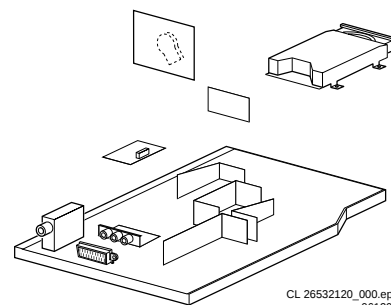


Service Service Service



Service Manual

Contents	Page
1. Technical Specifications, Connections and Chassis Overview	2
2. Safety & Maintenance Instructions, Warnings and Notes	4
3. Directions for Use	6
4. Mechanical Instructions	14
5. Service Modes, Error Codes and Faultfinding	15
6. <i>Block Diagram, I²C Bus Interconnection Diagram and Supply Voltage Diagram</i>	
Block Diagram	17
I ² C-Bus Interconnection Diagram	18
Supply Voltage Diagram	19
7. <i>Electrical Diagrams and PWB's</i>	<i>Diagram CBA</i>
Main Panel: Tuner	(Diagram A1) 20 26-27
Main Panel: Video Processor	(Diagram A2) 20 26-27
Main Panel: SCART	(Diagram A3) 21 26-27
Main Panel: EEPROM	(Diagram A4) 21 26-27
Main Panel: Power Supply	(Diagram A5) 22 26-27
Main Panel: Horizontal	(Diagram A6) 23 26-27
Main Panel: u-Controller	(Diagram A7) 21 26-27
Main Panel: Audio Amplifier	(Diagram A8) 24 26-27
Main Panel: Vertical	(Diagram A9) 24 26-27
Main Panel: Out	(Diagram A10) 25 26-27
Main Panel: Keyboard Panel	(Diagram A11) 25 26-27
CRT Panel	(Diagram B) 28 28
RC Panel	(Diagram C) 29 29
Front AV Module	(Diagram D) 29 29
Line Out Panel	(Diagram E) 30 30
8. Alignments	31
9. Circuit Description	34
Abbreviation List (Not Applicable yet)	34
IC Data Sheets	34
10. Spare Parts List	42

©Copyright 2002 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.



PHILIPS

1. Technical Specifications, Connection Facilities, and Chassis Overview

1.1 Technical Specifications

1.1.1 Reception

Tuning System	: PLL
Colour Systems	: PAL
	: SECAM
	: NTSC
Sound System	: Mono
A/V Connections	: SCART
	: FRONT AV
Channel Selections	: Air
	: Cable
IF Frequency	: B/G, D/K, L: 38.9 MHz
	: L': 33.4 MHz
	: I: 39.5 MHz
Aerial Input	: 75 Ohm

1.1.2 DVD module

Disc formats	: CD (R/RW)
	: CVD
	: (S) VCD
	: DVCD
	: DVD (+R/+RW)
Rotational speed	: 4x CD
	: 2x DVD
Data transfer rate	: 2760 kB/s for DVD
	: 688 kB/s for VCD
Avg. access time	: 250 ms typical
Data buffer capacity	: 512 Kbytes

1.1.3 Miscellaneous

Audio Output (RMS)	: 2 x 2.5 W
Mains Voltage	: 220 - 240 V (± 10 %)
Mains Frequency	: 50 / 60 Hz (± 5 %)
Power Consumption	: 50 W
Standby Power Consumption	: 4 W

1.2 Connection/Control Facilities

1.2.1 TV Side Connections and Front Control

FRONT CONTROL

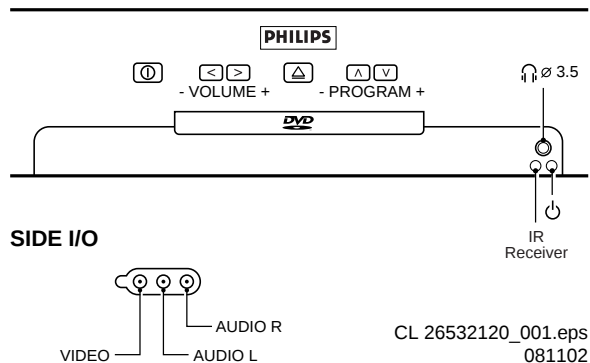


Figure 1-1 Side connections and Front control

Cinch (Input)

1 - CVBS	1 Vpp / 75 Ω
2 - Audio - L	0.5 Vrms / 10 kΩ
3 - Audio - R	0.5 Vrms / 10 kΩ



1.2.2 TV Rear Connections

REAR CONNECTIONS

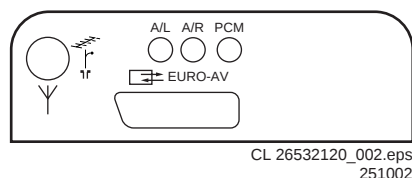


Figure 1-2 Rear connections

Cinch (Output)

1 - Audio - L	0.5 Vrms / 1 kΩ
2 - Audio - R	0.5 Vrms / 1 kΩ
3 - S/PDIF (PCM)	



Euro AV

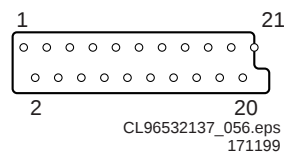
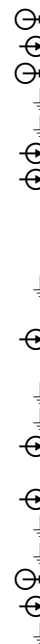


Figure 1-3 SCART connector

1 - Audio - R	0.5 Vrms / 1 kOhm
2 - Audio - R	0.5 Vrms / 10 kOhm
3 - Audio - L	0.5 Vrms / 1 kOhm
4 - Audio	Ground
5 - Blue	Ground
6 - Audio - L	0.5 Vrms / 10 kOhm
7 - Blue	0.7 Vpp / 75 Ohm
8 - CVBS-status	0 - 1.3 V: INT
	4.5 - 7 V: EXT 16:9
	9.5 - 12 V: EXT 4:3
9 - Green	Ground
10 -	
11 - Green	0.7 Vpp / 75 Ohm
12 -	
13 - Red	Ground
14 - CVBS status	Ground
15 - Red	0.7 Vpp / 75 Ohm
16 - RGB status	0 - 0.4 V: INT
	1 - 3 V: EXT / 75 Ohm
17 - CVBS	Ground
18 - RGB status	Ground
19 - CVBS-out	1 Vpp / 75 Ohm
20 - CVBS-in	1 Vpp / 75 Ohm
21 - Shielding	Ground



1.2.3 DVD Module Connections

DC Power Connector (CN401)

- 1 - Supply voltage + 12 V
- 2 - Ground (analogue) A-GND
- 3 - Ground (digital) D-GND
- 4 - Supply voltage + 5 V

A/V and DAIO Output (CN403)

- 1 - ML n.c.
- 2 - MC n.c.
- 3 - R/R (MD) Rear Right Audio
- 4 - AGND Audio Ground
- 5 - R/L (PCM2) Rear Left Audio
- 6 - CEN (PCM1) Centre Audio
- 7 - A-GND Audio Ground
- 8 - S/W (PCM0) Sub Woofer

- | | | |
|------------------|-------------------|---|
| 9 - F/R (SCK) | Front Right Audio | ⊗ |
| 10 - A-GND | Audio Ground | ⊗ |
| 11 - F/L (BCK) | Front Left Audio | ⊗ |
| 12 - MUTE (LRCK) | Mute for Audio | ⊗ |
| 13 - S/PDIF | Digital Audio | ⊗ |
| 14 - D-GND | Digital Ground | ⊗ |
| 15 - CVBS | 1 Vpp / 75 Ohm | ⊗ |
| 16 - V-GND | Video Ground | ⊗ |
| 17 - Y | 1 Vpp / 75 Ohm | ⊗ |
| 18 - V-GND | Video Ground | ⊗ |
| 19 - C | 0.3 Vpp / 75 Ohm | ⊗ |
| 20 - V-GND | Video Ground | ⊗ |
| 21 - G/Y | 0.7 Vpp / 75 Ohm | ⊗ |
| 22 - B/Cb | 0.7 Vpp / 75 Ohm | ⊗ |
| 23 - R/Cr | 0.7 Vpp / 75 Ohm | ⊗ |
| 24 - V-GND | Video Ground | ⊗ |
| 25 - VID_S/W | Video switching | ⊗ |
| 26 - TV_S/W | TV switching | ⊗ |

1.3 Chassis Overview

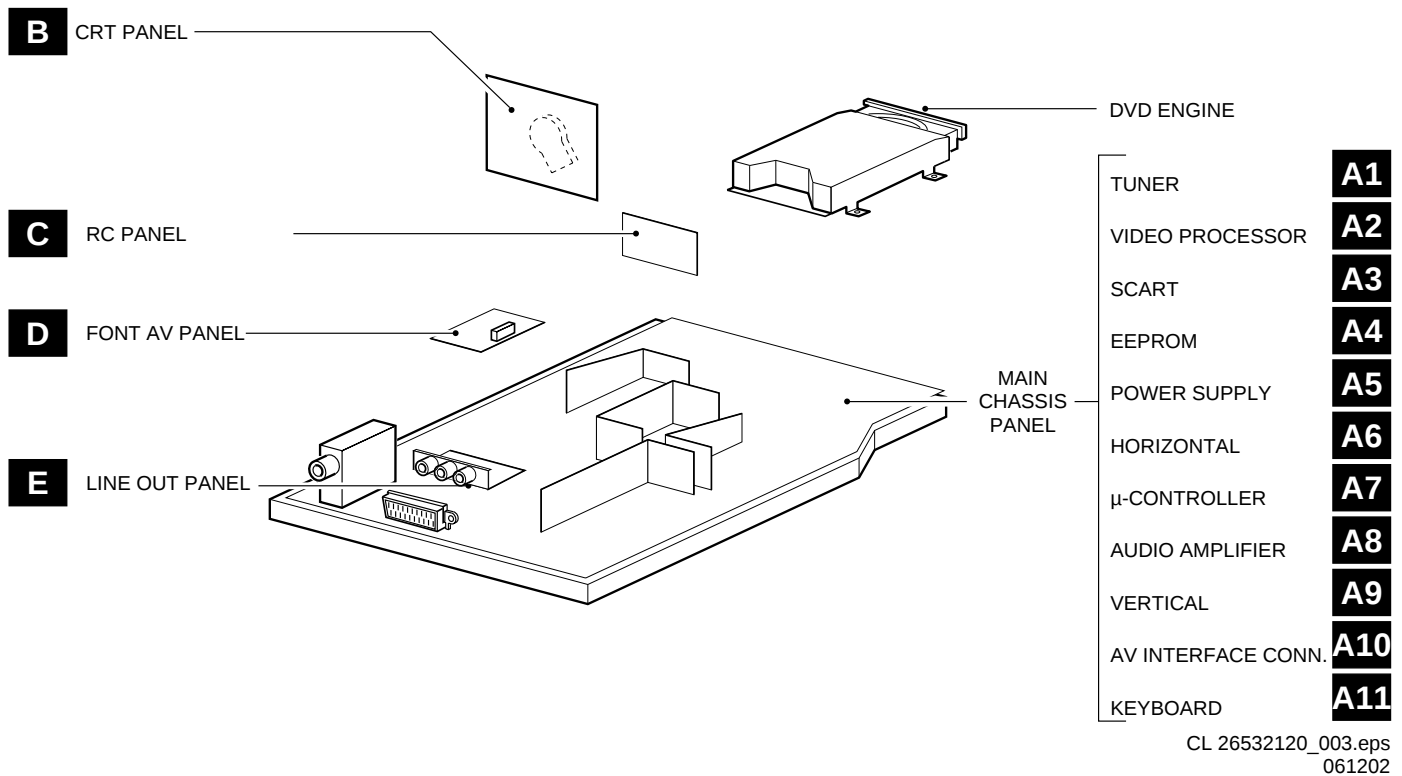


Figure 1-4 PWB location

2. Safety and Maintenance Instructions, Warnings, and Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Due to the chassis concept, a part of the circuitry is 'hot'. Therefore, connect the set to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- Wear safety goggles when you replace the CRT.

Safety regulations require that **after** a repair, you must return the set in its original condition. Pay, in particular, attention to the following points:

- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current is flowing. In particular this is valid for the:
 1. Pins of the line output transformer (LOT).
 2. Fly-back capacitor(s).
 3. S-correction capacitor(s).
 4. Line output transistor.
 5. Pins of the connector with wires to the deflection coil.
 6. Other components through which the deflection current flows.

Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections, and is therefore only necessary for television sets more than two years old.

- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.
- Check the insulation of the mains cord for external damage.
- Check the strain relief of the mains cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets that have an isolated power supply). Do this as follows:
 1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
 2. Turn on the main power switch (keep the mains cord unplugged!).
 3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection of the set. The reading should be between 4.5 MΩ and 12 MΩ.
 4. Switch the TV 'off' and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

2.1.1 Laser Safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser Device Unit

Type	: Semiconductor laser GaAlAs
Wavelength	: 650 nm (DVD) : 780 nm (VCD/CD)
Output Power	: 20 mW (DVD+RW writing) : 0.8 mW (DVD reading) : 0.3 mW (VCD/CD reading)
Beam divergence	: 60 degree



Figure 2-1

Note: 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.

2.2 Maintenance Instructions

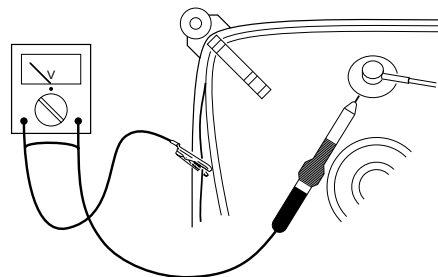
We recommend a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When a customer uses the set under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When a customer uses the set in an environment with higher dust, grease, or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:
 1. Perform the 'general repair instruction' noted above.
 2. Clean the power supply and deflection circuitry on the chassis.
 3. Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

2.3.1 General

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in Fig. 2-2, to discharge the picture tube. Use a high voltage probe and a multi-meter (position V_{DC}). Discharge until the meter reading is 0 V (after approx. 30 s).



CL96532156_040.eps
140501

Figure 2-2 Discharge picture tube

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, symbol w). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and ground cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.

- Together with the deflection unit and any multi-pole unit, flat square picture tubes form an integrated unit. The deflection and the multi-pole units are set optimally at the factory. We do not recommend adjusting this unit during repair.
- Be careful during measurements in the high voltage section and on the picture tube.
- Never replace modules or other components while the unit is 'on'.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3.2 Laser

- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield:

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 DEKNINGEN ÖPPNAS BETRÄKTA EJ STRÅLEN
 VARO! AVATT AESSA OLET ALTTIIN 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

Figure 2-3

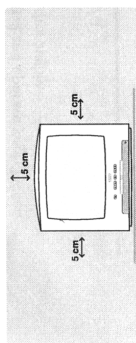
2.4 Notes

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground ($\perp$), or hot ground ($\rightarrow$), depending on the tested area of circuitry.
- The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz (PAL) or 61.25 MHz (NTSC, channel 3).
- Where necessary, measure the waveforms and voltages with ($\square$) and without ($\times$) aerial signal. Measure the voltages in the power supply section both in normal operation ($\textcircled{1}$) and in standby ($\textcircled{2}$). These values are indicated by means of the appropriate symbols.
- The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

3. Directions for Use

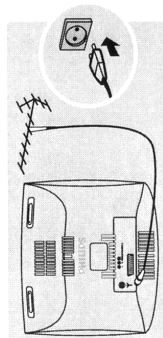
Installing your television set

① Positioning the television set



Place your TV on a solid, stable surface, leaving a space of at least 5 cm around the appliance. To avoid accidents, do not put anything on the set such as a cloth or cover, a container full of liquid (vase) or a heat source (lamp). The set must not be exposed to water.

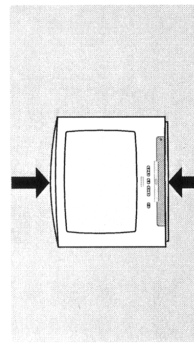
2 Connections



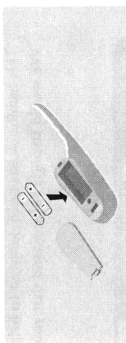
- Insert the aerial plug into the **⏏** socket at the rear of the set.
- If you are using an indoor aerial, reception may be difficult in certain conditions. You can improve reception by rotating the aerial. If the reception remains poor, you will need to use an external aerial.
- Insert the mains plug into a wall socket (220-240 V / 50 Hz).

The keys on the TV set

The television set has 6 keys which are located on the front.



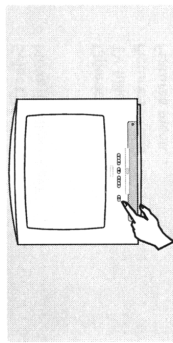
③ Remote control



Insert the two R6-type Philips "Long Life" batteries (supplied) making sure that they are the right way round.

The batteries supplied with this appliance do not contain mercury or nickel cadmium. If you have access to a recycling facility, please do not discard your used batteries (if in doubt, consult your dealer). When the batteries are replaced, use the same type.

④ Switching on



To switch on the set, press the on/off key. A red indicator comes on and the screen lights up. Go straight to the chapter Quick installation on page 4.

After cold power on TV will remain in its last state before the cold power off. If the TV remains in standby mode, press P+ on the remote control. The indicator led will flash when you use the remote control.

The **VOLUME** - + (- $\blacktriangleleft$ +) keys are used to adjust sound levels. The **PROGRAM** - + (**P** +) keys are used to select the required programmes.

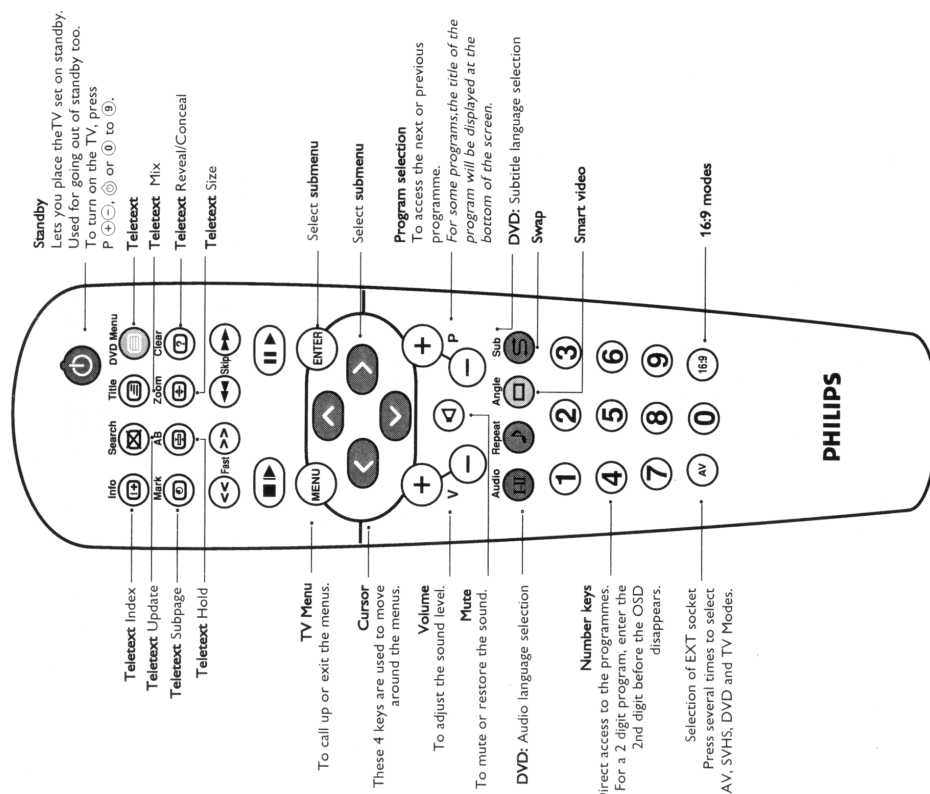
To access the menus, simultaneously hold down the **0** - and $\blacktriangleleft$ + keys. The **PROGRAM** - + keys may then be used to select an adjustment and the - $\blacktriangleleft$ + keys to make that adjustment.

To exit from the menus, hold down the $\blacktriangleleft$ - and $\blacktriangleleft$ + keys.

The eject key is used to eject disc from player. Main switch key is also placed at front panel.

Note: When the **Child Lock** function is activated, these keys are unavailable (refer to **Features** menu).

Remote control keys



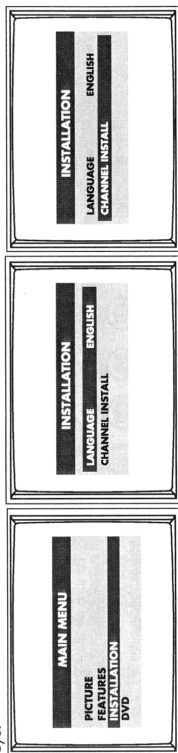
* DVD key

The remote control lets you control the main functions of the DVD.

You can press one of the keys to access the DVD functions:

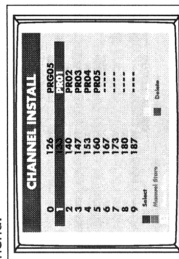
Installation

On this menu, you can change language setting and enter the channel install menu. You can change language setting by using LEFT/RIGHT keys or enter channel install menu by using RIGHT or ENTER keys.



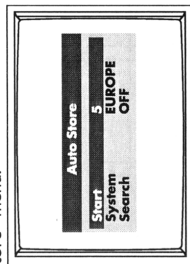
Channel Install

On this menu, you can make automatic and manual channel search, by entering related sub-menus, find and save programmes, give names to the programmes, delete programmes that you no longer want and change their order by moving. In order to enter channel install menu, firstly you must enter installation menu from main menu and then enter the channel install menu.



Auto Store (+ key)

If you press the "+ key" key on remote control unit in the "Installation" menu, you will enter the "Auto Store" menu. "Start", "System" and "Search" selections are available in the "Auto Store" menu.



Start: This selection allows to start the automatic channel search procedure from any programme between 0-99. In this menu programme number can only be changed by using LEFT/RIGHT keys.

System: You can specify the TV system according to the valid system in your country. But this feature is selectable only for multi system TVs, otherwise it is adjusted to valid TV system by default.

