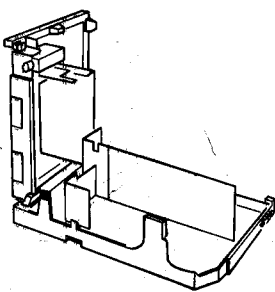


Service
Service
Service

MD1.2E

AA



Service Manual

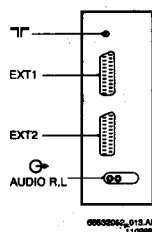
Contents	Page	Contents	Page
1. Technical specifications	2	<i>Electrical diagrams and PWB-layouts</i>	<i>Diagram PWB</i>
2. Connection facilities and Chassis overview	2	Synchronisation (Schéma B3)	21 18
3. Safety instructions for repairs, Maintenance instructions, Warnings and Notes	3	IF sound (Schéma B4)	21 18
4. Mechanical instructions	4	Euroconnector 1 (Schéma B5)	22 18
5. Block diagram	6	Euroconnector 2 (Schéma B6)	22 18
Testpoint overview	7	Controls (Schéma B7)	23 18
Wiring diagram	8	Connections audio module (Schéma B8)	24 18
6. Service Modes, DST, Error messages, Protections, Faultfinding and Repair tips	8	Teletext (Schéma B9)	24 18
7. <i>Electrical diagrams and PWB-layouts</i>	<i>Diagram PWB</i>	CRT panel (Schéma C)	25 25
Supply voltage diagram	12	Audio module (Schéma D1)	26 27
Power supply 21" (Schéma A1)	13 14	Nicam L module (Schéma D2)	27 27
Power supply > 21" (Schéma A1)	15 14	CTI/Black Stretch panel (Schéma F)	28 29
Horizontal output (Schéma A2)	16 14	N/S panel (Schéma G)	29 29
Vertical output (Schéma A3)	17 14	Main/RC5/LED panel (Schéma I)	30 30
Audio amplifier (Schéma A4)	17 14	Control and Input/Output (Schéma J)	31 31
Tuner + IF (Schéma B1)	19 18	8. Electrical alignments	32
Video processing (Schéma B2)	20 18	10. Directions for use	34
		11. List of abbreviations	37
		12. Spare parts lists	39

Copyright 1996 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.

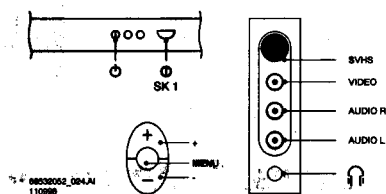
1. Technical specifications

Mains voltage	: 220-240V AC ($\pm 10\%$)
Power consumption	
nominal output power (Watt)	: 100 (21" 90°); 130 (110° SF 4:3); 150 (110° SF 16:9)
peak output power (Watt)	: 160 (21" 90°); 180 (110° SF 4:3); 220 (110° SF 16:9)
standby (Watt)	: 3 ($\pm 10\%$)
Mains frequency	: 50 Hz ($\pm 10\%$)
Pull-in range colour synchronisation	: $> \pm 300\text{Hz}$
Pull-in range horizontal synchronisation	: $> \pm 600\text{Hz}$

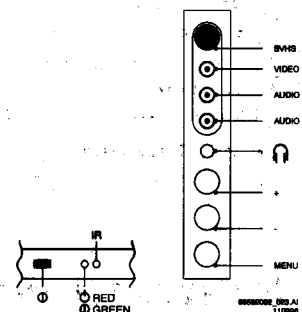
2. Connection facilities and Chassis overview



Rear connections



Front + Top control + Side I/O



Front + Side control + Side I/O

Specification of the terminal sockets

REAR

EXT1 - CVBS (in/out) + RGB (in) - tuner at output

EXT2 - CVBS (in/out) + SVHS (in)
- Input: EXT2 then output = tuner; input: other then output = input

Cinch - audio out

- ⊕ CINCH Audio L (red) ⊖ (0.5V_{RMS} < 1kΩ)
- ⊕ CINCH Audio R (white) ⊖ (0.5V_{RMS} < 1kΩ)

1	- Audio ⊕ R (0.5V _{RMS} ≤ 1kΩ)
2	- Audio ⊖ R (0.2-2V _{RMS} ≥ 10kΩ)
3	- Audio ⊕ L (0.5V _{RMS} ≤ 1kΩ)
4	- Audio ⊥
5	- Blue ⊥
6	- Audio ⊖ L (0.2-2V _{RMS} ≥ 10kΩ)
7	- Blue ⊖ (0.7V _{pp} /75Ω)
8	- CVBS status (0-2V: INT; 4.5-7V: EXT1-16/9; 9.5-12V: EXT1-4/3)
9	- Green ⊥
10	-
11	- Green ⊖ (0.7V _{pp} /75Ω)
12	-
13	- Red ⊥
14	- RGB status ⊥
15	- Red ⊖ (0.7V _{pp} /75Ω)
16	- RGB status (0-0.4V: INT; 1-3V: EXT1/75Ω)
17	- CVBS ⊥
18	- CVBS ⊥
19	- CVBS ⊕ (1V _{pp} /75Ω)
20	- CVBS ⊖ (1V _{pp} /75Ω)
21	- Earth screen

1	- Audio ⊕ R (0.5V _{RMS} ≤ 1kΩ)
2	- Audio ⊖ R (0.2-2V _{RMS} ≥ 10kΩ)
3	- Audio ⊕ L (0.5V _{RMS} ≤ 1kΩ)
4	- Audio ⊥
5	-
6	- Audio ⊖ L (0.2-2V _{RMS} ≥ 10kΩ)
7	-
8	- CVBS status ⊖ (0-2V: INT; 4.5-7V: EXT2-16/9; 9.5-12V: EXT2-4/3)
9	-
10	-
11	-
12	-
13	- C ⊥
14	-
15	- C ⊖ (300mV _{pp} /75Ω)
16	-
17	- CVBS ⊥
18	- CVBS ⊥
19	- CVBS ⊕ (1V _{pp} /75Ω)
20	- CVBS/Y ⊖ (1V _{pp} /75Ω)
21	- Earth screen

FRONT

Audio/video in

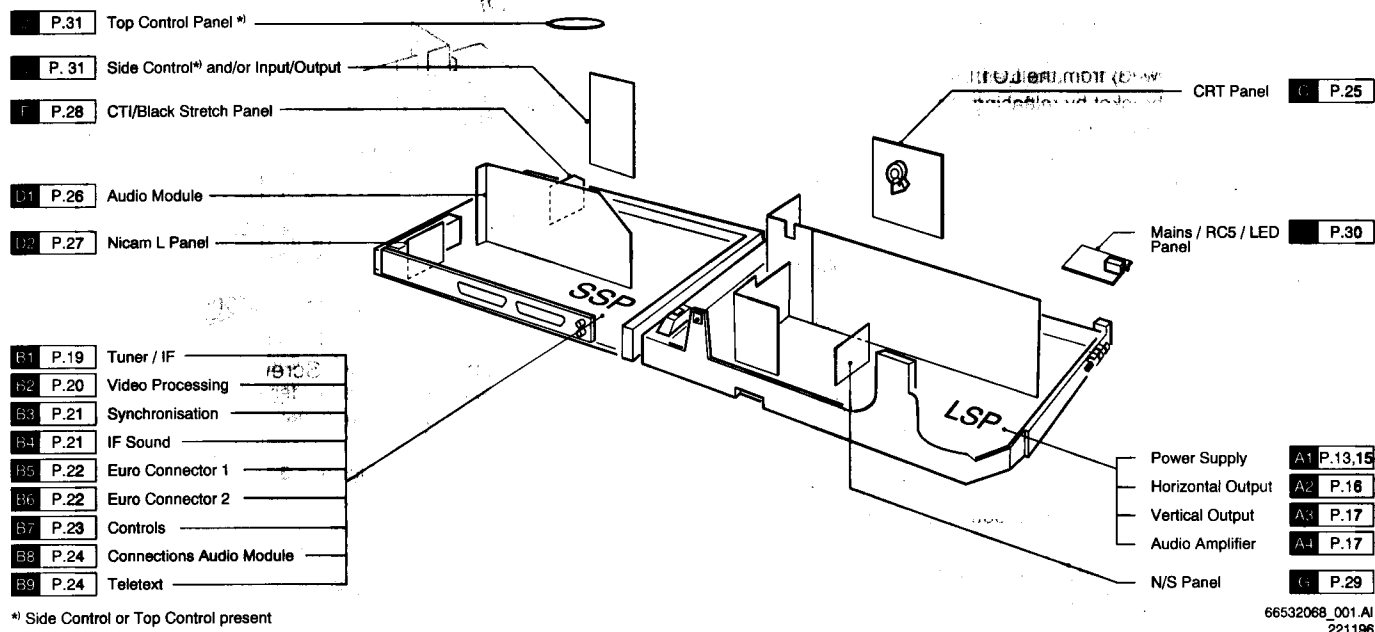
- ⊕ CINCH CVBS ⊖ (1V_{pp}/75Ω)
- ⊕ CINCH Audio L (red) ⊖ (2V_{RMS} ≥ 10kΩ)
- ⊕ CINCH Audio R (white) ⊖ (2V_{RMS} ≥ 10kΩ)

Headphone

⊕ ⊖ 8-600Ω

SVHS

- 1 - ⊥
- 2 - ⊥
- 3 - Y ⊖ (1V_{pp}/75Ω)
- 4 - C ⊖ (0.3V_{pp}/75Ω)



3. Safety instructions for repairs, Maintenance instructions, Warnings and Notes

Safety instructions for repairs

- Safety regulations require that during a repair:
 - the set should be connected to the mains via an isolating transformer;
 - safety components, indicated by the symbol ▲ should be replaced by components identical to the original ones;
 - when replacing the CRT, safety goggles must be worn.
- Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points:
 - As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular:
 - all pins of the line output transformer (LOT);
 - fly-back capacitor(s);
 - S-correction capacitor(s);
 - line output transistor;
 - pins of the connector with wires to the deflection coil;
 - other components through which the deflection current flows.

Note:

This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years.

- The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
- The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply).
This check can be done as follows:
 - unplug the mains cord and connect a wire between the two pins of the mains plug;
 - set the mains switch to the on position (keep the mains cord unplugged!);
 - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ;
 - switch off the TV and remove the wire between the two pins of the mains plug.
- The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

Maintenance instructions

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:

- when the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years;
- when the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.

The maintenance inspection contains the following actions:

- execute the above mentioned "general repair instruction";
- clean the power supply and deflection circuitry on the chassis;
- clean the picture tube panel and the neck of the picture tube.

Warnings

1. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).
2. **ESD** 
All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.
3. Together with the deflection unit and any multipole unit, the flat square picture tubes used form an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.
4. Be careful when taking measurements in the high-voltage section and on the picture tube.
5. Never replace modules or other components while the unit is switched on.
6. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth ($\perp$), or hot earth ($\perp$ with a lightning bolt) as this is called.
2. The direct voltages and oscillograms shown in the diagrams should be measured in the **Service Default Mode** (see chapter 8) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.
3. Where necessary, the oscillograms and direct voltages are measured with (Π) and without aerial signal ($\times$). Voltages in the power supply section are measured both for normal operation ($\odot$) and in standby ($\ominus$). These values are indicated by means of the appropriate symbols.
4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

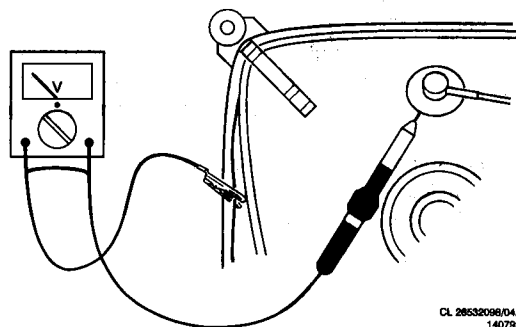
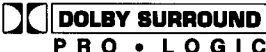
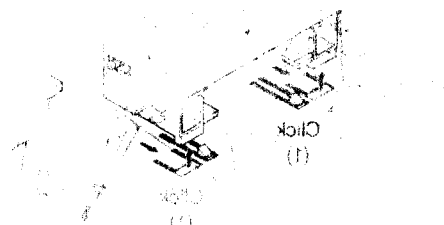


Figure 3.1

6. 

Manufactured under license from Dolby Laboratories Licensing Corporation.

DOLBY, the double-D symbol  and PRO LOGIC are trademarks of Dolby Laboratories Licensing Corporation.



The MD1.2E chassis has two different mechanical executions.

4.1 Styling with top control and side input/output (also applicable for MD1.1E Widescreen)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
 - 4 Screws are located at each corner of the cabinet.
 - 2 Screws are located at the left and right bottom corners of the rear cover.
 - 4 Screws are fixed at the 4 corners of the I/O panel with the Euroconnectors and aerial input.
2. The rear cover is now held in position by 6 clicks between the cabinet and the rear cover. There are 2 clicks at the left, 2 at the right and 2 at the top. After loosening all clicks (by releasing them with a screw-driver), the rear cover can be removed.
3. The cover plate on the I/O panel with the Euro-connectors and aerial input can be removed in the following way: remove the screw in the middle, release the click connection at the bottom and lift the cover plate.

Process position

The process position provides easier access to the entire chassis.

1. Release the mains cord from its fixation brackets.
2. Push back the clicks between bottom plate and rear cover and pull the cabinet at the same time backwards.

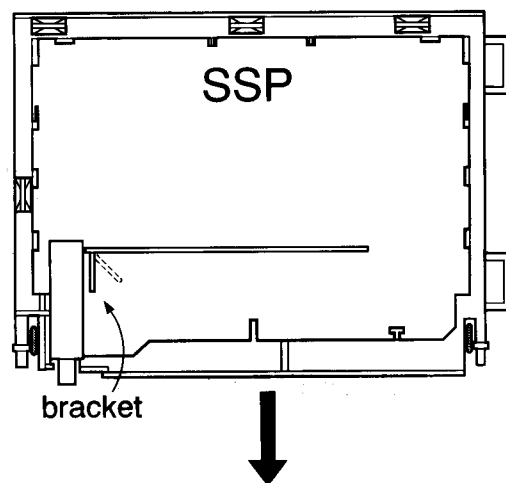
For some service positions cables may have to be removed from their cable clamps and channels. Afterwards, put the cables back in their original position.

Service positions

Small Signal Panel (SSP) component side (Figure 4.1)

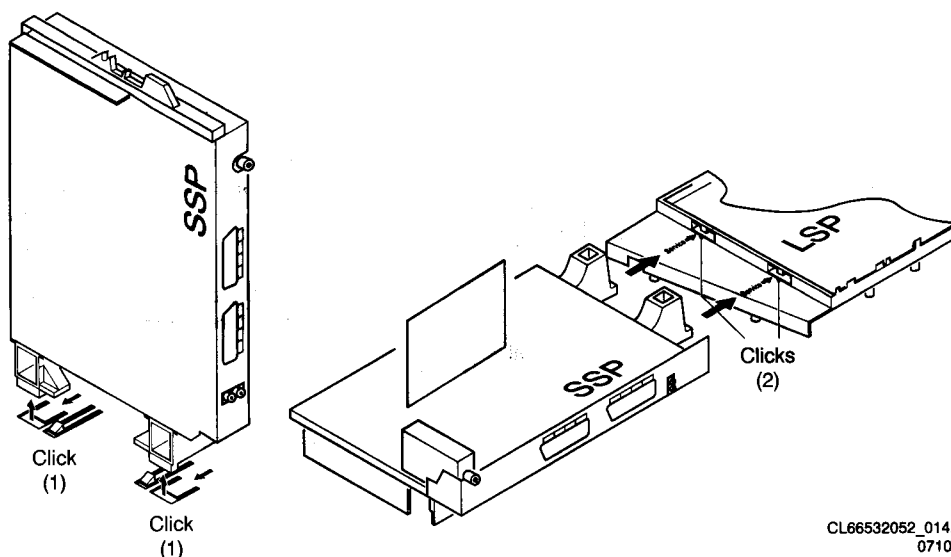
1. Push down the clicks of the SSP bracket (1) and shift the SSP to the left.
2. Pull up the SSP and tilt the SSP counter clockwise to a horizontal position (180° with Large Signal Panel (LSP)).
3. Put the SSP in the clicks (2) marked "Service" on the bottom plate.

When all cables on the SSP are disconnected, the SSP can also be removed from its bracket (Figure 4.2), providing better access to component and copper side.



CL66532025_030.EPS
100496

Figure 4.2



CL66532052_014.AI
071096

Figure 4.1

LSP component side (Figure 4.3)

1. Put the SSP in the horizontal service position as described above.
2. Remove screw (3) from the LOT bracket.
3. Remove the bracket by releasing click (4) and pulling the bracket upwards.
4. Release clicks (5) and (6).
5. Lift the LSP PWB out of its bracket (indicated by the arrow) and pull it a little back.

Warning! The heat sinks are not connected to ground.

LSP copper side with table/workbench (Figure 4.4)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP).
2. If necessary, disconnect the cable on the left loudspeaker.
3. Lift the LSP from its bracket as described above (LSP component side).
4. Turn the LSP underneath the CRT panel (keep cable S15/L15 UNDER the audio module) as indicated by the arrow (7).

The LSP now rests on the bottom plate, held in place by the cable clamp on the heat sink and the LOT bracket.

Warning! Be careful not to damage the CRT-panel or picture tube neck.

The heat sinks are not connected to ground.

SSP and LSP copper side without table/workbench (Figure 4.5)

For this service position MD1 cable extension kit (service code number 4822 320 11695) is required.

1. Break the service pin (marked M1 - see Figure 4.3) from its position at the right hand side of the bottom plate.
2. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP) and the cable on the left loudspeaker.
3. Remove cables S10/L10, S11/L11 and S15/L15 from LSP to SSP and cable I28/L28 from Audio module to LSP.
4. Lift the LSP from its bracket as described earlier (LSP component side).
5. Put the LSP to the vertical position (Figure 4.5), copper side at the right hand, LOT above (8). For this position, special grooves are made in the bottom plate of the cabinet.
6. Fix the position of the LSP by putting the service pin between LSP (heat sink) and bottom plate (9). There are special holes in the heat sink and the bottom plate to put the service pin in.
7. Reconnect cable I28/L28.
8. Use the cables from the MD1 cable extension kit to reconnect connectors S10/L10, S11/L11 and S15/L15.

Warning! All cables should be reconnected correctly.

After use the service pin can be placed in the spare hole at the right hand side in the bottom plate.

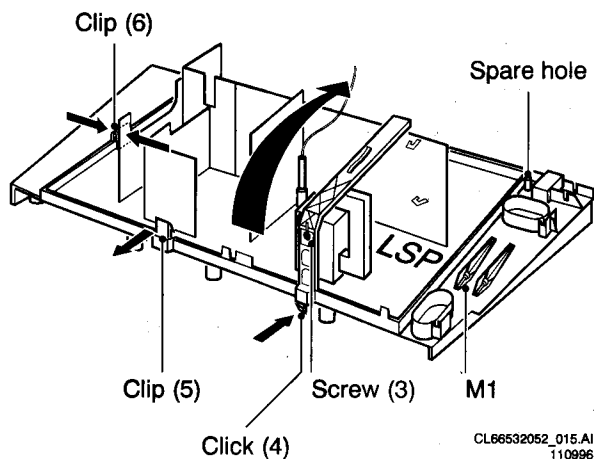


Figure 4.3

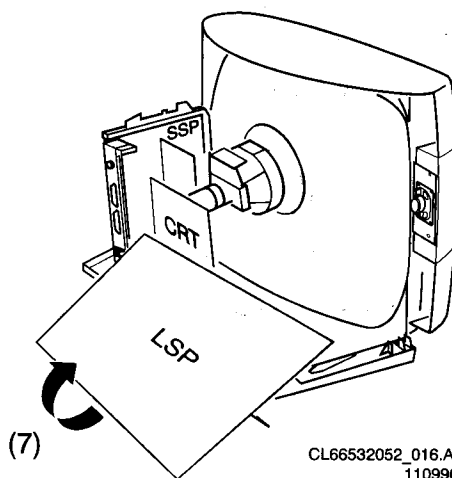


Figure 4.4

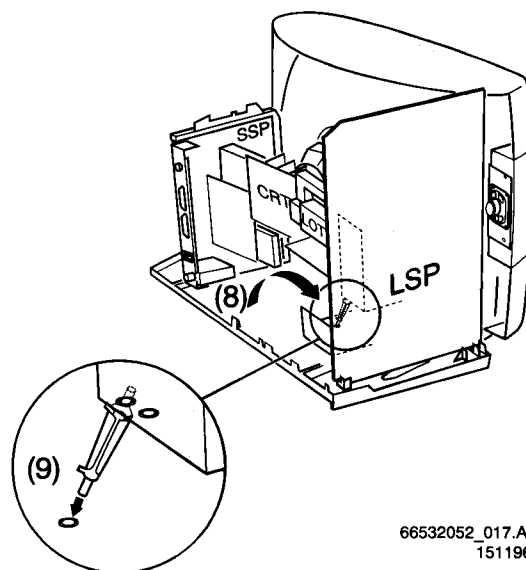


Figure 4.5

Accessing the module with mains switch, LED and RC5 receiver (Fig. 4.6)

1. Cut the tie rap of the degaussing coil at the left hand bottom side (10). Remove the degaussing coil in the left bottom corner from its fixation bracket (11) to get more space to handle the mains module.
2. Remove the red mains panel bracket by lifting the end and pulling it backwards (12).
3. To get more movement space, the left top of the cabinet can be pushed or pulled upwards (13).
4. The mains panel can now be removed.

Afterwards the degaussing coil should be retied at position (10).

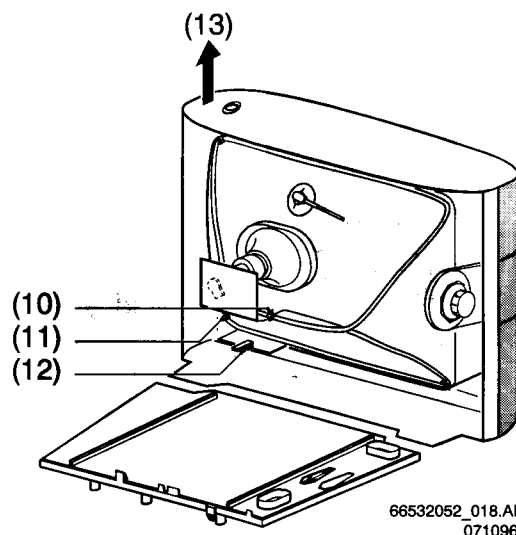


Figure 4.6

4.2 Styling with side control and side input/output (no top control)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
 - 6 Screws are located at the corners of the cabinet.
 - 2 Screws are located at the left and right bottom of the rear cover.
 - 3 Screws are located just above, under and left of the cover plate of the I/O connections.

For some service positions cables may have to be removed from their cable clamps and channels. Afterwards, put the cables back in their original position.

Process position

The process position provides easier access to the entire chassis during the service positions.

1. The chassis can be lifted, pulled forward (± 5 cm) and fixed in the bottom plate.
2. When the clicks between bottom plate rear cover are pushed back, the chassis and the bottom plate can be pulled backwards.

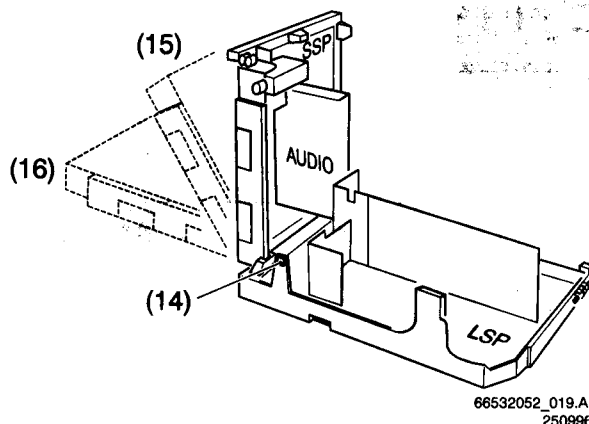


Figure 4.7

Service positions

SSP copper and component side, module servicing (Figure 4.7)

1. Release the click construction (14) between the SSP and LSP.
2. Lift the SSP a little and turn it to an angle of 135° (15) or 180° (16) from the LSP.
This provides better access to the component side of the SSP and also allows for the removal of modules.

Service position with table/workbench (Fig. 4.8)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and pull it backwards (17).
3. Turn the entire chassis around the CRT panel (18).
The chassis rests on the SSP with the copper side of the LSP backwards.

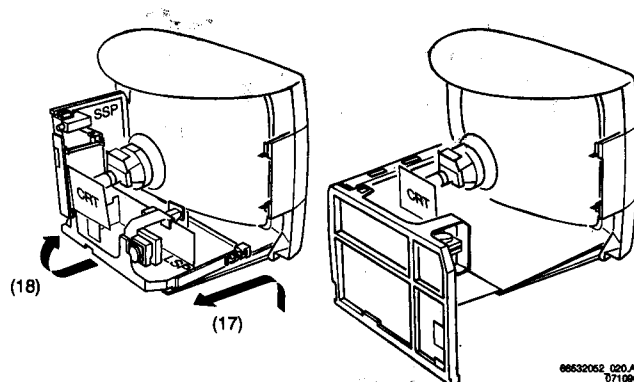


Figure 4.8

Warning! Be careful not to damage the CRT-panel or picture tube neck.
The heat sinks are not connected to ground.

Service position (LSP copper side) without table/workbench (Fig. 4.9)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and turn it counter clockwise (19).
3. The SSP can be fixed with a screwdriver to the bottom plate (20). The copper side of the LSP can now be accessed.

Warning! *Be careful not to damage the CRT-panel or picture tube neck.
The heat sinks are not connected to ground.*

Small Signal Panel (Fig. 4.2)

First, remove all cables connected to the Small Signal Panel. The SSP can be removed by sliding it out of the SSP bracket (in the direction of the arrow).

Large Signal Panel (Fig. 4.10)

After removing the screw (21), and pushing back the clips (22), the LSP can be lifted out the bracket as indicated by the arrow.

Accessing the panel with mains switch, LED and RC5 receiver

The mains module is located in the middle of the set, below the picture tube.

1. Push the clicks between bottom plate and rear cover back and pull the chassis back as far as possible.
2. Release the click construction (14 - Fig. 4.7) between the SSP and LSP, lift the SSP a little and turn it to an angle of 180° (16 - see Fig. 4.7) from the LSP.
The mains panel can now be accessed when reaching over the SSP/LSP.
3. Remove the 2 screws left and right on the mains panel bracket.
The complete mains panel can now be removed by pulling it backwards.

