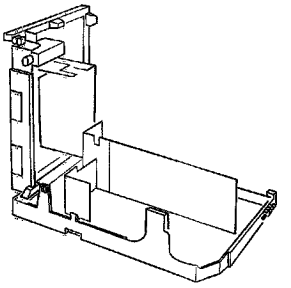
Colour television **Chassis**

Service
Service
Service

MD1.2E
AA



Service Manual

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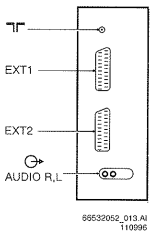
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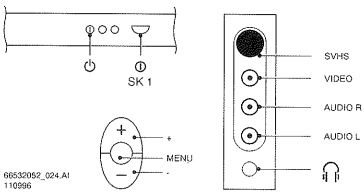
1. Technical specifications

Mains voltage	: 220-240V AC (±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 (±10%)
Mains frequency	: 50 Hz (±10%)
Pull-in range colour synchronisation	: > ± 300Hz
Pull-in range horizontal synchronisation	: > ± 600Hz

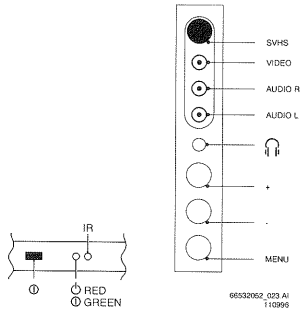
2. Connection facilities and Chassis overview



Rear connections



Front + Top control + Side I/O

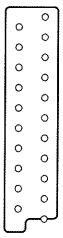


Front + Side control + Side I/O

Specification of the terminal sockets

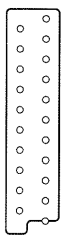
REAR

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



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

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



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

Cinch - audio out

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

FRONT

Audio/video in

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

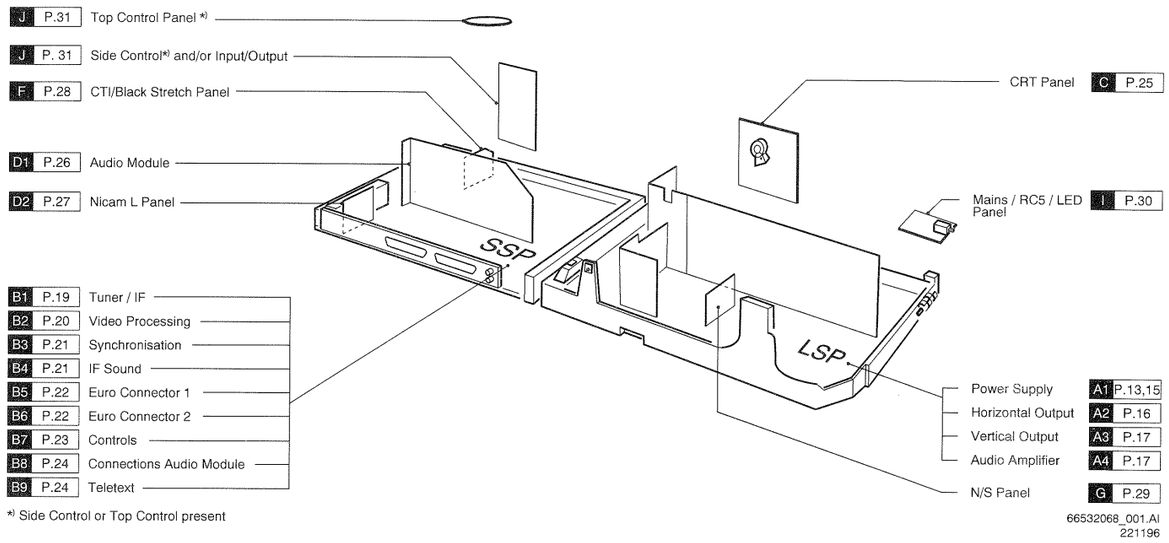
Headphone

8-600Ω

SVHS



1	-	⊥
2	-	⊥
3	-	Y ⊕ (1V_{pp}/75Ω)
4	-	C ⊕ (0,3V_{pp}/75Ω)



*) Side Control or Top Control present

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

Safety instructions for repairs

1. 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.

2. 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 ot 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 (⊥), or hot earth (⊥↯) 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 (⊓) and without aerial signal (⊁).
Voltages in the power supply section are measured both for normal operation (⏻) and in standby (⏻). 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.

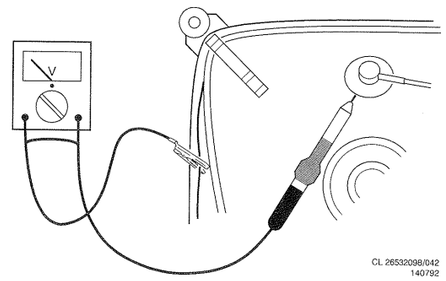


Figure 3.1

6. DOLBY SURROUND PRO • LOGIC

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4. Mechanical instructions

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 screwdriver), the rear cover can be removed.
3. The cover plate on the I/O panel with the Euroconnectors 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.

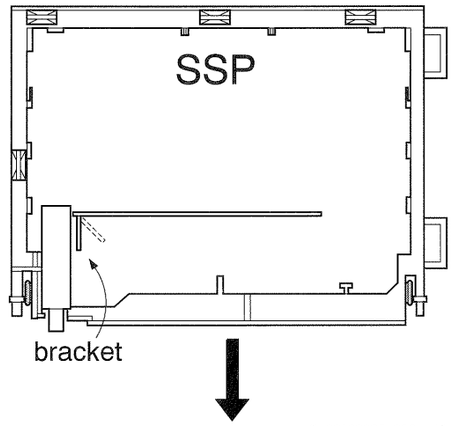


Figure 4.2

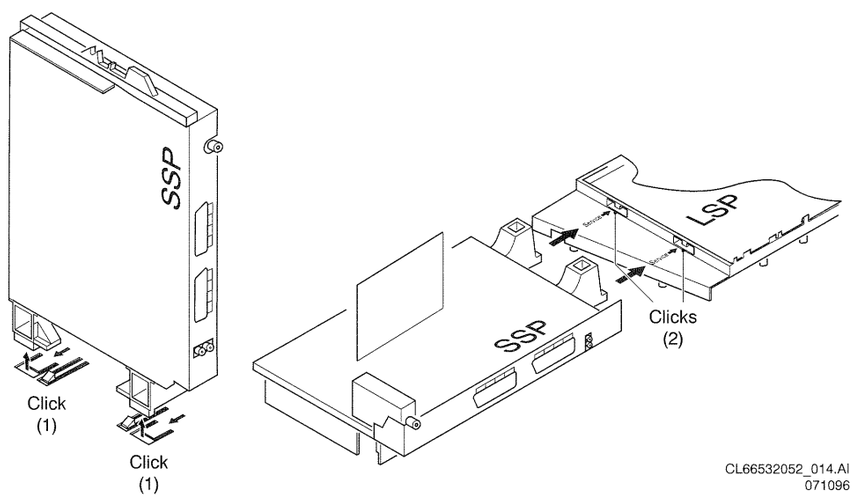


Figure 4.1

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.

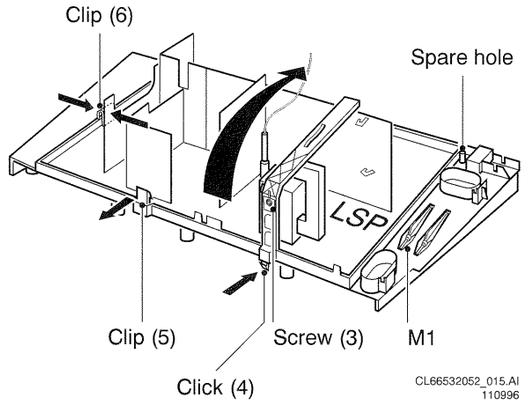


Figure 4.3

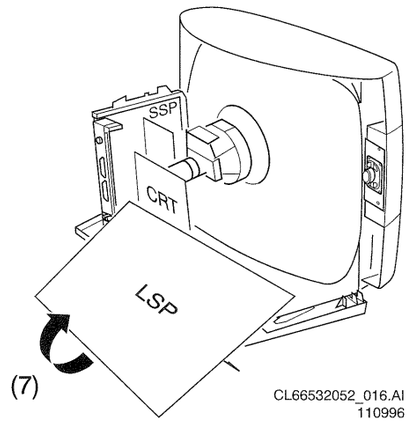


Figure 4.4

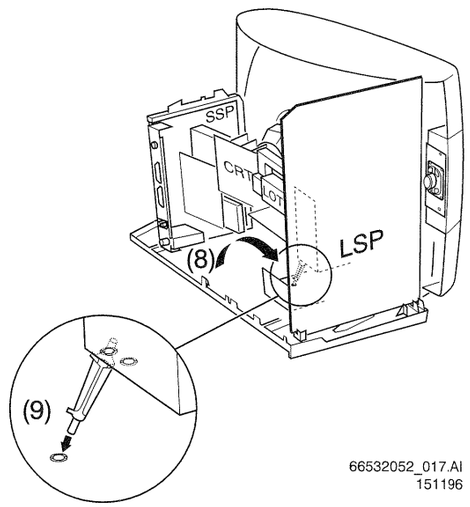


Figure 4.5

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).

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 (± 5cm) 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.

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.

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

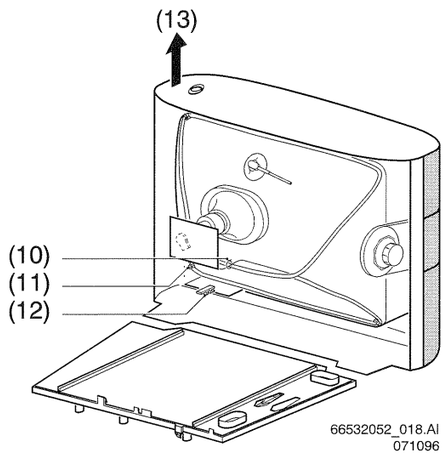


Figure 4.6

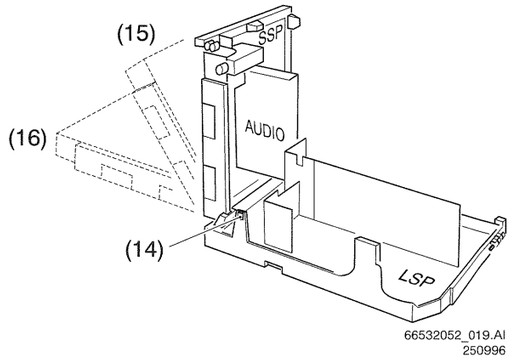


Figure 4.7

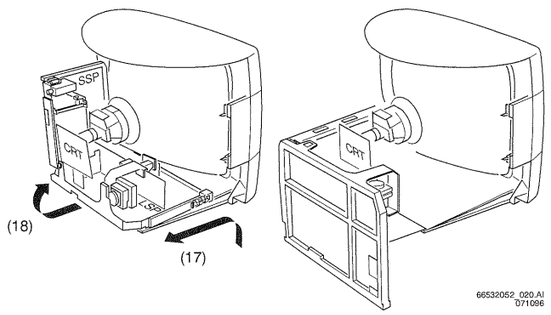


Figure 4.8

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.

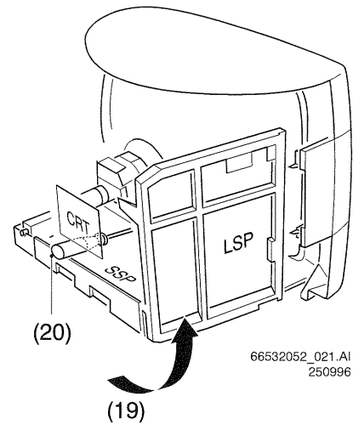


Figure 4.9

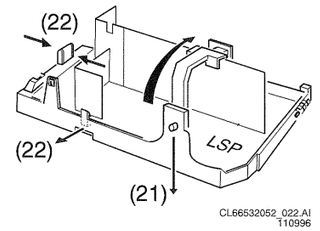
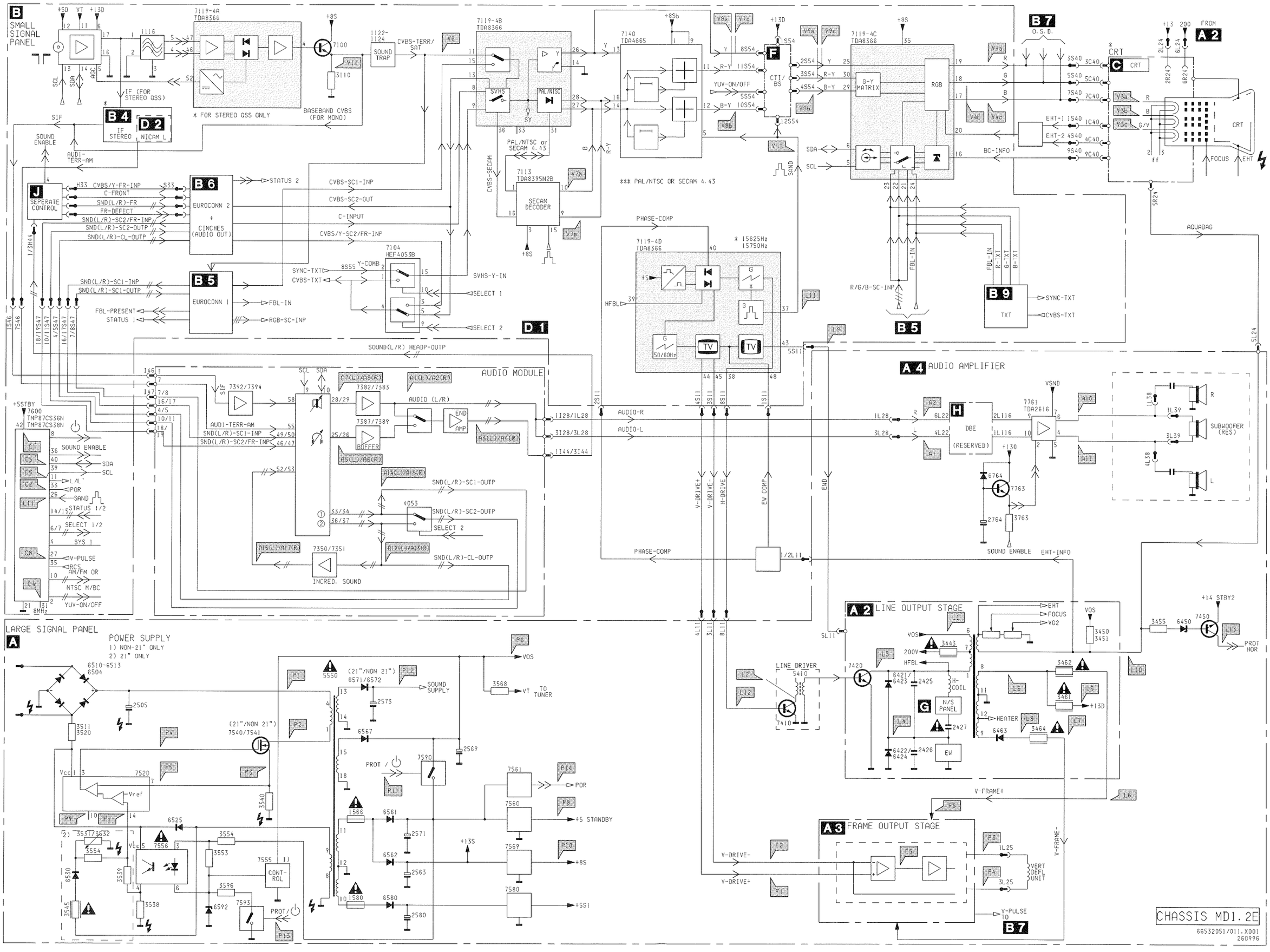