Search: Automatic search is enabled by "Search" selection in "Auto Store" menu. Auto search can be started by LEFT/RIGHT keys and while the auto search procedure, frequency values will be displayed near the Search item. Otherwise "OFF" will be displayed.

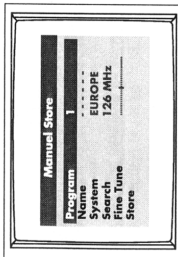
Delete (Red key)

This function allows the user to delete an undesired programme in Program Table. You can move selection bar moving between programmes by using UP/DOWN keys and press

the "red" key to delete programme. The deleted programme is disappeared and other programmes are shifted to sequentially up.

Manual Store (Green key)

You can enter to "Manual Store" menu by pressing "green" key on remote control unit in "Channel Install" menu. "Program", "Name", "System", "Search", "Fine Tune", "Store" selections are available in "Manual Store" menu.



Program: You can select a programme number by pressing digit keys or by using LEFT/RIGHT keys and move the selection bar to the "Store" selection to store the existing channel settings in memory.

Name: You can name the programmes by this menu. Move the selection bar to the "Name" and press the RIGHT (or LEFT) key to start writing the programme name in name field. The first character blinks and the character character changes everytime you hit UP/DOWN keys. Press the RIGHT key to set the next (or LEFT key for previous one) After you finished the naming the programme, you can move the selection bar to the "Store" and press the LEFT/RIGHT keys to store the actual settings.

System: It has the same function like "System" selection in the "Auto Store" menu. You can select the TV system according to your regional broadcast system. This function is selectable only on the multi system TVs. Otherwise it is predefined according to your TV system.

Search: After choosing system, frequency should be entered by digits or should be searched by pressing LEFT/RIGHT keys. You can press the digit keys, when the selection bar on the search option, to find channel manually. You can also search channel by pressing RIGHT (or LEFT) key when selection bar on the search option. Search will be automatically finished and waits for your decision, whether you will store channel or not. By the same manner, after digits are entered, TV waits for your decision.

Fine tune: This option allows the user to do fine tuning in the desired channel according to his own wishes. This tuning is done by LEFT/RIGHT keys.

Store: continue the searching process. You can store the programme settings by activating the "Store" option. Move the selection bar to the "Store" by UP or DOWN key and press the LEFT or RIGHT key to store the channel settings.

Press **MENU** or **AV** to exit from this menu.

Select (Blue key)

If you press the "Select" (blue) key, the programme line will turn to yellow and the selected programme displayed on the background. If you move between programmes by UP/DOWN

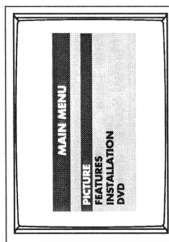
keys and press the blue key again then you can select your desired programme, you can jump the Previous menu by "Menu" key.

Move (Yellow key)

You can move (swap) the location of desired programme. Move the selection bar on programme line which do you want to move and press the "Select" (blue) key, then move the selection bar to the new location where do you want to place the selected programme and Menu key.

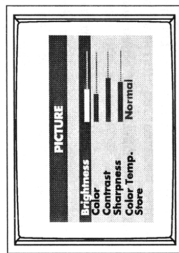
TV functions (Menus)

MOVING THE SELECTION BAR IN THE MENUS: You can move the selection bar by pressing the **UP** and **DOWN** keys. You can press "Right" key to INCREASE or "Left" key to DECREASE the parameters of actual selection in the menus. RIGHT key can be also used as enter key. Volume +/- and MUTE keys are accessible in all menus. AV key can be used to exit from all menus at once. MENU key can only exit from the current menu to the previous menu.



Picture Settings Menu

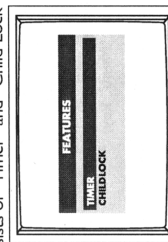
The picture settings menu is accessed by selecting "PICTURE" Sub-menu on the main menu. In the picture settings menu, many values related to the picture can be changed. You can adjust the brightness, color, contrast, sharpness, color temperature (not available in NTSC) and tint (only available in NTSC) settings according to your wish. You can choose any of them by **UP/DOWN** keys and increase or decrease by **RIGHT/LEFT** keys.



After the changes are done, move the selection bar to the "Store" selection and press the **RIGHT** key to save the new values in memory. If you press **MENU** key, you will return to "MAIN MENU".

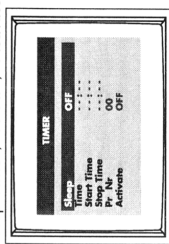
Features Menu

The features menu is accessed by selecting "Features" line on the Main Menu. This menu consists of "Timer" and "Child Lock" sections.



Timer Menu

The timer menu is accessed by selecting "TIMER" line on the "Features Menu". This menu consist "Sleep", "Time", "Start Time", "Stop Time", "Pr Nr", "Activate" selections.



Sleep : This option enables automatic Standby facility. It offers you "OFF", "15 min", "30 min", "45 min", "60 min", "90 min", "120 min", "180 min".

Time : Enter the current time.

Start Time : Start time facility allows switching operation automatically at user defined time, from any mode (AV, DVD, SVHS, standby or any TV program) to the desired mode or program defined in Pr Nr selection.

Stop Time : Enter the Stop time to switch the TV to Standby state.

Pr Nr : Swapped Program number at the start time. AV, SVHS, DVD are available.

Activate : This option enables Start time and Stop time facilities. It offers you "OFF", "Once", "Daily" selections.

Child Lock Menu

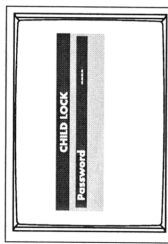
(This is not available at some models)

This selection is set to "Off" as default value. The "Child Lock" can be set by password. The valid password must be four digit number between 0000 to 9999. (If you forgot your password please see notes in WARNING section). Each digit entry is displayed as "X" symbol on the screen. If you enter the password correctly, the "Child Lock" selection is displayed. If you set this selection as "On", then your TV will ask the password in every switching on. TV will not work until the password is entered correctly. If you want to specify new password, you can move the selection bar to "New Password" by pressing **UP** and press the **RIGHT** key.

The new password must be four digit number between 0000 to 9999. After your entry is completed successful, "Confirm" message is displayed and you are asked to enter your new password once again. If you entered your password correctly then your new password will be validated.

Note: When the child lock is activated, **P+/P-**,

Eject, V+/V- keys on the front panel can't be used.



WARNING :

If you forgot your password, you can enter 0,7,1,1 / 0,7,1,1 sequentially. In this case the "Child Lock" will be disabled and you can set your own password in New Password line.

16:9 Format



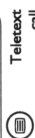
Compress 16:9

The picture is compressed vertically into 16:9 format.

Teletext

Teletext is an information system broadcast by offered by certain channels which can be consulted like a newspaper. It also offers access to subtitles for viewers with hearing problems or who are not familiar with the transmission language (cable networks, satellite channels, etc.).

Press :



You will obtain:

This is used to call teletext and then exit. The summary appears with a list of items that can be accessed. Each item has a corresponding 3 digit page number. If the selected channel does not broadcast teletext, the indication '100' will be displayed and the screen will remain blank (in this case, exit teletext and select another channel).

Selecting a page
0/G
- P +

Enter the number of the page required using the 0 to 9 or - P + keys. Example: page 120, enter 1 2 0. The number is displayed top left, the counter turns and then the page is displayed. Repeat this operation to view another page.

Direct access to the items

Coloured areas are displayed at the bottom of the screen. The 4 coloured keys are used to access the items or corresponding pages. The coloured areas flash when the item or the page is not yet available.

Contents

This returns you to the contents page (usually page 100).

Return to the TV Broadcast without deactivating the teletext

This allows you to return to the TV Broadcast but teletext will be still active in the background and will go on searching for the desired page if a new page number was entered.

View Teletext and TV broadcast together

This allows you viewing the TV broadcast and the teletext data related to that program together on the screen.

Quick access to the subpages

This allows you to access to the subpages if the current teletext page has subpages by entering the number of the subpage after pressing this key.

Stop sub-page acquisition

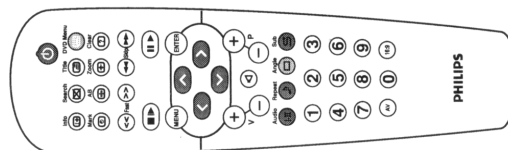
Certain pages contain sub-pages which are automatically displayed successively. This key is used to stop or resume sub-page acquisition. The indication 'E' appears top left.

Enlarge a page

This allows you to display the top or bottom part of the page and then return to normal size.

Hidden information

To display or hide the concealed information (games solutions).



Using the built-in DVD player

The built-in DVD player allows you to play DVD video disks as well as video and audio CDs (including finalised CD-Rs and CD-RWs). The disks can be recognised by their logo on the packaging.

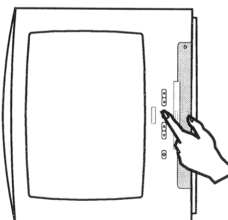


Note: Generally, DVD films are not placed on the market at the same time in the various regions of the world. Accordingly, DVD players are provided with geographical zone codes. If you insert a disk which has a regional code that is different from that of your reader, you will see a message displayed on the screen. The disk cannot be played and you will have to remove it.

Inserting a disk

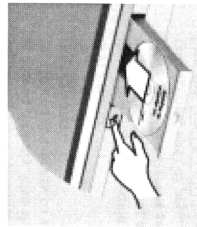
1 Opening the tray

Press the EJECT (▲) key on the front panel.



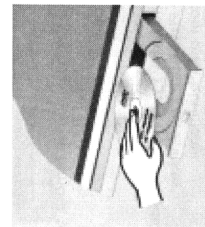
3 Closing the tray

Gently push the tray back in or press the EJECT key to close. The disk will begin to play.



2 Inserting the disk

Place the disk in the tray, with the label facing upwards. Make sure that it is positioned correctly in the recess.



4 Automatic play

Play begins automatically when the tray closes. A status window appears on the upper-right corner of the screen and indicates the current operation. Next, the content of the disk is displayed.



Playing a DVD or video CD

Play

Once the disk has been inserted and the tray closed, play begins automatically. Certain disks will ask you to select a heading from DVD Menu. Use the keys For selecting title... or  then press **ENTER**.

Stopping play

Press the  key to stop play. The default screen appears and displays information on the player status.

Re-starting play ("resume" function)

When you stop a disk mid-play (pressing ) , you can resume play at the exact point you stopped the disk. Simply press the  key, if you Stop DVD by pressing  key,  key resumes play.

Slow motion, fast forward and rewind

During play, press the Pause key and then fast forward key to slow down forward speed of play, e.g. 5 %, 8 %, 12 %, ... Press the  or  key to fast forward or rewind at 200 %, 400 %, 800 % or 1500 % speed. Press  to return to normal speed.

Freeze-frame

Press  to freeze the image. Press  to resume play.

Next / previous chapter

DVD disks are split into different chapters to allow certain scenes to be accessed directly. Use the  or  keys to access the previous or next chapter. In the first press to the  key will cause to access the starting of the current chapter.

DVD menu

Press the  key while playing or disc menu is already displayed at the first insert. The DVD menu appears. Its contents will depend on the DVD. It allows you to access different sections, such as choice of language, direct access to certain scenes, special production notes, trailers, etc. Use the   keys to select. **ENTER** confirm.

Language selection

Press the  (Red) key to select the different languages available on the disc. A menu bar appears at the top of the screen, this will disappear after a few seconds.

Subtitling language

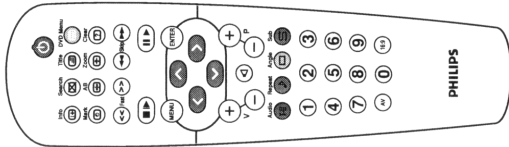
Press the  Sub (Blue) key to choose your subtitling language (choose **off** to deactivate it). The menu disappears after a few seconds.

Ejecting the disk

Press the **EJECT** () key located on the front of the television or remote control. Play stops, then after several seconds the tray opens.

Choice of TV or DVD mode

Press the **AV** key on the remote control to switch the TV set to TV mode. DVD mode selection can be achieved by DVD Play/Pause key, AV key (TV => AV => SVHS => DVD => TV) and from the Main Menu.



Playing an audio CD

Play

Once the disk has been inserted and the tray has closed, play begins automatically. For MP3 cd, a special menu appears on the screen, to lead you whether to display track details or File list. These Submenus indicates information about tracks in disc, list of tracks.

Changing tracks

Use the ,  keys on the remote control to change tracks. For audio cd, the ,  keys are also used to select the track of your choice.

Fast forward and rewind

Press the  key or  to fast forward or rewind at 200%, 300%, 400% speed. Press  to return to normal speed.

Pause / stop / eject

Press  to pause and  to resume play.

Press  to stop and the **EJECT** () key located on the front of the television to eject the disk.

Playing an MP3 audio CD

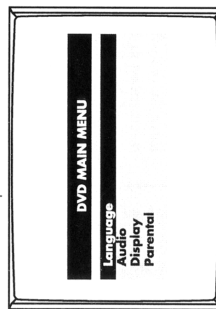
The MP3 CDs allow you to store several albums on a single disc. Use the   keys to select the albums and the  with enter key in disc menu.



DVD Settings

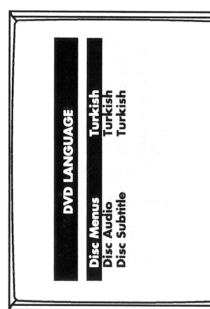
DVD MAIN MENU:

You can setup your DVD player's settings with DVD Main Menu. Press MENU key, MAIN MENU is displayed on screen then press select key while cursor is on DVD line. Menu selections can be done with pressing "ENTER" and "RIGHT" key. To exit menu whenever you want please press "A" key or press "MENU" key for previous menu. To access DVD menus, player should be in stop condition.



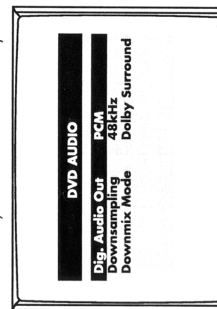
1. DVD LANGUAGE :

In this Menu you can select Subtitle Audio or Menu languages can be selected too Language for you.



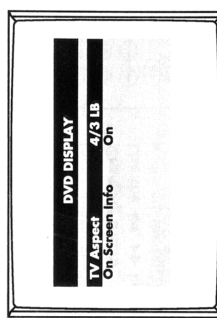
2. DVD AUDIO:

In this menu you can make audio adjustments.



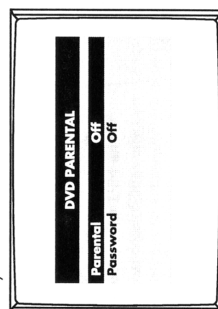
3. DVD DISPLAY :

In this menu you can select setup Display format.



4. DVD PARENTAL:

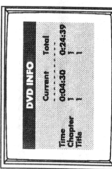
In this Menu you can select Parental Control Level. To adjust the level you should enter the Password.



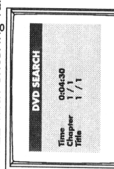
You can change Password which is asked in Parental Control section. Forgotten password can be cancelled by pressing the Stop/Eject key four times in DVD PARENTAL Menu.

Basic Functions

INFO : If you press "INFO" during playing, info Menu will be displayed. This menu indicates the current time, chapter and title data.



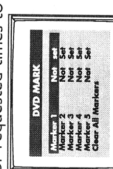
SEARCH: Search menu will be displayed if you press "SEARCH" key. If you enter a time value, DVD will be played starting from this point. Or DVD can be played starting from desired chapter after entering Chapter value and pressing "ENTER". If more than one TITLE are recorded on to your DVD CD you can watch desired TITLE with entering value into the TITLE section.



TITLE : You will access disc menu consists of TITLES that has been recorded on the DVD with pressing "TITLE" key on the remote control.

DVD MENU : The "DVD MENU" key on the remote control enables you to access menu that is on the disc. Usually with this menu, you can access to information regarding to movie's sections, director and actor-accesses, movie's production story and short advertisement films.

MARK : If you press "MARK" during playing, Mark Menu is seen then 5 Marker can be used for requested times to be reached later.



REPEATING OF DESIGNATED INTERVAL "A-B" : If you press "A-B" during DVD is playing you will designate the initial point of repeating. On your second press, the last point of repeating will be designated. DVD player will continuously play this interval. To cancel this selection you must press the key third time.

Repeat A-

Repeat A-B

Repeat A-B off

Note:
In DVDs every TITLE is equivalent of a film or an advertisement film.

ZOOM MODE: You can enlarge the display on the screen with pressing "ZOOM" key on the remote control. You can move enlarged view UP, DOWN, RIGHT, LEFT keys.

Zoom

Zoom Off

SPOKEN LANGUAGE (AUDIO): Language of audio will be changed with every pressing of "AUDIO" key on the remote control. (For DVD discs)

Audio : Audio 1, MPEG 1, 44, 1KHz, 2ch

REPEAT: By pressing REPEAT key you can repeat just one track or all chapter/title or disc.

Repeat Disc

Repeat Title

Repeat Chapter

Repeat Off

ANGLE MODE: If your DVD movie is recorded from Various angles, you can select these angles by pressing this key. Watching angle will changes with every press of this key.

SUBTITLE: Language of subtitle will be changed with every pressing of "SUB" key on the remote control.

FOR YOUR KNOWLEDGE

Press a key that is deactivated at the moment a "Q" icon will be displayed on TV screen indicating that your DVD player unable to carry on the operation.

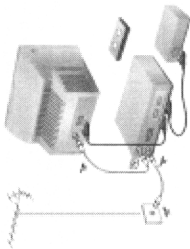
- While in Playback, DVD Main Menu can't be reached. To open DVD Main Menu, you must first stop the Playback.

- PCM is an abbreviation for Pulse Code Modulation. It is regarding to sound.

- Area Code: area codes of DVD Players and CDs are to be found here. If DVD Player's and CDs area codes don't match then this Cd can not be played. "Invalid Area" will be displayed. Area code of this DVD player is "2" and only CDs with area code "2" can be played.

Connecting peripheral equipment

Video recorder



Carry out the connections shown opposite, using a good quality euroconnector cable.

If your video recorder does not have a euroconnector socket, the only connection possible is via the aerial cable. You will therefore need to tune in your video recorder's test signal and assign it programme number 0 (refer to manual store, p.6).

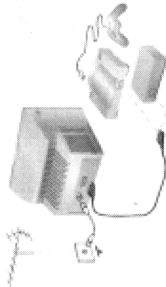
To reproduce the video recorder picture, press

①.

Video recorder with decoder

Connect the decoder to the second euroconnector socket of the video recorder. You will then be able to record scrambled transmissions.

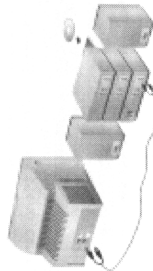
Other equipment



Satellite receiver, decoder, CDV, games, etc.

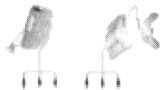
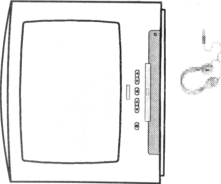
Carry out the connections shown opposite.

Amplifier



Use a digital audio connecting cable and connect the television's "DIGITAL AUDIO OUT" output to a "DIG IN" input on the amplifier (amplifier with coaxial digital input).

Side connections



Make the connections as shown opposite. With the n key, select AV.

For a monophonic device, connect the audio signal to the AUDIO L input. Use the  key to reproduce the sound on the left and right speakers of the TV set.

Headphones

When headphones are connected, the sound on the TV set will be cut. The  V  keys are used to adjust the volume level.

The headphone impedance must be between 32 and 600 Ohms.

Personal Notes:

Tips

Poor reception

The proximity of mountains or high buildings may be responsible for ghost pictures, echo or shadows. In this case, try manually adjusting your picture; see **Manual Store** (p.5) or modify the orientation of the outside aerial.

Does your antenna enable you to receive broadcasts in this frequency range (UHF or VHF band)?

No picture

If the television does not switch on, please press the standby key  (located on the remote control) twice.

Have you connected the aerial socket properly? Have you chosen the right system? (p.5).

Poorly connected euroconnector cables or aerial sockets are often the cause of picture or sound problems (sometimes the connectors can become half disconnected if the TV set is moved or turned). Check all connections.

No sound

If on certain channels you receive a picture but no sound, this means that you do not have the correct TV system. Modify the **System** setting (p.5).

Teletext

Are certain characters not displayed correctly? Check that the **Language** setting has been positioned correctly (p.5).

Does the DVD player no longer work?

Check that the disk does not have any fingerprints on it. Clean it with a soft cloth, wiping from the centre to the edge.

Remote control

The TV set does not react to the remote control; the indicator on the set no longer flashes when you use the remote control? Replace the batteries.

Standby

When you switch the TV set on it remains in standby mode and the indication **Locked** is displayed when you use the keys on the TV set? The **Child Lock** function is switched **On** (p.7). If the set receives no signal for 5 mins, it automatically goes into standby mode.

To save power, your set is fitted with components that give it a very low power consumption when in standby mode (less than 3 W).

Still no results?

If your TV set breaks down, never attempt to repair it yourself; contact your dealer's after-sales service.

Cleaning the set

Only use a clean, soft and lint-free cloth to clean the screen and the casing of your set. Do not use alcohol-based or solvent-base products.

Glossary

RGB Signals: These are 3 Red, Green and Blue video signals which directly drive the red, green and blue emitters in the cathode ray tube. Using these signals provides better picture quality.

NICAM sound: Process by which digital sound can be transmitted.

System: Television pictures are not broadcast in the same way in all countries. There are different standards: BG, DK, I, and L.L'. The **SYSTEM** setting (p.6) is used to select these different standards. This is not to be confused with PAL or SECAM colour coding. PAL is used in most countries in Europe, Secam in France, Russia and most African countries. The United States and Japan use a different system called NTSC.

16:9: Refers to the ratio between the length and height of the screen.

Wide screen televisions have a ratio of 16/9, conventional screen TV sets have a ratio of 4/3.