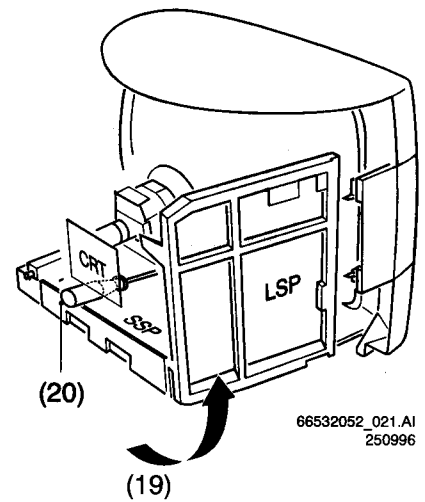


Figure 4.9

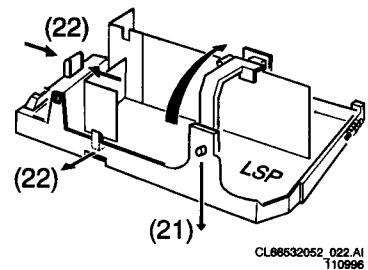
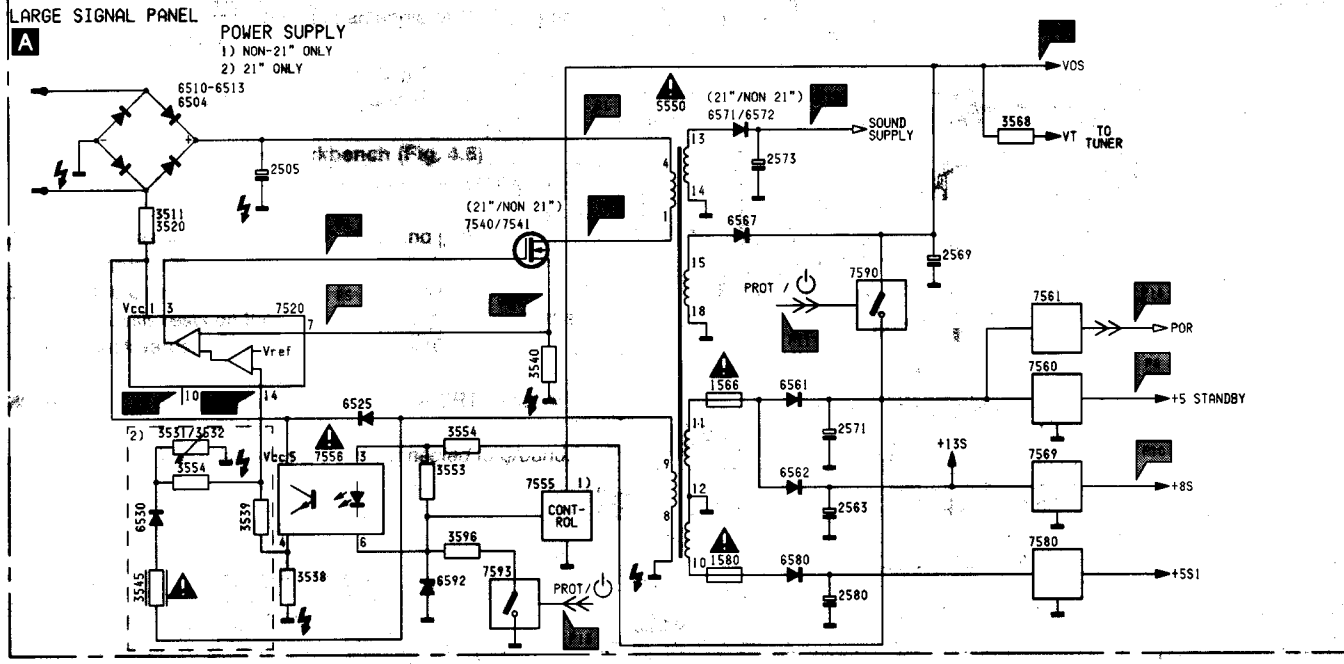
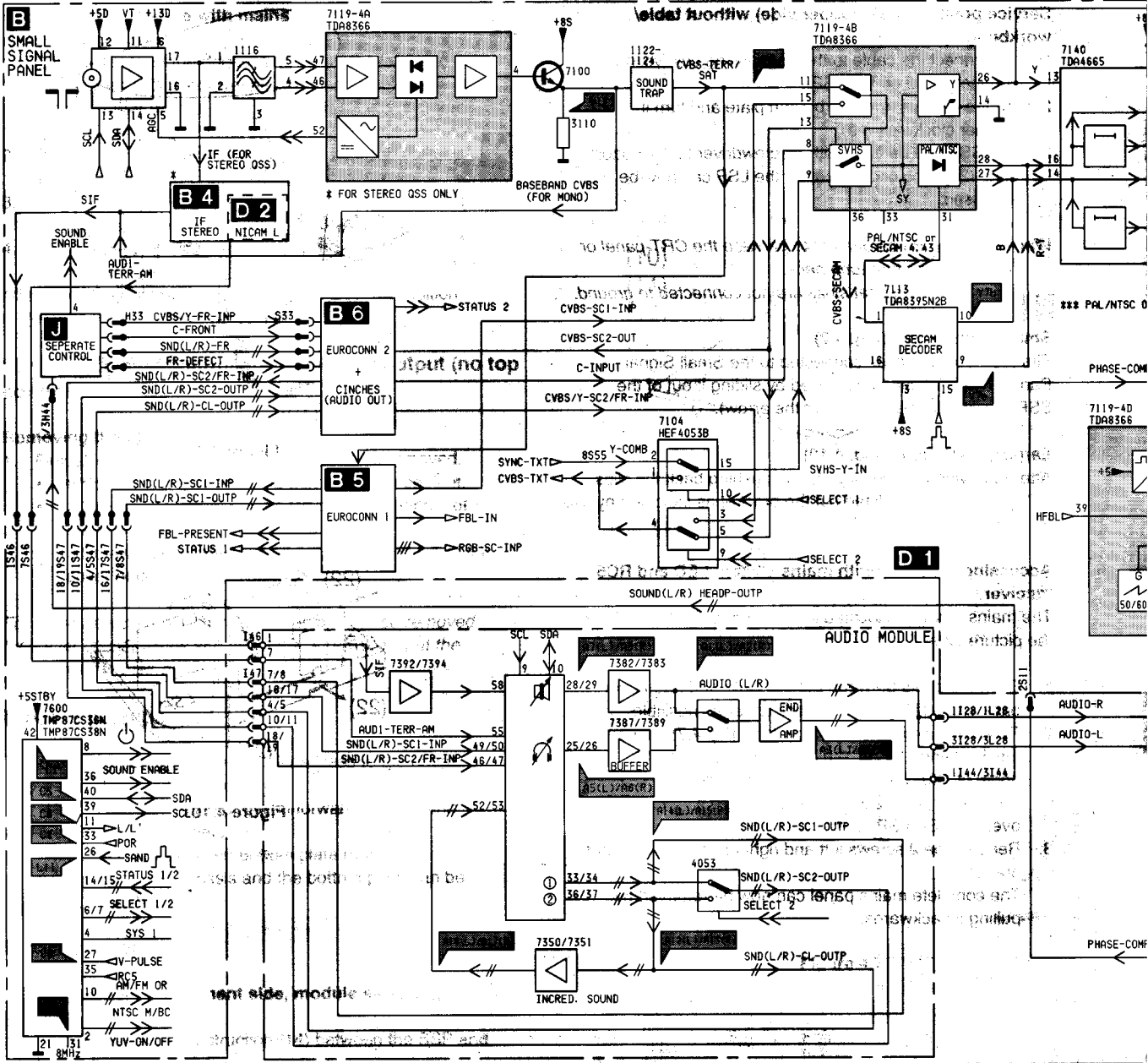
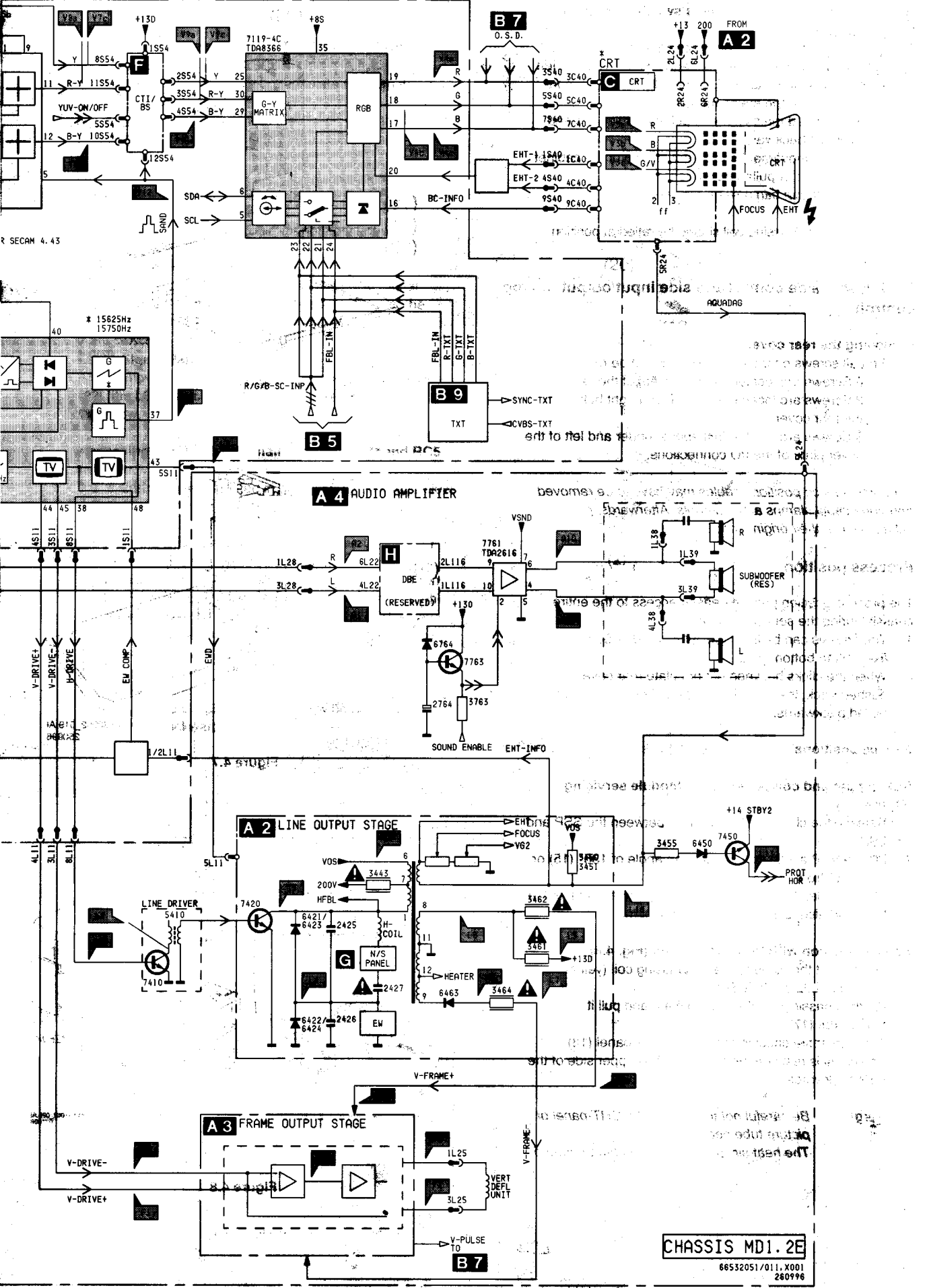
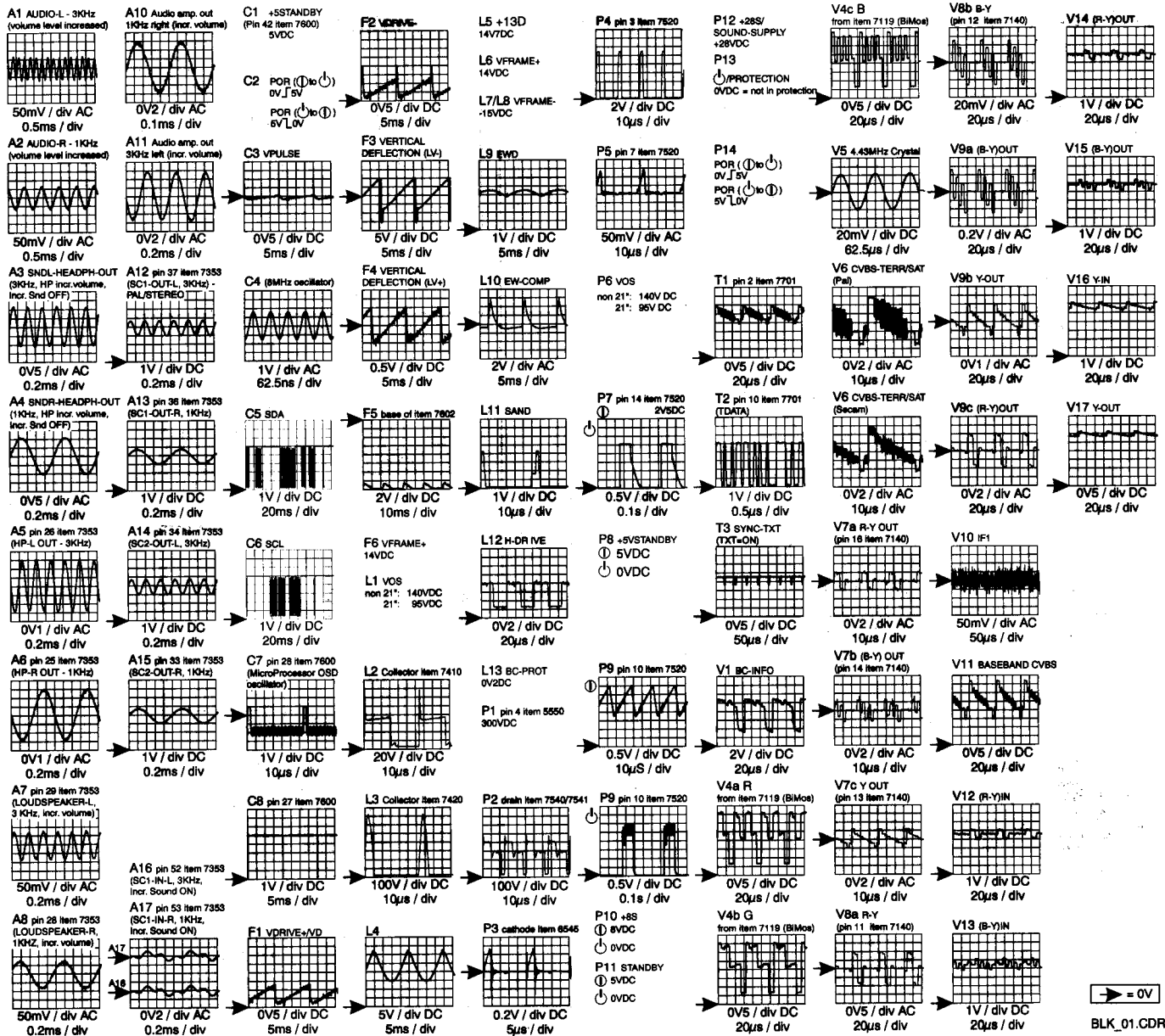


Figure 4.10







() CONNECTORS US...

6. Service Modes, DST, Error messages, Protections, Faultfinding and Repair tips

In this chapter the following paragraphs are included:

- 6.1 Test points
- 6.2 Service Modes and Dealer Service Tool (DST)
- 6.3 Error codes and "blinking LED" procedure
- 6.4 Protections
- 6.5 Fault finding and repair tips

6.1 Test points

The MD1 chassis is equipped with test points in the service printing. These test points are referring to the functional blocks:

- * A1-A2-A3, etc.: Test points for the audio processing circuitry
- * C1-C2-C3, etc.: Test points for the control circuitry
- * F1-F2-F3, etc.: Test points for the frame drive and frame output circuitry
- * L1-L2-L3, etc.: Test points for the line drive and line output circuitry
- * P1-P2-P3, etc.: Test points for the power supply
- * T1-T2-T3, etc.: Test point for the teletext circuitry
- * V1-V2-V3, etc.: Test points for the video processing circuitry

6.2 Service modes and Dealer Service Tool (DST)

For easy installation and diagnosis the dealer remote control RC7150 is introduced. The RC7150 can be used for all new TV sets, including all set of the MD1 chassis. The RC7150 is also called Dealer Service Tool or DST. The ordering number of the DST (RC7150) is 4822 218 21232.

6.2.1 Installation features for the dealer

The dealer can use the RC7150 for programming the TV-set with presets, TV-settings, Dish settings.

10 Different program tables can be programmed into the DST via a GFL or MD2 TV-set (downloading from the GFL or MD2 to the DST; see GFL or MD2 service manuals) or by the DST-I (DST/PC interface; ordering code 4822 218 21277). For explanation of the installation features of the DST, the directions for use of the DST are recommended (For the MD1 chassis, download code 4 should be used).

6.2.2 Diagnose features for the servicer

The MD1.2 sets can be put in the two service modes via the DST RC7150. These are the Service Alignment Mode (SAM) and the Service Default Mode (SDM). SDM can also be entered by short circuiting the "service" pins on the SSP.

6.2.2.1 Service Default Mode (SDM)

Entering the SDM:

- By transmitting the "DEFAULT" command with the RC7150 Dealer Service Tool.
- By temporarily shorting pins S42 and S43 on the Small Signal Panel.

Exiting the SDM:

- Switch the set to stand-by (the error buffer is also cleared).

Note: *When the mains power is switched off while the set is in SDM, the set will enter to SDM immediately when the mains is switched on again.*

The SDM has the following pre-defined conditions for all microprocessor controlled tuning and linear functions:

- For recognition of the SDM "SER" is displayed at the top of the screen.
- Tuning at 475.25 MHz (Secam on Multi-France sets (with Nicam L), PAL on other sets).
- Volume level is set to 25% (of the maximum volume level). Other picture and sound settings are set to 50%.
- Auto switch off disabled (normally the set is automatically switched off when no video signal (IDENT) was received for 15 minutes).
- Sleep timer is disabled.
- All other controls operate normally.
- *When the microprocessor supports the "blinking LED" procedure (See 6.3) and an error code is present in the error buffer, the LED will blink the number of times, equal to the value of the last error code.*
This function will also work when there is no sound or picture.

6.2.2.2 Service Alignment Mode (SAM)

Entering SAM:

- By transmitting the "ALIGN" command with the RC7150 Dealer Service Tool (this works both while the set is in normal operation mode or in the SDM).
- By pressing the "MENU" and "-" key on the local keyboard simultaneously when the set is in SDM.

Exiting SAM:

- Switch the set to stand-by.

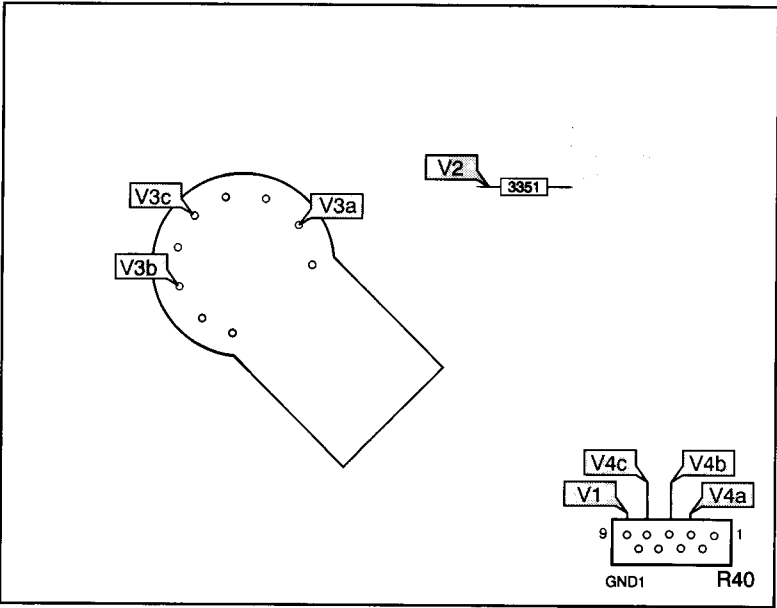
Note: *When the mains power is switched off while the set is in SAM, the set will enter SDM immediately when the mains is switched on again.*

In the SAM the following information is displayed on the screen:

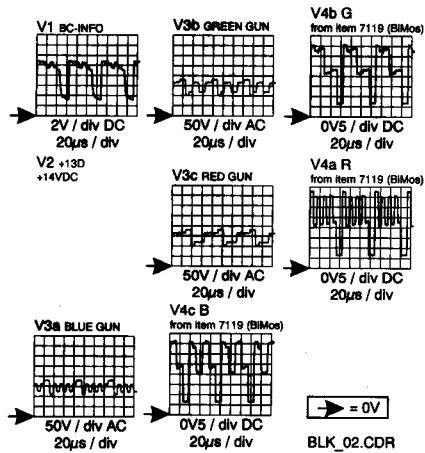
- Software version (the software version of the microprocessor in the set is displayed. This software version identification corresponds with the software versions in the Software Survey as published in the Product Survey).
- Error code buffer (see paragraph 6.3).
- Options (see paragraph 8.4).
- Alignment and geometry information (see paragraph 8.2.1, 8.3.1 and 8.3.2).

Testpoint overview / Testpunkt Übersicht /
Relevé des points de test

CRT panel / CRT-Platine / Platine tube cathodique



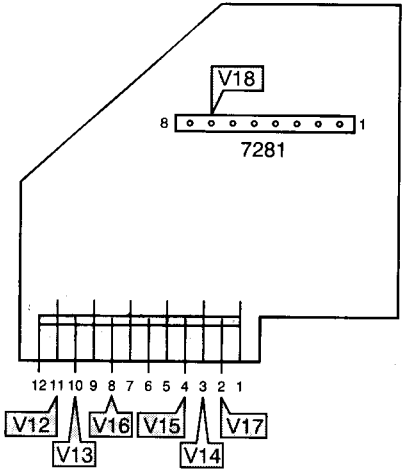
CL 66532051_004.ai
181196



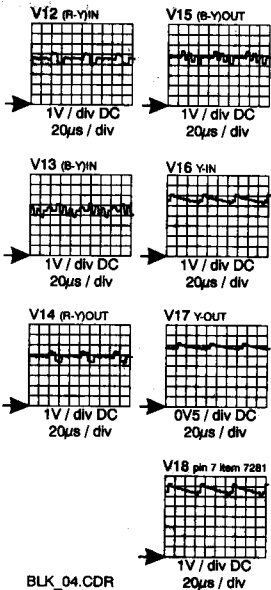
→ = 0V

BLK_02.CDR

CTI/Black Stretch panel /
CTI/Black Stretch Platine /
Platine CTI/Black Stretch

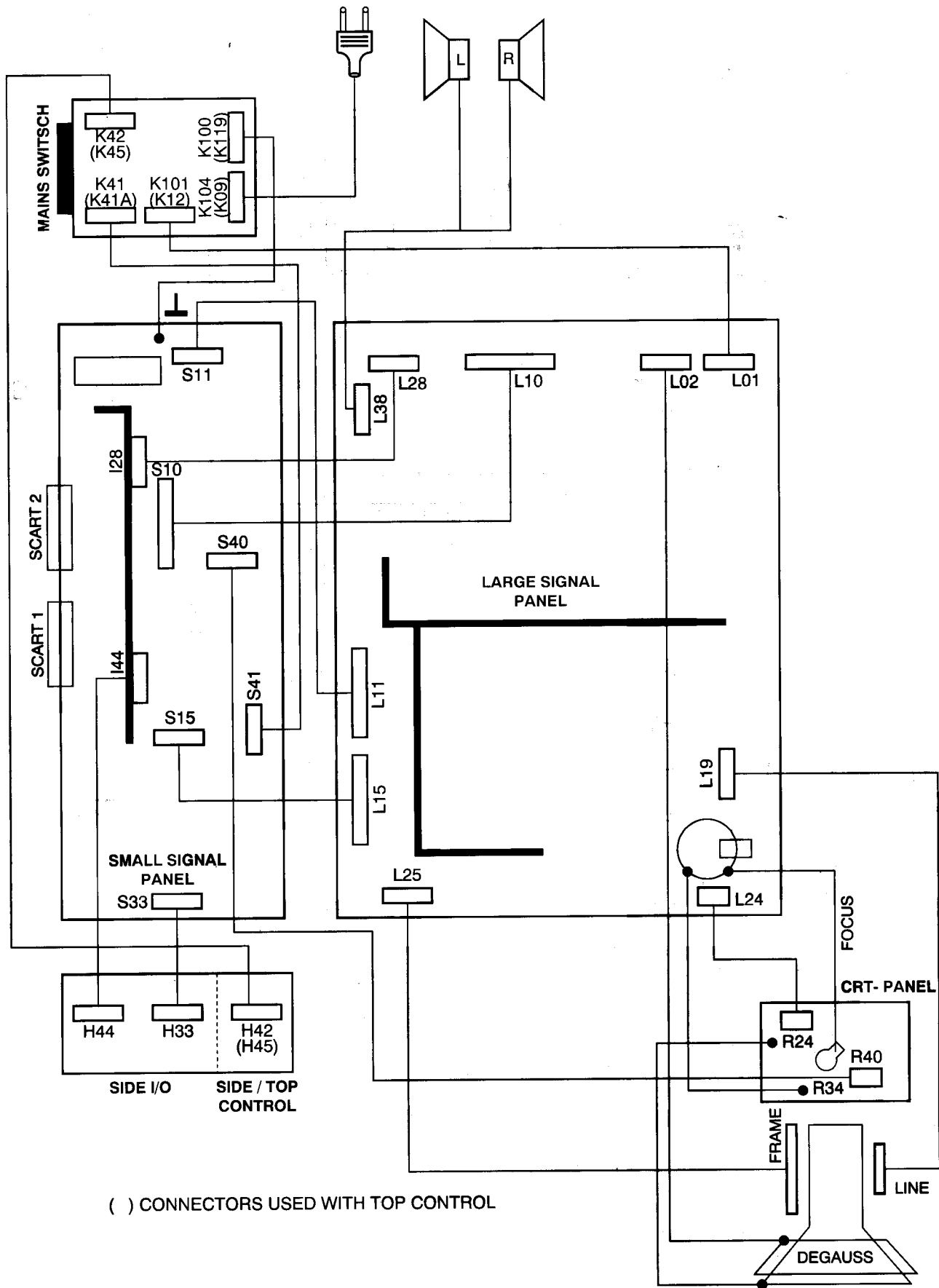


CL 66532051_003.ai
060996



BLK_04.CDR

Wiring diagram / Verdrahtungsschema /
Schéma de câblage

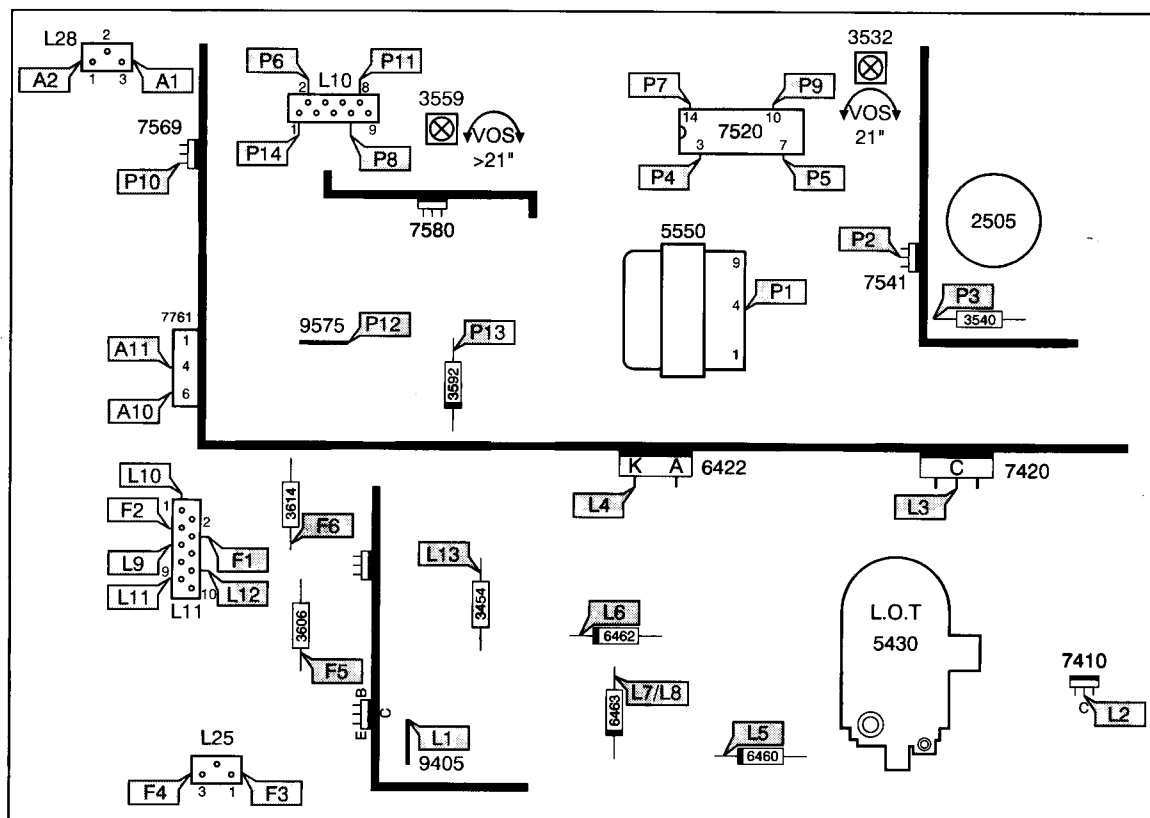


Testpoint overview / Testpunkt Übersicht / Relevé des points de test

Chassis MD1.2E

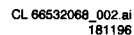
7

Large signal panel / Groß-Signal Platine / Platine forts signaux



CL 86532051_002.ai
T90896

Small signal panel / Klein-Signal Platine / Platine petits signaux



- (1) Software version
- (2) Error buffer
- (3) Options
- (4) Alignments and geometry

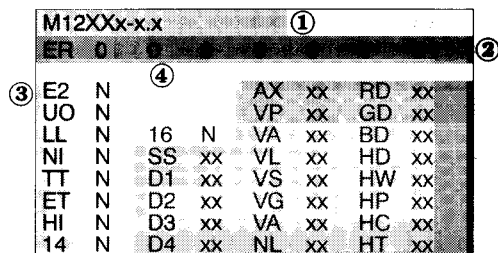


Figure 6.1 Screen of the Service Alignment Mode (SAM)

6.3 Error codes and "blinking LED" procedure

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right.

- The last error detected (actual) is the error at the left side
- The error buffer will be reset in the following cases:
 1. exiting the SAM with the "standby" command on the remote control
 2. transmitting the commands "DIAGNOSE 9 9 OK" with the DST
- By leaving the SAM with the mains switch, the error buffer is not reset.

Examples:

ERROR: 0 0 0 0 0: No error code detected
 ERROR: 3 0 0 0 0: Error code 3 is the last and only detected error
 ERROR: 5 3 0 0 0: Error code 3 first and error code 5 last detected

The contents of the error buffer can also be made visible through the "blinking LED" procedure. This is especially useful when there is no picture. There are two methods:

1. When the SDM is entered, the LED will blink the number of times, equal to the value of the *last* error code. The LED will stay off briefly and blink again the number of times, equal to the value to the *last* error code
2. With the DST *all* error codes in the error buffer can be made visible. While in SDM, transmit the command: "DIAGNOSE x OK" where x is the position in the error buffer to be made visible x ranges from 1, (the last (actual) error) to 7 (the first error)

The LED will operate in the same way as in point 1, but now for the error code on position x.

Example:

Error code position 1 2 3 4 5 6 7
 Error buffer 2 4 1 0 0 0 0

- after entering SDM blink (2x) - pause - blink (2x)
- after transmitting "DIAGNOSE 2 OK" with the DST blink (4x) - pause - blink (4x)
- after transmitting "DIAGNOSE 3 OK" with the DST blink - pause - blink
- after transmitting "DIAGNOSE 4 OK" with the DST nothing happens

Note!

Note that it may take up to 7 seconds before the set responds to a DIAGNOSE command. Interruption of the blinking sequence may lead to incorrect results.

Important!

Not all software versions of the MD1.2E chassis support the blinking LED procedure and the DIAGNOSE 99 command. Software versions NOT supporting the blinking LED procedure are M12BAX-x.x and M12COx-3.x.

Error code	Error description	Blinking LED	Possible defective components
0	No error detected	—	—
1	BIMOS (TDA8366) error	1x	IC7119 (SSP)
2	MSP3400/3410 error	2x	IC7353 (SSP)
3	I ² C bus error	3x	All I ² C-related components
4	Wrong EEPROM	4x	IC7685 (SSP)
5	EEPROM defective	5x	IC7685 (SSP)
6	Tuner error	6x	U1000 (SSP)
7	TXT error	7x	IC7702 (SSP)
8	Histogram Proc. error	8x	IC7210 (reserved)
9	16:9 processor error	9x	IC7440 (16x9 module)
10	WSSB module error	10x	IC7540 (WSSB module)
11	Dolby processor error	11x	IC7600 (Audio module)

Table 6.1 Error code list

Protections, Faultfinding and Repair tips

6.4 Protections

6.4.1 In the MD 1.2E the following protections are possible:

Protections generated by the power supply:

- Overload protection → Hick up mode
- Underload → Hick up mode
- Over voltage → Hick up mode
- Under voltage → Hick up mode

Deflection:

- Horizontal Protection → Supply to standby
- EW-Protection → Supply to standby
- Vertical Protection → BIMOS standby mode

Software protection

- BIMOS IC7119 defective → (Error code 1)
Set can be switched between standby and ON, but there is no picture, no OSD, sound is only noise.
- SDA or SCL shorted → (Error code 3)
Set is switched to standby via standby line, set tries to restart.
- No +5Db or +8Sc at μC → Set is switched to standby via standby line, set tries to restart.

6.4.2 Power supply protections

The power supply will go to a very good audible hick-up mode in the following situations:

- Overload protection
- Under load
- Over voltage
- Under voltage

In hick-up mode

Pin 1 of IC7520 starts up from the start circuit for approximately 2 seconds, immediately after that the protection is activated. This cycle is constantly repeated in hick-up mode. When the set is in hick-up mode a short squeak is audible every 2 seconds.

6.4.3 Horizontal-protection

When the beam current becomes too high for a long period the voltage across C2450 will drop. D6450 will start conducting and as soon as the voltage drop across R3456 is 0V7, TS7450 will conduct, making PROT high. Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

6.4.4 EW-protection (not for 21" sets)

The East/West protection switches the power supply to standby via the signal line STANDBY-SUPPLY PROTECTION. Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

The East/West protection detects when the current through the East/West power output stage with TS7480 is too high.

Note: *A current through the East/West stage that is too high can be caused by a defective part in the line-deflection circuitry!*

The current through the East/West stage is measured on the LSP via 2 precision resistors (R3483 and R3484). In case of a line problem, the east/west-current becomes too high and the voltage across resistors R3483 and R3484 rises. When the voltage level exceeds 0.6V, D6480 starts to conduct and STANDBY-SUPPLY PROTECTION becomes HIGH. When the voltage across C2480 is very high (e.g. when a line problem is already present when the set is switched on with the mains switch), D6481 and D6482 conduct and EW-PROTECTION is activated very fast.

The East/West protection becomes active in the following cases:

1. Bad contacts of horizontal deflection circuit:
 - bad contacts of horizontal deflection coil
 - bad contacts of linearity corrector coil L5421
 - bad contacts of S-correction capacitor C2427
 2. Bad contacts of flyback capacitor C2425.
 3. Shorted flyback diode D6421 or D6423.
 4. Shorted S-correction capacitor C2427.
 5. Bad solder contacts in the line output stage.
- When EW-protection has been active, the line output transistor 7420 may also be defective.

6.4.5 Vertical-protection

The vertical output stage creates VERTICAL-PROTECTION pulses at every flyback pulse when it is functioning correctly. These pulses are sensed by the BIMOS IC7119-4D on pin 37. When the pulse train is interrupted, the BIMOS will switch to BIMOS STANDBY mode. In the BIMOS STANDBY mode, the BIMOS switches off the VDRIVE+ and VDRIVE- while the RGB outputs are blanked. Circuit breaker 1463 may be open. Probably, the line output stage will not work and the power supply will switch to hick-up mode (under voltage protection).

6.4.6 Software protection

The software protection is managed by the microprocessor. It continuously verifies the presence of the +5 and +8 supply voltages on pin 34 and the activity of the I²C bus. When the protection becomes active, the software will switch the power supply on and off continuously via the STANDBY line. In this situation the power supply produces a squeaking sound.

- I²C protection
The I²C bus is controlled at each I²C-command.
Therefore every I²C command has a defined start/stop condition. When the defined start/stop condition is repeatedly incorrect, error 3 is placed in the error buffer and the set switches to software protection.
I²C-protection is generated in the following situations:
 - SDA shorted to earth
 - SCL shorted to earth
 - SDA and SCL shorted
 When SCL or SDA is shorted, the set tries to restart and the LED lights in a clearly recognisable pattern.
 - SDA/SCL shorted when the set is switched ON with the mains switch:
LED is 8 seconds RED, 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.
 - SDA/SCL shorted during operation
LED is 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.
- +5Db and +8Sc protection of the microprocessor
+5Db and +8Sc are the main supply voltages of the entire small signal processing of the set. At pin 34 the microprocessor senses whether the supply voltages +5SSDb or +8Sc coming from the power supply are present. When one or both the supply voltages are missing, the set switches to software protection.

6.5 Fault finding and repair tips

Note that for 21" sets, voltages and wave forms may differ.

6.5.1 General

LED indication after start-up procedure is completed

- No LED
Set is switched OFF, supply problem or microprocessor problem.
- LED continuously
Set is in standby, control part defective, standby mode defective.
- LED blinking
Set in SDM, transmitting error buffer.

Audible checks

- Demagnetisation audible: mains voltage is present at LSP.
- EHT audible: supply is operational (line output stage only works in case VOS (+140V for 25 & 29"; +95V for 21") is present.
- Hick-up sound power supply audible: power supply is shorted. Check the LOT (item 5430) and the line output transistor TS7420.

6.5.2 Fault finding in the power supply

In case of a power supply problem, the power supply can be simplified to a stand alone power supply at low voltages (low risk) as follows:

Control part of the power supply

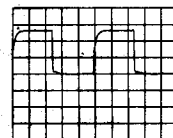
1. Disconnect the SSP (as a result the line will not function any more and therefore will no longer be a load of the power supply) or disconnect the line by removing jumper 9400 and R3400 (if present) on the LSP.
2. Connect an external DC power supply between supply pin 1 IC7520 (via a diode - e.g. BYD33D - with cathode to supply pin 1 IC7520) and hot earth (e.g. earth of the big smoothing capacitor C2505).
3. Connect a oscilloscope to test point P4 at pin 3 IC7520.
4. Turn up the external DC supply voltage slowly to 17V DC.

Remark: *The IC starts at a supply voltage of 14V DC, after that the supply voltage can drop to approx. 9V DC. At approximately 18V DC, over voltage protection becomes active, resulting in a supply voltage drop below 7V DC before a new start-up is performed by turning up the supply voltage above 14V DC.*

5. The correct (measured) situation is displayed in . Other results indicate a defect in the power supply control part (IC7520 or peripheral components at pins 10 or 11).