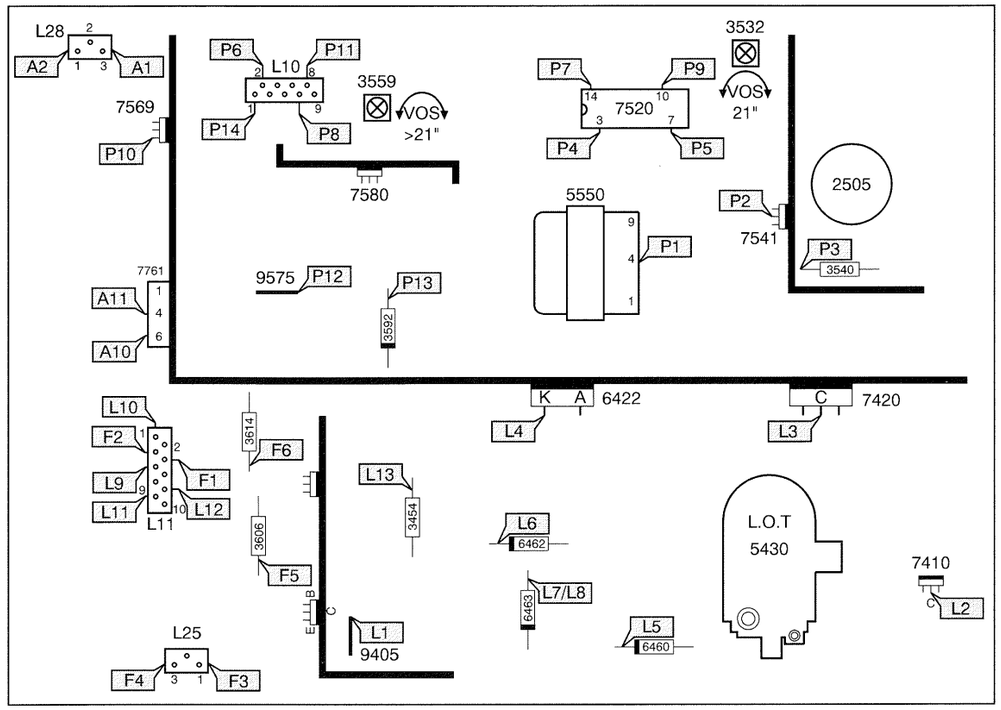
Figure 4.10

5. Block diagram / Blockschaltbild / Schéma-bloc **Chassis MD1.2E** **6**



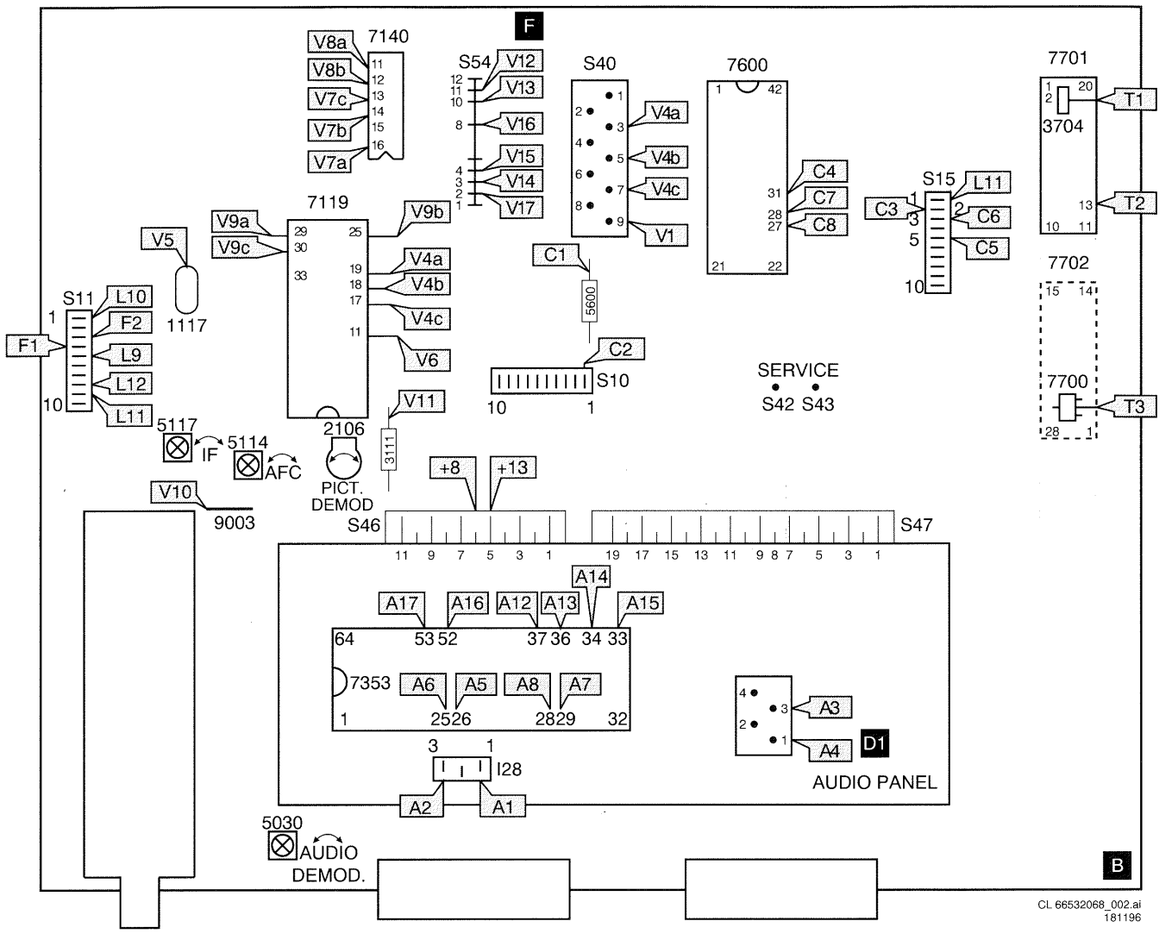
Testpoint overview / Testpunkt Übersicht / Relevé des points de test

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

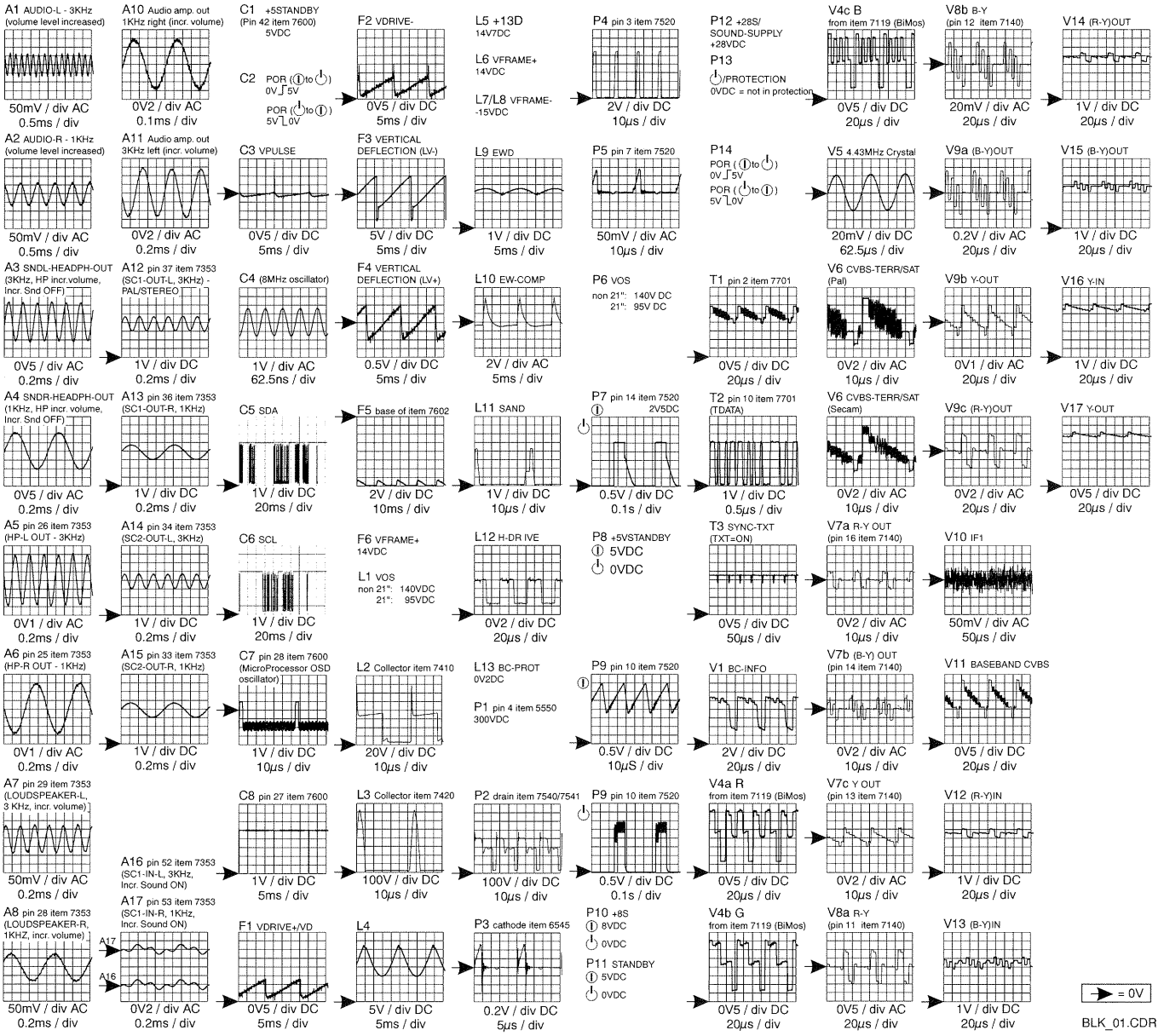


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Small signal panel / Klein-Signal Platine / Platine petits signaux

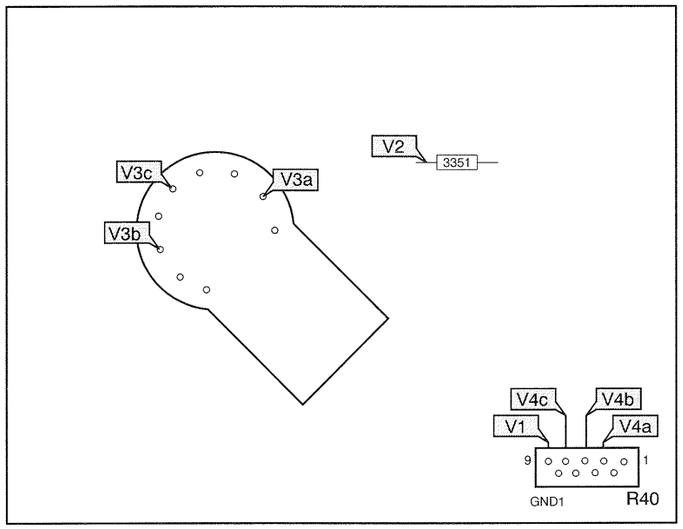


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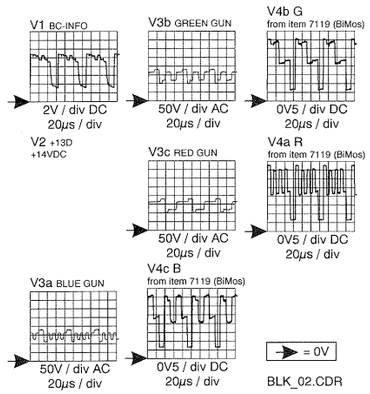

A1 AUDIO-L - 3KHz (volume level increased)
50mV / div AC
0.5ms / div
A10 Audio amp. out 1KHz right (incr. volume)
0V2 / div AC
0.1ms / div
C1 +5STANDBY (Pin 42 item 7600) 5VDC
C2 POR (to) 0V 5V
POR (to) 5V 0V
F2 VDRIVE-
0V5 / div DC
5ms / div
L5 +13D 14V7DC
L6 VFRAME+ 14VDC
L7/L8 VFRAME- -15VDC
P4 pin 3 item 7520
2V / div DC
10µs / div
P12 +28S/ SOUND-SUPPLY +28VDC
P13 /PROTECTION 0VDC = not in protection
V4c B from item 7119 (BiMos)
0V5 / div DC
20µs / div
V8b B-Y (pin 12 item 7140)
20mV / div AC
20µs / div
V14 (R-Y)OUT
1V / div DC
20µs / div
A2 AUDIO-R - 1KHz (volume level increased)
50mV / div AC
0.5ms / div
A11 Audio amp. out 3KHz left (incr. volume)
0V2 / div AC
0.2ms / div
C3 VPULSE
0V5 / div DC
5ms / div
F3 VERTICAL DEFLECTION (LV-)
5V / div DC
5ms / div
L9 EWD
1V / div DC
5ms / div
P5 pin 7 item 7520
50mV / div AC
10µs / div
P14 POR (to) 0V 5V
POR (to) 5V 0V
V5 4.43MHz Crystal
20mV / div DC
62.5µs / div
V9a (B-Y)OUT
0.2V / div AC
20µs / div
V15 (B-Y)OUT
1V / div DC
20µs / div
A3 SNDL-HEADPH-OUT (3KHz, HP incr.volume, Incr. Snd OFF)
0V5 / div AC
0.2ms / div
A12 pin 37 item 7353 (SC1-OUT-L, 3KHz) - PAL/STEREO
1V / div DC
0.2ms / div
C4 (8MHz oscillator)
1V / div AC
62.5ns / div
F4 VERTICAL DEFLECTION (LV+)
0.5V / div DC
5ms / div
L10 EW-COMP
2V / div AC
5ms / div
P6 VOS
non 21": 140V DC
21": 95V DC
T1 pin 2 item 7701
0V5 / div DC
20µs / div
V6 CVBS-TERR/SAT (Pal)
0V2 / div AC
10µs / div
V9b Y-OUT
0V1 / div AC
20µs / div
V16 Y-IN
1V / div DC
20µs / div
A4 SNDR-HEADPH-OUT (1KHz, HP incr. volume, Incr. Snd OFF)
0V5 / div AC
0.2ms / div
A13 pin 36 item 7353 (SC1-OUT-R, 1KHz)
1V / div DC
0.2ms / div
C5 SDA
1V / div DC
20ms / div
F5 base of item 7602
2V / div DC
10ms / div
L11 SAND
1V / div DC
10µs / div
P7 pin 14 item 7520 2V5DC
0.5V / div DC
0.1s / div
T2 pin 10 item 7701 (TDATA)
1V / div DC
0.5µs / div
V6 CVBS-TERR/SAT (Secam)
0V2 / div AC
10µs / div
V9c (R-Y)OUT
0V2 / div AC
20µs / div
V17 Y-OUT
0V5 / div DC
20µs / div
A5 pin 26 item 7353 (HP-L OUT - 3KHz)
0V1 / div AC
0.2ms / div
A14 pin 34 item 7353 (SC2-OUT-L, 3KHz)
1V / div DC
0.2ms / div
C6 SCL
1V / div DC
20ms / div
F6 VFRAME+ 14VDC
L1 VOS
non 21": 140VDC
21": 95VDC
L12 H-DR IVE
0V2 / div DC
20µs / div
P8 +5VSTANDBY 5VDC 0VDC
T3 SYNC-TXT (TXT=ON)
0V5 / div DC
50µs / div
V7a R-Y OUT (pin 16 item 7140)
0V2 / div AC
10µs / div
V10 IF1
50mV / div AC
50µs / div
A6 pin 25 item 7353 (HP-R OUT - 1KHz)
0V1 / div AC
0.2ms / div
A15 pin 33 item 7353 (SC2-OUT-R, 1KHz)
1V / div DC
0.2ms / div
C7 pin 28 item 7600 (MicroProcessor OSD oscillator)
1V / div DC
10µs / div
L2 Collector item 7410
20V / div DC
10µs / div
L13 BC-PROT 0V2DC
P1 pin 4 item 5550 300VDC
P9 pin 10 item 7520
0.5V / div DC
10µS / div
V1 BC-INFO
2V / div DC
20µs / div
V7b (B-Y) OUT (pin 14 item 7140)
0V2 / div AC
10µs / div
V11 BASEBAND CVBS
0V5 / div DC
20µs / div
A7 pin 29 item 7353 (LOUDSPEAKER-L, 3 KHz, Incr. volume)
50mV / div AC
0.2ms / div
A16 pin 52 item 7353 (SC1-IN-L, 3KHz, Incr. Sound ON)
A17 pin 53 item 7353 (SC1-IN-R, 1KHz, Incr. Sound ON)
C8 pin 27 item 7600
1V / div DC
5ms / div
L3 Collector item 7420
100V / div DC
10µs / div
P2 drain item 7540/7541
100V / div DC
10µs / div
P9 pin 10 item 7520
0.5V / div DC
0.1s / div
V4a R from item 7119 (BiMos)
0V5 / div DC
20µs / div
V7c Y OUT (pin 13 item 7140)
0V2 / div AC
10µs / div
V12 (R-Y)IN
1V / div DC
20µs / div
A8 pin 28 item 7353 (LOUDSPEAKER-R, 1KHZ, incr. volume)
A17
A16
50mV / div AC
0.2ms / div
0V2 / div AC
0.2ms / div
F1 VDRIVE+/VD
0V5 / div DC
5ms / div
L4
5V / div DC
5ms / div
P3 cathode item 6545
0.2V / div DC
5µs / div
P10 +8S 8VDC 0VDC
P11 STANDBY 5VDC 0VDC
V4b G from item 7119 (BiMos)
0V5 / div DC
20µs / div
V8a R-Y (pin 11 item 7140)
0V5 / div AC
20µs / div
V13 (B-Y)IN
1V / div DC
20µs / div
= 0V
BLK_01.CDR

Testpoint overview / Testpunkt Übersicht / Relevé des points de test

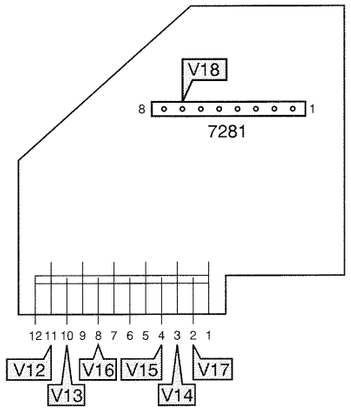
CRT panel / CRT-Platine / Platine tube cathodique



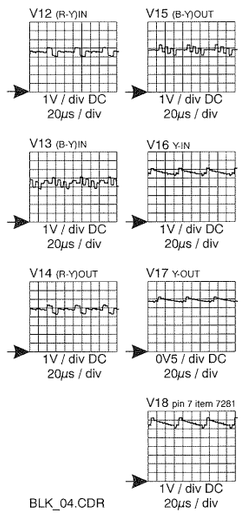
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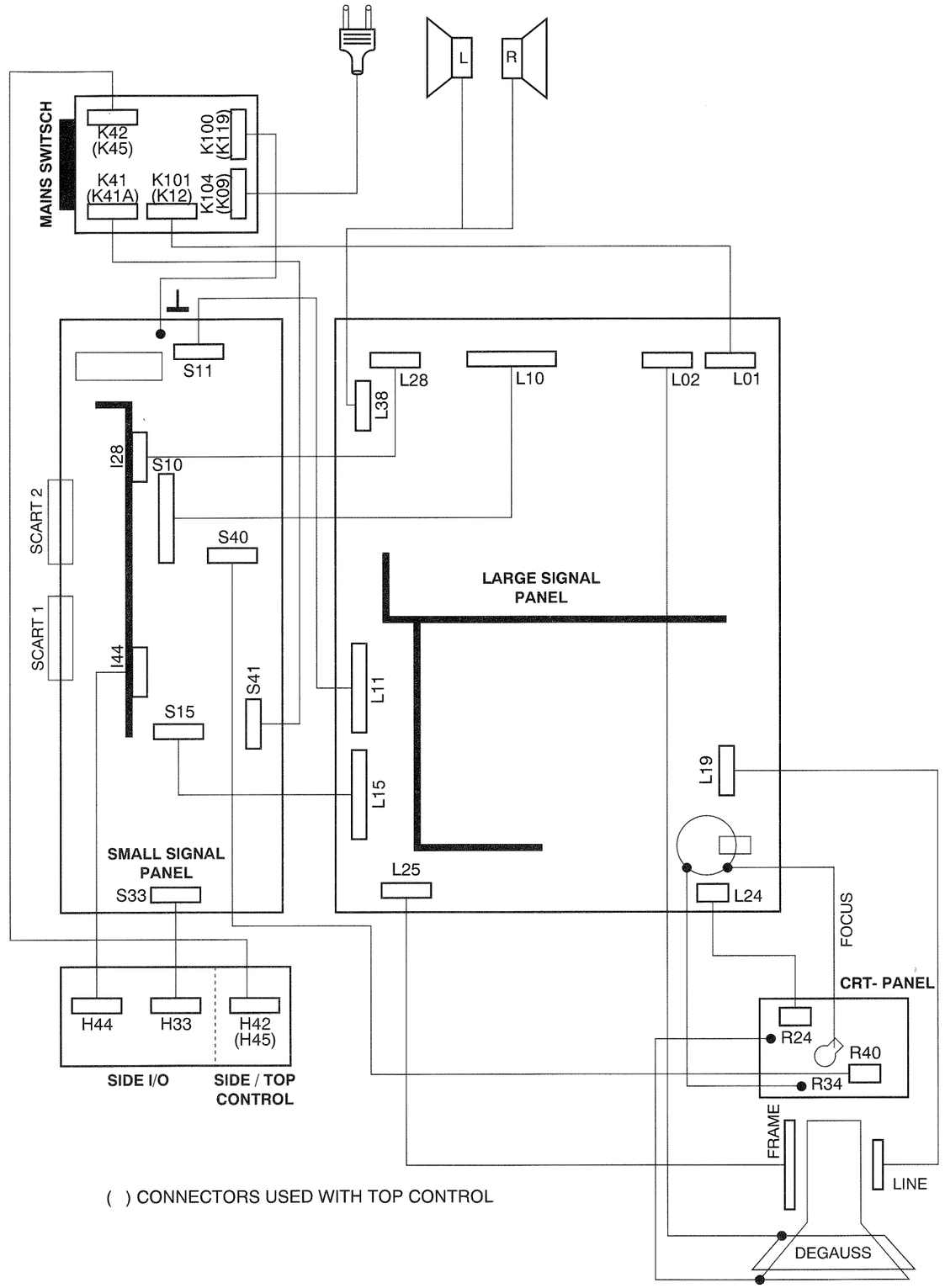
CTI/Black Stretch panel / CTI/Black Stretch Platine / Platine CTI/Black Stretch



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Wiring diagram / Verdrahtungsschema / Schéma de câblage



( ) CONNECTORS USED WITH TOP CONTROL

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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).