4. Mechanical instructions

Index of this chapter:

1. Rear Cover Removal
2. Service Position Main Panel
3. DVD Module Removal
4. Side I/O Panel Removal
5. Rear I/O Panel Removal
6. Rear Cover Mounting

Note:

Figures can deviate slightly from the actual situation.

4.1 Rear Cover Removal

1. Remove all fixation screws (7x) of the rear cover.
2. Pull the rear cover a little backwards.
3. Disconnect the Rear I/O and Side I/O panel cables.
4. Now pull the rear cover backwards to remove it.

4.2 Service Position Main Panel

1. Disconnect all cables of the DVD module.
2. Remove the main panel, by pushing the two centre clips outward [1]. At the same time, pull the panel away from the CRT [2].
3. Turn the panel 90 degrees clockwise [3].
4. Flip the panel 90 degrees [4], with the components towards the CRT.

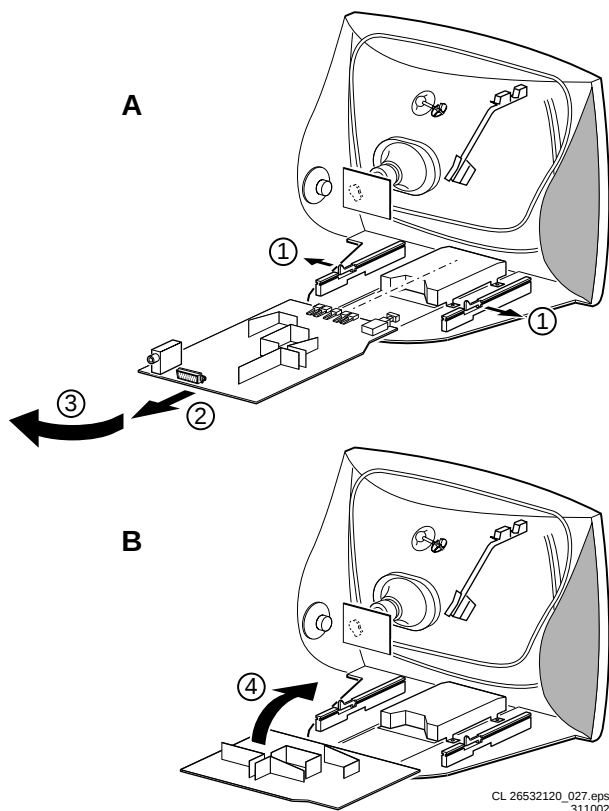


Figure 4-1 Service position Main panel

4.3 DVD Module Removal

Remove the complete DVD module after unscrewing the four fixation screws [1].

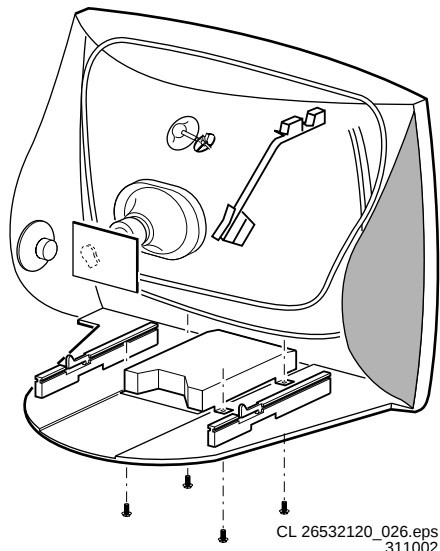


Figure 4-2 Disassemble DVD module

4.4 Side I/O Panel Removal

Remove the side I/O panel after unscrewing the screw from the outside of the rear cover.

4.5 Rear I/O Panel Removal

Remove the rear I/O panel after unscrewing the two screws from the inside of the rear cover.

4.6 Rear Cover Mounting

To reassemble the set, perform all described processes in reverse order.

Be sure that, before the rear cover is mounted:

- The mains cord is mounted correctly in its guiding bracket.
- All wires/cables are returned in their original position.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter

1. Service Modes
2. Dealer Mode
3. Fault Finding

5.1 Service Modes

The Service Mode is a combination of the TV Service Mode and the DVD Service Mode. You can enter the DVD Service Mode via the TV Service Mode. The Service Mode offers features, which the service technician can use to repair a set. Any feature change, made via the Service Menu, will respond at the same time (for example; if Hotel Mode is enabled, the volume cannot be increased above max. volume displayed at the Service Menu).

The Dealer Mode is a special DVD mode, to provide an auto replay function for commercial purposes.

All displayed text strings in the Service Modes are in English.

5.1.1 TV Service Mode

Purpose

- To perform alignments (e.g. colour adjustment and geometry alignments)
- To change option settings
- Hotel Mode operations
- DVD Service menu

Specifications

All service unfriendly modes (if present) are disabled, like:

- Auto switch 'off' (when there is no 'ident' signal)
- Timer switch to a channel
- Automatic user menu time-out
- The NVM is unprotected
- AV functions are not working

How to enter the Service Mode

Screen menu's must be 'off', when you enter the Service Mode. Use a standard customer RC-transmitter and key in the code **062596** directly followed by the **MENU** button.

The following screen is visible when you enter the Service Mode:

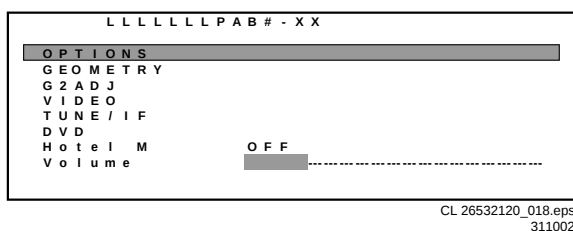


Figure 5-1 TV Service Mode menu

1. **LLLLLLL**. This is the used IC type.
2. **PAB#-XX**. This is the software identification.
 - **P** = Philips.
 - **A** = the region (W = West Europe, E = East Europe).
 - **B** = sound specification (M = Mono, S = Stereo).
 - **#** = number of TXT pages.
 - **XX** = the software version number (the first X is the main software version number and the second X is the sub software version number).
3. **OPTIONS**. Three codes possible. (see chapter 8.x for a detailed description).
4. **GEOMETRY**. To align the geometry (see chapter 8.x for a detailed description).

5. **G2ADJ**. To align the G2 (see chapter 8.x for a detailed description).
6. **VIDEO**. To adjust RGB, R_cut-off and G_cut-off.
7. **TUNE/IF**. To align the tuner.
8. **DVD**. To enter the DVD Service Mode.
9. **HOTEL M**. To switch the Hotel mode 'on/off'.
10. **VOLUME**. To adjust the volume when Hotel mode is 'off'.

How to navigate

- Select menu items with the CURSOR UP/DOWN keys.
- With the CURSOR LEFT/RIGHT keys, it is possible to change the value of the last two menu items (Hotel mode and Volume).
- With the CURSOR RIGHT and ENTER keys, activate the selected menu item.
- When you press the MENU key in a sub menu, you will return to the previous menu.
- When you press the MENU key in the Service Mode menu, you will return to the Main menu.

How to exit

- With the STANDBY command, the set switches to Standby.
- With the MENU key, the set returns to the Main menu.
- With the AV key, the service mode closes.

Switching the set 'off' and 'on' with the mains switch, brings the set into normal operation again.

All changes in the Service Mode are stored immediately.

5.1.2 Dealer Mode

Purpose

- To provide an auto replay function (commercial purpose).
- To ignore some features.

Pre-conditions to start the Dealer Mode are:

- Put the set in DVD Mode.
- Switch Teletext 'off' (if set is in TV Mode).
- Switch Childlock 'off'.
- No screen Menu's.
- A disc exists in the tray.
- Close disc tray.
- Switch the DVD in STOP condition.

Specifications

- The information line displays the current mode.
- The set starts to play the disc.
- The Disc Menu passes automatically.
- At the end of the disc, the set replays the disc from chapter 1 onwards.

In Dealer Mode, some restrictions and rules are defined:

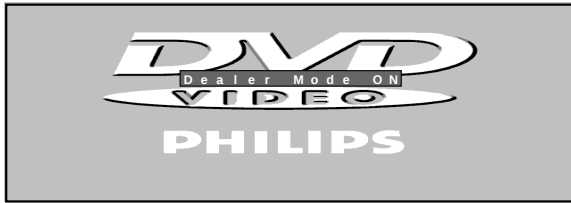
- While the Dealer Mode is active, you cannot use the STANDBY key (RC reception is blocked), so it is not possible to go to standby. The only way to switch off the set is to switch the Mains Power 'off'.
- When the mains Power is switched 'on', the set will go out of standby (DVD Mode) automatically.

How to enter the Dealer Mode

Use a standard RC-transmitter and key in the code **9999** directly followed by the **MENU** button.

The set will now switch to Dealer Mode. The current mode is written to the NVM.

The set switches to the DVD mode and informs the DVD about the current mode.



CL 26532120_019.eps
311002

Figure 5-2 Dealer Mode menu

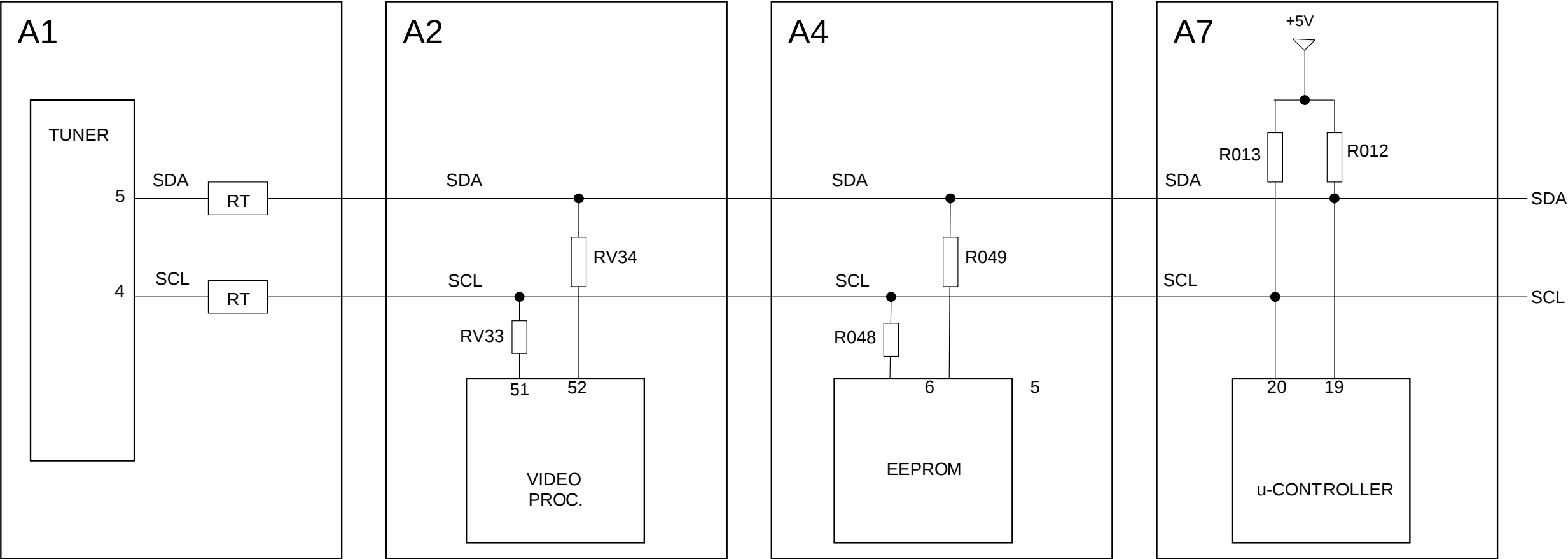
How to exit

Use a standard RC-transmitter and key in the code **9999** directly followed by the **MENU** button.

The Play mode is stopped, the Dealer mode is deactivated, and the TV menu returns.

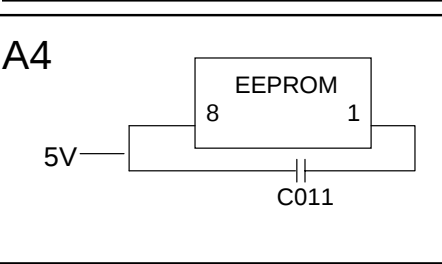
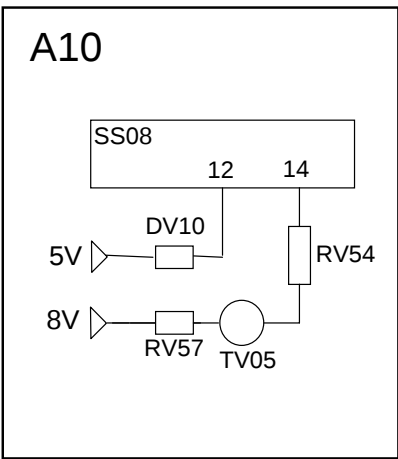
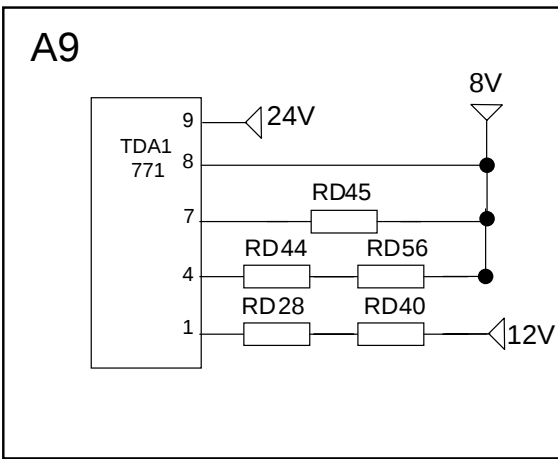
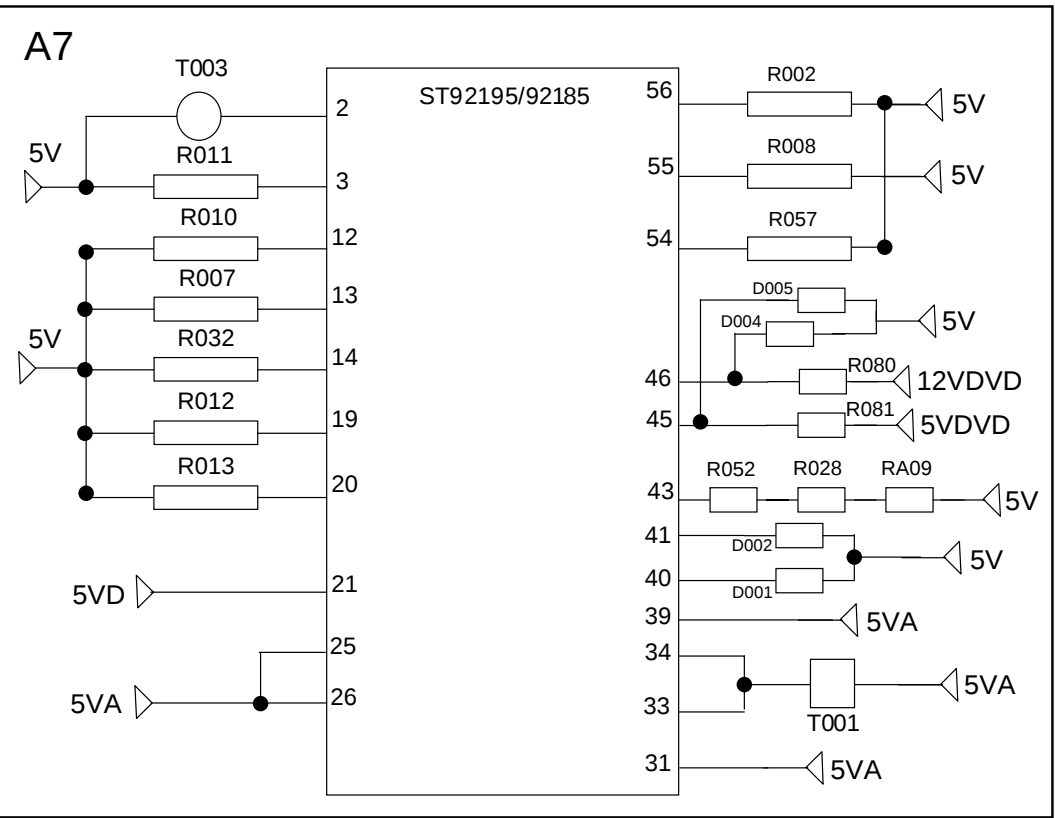
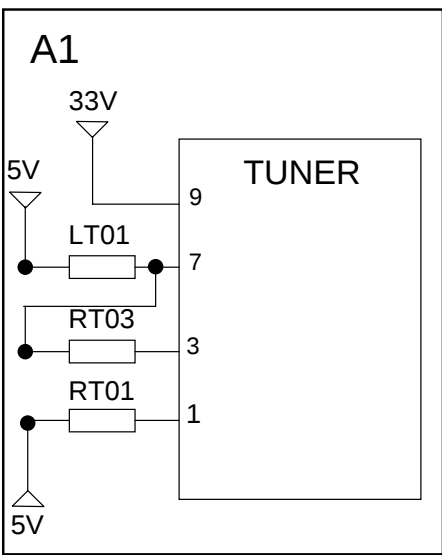
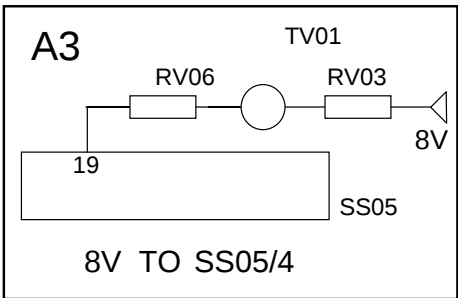
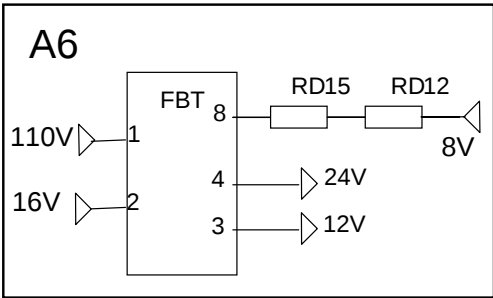
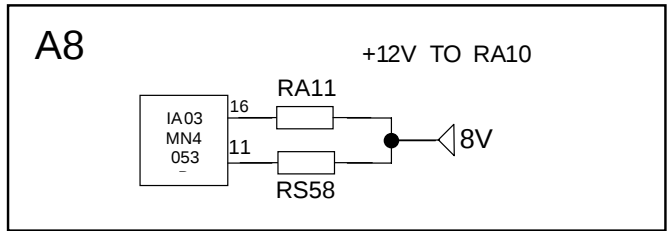
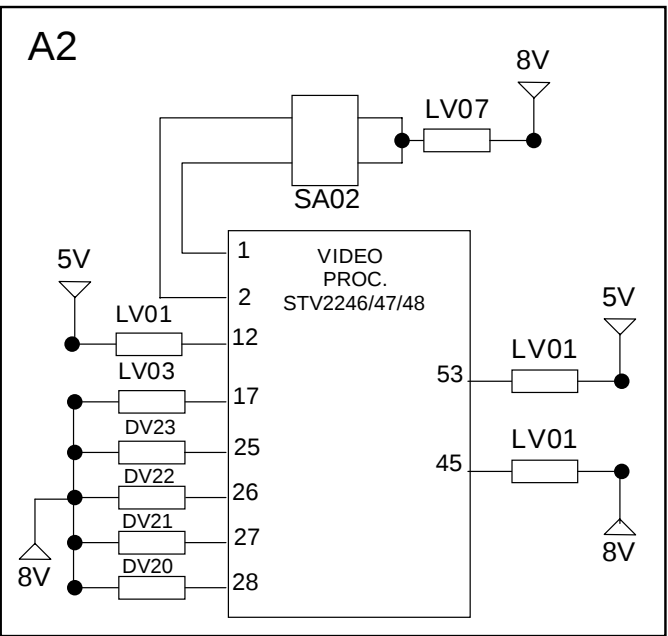
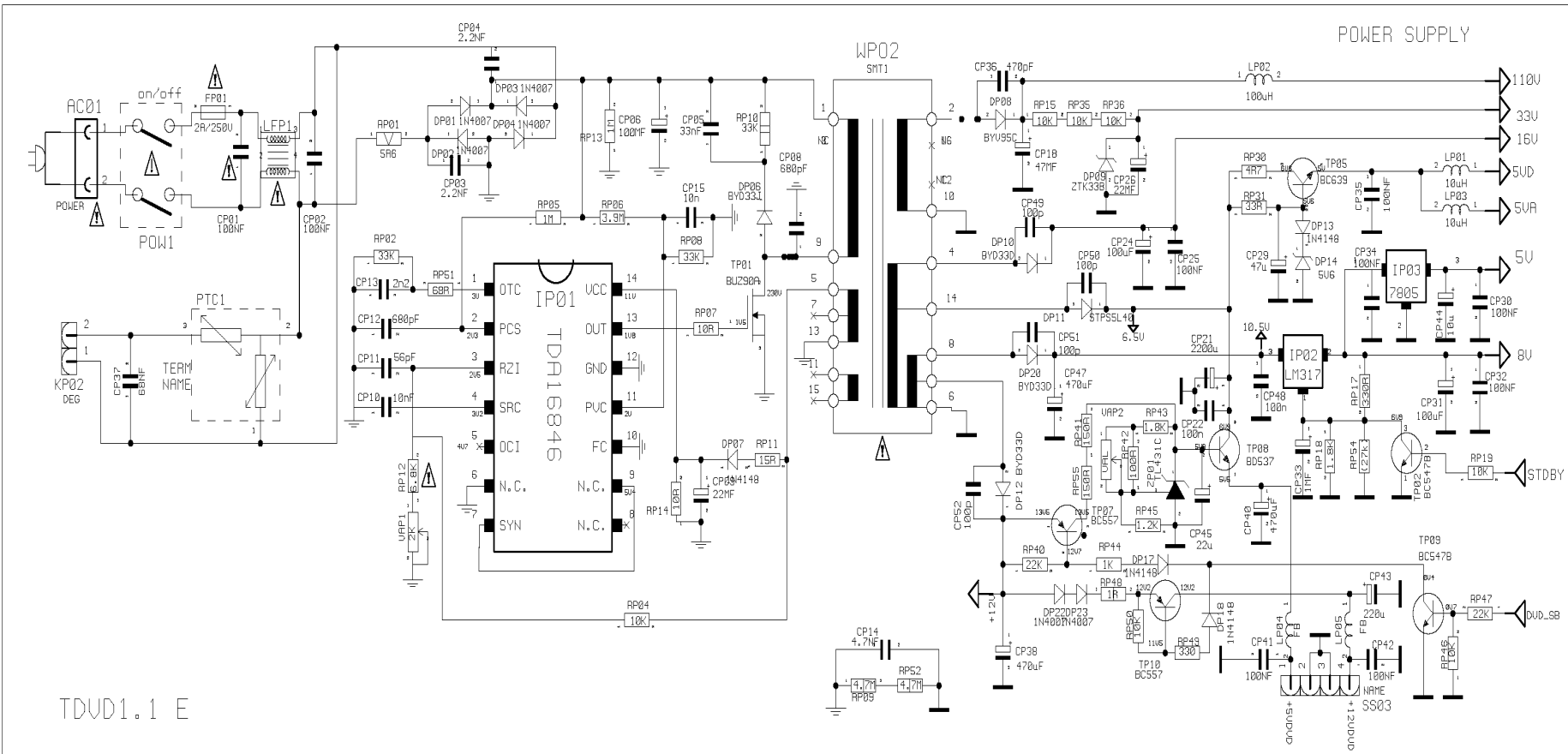
I²C Bus Interconnection Diagram