Figure 6.2:

5V/div;
→ 40KHz pulse



Energy transfer of the power supply (only if control part is OK)

6. Apply action 1, 2 and 4 as described earlier.
7. Connect a lamp of 230V/100W across the VOS output capacitor C2569.
8. Connect a 1kΩ resistor between the +5STANDBY (connector 7L10) and the STANDBY line (connector 8L10) to switch the power supply to normal operation.
9. Connect the mains connector to a VARIAC but leave it at 0.
10. Connect a voltmeter across C2569 and an oscilloscope between the drain of TS7541 (25 & 29") or TS7540 (21") and hot earth.
11. Slowly increase the mains input voltage by the VARIAC (in this way further damage to the power supply can be avoided).

Protections, Faultfinding and Repair tips

The wave forms for the following mains voltage are given:

Mains in voltage

10V AC: 20kHz and VOS 7V5

20V AC: 40kHz and VOS 30V

40V AC: 40kHz and VOS 80V

65V AC: 40kHz and VOS 140V

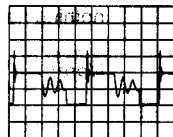
> 65V AC: Stable situation, so 40kHz and 140V

In case of a feedback problem, the situation will not stabilise or the voltage will exceed 140V (95V with 21")

1. Figure 6.3:

Mains in 10V AC

10V/div; 10 μ s/div



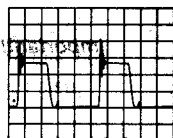
2. Figure 6.4:

Mains in 20V AC

20V/div; 5 μ s/div

→ 40kHz pulse

→ VOS 30V



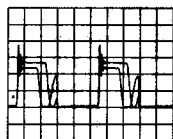
3. Figure 6.5:

Mains in 40V AC

50V/div; 5 μ s/div

→ 40kHz pulse

→ VOS 80V



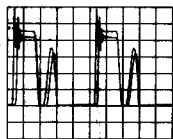
4. Figure 6.6:

Mains in 65V AC

50V/div; 5 μ s/div

→ 40kHz pulse

→ VOS 140V



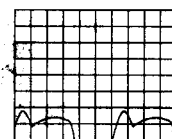
Correct horizontal circuitry

Note that the amplitude of the signal strongly depends on the frequency of the generator.

2. Figure 6.8:

L3; test point at collector line output transistor (7420)

50V/div; 10 μ s/div



Line deflection open:

Current from external DC supply is approximately 100mA.

Observation: small pulse followed by wide pulse and 100mA supply current

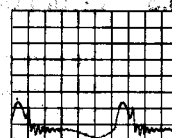
Causes: horizontal deflection coil open
linearity coil L5421 open
S-correction C2427 open

3. Figure 6.9:

L3; test point at collector line output transistor (7420)

50V/div; 10 μ s/div

Current from external DC supply approx 500mA !!



Observation: fast oscillations and 500mA supply current

Cause: horizontal deflection shorted (e.g. line deflection coil shorted)

When the line deflection is not completely shorted but only a number of windings are shorted, the wave form does not show the oscillation and the current of the external DC supply is approximately 200mA.

4. Figure 6.10:

L3; test point at collector line output transistor (7420)

100V/div; 10 μ s/div



Current from external DC supply is approximately 150mA

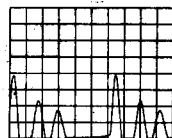
Observation: flyback time is shorter, one extra pulse in between, 150mA supply current

Cause: flyback capacitor C2425 open

5. Figure 6.11:

L3; test point at collector line output transistor (7420)

100V/div; 10 μ s/div



Current from external DC supply > 1A

Observation: 2 pulses per cycle extra and supply current from more than 1A

Cause: short-circuit in picture tube (e.g. EHT to Aquadag)

6.5.3 Fault finding of the horizontal circuitry

When the horizontal circuitry itself is defective, it can be simplified to a stand alone "switched mode supply" at low voltages (low risk) as follows:

1. Disconnect the set from mains.
2. Disconnect the SSP by removing all cables to the SSP.
3. Connect an external 50V DC (or 40V DC) supply with current measurement possibility across C2400.
4. Replace the HDRIVE by an external LF generator (TTL level (between 0 and 5V); duty cycle 50%) with a 16 kHz pulse at the base of TS7410 (near LOT at the side of the PCB).
5. Connect an oscilloscope to test point L1 (collector of line output transistor 7420).

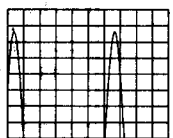
Possibilities:

1. Figure 6.7:

L3; test point at collector line output transistor (7420)

50V/div; 10 μ s/div

Current from external DC supply approx. 100mA



Observation: normal 16kHz pulses and 100mA supply current

Service Modes, DST, Error messages,

6.5.4 Fault finding “no picture, no protection” (problem in the video controller IC part TDA8366-4C)

When there is no picture and no protection, it is most likely that there is a problem with the BC_INFO caused by the TDA8366, the RGB amplifiers or the picture tube.

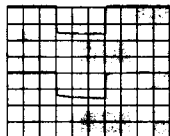
For measuring, connect a video generator (e.g. PM5518) at the aerial input with a white pattern to the tuner. Trigger the oscilloscope field frequent. A stable picture is obtained if triggered with VDRIVE+ at pin 4 S11.

Normal start up procedure

1. First phase of start up; 4 white measuring lines (lines 15, 16, 17, 18) and the main picture is muted (wave forms are better visible if the picture tube is cold);

Figure 6.12:

Red (pin 8 of connector R43 on the CRT panel) and green gun (pin 6)
100V/div DC;
100μs/div



The total beam current is measured and fed back to pin 16 TDA8366 (IC7119)

The TDA8366 checks the voltage at pin 16 of the TDA8366 during these lines

< 4.5V : set remains in this phase

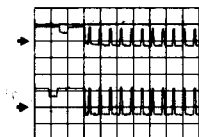
≥ 4.5V : set continues with start up phase 2

2. Second phase of start up; each beam is separately measured and the main picture is still muted. Line 15 is Red, line 16 is Green and line 17 is Blue. BC_INFO is measured.

- differences between the lines (guns) are compensated
- when the differences are minimal the set continues with phase 3, otherwise it remains in phase 2

Figure 6.13:

Red (lower line) (pin 8 of connector R43 on the CRT panel) and green (upper line) gun (pin 6)
50V/div AC;
100μs/div



3. After start up the picture is present and differences in cut-off points of the R, the G and the B gun are compensated continuously.

Repair procedure

Typical situation: no picture and no error codes

- Switch the set on.
- In a 4:3 set, press “picture size” to switch the set to “16:9 compressed” mode.
- In a 16:9 set, shift down the picture with the cursor keys.

The start up phase of the set can be identified:

1. **A bright white horizontal line at the top; the rest of the picture is dark**
(set hangs in first phase of start up procedure)
Oscilloscope picture of the voltage over the guns looks like figure 6.12.

TDA8366 (IC7119), picture tube and RGB amplifiers are OK

There should be 4.5V at pin 16 TDA8366.

Possible problem: if there is no 4.5V present at pin 16 of TDA8366, there is a defect (in one or more of the components) in the BC_INFO feedback loop.

2. **Small horizontal red, green and blue lines at the top; the rest of the picture is dark**
(set hangs in second phase of start up procedure)

TDA8366 is OK

Possible problem: one or more of the guns of the picture tube are bad

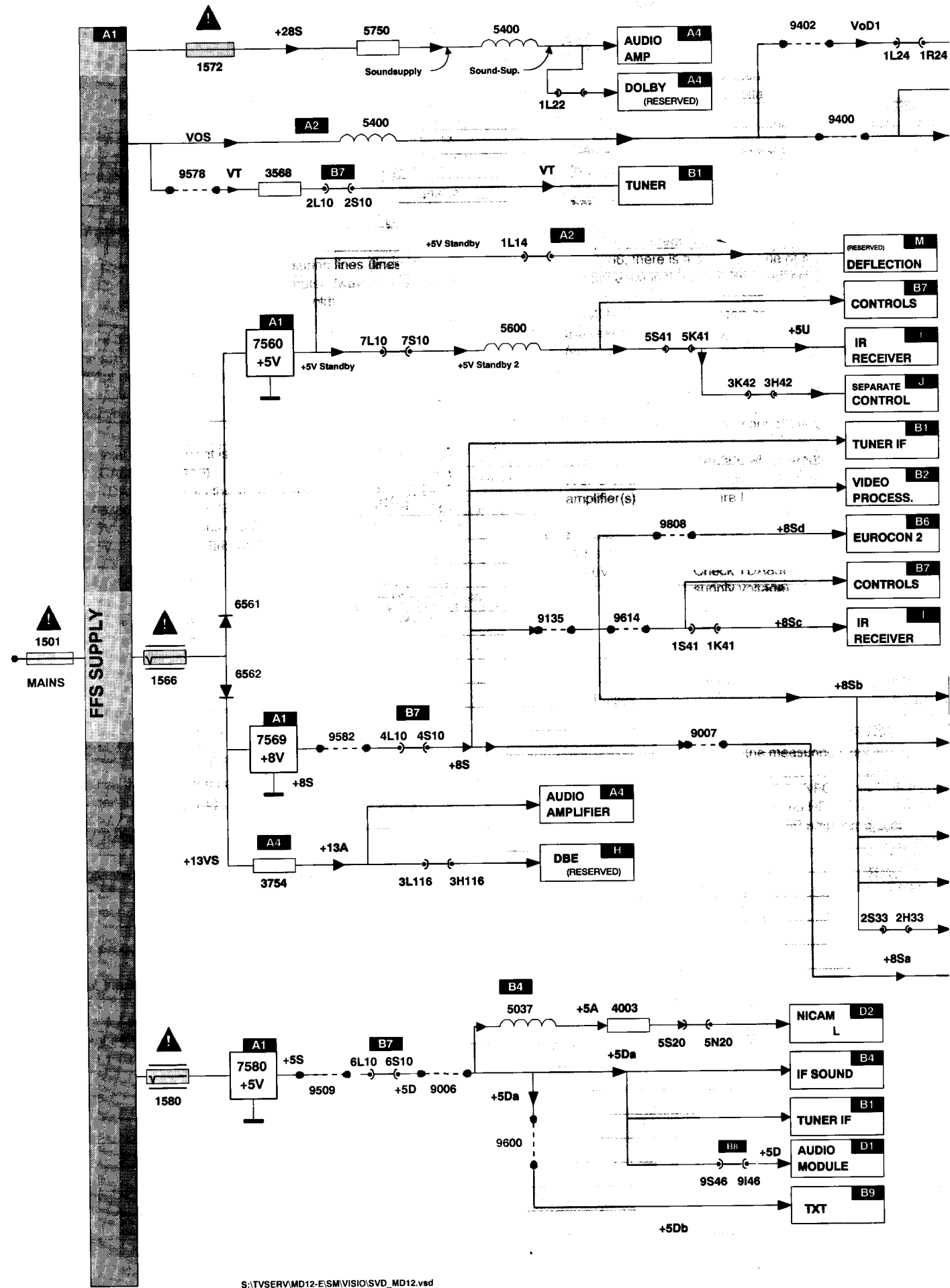
Measure at pin 16 TDA8366 which feedback line(s) (the R or G or B line) is/are smaller; the corresponding amplifier(s) or gun(s) is/are faulty.

3. **No lines visible (picture dark)**

Measure pin 16 TDA8366; possible measurements:

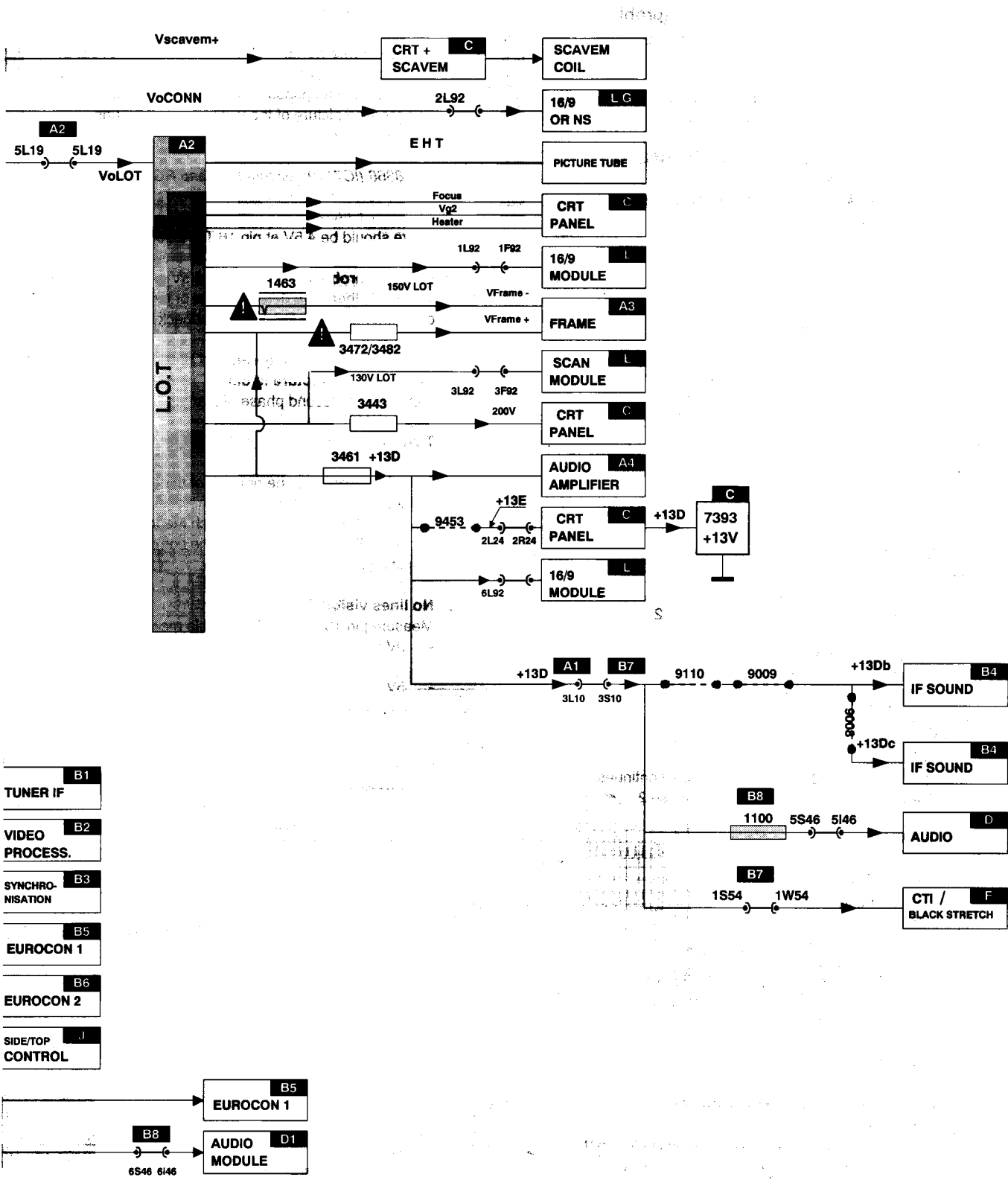
- 0V : Check TDA8366 (sandcastle and the supply voltage)
- 5V : Check RGB amplifiers
Short pin 16 TDA8366 to ground, now there will be measuring lines (at continuously 5V, phase 1 and 2 is bypassed)
- Pulses : there is a measuring line, so the TDA8366 is OK
Measure on cathode on the CRT panel if the measuring lines are present:
Yes → BC_INFO circuit is open or no HEATER voltage
No → RGB amplifier problem

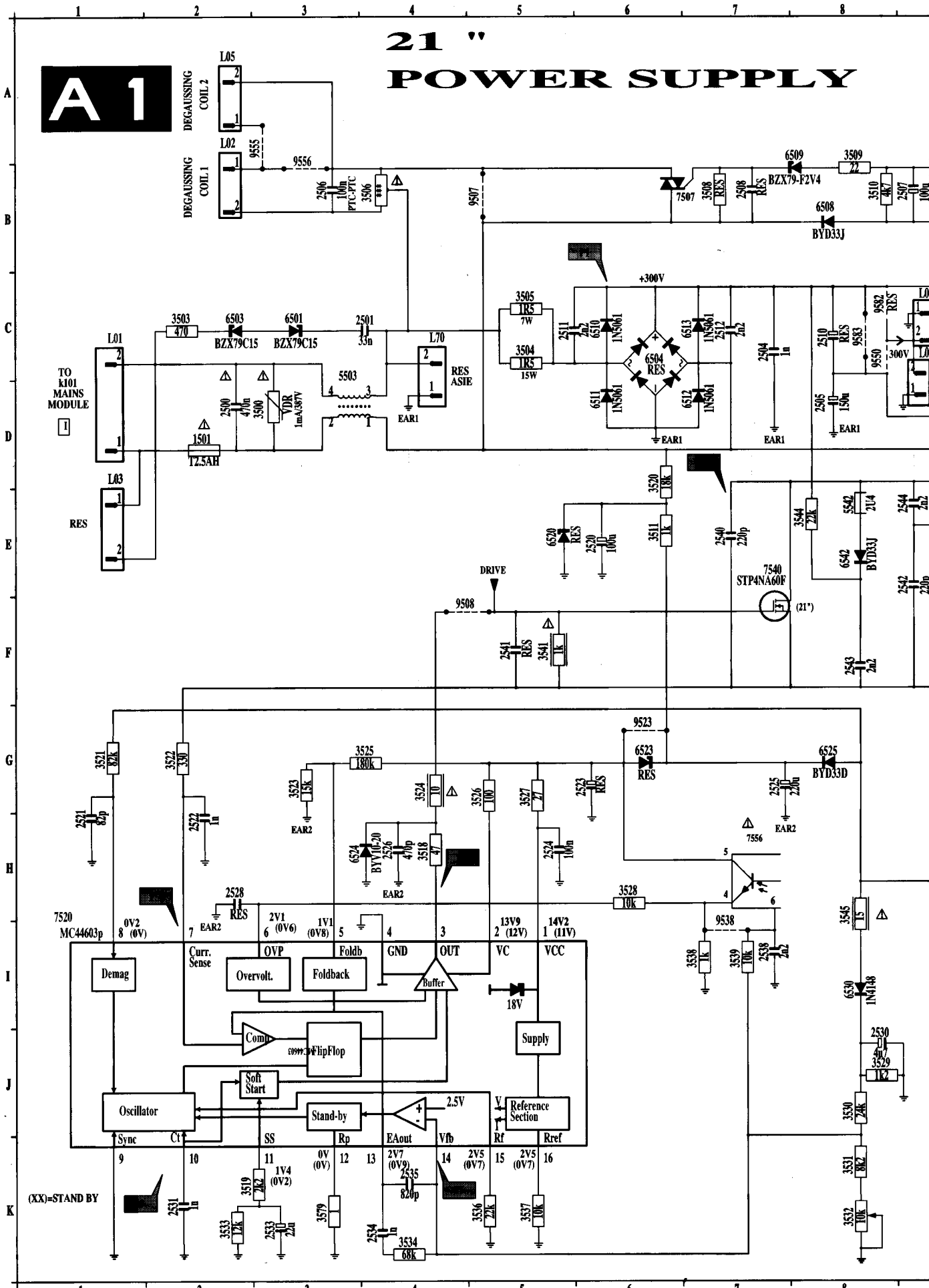
7. Supply voltage diagram /



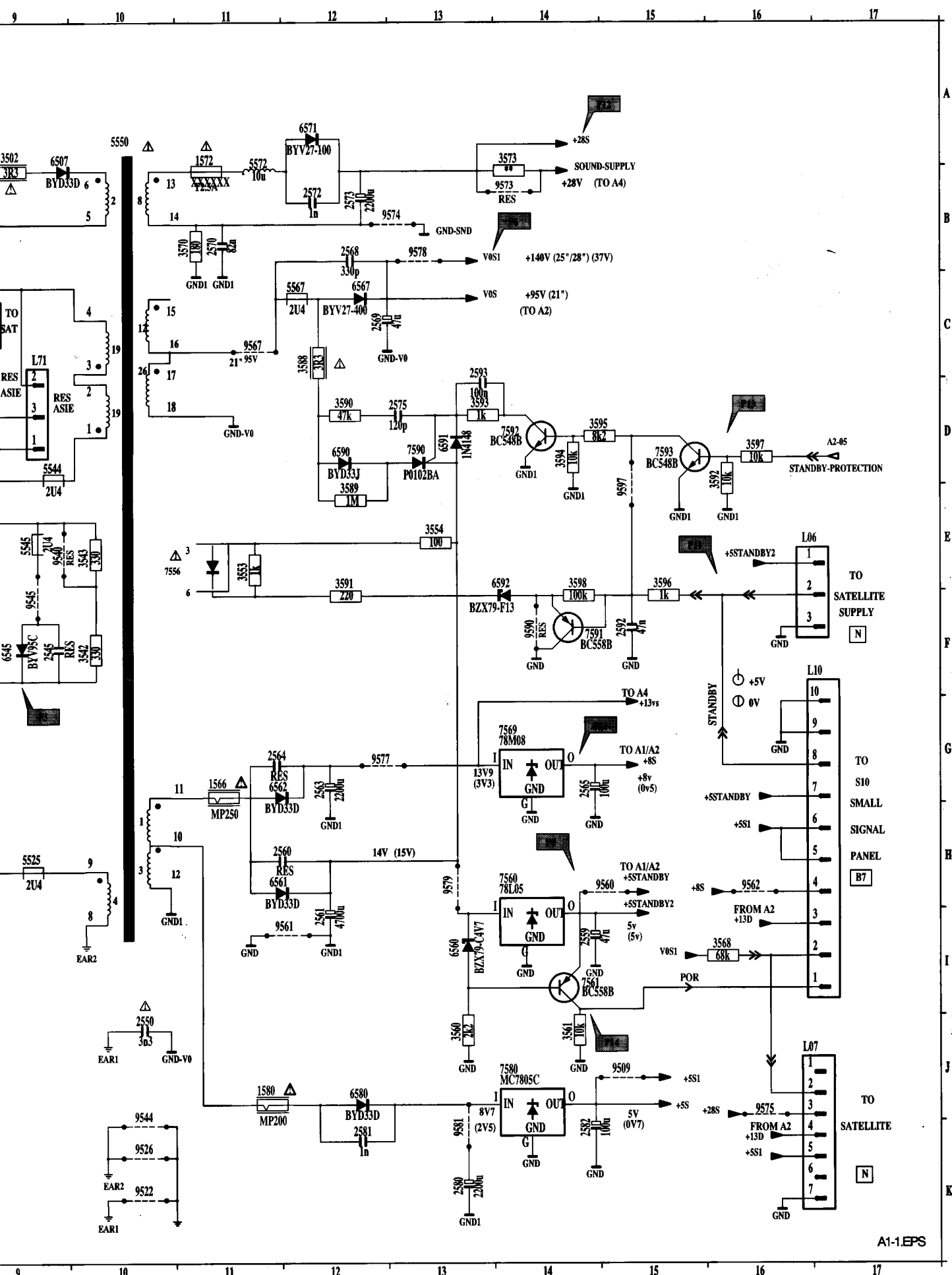
S:\TVSERV\MD12-E\SM\VISIO\SVD_MD12.vsd

Speisespannung Schaltplan / Diagramme de tension d'alimentation





Alimentation 21 "



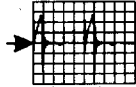
P1 pin 4 item 5550
300VDC

P2 drain item 7540/7541



100V / div DC
10 μ s / div

P3 cathode item 6545



0.2V / div DC
5 μ s / div

P4 pin 3 item 7520



2V / div DC
10 μ s / div

P5 pin 7 item 7520



50mV / div AC
10 μ s / div

P6 VDS

non 21": 140V DC

21": 95V DC

P7 pin 14 item 7520



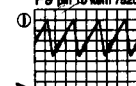
0.5V / div DC
0.1s / div

P8 +5VSTANDBY

① 5VDC

② 0VDC

P9 pin 10 item 7520



0.5V / div DC
10 μ s / div

P10 +8S

① 8VDC

② 0VDC

P11 STANDBY

① 5VDC

② 0VDC

P12 +28S/

SOUND-SUPPLY

+28VDC

P13

①/PROTECTION

0VDC = not in protection

P14

POR (① to ②)

0V / 5V

POR (③ to ④)

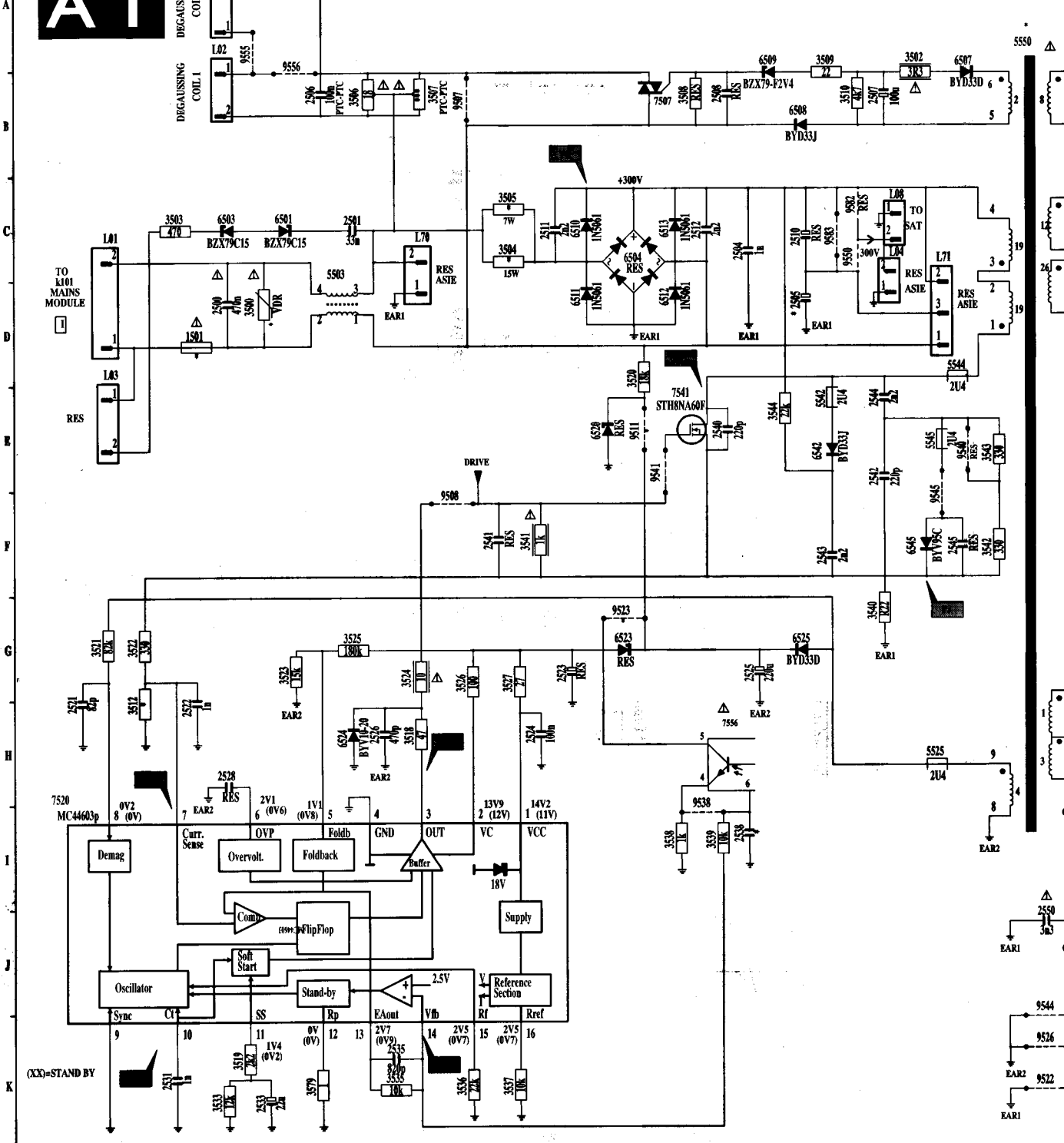
5V / 0V

OSC A1.CDR

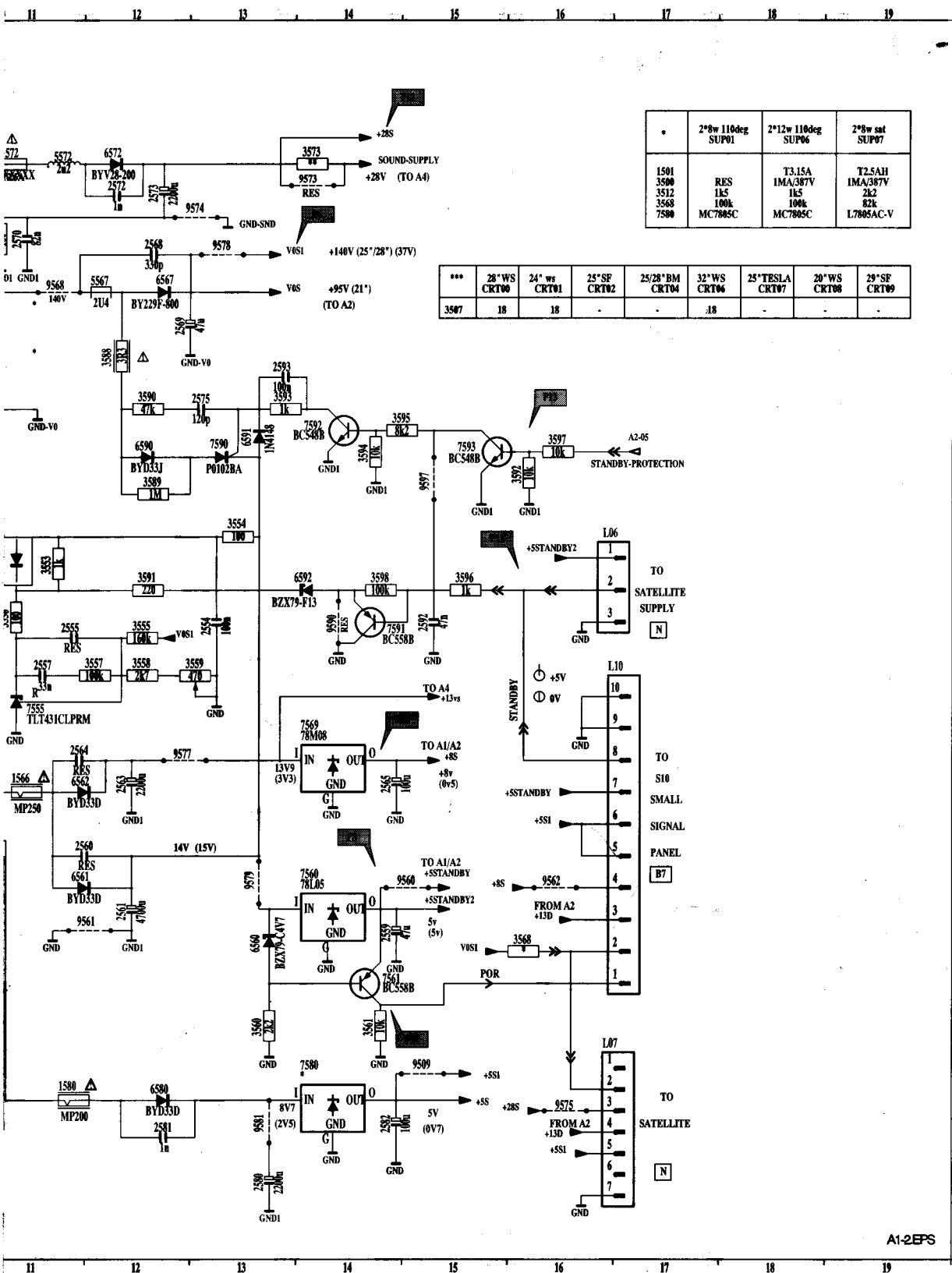
98 1998
2A S088
1A F088
98 1998
2A S088
1A F088

A 1

> 21" POWER SUPPLY

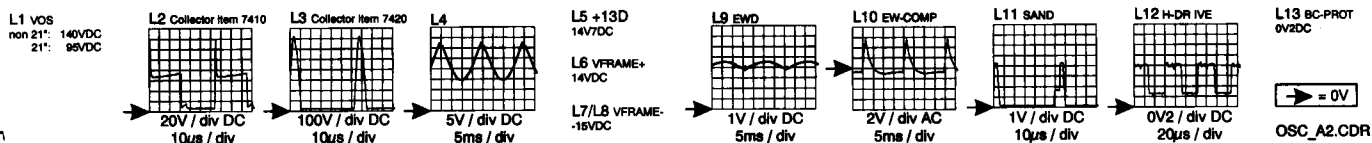


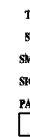
Alimentation > 21"



A1-2EPS

HORIZONTAL





	2°SW/110deg SUP01	2°SW 90deg SUP04	2°12W 110deg SUP06	2°SW SAT SUP07
3461	1R5	2R2	1R5	1R5

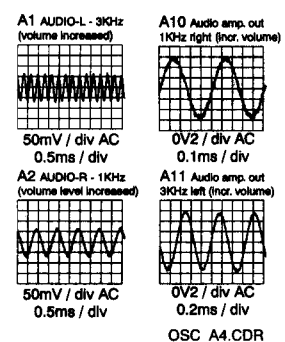
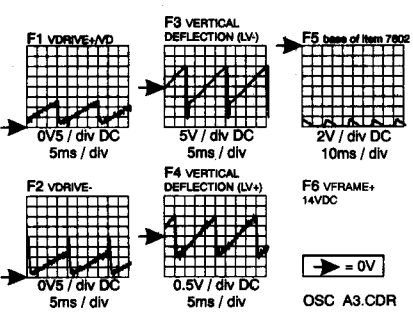
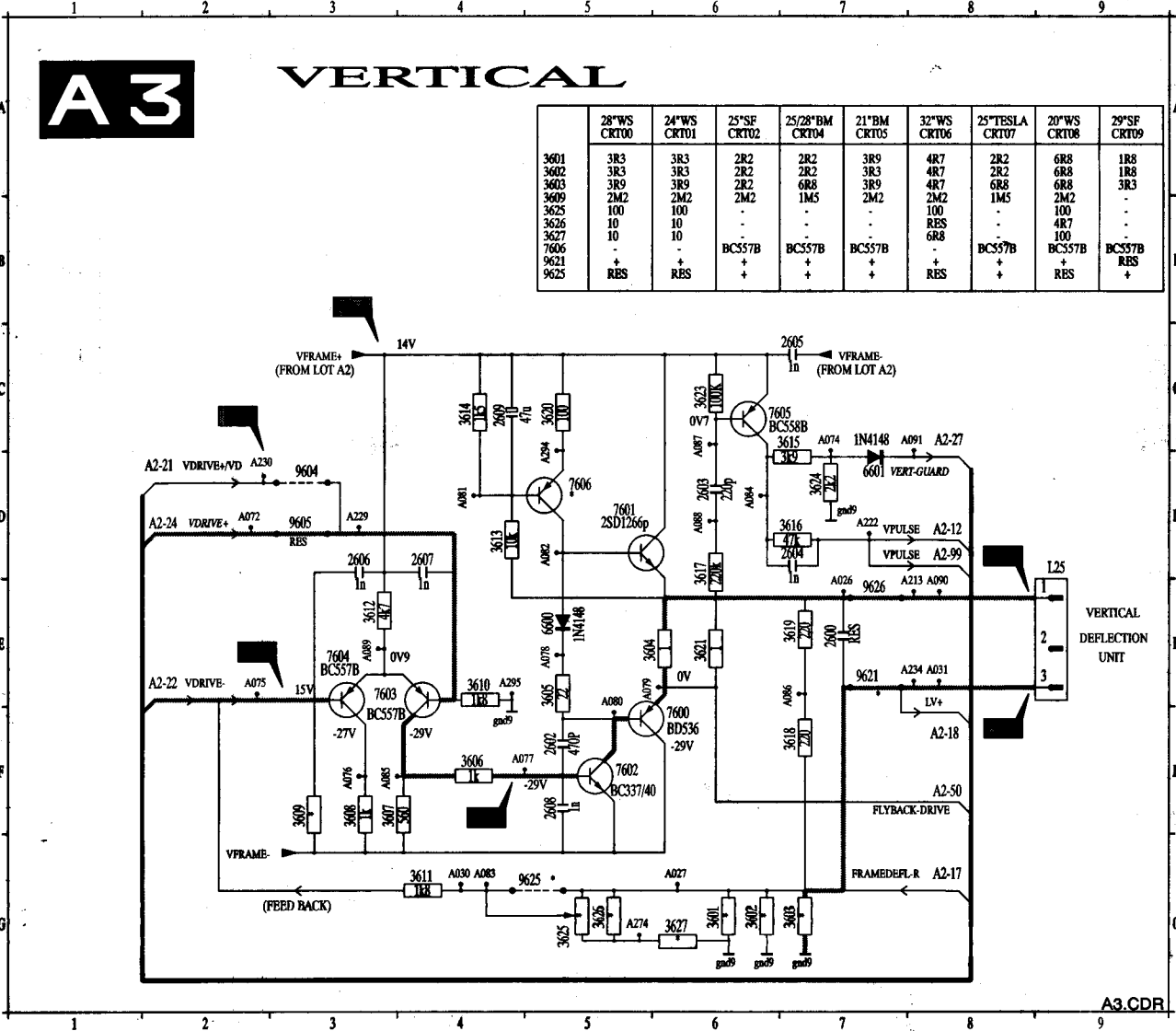
A horizontal number line with tick marks and labels from 13 to 23. The line is used for plotting data points.