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

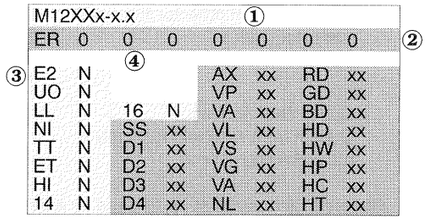


Figure 6.1 Screen of the Service Alignment Mode (SAM)

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 0:	No error code detected
ERROR:	3 0 0 0 0 0:	Error code 3 is the last and only detected error
ERROR:	5 3 0 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 respons 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^2C bus error	3x	All I^2C-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 I^2C 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.

- I^2C protection
  The I^2C bus is controlled at each I^2C-command. Therefore every I^2C 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.
  I^2C-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 +5SDb 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

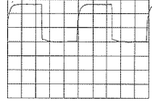
In case of a power supply problem, the power supply can be simplified to a stand alone power supply at low voltages (low risk) as follows:

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; 5uS/div
→ 40KHz pulse

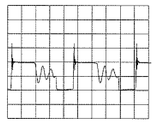


Energy transfer of the power supply (only if control part is OK)
6. Apply action 1, 2 and 4 as described earlier.
7. Connect a lamp of 230V/100W across the VOS output capacitor C2569.
8. Connect a 1kΩ resistor between the +5STANDBY (connector 7L10) and the STANDBY line (connector 8L10) to switch the 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).

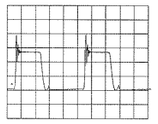
The wave forms for the following mains voltage are given:

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")

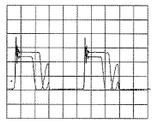
1. Figure 6.3:
   Mains in 10V AC
   10V/div; 10us/div



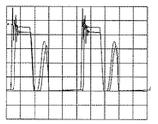
2. Figure 6.4:
   Mains in 20V AC
   20V/div; 5uS/div
   → 40kHz pulse
   → VOS 30V



3. Figure 6.5:
   Mains in 40V AC
   50V/div; 5uS/div
   → 40kHz pulse
   → VOS 80V



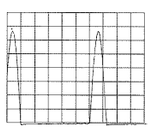
4. Figure 6.6:
   Mains in 65V AC
   50V/div; 5uS/div
   → 40kHz pulse
   → VOS 140V



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 a oscilloscope to test point L1 (collector of line output transistor 7420).

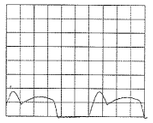
Possibilities:
1. Figure 6.7:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div
   Current from external DC supply approx. 100mA



Observation: *normal 16kHz pulses and 100mA supply current*

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

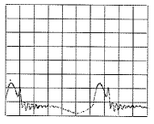
2. Figure 6.8:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div



   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

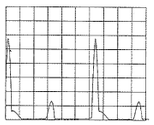
3. Figure 6.9:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div
   Current from external DC supply approx 500mA !!



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.

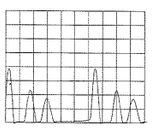
4. Figure 6.10:
   L3; test point at collector line output transistor (7420)
   100V/div; 10µS/div



   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; 10µS/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)*

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

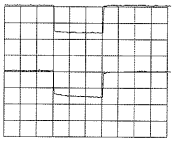
When there is no picture and no protection, it is most likely that there is a problem with the BC_INFO caused by the TDA8366, the RGB amplifiers or the picture tube.

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);

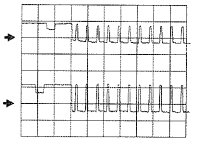
   Figure 6.12:
   Red (pin 8 of connector R43 on the CRT panel) and green gun (pin 6)
   100V/div DC;
   100µs/div

   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.

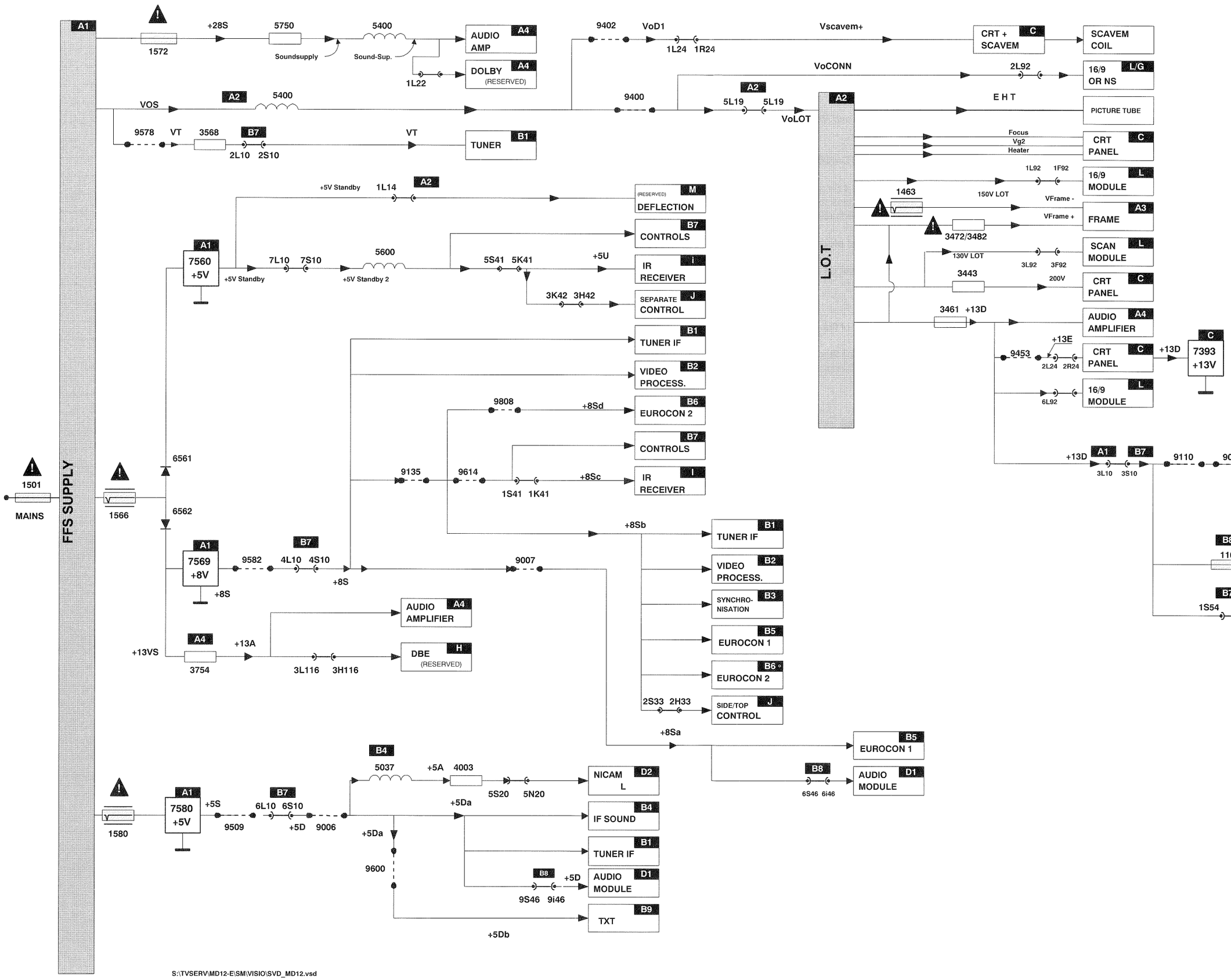
2. **Small horizontal red, green and blue lines at the top; the rest of the picture is dark**
   (set hangs in second phase of start up procedure)

   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 / Chassis MD1.2E 12 Speisespannung Schaltplan / Diagramme de tension d'alimentation



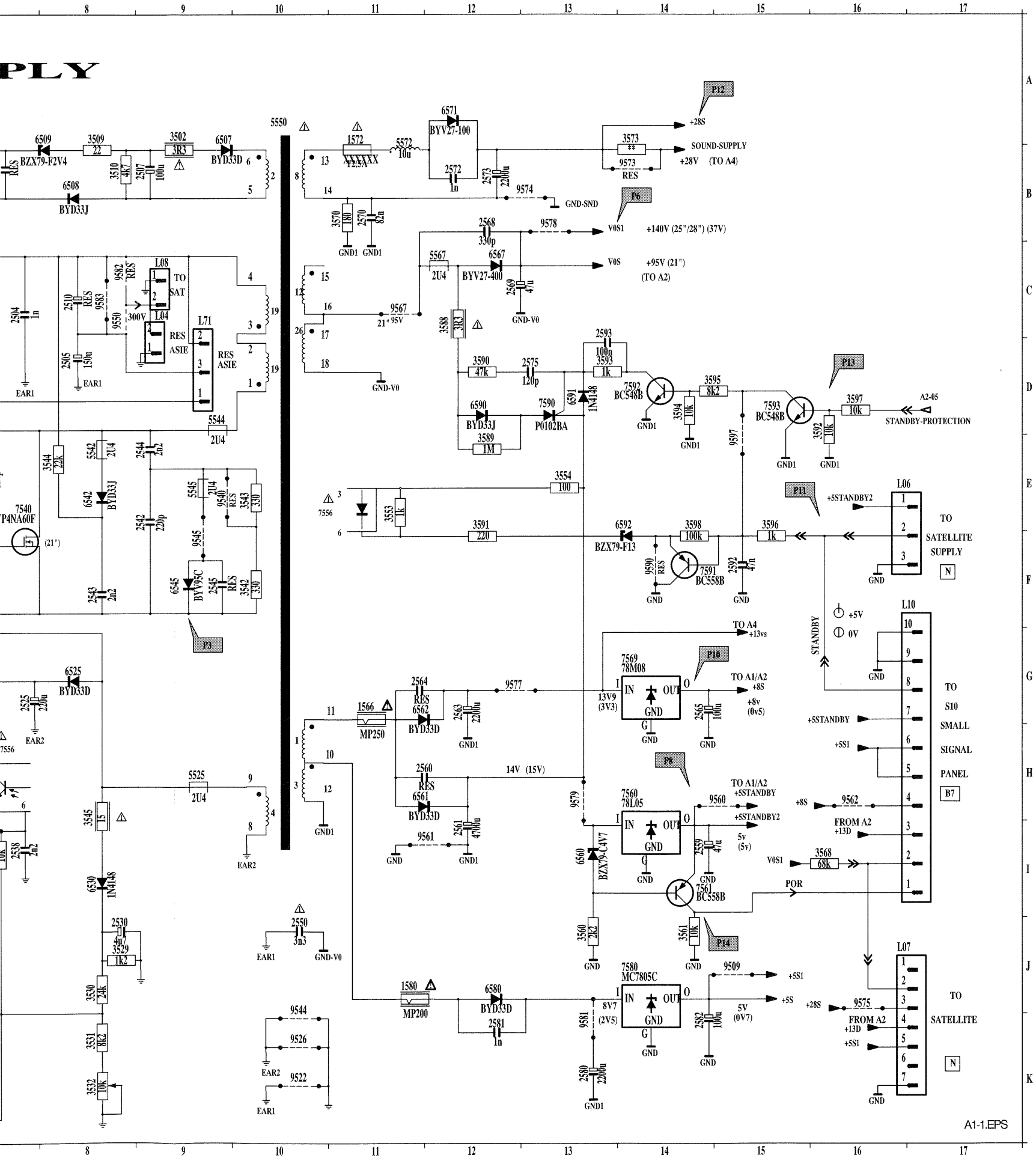
A 1

21 "
POWER SUPPLY

DEGAUSSING COIL 2
DEGAUSSING COIL 1
TO k101 MAINS MODULE
RES
DRIVE
(21")
RES ASIE
EAR1
EAR2
+300V
TO SAT
STP4NA60F
BZX79-F2V4
BYD33J
BYD33D
BZX79C15
BYV95C
1N4148
1N5061
6504 RES
MC44603p
Demag
Overvolt.
Foldback
Buffer
Comp
FlipFlop
Supply
Soft Start
Oscillator
Stand-by
Reference Section
Curr. Sense
OVP
Foldb
GND
OUT
VC
VCC
Sync
Ct
SS
Rp
EAout
Vfb
Rf
Rref
0V2 (0V)
2V1 (0V6)
1V1 (0V8)
13V9 (12V)
14V2 (11V)
1V4 (0V2)
2V7 (0V9)
2V5 (0V7)
0V (0V)
2.5V
18V
(XX)=STAND BY
P1
P2
P3
P4
P5
P7
P9
P12
P13
P11
P10
P8
P14
P6
+28S
SOUND-SUPPLY
+28V (TO A4)
GND-SND
V0S1
+140V (25"/28") (37V)
V0S
+95V (21")
(TO A2)
GND-V0
21"95V
STANDBY-PROTECTION
A2-05
+5STANDBY2
TO SATELLITE SUPPLY
TO A4 +13vs
TO A1/A2 +8S
+8v (0v5)
14V (15V)
TO A1/A2 +5STANDBY
5v (5v)
POR
+5V
0V
STANDBY
TO S10 SMALL SIGNAL PANEL
FROM A2 +13D
+5S1
+5S
+28S
TO SATELLITE
7569 78M08
7560 78L05
7580 MC7805C
13V9 (3V3)
8V7 (2V5)
MP250
MP200
A1-1.EPS

Alimentation 21"

PLY



1501 D 2	6513 C 7	2507 B 9	6561 H11
1566 G11	6520 E 5	2508 B 7	6567 C12
1572 A11	6523 G 6	2510 C 8	6571 A12
1580 J11	6524 H 3	2511 C 5	6580 J12
2500 D 2	6525 G 8	2512 C 7	6590 D12
2501 C 4	6530 L 8	2520 E 6	6591 D13
2504 C 7	6542 E 8	2521 H 1	6592 E14
2505 D 8	6545 F 9	2522 H 2	6607 B 6
2506 B 3	6560 I13	2523 G 6	7507 B 6
2507 B 9	6561 H11	2524 H 5	7520 H 1
2508 B 7	6567 C12	2525 G 7	7540 E 7
2510 C 8	6571 A12	2526 H 4	7556 H 7
2511 C 5	6580 J12	2528 H 2	7556 E10
2512 C 7	6590 D12	2530 J 6	7560 H14
2520 E 6	6591 D13	2531 K 2	7561 J14
2521 H 1	6592 E14	2533 K 3	7569 G14
2522 H 2	7507 B 6	2534 K 4	7580 J14
2523 G 6	7520 H 1	2535 K 4	7590 D13
2524 H 5	7540 E 7	2538 I 7	7591 F15
2525 G 7	7556 E 7	2540 E 7	7592 D14
2526 H 4	7556 H 7	2541 F 5	7593 D15
2528 H 2	7556 E10	2542 E 9	9507 B 5
2530 J 6	7560 H14	2543 F 8	9508 F 4
2531 K 2	7561 J14	2544 E 9	9509 J15
2533 K 3	7569 G14	2545 F 9	9522 K10
2534 K 4	7580 J14	2550 J10	9523 G 6
2535 K 4	7590 D13	2559 J14	9526 K10
2538 I 7	7591 F15	2560 H12	9538 I 7
2540 E 7	7592 D14	2561 I12	9540 E 9
2541 F 5	7593 D15	2563 G12	9544 J10
2542 E 9	9507 B 5	2564 G11	9545 F 9
2543 F 8	9508 F 4	2565 G14	9550 C 8
2544 E 9	9509 J15	2568 B12	9555 A 3
2545 F 9	9522 K10	2569 C12	9556 B 3
2550 J10	9523 G 6	2570 B11	9560 H15
2559 J14	9526 K10	2572 B12	9561 J12
2560 H12	9538 I 7	2573 B15	9562 H16
2561 I12	9540 E 9	2575 D13	9567 C11
2563 G12	9544 J10	2580 K13	9573 B14
2564 G11	9545 F 9	2581 K12	9574 B13
2565 G14	9550 C 8	2582 K14	9575 J16
2568 B12	9555 A 3	2592 F15	9577 G12
2569 C12	9556 B 3	2593 C13	9578 B13
2570 B11	9560 H15	3500 D 3	9579 H13
2572 B12	9561 J12	3502 A 9	9581 K13
2573 B15	9562 H16	3503 C 2	9582 C 8
2575 D13	9567 C11	3504 C 5	9583 C 8
2580 K13	9573 B14	3505 C 5	9590 F14
2581 K12	9574 B13	3506 B 4	9597 E15
2582 K14	9575 J16	3508 B 7	L01 C 1
2592 F15	9577 G12	3509 A 8	L02 B 2
2593 C13	9578 B13	3510 B 8	L03 B 1
3500 D 3	9579 H13	3511 E 6	L04 D 9
3502 A 9	9581 K13	3518 H 4	L05 A 2
3503 C 2	9582 C 8	3519 K 2	L06 E16
3504 C 5	9583 C 8	3520 D 6	L07 J16
3505 C 5	9590 F14	3521 G 1	L08 C 9
3506 B 4	9597 E15	3522 G 2	L10 F16
3508 B 7	L01 C 1	3523 G 3	L70 C 4
3509 A 8	L02 B 2	3524 G 4	L71 C 9
3510 B 8	L03 B 1	3525 G 4	
3511 E 6	L04 D 9	3526 G 5	
3518 H 4	L05 A 2	3527 G 5	
3519 K 2	L06 E16	3528 H 6	
3520 D 6	L07 J16	3529 I 8	
3521 G 1	L08 C 9	3530 I 8	
3522 G 2	L10 F16	3531 K 8	
3523 G 3	L70 C 4	3532 K 8	
3524 G 4	L71 C 9	3533 K 2	
3525 G 4		3534 K 4	
3526 G 5		3536 K 5	
3527 G 5		3537 K 5	
3528 H 6		3538 I 7	
3529 I 8		3539 I 7	
3530 I 8		3541 F 5	
3531 K 8		3542 E10	
3532 K 8		3543 E10	
3533 K 2		3544 E 8	
3534 K 4		3545 H 8	
3536 K 5		3553 E11	
3537 K 5		3554 E13	
3538 I 7		3560 I13	
3539 I 7		3561 I14	
3541 F 5		3568 B11	
3542 E10		3570 B11	
3543 E10		3573 A14	
3544 E 8		3579 K 3	
3545 H 8		3588 C12	
3553 E11		3589 E12	
3554 E13		3590 D12	
3560 I13		3591 E12	
3561 I14		3592 D16	
3568 B11		3593 D13	
3570 B11		3594 D14	
3573 A14		3595 E15	
3579 K 3		3596 E15	
3588 C12		3597 D16	
3589 E12		3598 E14	
3590 D12		5503 C 3	
3591 E12		5525 H 9	
3592 D16		5542 E 8	
3593 D13		5544 D 9	
3594 D14		5545 E 9	
3595 D15		5550 A10	
3596 E15		5567 C12	
3597 D16		5572 B11	
3598 E14		6501 C 3	
5503 C 3		6503 C 2	
5525 H 9		6504 C 6	
5542 E 8		6507 A 9	
5544 D 9		6508 B 8	
5545 E 9		6509 A 8	
5550 A10		6510 C 6	
5567 C12		6511 D 6	
5572 B11		6512 D 7	
6501 C 3			
6503 C 2			
6504 C 6			
6507 A 9			
6508 B 8			
6509 A 8			
6510 C 6			
6511 D 6			
6512 D 7			