I²C BUS INTERCONNECTION DIAGRAM



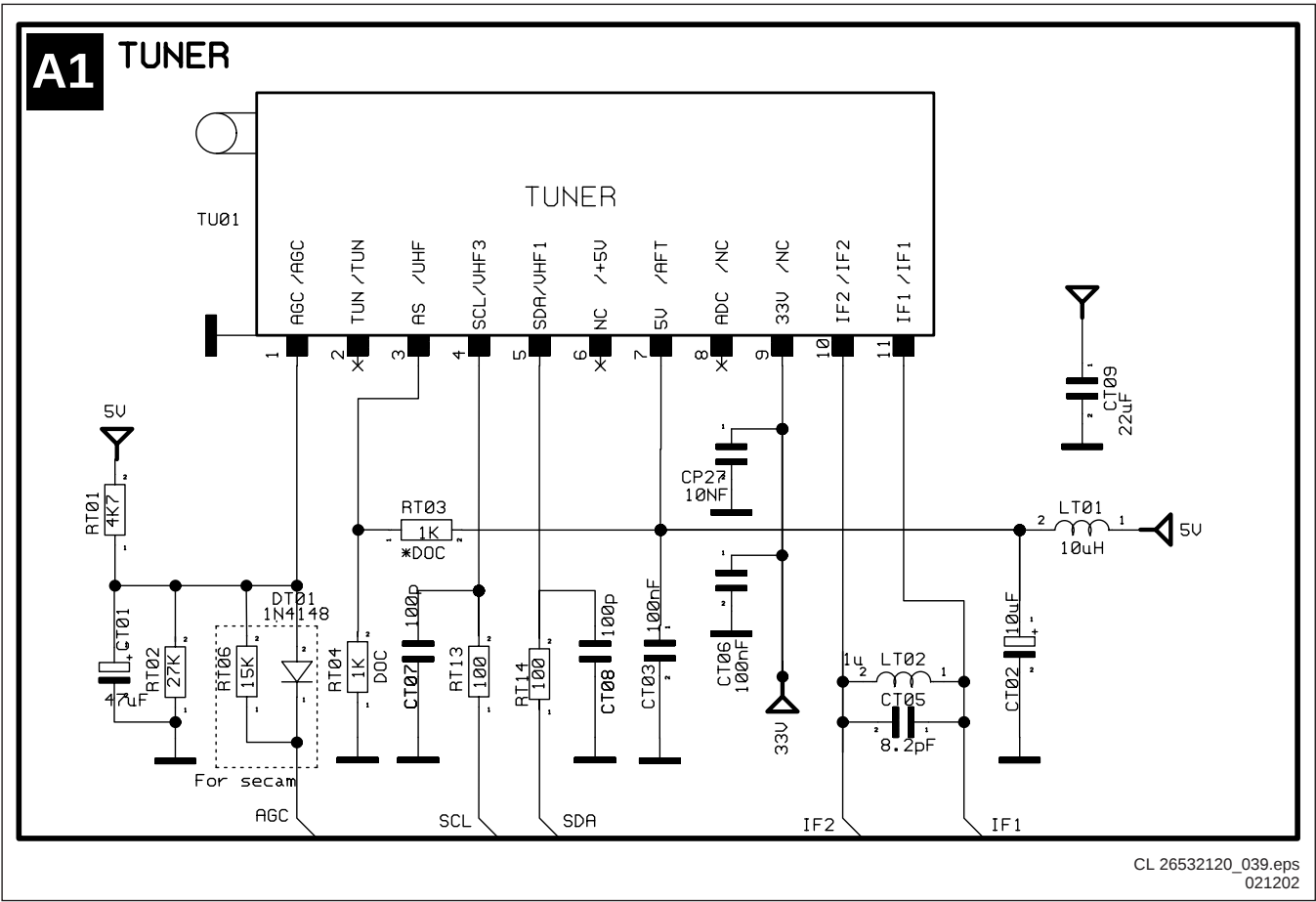
Supply Voltage Diagram

SUPPLY VOLTAGE DIAGRAM

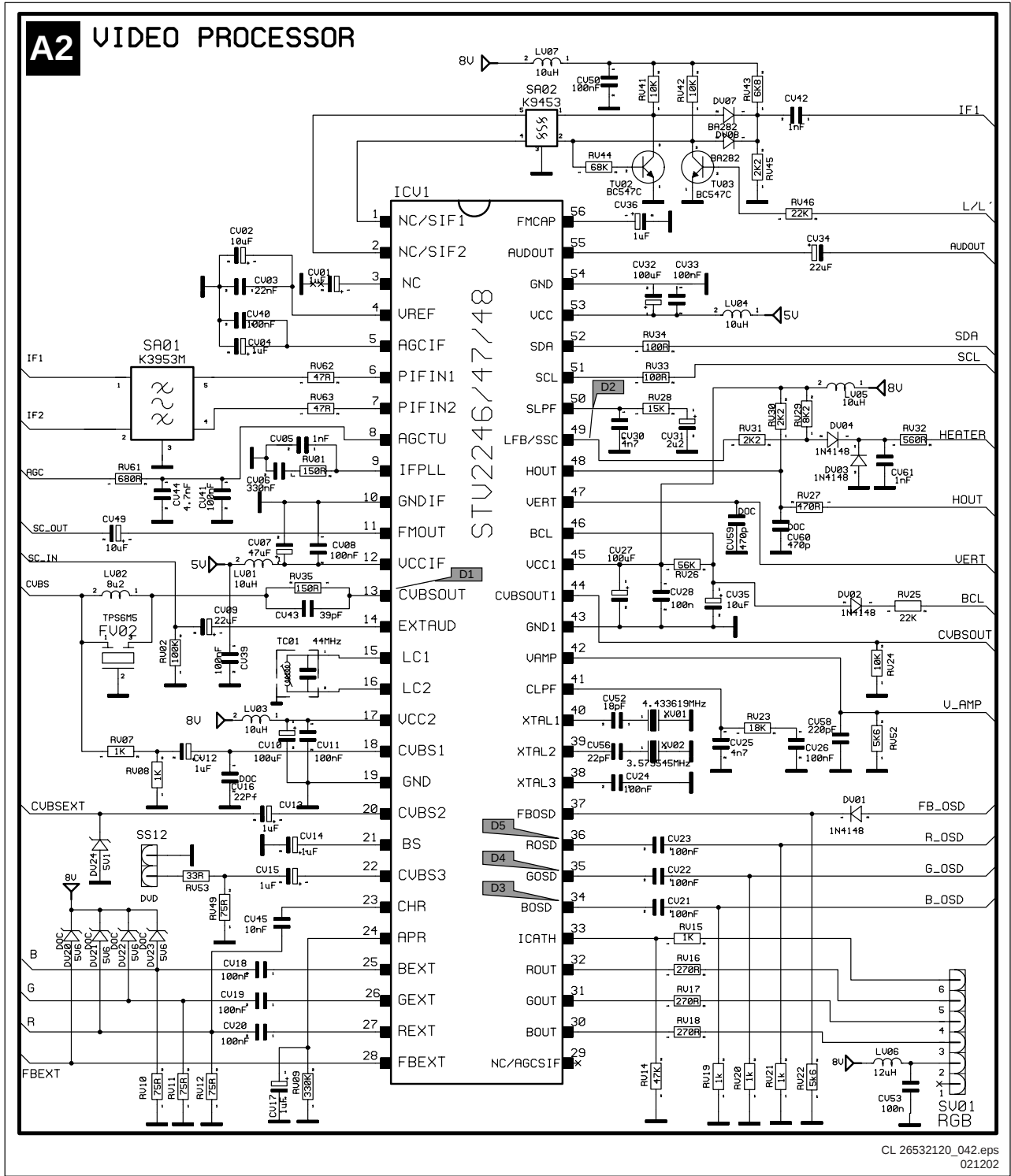


7. Circuit Diagrams and PWB Layouts

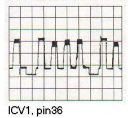
Main Panel: Tuner



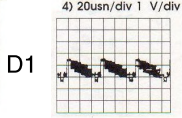
Main Panel: Video Processor



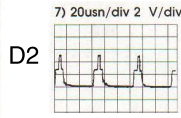
10) 10 usn/div 2 V/div



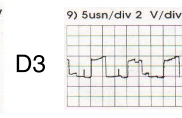
4) 20usn/div 1 V/div



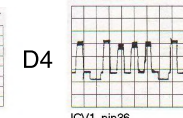
7) 20usn/div 2 V/div



9) 5usn/div 2 V/div



10) 10 usn/div 2 V/div



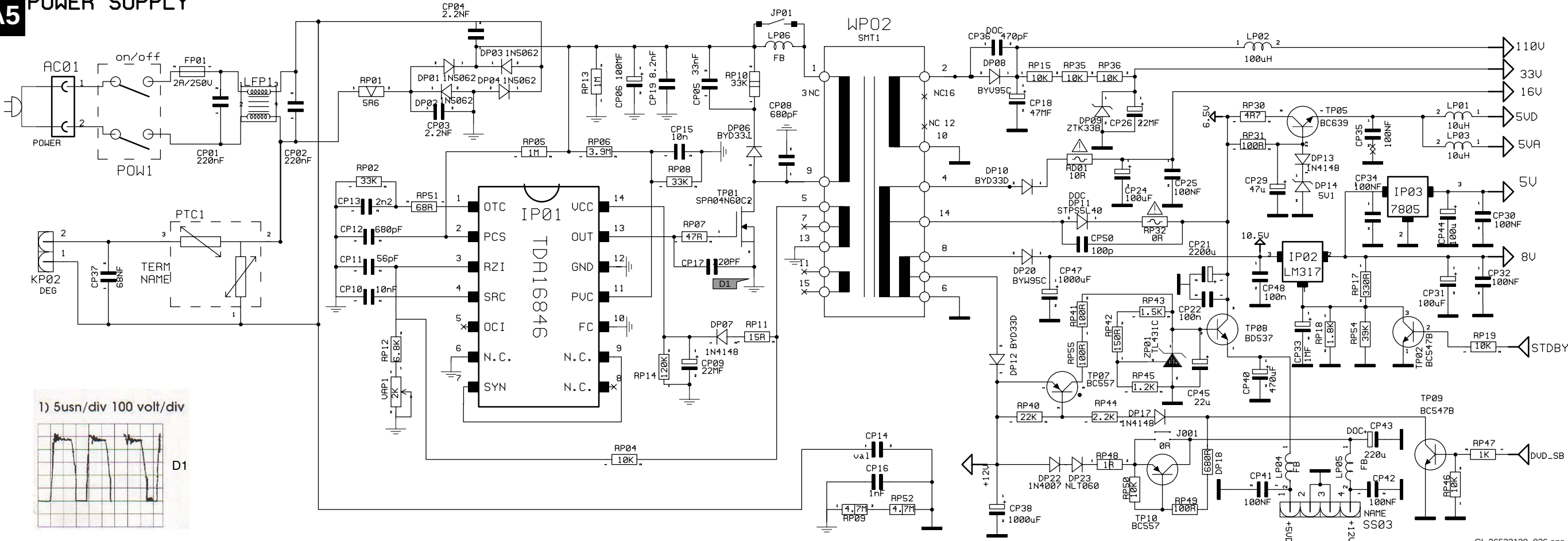
CL 26532120_038.eps
021202

CL 26532120_029.eps
021202

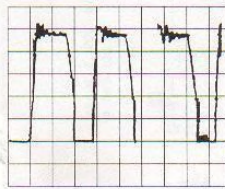
CL 26532120_033.eps
021202

Main Panel: Power Supply

A5 POWER SUPPLY

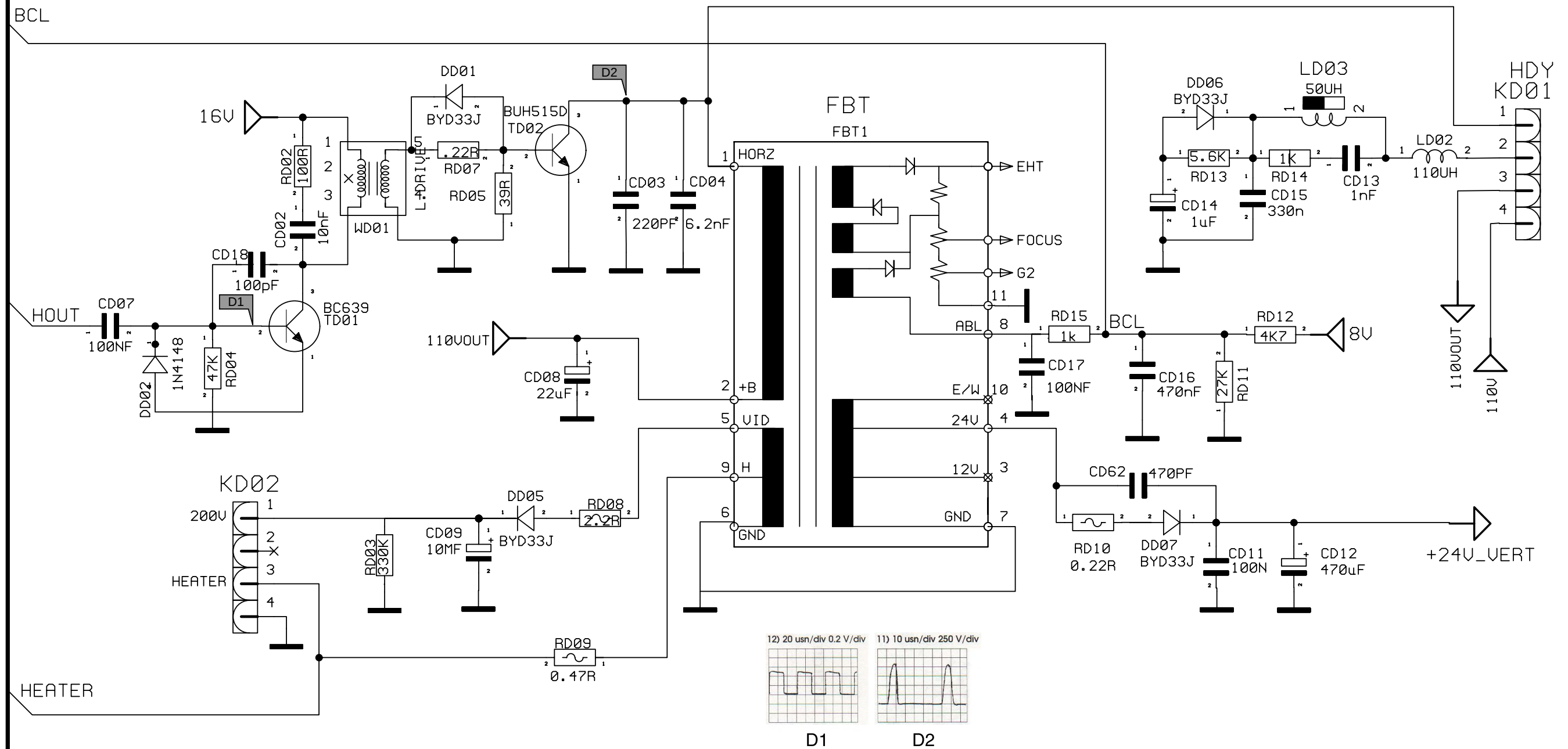


1) 5usn/div 100 volt/div

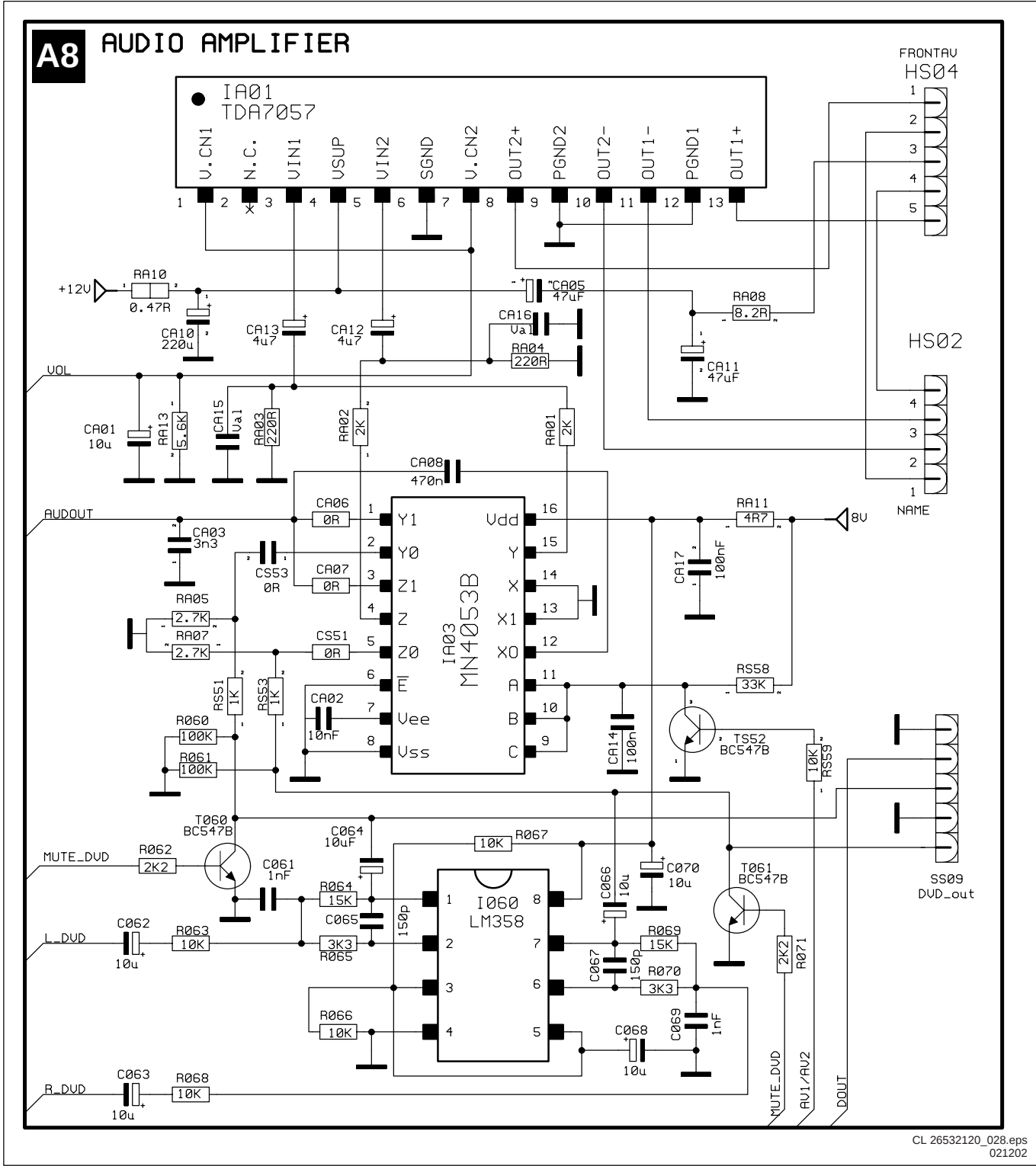


D1

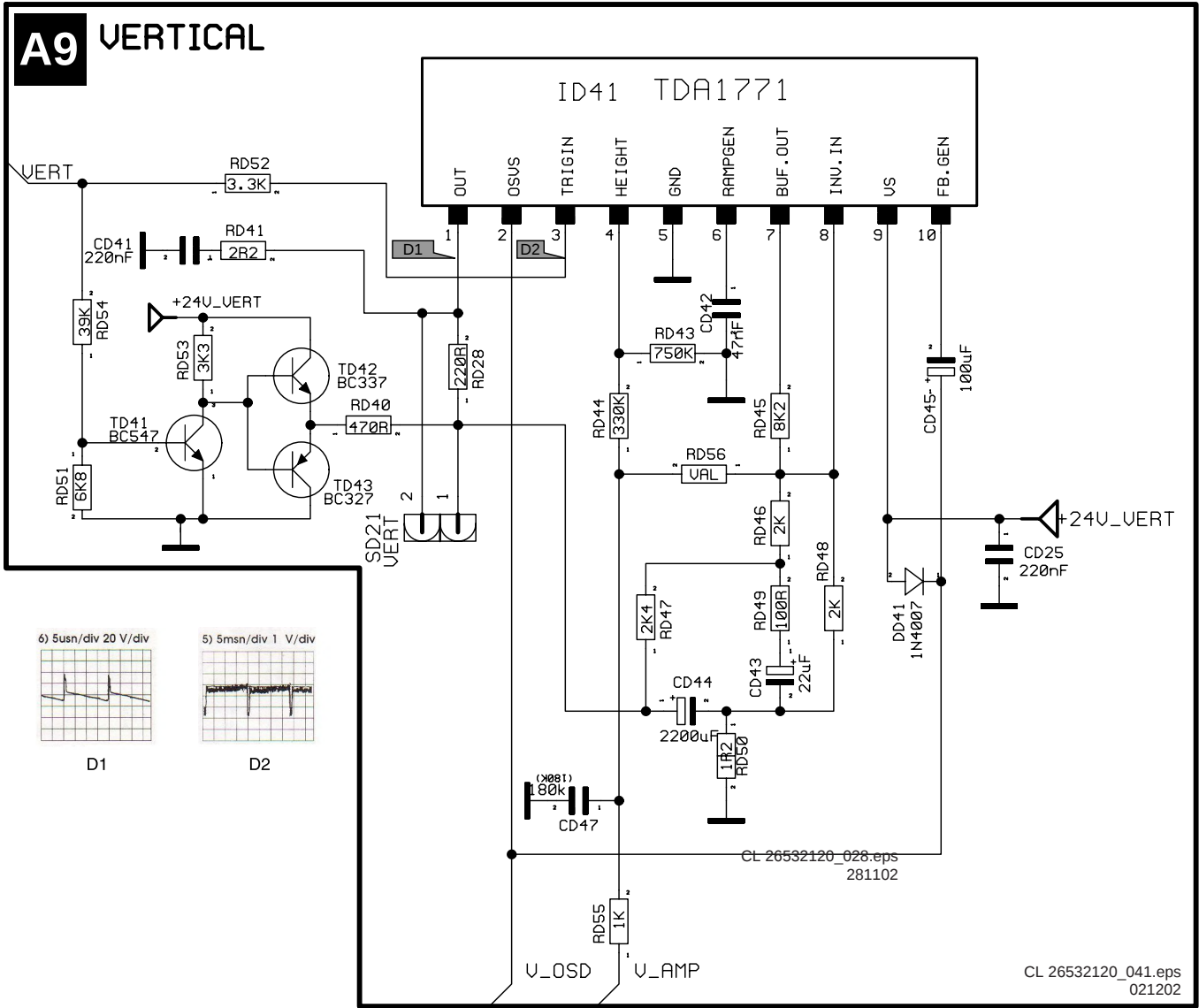
Main Panel: Horizontal

A6 HORIZONTAL

Main Panel: Audio Amplifier



Main Panel: Vertical



[illegible]