2600 E7	2608 E5	3606 E4	3613 D4	3620 C5	6600 E5	7605 C6	A2-12 D8	A2-50 E8	A274 G5
2601 D6	2609 C6	3607 E3	3614 D5	3621 C6	6601 E6	7606 D3	A2-13 D8	A2-51 E8	A275 E4
2602 D7	2610 C7	3608 E4	3615 D6	3622 C7	6602 E7	7607 D4	A2-14 D9	A2-52 E9	A276 D3
2603 D8	2611 C8	3609 E5	3616 D7	3623 C8	6603 E8	7608 D5	A2-15 D9	A2-53 E9	A277 D4
2604 D9	2612 C9	3610 E6	3617 D8	3624 C9	6604 E9	7609 D6	A2-16 D9	A2-54 E9	A278 D5

A3

VERTICAL

	28"WS CRT00	24"WS CRT01	25"SE CRT02	25/28"BM CRT04	21"BM CRT05	32"WS CRT06	25"TESLA CRT07	20"WS CRT08	29"SF CRT09
3601	3R3	3R3	2R2	2R2	3R3	4R7	2R2	6R8	1R8
3602	3R3	3R3	2R2	2R2	3R3	4R7	2R2	6R8	1R8
3603	3R9	3R9	2R2	2R2	3R9	4R7	2R2	6R8	3R3
3609	2M2	2M2	2M2	1M5	2M2	2M2	1M5	2M2	-
3625	100	100	-	-	-	100	-	100	-
3626	10	10	-	-	-	RES	-	4R7	-
3627	10	10	-	-	-	6R8	-	100	-
7606	-	-	BC557B	BC557B	BC557B	-	BC557B	BC557B	BC557B
9621	+ RES	+ RES	+	+	+	+	+	+	RES
9625	-	-	+	+	+	-	+	-	+



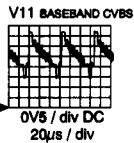
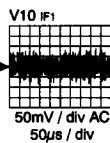
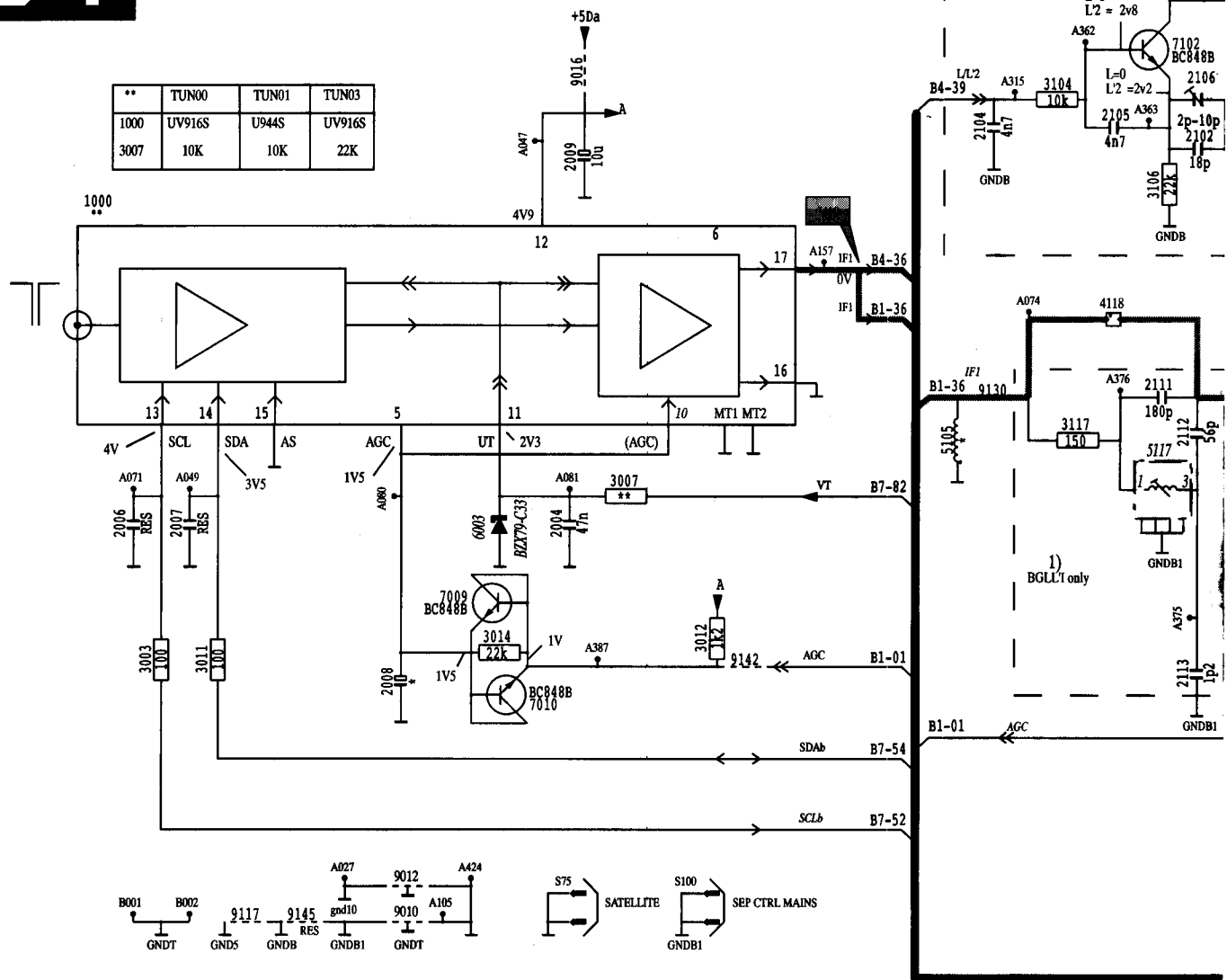
2750 A4	2764 I5	2780 H3	2786 H3	2793 I4	2790 G7	2795 F8	2799 I6	L38 F10 L39 I10
2751 A3	2765 H6	2781 A6	2787 G2	2794 G4	2791 G5	2796 I8	2798 G4	
2752 A4	2766 H6	2782 A8	2788 H3	2795 I6	2792 I5	2797 I8	2799 G5	
2753 A6	2767 H4	2783 G7	2789 H3	2796 I6	2793 I5	2798 I8	2800 G4	
2754 A6	2768 H4	2784 I7	2790 G2	2797 I7	2794 I5	2799 I8	2801 G5	
2755 A6	2769 H4	2785 I7	2791 A6	2798 I7	2795 I5	2800 I8	2802 G5	
2756 A6	2770 H4	2786 I4	2792 A6	2799 I6	2796 I5	2801 I8	2803 G5	
2757 A4	2771 F7	2787 F4	2793 A8	2800 I6	2797 I5	2802 I8	2804 G5	



1000	C 1	2006	E 1	2101	A 9	2106	B 9	2113	F 9	3007	E 5	3101	C11	3110	E13	4100	D16	5106	C14	7010	F 4	9012	H 3	9127	B 9	B1-01	F
1116	D 9	2007	E 2	2102	B 9	2108	G10	2123	F13	3011	F 2	3104	B 8	3111	D14	4101	C10	5114	B12	7100	D13	9016	B 5	9130	D 7	B2-19	F
1122	D14	2008	F 3	2103	F12	2109	F11	2124	C14	3012	F 5	3105	A 9	3112	D13	4118	C 8	5117	D 9	7102	B 9	9100	C13	9142	F 6	B4-36	F
1123	C14	2009	B 4	2104	B 7	2111	D 9	2129	C12	3014	F 4	3106	C 9	3117	D 8	5100	E14	6003	E 4	7119	D10	9116	D15	9145	H 3	B4-39	F
2004	E 4	2100	C11	2105	B 8	2112	D 9	3003	F 1	3100	B11	3109	F12	3119	D15	5105	D 7	7009	F 4	9010	H 3	9117	H 2	9146	E10	B5-19	F

B 1 TUNER + IF (BIMOS-IC)

**	TUN00	TUN01	TUN03
1000	UV916S	U944S	UV916S
3007	10K	10K	22K

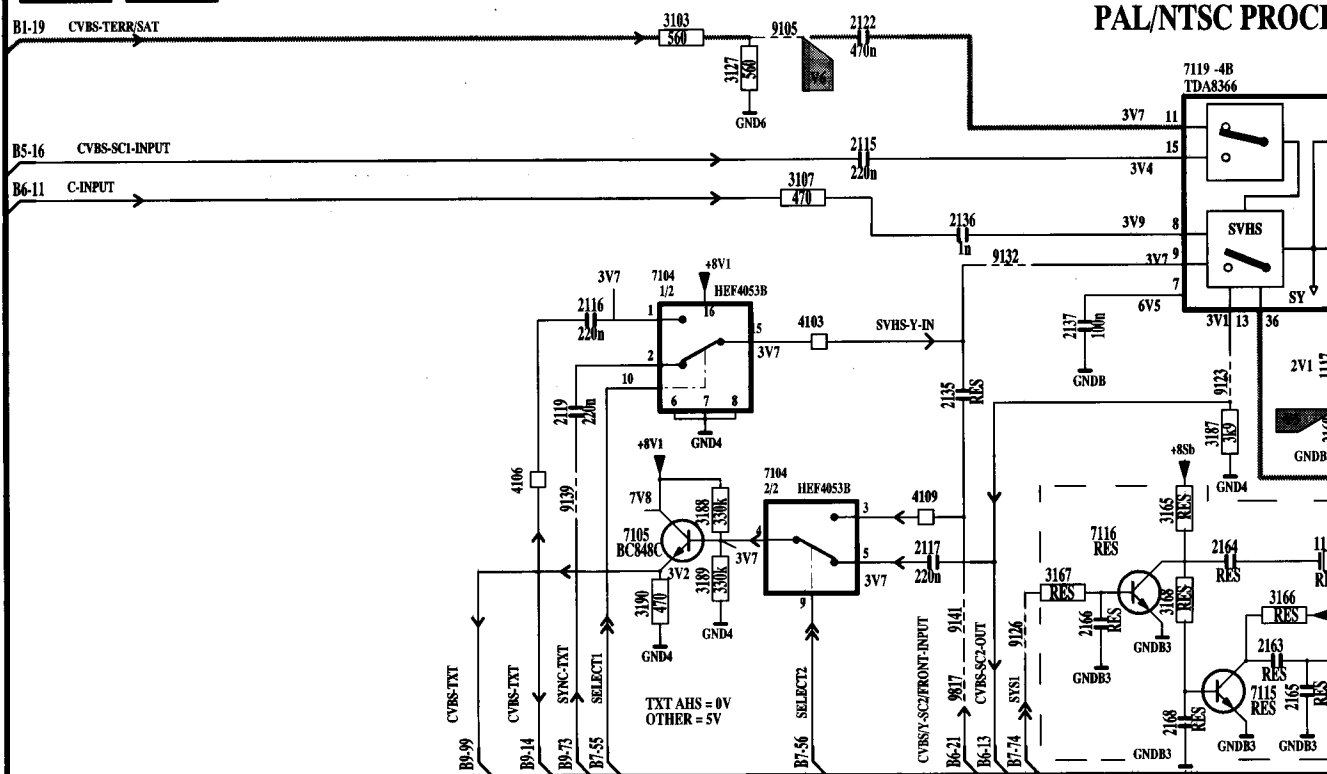


→ = 0V
OSC_B1.CDR

B2

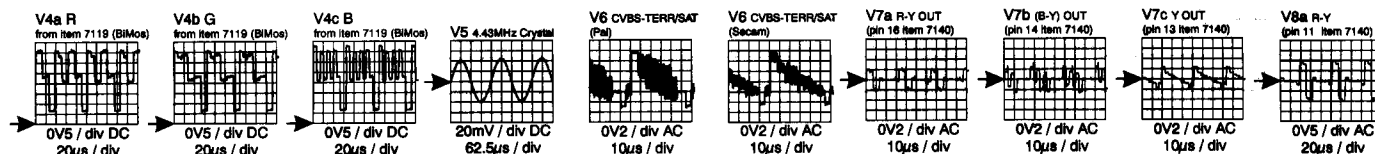
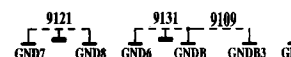
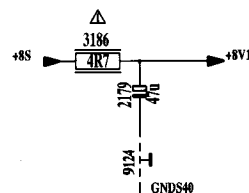
VIDEO PROCESSING (BIMOS-IC)

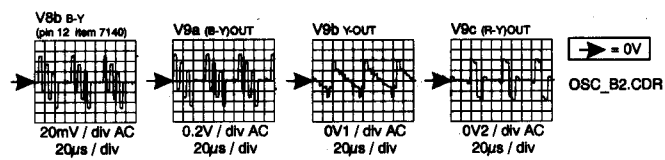
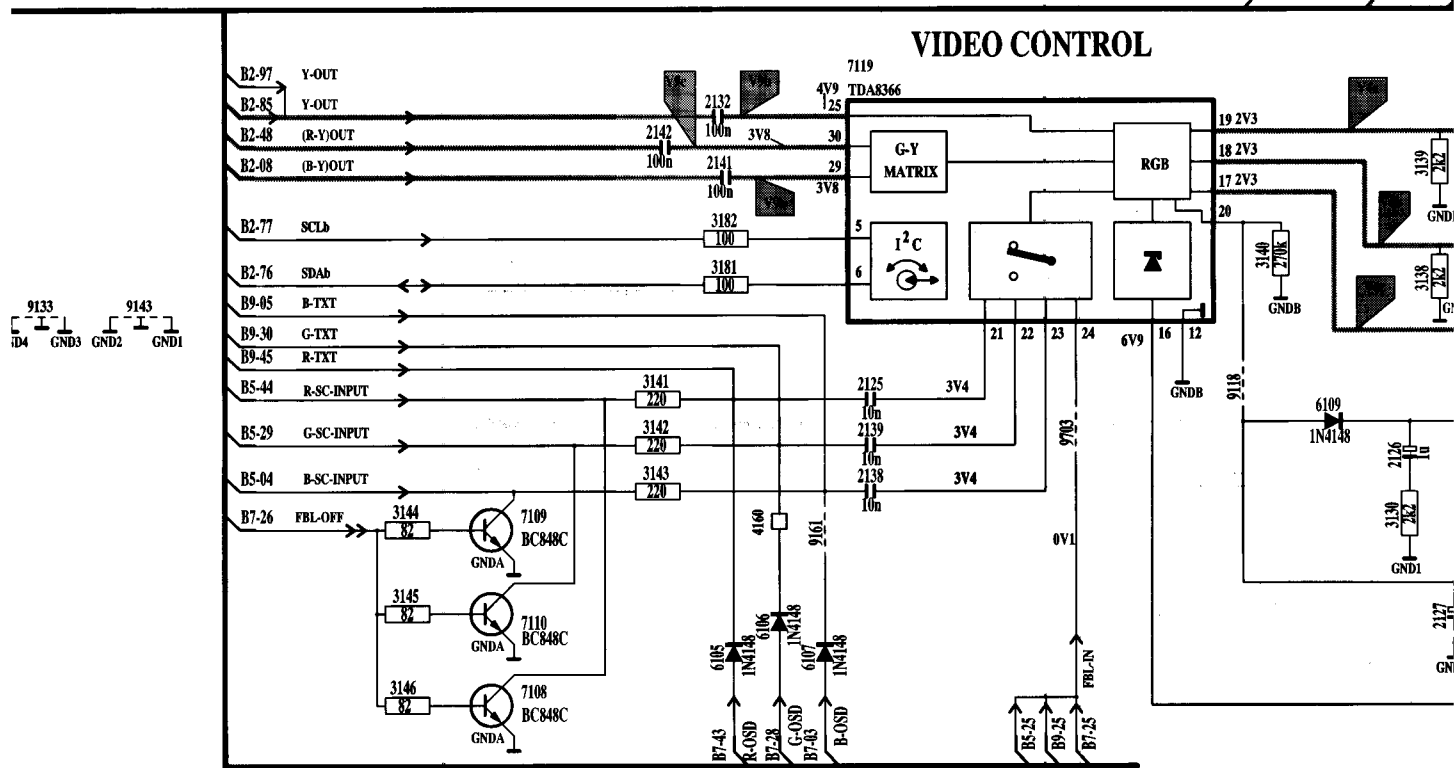
PAL/NTSC PROC

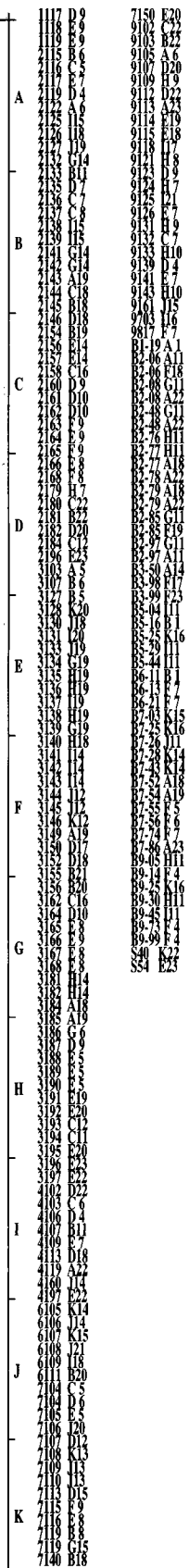
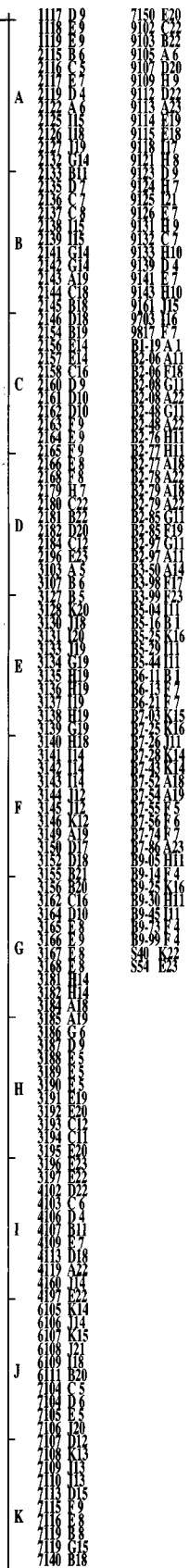


*	CTI/HIST PCT 00	BLKSTR PCT 01	NO CTI/BLK/HIST PCT 02	CTI/BLKSTR PCT 03	WS PCT 04
2180	220	-	-	220	-
2181	220	-	-	220	-
3195	-	-	1K	-	1K
3197	1k5	-	-	-	-
4102	+	+	-	+	+
4119	+	+	-	+	+
4197	+	+	-	+	+
9102	-	+	+	-	+
9103	-	+	-	-	+
9113	-	+	-	res	-

**	pal/secam STD00	pal STD02
2161	470n	100n
2162	4n7	3n9
3164	18k	100k
3193	jump	-







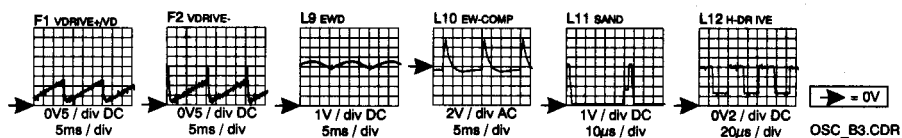
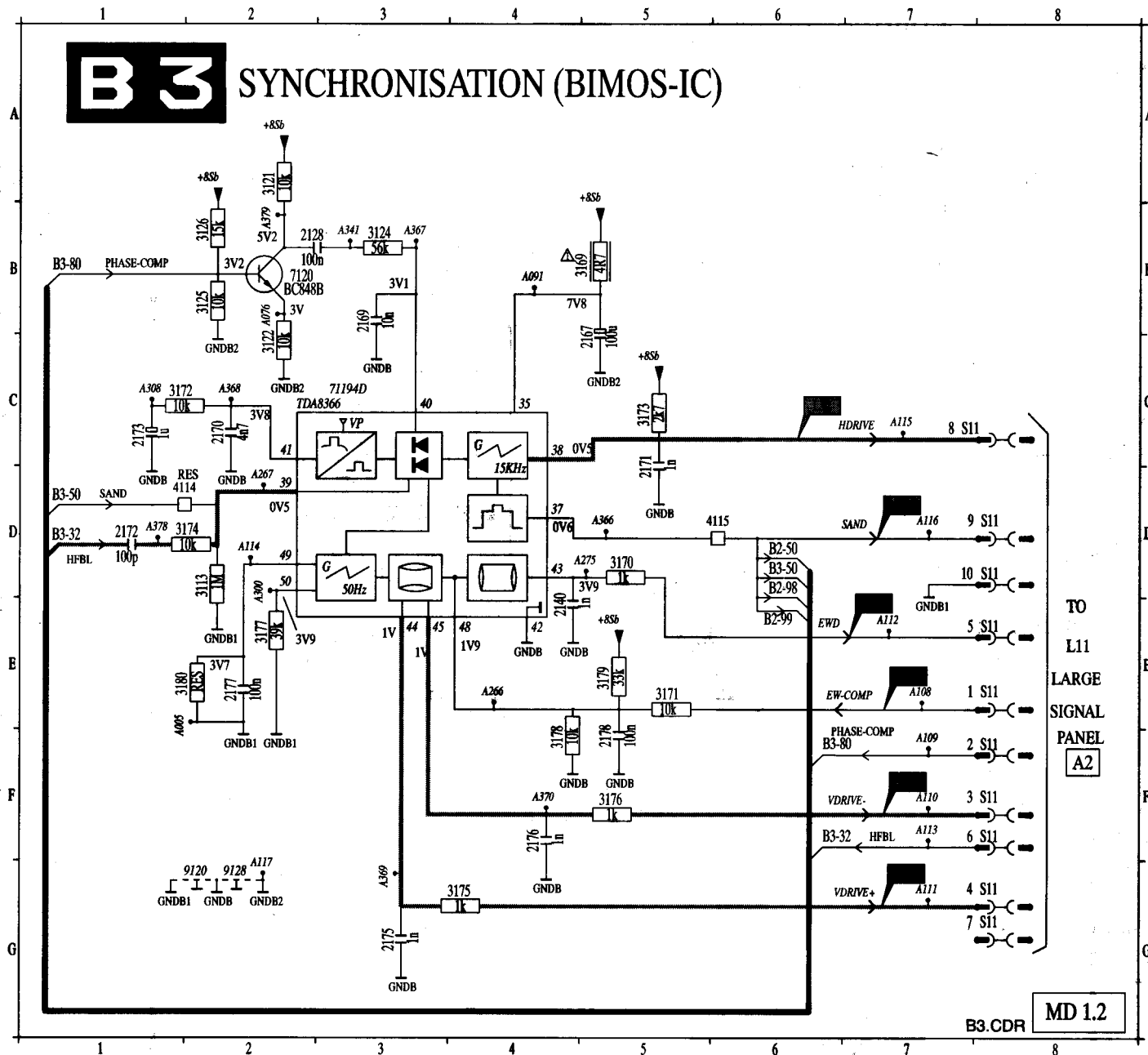
B2.EPS