P1 pin 4 item 5550
300VDC

P2 drain item 7540/7541
100V / div DC
10µs / div

P3 cathode item 6545
0.2V / div DC
5µs / div

P4 pin 3 item 7520
2V / div DC
10µs / div

P5 pin 7 item 7520
50mV / div AC
10µs / div

P6 VOS
non 21": 140V DC
21": 95V DC

P7 pin 14 item 7520
① 2V5DC
⏻ 0VDC
0.5V / div DC
0.1s / div

P8 +5VSTANDBY
① 5VDC
⏻ 0VDC

P9 pin 10 item 7520
0.5V / div DC
10µS / div

P10 +8S
① 8VDC
⏻ 0VDC

P11 STANDBY
① 5VDC
⏻ 0VDC

P12 +28S/ SOUND-SUPPLY +28VDC

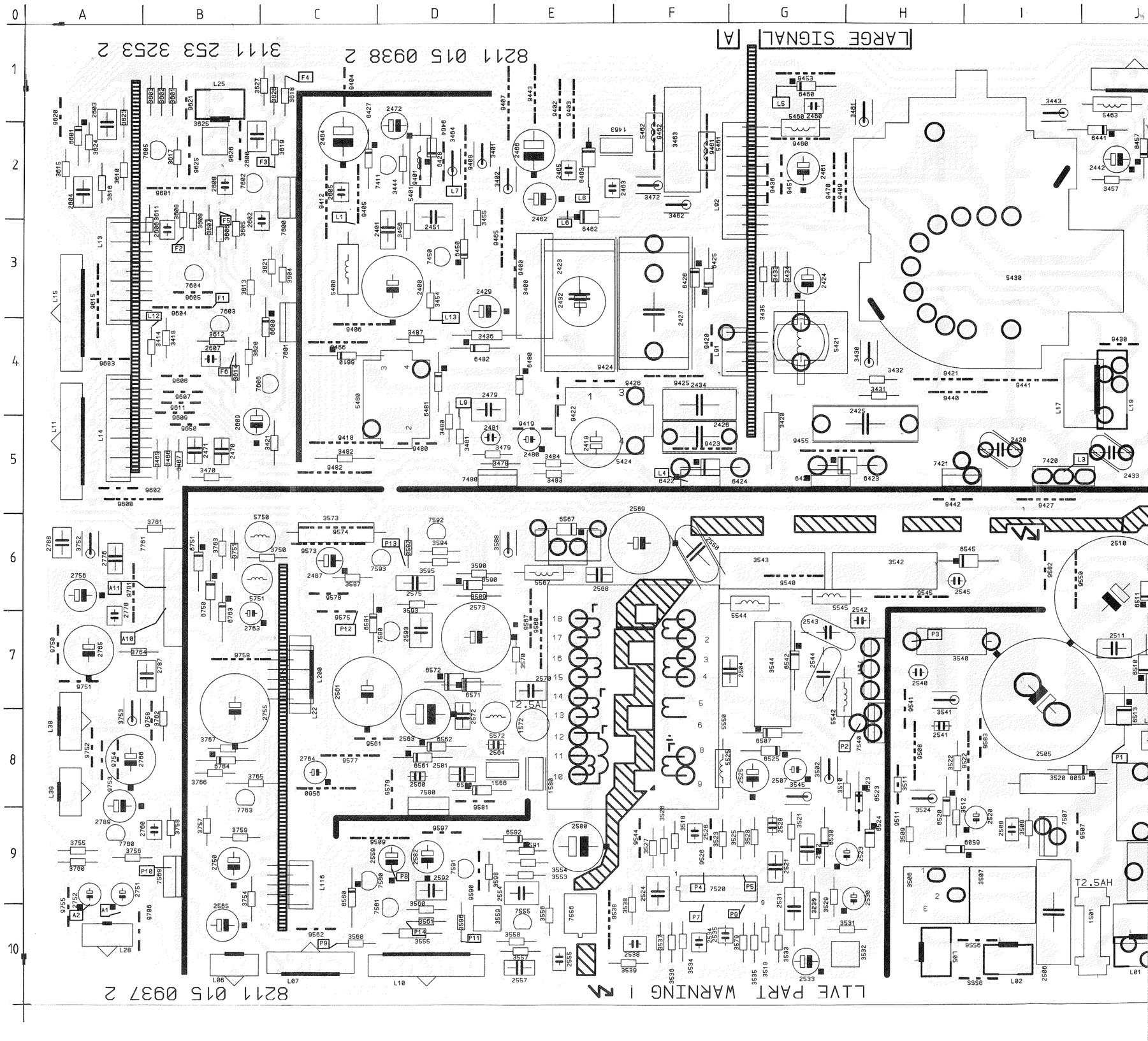
P13
⏻/PROTECTION
0VDC = not in protection

P14
POR (⏻ to ①)
0V ⎍ 5V
POR (① to ⏻)
5V ⎎ 0V

OSC A1.CDR

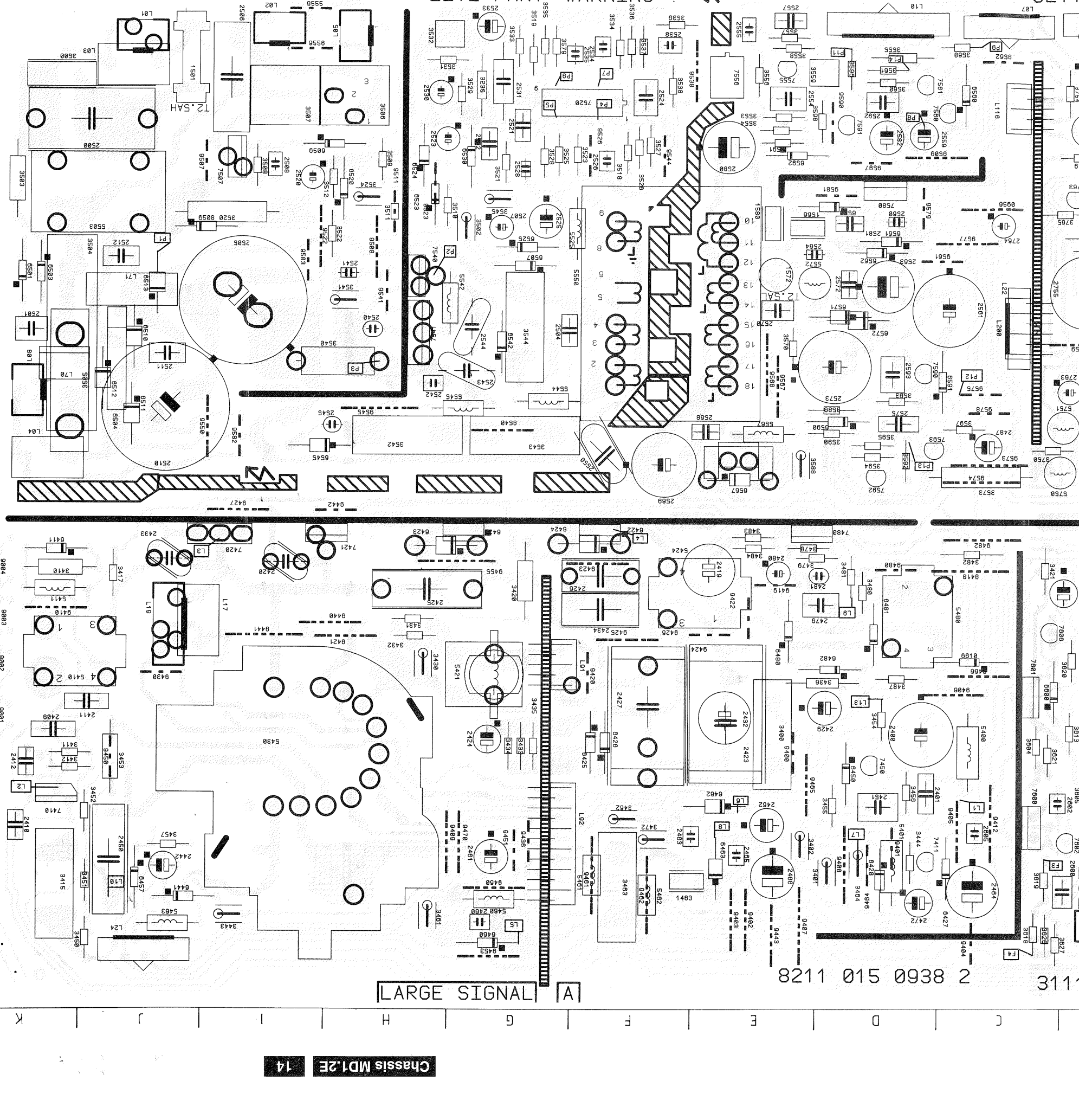
Large signal panel / Groß-Signal Platine / Platine forts signaux

L01 J10
L02 I10
L03 J10
L04 K6
L05 H10
L06 B10
L07 C10
L08 K7
L10 D10
L11 A5
L13 A3
L14 A5
L15 A3
L17 I4
L19 J4
L22 C7
L24 J1
L25 B1
L28 A10
L38 A8
L39 A8
L70 K7
L71 J8
L91 F4
L92 F2
L116 C9
L200 C7
1463 E2
1566 E8
1572 E8
1580 E8
2400 D3
2401 D3
2409 K3
2410 K2
2411 J3
2412 K3
2419 E5
2420 I5
2423 E3
2424 G3
2425 H5
2426 F5
2427 F3
2429 D3
2432 E3
2433 J5
2434 F4
2442 J2
2450 J2
2451 D2
2460 G1
2461 G2
2462 E2
2463 E2
2464 C2
2465 E2
2466 E2
2470 B5
2471 B5
2472 D2
2479 D4
2480 E5
2481 D5
2487 C6
2500 J9
2501 K7
2504 F7
2505 I7
2506 I10
2507 G8
2508 I9
2510 J6
2511 J7
2512 J8
2520 I9
2521 G9
2522 G9
2523 G9
2524 F9
2525 G8
2526 F9
2528 G9
2530 G9
2531 G10
2533 G10
2534 F10
2535 F10
2538 F10
2540 H7
2541 H8
2542 H7
2543 G7
2544 G7
2545 H6
2550 F6
2554 E9
2555 E10
2557 E10
2559 D9
2560 D8
2561 C7
2563 D8
2564 D8
2565 B10
2568 E6
2569 F6
2570 E7
2572 D8
2573 D7
2575 D6
2580 E9
2581 D8
2582 D9
2592 D9
2593 D7
2600 B2
2602 B3
2603 A2
2604 A2
2605 C2
2606 B3
2607 B4
2608 B2
2609 B5
2750 B9
2751 A9
2752 A9
2755 B7
2756 A6
2760 B9
2763 B7
2764 C8
2765 A7
2766 A8
2776 A6
2778 A7
2787 A7
2788 A6
2789 A8
3400 E3
3401 D2
3402 E2
3410 K5
3411 J3
3412 J3
3414 A4
3415 K2
3417 J5
3418 B4
3420 G5
3421 C5
3430 H4
3431 H4
3432 H4
3433 G3
3434 G3
3435 G3
3436 D4
3443 I1
3444 D2
3450 J1
3451 J2
3452 J2
3453 J3
3454 D3
3455 D2
3456 D3
3457 J2
3461 H1
3462 F2
3463 F2
3464 D2
3465 B5
3466 B5
3467 B5
3470 B5
3472 F2
3478 D5
3479 D5
3480 D5
3481 D5
3482 C5
3483 E5
3484 E5
3487 D4
3500 K10
3502 G8
3503 K9
3504 J7
3505 K7
3506 H9
3507 I9
3508 I9
3509 H9
3510 G8
3511 H8
3512 H9
3518 F9
3519 G10
3520 I8
3521 G9
3522 H8
3523 F9
3524 H8
3525 G9
3526 F9
3527 F9
3528 G9
3529 G9
3530 G10
3531 G10
3532 G10
3533 G10
3534 F10
3535 G10
3536 F10
3537 F10
3538 F10
3539 F10
3540 H7
3541 H7
3542 H6
3543 G6
3544 G7
3545 G8
3553 E9
3554 E9
3555 D10
3556 E10
3557 E10
3558 E10
3559 D10
3560 D10
3561 D10
3568 C10
3570 E7
3573 C6
3579 G10
3588 E6
3589 D6
3590 D6
3591 E9
3592 D6
3593 D6
3594 D6
3595 D6
3596 D10
3597 C6
3598 D9
3601 B1
3602 B1
3603 A1
3604 C3
3605 B3
3606 B3
3607 B3
3608 B3
3609 B3
3610 A2
3611 A3
3612 B4
3613 B3
3614 B4
3615 A2
3616 A2
3617 B2
3618 C1
3619 C2
3620 B4
3621 C3
3623 A1
3624 A2
3625 B2
3626 C1
3627 B1
3750 B6
3751 B6
3752 A6
3753 B8
3754 B9
3755 A9
3756 B10
3759 F10
3761 E6
3762 B8
3763 B6
3764 A7
3765 B8
3766 B8
3767 B8
5400 C3
5401 D2
5410 J4
5411 K5
5421 G4
5424 E5
5430 H3
5460 G2
5461 F2
5462 F2
5463 J1
5480 D4
5503 J8
5525 F8
5542 G7
5544 G6
5545 G6
5550 F7
5567 E6
5572 D8
5750 B6
5751 B6
6411 K5
6421 G5
6422 F5
6423 G5
6424 F5
6425 F3
6426 F3
6427 C2
6428 D2
6441 J2
6450 D3
6457 J2
6460 G1
6462 E2
6463 E2
6480 E4
6481 D4
6482 D4
6501 K8
6503 K8
6504 J7
6507 G8
6508 I8
6509 H9
6510 J7
6512 J7
6513 J8
6520 H8
6523 H8
6524 H9
6525 G8
6530 G9
6542 G7
6545 H6
6560 C9
6561 D8
6562 D8
6567 E6
6571 D7
6572 D7
6580 D8
6590 D6
6591 C7
6592 E9
6600 B4
6601 A2
6610 C4
6750 B6
6751 B6
6763 B7
6764 B8
7410 K3
7411 D2
7420 I5
7421 H5
7450 D3
7480 D5
7507 I9
7520 F9
7540 H8
7541 H7
7555 E10
7556 E10
7560 C9
7561 D10
7569 B9
7580 D9
7590 D7
7591 D9
7592 D6
7593 C6
7600 C2
7601 C4
7602 B2
7603 B4
7604 B3
7605 B2
7606 B4
7760 A9
7761 B6
7763 B8
9001 K3
9002 K4
9003 K4
9004 K5
9005 K3
9006 K4
9007 K4
9008 K5
9400 E3
9401 D2
9402 E1
9403 E1
9404 C1
9405 C2
9406 C4
9407 E1
9408 D2
9409 G2
9410 K4
9412 C2
9418 C5
9419 E5
9420 F4
9421 H4
9422 E4
9423 F5
9424 F4
9427 I5
9430 J4
9436 G2
9440 H4
9441 I4
9442 H5
9443 E1
9450 J3
9451 G2
9453 G1
9455 G5
9460 G2
9461 F2
9462 F2
9464 D2
9465 D3
9466 C4
9470 G2
9480 D5
9482 C5
9507 I9
9508 H8
9509 C9
9511 H8
9522 H8
9523 H9
9526 F9
9538 E10
9540 G6
9541 H8
9544 F9
9545 H6
9550 I6
9555 I10
9556 I10
9560 C8
9561 C8
9562 C10
9567 E7
9568 E7
9573 C6
9574 C6
9575 C7
9577 B8
9578 C6
9579 D8
9581 D8
9582 I6
9583 I8
9590 D9
9597 D9
9601 B2
9602 A5
9603 A4
9604 B3
9605 B3
9606 B4
9607 B4
9608 A5
9609 B4
9611 B4
9615 A3
9620 A1
9621 B1
9625 B2
9626 B2
9650 B5
9750 A7
9751 A7
9752 A8
9753 A8
9754 A8
9755 A10
9758 B8
9759 B7
9781 A6
9786 A10



LIVE PART WARNING !