A11 KEYBOARD PANEL

SW05 EJECT

SW02 CH-

SW01 CH+

SW04 VOL+

SW03 VOL-

R050

5K6

1K5

R006

560R

R005

820R

R004

470R

R051

220

R003

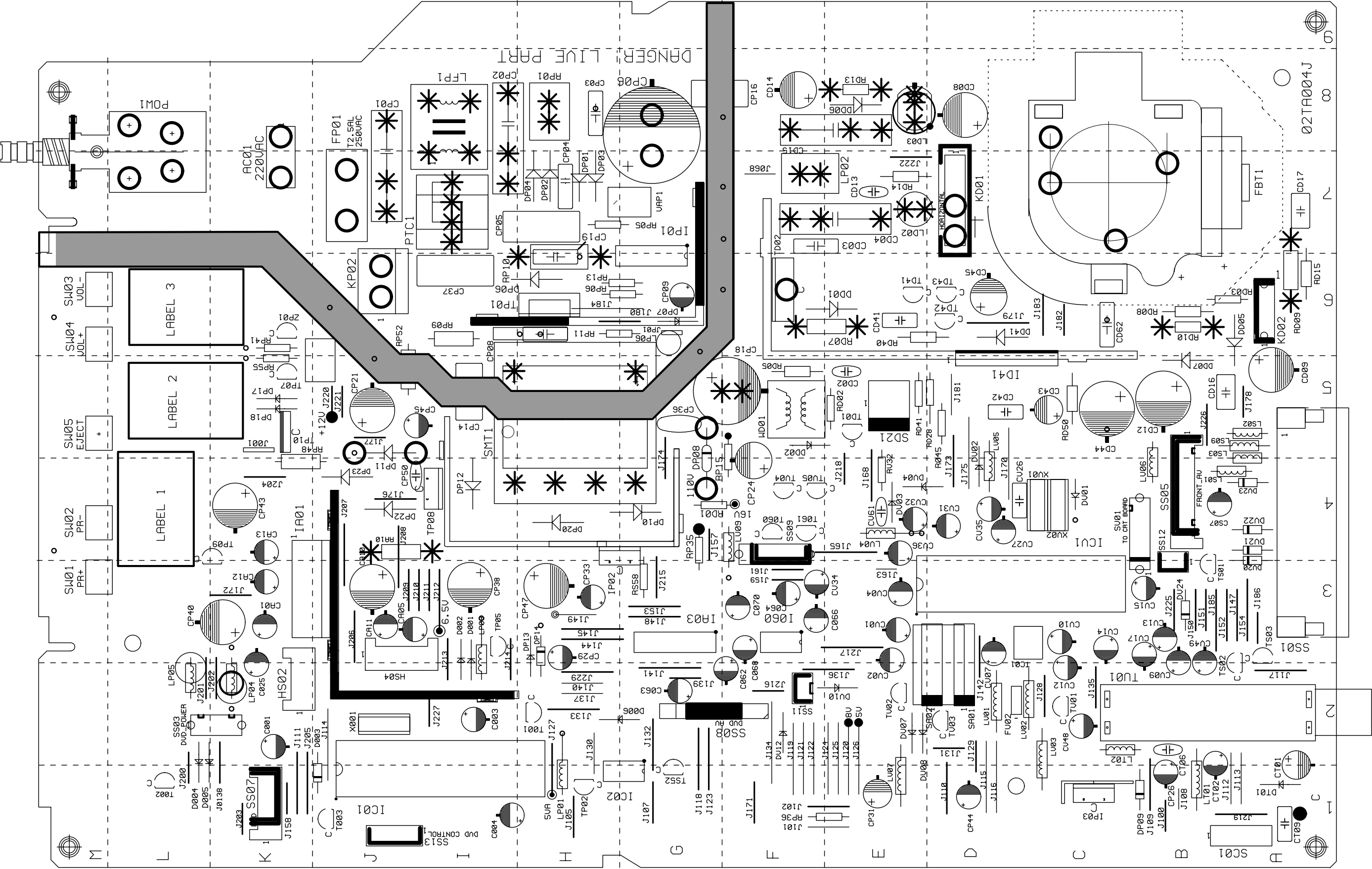
KEYB

CL 26532120_034.eps
0212103

Personal Notes:

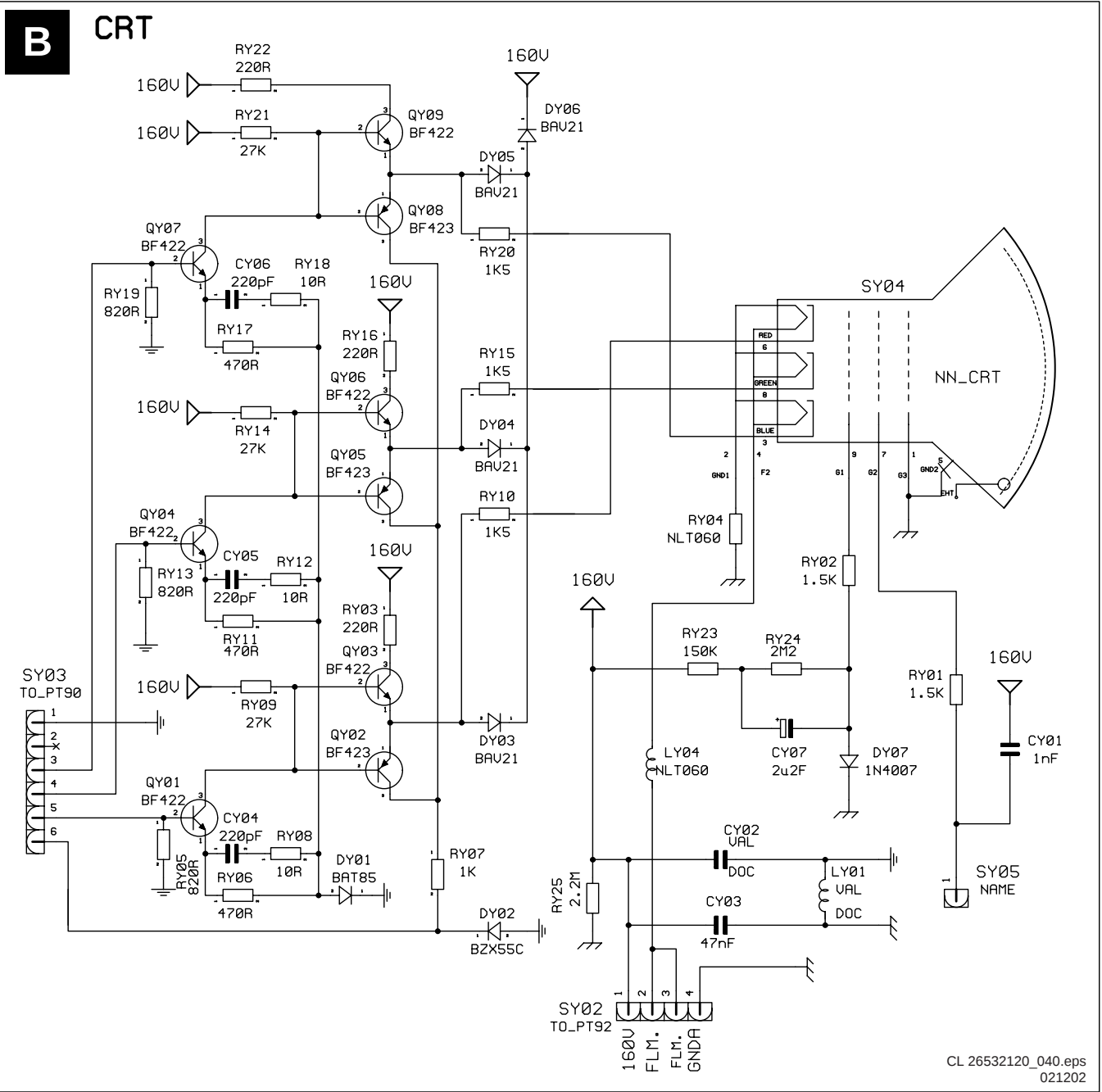
This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Layout Main Panel (Top Side)

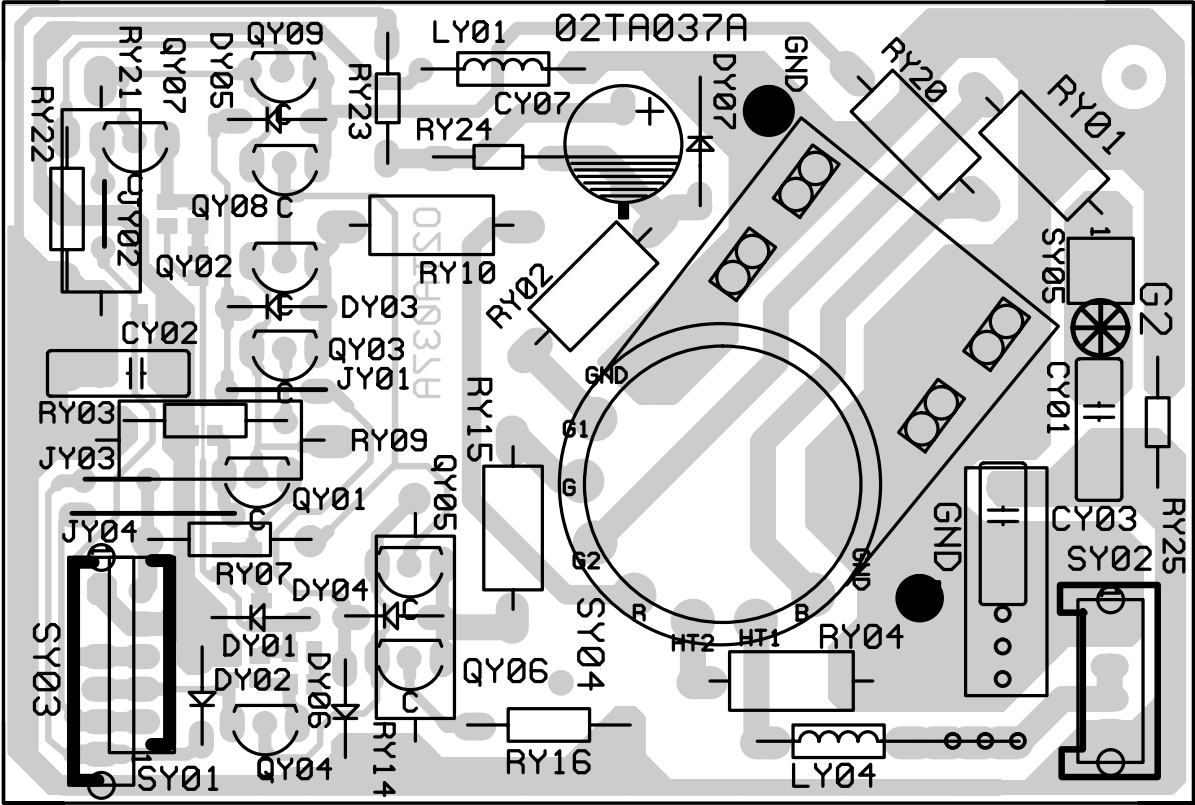


CL 26532120_050.eps
281102

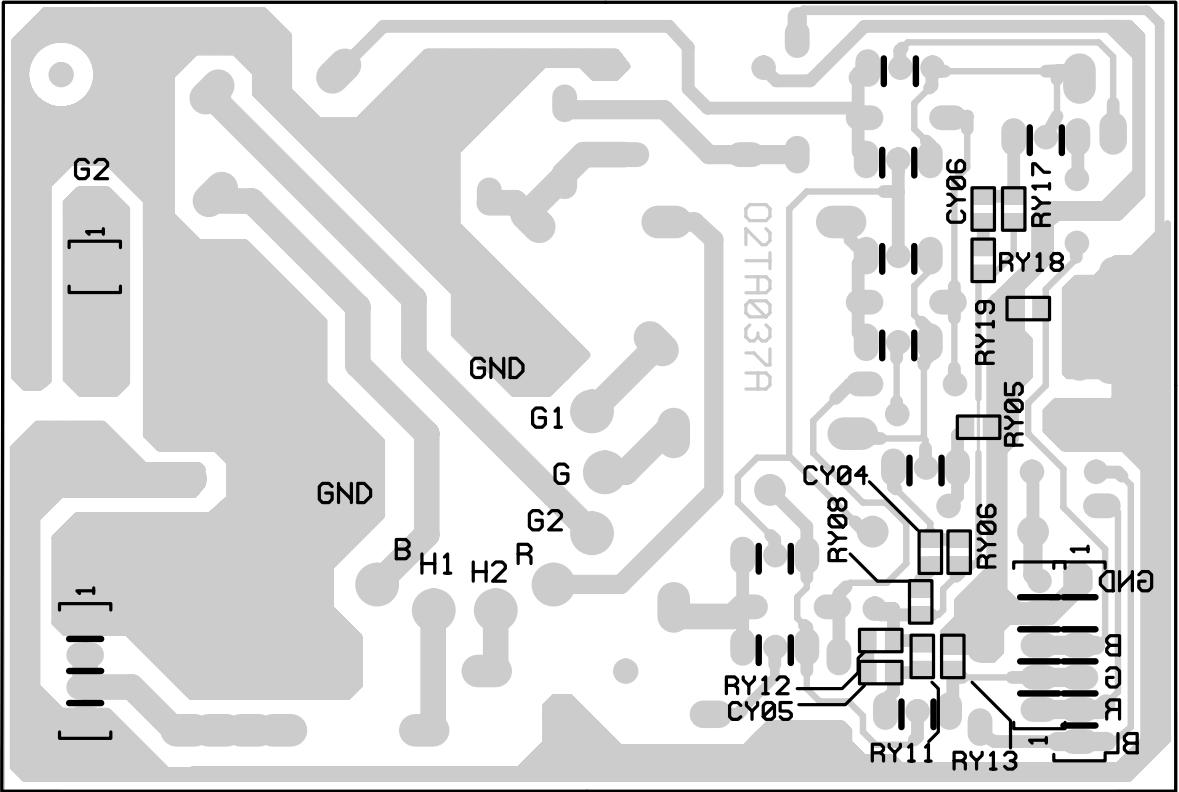
CRT Panel



Layout CRT Panel (Top Side)



Layout CRT Panel (Bottom Side)



8. Alignments

Index of this chapter

1. Hardware Alignments
2. Software Alignments/Settings

8.1 Hardware Alignments

8.1.1 System Voltage Adjustment

- Switch the TV in AV mode by pressing the AV button on the remote control unit (minimum beam current condition).
- Adjust the VAP2 potentiometer until you measure 115 Vdc on the cathode of diode DP08.

8.2 Software Alignments/Settings

Enter the TV Service Mode (see chapter 5). The Service Mode menu will now appear on the screen.

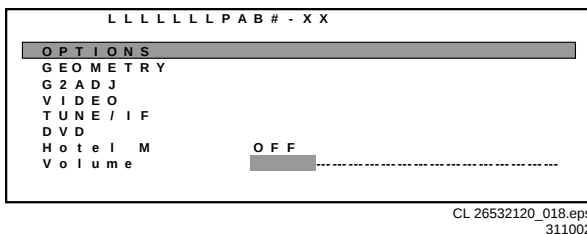


Figure 8-1 Service mode menu

Select one of the following alignments:

1. OPTIONS.
2. GEOMETRY.
3. G2ADJ.
4. VIDEO.
5. TUNE/IF.

8.2.1 Options

Options are used to control the presence/absence of certain features and hardware.

An Option byte represents a number of different options. All options are controlled via three option bytes.

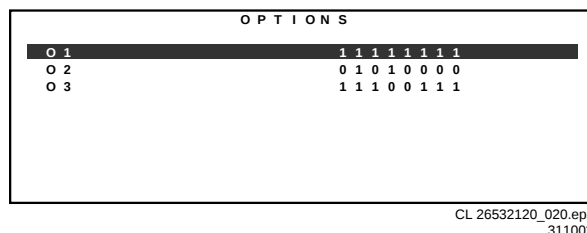


Figure 8-2 Option menu

How to change an Option byte

Select the option byte (01, 02 or 03) with the CURSOR UP/DOWN keys.

Use a digit key (0 to 7) to change the relevant option bit. The bit values will change from 0 to 1 and from 1 to 0 on each pressing of the relevant digit key.

Option bit definition

Option byte 1 (01): System configuration

Default setting is: 10111111 (b7.....b0)

b0

- 1: France and Europe available
- 0: Only Europe available

b1 (*)

- 1: not used
- 0: not used

b2

- 1: not used
- 0: not used

b3

- 1: not used
- 0: not used

b4

- 0: not used
- 1: not used

b5

- 0: not used
- 1: not used

b6-7

- 00: Alps tuner
- 10: Philips UV1316 tuner
- 01: Thomson/Orega tuner

Option byte 2 (02): Video configuration

Default setting is: 11011011 (b7.....b0)

b0

- 1: RGB Peak Lim. available
- 0: not available

b1

- 1: QSS application
- 0: Intercarrier application

b2

- 1: Coring available
- 0: not available

b3

- 1: Black Stretch available
- 0: not available

b4

- 1: Blue Screen disable
- 0: Enable

b5

- 1: OSD Contrast Control enable
- 0: Disable

b6-b7

- 00: APR OFF (Auto Peak Regulation 'off')
- 01: APR 50 IRE (Auto Peak Regulation 50)
- 10: APR 75 IRE (Auto Peak Regulation 75)
- 11: APR 100 IRE (Auto Peak Regulation 100)

Option byte 3 (03): Feature configuration

Default setting is: 01101111 (b7.....b0)

b0

- 1: CVBS output 2.3 V
- 0: CVBS output 2.0 V

b1

- 1: not used
- 0: not used

b2

- 1: DVD available
- 0: not available

b3

- 1: AFC open
- 0: AFC closed

b4

- 1: One Crystal applied (4.43 MHz)

0: Two crystals applied (for NTSC playback)

b5

1: AVL Auto Volume Level (Mono 22XX)

0: not available

b6

1: 2248E (microprocessor)

0: 2248C (microprocessor)

b7

1: Standby after power 'on'

0: No Standby after power 'on'

Note:

- Reserved bits (*) must be set to 0.
- The 7th bit of Option byte 03 enables the 'no video ident' timer.

8.2.2 Geometry

The Geometry Alignments menu contains several items to align the set, in order to obtain a correct picture geometry.

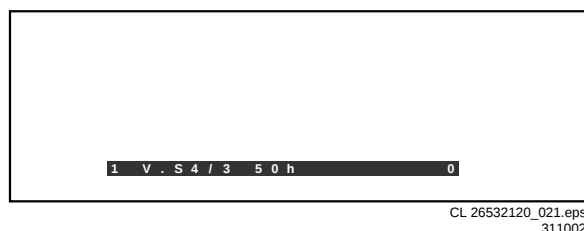


Figure 8-3 Geometry alignment menu

How to align

Enter the Service Mode and select the GEOMETRY settings. Standard geometry adjustments are carried out by VSIZE, VPOS and HPOS settings. VSIZE 16/9 50h setting has to be carried out until 3 cm distance between upper and lower parts of the screen. Same adjustments are valid for 60H 16/9 and 4/3.

- V.S4/3 50h** Vertical size property of picture at 50 Hz 4/3 aspect ratio broadcast (default value -17).
- V.S16/9 50h** Vertical size property of picture at 50 Hz 16/9 aspect ratio broadcast (default value 16).
- V.S4/3 60h** Vertical size property of picture at 60 Hz 4/3 aspect ratio broadcast (default value -32).
- V.S16/9 60h** Vertical size property of picture at 60 Hz 16/9 aspect ratio broadcast (default value 0).
- V.P** To adjust the vertical position of the picture (default value 7).
- H.P** To adjust the horizontal position of the picture (default value 3).