Euroconnector 2 / Eurostecker 2 / Scart 2

131 F4	2847 I3	3836 I4	3855 E5	3870 B6	6836 K5	9807 C6	B8-62 F1
132 F5	2852 I5	3842 I5	3856 E6	3871 B7	6837 K6	9808 C7	B8-62 G1
133 F6	2857 I6	3847 I6	3857 E7	3872 B8	6838 K7	9809 C8	B8-62 H1
134 F7	2862 I7	3852 I7	3858 E8	3873 B9	6839 K8	9810 C9	B8-62 I1
135 F8	2867 I8	3857 I8	3859 E9	3874 B10	6840 K9	9811 C10	B8-62 J1
136 F9	2872 I9	3862 I9	3860 E10	3875 B11	6841 K10	9812 C11	B8-62 K1
137 F10	2877 I10	3867 I10	3861 E11	3876 B12	6842 K11	9813 C12	B8-62 L1
138 F11	2882 I11	3872 I11	3862 E12	3877 B13	6843 K12	9814 C13	B8-62 M1
139 F12	2887 I12	3877 I12	3863 E13	3878 B14	6844 K13	9815 C14	B8-62 N1
140 F13	2892 I13	3882 I13	3864 E14	3879 B15	6845 K14	9816 C15	B8-62 O1
141 F14	2897 I14	3887 I14	3865 E15	3880 B16	6846 K15	9817 C16	B8-62 P1
142 F15	2902 I15	3892 I15	3866 E16	3881 B17	6847 K16	9818 C17	B8-62 Q1
143 F16	2907 I16	3897 I16	3867 E17	3882 B18	6848 K17	9819 C18	B8-62 R1
144 F17	2912 I17	3902 I17	3868 E18	3883 B19	6849 K18	9820 C19	B8-62 S1
145 F18	2917 I18	3907 I18	3869 E19	3884 B20	6850 K19	9821 C20	B8-62 T1
146 F19	2922 I19	3912 I19	3870 E20	3885 B21	6851 K20	9822 C21	B8-62 U1
147 F20	2927 I20	3917 I20	3871 E21	3886 B22	6852 K21	9823 C22	B8-62 V1
148 F21	2932 I21	3922 I21	3872 E22	3887 B23	6853 K22	9824 C23	B8-62 W1
149 F22	2937 I22	3927 I22	3873 E23	3888 B24	6854 K23	9825 C24	B8-62 X1
150 F23	2942 I23	3932 I23	3874 E24	3889 B25	6855 K24	9826 C25	B8-62 Y1
151 F24	2947 I24	3937 I24	3875 E25	3890 B26	6856 K25	9827 C26	B8-62 Z1
152 F25	2952 I25	3942 I25	3876 E26	3891 B27	6857 K26	9828 C27	B8-62 A2
153 F26	2957 I26	3947 I26	3877 E27	3892 B28	6858 K27	9829 C28	B8-62 B2
154 F27	2962 I27	3952 I27	3878 E28	3893 B29	6859 K28	9830 C29	B8-62 C2
155 F28	2967 I28	3957 I28	3879 E29	3894 B30	6860 K29	9831 C30	B8-62 D2
156 F29	2972 I29	3962 I29	3880 E30	3895 B31	6861 K30	9832 C31	B8-62 E2
157 F30	2977 I30	3967 I30	3881 E31	3896 B32	6862 K31	9833 C32	B8-62 F2
158 F31	2982 I31	3972 I31	3882 E32	3897 B33	6863 K32	9834 C33	B8-62 G2
159 F32	2987 I32	3977 I32	3883 E33	3898 B34	6864 K33	9835 C34	B8-62 H2
160 F33	2992 I33	3982 I33	3884 E34	3899 B35	6865 K34	9836 C35	B8-62 I2
161 F34	2997 I34	3987 I34	3885 E35	3900 B36	6866 K35	9837 C36	B8-62 J2
162 F35	3002 I35	3992 I35	3886 E36	3901 B37	6867 K36	9838 C37	B8-62 K2
163 F36	3007 I36	3997 I36	3887 E37	3902 B38	6868 K37	9839 C38	B8-62 L2
164 F37	3012 I37	4002 I37	3888 E38	3903 B39	6869 K38	9840 C39	B8-62 M2
165 F38	3017 I38	4007 I38	3889 E39	3904 B40	6870 K39	9841 C40	B8-62 N2
166 F39	3022 I39	4012 I39	3890 E40	3905 B41	6871 K40	9842 C41	B8-62 O2
167 F40	3027 I40	4017 I40	3891 E41	3906 B42	6872 K41	9843 C42	B8-62 P2
168 F41	3032 I41	4022 I41	3892 E42	3907 B43	6873 K42	9844 C43	B8-62 Q2
169 F42	3037 I42	4027 I42	3893 E43	3908 B44	6874 K43	9845 C44	B8-62 R2
170 F43	3042 I43	4032 I43	3894 E44	3909 B45	6875 K44	9846 C45	B8-62 S2
171 F44	3047 I44	4037 I44	3895 E45	3910 B46	6876 K45	9847 C46	B8-62 T2
172 F45	3052 I45	4042 I45	3896 E46	3911 B47	6877 K46	9848 C47	B8-62 U2
173 F46	3057 I46	4047 I46	3897 E47	3912 B48	6878 K47	9849 C48	B8-62 V2
174 F47	3062 I47	4052 I47	3898 E48	3913 B49	6879 K48	9850 C49	B8-62 W2
175 F48	3067 I48	4057 I48	3899 E49	3914 B50	6880 K49	9851 C50	B8-62 X2
176 F49	3072 I49	4062 I49	3900 E50	3915 B51	6881 K50	9852 C51	B8-62 Y2
177 F50	3077 I50	4067 I50	3901 E51	3916 B52	6882 K51	9853 C52	B8-62 Z2
178 F51	3082 I51	4072 I51	3902 E52	3917 B53	6883 K52	9854 C53	B8-62 A3
179 F52	3087 I52	4077 I52	3903 E53	3918 B54	6884 K53	9855 C54	B8-62 B3
180 F53	3092 I53	4082 I53	3904 E54	3919 B55	6885 K54	9856 C55	B8-62 C3
181 F54	3097 I54	4087 I54	3905 E55	3920 B56	6886 K55	9857 C56	B8-62 D3
182 F55	3102 I55	4092 I55	3906 E56	3921 B57	6887 K56	9858 C57	B8-62 E3
183 F56	3107 I56	4097 I56	3907 E57	3922 B58	6888 K57	9859 C58	B8-62 F3
184 F57	3112 I57	4102 I57	3908 E58	3923 B59	6889 K58	9860 C59	B8-62 G3
185 F58	3117 I58	4107 I58	3909 E59	3924 B60	6890 K59	9861 C60	B8-62 H3
186 F59	3122 I59	4112 I59	3910 E60	3925 B61	6891 K60	9862 C61	B8-62 I3
187 F60	3127 I60	4117 I60	3911 E61	3926 B62	6892 K61	9863 C62	B8-62 J3
188 F61	3132 I61	4122 I61	3912 E62	3927 B63	6893 K62	9864 C63	B8-62 K3
189 F62	3137 I62	4127 I62	3913 E63	3928 B64	6894 K63	9865 C64	B8-62 L3
190 F63	3142 I63	4132 I63	3914 E64	3929 B65	6895 K64	9866 C65	B8-62 M3
191 F64	3147 I64	4137 I64	3915 E65	3930 B66	6896 K65	9867 C66	B8-62 N3
192 F65	3152 I65	4142 I65	3916 E66	3931 B67	6897 K66	9868 C67	B8-62 O3
193 F66	3157 I66	4147 I66	3917 E67	3932 B68	6898 K67	9869 C68	B8-62 P3
194 F67	3162 I67	4152 I67	3918 E68	3933 B69	6899 K68	9870 C69	B8-62 Q3
195 F68	3167 I68	4157 I68	3919 E69	3934 B70	6900 K69	9871 C70	B8-62 R3
196 F69	3172 I69	4162 I69	3920 E70	3935 B71	6901 K70	9872 C71	B8-62 S3
197 F70	3177 I70	4167 I70	3921 E71	3936 B72	6902 K71	9873 C72	B8-62 T3
198 F71	3182 I71	4172 I71	3922 E72	3937 B73	6903 K72	9874 C73	B8-62 U3
199 F72	3187 I72	4177 I72	3923 E73	3938 B74	6904 K73	9875 C74	B8-62 V3
200 F73	3192 I73	4182 I73	3924 E74	3939 B75	6905 K74	9876 C75	B8-62 W3
201 F74	3197 I74	4187 I74	3925 E75	3940 B76	6906 K75	9877 C76	B8-62 X3
202 F75	3202 I75	4192 I75	3926 E76	3941 B77	6907 K76	9878 C77	B8-62 Y3
203 F76	3207 I76	4197 I76	3927 E77	3942 B78	6908 K77	9879 C78	B8-62 Z3
204 F77	3212 I77	4202 I77	3928 E78	3943 B79	6909 K78	9880 C79	B8-62 A4
205 F78	3217 I78	4207 I78	3929 E79	3944 B80	6910 K79	9881 C80	B8-62 B4
206 F79	3222 I79	4212 I79	3930 E80	3945 B81	6911 K80	9882 C81	B8-62 C4
207 F80	3227 I80	4217 I80	3931 E81	3946 B82	6912 K81	9883 C82	B8-62 D4
208 F81	3232 I81	4222 I81	3932 E82	3947 B83	6913 K82	9884 C83	B8-62 E4
209 F82	3237 I82	4227 I82	3933 E83	3948 B84	6914 K83	9885 C84	B8-62 F4
210 F83	3242 I83	4232 I83	3934 E84	3949 B85	6915 K84	9886 C85	B8-62 G4
211 F84	3247 I84	4237 I84	3935 E85	3950 B86	6916 K85	9887 C86	B8-62 H4
212 F85	3252 I85	4242 I85	3936 E86	3951 B87	6917 K86	9888 C87	B8-62 I4
213 F86	3257 I86	4247 I86	3937 E87	3952 B88	6918 K87	9889 C88	B8-62 J4
214 F87	3262 I87	4252 I87	3938 E88	3953 B89	6919 K88	9890 C89	B8-62 K4
215 F88	3267 I88	4257 I88	3939 E89	3954 B90	6920 K89	9891 C90	B8-62 L4
216 F89	3272 I89	4262 I89	3940 E90	3955 B91	6921 K90	9892 C91	B8-62 M4
217 F90	3277 I90	4267 I90	3941 E91	3956 B92	6922 K91	9893 C92	B8-62 N4
218 F91	3282 I91	4272 I91	3942 E92	3957 B93	6923 K92	9894 C93	B8-62 O4
219 F92	3287 I92	4277 I92	3943 E93	3958 B94	6924 K93	9895 C94	B8-62 P4
220 F93	3292 I93	4282 I93	3944 E94	3959 B95	6925 K94	9896 C95	B8-62 Q4
221 F94	3297 I94	4287 I94	3945 E95	3960 B96	6926 K95	9897 C96	B8-62 R4
222 F95	3302 I95	4292 I95	3946 E96	3961 B97	6927 K96	9898 C97	B8-62 S4
223 F96	3307 I96	4297 I96	3947 E97	3962 B98	6928 K97	9899 C98	B8-62 T4
224 F97	3312 I97	4302 I97	3948 E98	3963 B99	6929 K98	9900 C99	B8-62 U4
225 F98	3317 I98	4307 I98	3949 E99	3964 B100	6930 K99	9901 C100	B8-62 V4
226 F99	3322 I99	4312 I99	3950 E100	3965 B101	6931 K100	9902 C101	B8-62 W4
227 F100	3327 I100	4317 I100	3951 E101	3966 B102	6932 K101	9903 C102	B8-62 X4
228 F101	3332 I101	4322 I101	3952 E102	3967 B103	6933 K102	9904 C103	B8-62 Y4
229 F102	3337 I102	4327 I102	3953 E103	3968 B104	6934 K103	9905 C104	B8-62 Z4
230 F103	3342 I103	4332 I103	3954 E104	3969 B105	6935 K104	9906 C105	B8-62 A5
231 F104	3347 I104	4337 I104	3955 E105	3970 B106	6936 K105	9907 C106	B8-62 B5
232 F105	3352 I105	4342 I105	3956 E106	3971 B107	6937 K106	9908 C107	B8-62 C5
233 F106	3357 I106	4347 I106	3957 E107	3972 B108	6938 K107	9909 C108	B8-62 D5
234 F107	3362 I107	4352 I107	3958 E108	3973 B109	6939 K108	9910 C109	B8-62 E5
235 F108	3367 I108	4357 I108	3959 E109	3974 B110	6940 K109	9911 C110	B8-62 F5
236 F109	3372 I109	4362 I109	3960 E110	3975 B111	6941 K110	9912 C111	B8-62 G5
237 F110	3377 I110	4367 I110	3961 E111	3976 B112	6942 K111	9913 C112	B8-62 H5
238 F111	3382 I111	4372 I111	3962 E112	3977 B113	6943 K112	9914 C113	B8-62 I5
239 F112	3387 I112	4377 I112	3963 E113	3978 B114	6944 K113	9915 C114	B8-62 J5
240 F113	3392 I113	4382 I113	3964 E114	3979 B115	6945 K114	9916 C115	B8-62 K5
241 F114	3397 I114	4387 I114	3965 E115	3980 B116	6946 K115	9917 C116	B8-62 L5
242 F115	3402 I115	4392 I115	3966 E116	3981 B117	6947 K116	9918 C117	B8-62 M5
243 F116	3407 I116	4397 I116	3967 E117	3982 B118	6948 K117	9919 C118	B8-62 N5
244 F117	3412 I117	4402 I117	3968 E118	3983 B119	6949 K118	9920 C119	B8-62 O5
245 F118	3417 I118	4407 I118	3969 E119	3984 B120	6950 K119	9921 C120	B8-62 P5
246 F119	3422 I119	4412 I119	3970 E120	3985 B121	6951 K120	9922 C121	B8-62 Q5
247 F120	3427 I120	4417 I120	3971 E121	3986 B122	6952 K121	9923 C122	B8-62 R5
248 F121	3432 I121	4422 I121	3972 E122	3987 B123	6953 K122	9924 C123	B8-62 S5
249 F122	3437 I122	4427 I122	3973 E123	3988 B124	6954 K123	9925 C124	B8-62 T5
250 F123	3442 I123	4432 I123	3974 E124	3989 B125	6955 K124	9926 C125	B8-62 U5
251 F124	3447 I124	4437 I124	3975 E125	3990 B126	6956 K125	9927 C126	B8-62 V5
252 F125	3452 I125	4442 I125	3976 E126	3991 B127	6957 K126	9928 C127	B8-62 W5
253 F126	3457 I126	4447 I126	3977 E127	3992 B128	6958 K127	9929 C128	B8-62 X5
254 F127	3462 I127	4452 I127	3978 E128	3993 B129	6959 K128	9930 C129	B8-62 Y

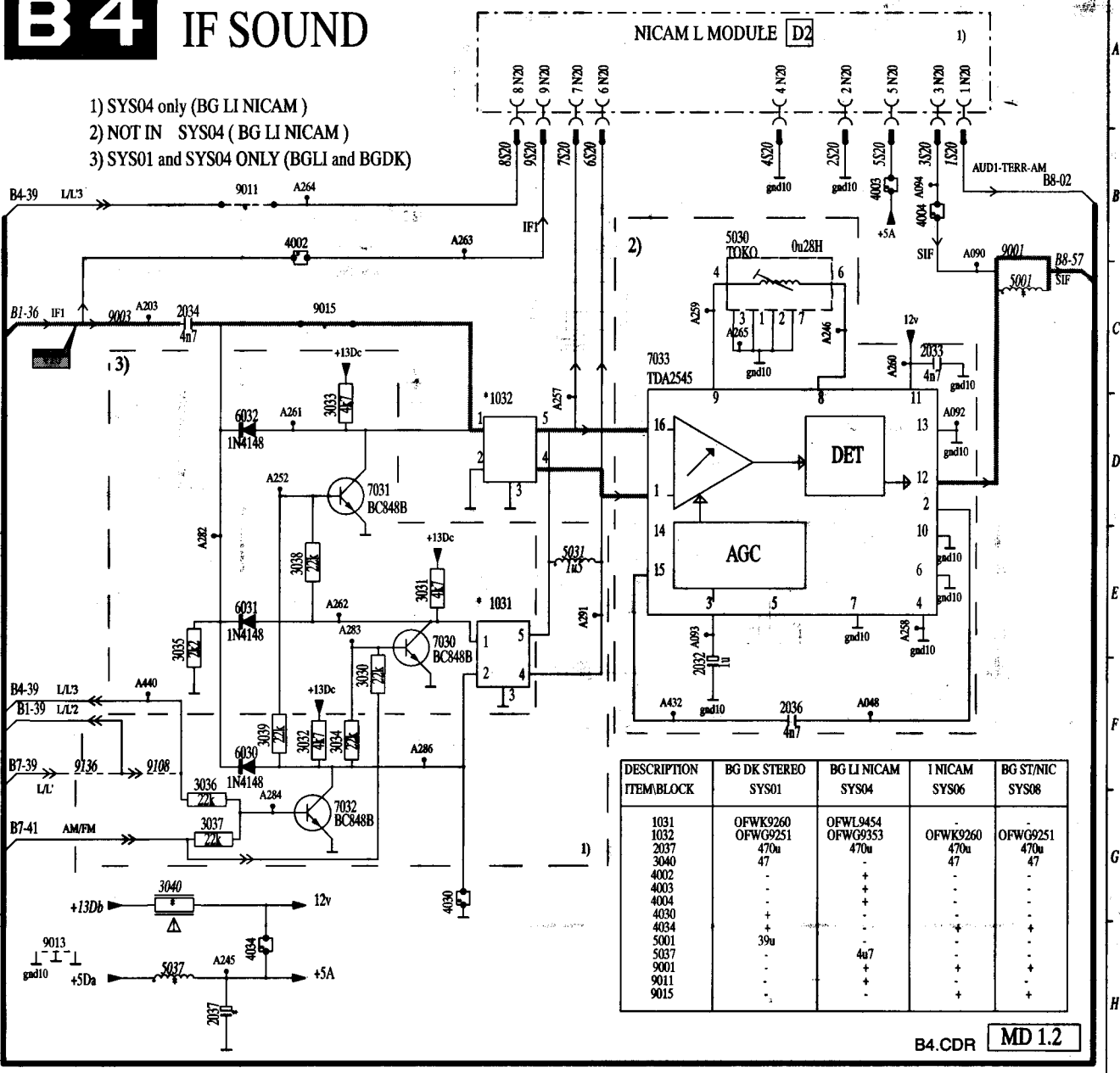
2128 B 2	2173 C 1	3122 C 2	3172 C 1	3179 E 5	9128 G 2	B3-80 F 6
2140 B 4	3175 G 3	3174 C 3	3174 C 2	3180 E 2	B2-50 D 6	S11 C 7
2167 B 5	3176 E 4	3175 C 4	3175 C 4	4114 D 2	B3-32 D 2	
2169 B 5	3177 E 5	3176 E 5	3176 E 5	4115 D 6	B3-50 D 6	
2170 C 5	3178 F 2	3177 E 5	3177 E 5	7119 C 2	B3-50 D 6	
2171 C 5	3179 D 2	3178 F 2	3178 F 2	7120 B 2	B3-80 D 1	
2172 D 1	3121 A 2	3171 E 5	3178 F 4	9120 G 2	B3-80 B 1	



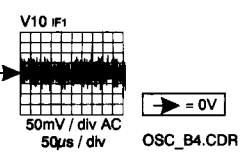
1031 E4	3030 F3	3037 G2	4030 G4	6031 E2	9003 C1	B1-39 F1	B8-57 D8
2032 D4	3031 F4	3038 G3	4031 G5	6032 E3	9004 C2	B2-39 F2	B8-57 B8
2033 E6	3032 F5	3039 G4	4032 G6	6033 E4	9005 C3	B3-39 F3	S20 B4
2034 C7	3033 F6	3040 G5	4033 G7	6034 E5	9006 C4	B4-39 F4	
2035 F7	3034 F7	3041 G6	4034 G8	6035 E6	9007 C5	B5-39 F5	
2037 H2	3036 F2	4004 B7	6030 F2	9001 B8	B1-36 C1	B8-02 B8	
						B8-39 F1	

B4 IF SOUND

- 1) SYS04 only (BG LI NICAM)
- 2) NOT IN SYS04 (BG LI NICAM)
- 3) SYS01 and SYS04 ONLY (BGLI and BGDK)

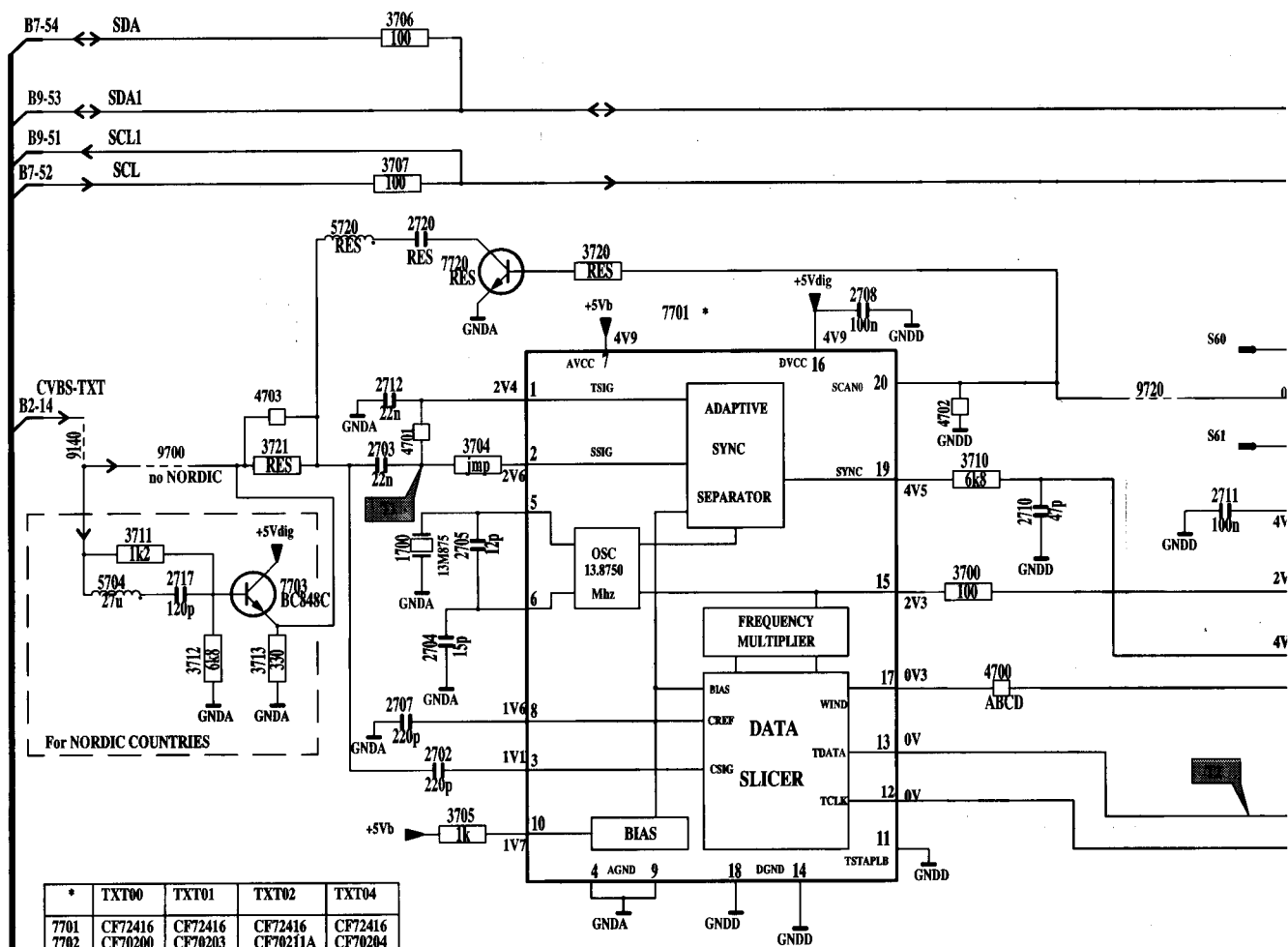
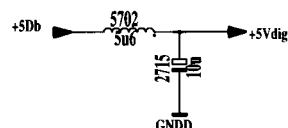


B4.CDR MD 1.2

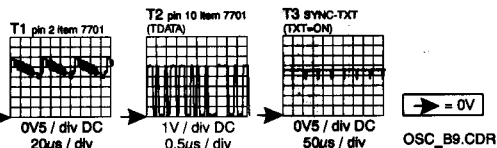


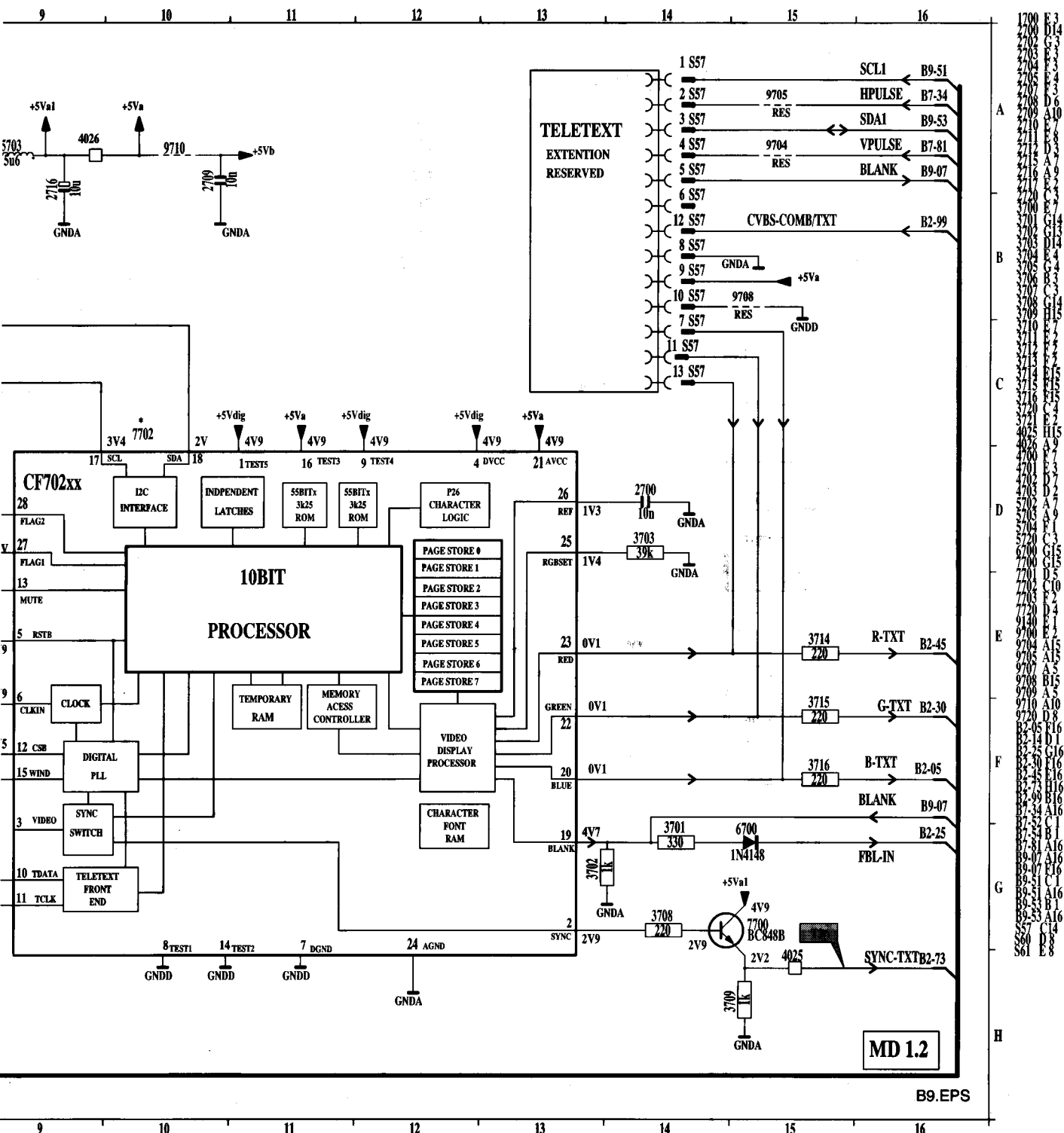
9707 9709

GNDA GNDD GNDD

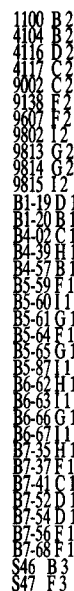


*	TXT00	TXT01	TXT02	TXT04
7701	CF72416	CF72416	CF72416	CF72416
7702	CF70200	CF70203	CF70211A	CF70204

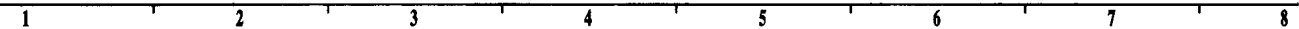




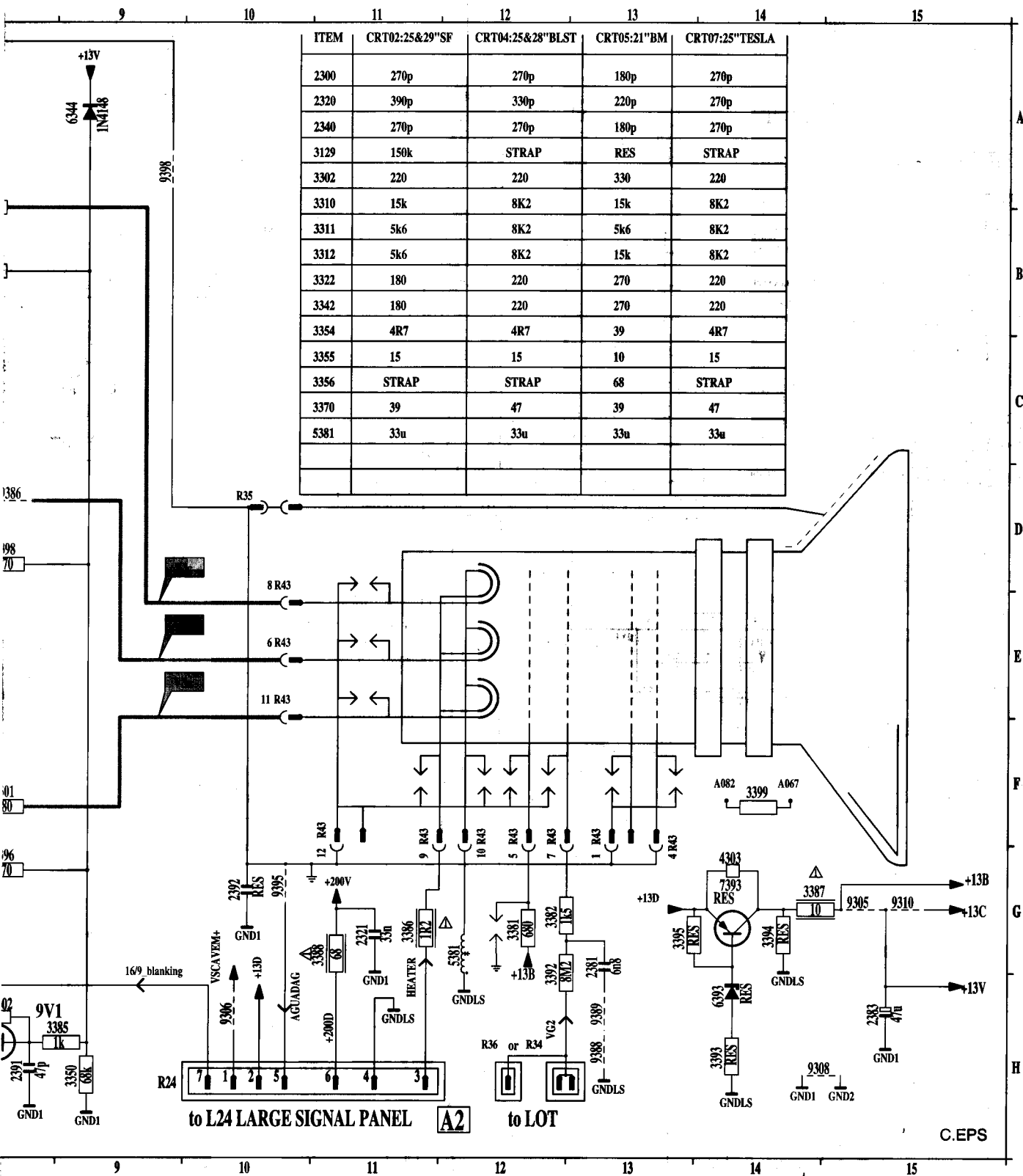
B 8



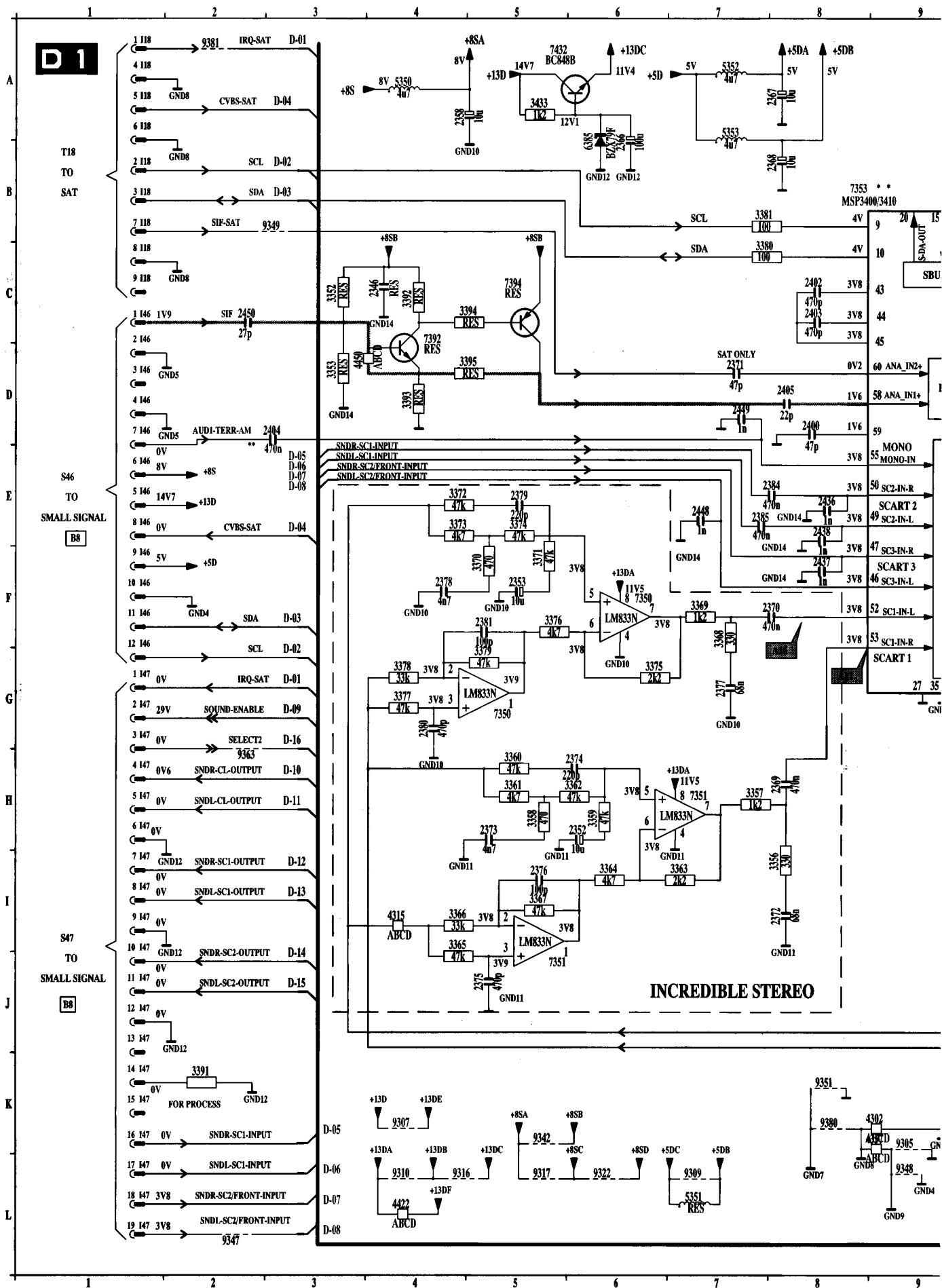
A horizontal number line with tick marks labeled 1 through 8.