8211



LARGE SIGNAL A

8211 015 0938 2

A1

> 21" POWER SUPPLY

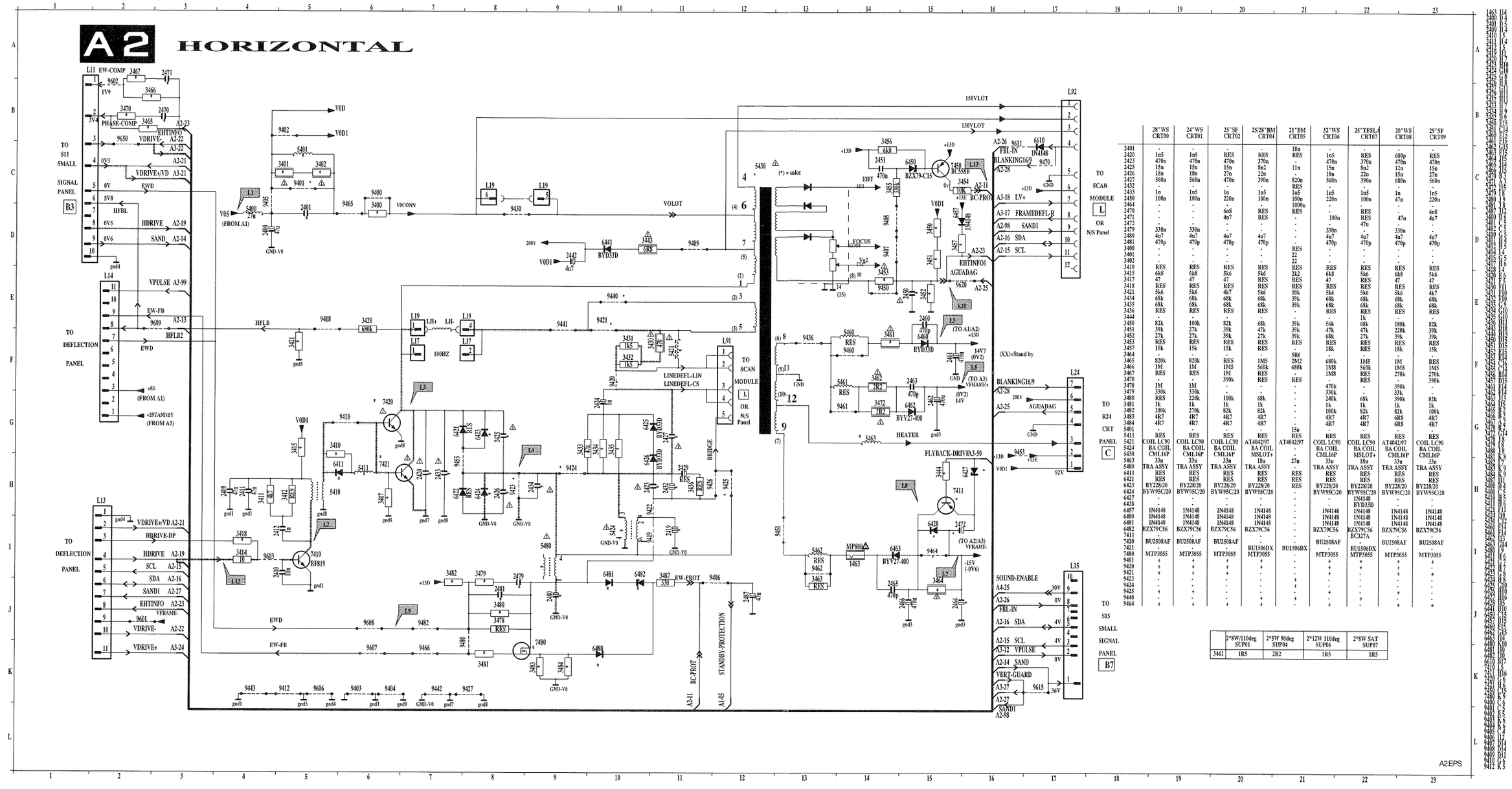
*	2*8w 110deg SUP01	2*12w 110deg SUP06	2*8w sat SUP07
1501		T3.15A	T2.5AH
3500	RES	1MA/387V	1MA/387V
3512	1k5	1k5	2k2
3568	100k	100k	82k
7580	MC7805C	MC7805C	L7805AC-V

***	28"WS CRT00	24" ws CRT01	25"SF CRT02	25/28"BM CRT04	32"WS CRT06	25"TESLA CRT07	20"WS CRT08	29"SF CRT09
3507	18	18	-	-	18	-	-	-

(XX)=STAND BY

A1-2.EPS

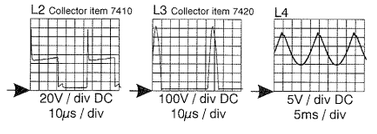
A2 HORIZONTAL



	28"WS CRT00	24"WS CRT01	25"SF CRT02	25/28"BM CRT04	21"BM CRT05	32"WS CRT06	25"TESLA CRT07	20"WS CRT08	29"SF CRT09
2401	-	-	-	-	10n	-	-	-	-
2420	1n5	1n5	RES	RES	RES	1n5	RES	680p	RES
2423	470n	470n	470n	370n	-	470n	370p	470n	470n
2425	15n	15n	15n	8n2	11n	15n	8n2	12n	15n
2426	18n	18n	27n	22n	-	18n	22n	15n	27n
2427	560n	560n	470n	390n	820n	560n	390n	680n	560n
2432	-	-	-	-	RES	-	-	-	-
2433	1n	1n5	1n	1n5	1n5	1n5	1n5	1n	1n5
2458	100n	100n	220n	100n	100n	220n	100n	47n	220n
2464	-	-	-	-	1000n	-	-	-	-
2470	-	-	6n8	RES	RES	-	RES	-	6n8
2471	-	-	4n7	RES	-	100n	RES	47n	4n7
2472	-	-	-	-	-	-	-	-	-
2479	330n	330n	-	-	-	330n	-	330n	-
2480	4n7	4n7	4n7	4n7	4n7	4n7	4n7	4n7	4n7
2481	470p	470p	470p	470p	470p	470p	470p	470p	470p
3400	-	-	-	-	RES	-	-	-	-
3401	-	-	-	-	22	-	-	-	-
3402	-	-	-	-	22	-	-	-	-
3410	RES	RES	RES	RES	RES	RES	RES	RES	RES
3415	6k8	6k8	5k6	5k6	2k2	6k8	5k6	6k8	5k6
3417	47	47	RES	RES	RES	RES	RES	47	47
3418	RES	RES	RES	RES	RES	RES	RES	RES	RES
3421	5k6	5k6	4k7	5k6	10k	5k6	5k6	5k6	4k7
3434	68k	68k	68k	68k	39k	68k	68k	68k	68k
3435	68k	68k	68k	68k	39k	68k	68k	68k	68k
3436	RES	RES	RES	RES	-	RES	RES	RES	RES
3444	-	-	-	-	1k	-	-	-	-
3450	82k	100k	82k	68k	39k	56k	68k	180k	82k
3451	39k	27k	39k	47k	39k	47k	47k	220k	39k
3452	27k	27k	39k	27k	39k	68k	27k	39k	39k
3453	RES	RES	RES	RES	RES	RES	RES	RES	RES
3457	15k	15k	RES	RES	-	18k	RES	18k	15k
3464	-	-	-	-	5R6	-	-	-	-
3465	820k	820k	RES	1M5	2M2	680k	1M5	1M	RES
3466	1M	1M	1M5	560k	680k	1M8	560k	1M8	1M5
3467	RES	RES	1M	RES	-	1M8	RES	270k	270k
3470	-	-	390k	RES	RES	-	RES	-	390k
3478	1M	1M	-	-	-	470k	-	390k	-
3479	330k	330k	-	-	-	330k	-	33k	-
3480	RES	220k	100k	68k	-	240k	68k	390k	82k
3481	1k	1k	1k	1k	-	1k	1k	1k	1k
3482	100k	270k	82k	82k	-	100k	82k	82k	100k
3483	4R7	4R7	4R7	4R7	-	4R7	4R7	6R8	4R7
3484	4R7	4R7	4R7	4R7	-	4R7	4R7	6R8	4R7
5401	-	-	-	-	15n	-	-	-	-
5411	RES	RES	RES	RES	RES	RES	RES	RES	RES
5421	COIL LC90 BA COIL CML16P	COIL LC90 BA COIL CML16P	COIL LC90 BA COIL CML16P	AT4042/97 BA COIL MSLOT+	AT4042/97 -	COIL LC90 BA COIL CML16P	COIL LC90 BA COIL MSLOT+	AT4042/97 BA COIL CML16P	COIL LC90 BA COIL CML16P
5424	33u	33u	18u	33u	27u	33u	18u	33u	33u
5430	TRA ASSY	TRA ASSY	TRA ASSY	TRA ASSY	-	TRA ASSY	TRA ASSY	TRA ASSY	TRA ASSY
5463	RES	RES	RES	RES	RES	RES	RES	RES	RES
5480	RES	RES	RES	RES	RES	RES	RES	RES	RES
6411	BY228/20	BY228/20	BY228/20	BY228/20	-	BY228/20	BY228/20	BY228/20	BY228/20
6423	BYW95C/20	BYW95C/20	BYW95C/20	BYW95C/20	-	BYW95C/20	BYW95C/20	BYW95C/20	BYW95C/20
6424	-	-	-	-	-	-	-	-	-
6427	-	-	-	-	-	-	BYD33D	-	-
6428	-	-	-	-	-	-	-	-	-
6457	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6480	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6481	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6482	BZX79C56	BZX79C56	BZX79C56	BZX79C56	-	BZX79C56	BZX79C56 BC327A	BZX79C56	BZX79C56
7411	-	-	-	-	-	-	-	-	-
7420	BU2508AF	BU2508AF	BU2508AF	-	-	BU2508AF	-	BU2508AF	BU2508AF
7421	-	-	-	BU1506DX	BU1506DX	-	BU1506DX	-	-
7480	MTP3055	MTP3055	MTP3055	MTP3055	-	MTP3055	MTP3055	MTP3055	MTP3055
9401	+	+	+	+	-	+	+	+	+
9420	+	+	+	+	-	+	+	+	-
9421	+	+	+	-	-	+	-	-	+
9423	-	-	-	-	+	-	-	-	-
9424	-	-	-	-	-	-	-	-	-
9425	+	+	-	-	-	+	-	+	-
9440	-	-	-	+	+	-	+	-	-
9464	+	+	+	+	-	+	-	+	+

	2*8W/110deg SUP01	2*5W 90deg SUP04	2*12W 110deg SUP06	2*8W SAT SUP07
3461	1R5	2R2	1R5	1R5

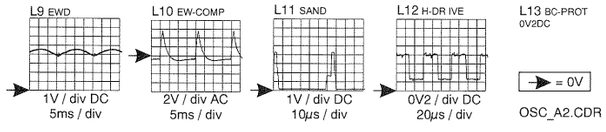
L1 VOS
non 21": 140VDC
21": 95VDC



L5 +13D
14V7DC

L6 VFRAME+
14VDC

L7/L8 VFRAME-
-15VDC



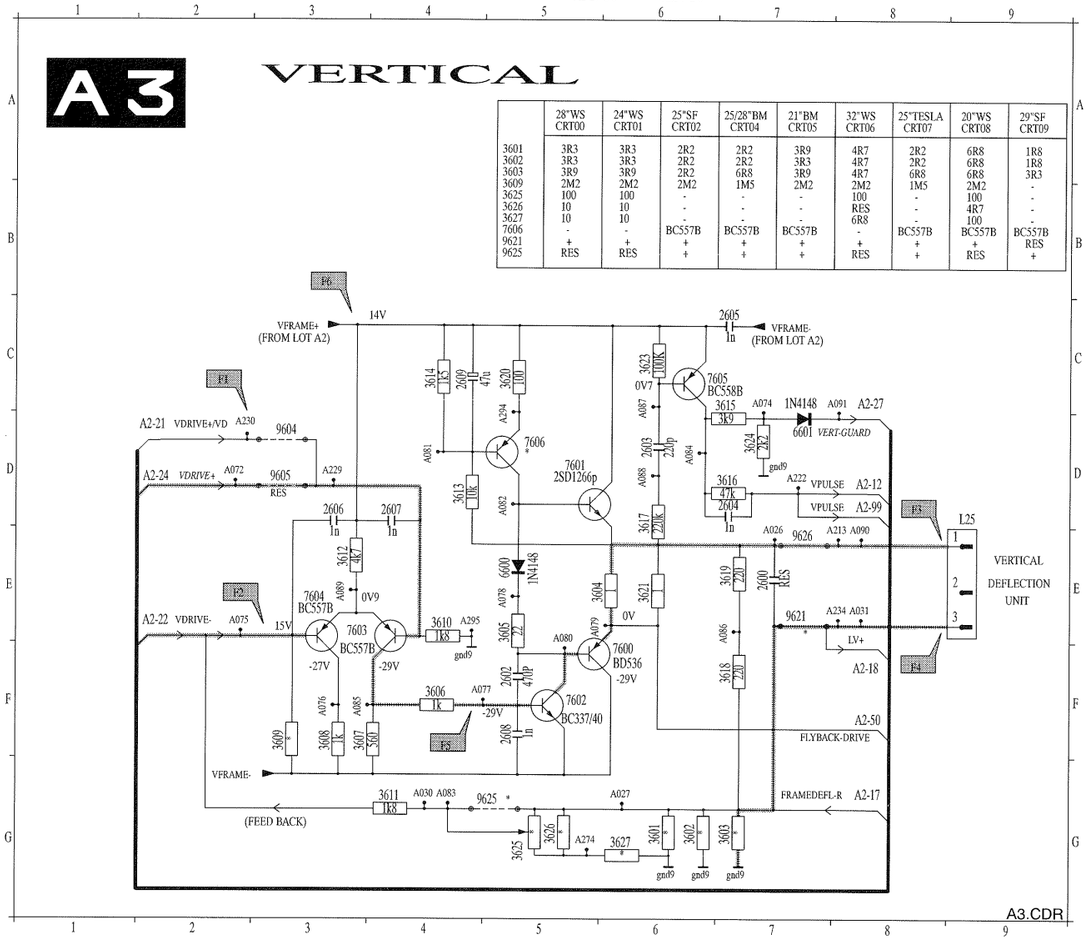
L13 BC-PROT
0V2DC

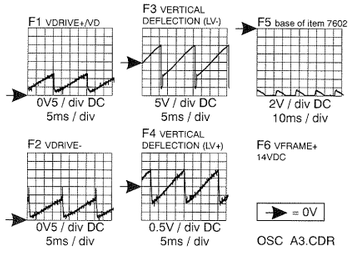
= 0V

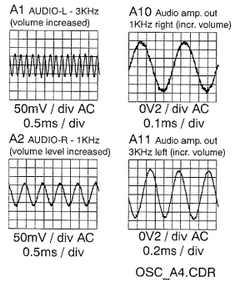
OSC_A2.CDR

Vertical output / Vertikalausgang / Sortie verticale

2600 E7 2601 F5 2602 F5 2603 G6 2604 G7 2605 F7 2606 D3 2607 D4
2608 E5 2609 C4 2610 G6 2611 G4 2612 E3
3606 F4 3607 F3 3608 F3 3609 F3 3610 E4 3611 G4 3612 E3
3613 D4 3614 C4 3615 C7 3616 D7 3617 D6 3618 E7 3619 E7
3620 C5 3621 E6 3623 C5 3624 C6 3625 G5 3626 G5 3627 G6
6600 E5 6601 D7 7600 E6 7601 D5 7602 F5 7603 E4 7604 E3
7605 C6 7606 D5 6604 D3 6605 D3 6621 E7 6625 G5 9626 E7
A2-12 D8 A2-17 G8 A2-18 E8 A2-21 D3 A2-22 E7 A2-24 D2 A2-27 C8
A2-50 F8 A2-99 D8 A213 E8 A222 D7 A229 D3 A230 D2 A234 E8
A274 G5 A204 D5 A205 E4 L25 D9

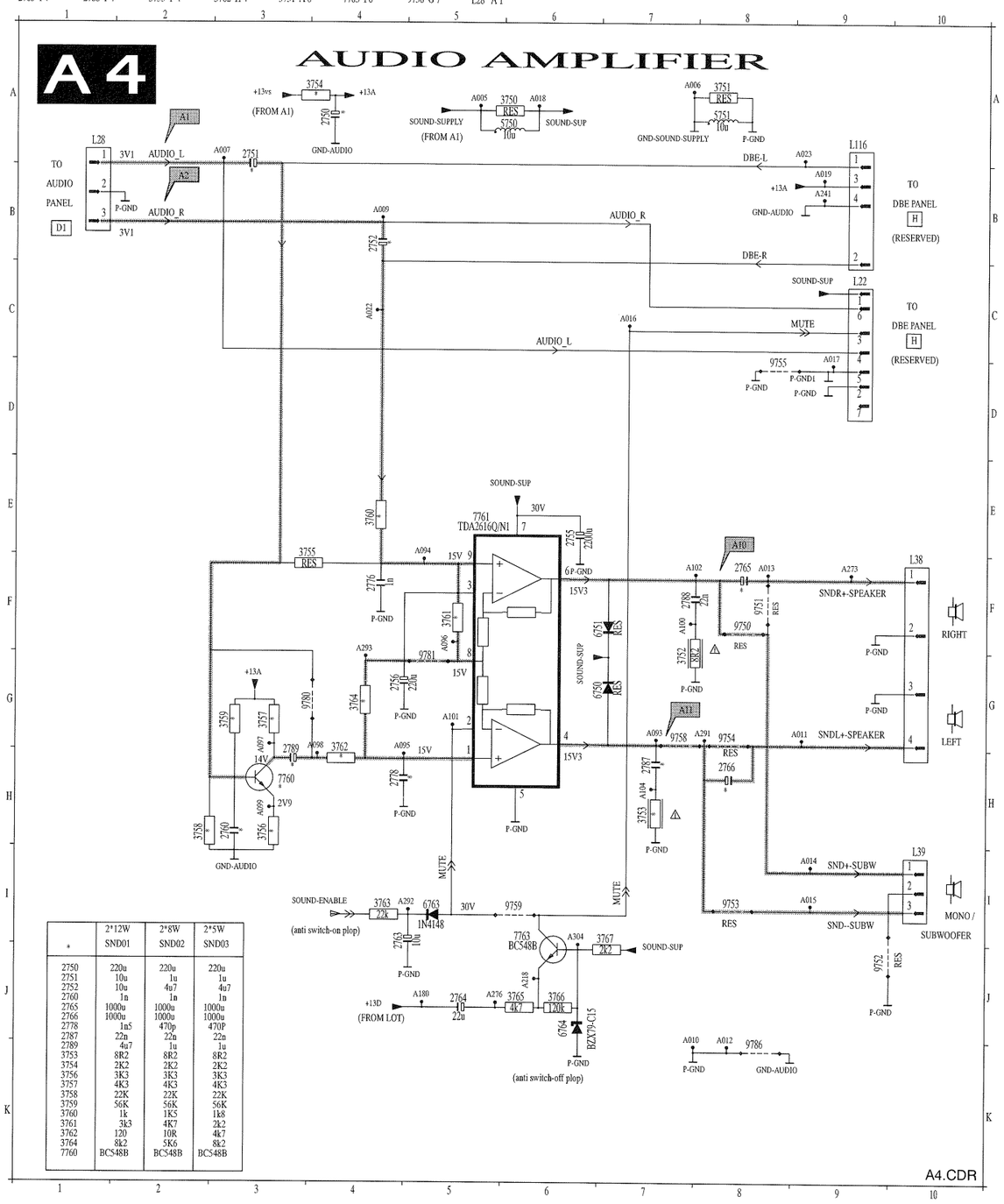






Audio amplifier / Ton Verstärker / Amplification audio

2750 A4 2751 A3 2752 B4 2755 E6 2756 G4 2760 H3 2763 I4
2764 I5 2765 F8 2766 H8 2776 F4 2778 F7 2788 F7
2780 H3 3750 A6 3751 A8 3752 G7 3753 H7 3754 A4 3755 F4
3756 H3 3757 G3 3758 H2 3759 G3 3760 F4 3761 F5 3762 H4
3763 L4 3764 G4 3765 I6 3766 I6 3767 I7 3750 A6 3751 A8
6750 G7 6751 E7 6763 I5 6764 I6 7760 H3 7761 E5 7703 I6
9750 F8 9751 F8 9752 I8 9753 I8 9754 G8 9755 D8 9758 G7
9759 I6 9780 G4 9781 G5 9786 J8 L116 A9 L22 C9 L28 A1
L38 F10 L39 I10