8.2.3 G2 Adjust menu

In this menu we will see a comparative display according to the preset. To adjust the G2, turn the G2 potentiometer on the LOT until you reach the ':' sign. If the colon is highlighted, adjustment is achieved ('<' means you have to decrease and '>' means you have to increase).

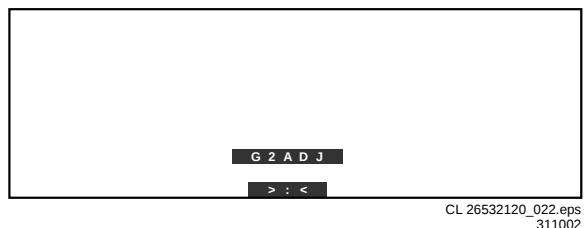


Figure 8-4 G2 adjustment menu

8.2.4 Video

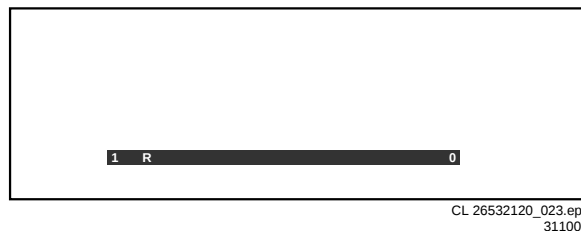


Figure 8-5 Video alignment menu

- Apply a 'white' pattern (at 100 IRE)
- Set CONTRAST to 70% and BRIGHTNESS and COLOUR SATURATION in the middle.
- Place the colour analyser.
- Via R, G, and B, it is possible to modify the 'peak white'.
- Adjust to obtain the necessary values for x and y.
 - R (default value = 20)
 - G (default value = 16)
 - B (default value = 12)
- Apply a 'dark gray' pattern (at 10 IRE).
- Set CONTRAST to 70% and BRIGHTNESS and COLOUR SATURATION in the middle.
- Adjust to obtain the necessary values for x and y by changing the RED CFF and GREEN CFF
 - R CFF (default value = 3)
 - G CFF (default value = -7)

Remark: After the low light alignment it may be necessary to check and to re-align the high light, and to repeat several times the procedure to obtain a good alignment for both low and high light.

8.2.5 Tune IF

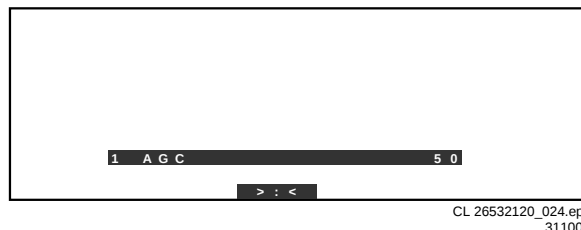


Figure 8-6 Tuner alignment menu

AGC adjustment (default value = 49):

Select AGC, and adjust the settings until the ':' indicator (displayed as >:<) turns into red by pressing < and > on the remote control.

PIF adjustment for BG/DK/L systems:

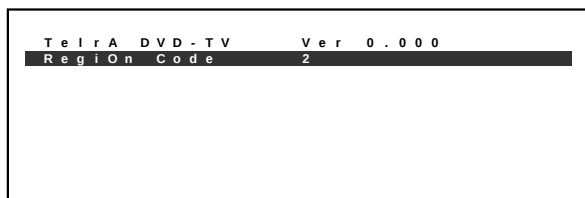
- Apply a 38.9 MHz PAL BG signal.
- Enter the Service Mode.
- Select TUNE IF.
- Choose the PIF COARSE and PIF FINE items, and adjust the settings until the ':' indicator (displayed as >:<) turns into red by pressing < and > on the remote control.
 - PIF C (default value = -2)
 - PIF F (default value = -12)

PIF adjustment for L' system:

- Apply a 33.9 MHz SECAM L' signal.
- Enter the Service Mode.
- Select TUNE IF.

4. Choose the PIF COARSE L' and PIF FINE L' items, and adjust the settings until the ':' indicator (displayed as >:<) turns into red by pressing < and > on the remote control.
 - PIFCL' (default value = -0)
 - PIF FL' (default value = -0)

8.2.6 DVD



CL 26532120_025.eps
311002

Figure 8-7 DVD settings menu

In this menu the following selections are possible:

- Region Code 2
- Region Code All

8.2.7 Hotel Mode

Installation and Child Lock Menus are omitted in Hotel Mode. You cannot search any channel when the Hotel Mode is activated.

8.2.8 Volume

In Hotel Mode the volume level cannot be increased higher than the level adjusted in the Service Mode.

9. Circuit Descriptions and Abbreviation List

9.1 List of Abbreviations (not applicable yet)

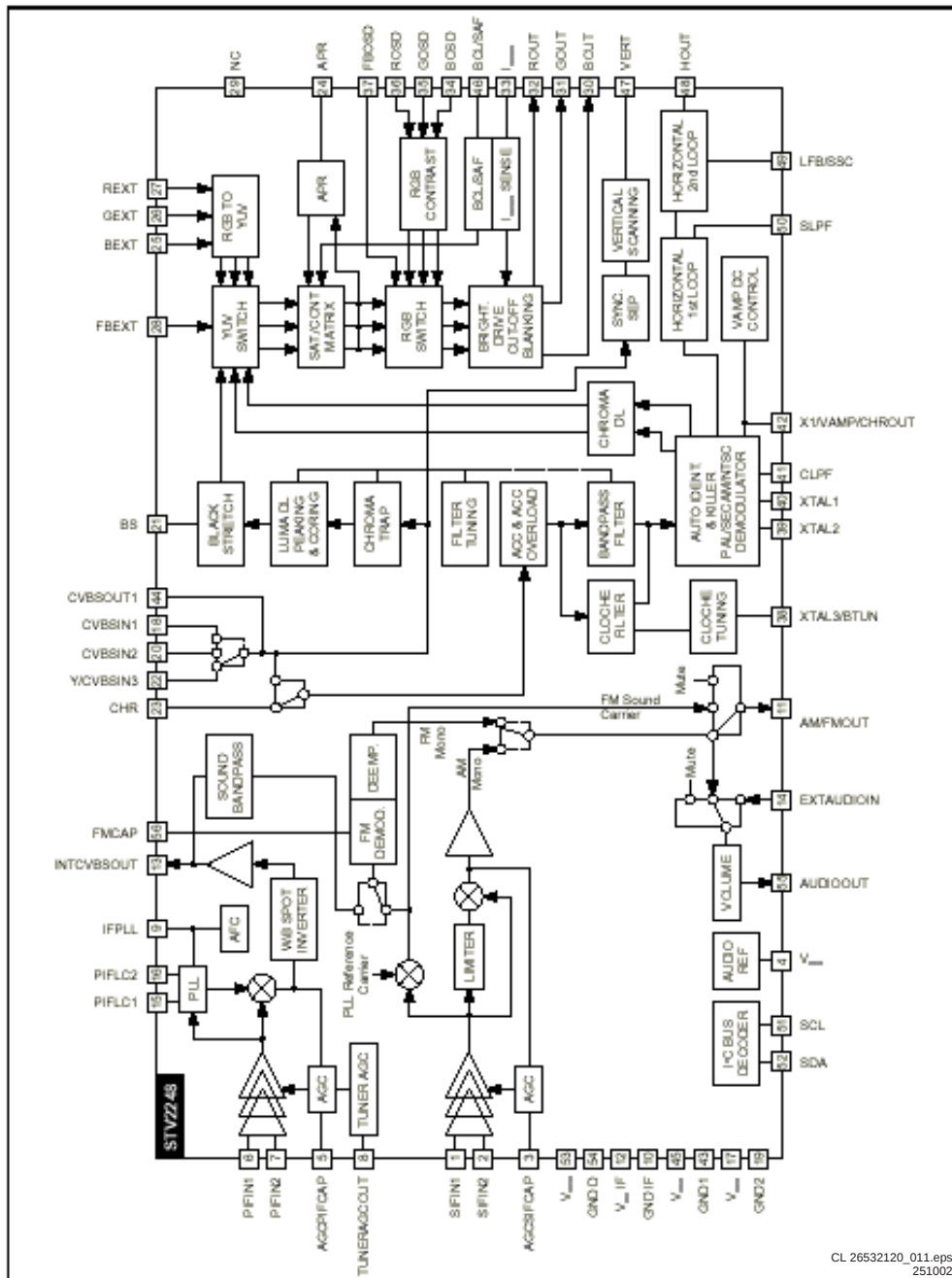
9.2 IC Data Sheets

In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as a "black box" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.2.1 STV2248 Multi Standard TV Processor

STV2248

BLOCK DIAGRAM



CL 26532120_011.eps
251002

Figure 9-1 STV2248 internal block diagram

STV2248**PIN CONNECTIONS**

Pin N°	Symbol	Description
1	SIFIN1	SIF Input
2	SIFIN2	SIF Input
3	AGCSIFCAP	AGC SIF Capacitor
4	V _{REF} IF	Voltage Reference Filtering
5	AGCPIFCAP	AGC PIF Capacitor
6	PIFIN1	PIF Input
7	PIFIN2	PIF Input
8	TUNERAGCOUT	AGC Tuner Output
9	IFPLL	IF PLL Filter
10	GND IF	IF Ground
11	AM/FMOUT	AM/FM Mono Sound or Stereo Carriers Output
12	V _{CC} IF	5V IF Supply
13	INTCVBSOUT	Internal CVBS Output
14	EXTAUDIOIN	Audio Scart Input
15	PIFLC1	LC Input
16	PIFLC2	LC Input
17	V _{CC2}	Video/Luma Supply Voltage (8V)
18	CVBSIN1	Internal Video Input
19	GND2	Video/Luma Ground
20	CVBSIN2	External Video Input
21	BS	Black Stretch Capacitor
22	Y/CVBSIN3	Y(SVHS) or CVBS3 External Input
23	CHR	Chroma (SVHS) Input
24	APR	Auto Peak Regulation
25	BEXT	External Blue Input
26	GEXT	External Green Input
27	REXT	External Red Input
28	FBEXT	External Fast Blanking Input
29	NC	Not to be connected
30	BOUT	Blue Output
31	GOUT	Green Output
32	ROUT	Red Output
33	I _{CATH}	Cathode Current Measurement Input
34	BOSD	OSD Blue Input
35	GOSD	OSD Green Input
36	ROSD	OSD Red Input
37	FBOSD	OSD Fast Blanking
38	XTAL3/BTUN	3.5XMHz Crystal or Cloche Filter Tuning Capacitor
39	XTAL2	3.5XMHz Crystal
40	XTAL1	4.43/3.5XMHz Crystal
41	CLPF	Chroma PLL Filter
42	X1/VAMP/CHROUT	XTAL1 Control Pin, Vertical Amplitude DAC Output and Chroma Reference Signal Output
43	GND1	Chroma/Scanning Ground
44	CVBSOUT1	Main Video Switch Output

CL 26532120_009.eps
251002

Figure 9-2 STV2248 pin definitions (1)

STV2248

PIN CONNECTIONS (continued)

Pin N°	Symbol	Description
45	V _{CC1}	Chroma/Scanning Power Supply (8V)
46	BCL/SAF	Beam Current Limiter Control Voltage and Safety Input (XRAY)
47	VERT	Vertical Output Pulse
48	HOUT	Horizontal Output Pulse
49	LFB/SSC	Line Flyback Input and Super-sandcastle Output
50	SLPF	Scanning PLL Filter
51	SCL	I ² C Bus Clock Input
52	SDA	I ² C Bus Data Input
53	V _{CCD}	Digital Supply Voltage (5V)
54	GND D	Digital Ground
55	AUDIOOUT	Main Audio Output
56	FMCAP	FM Demodulation Capacitor

CL 26532120_010.eps
251002

Figure 9-3 STV2248 pin definitions (2)

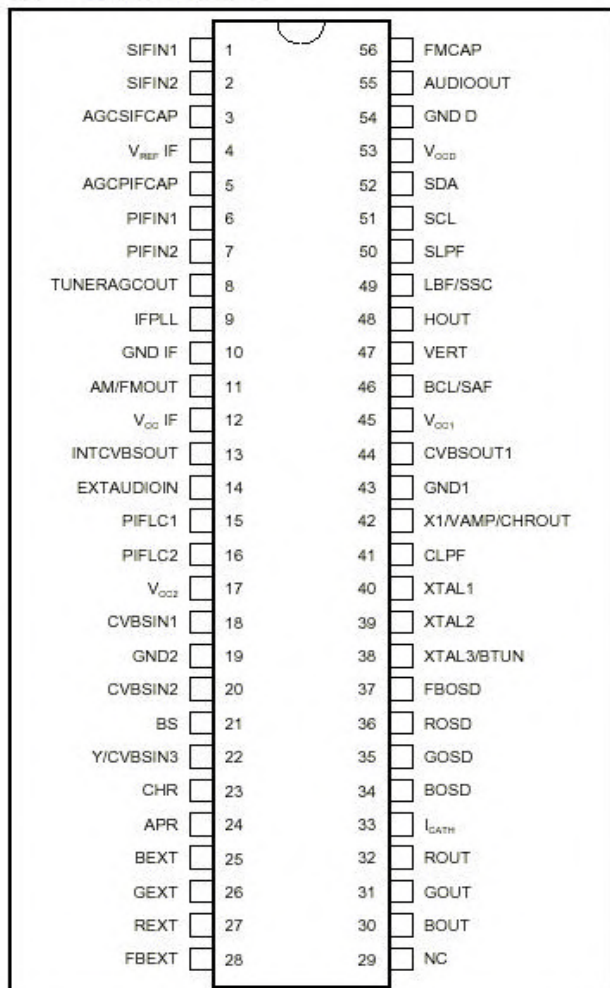
CL 26532120_008.eps
251002

Figure 9-4 STV2248 pinning

9.2.2 ST92195 C/D

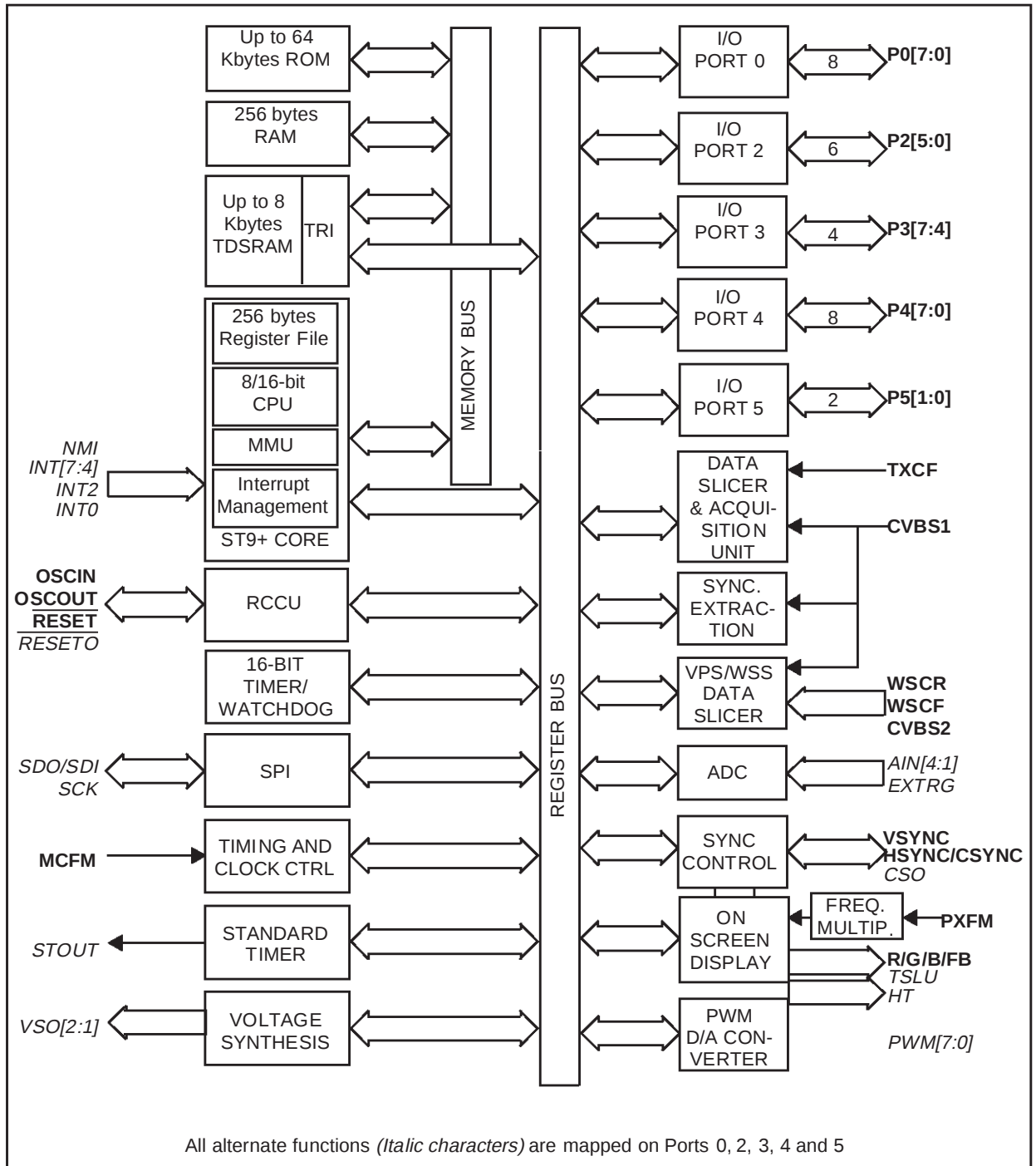
CL 26532120_012.eps
251002

Figure 9-5 ST92195 C/D internal block diagram

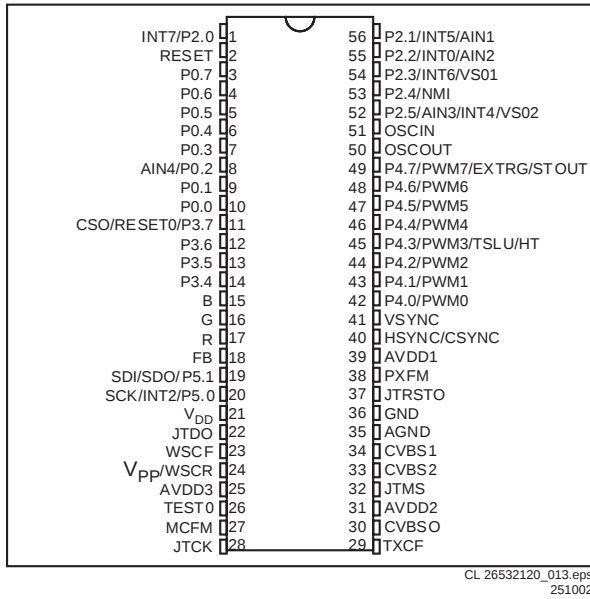


Figure 9-6 ST92195 C/D pinning

Table 9-1 ST92195 C/D pin definitions

Pin No.	Pin Name	I/O Function
1	INT7/P2.0	IR INT. IN
3	P0.7	DVDDATAOUT
4	P0.6	STOP
5	P0.5	N.C.
6	P0.4	N.C.
7	P0.3	N.C.
8	AIN4	AV.STATUS
9	P0.1	N.C.
10	P0.0	N.C.
11	CSO/RESET0/P3.7	MUTE_DVD
12	P3.6	L/L'
13	P3.5	TV/DVD
14	P3.4	STDBY
28	JTCK	N.C.
30	CVBS0	N.C.
32	JTMS	N.C.
42	P4.0/PWMO	DVD_STD_BY
43	P4.1/PWM1	VOL
44	P4.2/PWM2	N.C.
45	P4.3/PWM3	DVD POWER +5V
46	P4.4/PWM4	DVD POWER +12V
47	P4.5/PWM5	N.C.
48	P4.6/PWM6	N.C.
49	P4.7/PWM7/EXTRG/STOUT	N.C.
53	P2.4/NMI	N.C.
54	P2.3/INT6/VS01	LED CONTROL
55	P2.2/INT0/AIN2	DVDDATAIN
56	P2.1/INT5/AIN1	KEYBOARD INPUT

