
3463	482211712955	2K7	1%	0,1W 0805	4304	482205120008	0R00	JUMP.	(0805)
3464	482211710833	10K	1%	0,1W	4305	482205120008	0R00	JUMP.	(0805)
3466	482211711503	220R	1%	0,1W					
3468	482211710837	100K	1%	0,1W					
3469	482211710833	10K	1%	0,1W					
3470	482211712955	2K7	1%	0,1W 0805					
3471	482205120562	5K6	5%	0,1W 0805					
3472	482211711152	4R7	5%						
3473	482205120008	0R00	JUMP.	(0805)					
3475	482211710833	10K	1%	0,1W					
3476	482205120101	100R00	5%	0,1W					
3477	482205120101	100R00	5%	0,1W					
3478	482211710837	100K	1%	0,1W					
3479	482205120562	5K6	5%	0,1W 0805					
3480	482211711503	220R	1%	0,1W					
3481	482211712955	2K7	1%	0,1W 0805					
3482	482211710833	10K	1%	0,1W					
					Coils				
					5400	482215770601	100UH	(920927085A)	
					Diodes				
					6300	482213010648	BZX284-C5V6		
					6301	482213083757	BAS216		
					6302	482213083757	BAS216		
					6303	482213083757	BAS216		
					6400	482213010845	GP1F32T		
					Transistors & IC's				
					7300	482213060373	BC856B		
					7301	482213060511	BC847B		
					7302	482213060511	BC847B		

7303	482213060511	BC847B	
7304	932213486668	LF80C	
7305	932213558671	IC SM STV6410AD	(ST00) Y
7306	482213060511	BC847B	
7307	482213060511	BC847B	
7308	482213060511	BC847B	
7309	482213060511	BC847B	
7310	482213060511	BC847B	
7311	482213060511	BC847B	
7312	482213060373	BC856B	
7313	482213060511	BC847B	
7314	482213042804	BC817-25	
7315	482213042804	BC817-25	
7316	482220916256	TDA4780/V4	
7320	482213060511	BC847B	
7321	482213042804	BC817-25	
7322	482213060511	BC847B	
7324	482213042804	BC817-25	
7325	482213060511	BC847B	
7326	482213060373	BC856B	
7327	482213060511	BC847B	
7328	482213060511	BC847B	
7329	482213060511	BC847B	
7330	482213060511	BC847B	
7331	482213040959	BC547B	
7332	482213060373	BC856B	
7333	482213041246	BC327-25	
7334	482213060511	BC847B	
7335	482213060511	BC847B	
7336	482213042804	BC817-25	
7337	482213042804	BC817-25	
7400	482220917398	LD1117DT33	
7401	482220917423	UAD1328T	
7402	482213042804	BC817-25	
7403	482220932071	MC33079D	
7404	482213042804	BC817-25	
7405	482213042804	BC817-25	
7406	482213042804	BC817-25	
7407	482213042804	BC817-25	
7408	482220932071	MC33079D	
7409	482213042804	BC817-25	
7410	482213042804	BC817-25	
7411	482213042804	BC817-25	
7412	482213042804	BC817-25	
7413	532220911296	74HC4053N	
7414	482220930095	LM833D	
7415	482213042804	BC817-25	
7416	482213042804	BC817-25	
7419	482213042804	BC817-25	
7420	482213042804	BC817-25	
7421	482213042804	BC817-25	
7422	482213044568	BC557B	
7423	482213060511	BC847B	