*	2*12W SND01	2*8W SND02	2*5W SND03
2750	220u	220u	220u
2751	10u	1u	1u
2752	10u	4u7	4u7
2760	1n	1n	1n
2765	1000u	1000u	1000u
2766	1000u	1000u	1000u
2778	1n5	470p	470P
2787	22n	22n	22n
2789	4u7	1u	1u
3753	8R2	8R2	8R2
3754	2K2	2K2	2K2
3756	3K3	3K3	3K3
3757	4K3	4K3	4K3
3758	22K	22K	22K
3759	56K	56K	56K
3760	1k	1K5	1k8
3761	3k3	4K7	2k2
3762	120	10R	4k7
3764	8k2	5K6	8k2
7760	BC548B	BC548B	BC548B

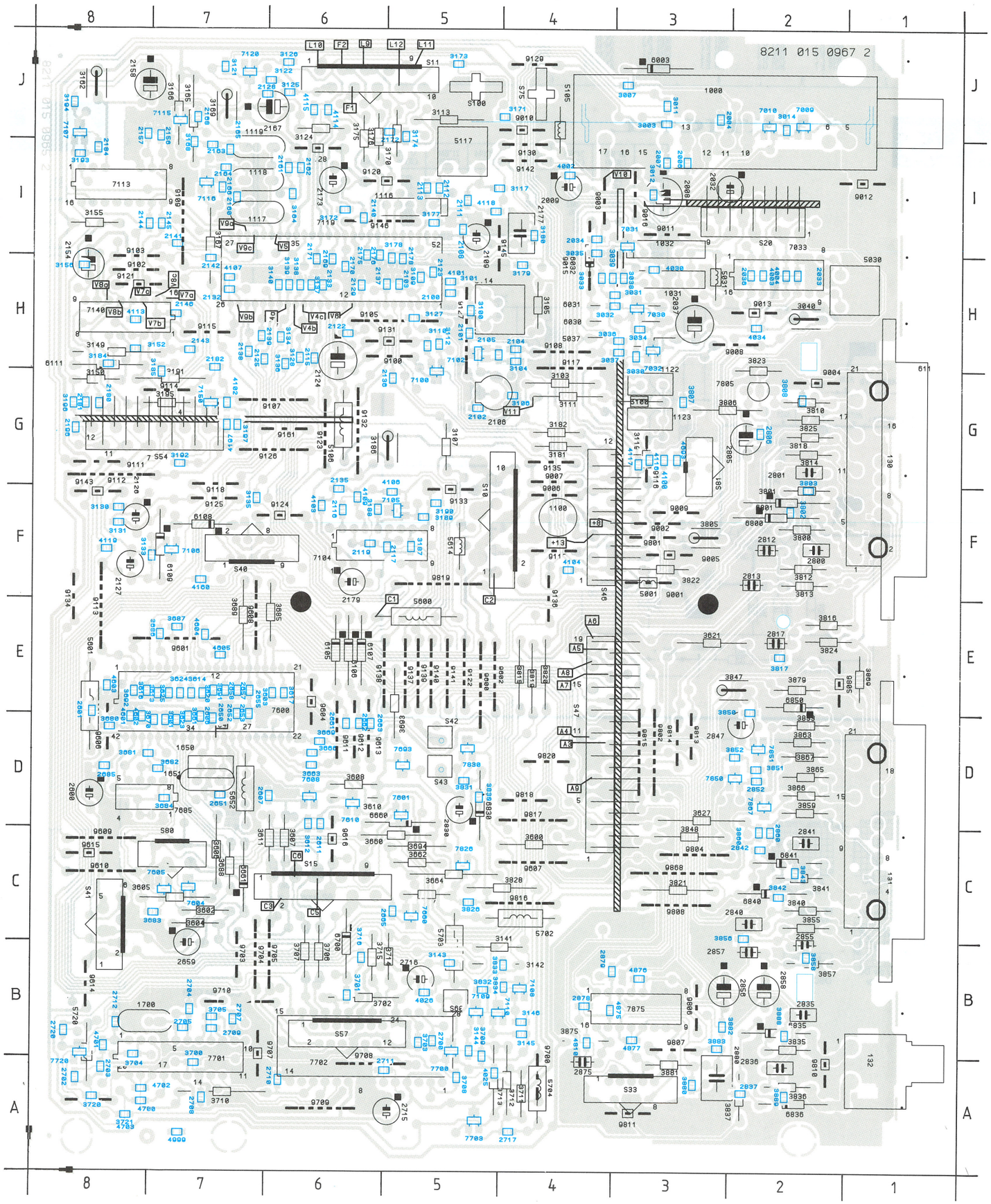
Small signal panel / Klein Signal Platine /

Chassis MD1.2E **18**

Platine petits signaux

S11	J6	2160	I7*	3036	H3*	3613	E7*	3852	D2*	6836	A2	9135	G4
S15	C6	2161	I6*	3037	H3*	3614	E7*	3853	D2	6840	C2	9136	F4
S20	I2	2162	I6*	3038	H3*	3616	E8*	3855	C2	6841	C2	9137	E5
S33	A3	2163	I7*	3039	H3*	3617	E6*	3856	C2*	6850	E2	9138	E5
S40	F7	2164	I7*	3040	H2	3620	E7*	3857	B2	7009	J2*	9139	E5
S41	C8	2165	I7*	3100	H5*	3621	E3	3858	B2*	7010	J2*	9140	E5
S42	D5	2166	I7*	3101	H5*	3623	D7*	3859	D2	7030	H3*	9141	E5
S43	D5	2167	J6	3103	G4	3624	E7*	3860	C2*	7031	I3*	9142	I4
S46	F4	2168	J7*	3104	H4*	3625	E7*	3863	D2	7032	H3*	9143	F8
S47	D4	2169	H6*	3105	H4	3627	D3	3865	D2	7033	H2	9145	I4
S54	G7	2170	H6*	3106	G4*	3660	C5	3866	D2	7100	H5*	9146	I6
S57	B6	2171	H6*	3107	G5	3661	D7*	3867	D2	7102	H5*	9161	G6
S60	B5	2172	J5*	3109	H5*	3662	C5	3869	E1	7104	F5	9600	E5
S75	J4	2173	I6	3110	H5*	3663	D6*	3875	B4	7105	F5*	9601	E7
S80	C7	2175	I6*	3111	G4	3664	C5	3879	E2	7106	F7*	9602	E5
S81	G3	2176	I6*	3112	H5*	3666	D6*	3880	A3*	7107	J8*	9604	E6
S100	J5	2177	I4	3113	J5	3669	D6*	3881	A3	7108	B4*	9606	D8
130	F1	2178	H5*	3117	I4*	3670	D7*	3882	B3*	7109	B5*	9607	C4
131	C1	2179	F6	3119	G3	3680	D8*	3883	B3*	7110	B4*	9608	E7
132	A1	2180	G8*	3121	J7*	3681	D8*	3888	B2*	7113	I8	9609	C8
1000	J3	2181	G8*	3122	J6*	3682	D7*	3889	A2*	7115	J7*	9610	C8
1031	H3	2182	H7*	3124	J6	3683	C7*	4002	I4*	7116	I7*	9611	D6
1032	I3	2184	I8*	3125	J6*	3684	D7*	4003	H2*	7119	H6	9612	D6
1100	F4	2196	G8*	3126	J6*	3685	E6	4004	H2*	7120	J7*	9613	D6
1116	I5	2600	D8	3127	H5*	3686	E7*	4025	A4*	7140	H8	9614	B8
1117	I7	2601	E8*	3128	H6*	3687	E7*	4026	B5*	7150	G7*	9615	C8
1118	I7	2606	D7*	3130	F8*	3688	C7	4030	H3*	7600	E7	9616	C6
1119	I7	2607	D6*	3131	F8*	3689	E7	4034	H2*	7601	D5*	9700	A4
1122	G3	2611	D6*	3133	F8*	3691	E7*	4100	G3*	7604	C7*	9703	B7
1123	G3	2650	D7*	3134	H6*	3692	E8*	4101	H5*	7605	C7*	9704	B7
1650	D7	2651	D7*	3135	F7*	3693	E5	4102	G7*	7608	D6*	9705	B6
1651	D7	2652	E7*	3136	H6*	3694	C5	4103	F6*	7610	D6*	9707	B7
1700	B8	2653	E7*	3137	H6*	3700	A7*	4104	F4*	7660	C5*	9708	A6
1800	F1*	2655	E7*	3138	H6*	3701	B6*	4106	F5*	7685	D8	9709	A6
1801	F1*	2657	E7*	3139	H6*	3702	B6	4107	H7*	7693	D5*	9710	B7
1802	F1*	2658	E7*	3140	H6*	3703	B5*	4109	F6*	7700	B5*	9720	A8
1803	F1*	2659	B7	3141	B4	3704	B8*	4113	H8*	7701	A7	9801	F3
1804	C1*	2661	D6*	3142	B4	3705	B7*	4114	J6*	7702	B6	9802	D3
1805	C1*	2662	D6*	3143	B5*	3706	B6	4115	J6*	7703	A5*	9804	C3
1806	C1*	2663	D6*	3144	B5*	3707	B6	4116	G3*	7720	B8*	9805	E1
1807	C1*	2665	C5*	3145	B4*	3708	A5*	4117	G3*	7805	G2	9806	B3
2004	J3*	2685	D8*	3146	B4*	3709	B5*	4118	I5*	7826	C5*	9807	B3
2006	I3*	2700	B5*	3149	H8	3710	A7	4119	F8*	7830	D5*	9808	C3
2007	I3*	2702	A8*	3150	G8	3711	A4	4160	F7*	7850	D2*	9810	A2
2008	I3	2703	A8*	3152	H8*	3712	A4	4197	G7*	7851	D2*	9811	A3
2009	I4	2704	B7*	3155	I8	3713	A4	4601	D8*	7867	D2*	9813	D3
2032	I2	2705	B7*	3156	H8*	3714	B5	4602	D8*	7875	B3	9814	D3
2033	H2*	2707	B7*	3162	J8	3715	B6	4603	E8*	9001	F3	9815	D3
2034	I4*	2708	A7*	3164	I6*	3716	B6*	4604	E7*	9002	F3	9816	C4
2036	H2*	2709	B7*	3165	J7	3720	A8*	4605	E7*	9003	I4	9817	D4
2037	H3	2710	A6*	3166	J7	3721	A8*	4693	G3*	9004	G2	9818	D4
2100	H5*	2711	A5*	3167	I7	3800	F2	4700	A8*	9005	F3	9819	F5
2101	H5*	2712	B8*	3168	J7*	3801	F2	4701	B8*	9006	F4	9820	D4
2102	G5*	2715	A5	3169	J7	3802	F2*	4702	A8*	9007	G4	9868	C3
2103	H5*	2716	B5	3170	J5	3803	F2*	4703	A8*	9008	H2		
2104	H4*	2717	A4*	3171	J4*	3805	F3	4810	B4*	9009	F3		
2105	H4*	2720	B8*	3172	I6*	3806	G2	4875	B3*	9010	J4		
2106	G5	2800	F2	3173	J5*	3807	G3*	4876	B3*	9011	I3		
2108	I5*	2801	G2	3174	J5*	3808	G2*	4877	B3*	9012	I1		
2109	I5	2805	G2	3175	J6	3810	G2	5001	F3	9013	H2		
2111	I5*	2806	G2*	3176	J6	3812	F2	5030	H1	9015	I4		
2112	I5*	2812	F2	3177	I5*	3813	F2	5031	H3	9016	I3		
2113	I5*	2813	F2	3178	I5*	3814	G2	5037	H3	9100	H5		
2115	H6*	2817	E2	3179	H4*	3815	E4	5100	G3	9102	H8		
2116	F6*	2830	D5	3180	I4*	3816	E2	5105	J4	9103	I8		
2117	F5*	2835	B2	3181	G4	3817	E2*	5106	G6	9105	H5		
2119	F6*	2836	A2	3182	G4	3818	G2	5114	H4	9107	G6		
2122	H6*	2837	A2*	3184	H8*	3819	E4	5117	I5	9108	H4		
2123	H5*	2840	C2	3185	H7*	3820	E4	5600	E5	9109	I7		
2124	H6	2841	C2	3186	G5	3821	C3	5601	E8	9110	F4		
2125	H7*	2842	C2*	3187	F5*	3822	F3	5614	F5	9111	G8		
2126	F8	2847	D2	3188	F6*	3823	H2	5652	D7	9112	G8		
2127	F8	2852	D2*	3189	F5*	3824	E2	5702	C4	9113	E8		
2128	J7*	2855	B2	3190	F5*	3825	G2	5703	B5	9114	G7		
2129	H6*	2856	B2	3191	G7	3826	C5*	5704	A4	9115	H7		
2132	H7*	2857	B2	3192	G7*	3827	C5	5720	B8	9116	G3		
2133	H6*	2858	B2	3193	I8*	3828	C4	6003	J3	9117	H4		
2135	F6*	2860	C2*	3194	J8*	3830	D5*	6030	H3	9118	G7		
2136	G5*	2875	A4	3195	G7	3831	D5*	6031	H3	9120	I5		
2137	H5*	2878	B4*	3196	G8*	3832	B5*	6032	I4	9121	H8		
2138	H7*	2879	B3*	3197	G7*	3833	B4*	6105	E6	9122	E5		
2139	H7*	2880	A3	3600	C4	3834	B4*	6106	E6	9123	G6		
2140	I6*	3003	J3*	3601	D7*	3835	B2	6107	E6	9124	F6		
2141	I7*	3007	J3*	3602	C7	3836	A2	6108	F7	9125	F7		
2142	H7*	3011	J3*	3603	E6*	3837	A2	6109	F7	9126	G6		
2143	H7*	3012	I3*	3604	C7	3840	C2	6111	H8	9127	H5		
2144	I8*	3014	J2*	3605	C7	3841	C2	6660	D5	9128	I6		
2145	I7*	3030	H3*	3606	C7	3842	C2*	6661	C7	9129	J4		
2146	H7*	3031	H3*	3607	C6	3843	C2*	6700	B6	9130	I4		
2154	H8	3032	H3*	3608	D6	3847	E2	6800	F2	9131	H5		
2156	J7*	3033	H4*	3610	D6	3848	C3	6801	F2	9132	G6		
2157	J8*	3034	H3*	3611	C6	3850	E2*	6830	D5	9133	F5		
2158	J8	3035	I4*	3612	D6*	3851	D2*	6835	B2	9134	F8		

* = SMD component



1000 C 1 | 1116 D 9 | 1122 D14 | 1123 C14 | 2004 E 4 | 2006 E 1 | 2007 E 2 | 2008 F 3 | 2009 B 4 | 2100 C11 | 2101 A 9 | 2102 B 9 | 2103 F12 | 2104 B 7 | 2105 B 8 | 2106 B 9 | 2108 G10 | 2109 F11 | 2111 D 9 | 2112 D 9 | 2113 F 9 | 2123 F13 | 2124 C14 | 2129 C12 | 3003 F 1 | 3007 E 5 | 3011 F 2 | 3012 F 5 | 3014 F 4 | 3100 B11 | 3101 C11 | 3104 B 8 | 3105 A 9 | 3106 C 9 | 3109 F12 | 3110 E13 | 3111 D14 | 3112 D13 | 3117 D 8 | 3119 D15 | 4100 D16 | 4101 C10 | 4118 C 8 | 5100 E14 | 5105 D 7 | 5106 C14 | 5114 B12 | 5117 D 9 | 6003 E 4 | 7009 F 4 | 7010 F 4 | 7100 D13 | 7102 B 9 | 9010 H 3 | 9012 H 3 | 9016 B 5 | 9100 C13 | 9116 D15 | 9117 H 2 | 9127 B 9 | 9130 D 7 | 9142 F 6 | 9145 H 3 | 9146 E10 | B1-01 F 7 | B1-19 D17 | B4-36 D 7 | B4-39 B 7 | B5-19 D17 | B7-52 G 7 | B7-54 G 7 | B7-82 E 7 | B8-19 D17 | B8-20 E17 | S100 H 5 | S75 H 4

B 1 TUNER + IF (BIMOS-IC)