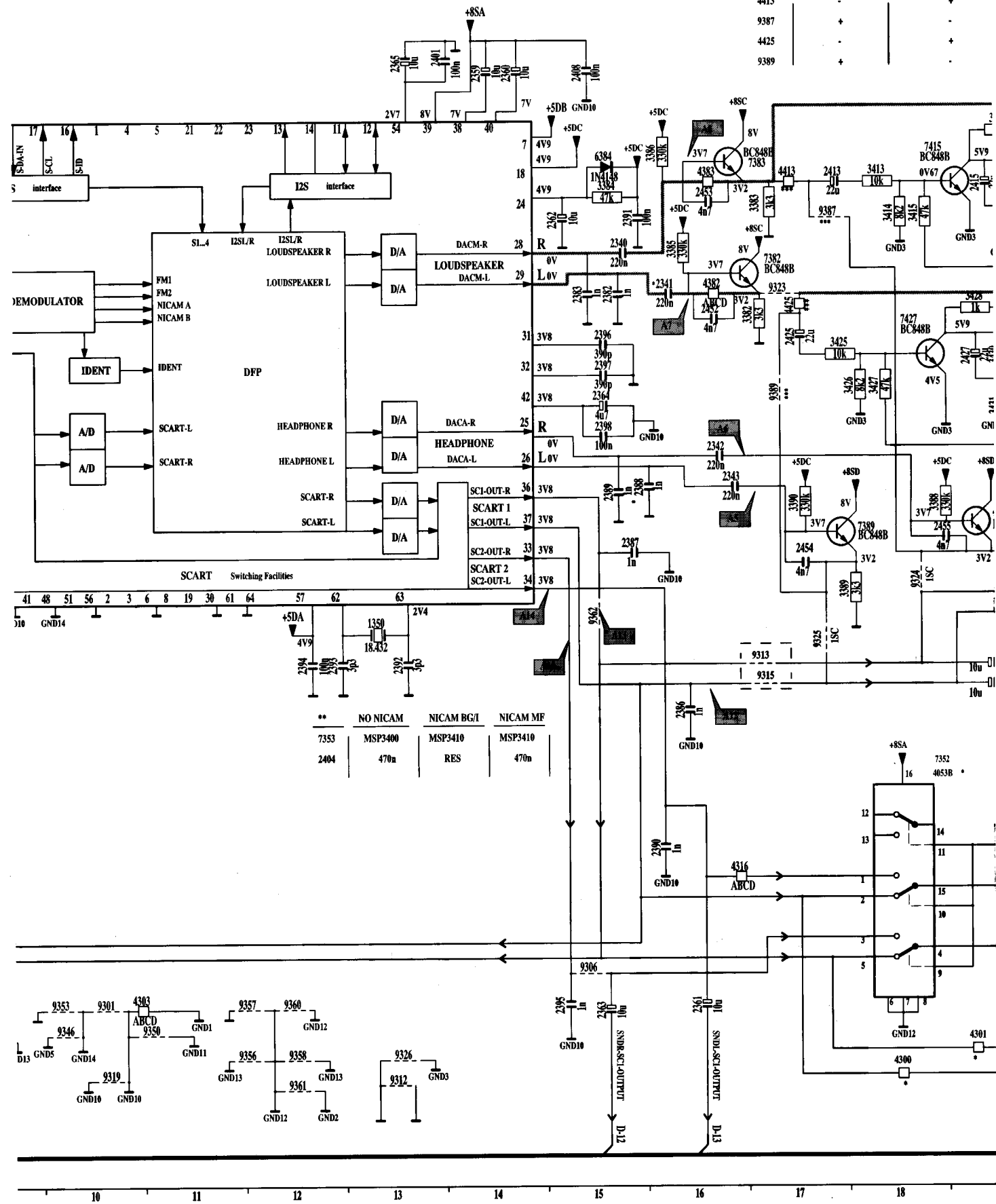
G6 7340 D6
 F7 7341 D6
 A6 7342 D7
 B7 7343 C7
 A7 7344 D3
 7345 D3
 7346 H4
 7347 H4
 7348 H4
 7349 H8
 7393 G14
 9301 E2
 9305 G15
 9306 H10
 9308 H10
 9310 G15
 9311 D3
 9312 F4
 9386 D8
 9388 H13
 9389 H13
 9391 A7
 9395 G10
 9397 E2
 9398 A9
 A067 F14
 A082 F14
 R24 H9
 R34 H12
 R35 D10
 R36 H12
 R40 A1
 R43 E10
 R169 D1

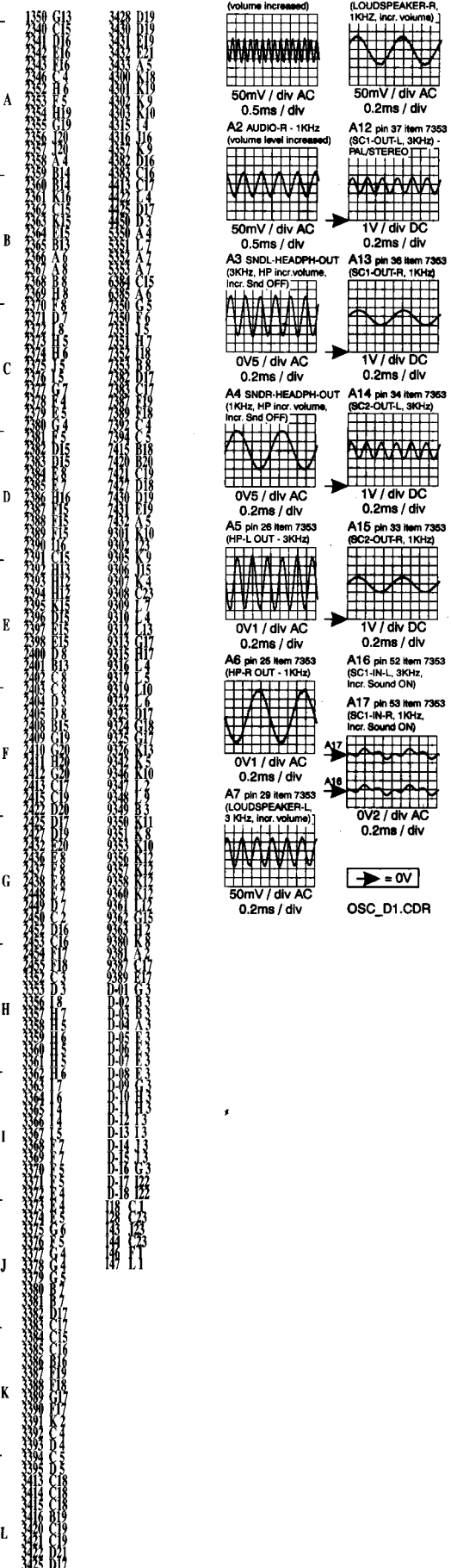
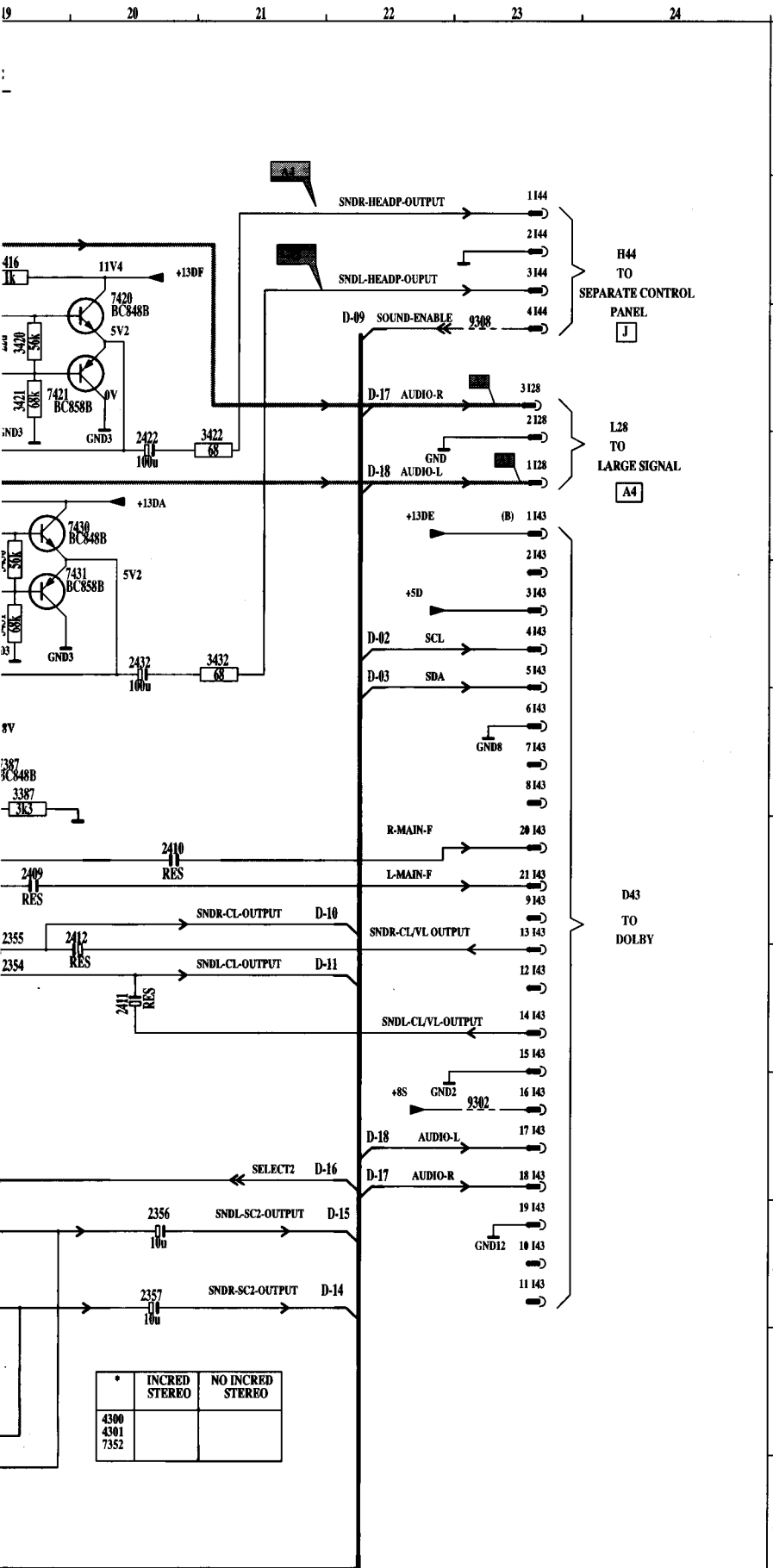


Audio module / Audio Modul / Module audio

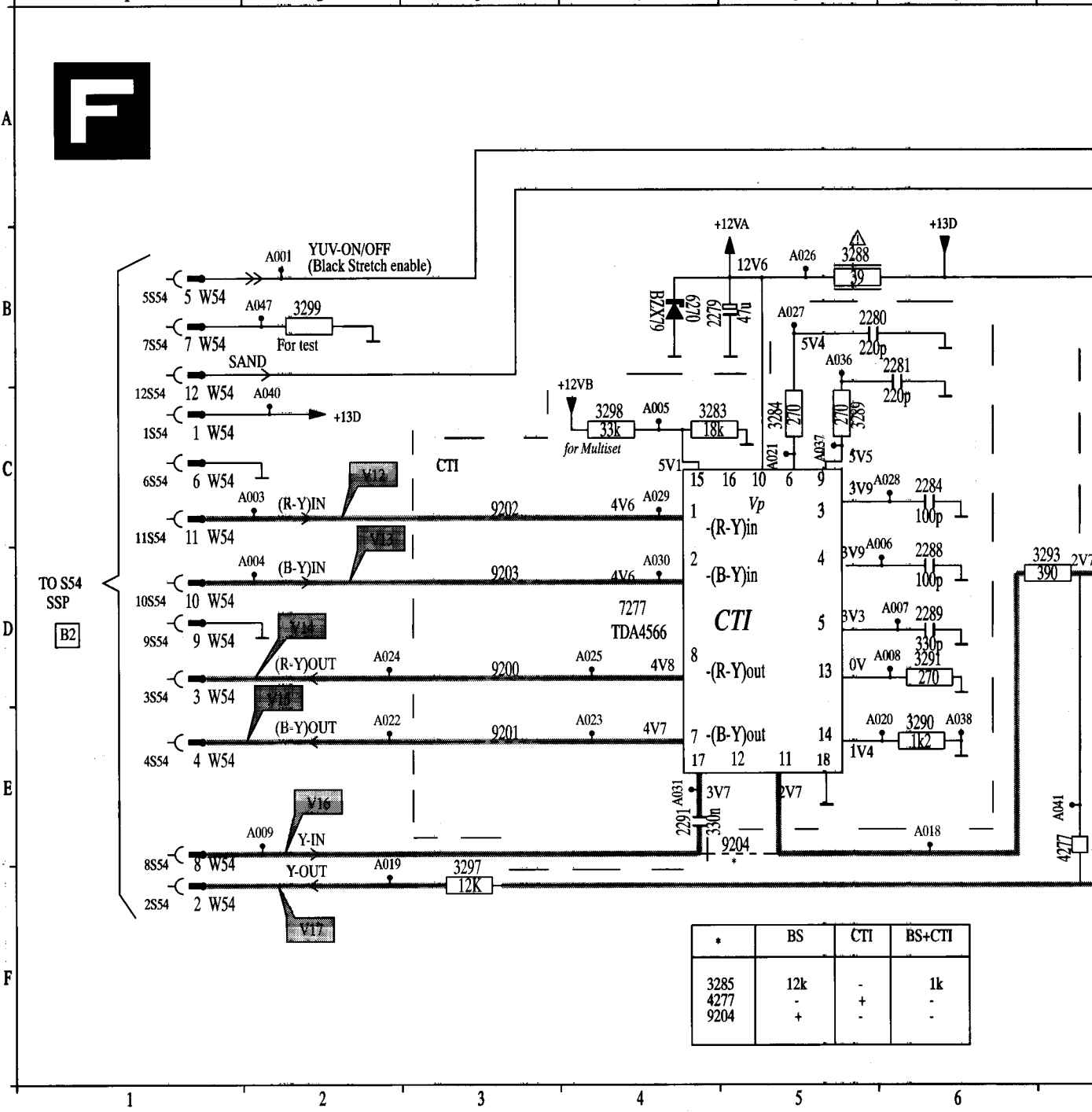


AUDIO MODULE

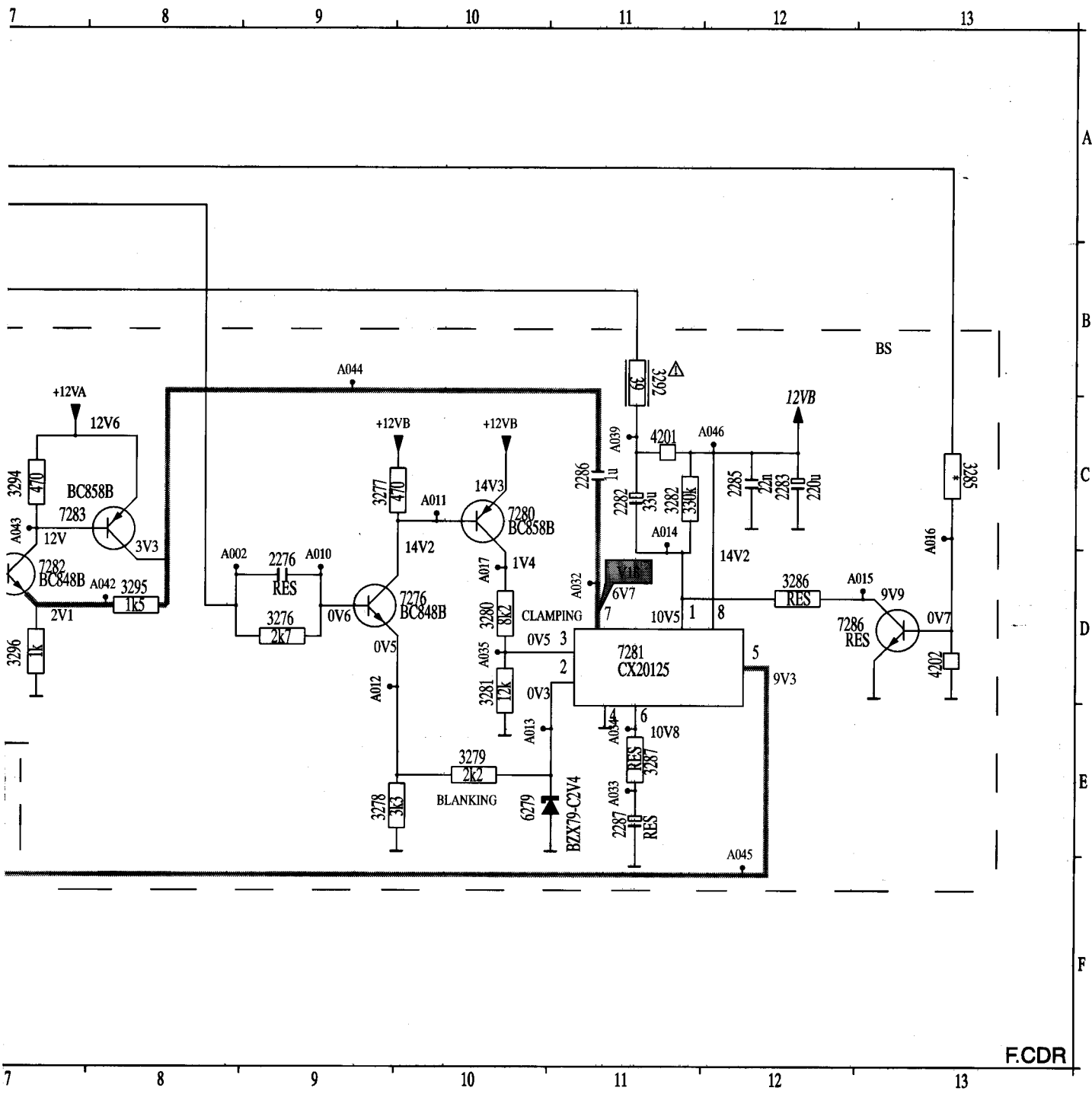


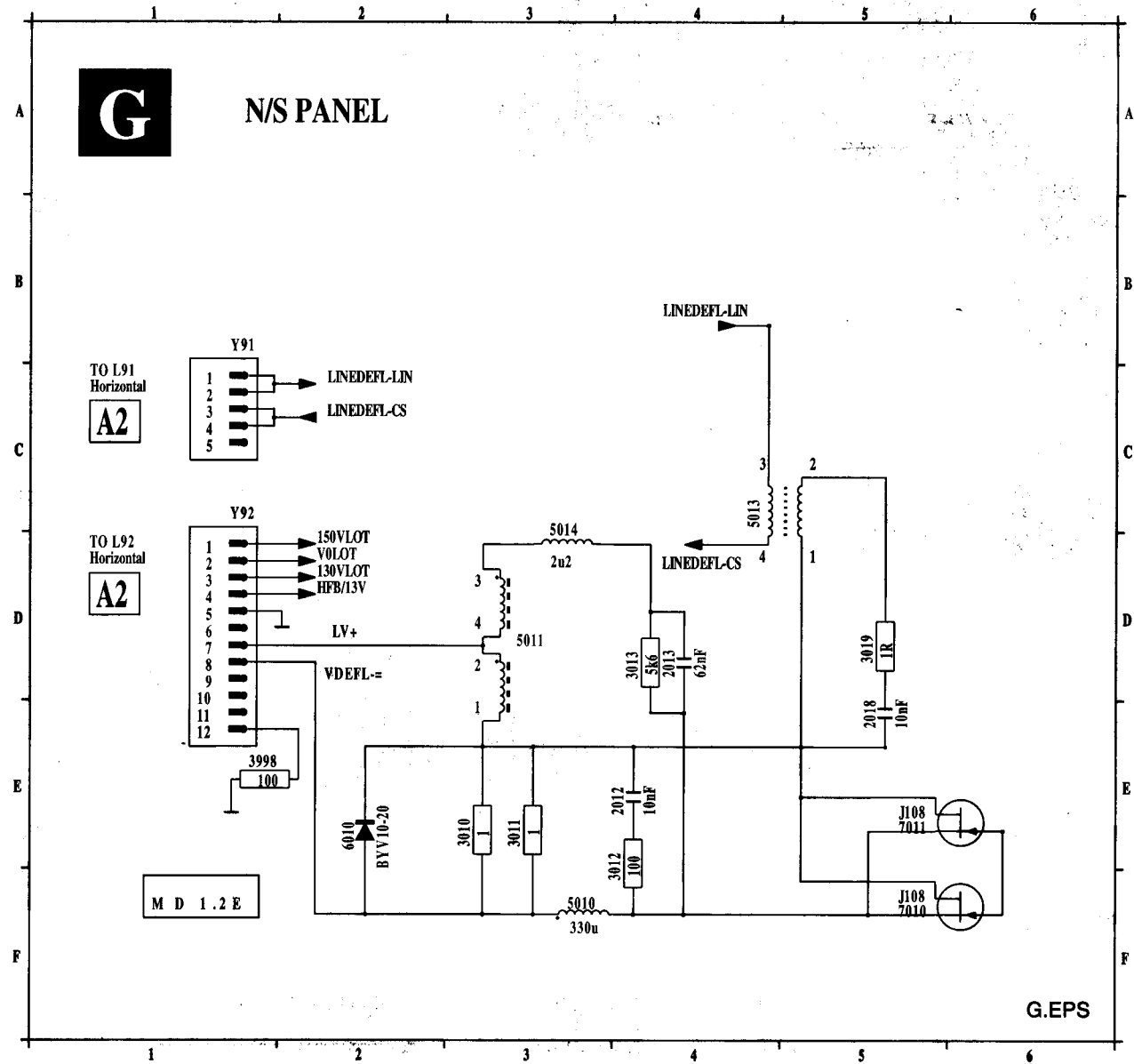


2276 D 9	2284 C 6	2291 E 4	3281 D10	3287 E11	3293 D 7	3299 B 2	7276 D10	7286 D13	W54 B 1
2279 B 5	2285 C12	2276 D 9	3282 C11	3288 B 5	3294 C 7	4201 C11	7277 D 4	9200 D 3	
2280 B 5	2286 C11	3277 C 6	3283 C 4	3289 C 5	3295 D 8	4202 D13	7280 C10	9201 E 3	
2281 B 6	2287 E11	3278 E 9	3284 C 5	3290 E 6	3296 D 7	4277 E 7	7281 D11	9202 C 3	
2282 C11	2288 D 6	3279 E10	3285 C13	3291 D 6	3297 F 3	6270 B 4	7282 D 7	9203 D 3	
2283 C12	2289 D 6	3280 D10	3286 D12	3292 B11	3298 C 4	6279 E10	7283 C 7	9204 E 5	

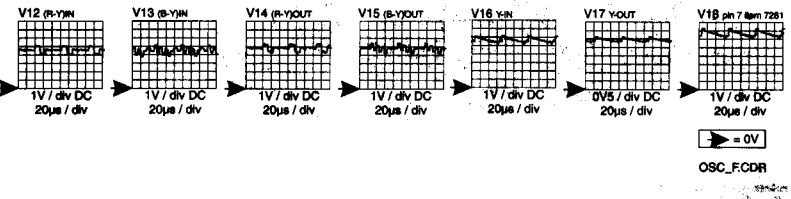


CTI/Black Stretch Platine / Platine CTI/Black Stretch

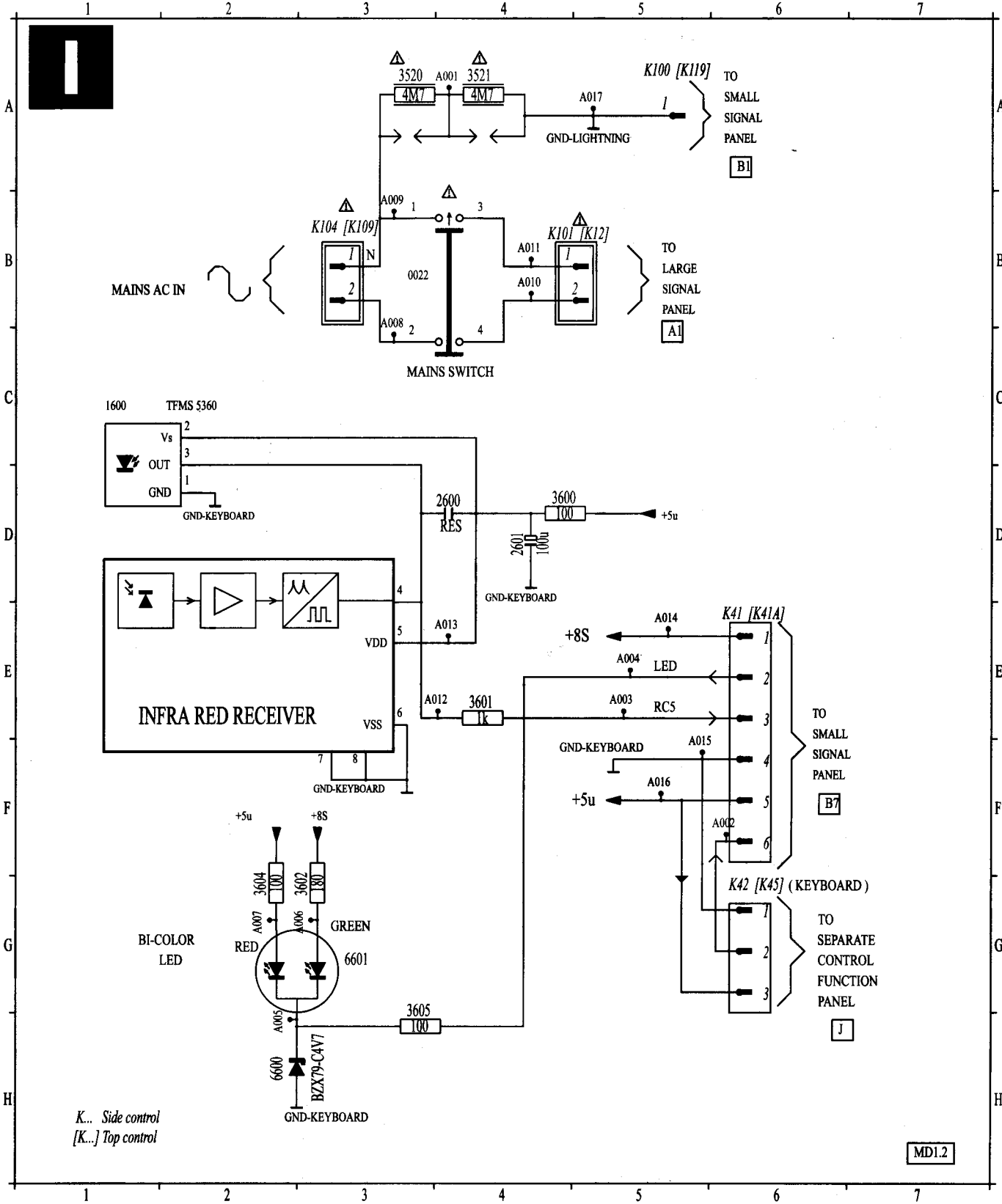




- 2012 E 4
- 2013 D 4
- 2018 E 5
- 3010 E 3
- 3011 E 3
- 3012 E 4
- 3013 D 4
- 3019 D 5
- 3998 E 1
- 5010 F 3
- 5011 D 3
- 5013 C 4
- 5014 C 3
- 6010 E 2
- 7010 F 5
- 7011 E 5
- Y91 B 1
- Y92 D 1



0022 B 3	3520 A 3	3602 G 3	6601 G 3	A004 E 5	A008 B 3	A012 E 4	A016 F 5	K104 B 3
1600 C 1	3521 A 4	3604 G 2	A001 A 4	A005 H 2	A009 B 3	A013 E 4	A017 A 5	K41 E 6
2600 D 4	3600 D 4	3605 H 3	A002 F 6	A006 G 3	A010 B 4	A014 E 5	K100 A 5	K42 G 6
2601 D 4	3601 E 4	6600 H 2	A003 E 5	A007 G 2	A011 B 4	A015 F 5	K101 B 4	





8.3.2 Geometry adjustments (for software versions M12COx-3.x and M12BAx-x.x)

Connect a pattern generator and select a geometry pattern (signal at 475.25 MHz)

- Switch to the Service Default Mode, then to the Service Alignment Mode.
- Select the desired alignment with the ↑ / ↓ keys.
- Change the selected alignment with the ← / → keys.
- A value between 0 and 63 can be selected.
- Changed values are stored immediately.

Vertical

- VP : Vertical Shift
Set this for the correct vertical position.
- VA : Picture height
Set this for the correct picture height.
- VL : Vertical linearity
Set this so that the vertical centre of the picture is at the centre of the tube.
- VS : Vertical S-correction
Set this so that the height of the squares in the top of the picture equal the height in the bottom of the picture.

Horizontal

- HD : Horizontal shift.
Set this so that the horizontal centre of the picture is on the centre of the tube.

For sets with a screen size larger than 21", the following alignments can be done as well. For 21" sets these alignments have no function.

- HW : East-west width
Align the picture width with this.
- HP : East-west parabola correction
Set this so that the vertical lines at the sides of the screen are straight.
- HC : East-west corner-correction.
Set this so that the vertical lines are straight in the corners.
- HT : Trapezium correction
Set this so that the vertical lines are as vertical as possible.

Adjustments for 16:9 sets (reserved)

16 = N 4:3 tube (options SS, D1, D2, D3 and D4 not available (blue))

16 = Y 16:9 tube (options SS, D1, D2, D3 and D4 available)

8.4 Options

- E2 : Number of Euro/Scart connectors (options N or Y)
N 1 Euro/Scart connector present
Y 2 Euro/Scart connectors present
- UO : Tuner type
N UHF/VHF tuner (item 1000 is UV916S)
Y UHF tuner (item 1000 is UV944S).
Used in the United Kingdom (/05 sets)
- LL : Nicam L (options N or Y)
N Nicam L not present
Y Nicam L present (Nicam L panel required and item 7353 is MSP3410)
- NI : Nicam (stereo) sound (options N or Y)
N Only 2CS stereo, no Nicam (item 7353 is MSP3400)
Y 2CS and Nicam stereo (item 7353 is MSP3410)
- TT : Teletext (options N or Y)
N No Teletext present
Y Teletext present
- ET : (Eastern Europe) teletext type (options N or Y)
N No Eastern Europe teletext
Y Eastern Europe teletext (/58 sets)
- 14 : 14:9 Picture format supported by 4:3 tube (options N or Y)
N Not supported
Y Supported
- HI : Histogram (not with software version M12BAx-x.x)
N No Histogram present (options VG, VA and NL not available (blue))
Y Histogram present (options VG, VA and NL available)
- M2 : MD1.1E or MD1.2E chassis (only with software version M12BAx-x.x)
N MD1.1E chassis
Y MD1.2E chassis

General: the Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 6.

Alignment conditions:

All electrical adjustments should be performed under the following conditions:

- Power supply voltage: $240V \pm 10\%$, $50Hz \pm 5\%$.
- Warm-up time: ≈ 10 minutes
- The voltages and oscillograms are measured in relation to the tuner earth.
- Test probe: $R_i > 10M\Omega$; $C_i < 2,5$ pF.

8.1 Adjustments on the large signal panel

8.1.1 95V/140V supply voltage

For 21" TV-sets

Connect a voltmeter to the cathode of D6567.

With the aid of R3532 adjust the power supply voltage to $95V \pm 0,5V$.

For sets 21"

Connect a voltmeter to the cathode of D6567.

With the aid of R3559 adjust the power supply voltage to $140V \pm 1V$.

8.1.2 VG2 adjustment

Connect a pattern generator displaying a full black picture. Switch the TV-set to the service default mode (see chapter 6). Connect an oscilloscope to the picture tube cathodes for red, green and blue (pins 6, 8 en 11 of the picture tube socket). Set the oscilloscope to DC, 50V/div and 2 ms/div. Measure the DC level of the measuring pulses at the end of the frameblanking (see fig. 8.1). Using the Vg2 potentiometer on the linetransformer (bottom potentiometer) the measuringpulse with the highest level must be set to $+160V \pm 2V$.

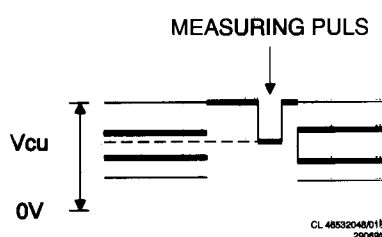


Figure 8.1

8.1.3 Focusing

Is aligned using the focuspotentiometer on the linetransformer (top potentiometer).

8.2 Alignments on the small signal panel

8.2.1 40.4 MHz IF filter (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) and a capacitor of 5,6 pF supply a 40,4 MHz signal to pin 17 of the tuner. Connect an oscilloscope to pin 1 of filter 1016. Switch on the set and select in the installation menu MANUAL; SYSTEM EUR.W. Align coil L5117 for maximum DC output voltage.

8.2.2 AFC

Switch the set to service default mode (see chapter 8).

Using a pattern generator (e.g. PM5518) supply a signal on a frequency of 475,25 MHz

Align coil L5114 for optimal picture quality.

8.2.3 Picture demodulator (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) supply a 32.95MHz signal via a 5,6 pF capacitor to pin 17 of the tuner.

Align the signal level of the generator so that the DC-voltage on pin 5 of the tuner is 5V.

Switch on the set and select in the installation menu MANUAL; SYSTEM FRANCE. Align capacitor C2106 for minimal voltage on pin 5 of the tuner.

8.2.4 RF-AGC

If the signal of a strong local transmitter is distorted, align the value for AX (AGC crossover) in the service menu (see chapter 8) until the picture is no longer distorted.

8.2.5 Audio demodulator (Not for sets with LL' and NICAM reception possibility)

Using a signal generator (e.g. PM5326) supply a 38.9MHz signal via a 5,6 pF capacitor to pin 17 of the tuner.

Connect an oscilloscope (2ms/div) to pin 12 of IC7033 (TDA3845). Align coil L5030 for minimal amplitude.

8.3 Picture tube alignments

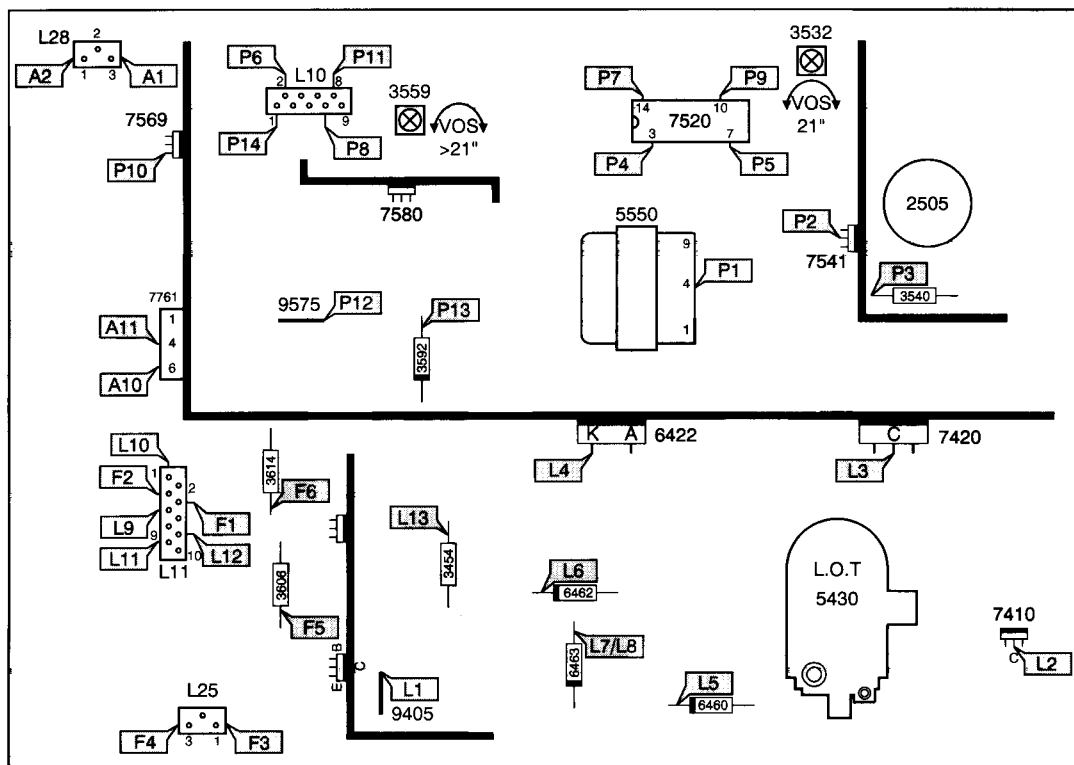
8.3.1 Whitebalance

Connect a pattern generator and select a white picture.