9.2.3 TDA1771 Vertical Deflection Circuit

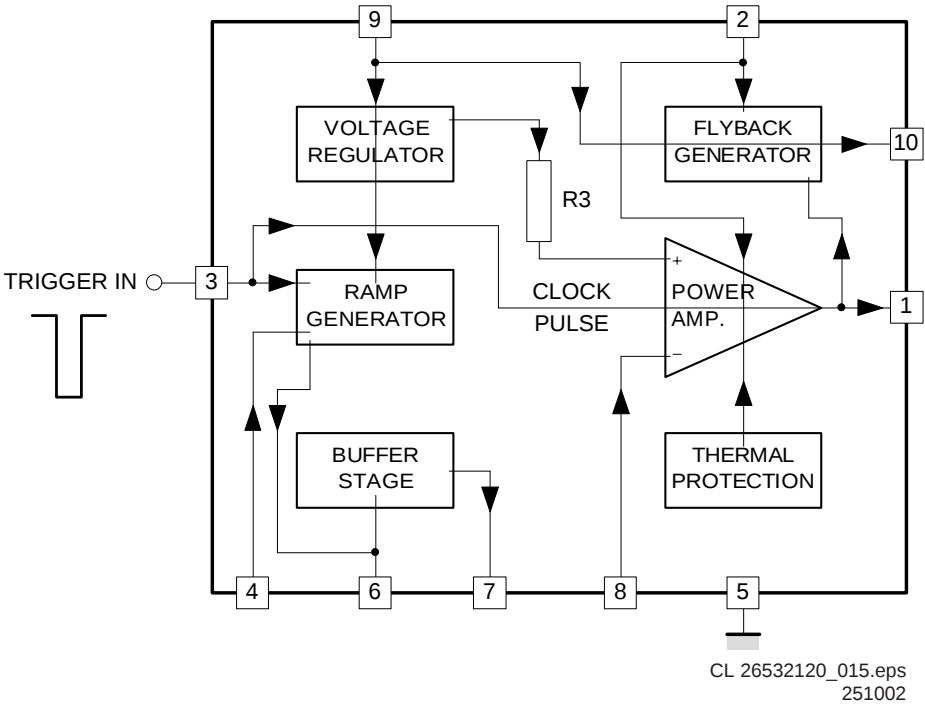


Figure 9-7 TDA 1771 internal block diagram

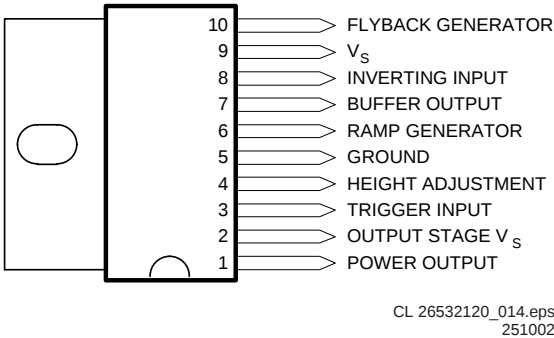


Figure 9-8 TDA 1771 pinning

9.2.4 TDA 16846

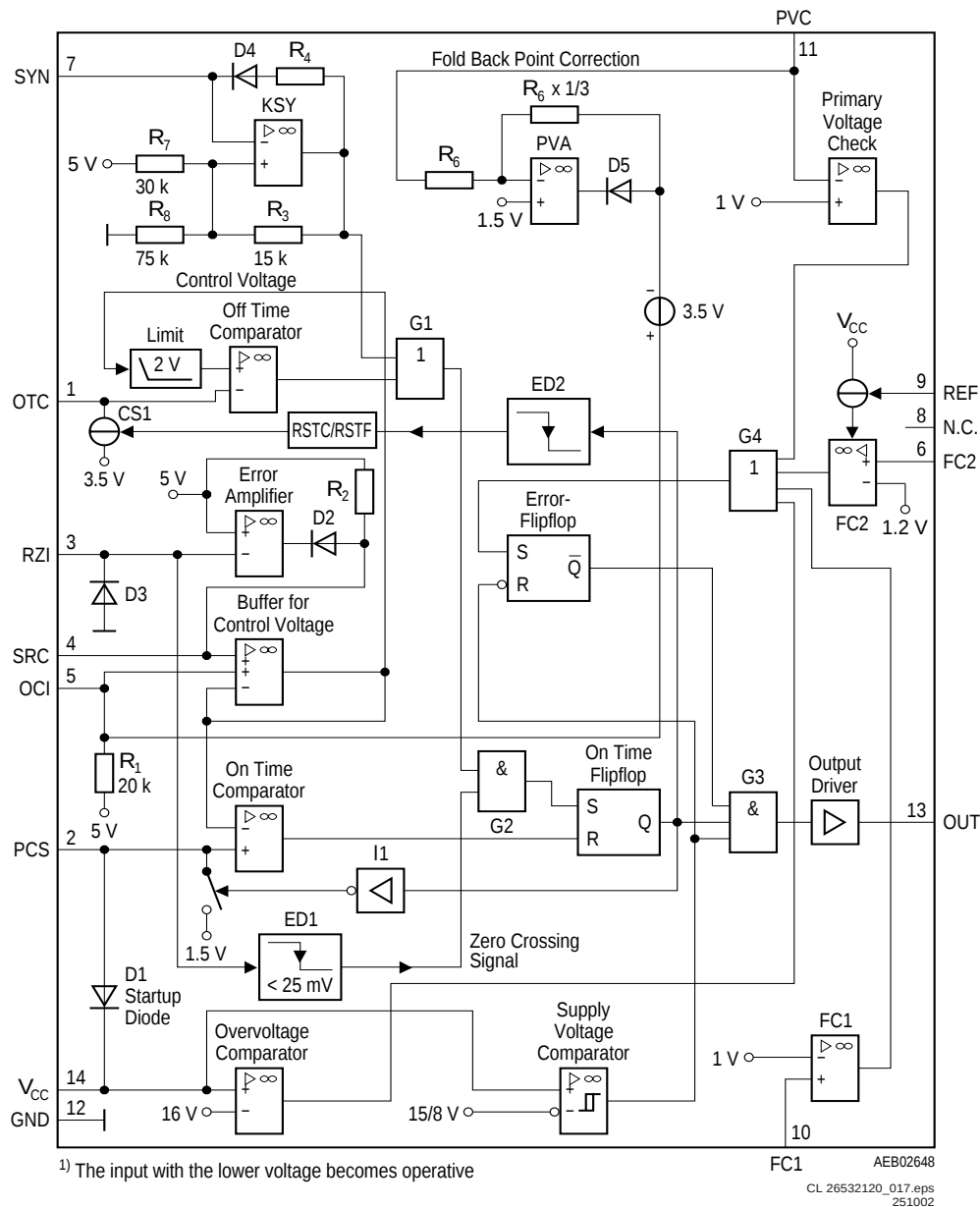


Figure 9-9 TDA 16846 internal block diagram

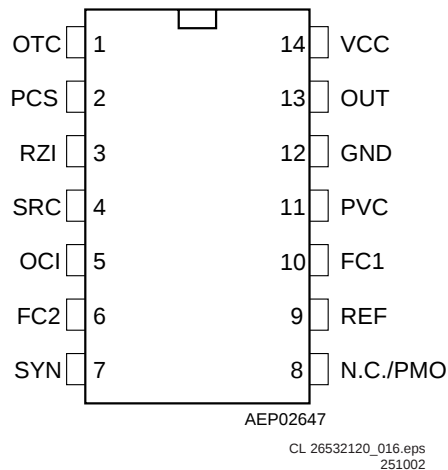


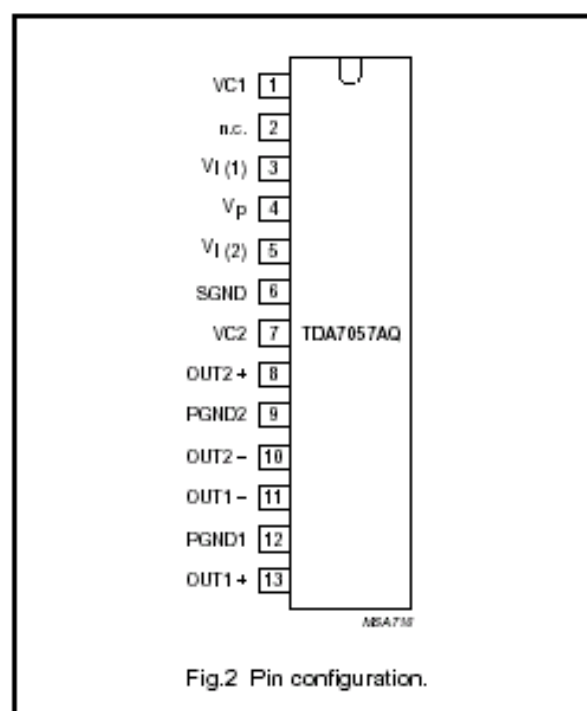
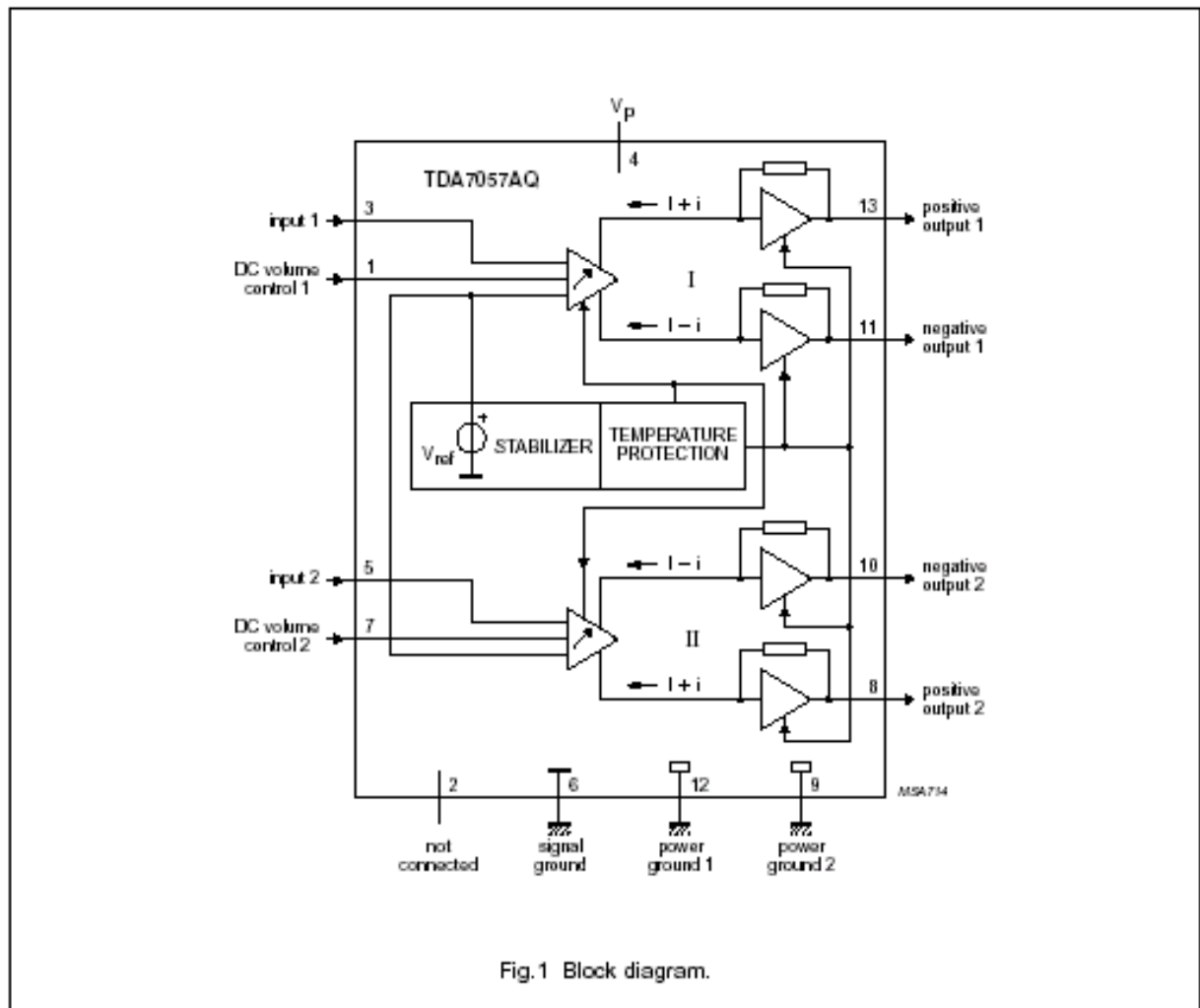
Figure 9-10 TDA 16846 pinning

Table 9-2 TDA 16846 pin definitions

Pin	Symbol	Function
1	OTC	Off Time Circuit
2	PCS	Primary Current Simulation
3	RZI	Regulation and Zero Crossing Input
4	SRC	Soft-Start and Regulation Capacitor
5	OCI	Opto Coupler Input
6	FC2	Fault Comparator 2
7	SYN	Synchronization Input
8	N.C./PMO	Not Connected (TDA16846)/ PMO (TDA16847)
9	REF	Reference Voltage and Current
10	FC1	Fault Comparator 1
11	PVC	Primary Voltage Check
12	GND	Ground
13	OUT	Output
14	VCC	Supply Voltage

9.2.5 TDA7057AQ

BLOCK DIAGRAM



14PT6107

Various

AC01	0020 210 10300	Cable 4P 30cm
	0050 302 61010	2P vert.
	0020 272 32230	Cable 30cm
	0023 443 50221	Cable 2P 35cm
	0050 510 84620	Insulation plate 13X23
1FRN	3990 000 02201	DSL combo loader DSL-760
	9965 000 15464	Side I/O panel
1LED	9965 000 15465	LED panel
1TUP	8411 400 10395	CRT panel
FP01▲	0673 100 01831	Fuse 2.5A 250V 5X20mm
FP01▲	0751 102 11040	Fuse holder 2.5A
FP02	4822 242 10254	Filter TPWA02B-TF21
HL01	0750 164 20211	Socket headphone
HS02	0751 004 11000	4P vert.
HS04	0750 305 11001	5P in-line vert. mini
KC01	0750 128 80021	Socket cinch rear BK
KC02	0750 128 80051	Socket cinch rear RD
KC03	0750 128 80061	Socket cinch rear WH
KD01	0751 002 01010	4P hor. male
KD02	0020 220 00030	4P (3P) 22cm mini
KD02	0750 304 11001	4P in-line vert. mini
KF01	0751 009 11001	9P in-line vert. mini
KF02	0750 164 44131	Socket cinch side YE.
KF03	0750 164 44121	Socket cinch side WH.
KF04	0750 164 44111	Socket cinch side RD
KL01	0020 920 00320	Cable 5P 25cm mini
KL02	0020 995 04450	Cable 4P 45cm
KP02	0751 002 11781	2P 7.5mm
KS01	0020 520 00401	Cable 5P 40cm mini
KS01	0750 305 11001	5P in-line vert. mini
POW1	0810 000 00141	Mains switch
SO01	0020 720 00211	Cable 6P 20cm
SA01	0377 300 07991	Filter K2977M B/GD/K
SA02	0377 300 07771	Filter K9453M B/GD/K/L/L'
SC01	0751 007 11041	5P straight flat
SD21	0750 302 11001	2P
SS01	0750 402 10051	Socket scart
SS03	0020 320 00040	Cable 4P 30cm
SS03	0750 304 11001	4P in-line vert. mini
SS05	0020 999 02311	Cable 9P 30cm mini
SS05	0751 009 11001	9P in-line vert. mini
SS07	0751 004 11000	4P vert.
SS08	0021 630 18230	Cable 12P FFC 30cm
SS08	0751 010 11061	12P FFC vert.
SS09	0750 305 11001	5P in-line vert. mini
SS11	0020 205 11130	Cable 2P 15cm mini
SS11	0750 302 11011	2P in-line vert. mini
SS12	0750 302 11011	2P in-line vert. mini
SS13	0020 720 00201	Cable 6P 40cm 2mm
SS13	0750 303 11061	6P in-line vert. 2mm
SV01	0020 720 00211	Cable 6P 20cm
SV01	0750 306 11061	6P in-line vert. mini
SW01	0811 011 11601	Tact switch
SW02	0811 011 11601	Tact switch
SW03	0811 011 11601	Tact switch
SW04	0811 011 11601	Tact switch
SW05	0811 011 11601	Tact switch
SY02	0750 304 11011	4P (3P) in-line vert. mini
SY03	0750 306 11061	6P in-line vert. mini
SY04	0750 208 00031	Picture tube socket
TU01	6168 000 20001	Tuner PLL CTT5020E/CTF5510
X001	0490 300 00461	Crystal 4.433619 MHz
XV01	0490 300 00501	Crystal 4.433619 MHz
XV02	0490 300 00511	Crystal 3.579545 MHz

 $\parallel$

C001	0424 465 01061	10μF 50V 20%
C002	0400 310 02261	22pF 50V 5% 0603
C003	0424 465 01061	10μF 50V 20%
C004	0421 401 61071	100μF 16V 20%
C005	5322 126 11578	1nF 50V 50% 0603
C008	0400 670 41081	100nF 10V 20%
C009	0400 310 02261	22pF 50V 5% 0603
C010	4822 126 14231	2.2nF 50V 0603
C011	0400 440 81861	470nF 16V 10% 0603

C013	4822 126 14238	2.2nF 50V 0603
C014	0400 670 41081	100nF 50V 20%
C015	4822 122 33753	150pF 5% 50V
C016	0400 440 81861	CER 470nF 16V 10% 0603
C019	4822 126 13193	4.7nF 10% 63V
C020	5322 126 11583	10nF 10% 50V 0603
C022	0400 310 42261	CER 22pF 50V 5% COG 0603
C023	0400 310 42261	CER 22pF 50V 5% COG 0603
C024	4822 126 14238	2.2nF 50V 0603
C025	0424 165 01051	1μF 50V 20%
C030	0400 310 42261	22pF 50V 5% 0603
C031	4822 126 13883	220pF 5% 50V
C040	0400 440 81861	470nF 16V 10% 0603
C041	0400 400 42261	22nF 50V 20% 0603
C061	4822 126 14238	2.2nF 50V 0603
C062	0424 465 01061	10μF 50V 20%
C063	0424 465 01061	10μF 50V 20%
C064	0424 465 01061	10μF 50V 20%
C065	4822 122 33753	150pF 5% 50V
C066	0424 465 01061	10μF 50V 20%
C067	4822 122 33753	150pF 5% 50V
C068	0424 465 01061	10μF 50V 20%
C069	4822 126 14238	2.2nF 50V 0603
C070	0424 465 01061	10μF 50V 20%
CA01	0424 465 01061	10μF 50V 20%
CA02	5322 126 11583	10nF 10% 50V 0603
CA03	5322 126 11579	3.3nF 10% 63V
CA05	0424 142 54761	47μF 25V 20%
CA06	4822 051 30008	Jumper 0603
CA07	4822 051 30008	Jumper 0603
CA08	0400 440 81861	470nF 16V 10% 0603
CA10	0424 492 52271	220μF 25V 20%
CA11	0424 142 54761	47μF 25V 20%
CA12	0421 945 04751	4.7μF 50V 20%
CA13	0421 945 04751	4.7μF 50V 20%
CA14	0400 670 41081	100nF 50V 20%
CA17	0400 670 41081	100nF 50V 20%
CD02	6200 040 71031	10nF 50V 10%
CD04	6193 237 76221	6.2nF 1.6kV 2.5%
CD07	0400 670 41081	100nF 50V 20%
CD08	0424 161 60001	22μF 160V 20%
CD09	0424 408 61061	10μF 250V 20%
CD11	0400 670 41081	100nF 50V 20%
CD12	0424 403 54771	470μF 35V 20%
CD13	0400 461 51021	1nF 1kV 10%
CD14	0424 148 61051	1μF 250V 20%
CD15	6200 130 54741	470nF 250V 5%
CD15	6210 030 03351	330nF 250VC 5%
CD16	6190 050 64741	470nF 63V 10%
CD17	6180 140 11041	100nF 63V 10%
CD18	0407 320 41081	100pF 50V 5%
CD25	0407 430 22261	220nF 50V 20-80% 0603
CD28	0400 440 81861	470nF 16V 10% 0603
CD41	6200 040 72241	220nF 63V 10%
CD42	6210 030 04731	47nF 50V 5%
CD43	0424 165 02261	22μF 50V 20%
CD44	0424 102 52281	2200μF 25V 20%
CD45	0424 146 31071	100μF 63V 20%
CD47	4822 051 30184	180K 5% 0,062W
CD62	0400 401 54711	470pF 1kV 10%
CF01	0400 320 41001	10pF 50V 5%
CF02	0400 320 41001	10pF 50V 5%
CF03	0400 400 41011	100pF 50V 10%
CF04	0400 400 41011	100pF 50V 10%
CF05	0400 400 41011	100pF 50V 10%
CF06	0400 400 41011	100pF 50V 10%
CL01	0424 142 54761	47μF 25V 20%
CP01	6200 040 62241	220nF 275V 20%
CP02	6200 040 62241	220nF 275V 20%
CP03▲	0400 401 52211	2.2nF 1kV 10%
CP04▲	0400 401 52211	2.2nF 1kV 10%
CP05	6200 041 33331	33nF 630V 5%
CP06	0427 199 01071	100μF 400V 20%
CP08	0400 401 56811	680pF 1kV 10%
CP09	0424 165 02261	22μF 50V 20%
CP10	5322 126 11583	10nF 10% 50V 0603
CP11	0400 430 45661	56pF 50V 5% 0603
CP12	0400 500 56861	680pF 50V 5% 0603
CP13	4822 126 14238	2.2nF 50V 0603
CP14	0400 402 02221	0.2nF 400V 20%
CP15	5322 126 11583	10nF 10% 50V 0603
CP16	0400 402 02221	0.2nF 400V 20%
CP18	0424 198 34761	47μF 160V 20%
CP21	0424 401 62281	220