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

1) BGLL'I only

L'2=2V2
L=7V6

L=0
L'2 = 2v8

L=0
L'2 =2v2

+5Da
+8Sb
+8S
4V9
5V8
7V8
3V9
3V5
3V4
3V3
2V7
1V5
1V
1v6
2v
3v9
1V5
4V
1v2
1u2

SCL
SDA
AS
AGC
UT
2V3
(AGC)
MT1 MT2
IF1
VT
SDAb
SCLb
CVBS-TERR/SAT
BASEBAND-CVBS
SATELLITE
SEP CTRL MAINS

BC848B
BZX79-C33
TDA8366

GNDB
GNDB1
GNDT
GND5
GND6

RES

B4-39
B1-36
B1-01
B7-82
B7-54
B7-52
B2-19
B5-19
B8-19
B8-20

V10 IF1
V11 BASEBAND CVBS

50mV / div AC
50µs / div
0V5 / div DC
20µs / div
= 0V
OSC_B1.CDR

* DESCRIPTION ITEM\BLOCK	BG DK STEREO SYS01	BG LI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
1116	OFWK3953	OFWK3953	OFWK3953	OFWG3962
1122	TPS5,5MHZ	TPS5,5MHZ	TPS 6MHZ	TPS5,5MHZ
2008	100u	220u	100u	100u
2108	-	4n7	-	-
3111	120	120	150	150
3119	100	100	-	100
4118	+	-	+	+
5105	1u	0u68	1u2	1u2
9116	-	-	+	-

B1.CDR MD 1.2

B2 VIDEO PROCESSING (BIMOS-IC)

PAL/NTSC PROCESSING

SECAM PROCESSING

VIDEO CONTROL

*	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	-

TXT AHS = 0V
OTHER = 5V

FOR PAL M/N AND NTSC M

V4a R from item 7119 (BiMos) 0V5 / div DC 20µs / div
V4b G from item 7119 (BiMos) 0V5 / div DC 20µs / div
V4c B from item 7119 (BiMos) 0V5 / div DC 20µs / div
V5 4.43MHz Crystal 20mV / div DC 62.5µs / div
V6 CVBS-TERR/SAT (Pal) 0V2 / div AC 10µs / div
V6 CVBS-TERR/SAT (Secam) 0V2 / div AC 10µs / div
V7a R-Y OUT (pin 16 item 7140) 0V2 / div AC 10µs / div
V7b (B-Y) OUT (pin 14 item 7140) 0V2 / div AC 10µs / div
V7c Y OUT (pin 13 item 7140) 0V2 / div AC 10µs / div
V8a R-Y (pin 11 item 7140) 0V5 / div AC 20µs / div
V8b B-Y (pin 12 item 7140) 20mV / div AC 20µs / div
V9a (B-Y)OUT 0.2V / div AC 20µs / div
V9b Y-OUT 0V1 / div AC 20µs / div
V9c (R-Y)OUT 0V2 / div AC 20µs / div
= 0V
OSC_B2.CDR

C PROCESSING

SVHS

PAL/NTSC

SY

B-Y_OUT

R-Y_OUT

PAL-NTSC/SECAM & 4.43MHZ

CVBS-SECAM

FOR PAL M/N AND NTSC M

SECAM PROCESSING

TDA4665 7140

DELAY

7113 TDA8395N2B

INTERFACE CONTROL IDENT AGC C-FILTER DE_EMPHASIS TUNING PLL SECAM

VIDEO CONTROL

7119 TDA8366

G-Y MATRIX RGB I^2C

Y-OUT (B-Y)OUT SCLb SDAb B-TXT G-TXT R-TXT R-SC-INPUT G-SC-INPUT B-SC-INPUT FBL-OFF

7109 BC848C 7110 BC848C 7108 BC848C

F CTI/HISTOGRAM or CTI/BLACKSTRECHT

C CRT MODULE

MD 1.2

B2.EPS

1117 D 9	7150 E20
1118 E 9	9102 C22
1119 E 9	9103 B22
2115 B 6	9105 A 6
2116 C 5	9107 D20
2117 E 5	9109 H 9
2119 D 4	9112 D22
2122 A 6	9113 A23
2125 I15	9114 E19
2126 I18	9115 E18
2127 I19	9118 I17
2132 G14	9121 H 8
2133 B11	9125 D 9
2135 D7	9124 H 7
2136 C 7	9125 J21
2137 C 8	9126 F 7
2138 I15	9131 H 9
2139 I15	9132 C 7
2141 G14	9133 H10
2142 G14	9139 D 4
2143 A19	9141 F 7
2144 C18	9143 H10
2145 B18	9161 J15
2146 D18	9703 I16
2154 B19	9817 F 7
2156 E14	B1-19 A 1
2157 E14	B2-06 A11
2158 C16	B2-06 F18
2160 D 9	B2-08 G11
2161 D10	B2-08 A22
2162 D10	B2-48 G11
2163 F 9	B2-48 A22
2164 F 9	B2-76 H11
2165 F 9	B2-77 H11
2166 E 8	B2-77 A18
2168 F 8	B2-78 A22
2179 H 7	B2-79 A18
2180 C22	B2-79 A22
2181 B22	B2-85 G11
2182 B20	B2-85 E19
2184 C12	B2-97 G11
2196 E23	B2-97 A11
3103 A 5	B3-50 A14
3107 B 6	B3-98 F17
3128 K20	B3-99 F23
3130 J18	B5-04 I11
3131 I20	B5-16 B 1
3133 J19	B5-25 K16
3134 G19	B5-29 I11
3135 H19	B5-44 I11
3136 H19	B6-11 B 1
3137 I19	B6-21 F 7
3138 H19	B7-03 K15
3139 G19	B7-25 K16
3140 H18	B7-26 J11
3141 I14	B7-28 K14
3142 I14	B7-43 K14
3143 I14	B7-52 A18
3144 J12	B7-54 A19
3145 J12	B7-55 F 5
3146 K12	B7-56 F 6
3149 A19	B7-74 F 7
3150 D17	B7-86 A23
3152 D18	B9-05 H11
3155 B21	B9-14 F 4
3156 B20	B9-25 K16
3162 C16	B9-30 H11
3164 D10	B9-45 I11
3165 E 8	B9-73 F 4
3166 E 9	B9-99 F 4
3167 E 8	S40 K22
3168 E 8	S54 E25
3181 H14	
3182 H14	
3184 A18	
3185 A19	
3186 G 6	
3187 D 9	
3188 E 5	
3189 E 5	
3190 E 5	
3191 E19	
3192 E20	
3193 C12	
3194 C11	
3195 E20	
3196 E23	
3197 E22	
4102 D22	
4103 C 6	
4106 D 4	
4107 B11	
4109 F 7	
4113 D18	
4119 A22	
4160 J14	
4197 E22	
6105 K14	
6106 J14	
6107 K15	
6108 J21	
6109 I18	
6111 B20	
7104 C 5	
7104 D 6	
7105 E 5	
7106 J20	
7107 D12	
7108 K13	
7109 I13	
7110 L13	
7113 D15	
7115 F 9	
7116 E 8	
7119 B 8	
7119 G15	
7140 B18	

V8a R-Y (pin 11 item 7140) 0V5 / div AC 20µs / div

V8b B-Y (pin 12 item 7140) 20mV / div AC 20µs / div

V9a (B-Y)OUT 0.2V / div AC 20µs / div

V9b Y-OUT 0V1 / div AC 20µs / div

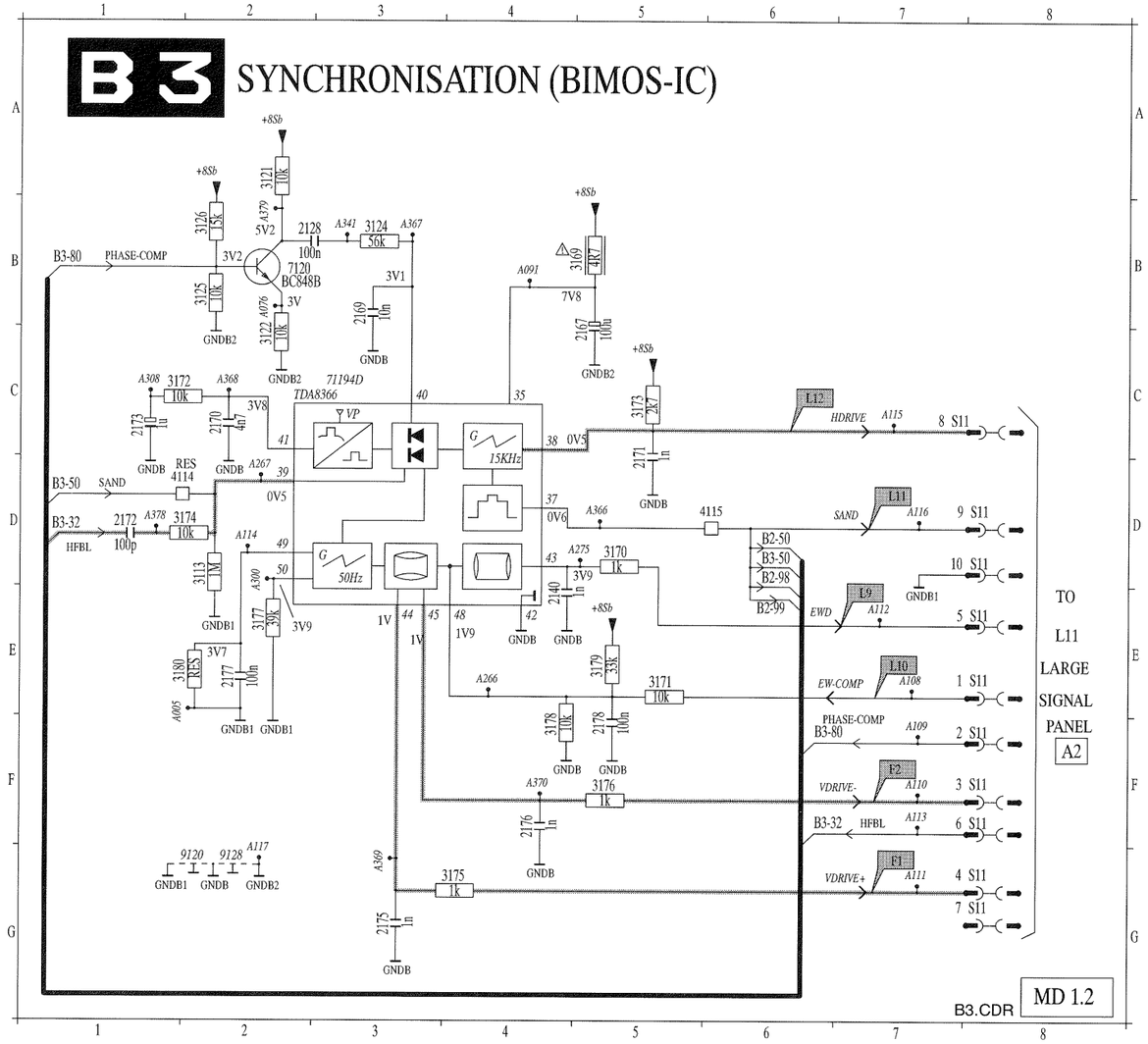
V9c (R-Y)OUT 0V2 / div AC 20µs / div

= 0V

OSC_B2.CDR

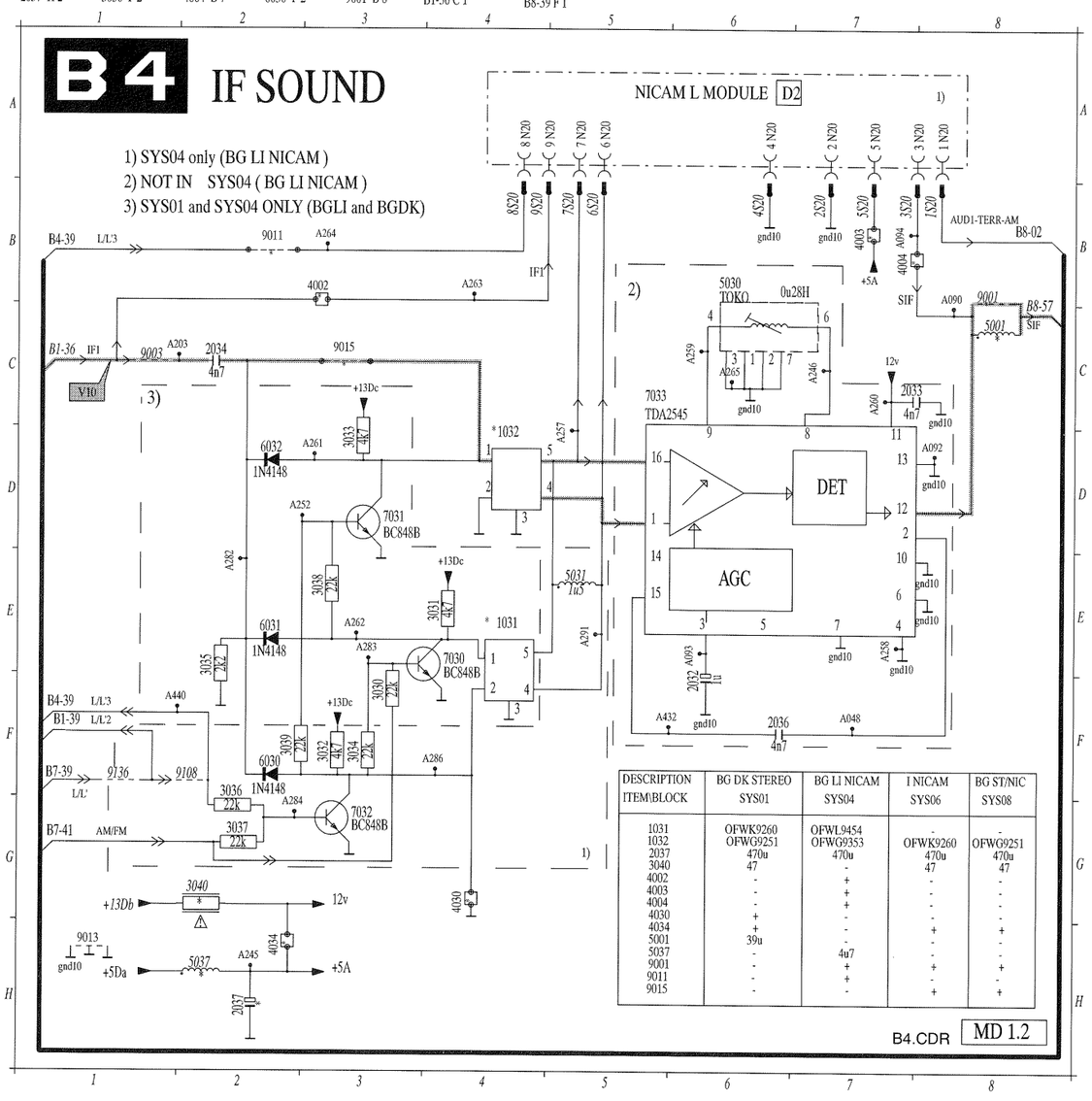
Synchronisation / Synchronisierung / Synchronisation

2128 B 2 2140 E 4 2167 B 5 2169 B 3 2170 C 2 2171 C 5 2172 D 1
2173 C 1 2175 G 3 2176 E 4 2177 E 5 2178 F 5 3113 D 2 3121 A 2
3122 C 2 3124 B 3 3125 B 3 3126 E 5 3160 D 5 3170 D 5 3171 E 5
3172 C 1 3173 C 5 3174 D 2 3175 G 4 3176 E 5 3177 E 5 3178 F 4
3179 E 5 3180 E 2 4114 D 2 4115 D 6 7120 C 3 7120 B 2 9120 G 2
9128 G 2 B2-50 D 6 B3-32 D 1 B3-32 F 6 B3-50 D 6 B3-50 D 1 B3-80 B 1
B3-80 F 6 S11 C 7

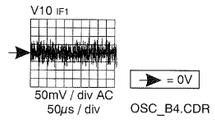


IF sound / ZF Ton / FI son

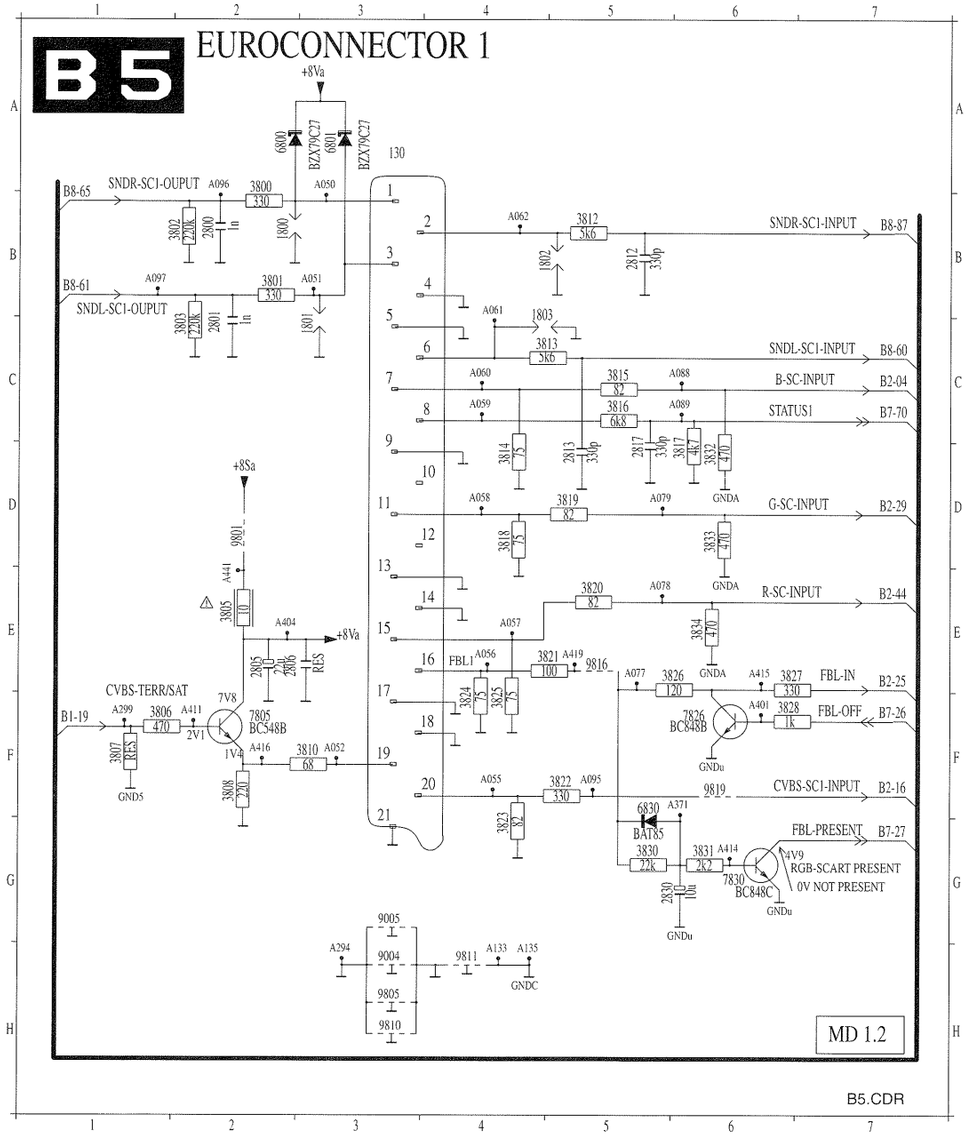
1031 E 4 1032 D 4 2037 F 6 2033 C 7 2034 C 2 2036 F 6 2037 H 2
3030 F 3 3031 E 4 3032 F 3 3033 D 3 3034 F 3 3035 F 3 3036 F 2
3037 G 2 3038 E 5 3039 F 2 3040 G 2 4002 B 5 4003 B 5 4004 B 7
4030 G 4 4034 H 2 5001 C 8 5030 B 6 5031 E 5 5037 H 2 6030 F 2
6031 E 2 6032 D 5 7030 E 4 7031 D 3 7032 G 3 7033 C 5 9001 B 8
9003 C 1 9011 B 2 9015 H 1 9015 C 3 9108 F 2 9136 F 1 B1-36 C 1
B1-39 F 1 B2-39 F 1 B4-39 B 1 B7-39 F 1 B7-41 G 1 B8-02 B 8 B8-39 F 1
B8-57 D 8 B8-57 B 8 S20 B 4