Set contrast to maximum (63) for 21" or to 40 for 21" tv-sets. Use the $\uparrow / \downarrow$ keys to select an alignment and the $\leftarrow / \rightarrow$ keys to change the value. Set GD to 50, RD to 57 and BD to 45.

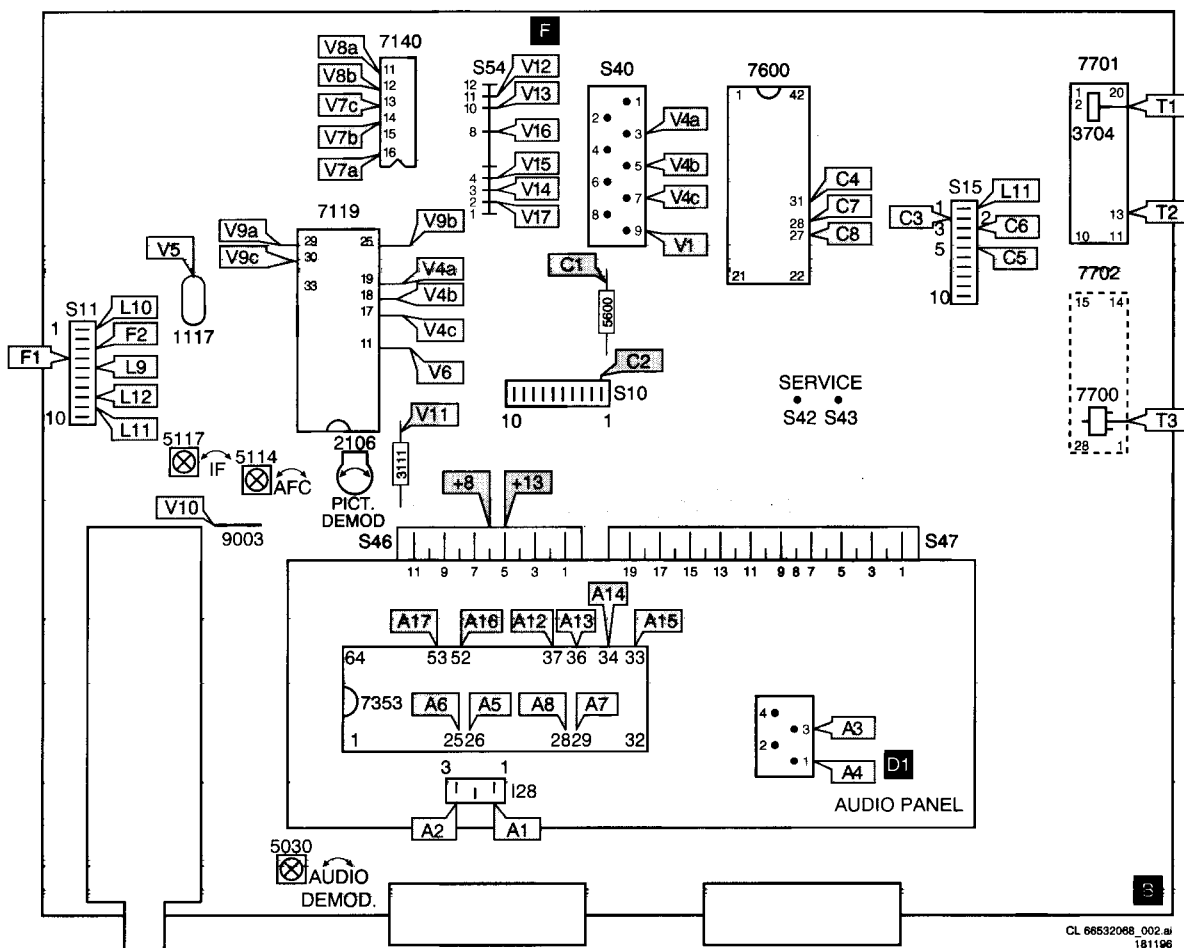
If necessary change the settings for RD and BD for a correct white balance.

Large signal panel / Groß-Signal Platine / Platine forts signaux



CL 66532061_002.ai
180896

Small signal panel / Klein-Signal Platine / Platine petits signaux



CL 66532068_002.ai
181196

11. List of abbreviations

AC	Alternating Current
AF_AMP	Audio frequency amplifier
AGC	Automatic gain control
AM	Amplitude modulation
ATS	Automatic Tuning System
AQUADAG	Earth from the CRT
AUD_TERR_AM	Audio (AM) from the antenna
AUD1_TERR_AM	Audio (AM) from the antenna
AUDIO L	Audio left
AUDIO R	Audio right
AUDIO_L	Left to DBE module
AUDIO_R	Right to DBE module
B	Blue signal to CRT panel
B_IN	Blue signal input
BC_INFO	Beam current information
B_SC_INPUT	Blue input from Euro connector
B_TXT	Blue Teletext signal
(B-Y) IN	B-Y input signal
(B-Y) OUT	Colour difference signal out
BC_INFO	Black current info from CRT panel
BG DK STEREO	System PAL BG DK; stereo sound
BG LI NICAM	System PAL BGI; NICAM sound
BG LI STEREO	The stereo signal from PAL BGI or SECAM L
BG_ST/NIC	System BG stereo with NICAM sound
Bk	Burst key pulse
BLANK	Blanking signal
BLK	Black stretch
BLKSTR	Black stretch
BLS	Black line S
BLKSCREEN	Blank screen, signal from the microcomputer
BM	Black matrix
B_OSD	Blue on screen display signal
C_AFU	Centre signal to module
C_FILTER	Chrominance filter
C_FRONT	Chrominance signal from separate controls panel
C_INPUT	Chrominance from Euro connector 2
CRT	Cathode ray tube
CRT..	Indicator for different CRT types
CTI	Colour transient improvement
CURR.SENZE	Current sense to detect current
CUT_OFF	Signal to align the black level of the RGB signals
CVBS	Composite Video Blanking Synchronisation
CVBS/Y_FRONT	CVBS or luminance from separate controls
CVBS/Y_SC2/Front_INPUT	CVBS/luminance signal from Euro connector/front input
CVBS_COMB/TXT	CVBS signal to teletext
CVBS_SC1_INPUT	CVBS signal from Euro connector 1
CVBS_SC2	CVBS signal from Euro connector 2
CVBS_SC2_OUT	CVBS outgoing signal from Euro connector 2
CVBS_SECAM	CVBS signal to SECAM IC
CVBS_TERR	CVBS from the antenna
CVBS_TERR/SAT	CVBS Signal from antenna or from satellite
CVBS_TXT	CVBS to Teletext
CVBS_SAT	CVBS signal from satellite tuner
D/A	Digital to analogue converter
DACA_L	Left output signal from DFP to headphone (independent volume controlled)
DACA_R	Right output signal from DFP to headphone (independent volume controlled)
DACAM_L	Left output signal from DFP to loudspeaker
DACAM_R	Right output signal from DFP to loudspeaker
DC	Direct Current
DEGAUSS	Degaussing
DELAY	Luminance delay
DET	Detector
DFP	Digital Sound Processor
DEM0D	Demodulator

EAR1	Earth 1 (ground)
EARTH	Earth (ground)
EAST EU	East Europe
EHT	Extra high tension
EHTINFO	Voltage related to beam current
EHTINFO1	Voltage related to beam current to CRT panel
EW	East-west
EW_COMP	East-west compensation
EWD	East-west drive
FBL_IN	Fast blanking in
FBL_OFF	Fast blanking off
FBL_PRESENT	From Euro connector, detects if there is a full page RGB at the Euro connector or OSD or a MENU from an external source
FILA_CRT	Filament for the CRT
FM	Frequency modulation
FOLDB	Foldback
FRAMEDEFL_R	Frame deflection right signal
FRONT_DETECT	Signal to detect if on separate controls panel video signals are present
FRONT_INPUT	Input from separate controls panel at front side of the TV set
G_IN	Green signal in
G_OSD	Green (on screen display) signal
G_SC_INPUT	Green input from Euro connector
G_TXT	Green Teletext signal
G-Y	Colour difference signal
G_Y MATRIX	RGB luminance matrix
GND..	Ground ..
GND_AUDIO	Ground
GND_KEYBOARD	Ground of keyboard
GND_LIGHTNING	Ground on mains module
GND_LINE_SS	Ground from SS-panel for line drive
GND_SOUND_SUPPLY	Ground to the audio amplifier
GND_VO	Ground to the deflection
GNDB	Ground B
GNDD	Ground D
G/V	Green signal to CRT panel
H	Horizontal pulse
HDRIVE	Horizontal drive signal
HEATER	Output voltage to the tube heater
HFBL	Feedback from line deflection
HPULSE	From deflection module, horizontal pulse for OSD synchronisation
HIST	Histogram
I/BG	To Sound module, selects the audio system
IDENT	Identification
I NICAM	System NICAM/PAL I
IF	Intermediate-frequency
INT/EXT	Internal or external switching
IRQ	From the Satellite or Teletext module, interrupt signal from these modules
ITT	Type indication Sound module
I ² C	Inter IC bus
I/O	Input/Output
LED	Light emitting diode
LF	Low frequency
L/L	To BIMOS module and Sound module, switches between the L and L' system
LINEDEFL_CS	Connection for geometry correction panels
LINEDEFL_LIN	Connection for geometry correction panels
LOT	Line output transformer
NC	Not connected
NICAM	Near Instantaneous Compending Audio Multiplex (digital sound system)
NICAM L	System L-NICAM
NO NORDIC	Not used in set for Nordic countries
NTSCM/BG	Switching signal
OK	Correct
OSC	Oscillator

PAL	Phase Alternating Line (colour system)
P_GND	Audio power ground
PHASE COMP	Phase compensation
PLL	Phase lock loop
POR	Power-on reset
PROT	Protection
R	Red signal to CRT panel
RC5	Remote Control signal
R-IN	Red input signal
(R-Y)IN	Colour difference (R-Y) input signal
R_OSD	Red (on screen display) signal
R_SC_INPUT	Red input from Euro connector
R_TXT	Red Teletext
R_Y OUT	Colour difference signal out
RGB	Red Green Blue
SAND	Sand castle
SAND1	Sand castle signal to Scan module
SBUS	Sound bus
SCART_L	Sound signal L from Euro connector
SCART_R	Sound signal R from Euro connector
SAT	Satellite
SCL	I ² C Clock signal
SCLi	Serial clock pulse
SDA	I ² C data
SDAa	To every other module, serial data
SDAI	Serial data pulse
SECAM	SEquentiel Couleur A Memoire (colour system)
SECAM L	System L-SECAM
SELECT	Selection signal for Euroconnectors or separate controls
SEP CTRL	Separate controls
SF	Super flat
SIF	Sound IF
SIF_SAT	Sound IF from satellite tuner
SNDL	Sound left,
SNDL_CL_OUTPUT	Left sound to CL output from sound module
SNDL_FRONT	Left sound signal from separate controls panel
SND_HEADP_OUTPUT	Output sound left to the headphone connector
SNDL_SC1_INPUT	Left sound output signal from the audio module
SNDL_SC1_OUTPUT	Output signal, sound left to Euro connector 1
SNDL_SC2_FRONT_INPUT	Input signal sound L from Euro connector 2 or front input
SNDL_SC2_OUTPUT	Output signal sound L to Euro connector 2
SNDL_SPEAKER	Sound L signal to loudspeaker
SNDR	Sound right
SNDR_CL/VL_OUTPUT	Right CL/VL audio signal from Dolby
SNDR_CL_OUTPUT	Sound right, constant level output to rear cinches
SNDR_FRONT	Sound right from separate controls panel
SNDR_HEADP_OUTPUT	Output sound right to the headphone connector
SNDR_SC1_INPUT	Input signal, sound right to Euro connector 1
SNDR_SC1_OUTPUT	Output signal sound R to Euro connector 1
SNDR_SC2_OUTPUT	Right sound to Euro connector 2 output from sound module
SNDR+ SPEAKER	Sound R signal to loudspeaker
SNDR_SUBW	Sound R signal to subwoofer
SOUND_ENABLE	To the Audio Amplifier module, switches on and off the amplifier
SOUND_SUP	Supply voltage of amplifier
STANDBY	To supply module, switches the set in and out of standby
STATUS1	Status signal from Euro connector input to control module
STATUS2	Status signal from Euro connector 2 input to control module
STD..	Indicator for different standards
SVHS	Super VHS
SYNC	Synchronisation signal
SYNC_TXT	Synchronisation signal from Teletext
SYS	System switching signal
SYS..	Indicator for different systems
1SC	One carrier sound
2SC	Two carrier sound

TCLK	Teletext clock signal
TDATA	Teletext data signal
TUNING	Tuning voltage
TUN	Indicator for different tuners
VDRIVE	Vertical drive
VDRIVE+/VD	Vertical drive positive side
V0S	140 Volt (95 Volt for 21")
VFRAME (+ or -)	Positive or negative supply voltage for frame amplifier
VG1_CRT	VG1 input to the picture tube
VG2	G2 input to the picture tube
VIF	Video intermediate frequency
VDD	Supply voltage
V0D	Voltage used in horizontal output stage
V0D1	Voltage used in horizontal output stage
V0LOT	Voltage to line output transformer
V0CONN	Voltage to Scan module
VP	Video processor
VPROT	Protection voltage
VPULSE	From deflection module, vertical pulse for OSD synchronisation
VSS	Ground
VSCAVEM	Supply voltage for SCAVEM
VT	Tuning voltage
Y_COMB	Y (or CVBS) signal to TDA8366
Y_FRONT	Luminance signal from separate controls panel
Y_OUT	Luminance signal out
YUV_ON/OFF	To Histogram/black stretch module, switch on & off
UPR	Indicator for different control systems
WEST-EU	West Europe
21" EUR	21" Europe
+	Present, in diversity tables
-	Not present in diversity tables

3889 4822 051 20224 220k 5% 0.1W

5030 4822 157 63068 0.28μH
 5031 4822 156 21719 1.5μH 5%
 5037 4822 157 53139 4.7μH
 5100 4822 157 60123 6.8μH
 5105 4822 157 60119 1.2μH (BG/BGLI)
 5105 4822 157 63065 0.68μH (BGLI)
 5106▲ 4822 157 51462 10μH
 5114 4822 157 63068 0.28μH
 5117 4822 157 53539 0.27μH 5%
 5600 4822 157 51216 5.6μH

5601 4822 157 70826 2.4μH
 5614 4822 157 53066 15μH 10%
 5652 4822 157 71853 27U 5%
 5702 4822 157 51216 5.6μH
 5703 4822 157 51216 5.6μH

6003 4822 130 34142 BZX79-C33
 6030▲ 4822 130 30621 1N4148
 6031▲ 4822 130 30621 1N4148
 6032▲ 4822 130 30621 1N4148
 6105▲ 4822 130 30621 1N4148
 6106▲ 4822 130 30621 1N4148
 6107▲ 4822 130 30621 1N4148
 6108▲ 4822 130 30621 1N4148
 6109▲ 4822 130 30621 1N4148
 6111 4822 130 34233 BZX79-F5V1

6660▲ 4822 130 30621 1N4148
 6661▲ 4822 130 30621 1N4148
 6700▲ 4822 130 30621 1N4148
 6800 4822 130 34379 BZX79-C27
 6801 4822 130 34379 BZX79-C27
 6830▲ 4822 130 31983 BAT85
 6835 4822 130 34379 BZX79-C27
 6836 4822 130 34379 BZX79-C27
 6840 4822 130 34379 BZX79-C27
 6841 4822 130 34379 BZX79-C27

6850 4822 130 34379 BZX79-C27



7009▲ 5322 130 41982 BC848B
 7010▲ 5322 130 41982 BC848B
 7030▲ 5322 130 41982 BC848B
 7031▲ 5322 130 41982 BC848B
 7032▲ 5322 130 41982 BC848B
 7033 4822 209 81878 TDA2545A/V4
 7100▲ 5322 130 41982 BC848B
 7102▲ 5322 130 41982 BC848B
 7104 5322 209 10576 HEF4053BP
 7105 5322 130 42136 BC848C

7106 5322 130 41983 BC858B
 7108 5322 130 42136 BC848C
 7109 5322 130 42136 BC848C
 7110 5322 130 42136 BC848C
 7113 4822 209 90129 TDA8395P/N2
 7119 4822 209 14927 TDA8366/N4
 7120▲ 5322 130 41982 BC848B
 7140 4822 209 12635 TDA4665/V4
 7150▲ 5322 130 41982 BC848B
 7600 4822 900 10964 μP M12CO1-4.0

7600 4822 900 10971 μP M12CO2-4.0
 7600 See also Product Survey
 7601▲ 5322 130 41982 BC848B
 7604▲ 5322 130 41982 BC848B
 7605▲ 5322 130 41982 BC848B
 7608▲ 5322 130 41982 BC848B
 7610 5322 130 42136 BC848C
 7660 5322 130 42136 BC848C
 7685 4822 209 14928 ST24W16B6
 7693 5322 130 41983 BC858B
 7700▲ 5322 130 41982 BC848B

7701 4822 209 90963 CF72416
 7702 4822 209 14889 CF70200E
 7702 4822 209 90964 CF70203NW
 7805 4822 130 40937 BC548B
 7826▲ 5322 130 41982 BC848B
 7830 5322 130 42136 BC848C
 7850▲ 5322 130 41982 BC848B
 7851 5322 130 41983 BC858B
 7867▲ 5322 130 41982 BC848B
 7875 5322 209 10576 HEF4053BP

CRT PANEL [C]

Various

1065 4822 212 10953 CRT 21" BM
 1065 4822 212 10922 CRT 25/29" SF
 4822 265 10742 7P conn. R24
 4822 265 41451 9P conn. R40
 4822 255 70261 Socket Pict. tube



2300 4822 122 33216 270pF 5% 50V
 2300 4822 122 33575 220pF 5% 50V
 2320▲ 4822 122 33172 390pF 5% 50V
 2320 4822 122 33216 270pF 5% 50V
 2321 4822 121 41545 0.033μF 10% 250V
 2340 4822 122 33216 270pF 5% 50V
 2340 4822 122 33575 220pF 5% 50V
 2360 4822 124 81029 100μF 20% 25V
 2381 4822 121 70642 6.8nF 1600V
 2383▲ 4822 124 40433 47pF 20% 25V

2391 5322 122 32452 47pF 5% 63V



3129 4822 050 13904 390k 1% 0.4W
 3129 4822 116 52245 150k 5% 0.5W
 3132 4822 116 83874 220k 5% 0.5W
 3300 4822 053 12103 10k 5% 3W
 3301 4822 111 30991 680Ω 10%
 3302 4822 116 83872 220Ω 5% 0.5W
 3303 4822 116 52199 68Ω 5% 0.5W
 3304 4822 116 52195 47Ω 5% 0.5W
 3305 4822 116 52219 330Ω 5% 0.5W
 3307 4822 116 52224 470Ω 5% 0.5W

3309▲ 4822 052 10102 1k 5% 0.33W
 3310 4822 116 52244 15k 5% 0.5W
 3311 4822 116 52289 5k 5% 0.5W
 3311 4822 116 52303 8k 5% 0.5W
 3312 4822 116 52289 5k 5% 0.5W
 3320 4822 053 12103 10k 5% 3W
 3321 4822 111 30991 680Ω 10%
 3322 4822 116 52213 180Ω 5% 0.5W
 3322 4822 116 83872 220Ω 5% 0.5W
 3323 4822 116 52199 68Ω 5% 0.5W

3324 4822 116 52195 47Ω 5% 0.5W
 3325 4822 116 52219 330Ω 5% 0.5W
 3326 4822 116 52224 470Ω 5% 0.5W
 3329▲ 4822 052 10102 1k 5% 0.33W
 3340 4822 053 12103 10k 5% 3W
 3341 4822 111 30991 680Ω 10%
 3342 4822 116 52213 180Ω 5% 0.5W
 3342 4822 116 83872 220Ω 5% 0.5W
 3343 4822 116 52199 68Ω 5% 0.5W
 3344 4822 116 52195 47Ω 5% 0.5W

3345 4822 116 52219 330Ω 5% 0.5W
 3348 4822 116 52224 470Ω 5% 0.5W
 3349▲ 4822 052 10102 1k 5% 0.33W
 3350 4822 051 20683 68k 5% 0.1W
 3351 4822 116 52231 820Ω 5% 0.5W
 3352 4822 116 52231 820Ω 5% 0.5W
 3354 4822 051 20399 39Ω 5% 0.1W
 3354 4822 051 20478 40Ω 5% 0.1W
 3355▲ 4822 051 20109 10Ω 5% 0.1W
 3355 4822 051 20159 15Ω 5% 0.1W

3356 4822 051 20689 68Ω 5% 0.1W
 3356▲ 4822 051 20008 0Ω (jumper)
 3361 4822 051 20392 3k 5% 0.1W
 3370 4822 051 20399 39Ω 5% 0.1W
 3381 4822 111 30991 680Ω 10%
 3382 4822 117 11896 1k 5% 20% 0.5W
 3385 4822 051 10102 1k 2% 0.25W
 3386▲ 4822 052 10128 1k 2% 0.33W
 3387▲ 4822 052 10109 10Ω 5% 0.33W
 3388▲ 4822 052 10689 68Ω 5% 0.33W

3390 4822 051 10102 1k 2% 0.25W
 3391▲ 4822 051 20008 0Ω (jumper)
 3392 4822 053 20825 8.2M 5% 0.25W
 3396 4822 116 52224 470Ω 5% 0.5W
 3397 4822 116 52224 470Ω 5% 0.5W
 3398 4822 116 52224 470Ω 5% 0.5W
 3399 4822 051 20399 39Ω 5% 0.1W
 3399 4822 051 20478 40Ω 5% 0.1W

5381 4822 156 20915 33μH



6344▲ 4822 130 30621 1N4148

6360 4822 130 81424 BZV86-2V0



7300 4822 130 41773 BF869
 7301▲ 5322 130 41982 BC848B
 7302 4822 130 41646 BF423
 7303 4822 130 41782 BF422
 7320 4822 130 41773 BF869
 7321▲ 5322 130 41982 BC848B
 7322 4822 130 41646 BF423
 7323 4822 130 41782 BF422
 7340▲ 5322 130 41982 BC848B
 7341 4822 130 41773 BF869

7342 4822 130 41646 BF423
 7343 4822 130 41782 BF422
 7365▲ 5322 130 41982 BC848B

AUDIO MODULE [D1]

Various

4822 212 10917 Audio Mod. non-Nicam
 4822 212 10918 Audio Mod. Nicam
 4822 265 31247 3P conn. I28
 4822 265 31245 4P conn. I44
 4822 265 10419 12P conn. I46
 4822 265 10421 19P conn. I47
 1350 4822 242 10434 18,432MHz



2340 4822 126 13473 220nF 20% 50V
 2341 4822 126 13473 220nF 20% 50V
 2342 4822 126 13473 220nF 20% 50V
 2343 4822 126 13473 220nF 20% 50V
 2352▲ 4822 124 41579 10μF 20% 50V
 2353▲ 4822 124 41579 10μF 20% 50V
 2354▲ 4822 124 41579 10μF 20% 50V
 2355▲ 4822 124 41579 10μF 20% 50V
 2356▲ 4822 124 41579 10μF 20% 50V
 2357▲ 4822 124 41579 10μF 20% 50V
 2358▲ 4822 124 41579 10μF 20% 50V
 2359▲ 4822 124 41579 10μF 20% 50V
 2360▲ 4822 124 41579 10μF 20% 50V
 2361▲ 4822 124 41579 10μF 20% 50V
 2362▲ 4822 124 41579 10μF 20% 50V
 2363▲ 4822 124 41579 10μF 20% 50V
 2364 4822 124 40769 4.7μF 20% 100V
 2365▲ 4822 124 41579 10μF 20% 50V
 2366 4822 124 40255 100μF 20% 63V
 2367▲ 4822 124 41579 10μF 20% 50V
 2368▲ 4822 124 41579 10μF 20% 50V
 2369 4822 121 51252 470nF 5% 63V
 2370 4822 121 51252 470nF 5% 63V
 2372 4822 126 13805 68nF 10 16V
 2373▲ 5322 126 10223 4.7nF 10% 63V
 2374 5322 126 10794 220pF 5% 63V
 2375 5322 122 34099 470pF 10% 63V
 2376 5322 122 32531 100pF 5% 50V
 2377 4822 126 13805 68nF 10 16V

2378▲ 5322 126 10223 4.7nF 10% 63V
 2379 5322 126 10794 220pF 5% 63V
 2380 5322 122 34099 470pF 10% 63V
 2381 5322 122 32531 100pF 5% 50V
 2382▲ 5322 122 34123 1nF 10% 50V
 2383▲ 5322 122 34123 1nF 10% 50V
 2384 4822 121 51252 470nF 5% 63V
 2385 4822 121 51252 470nF 5% 63V
 2386▲ 5322 122 34123 1nF 10% 50V
 2387▲ 5322 122 34123 1nF 10% 50V
 2388▲ 5322 122 34123 1nF 10% 50V
 2389▲ 5322 122 34123 1nF 10% 50V
 2390▲ 5322 122 34123 1nF 10% 50V
 2392 5322 122 32286 3.3pF 5% 50V
 2393 5322 122 32286 3.3pF 5% 50V
 2394▲ 4822 126 10002 100nF 20% 25V
 2395▲ 5322 122 34123 1nF 10% 50V
 2396▲ 4822 122 33172 390pF 5% 50V
 2397▲ 4822 122 33172 390pF 5% 50V
 2398▲ 4822 126 10002 100nF 20% 25V
 2400 5322 122 32452 47pF 5% 63V
 2401▲ 4822 126 10002 100nF 20% 25V
 2402 5322 122 32268 470pF 10% 50V
 2403 5322 122 32268 470pF 10% 50V
 2404 4822 121 51252 470nF 5% 63V
 2405 5322 122 32658 22pF 5% 50V
 2408▲ 4822 126 10002 100nF 20% 25V
 2413 4822 124 41596 22μF 20% 50V
 2415 4822 124 41596 22μF 20% 50V
 2422 4822 124 41584 100μF 20% 10V
 2425 4822 124 41596 22μF 20% 50V
 2427 4822 124 41596 22μF 20% 50V
 2432 4822 124 41584 100μF 20% 10V
 2436 5322 126 10511 1nF 5% 50V
 2437 5322 126 10511 1nF 5% 50V

2438 5322 126 10511 1nF 5% 50V
 2448 5322 126 10511 1nF 5% 50V
 2449 5322 126 10511 1nF 5% 50V
 2450 5322 122 31946 27pF 5% 63V
 2452▲ 5322 126 10223 4.7nF 10% 63V
 2453▲ 5322 126 10223 4.7nF 10% 63V
 2454▲ 5322 126 10223 4.7nF 10% 63V
 2455▲ 5322 126 10223 4.7nF 10% 63V



3356 4822 051 20331 330Ω 5% 0.1W
 3357 4822 051 20122 1k 2% 0.1W
 3358 4822 051 20471 470Ω 5% 0.1W
 3359 4822 051 20473 47k 5% 0.1W
 3360 4822 116 52284 47k 5% 0.5W
 3361 4822 116 52283 47k 5% 0.5W
 3362 4822 051 20473 47k 5% 0.1W
 3363 4822 117 11449 2k 1% 0.1W
 3364▲ 4822 051 20472 47k 5% 0.1W
 3365 4822 051 20473 47k 5% 0.1W
 3366 4822 051 20333 33k 5% 0.1W
 3367 4822 051 20473 47k 5% 0.1W
 3368 4822 051 20331 330Ω 5% 0.1W
 3369 4822 051 20122 1k 2% 0.1W
 3370 4822 051 20471 470Ω 5% 0.1W
 3371 4822 051 20473 47k 5% 0.1W
 3372 4822 116 52284 47k 5% 0.5W
 3373 4822 116 52283 47k 5% 0.5W
 3374 4822 051 20473 47k 5% 0.1W
 3375 4822 117 11449 2k 1% 0.1W
 3376▲ 4822 051 20472 47k 5% 0.1W
 3377 4822 051 20473 47k 5% 0.1W
 3378 4822 051 20333 33k 5% 0.1W
 3379 4822 051 20473 47k 5% 0.1W
 3380 4822 116 52175 100Ω 5% 0.5W
 3381 4822 116 52175 100Ω 5% 0.5W
 3382▲ 4822 051 20332 3k 5% 0.1W
 3383▲ 4822 051 20332 3k 5% 0.1W
 3384 4822 051 20473 47k 5% 0.1W
 3385 4822 051 20334 330k 5% 0.1W
 3386 4822 051 20334 330k 5% 0.1W
 3387▲ 4822 051 20332 3k 5% 0.1W
 3388 4822 051 20334 330k 5% 0.1W
 3389▲ 4822 051 20332 3k 5% 0.1W
 3390 4822 116 52272 330k 5% 0.5W
 3391 4822 051 20563 56k 5% 0.1W
 3391 4822 051 20822 8k 2% 0.1W
 3395▲ 4822 051 20008 0Ω (jumper)
 3413 4822 117 10833 10k 1% 0.1W
 3414 4822 051 20822 8k 2% 0.1W
 3415 4822 051 20473 47k 5% 0.1W
 3416 4822 051 10102 1k 2% 0.25W
 3420 4822 051 20563 56k 5% 0.1W
 3421 4822 051 20683 68k 5% 0.1W
 3422 4822 116 52199 68Ω 5% 0.5W
 3425 4822 117 10833 10k 1% 0.1W
 3426 4822 051 20822 8k 2% 0.1W
 3427 4822 051 20473 47k 5% 0.1W
 3428 4822 051 10102 1k 2% 0.25W
 3430 4822 051 20563 56k 5% 0.1W
 3431 4822 051 20683 68k 5% 0.1W
 3432 4822 116 52199 68Ω 5% 0.5W
 3433 4822 051 20331 330Ω 5% 0.1W

5350 4822 157 53139 4.7μH
 5351▲ 4822 157 51462 10μH
 5352 4822 157 53139 4.7μH
 5353 4822 157 53139 4.7μH

6384▲ 4822 130 30621 1N4148
 6385 4822 130 34488 BZX79-F12



7350▲ 4822 209 83163 LM833N
 7351▲ 4822 209 83163 LM833N
 7352 4822 209 10576 HEF4053BP
 7353 4822 209 14894 MSP3410B-F7 (Nipam)
 7353 4822 209 90562 MSP3400-TC15 (non-Nipam)
 7382▲ 5322 130 41982 BC848B
 7383▲ 5322 130 41982 BC848B
 7387▲ 5322 130 41982 BC848B
 7389▲ 5322 130 41982 BC848B
 7415▲ 5322 130 41982 BC848B
 7420▲ 5322 130 41982 BC848B
 7421 5322 130 41983 BC858B
 7427▲ 5322 130 419

NICAM L MODULE [D2]

Various

	4822 212 10919	Nicam L Module
1000	4822 242 81436	OFWK3953M 38.9MHz



2000▲	5322 126 10223	4.7nF 10% 63V
2001	4822 126 13161	100nF 10% 25V
2002	4822 126 13473	220nF 20% 50V
2003	4822 126 13161	100nF 10% 25V
2006	4822 124 40763	2.2μF 100 V
2008	4822 124 40763	2.2μF 100 V
2009	4822 124 40763	2.2μF 100 V



3000	4822 051 20562	5k6 5% 0.1W
3002	4822 051 20471	470Ω 5% 0.1W
3003	4822 051 20223	22k 5% 0.1W



5001	4822 157 11014	Adj. coil
------	----------------	-----------



7001	4822 209 13003	TDA9811/V3
7002▲	5322 130 41982	BC848B

CTI/BS PANEL [F]

Various

	4822 212 10921	CTI/BSIstr. Module
	4822 265 10419	12P F-pin conn.