CP26	0424 165 02261	22μF 50V 20%
CP27	5322 126 11583	10nF 10% 50V 0603
CP29	0424 485 04761	47μF 50V 20%
CP30	0400 670 41081	100nF 50V 20%
CP31	0421 401 61071	100μF 16V 20%
CP32	0400 670 41081	100nF 50V 20%
CP33	0424 165 01051	1μF 50V 20%
CP34	2222 586 18812	100nF 10% 50V 0603
CP35	0400 670 41081	100nF 50V 20%
CP36	0400 401 54711	470pF 1KV 10%
CP37	6200 050 76831	68nF 275V 20%
CP38	0424 402 51081	1000μF 25V 20%
CP40	0421 401 64771	470μF 16V 20%
CP41	0400 670 41081	100nF 50V 20%
CP42	0400 670 41081	100nF 50V 20%
CP44	0421 401 61071	100μF 16V 20%
CP45	0424 165 02261	22μF 50V 20%
CP47	0424 121 61081	1000μF 16V 20%
CP48	2222 586 18812	100nF 10% 50V 0603
CP50	0400 401 41011	100pF 500V 10%
CS01	0400 400 41011	100pF 10% 50V
CS02	0400 400 41011	100pF 10% 50V
CS02	0400 402 53361	330pF 50V 10% 0603
CS03	0400 320 41001	10pF 50V 5%
CS03	0400 402 53361	330pF 50V 10% 0603
CS04	0400 400 41011	100pF 10% 50V
CS04	0400 402 53361	330pF 50V 10% 0603
CS05	0400 400 41011	100pF 10% 50V
CS05	0400 402 53361	330pF 50V 10% 0603
CS06	0400 320 41001	10pF 50V 5%
CS06	0400 402 53361	330pF 50V 10% 0603
CS07	0424 465 01061	10μF 50V 20%
CS51	4822 051 30008	Jumper 0603
CS53	4822 051 30008	Jumper 0603
CS54	0400 310 42261	22pF 50V 5% 0603
CT01	0424 142 54761	47μF 25V 20%
CT02	0424 465 01061	10μF 50V 20%
CT03	0400 670 41081	100nF 50V 20%
CT05	0400 320 48301	8.2pF 50V +-.0.5pF
CT06	0400 130 81041	100nF 63V 10%
CT09	6200 130 81041	100nF 63V 5%
CV01	0424 165 01051	1μF 50V 20%
CV02	0424 465 01061	10μF 50V 20%
CV03	0400 400 42261	22nF 50V 20% 0603
CV04	0424 165 01051	1μF 50V 20%
CV05	5322 126 11578	1nF 10% 50V 0603
CV06	0400 520 43381	330nF 50V 20-80%
CV07	0424 142 54761	47μF 25V 20%
CV08	0400 670 41081	100nF 50V 20%
CV09	0424 165 02261	22μF 50V 20%
CV10	0421 401 61071	100μF 16V 20%
CV11	0400 670 41081	100nF 50V 20%
CV12	0424 165 01051	1μF 50V 20%
CV13	0424 165 01051	1μF 50V 20%
CV14	0424 165 01051	1μF 50V 20%
CV15	0424 165 01051	1μF 50V 20%
CV16	0400 310 42261	22pF 50V 5% 0603
CV17	0424 165 01051	1μF 50V 20%
CV18	0400 670 41081	100nF 50V 20%
CV19	0400 670 41081	100nF 50V 20%
CV20	0400 670 41081	100nF 50V 20%
CV21	0400 670 41081	100nF 50V 20%
CV22	0400 670 41081	100nF 50V 20%
CV23	0400 670 41081	100nF 50V 20%
CV24	0400 670 41081	100nF 50V 20%
CV25	4822 126 13193	4.7nF 10% 63V
CV26	6200 130 81041	100nF 63V 5%
CV27	0421 401 61071	100μF 16V 20%
CV28	0400 670 41081	100nF 50V 20%
CV30	4822 126 13193	4.7nF 10% 63V
CV31	0424 465 02251	2.2μF 50V 20%
CV32	0421 401 61071	100μF 16V 20%
CV33	0400 670 41081	100nF 50V 20%
CV34	0424 165 02261	22μF 50V 20%
CV35	0424 465 01061	10μF 50V 20%
CV36	0424 165 01051	1μF 50V 20%
CV39	2222 586 18812	100nF 10% 50V 0603
CV40	0400 670 41081	100nF 50V 20%
CV41	0400 670 41081	100nF 50V 20%
CV42	5322 126 11578	1nF 10% 50V 0603
CV44	4822 126 13193	4.7nF 10% 63V
CV48	0424 165 01051	1μF 50V 20%
CV49	0424 465 01061	10μF 50V 20%
CV50	0400 670 41081	100nF 50V 20%
CV51	0400 130 81041	100nF 63V 10%
CV52	4822 126 14507	18pF 50V 50V 0603
CV53	0400 670 41081	100nF 50V 20%
CV55	5322 126 11583	10nF 10% 50V 0603
CV56	0400 310 42261	22pF 50V 5% 0603

CV57	0400 402 53361	330pF 50V 10% 0603
CV58	4822 126 13883	220pF 5% 50V
CV59	4822 126 13883	220pF 5% 50V
CV60	4822 126 13883	220pF 5% 50V
CV61	0400 420 41021	1nF 50V 10%
CY01	0400 401 71021	1nF 2kV 10%
CY03	6200 031 34731	47nF 630V 5%
CY04	4822 126 13883	220pF 5% 50V
CY05	4822 126 13883	220pF 5% 50V
CY06	4822 126 13883	220pF 5% 50V

-W-

PTC1▲	0347 103 03631	PTC 18Ω 30%
R001	4822 051 30221	220Ω 5% 0,062W
R002	4822 051 30222	2k2 5% 0,062W
R003	4822 051 30221	220Ω 5% 0,062W
R004	0300 106 82161	820Ω 5% 1/10W 0603
R005	4822 051 30561	560Ω 5% 0,062W
R006	4822 051 30152	1k5 5% 0,062W
R007	4822 117 13632	100k 1% 0603 0.62W
R009	4822 051 30221	220Ω 5% 0,062W
R010	4822 051 30472	4k7 5% 0,062W
R012	4822 051 30472	4k7 5% 0,062W
R013	4822 051 30472	4k7 5% 0,062W
R016	0300 106 12261	1.2k 5% 1/10W 0603
R017	0300 106 12261	1.2k 5% 1/10W 0603
R018	0300 106 12261	1.2k 5% 1/10W 0603
R019	4822 051 30471	470Ω 5% 0,062W
R022	4822 051 30562	5k6 5% 0,063W 0603
R023	4822 051 30153	15k 5% 0,062W
R025	4822 051 30562	5k6 5% 0,063W 0603
R026	4822 051 30472	4k7 5% 0,062W
R027	4822 051 30223	22k 5% 0,062W
R028	4822 051 30472	4k7 5% 0,062W
R030	4822 051 30472	4k7 5% 0,062W
R032	4822 051 30472	4k7 5% 0,062W
R040	4822 051 30152	1k5 5% 0,062W
R042	4822 051 30103	10k 5% 0,062W
R043	4822 051 30472	4k7 5% 0,062W
R044	4822 051 30472	4k7 5% 0,062W
R045▲	0300 206 10331	10k 1/4W 5%
R047	4822 051 30472	4k7 5% 0,062W
R048	4822 051 30101	100Ω 5% 0,062W
R049	4822 051 30101	100Ω 5% 0,062W
R050	4822 051 30562	5k6 5% 0,063W 0603
R051	4822 051 30471	470Ω 5% 0,062W
R052	4822 051 30103	10k 5% 0,062W
R053	4822 117 12925	47k 1% 0,063W 0603
R054	4822 051 30472	4k7 5% 0,062W
R055	4822 051 30221	220Ω 5% 0,062W
R056	4822 051 30472	4k7 5% 0,062W
R057	4822 051 30103	10k 5% 0,062W
R059	0300 106 15161	150Ω 5% 1/10W 0603
R060	4822 117 13632	100k 1% 0603 0.62W
R061	4822 117 13632	100k 1% 0603 0.62W
R062	4822 051 30222	2k2 5% 0,062W
R063	4822 051 30103	10k 5% 0,062W
R064	4822 051 30223	22k 5% 0,062W
R065	4822 051 30332	3k3 5% 0,062W
R066	4822 051 30103	10k 5% 0,062W
R067	4822 051 30103	10k 5% 0,062W
R068	4822 051 30103	10k 5% 0,062W
R069	4822 051 30223	22k 5% 0,062W
R070	4822 051 30332	3k3 5% 0,062W
R071	4822 051 30222	2k2 5% 0,062W
R080	4822 051 30103	10k 5% 0,062W
R081	4822 051 30103	10k 5% 0,062W
RA01	0300 106 83061	2k 5% 1/10W 0603
RA02	0300 106 83061	2k 5% 1/10W 0603
RA03	4822 051 30221	220Ω 5% 0,062W
RA04	4822 051 30221	220Ω 5% 0,062W
RA05	5322 117 13052	2k7 1% 0,063W 0603
RA07	5322 117 13052	2k7 1% 0,063W 0603
RA08	2322 702 81828	8Ω 2% 0603
RA09	4822 051 30683	68k 5% 0,062W
RA10	0301 056 47811	0.47Ω 1W 5%
RA11	0300 106 47961	4.7Ω 5% 1/10W 0603
RA13	4822 051 30562	5k6 5% 0,063W 0603
RD01	0300 256 10011	10Ω 1/4W 5%
RD02	0300 206 10131	100Ω 1/4W 5%
RD04	4822 117 12925	47k 1% 0,063W 0603
RD05	0301 406 39021	39Ω 1/2W 5%
RD07	0301 086 15511	0.22Ω 1W 5%
RD08	0300 556 10011	10Ω 1/2W 5%
RD09	0301 056 47811	0.47Ω 1W 5%
RD10	0300 557 22811	0.22Ω 1/2W 5%
RD12	4822 051 30472	4k7 5% 0,062W
RD13	0300 106 56221	5.6k 1W 5%
RD14	0300 506 10211	1k 1/2W 5%
RD15	0300 506 10211	1k 1/2W 5%
RD28	0300 596 22111	220Ω 1/2W 5%
RD40	0300 206 47131	470Ω 1/4W 5%

RD41	0300 206 22911	2.2Ω 1/4W 5%
RD43	0300 106 75461	750k 5% 1/10W 0603
RD44	0300 106 39461	390k 5% 1/10W 0603
RD45	4822 117 12902	8k2 1% 0.063W 0603
RD46	0300 106 83061	2k 5% 1/10W 0603
RD47	0300 106 24261	2.4k 1/10W5% 0603
RD48	0300 106 83061	2k 5% 1/10W 0603
RD49	4822 051 30221	220Ω 5% 0,062W
RD50	0300 206 10911	1Ω 1/4W 5%
RD51	4822 051 30682	6k8 5% 0,062W
RD52	4822 051 30332	3k3 5% 0,062W
RD53	4822 051 30332	3k3 5% 0,062W
RD54	0300 106 39381	39k 1/8W 5% 0805
RD55	4822 051 30102	1k 5% 0,062W
RL01	0300 206 10131	100Ω 1/4W 5%
RP01▲	0320 405 55211	5.6Ω 5W 10%
RP02	4822 051 30333	33k 5% 0,062W
RP04	4822 051 30103	10k 5% 0,062W
RP05	0300 106 11221	1M 1/4W 2%
RP06▲	0300 106 39221	3.9M 1/4W 2%
RP07	4822 051 30479	47Ω 5% 0,062W
RP08	4822 051 30333	33k 5% 0,062W
RP09▲	0300 506 47511	4.7M 1/2W 5%
RP10	0305 086 33311	33k 5W 5%
RP11	0300 206 15011	15Ω 1/4W 5%
RP12	4822 051 30472	4k7 5% 0,062W
RP13	0300 106 11221	1M 1/4W 2%
RP14	4822 051 30124	120k 5% 0,062W
RP15▲	0300 206 10331	10k 1/4W 5%
RP17	4822 051 30331	330Ω 5% 0,062W
RP18	4822 117 12903	1k8 1% 0.063W 0603
RP19	4822 051 30103	10k 5% 0,062W
RP30	0300 106 47961	4.7Ω 5% 1/10W 0603
RP31	4822 051 30101	100Ω 5% 0,062W
RP32	0673 100 01851	Fuse 5A 32V 0603
RP35▲	0300 206 10331	10k 1/4W 5% SFTY
RP36▲	0300 206 10331	10k 1/4W 5% SFTY
RP40	4822 051 30223	22k 5% 0,062W
RP41	0300 206 10131	100Ω 1/4W 5%
RP42	0300 106 15161	150Ω 5% 1/10W 0603
RP43	4822 051 30152	1k5 5% 0,062W
RP44	4822 051 30102	1k 5% 0,062W
RP45	0300 106 12261	1.2k 5% 1/10W 0603
RP46	4822 051 30103	10k 5% 0,062W
RP47	4822 051 30102	1k 5% 0,062W
RP48	6080 000 11011	10μH 1.4A 10%
RP49	4822 051 30101	100Ω 5% 0,062W
RP50	4822 051 30103	10k 5% 0,062W
RP51	4822 051 30008	Jumper 0603
RP52▲	0300 506 47511	4.7M 1/2W 5%
RP54	4822 051 30273	27k 5% 0,062W
RP55	0300 206 10131	100Ω 1/4W 5%
RS01	4822 051 30123	12k 5% 0,062W
RS02	4822 051 30123	12k 5% 0,062W
RS03	4822 051 30221	220Ω 5% 0,062W
RS04	4822 051 30683	68k 5% 0,062W
RS05	4822 051 30153	15k 5% 0,062W
RS06	4822 051 30681	680Ω 5% 0,062W
RS07	4822 051 30759	75Ω 5% 0,062W
RS09	4822 117 13632	100k 1% 0603 0.62W
RS10	4822 117 13632	100k 1% 0603 0.62W
RS11	4822 051 30223	22k 5% 0,062W
RS12	4822 117 12925	47k 1% 0.063W 0603
RS13	4822 051 30101	100Ω 5% 0,062W
RS51	4822 051 30102	1k 5% 0,062W
RS53	4822 051 30102	1k 5% 0,062W
RS58	0300 206 33331	33k 1/4W 5%
RS59	4822 051 30103	10k 5% 0,062W
RT01	4822 051 30472	4k7 5% 0,062W
RT02	4822 051 30273	27k 5% 0,062W
RT06	4822 051 30153	15k 5% 0,062W
RT13	4822 051 30101	100Ω 5% 0,062W
RT14	4822 051 30101	100Ω 5% 0,062W
RV01	0300 106 15161	150Ω 5% 1/10W 0603
RV02	4822 117 13632	100k 1% 0603 0.62W
RV03	0300 106 22261	22Ω 5% 1/10W 0603
RV04	4822 051 30101	100Ω 5% 0,062W
RV05	4822 051 30102	1k 5% 0,062W
RV06	4822 051 30759	75Ω 5% 0,062W
RV07	4822 051 30102	1k 5% 0,062W
RV08	4822 051 30102	1k 5% 0,062W
RV09	4822 051 30334	330k 5% 0,062W
RV10	4822 051 30759	75Ω 5% 0,062W
RV11	4822 051 30759	75Ω 5% 0,062W
RV12	4822 051 30759	75Ω 5% 0,062W
RV13	4822 051 30759	75Ω 5% 0,062W
RV14	4822 117 12925	47k 1% 0.063W 0603
RV15	4822 051 30102	1k 5% 0,062W
RV16	4822 051 30271	270Ω 5% 0,062W
RV17	4822 051 30271	270Ω 5% 0,062W
RV18	4822 051 30271	270Ω 5% 0,062W
RV19	4822 051 30102	1k 5% 0,062W
RV20	4822 051 30102	1k 5% 0,062W
RV21	4822 051 30102	1k 5% 0,062W

RV22	4822 051 30562	5k6 5% 0,063W 0603
RV23	4822 051 30183	18k 5% 0,062W
RV24	4822 051 30103	10k 5% 0,062W
RV25	4822 051 30223	22k 5% 0,062W
RV26	4822 051 30563	56k 5% 0,062W
RV27	4822 051 30471	470Ω 5% 0,062W
RV28	4822 051 30153	15k 5% 0,062W
RV29	4822 117 12902	8k2 1% 0.063W 0603
RV30	4822 051 30222	2k2 5% 0,062W
RV31	4822 051 30222	2k2 5% 0,062W
RV32	0300 206 56131	560Ω 1/4W 5%
RV33	4822 051 30101	100Ω 5% 0,062W
RV34	4822 051 30101	100Ω 5% 0,062W
RV35	0300 106 15161	150Ω 5% 1/10W 0603
RV41	4822 051 30103	10k 5% 0,062W
RV42	4822 051 30103	10k 5% 0,062W
RV43	4822 051 30682	6k8 5% 0,062W
RV44	4822 051 30683	68k 5% 0,062W
RV45	4822 051 30222	2k2 5% 0,062W
RV46	4822 051 30223	22k 5% 0,062W
RV48	4822 051 30759	75Ω 5% 0,062W
RV49	4822 051 30759	75Ω 5% 0,062W
RV50	4822 051 30221	220Ω 5% 0,062W
RV53	0301 406 33061	33Ω 5% 1/10W 0603
RV54	4822 051 30479	470Ω 5% 0,062W
RV55	0300 106 15161	150Ω 5% 1/10W 0603
RV56	4822 051 30101	100Ω 5% 0,062W
RV57	4822 051 30103	10k 5% 0,062W
RV61	4822 051 30681	680Ω 5% 0,062W
RV62	4822 051 30479	47Ω 5% 0,062W
RV63	4822 051 30479	47Ω 5% 0,062W
RY01	0300 506 15211	1.5k 1/2W 5%
RY05	0300 106 82161	820Ω 1/10W 5% 0603
RY06	4822 051 30471	470Ω 5% 0,062W
RY08	0301 406 33061	33Ω 1/10W 5% 0603
RY09	0302 086 27311	27k 2W 5%
RY11	4822 051 30471	470Ω 5% 0,062W
RY12	0301 406 33061	33Ω 1/10W 5% 0603
RY13	0300 106 82161	820Ω 1/10W 5% 0603
RY14	0302 086 27311	27k 2W 5%
RY17	4822 051 30471	470Ω 5% 0,062W
RY18	0301 406 33061	33Ω 1/10W 5% 0603
RY19	0300 106 82161	820Ω 1/10W 5% 0603
RY20	0300 506 15211	1.5k 1/2W 5%
RY21	0302 086 27311	27k 2W 5%
VAP1	6113 800 12021	Potmeter 2K 0.1W 30%

FBT1	6042 000 00371	LOT AC40SFT
LD02	6083 800 00101	Coil choke 110μH 15% 0.5A
LD03	6089 800 04051	Coil linearity 50μH
LF01	6089 800 00111	1μH 5% 0.27A
LF02	6080 000 00221	10μH 5% 0.41A
LF03	6080 000 00221	10μH 5% 0.41A
LFP1▲	6089 800 03151	Line ter. 2*27mH 1.5A
LH01	6089 800 00111	1μH 5% 0.27A
LH02	6080 000 00021	10μH 5% 0.16A
LH03	6080 000 00021	10μH 5% 0.16A
LP01	6080 000 00221	10μH 5% 0.41A
LP02	0320 405 55211	5.6Ω 5W 10%
LP03	6080 000 00221	10μH 5% 0.41A
LP04	6087 800 02411	Ferrite bead 3.5*9*0.8
LP05	6080 000 00261	6μH 1.5A 5%
LS01	6089 800 00101	12μH 5% 0.15A
LS02	6089 800 00101	12μH 5% 0.15A
LS03	6089 800 00101	12μH 5% 0.15A
LS09	6087 800 02411	Ferrite bead 3.5*9*0.8
LT01	6080 000 00221	10μH 5% 0.41A
LT02	6089 800 00111	1μH 5% 0.27A
LV01	6080 000 00221	10μH 5% 0.41A
LV02	6080 800 00191	8.2μH 5% 0.165A
LV03	6080 000 00221	10μH 5% 0.41A
LV04	6080 000 00221	10μH 5% 0.41A
LV05	6080 000 00221	10μH 5% 0.41A
LV06	6089 800 00101	12μH 5% 0.15A
LV07	6080 000 00221	10μH 5% 0.41A
LV09	6089 800 00111	1μH 5% 0.27A
SMT1▲	6021 900 00321	Transf. SMPS
TC01	6082 800 01981	Coil trim. 44MHz 39pF
WD01	6023 000 33071	Transf.hor.drive

DD01	4822 130 42606	BYD33J
DD02	4822 130 30621	1N4148
DD05	4822 130 42606	BYD33J
DD06	4822 130 42606	BYD33J
DD07	4822 130 42606	BYD33J
DD41	0483 214 23201	1N4007
DL01	0487 738 09001	Led KLR114L red
DP01	4822 130 80858	1N5062
DP02	4822 130 80858	1N5062
DP03	4822 130 80858	1N5062
DP04	4822 130 80858	1N5062
DP06	0480 000 00021	Diode rect.600V 1.5A SOD-57
DP07	4822 130 30621	1N4148
DP08	4822 130 41602	BYW95C
DP09	4822 130 30959	ZTK33B
DP10	4822 130 42606	BYD33J
DP11	0483 270 28221	Diode rect.schottky 5A 40V
DP12	0480 000 00021	Diode rect.600V 1.5A SOD-57
DP13	4822 130 30621	1N4148
DP14	4822 130 34233	BZX79-B5V1
DP17	4822 130 30621	1N4148
DP18	0300 206 68111	680Ω 5% 1/4W
DP20	4822 130 42606	BYD33J
DP22	0483 214 23201	1N4007
DT01	4822 130 30621	1N4148
DV01	4822 130 30621	1N4148
DV02	4822 130 30621	1N4148
DV03	4822 130 30621	1N4148
DV04	4822 130 30621	1N4148
DV07	0483 221 07001	BA282
DV08	0483 221 07001	BA282
DV24	4822 130 34233	BZX79-B5V1
DY01	4822 130 30621	1N4148
DY02	4822 130 34382	BZX79-B8V2
DY03	4822 130 30842	BAV21
DY04	4822 130 30842	BAV21
DY05	4822 130 30842	BAV21
DY06	4822 130 30842	BAV21



I060	4822 209 70672	LM358N sel.
IA01	0450 000 00981	TDA7057AQ
IA03	0450 000 01121	74HC4053
IC01	0450 000 91171	ST92T195D7B1
IC02	0450 000 01041	PCF8598C-2 / ST24C08
ICV1	0450 000 02141	STV2248C
ID41	0450 000 01971	TDA1771
IL01	6093 300 01241	RPM7138
IP01	0451 900 00021	TDA16846
IP02	0452 381 03051	LM317
IP03	0452 381 03081	LM7805
T001	4822 130 40959	BC547B
T002	4822 130 40959	BC547B
T003	4822 130 44568	BC557B
T060	4822 130 40959	BC547B
T061	4822 130 40959	BC547B
TD01	4822 130 41053	BC639
TD02	0460 000 00141	Transistor.hor.out.
TD41	4822 130 40959	BC547B
TD42	4822 130 40855	BC337
TD43	0469 862 94161	2SA720 & BC327
TP01	0467 110 00001	SPP03N60S5
TP02	4822 130 40959	BC547B
TP05	4822 130 41053	BC639
TP07	4822 130 44568	BC557B
TP08	0460 015 37001	BD537
TP09	4822 130 40959	BC547B
TP10	5322 130 41888	BD140-16
TS01	4822 130 40959	BC547B
TS02	4822 130 44568	BC557B
TS03	4822 130 40959	BC547B
TS52	4822 130 40959	BC547B
TV01	4822 130 40959	BC547B
TV02	4822 130 44503	BC547C
TV03	4822 130 44503	BC547C
TV04	4822 130 40959	BC547B
TV05	4822 130 44568	BC557B
ZP01	4822 209 81397	TL431CLPST