2279▲	4822 124 40433	47μF 20% 25V
2280	4822 122 33575	220pF 5% 50V
2281	4822 122 33575	220pF 5% 50V
2282	4822 124 42058	33μF 20% 50V
2283	4822 124 80791	470μF 20% 16V
2284	5322 122 32531	100pF 5% 50V
2285▲	5322 122 32654	22nF 10% 63V
2286	4822 121 51319	1μF 10% 63V
2288	5322 122 32531	100pF 5% 50V
2289	5322 122 31863	330pF 5% 50V
2291	5322 121 42661	330nF 5% 63V



3276	4822 051 20272	2k7 5% 0.1W
3277	4822 051 20471	470Ω 5% 0.1W
3278▲	4822 051 20332	3k3 5% 0.1W
3279	4822 117 11449	2k2 1% 0.1W
3280	4822 051 20822	8k2 5% 0.1W
3281	4822 117 11383	12k 1% 0.1W
3282	4822 051 20334	330k 5% 0.1W
3283	4822 051 20183	18k 5% 0.1W
3284	4822 051 20271	270Ω 5% 0.1W
3285	4822 051 10102	1k 2% 0.25W
3286▲	4822 052 10399	39Ω 5% 0.33W
3289	4822 051 20271	270Ω 5% 0.1W
3290	4822 051 20122	1k2 5% 0.1W
3291	4822 051 20271	270Ω 5% 0.1W
3292▲	4822 052 10689	68Ω 5% 0.33W
3293	4822 051 20391	390Ω 5% 0.1W
3294	4822 051 20471	470Ω 5% 0.1W
3295	4822 117 11139	1k5 1% 0.1W
3296	4822 051 10102	1k 2% 0.25W
3297	4822 117 11383	12k 1% 0.1W
3298	4822 051 20333	33k 5% 0.1W



6270	4822 130 34197	BZX79-C12
6279	4822 130 80655	BZX79-F2V4



7276▲	5322 130 41982	BC848B
7277	4822 209 14895	TDA4566/V2
7280	5322 130 41983	BC858B
7281	4822 209 30711	CX20125
7282▲	5322 130 41982	BC848B
7283	5322 130 41983	BC858B

NS PANEL [G]

Various

	4822 212 10958	NS Panel
--	----------------	----------



2012	4822 121 41857	10nF 5% 250V
2013	4822 121 10618	62nF 2% 63V
2018	4822 121 41857	10nF 5% 250V



3010	4822 116 80176	1Ω 5% 0.5W
3011	4822 116 80176	1Ω 5% 0.5W
3012	4822 116 52175	100Ω 5% 0.5W
3013	4822 116 52289	5k6 5% 0.5W
3019	4822 116 80176	1Ω 5% 0.5W
3998	4822 116 52175	100Ω 5% 0.5W



5010	4822 157 11017	330μH 10%
5011	4822 157 71033	NS corr. coil
5013▲	4822 142 40344	Driver transformer
5014	4822 157 62552	2.2μH



6011▲	4822 130 31631	BYV10-20
-------	----------------	----------



7010	4822 130 63441	FET J108
7011	4822 130 63441	FET J108

Top Control & Side IO

MAINS PANEL [I]

Various

	4822 212 10975	Mains/RC5/LED panel
0022▲	4822 276 13592	Mains switch
▲	4822 265 30389	2P conn. vert. K12
▲	4822 267 51348	2P conn. K09
	4822 265 31246	6P conn. K41A
	4822 265 10423	3P connector K45
1600	4822 212 30842	IR Rec. TFMSS360



2601	4822 124 11485	100μF 20% 16V
2604	4822 124 11486	220μF 20% 16V



3520▲	4822 053 21475	4M7 5% 0.5W
3521▲	4822 053 21475	4M7 5% 0.5W
3600	4822 116 52175	100Ω 5% 0.5W
3601	4822 116 52175	100Ω 5% 0.5W
3602	4822 116 52213	180Ω 5% 0.5W
3604	4822 116 52175	100Ω 5% 0.5W
3605	4822 116 52175	100Ω 5% 0.5W



6600	4822 130 34174	BZX79-C4V7
6601	4822 209 72895	TLUV5320 Bl.col LED

Side I/O [J]

Various

	4822 459 04021	Side IO Panel
	4822 267 31014	3.5mm headphone
	4822 256 92101	IO connections
	4822 265 41451	9P conn. H33
	4822 265 31245	4P conn. H44



2800	4822 124 41596	22μF 20% 50V
2801	4822 124 41596	22μF 20% 50V
2804	4822 122 33805	330pF 10% 63V
2805	4822 122 33805	330pF 10% 63V
2810▲	4822 122 33342	33nF 10% 63V
2811	4822 124 41643	100μF 20% 16V
2813	4822 124 41576	2.2μF 20% 50V
2832▲	4822 122 33177	10nF 20% 50V
2834▲	4822 122 33177	10nF 20% 50V



3801	4822 116 52202	82Ω 5% 0.5W
3802	4822 116 52201	75Ω 5% 0.5W
3803	4822 116 80175	4k7 5% 0.5W
3804	4822 116 80175	4k7 5% 0.5W
3805	4822 116 83874	220k 5% 0.5W
3806	4822 116 83874	220k 5% 0.5W
3807	4822 116 52175	100Ω 5% 0.5W
3808	4822 051 20101	100Ω 5% 0.1W
3809	4822 116 52219	330Ω 5% 0.5W
3810	4822 051 20824	820k 5% 0.1W
3811	4822 051 20393	39k 5% 0.1W
3813▲	4822 051 20008	0Ω (jumper)
3814▲	4822 051 20472	4k7 5% 0.1W
3830	4822 116 80173	10k 5% 0.5W
3840	4822 116 52257	22k 5% 0.5W
3842	4822 116 80173	10k 5% 0.5W
3998	4822 116 52219	330Ω 5% 0.5W
3999	4822 117 10353	150Ω 1% 0.1W



6803	4822 130 82346	LLZ-C27
6804	4822 130 82346	LLZ-C27
6805	4822 130 82346	LLZ-C27
6806	4822 130 82346	LLZ-C27



7811	5322 130 41983	BC858B
7812	5322 130 41983	BC858B
7840▲	5322 130 41982	BC848B

TOP CONTROL [J]

Various

	4822 212 10976	Top control panel
	4822 276 13396	Push button
	4822 265 10449	3P conn. H45



3630	4822 116 52238	12k 5% 0.5W
3631	4822 116 52289	5k6 5% 0.5W
3632	4822 116 52224	470Ω 5% 0.5W
3633	4822 050 24702	4k7 1% 0.6W
3634	4822 116 52175	100Ω 5% 0.5W

Side Control & IO

MAINS PANEL [I]

Various

1000	4822 212 10929	Mains/RC5/LED panel
▲	4822 276 13603	Mains switch
	4822 265 31246	6P conn. K41
	4822 265 31248	3P conn. K42
▲	4822 265 30389	2P conn. vert. K101
▲	4822 267 51348	2P conn. K104
▲	4822 256 91766	LED holder
1600	4822 130 83821	GP1U720Q IR rec.



2601	4822 124 41584	100μF 20% 10V
------	----------------	---------------



3520▲	4822 053 21475	4M7 5% 0.5W
3521▲	4822 053 21475	4M7 5% 0.5W
3600	4822 116 52175	100Ω 5% 0.5W
3601	4822 050 11002	1k 1% 0.4W
3602	4822 116 52213	180Ω 5% 0.5W
3604	4822 116 52175	100Ω 5% 0.5W

3605	4822 116 52175	100Ω 5% 0.5W
------	----------------	--------------



6600	4822 130 34174	BZX79-C4V7
6601	4822 209 72895	TLUV5320

Side Control + IO [J]

Various

1055	4822 212 10931	Side Control+IO panel
	4822 267 31014	3.5mm headphone
	4822 276 30422	Push buttons (3x)
	4822 256 92101	IO connections
	4822 265 41451	9P conn. H33
	4822 265 31248	3P conn. H42
	4822 265 31245	4P conn. H44



2800	4822 124 41596	22μF 20% 50V
2801	4822 124 41596	22μF 20% 50V
2804	4822 126 13597	330pF 10% 500V
2805	4822 126 13597	330pF 10% 500V
2810	5322 121 42489	33nF 5% 250V
2811	4822 124 81029	100μF 20% 25V
2813	4822 124 40763	2.2μF 100V
2832	4822 121 41677	10nF 10% 400V
2834	4822 121 41677	10nF 10% 400V
2840	4822 126 13599	3.3nF 10% 500V



3000	4822 116 52257	22k 5% 0.5W
3608	4822 116 52238	12k 5% 0.5W
3609	4822 116 52289	5k6 5% 0.5W
3610	4822 116 52224	470Ω 5% 0.5W
3611	4822 050 24702	4k7 1% 0.6W
3612	4822 116 52175	100Ω 5% 0.5W
3801	4822 116 52202	82Ω 5% 0.5W
3802	4822 116 52201	75Ω 5% 0.5W
3803	4822 116 52289	5k6 5% 0.5W
3804	4822 116 52289	5k6 5% 0.5W

3805	4822 116 83874	220k 5% 0.5W
3806	4822 116 83874	220k 5% 0.5W
3807	4822 116 52175	100Ω 5% 0.5W
3809	4822 116 52219	330Ω 5% 0.5W
3810	4822 116 52305	820k 5% 0.5W
3811	4822 116 83882	39k 5% 0.5W
3812	4822 116 83864	10k 5% 0.5W
3813	4822 116 52283	4k7 5% 0.5W
3830	4822 116 83864	10k 5% 0.5W
3840	4822 116 52257	22k 5% 0.5W

3842	4822 116 83864	10k 5% 0.5W
------	----------------	-------------



7811▲	4822 130 44197	BC558B
7812▲	4822 130 44197	BC558B
7840	4822 130 40937	BC548B

LARGE SIGNAL PANEL
[A]

Various

	4822 265 41461	10P conn. L10,11,15
	4822 265 40421	6P conn. L19
	4822 265 10742	7P conn. L24
	4822 264 40207	3P conn. L25
	4822 265 31247	3P conn. L28
	4822 265 31245	4P conn. L38
▲	4822 265 30389	2P conn. L01,L02
▲	4822 256 92053	Fuse holder
▲	4822 492 62076	Spring transistor
	4822 492 70871	Spring

	4822 404 31484	LOT bracket (21")
	4822 404 31488	LOT bracket
	4822 404 31483	Heat sink bracket
1463▲	4822 252 11194	19398E1 (0,800A)
1501▲	4822 070 33152	2183.15(3,15A)
1566▲	4822 252 51175	19398E1(2,500)
1572▲	4822 071 52502	19372(2,5A)
1580▲	4822 252 51186	19398E1(2,0A)

-II-

2400	4822 124 81257	47µF 10% 200V
2401	4822 121 42004	10nF 10% 400V
2409	4822 121 43875	47nF 5% 250V
2410	4822 121 41857	10nF 5% 250V
2411	4822 121 43875	47nF 5% 250V
2412	4822 122 31175	1nF 10% 500V
2423	4822 121 10507	470nF 5% 250V
2424	4822 124 81319	1µF 20% 160V
2425▲	4822 121 70434	11nF 5% 1.6KV
2425▲	5322 121 44345	15nF 5% 1.6KV

2426▲	4822 121 42934	27nF 10% 400V
2427	4822 121 10506	560nF 5% 250V
2427	4822 121 10507	470nF 5% 250V
2427▲	4822 121 10563	0.82µF 5% 250V
2433▲	4822 126 12274	1500pF 10% 2KV
2442	4822 124 81141	4.7µF 20% 160V
2450	4822 121 10619	220nF 10% 250V
2450▲	4822 121 40518	100nF 10% 250V
2451▲	4822 121 51252	470nF 5% 63V
2460	4822 126 11157	470pF 10% 500V

2461	4822 124 80791	470µF 20% 16V
2462	4822 124 80791	470µF 20% 16V
2463	4822 126 11157	470pF 10% 500V
2464	5322 124 41468	1000µF 20% 40V
2465	4822 126 11157	470pF 10% 500V
2466	4822 124 41334	470µF 20% 35V
2470	4822 126 12638	6.8nF 5% 50V
2471	4822 126 13614	4.7nF 10% 50V
2480	4822 124 40769	4.7µF 20% 100V
2481	4822 126 11157	470pF 10% 500V

2487▲	4822 124 40433	47µF 20% 25V
2500▲	4822 121 70285	470nF 10% 250V
2501	4822 121 70141	33nF 5% 400V
2504	4822 122 31175	1nF 10% 500V
2505▲	4822 124 11772	150µF 20% 385V
2505▲	4822 124 23492	220µF 50% 385V
2506▲	4822 121 40487	100nF 10% 400V
2507	4822 124 81029	100µF 20% 25V
2508	4822 121 42007	100nF 10% 100V
2511▲	4822 126 11141	2.2nF 10% 1KV

2512▲	4822 126 11141	2.2nF 10% 1KV
2520	4822 124 81029	100µF 20% 25V
2521	4822 126 13498	82pF 5% 50V
2522	4822 122 31175	1nF 10% 500V
2524	5322 121 42386	100nF 5% 63V
2525	4822 124 22263	220µF 20% 25V
2526	4822 126 11157	470pF 10% 500V
2530	4822 124 40769	4.7µF 20% 100V
2531	4822 121 43066	1nF 1% 400V
2533	4822 124 41596	22µF 20% 50V

2534	4822 122 33302	1nF 5% 50V
2535	4822 126 12451	820pF 10% 50V
2538	4822 122 33531	2.2nF 10% 50V
2540▲	4822 126 12426	330pF 10% 1KV
2542	4822 126 13595	220pF 10% 1KV
2543▲	4822 126 13451	2.2nF 10% 2KV
2544▲	4822 126 13451	2.2nF 10% 2KV
2550▲	4822 126 10727	3.3nF 20% 400V
2554	5322 121 42386	100nF 5% 63V
2557	5322 121 42489	33nF 5% 250V

2559▲	4822 124 40433	47µF 20% 25V
2561	4822 124 41458	4700µF 20% 16V
2563	4822 124 81139	2200µF 20% 16V
2565	4822 124 81029	220µF 20% 25V
2568▲	4822 126 12426	330pF 10% 1KV
2569	4822 124 81257	47µF 10% 200V
2570	4822 121 51379	82nF 5% 63V

2572	4822 122 31175	1nF 10% 500V
2573	4822 124 41663	220µF 20% 35V
2575	4822 126 13646	120P 5% 50V
2580	4822 124 40723	2200µF 20% 16V
2581	4822 122 31175	1nF 10% 500V
2582	4822 124 81029	100µF 20% 25V
2592	4822 121 43526	47nF 5% 250V
2593	5322 121 42386	100nF 5% 63V
2602	4822 126 10334	470pF 10% 50V
2603	4822 126 13499	220pF 5% 50V
2604	4822 122 33302	1nF 5% 50V
2605	4822 122 33302	1nF 5% 50V
2606	4822 122 33302	1nF 5% 50V

2607	4822 122 33302	1nF 5% 50V
2608	4822 122 33302	1nF 5% 50V
2609▲	4822 124 40433	47µF 20% 25V
2750	4822 124 22263	220µF 20% 25V
2751	4822 124 40756	1µF 20% 100V
2751▲	4822 124 41579	10µF 20% 50V
2752	4822 124 40769	4.7µF 20% 100V
2752▲	4822 124 41579	10µF 20% 50V
2755	4822 124 41663	220µF 20% 35V
2756	4822 124 22263	220µF 20% 25V

2760	4822 122 31175	1nF 10% 500V
2763▲	4822 124 41579	10µF 20% 50V
2764	4822 124 41596	22µF 20% 50V
2765	4822 124 80215	1000µF 20% 35V
2766	4822 124 80215	1000µF 20% 35V
2776	4822 122 31175	1nF 10% 500V
2778	4822 126 11157	470pF 10% 500V
2778	4822 126 11501	1.5nF 10% 500V
2787	4822 121 41856	22nF 5% 250V
2788	4822 121 41856	22nF 5% 250V

2789	4822 124 40756	1µF 20% 100V
2789	4822 124 40769	4.7µF 20% 100V



3401▲	4822 052 11229	22Ω 5% 0.5W
3402▲	4822 052 11229	22Ω 5% 0.5W
3411	4822 116 52283	4k7 5% 0.5W
3414	4822 116 52176	10Ω 5% 0.5W
3415	4822 117 12517	5k6 5% 5W
3415	4822 117 12618	2k2 5% 5W
3417	4822 116 52195	47Ω 5% 0.5W
3420	4822 053 21684	680k 5% 0.5W
3421	4822 116 52283	4k7 5% 0.5W
3421	4822 116 83864	10k 5% 0.5W

3430▲	4822 052 11471	470Ω 5% 0.5W
3431	4822 116 52243	1k5 5% 0.5W
3432	4822 116 52243	1k5 5% 0.5W
3433	4822 116 52284	47k 5% 0.5W
3434	4822 116 52297	68k 5% 0.5W
3434	4822 116 83882	39k 5% 0.5W
3435	4822 116 52297	68k 5% 0.5W
3435	4822 116 83882	39k 5% 0.5W
3443▲	4822 052 10688	62k 5% 0.33W
3450	4822 116 52304	82k 5% 0.5W

3450	4822 116 83882	39k 5% 0.5W
3451	4822 116 83882	39k 5% 0.5W
3452	4822 116 83882	39k 5% 0.5W
3454	4822 116 83864	10k 5% 0.5W
3455	4822 116 52272	330k 5% 0.5W
3456	4822 116 83961	6k8 5%
3457	4822 116 52244	15k 5% 0.5W
3461▲	4822 052 10228	202 5% 0.33W
3461▲	4822 052 11158	105 5% 0.5W
3462▲	4822 052 10228	202 5% 0.33W

3464▲	4822 052 11568	506 5% 0.5W
3465	4822 116 81682	2M 2.5% 0.5W
3466	4822 116 52298	680k 5% 0.5W
3466	4822 116 81783	1M 5% 0.5W
3467	4822 116 52235	1M 5% 0.5W
3467	4822 116 52298	680k 5% 0.5W
3470	4822 116 52278	390k 5% 0.5W
3472▲	4822 052 10228	202 5% 0.33W
3480	4822 116 52234	100k 5% 0.5W
3480	4822 116 52304	82k 5% 0.5W

3481	4822 050 11002	1k 1% 0.4W
3482	4822 116 52234	100k 5% 0.5W
3482	4822 116 52304	82k 5% 0.5W
3483▲	4822 050 24708	407 1% 0.6W
3484▲	4822 050 24708	407 1% 0.6W
3487	4822 116 52219	330Ω 5% 0.5W
3500▲	4822 116 21224	1MA/387V VDR
3502▲	4822 052 10338	303 5% 0.33W
3503▲	4822 111 20403	470Ω 10%
3505	4822 117 12074	7W 1.05 10%

3506▲	4822 117 12027	18Ω-3kΩ 25% PTC
3509	4822 116 52186	22Ω 5% 0.5W
3510	4822 116 52283	4k7 5% 0.5W
3511	4822 050 11002	1k 1% 0.4W
3512	4822 116 52243	1k5 5% 0.5W
3518	4822 116 52195	47Ω 5% 0.5W

3519	4822 116 52256	2k2 5% 0.5W
3520	4822 053 12183	18k 5% 3W
3521	4822 116 52304	82k 5% 0.5W
3522	4822 116 52219	330Ω 5% 0.5W
3523	4822 116 52244	15k 5% 0.5W
3524▲	4822 052 10109	10Ω 5% 0.33W
3525	4822 116 52252	180k 5% 0.5W
3526	4822 116 52175	100Ω 5% 0.5W
3527	4822 116 52188	27Ω 5% 0.5W
3528	4822 116 83864	10k 5% 0.5W
3529	4822 116 52207	1k2 5% 0.5W
3530	4822 050 22403	24k 1% 0.6W
3531	4822 116 52303	8k2 5% 0.5W
3532	4822 101 11191	10k 30% 0.1W Pot.

3533	4822 116 52238	12k 5% 0.5W
3534	4822 116 52297	68k 5% 0.5W
3535	4822 116 83864	10k 5% 0.5W
3536	4822 116 52257	22k 5% 0.5W
3537	4822 116 83864	10k 5% 0.5W
3538	4822 050 11002	1k 1% 0.4W
3539	4822 116 83864	10k 5% 0.5W
3540▲	4822 116 83027	0Ω22 5% 3W
3540	4822 117 11716	0Ω27 5% 3W
3541▲	4822 052 10102	1k 5% 0.33W

3542	4822 117 12621	330Ω 5% 5W
3543	4822 117 12621	330Ω 5% 5W
3544	4822 117 12076	5W 22k 5%
3545▲	4822 052 10159	15Ω 5% 0.33W
3553	4822 050 11002	1k 1% 0.4W
3554	4822 116 52175	100Ω 5% 0.5W
3555	4822 050 21604	160k 1% 0.6W
3556	4822 116 52175	100Ω 5% 0.5W
3557	4822 116 52234	100k 5% 0.5W
3558	4822 116 52263	2k7 5% 0.5W

3559	4822 101 11186	470Ω 30% 0.1W Pot
3560	4822 116 52256	2k2 5% 0.5W
3561	4822 116 83864	10k 5% 0.5W
3568	4822 116 52234	100k 5% 0.5W
3568	4822 116 52297	68k 5% 0.5W
3570	4822 116 52213	180Ω 5% 0.5W
3573	4822 053 12108	1Ω 5% 3W
3579	4822 116 80176	1Ω 5% 0.5W
3584▲	4822 052 11338	303 5% 0.5W
3589	4822 116 52235	1M 5% 0.5W

3590	4822 116 52284	47k 5% 0.5W
3591	4822 116 83872	220Ω 5% 0.5W
3592	4822 116 83864	10k 5% 0.5W

7580	4822 209 80817	MC7800
7590	4822 130 20293	P0102BA
7591	4822 130 44197	BC558B
7592	4822 130 40937	BC548B
7593	4822 130 40937	BC548B
7600	4822 130 42446	BD536
7601	4822 130 60775	2SD1266P
7602	4822 130 41344	BC337-40
7603	4822 130 44568	BC557B
7604	4822 130 44568	BC557B
7605	4822 130 44197	BC558B
7606	4822 130 44568	BC557B
7760	4822 130 40937	BC548B
7761	4822 209 32641	TD2A2616Q/N1
7763	4822 130 40937	BC548B

SMALL SIGNAL PANEL [B]

Various

	4822 265 41461	10P conn. S10,S11,S15
	4822 265 41451	9P conn. S33,S44
	4822 265 31246	6P conn. S41
	4822 267 31987	Pr.conn. S100
	4822 404 31487	Bracket SSP
	4822 404 31527	Bracket Nicam L
1000	4822 210 10691	Tuner UV916S
1000	4822 210 10731	Tuner U944S (UHF only)
1031	4822 242 82062	OFWL9454 38.9MHz (BGLI)
1032	4822 242 80303	OFWG9251M 38.9MHz (BGDK/5B)
1032	4822 242 81519	OFWK9260M 38.9MHz (I)
1032	4822 242 81854	OFWG9353M 38.9MHz (BGLI)
1100	4822 071 51001	Fuse 19372(100mA)
1116	4822 242 80295	OFWG3962M 38.9MHz (BG)
1116	4822 242 81436	OFWK3953M 38.9MHz (other)
1117	4822 242 10692	Xtal 4.433619 MHz
1122	4822 153 30025	Filt. TPS 6MHz (BGI)
1122	4822 242 72211	Filt. TPS 5.5MHz (other)
1651	4822 242 81946	Xtal 8MHz
1700	4822 242 81962	Xtal 13.875MHz

-II-

2004	4822 122 33797	47nF 20% 50V
2008	4822 124 40196	220pF 20% 16V (BGLI)
2008	4822 124 81029	100pF 20% 25V (other)
2009	4822 124 41579	10pF 20% 50V
2032	4822 124 40756	1pF 20% 100V
2033	5322 126 10223	4.7nF 10% 63V
2034	5322 126 10223	4.7nF 10% 63V
2036	5322 126 10223	4.7nF 10% 63V
2037	4822 124 41579	10pF 20% 50V
2037	4822 124 80791	470pF 20% 16V
2101	5322 126 10223	4.7nF 10% 63V
2102	5322 126 12415	18pF 5% 50V
2103	4822 126 13161	100nF 10% 25V
2104	5322 126 10223	4.7nF 10% 63V
2105	5322 126 10223	4.7nF 10% 63V
2106	4822 125 50062	1.4-10pF 250V
2108	5322 126 10223	4.7nF 10% 63V
2109	4822 124 40756	1pF 20% 100V
2111	4822 126 13159	180pF 5% 50V
2112	4822 126 13162	56pF 5% 50V
2113	5322 122 33537	1.2pF 5% 63V
2115	4822 126 13473	220nF 20% 50V
2116	4822 126 13473	220nF 20% 50V
2117	4822 126 13473	220nF 20% 50V
2119	4822 126 13473	220nF 20% 50V
2122	4822 126 13869	470nF 20% 16V
2124	4822 124 81029	100pF 20% 25V
2125	4822 122 33177	10nF 20% 50V
2126	4822 124 40756	1pF 20% 100V
2127	4822 124 41579	10pF 20% 50V
2128	4822 126 13161	100nF 10% 25V
2129	4822 126 13161	100nF 10% 25V
2132	4822 126 13161	100nF 10% 25V
2133	4822 126 13161	100nF 10% 25V
2136	5322 122 34123	1nF 10% 50V

2137	4822 126 10002	100nF 20% 25V
2138	4822 122 33177	10nF 20% 50V
2139	4822 122 33177	10nF 20% 50V
2140	5322 122 34123	1nF 10% 50V
2141	4822 126 13161	100nF 10% 25V
2142	4822 126 13161	100nF 10% 25V
2143	4822 126 13161	100nF 10% 25V
2144	5322 122 34123	1nF 10% 50V
2145	5322 122 34123	1nF 10% 50V
2154	4822 124 81286	47pF 20% 16V
2156	4822 126 13161	100nF 10% 25V
2157	4822 126 13161	100nF 10% 25V
2158	4822 124 40433	47pF 20% 25V
2160	4822 126 13689	18pF 1% 63V
2161	4822 126 13161	100nF 10% 25V (PAL)
2161	4822 126 13482	470nF 20% 16V (P/Sec.)
2162	5322 126 10223	4.7nF 10% 63V (P/Sec.)
2162	5322 126 10465	3.9nF 10% 63V (PAL)
2167	4822 124 81029	100pF 20% 25V
2169	4822 122 33177	10nF 20% 50V
2170	5322 126 10223	4.7nF 10% 63V
2171	4822 122 33177	10nF 20% 50V
2172	5322 122 32531	100pF 5% 50V
2173	4822 124 40756	1pF 20% 100V
2175	5322 122 34123	1nF 10% 50V
2176	5322 122 34123	1nF 10% 50V
2177	4822 121 70661	100N 5% 63V
2178	4822 126 13161	100nF 10% 25V
2179	4822 124 40433	47pF 20% 25V
2180	4822 126 13482	470nF 20% 16V
2181	4822 126 13482	470nF 20% 16V
2182	4822 126 13161	100nF 10% 25V
2196	5322 122 32448	10pF 5% 50V
2600	4822 124 41579	10pF 20% 50V
2601	4822 126 13161	100nF 10% 25V
2606	4822 122 33177	10nF 20% 50V
2607	4822 122 33177	10nF 20% 50V
2650	5322 122 31946	27pF 5% 63V
2651	5322 122 31946	27pF 5% 63V
2652	5322 122 32448	10pF 5% 50V
2653	5322 122 32448	10pF 5% 50V
2655	5322 122 34123	1nF 10% 50V
2659	4822 124 40756	1pF 20% 100V
2665	4822 126 10002	100nF 20% 25V
2685	4822 122 33177	10nF 20% 50V
2700	4822 122 33177	10nF 20% 50V
2702	5322 126 10794	220pF 5% 63V
2703	5322 122 32654	22nF 10% 63V
2704	5322 122 32481	15pF 5% 50V
2705	4822 122 32139	12pF 2% 63V
2707	5322 126 10794	220pF 5% 63V
2708	4822 126 10002	100nF 20% 25V
2709	4822 122 33177	10nF 20% 50V
2710	5322 122 32452	47pF 5% 63V
2711	4822 126 10002	100nF 20% 25V
2712	5322 122 32654	22nF 10% 63V
2715	4822 124 41579	10pF 20% 50V
2716	4822 124 41579	10pF 20% 50V
2800	4822 122 31175	1nF 10% 500V
2801	4822 122 31175	1nF 10% 500V
2805	4822 124 41596	22pF 20% 50V
2812	4822 126 13597	330pF 10% 500V
2813	4822 126 13597	330pF 10% 500V
2817	4822 126 13597	330pF 10% 500V
2830	4822 124 41579	10pF 20% 50V
2835	4822 122 31175	1nF 10% 500V
2836	4822 122 31175	1nF 10% 500V
2837	4822 126 10002	100nF 20% 25V
2840	4822 122 31175	1nF 10% 500V
2841	4822 122 31175	1nF 10% 500V
2847	4822 124 41596	22pF 20% 50V
2855	4822 126 13597	330pF 10% 500V
2856	4822 124 41596	22pF 20% 50V
2857	4822 126 13597	330pF 10% 500V
2858	4822 124 41596	22pF 20% 50V
2860	4822 126 13161	100nF 10% 25V
2875	5322 121 42386	100nF 5% 63V
2878	4822 126 13473	220nF 20% 50V
2879	4822 126 13473	220nF 20% 50V
3003	4822 051 20101	100Ω 5% 0.1W
3007	4822 117 10833	10k 1% 0.1W
3011	4822 051 20101	100Ω 5% 0.1W
3012	4822 051 20122	1k2 5% 0.1W
3014	4822 051 20223	22k 5% 0.1W
3030	4822 051 20223	22k 5% 0.1W
3031	4822 051 20472	4k7 5% 0.1W
3032	4822 051 20472	4k7 5% 0.1W
3033	4822 051 20472	4k7 5% 0.1W



3034	4822 051 20223	22k 5% 0.1W
3035	4822 117 11449	2k2 1% 0.1W
3036	4822 051 20223	22k 5% 0.1W
3037	4822 051 20223	22k 5% 0.1W
3038	4822 051 20223	22k 5% 0.1W
3039	4822 051 20223	22k 5% 0.1W
3040	4822 052 10479	47Ω 5% 0.33W
3100	4822 051 20682	6k8 5% 0.1W
3103	4822 116 52226	560Ω 5% 0.5W
3104	4822 117 10833	10k 1% 0.1W
3105	4822 116 52245	150k 5% 0.5W
3106	4822 051 20223	22k 5% 0.1W
3107	4822 116 52224	470Ω 5% 0.5W
3110	4822 051 20391	390Ω 5% 0.1W
3111	4822 116 52206	120Ω 5% 0.5W (P/Sec.)
3111	4822 116 83868	150Ω 5% 0.5W (PAL)
3112	4822 051 20331	330Ω 5% 0.1W
3113	4822 116 52235	1M 5% 0.5W
3117	4822 117 10353	150Ω 1% 0.1W
3119	4822 116 52175	100Ω 5% 0.5W
3121	4822 117 10833	10k 1% 0.1W
3122	4822 117 10833	10k 1% 0.1W
3124	4822 116 52291	56k 5% 0.5W
3125	4822 117 10833	10k 1% 0.1W
3126	4822 051 20153	15k 5% 0.1W
3127	4822 051 20561	560Ω 5% 0.1W
3128	4822 051 10102	1k 2% 0.25W
3130	4822 117 11449	2k2 1% 0.1W
3131	4822 051 20473	47k 5% 0.1W
3133	4822 051 10102	1k 2% 0.25W
3134	4822 051 20101	100Ω 5% 0.1W
3134	4822 051 20561	560Ω 5% 0.1W
3135	4822 051 20101	100Ω 5% 0.1W
3135	4822 051 20561	560Ω 5% 0.1W
3136	4822 051 20101	100Ω 5% 0.1W
3136	4822 051 20561	560Ω 5% 0.1W
3137	4822 117 11449	2k2 1% 0.1W
3138	4822 117 11449	2k2 1% 0.1W
3139	4822 117 11449	2k2 1% 0.1W
3140	4822 051 20274	270k 5% 0.1W
3141	4822 116 83872	220Ω 5% 0.5W
3142	4822 116 83872	220Ω 5% 0.5W
3143	4822 051 20221	220Ω 5% 0.1W
3144	4822 051 20829	82Ω 5% 0.1W
3145	4822 051 20829	82Ω 5% 0.1W
3146	4822 051 20829	82Ω 5% 0.1W
3149	4822 116 52176	10Ω 5% 0.5W
3150	4822 116 83864	10k 5% 0.5W
3155	4822 116 83872	220Ω 5% 0.5W
3156	4822 051 20109	10Ω 5% 0.1W
3162	4822 052 10478	4Ω 5% 0.33W
3164	4822 051 20104	100k 5% 0.1W (PAL)
3164	4822 051 20183	18k 5% 0.1W (P/Sec.)
3169	4822 052 10478	4Ω 5% 0.33W
3170	4822 050 11002	1k 1% 0.4W
3171	4822 117 10833	10k 1% 0.1W
3172	4822 117 10833	10k 1% 0.1W
3173	4822 051 20272	2k7 5% 0.1W
3174	4822 117 10833	10k 1% 0.1W
3175	4822 050 11002	1k 1% 0.4W
3176	4822 050 11002	1k 1% 0.4W
3177	4822 117 10356	39k 1% 0.1W
3178	4822 117 10833	10k 1% 0.1W
3179	4822 051 20333	33k 5% 0.1W
3181	4822 116 52175	100Ω 5% 0.5W
3182	4822 116 52175	100Ω 5% 0.5W
3186	4822 052 10478	4Ω 5% 0.33W
3187	4822 051 20392	3k9 5% 0.1W
3188	4822 051 20334	330k 5% 0.1W
3189	4822 051 20334	330k 5% 0.1W