DESCRIPTION ITEM\BLOCK	BG DK STEREO SYS01	BG LI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
1031	OFWK9260	OFWL9454	-	-
1032	OFWG9251	OFWG9353	OFWK9260	OFWG9251
2037	470u	470u	470u	470u
3040	47	-	47	47
4002	-	+	-	-
4003	-	+	-	-
4004	-	+	-	-
4030	+	-	-	-
4034	+	-	+	+
5001	39u	-	-	-
5037	-	4u7	-	-
9001	-	+	+	+
9011	-	+	-	-
9015	-	-	+	+



Euroconnector 1 / Eurostecker 1 / Scart 1



130 A 3
1800 B 2
1801 C 3
1802 B 5
1803 C 4
1804 B 2
1805 C 2
1806 E 5
1807 E 5
2835 E 3
2836 E 3
2837 E 4
2840 F 2
2841 E 3
2842 E 3

B2-29 D 7
B5-44 E 7
B7-25 E 7
B7-26 F 7
B7-27 G 7
B7-70 C 7
B8-60 C 7
B8-61 B 1
B8-65 A 1
B8-87 B 7

3800 A 2
3801 B 2
3802 B 2
3803 C 2
3805 E 2
3806 E 2
3807 E 1
3808 E 2
3810 E 3
3812 B 3
3813 C 3
3814 C 4
3815 C 3
3816 C 3
3817 D 4
3818 D 4
3819 D 3
3820 E 3
3821 E 3
3822 F 3
3823 G 4
3824 F 4
3825 F 4
3826 E 4
3827 E 5
3828 E 6
3830 G 5
3831 G 6
3832 F 6
3833 E 6
3834 E 6
6800 A 2
6801 A 2
6830 F 5
7805 E 2
7826 F 6
7830 G 6
9004 H 3
9005 G 3
9801 D 2
9805 H 3
9810 H 3
9811 H 4
9816 F 5
9819 F 6
B1-19 F 1
B2-04 C 7
B2-16 F 7

Euroconnector 2 / Eurostecker 2 / Scart 2

131 E 4
132 E 4
1803 C 3
1804 C 3
1805 C 3
1806 G 5
1807 E 5
2835 E 3
2836 E 3
2837 E 4
2840 F 2
2841 E 3
2842 E 3

2847 I 3
2852 I 3
2853 I 3
2855 E 5
2856 E 6
2857 G 5
2858 E 6
2860 G 6
2875 B 7
2878 B 7
2879 B 7
2880 E 7
3835 K 4

3836 L 4
3837 E 4
3840 E 3
3841 E 5
3842 E 2
3843 E 5
3847 H 3
3848 F 2
3850 I 5
3851 I 3
3852 I 3
3853 I 3

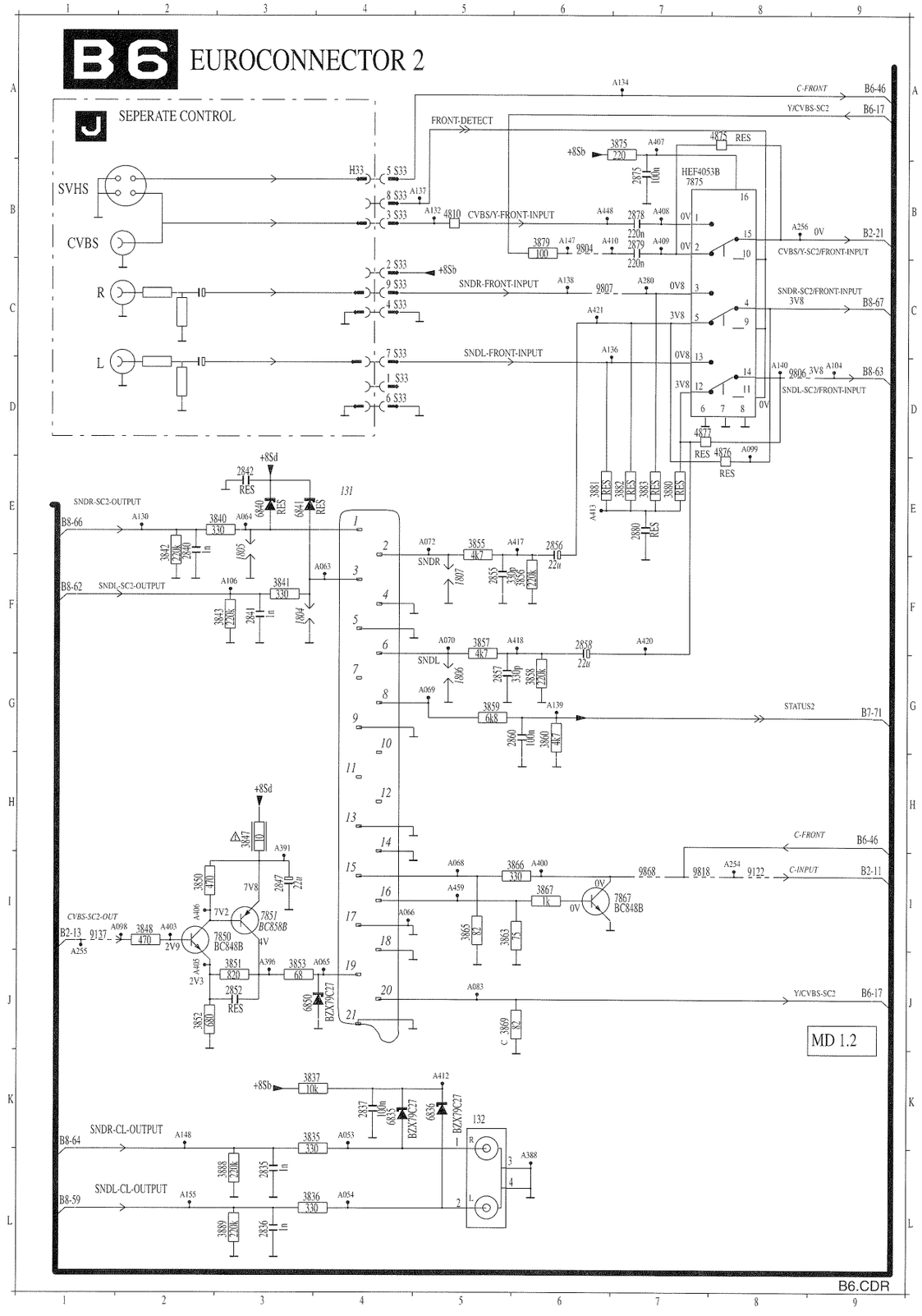
3855 E 5
3856 E 6
3857 E 5
3858 G 6
3859 G 5
3860 G 6
3865 I 5
3866 I 6
3867 I 6
3869 I 5
3875 A 7

3879 B 6
3880 E 7
3881 E 6
3882 E 7
3883 E 7
3888 L 3
3889 L 3
4810 B 5
4875 A 8
4876 D 8
4877 D 7
6835 K 4

6836 K 5
6840 E 3
6841 E 3
6850 I 5
7850 I 5
7851 I 3
7867 I 7
7875 B 7
9122 I 4
9137 I 1
9804 B 6
9806 D 8

9807 C 6
9818 I 7
9868 I 7
B2-11 I 9
B5-13 I 1
B2-21 B 9
B6-17 I 9
B6-17 A 9
B6-46 A 9
B6-46 H 9
B7-71 G 9
B8-59 L 1

B8-62 F 1
B8-63 D 9
B8-63 K 1
B8-66 E 1
B8-67 C 9
S33 B 4

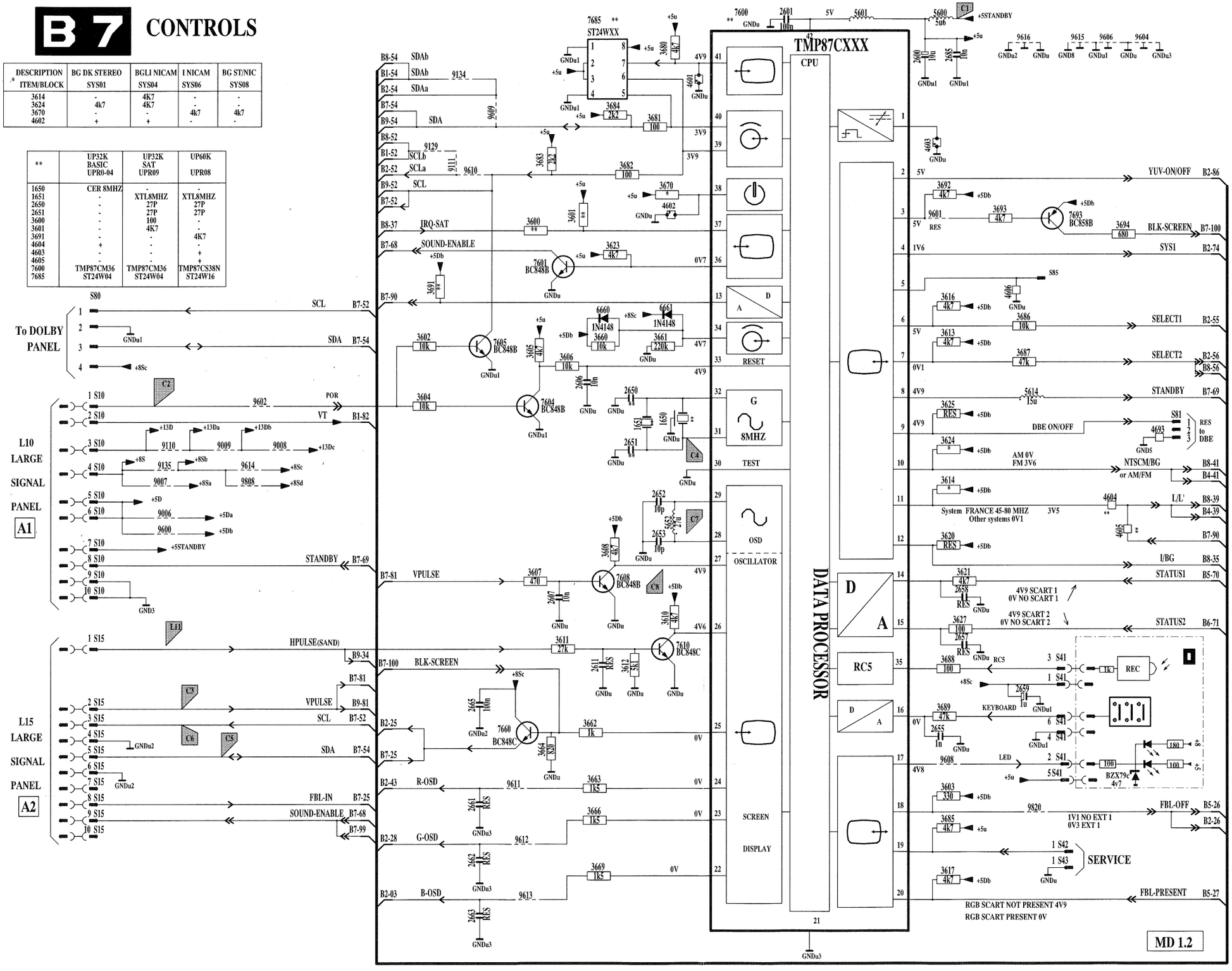


PCS 82 285

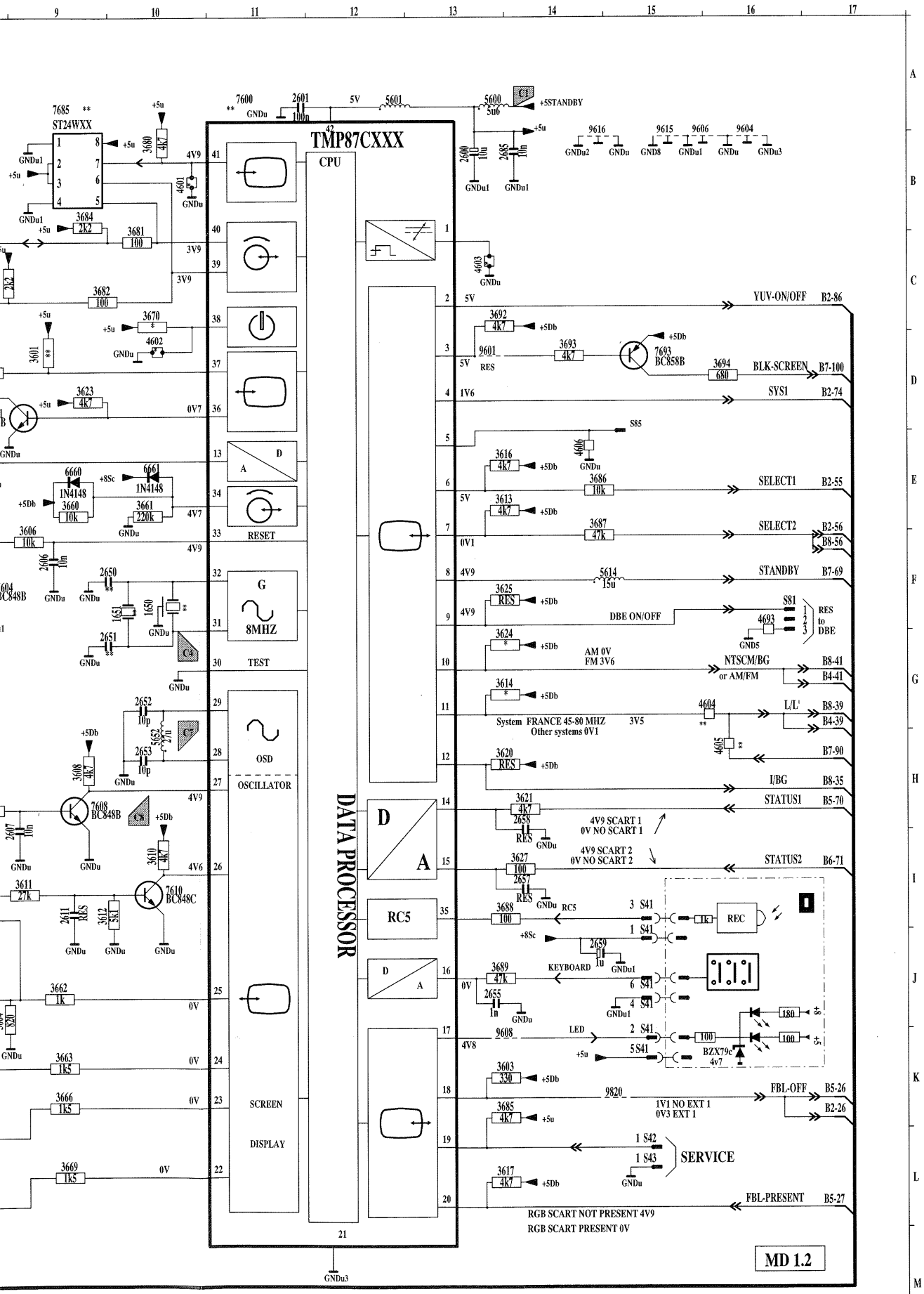
B 7 CONTROLS

DESCRIPTION * ITEM/BLOCK	BG DK STEREO SYS01	BGLI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
3614	-	4K7	-	-
3624	4k7	4K7	-	-
3670	-	-	4k7	4k7
4602	+	+	-	-

**	UP32K BASIC UPR0-04	UP32K SAT UPR09	UP60K UPR08
1650	CER 8MHZ	-	-
1651	-	XTL8MHZ	XTL8MHZ
2650	-	27P	27P
2651	-	27P	27P
3600	-	100	-
3601	-	4K7	-
3691	-	-	4K7
4604	+	-	-
4603	-	-	+
4605	-	-	+
7600	TMP87CM36	TMP87CM36	TMP87CS38N
7685	ST24W04	ST24W04	ST24W16



B7.EPS

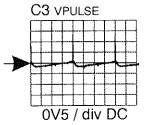


1650 F10	B7-68 K 6		
1651 F10	B7-68 D 6		
2600 B13	B7-69 H 6		
2601 A11	B7-69 F17		
2606 F9	B7-81 J 6		
2607 H9	B7-81 H 6		
2611 I9	B7-90 E 6		
2650 F10	B7-90 H17		
2651 G10	B7-99 K 6		
2652 G10	B8-35 H17		
2653 H10	B8-37 D 6		
2655 J13	B8-39 G17		
2657 J14	B8-41 G17		
2658 H14	B8-52 C 6		
2659 J14	B8-54 B 6		
2661 K8	B8-56 F17		
2662 C8	B9-34 I 6		
2663 L8	B9-52 C 6		
2665 J8	B9-54 C 6		
2685 B14	B9-81 J 6		
3600 D8	S10 H3		
3601 D9	S15 K3		
3602 E7	S41 K15		
3603 K14	S42 L15		
3604 F7	S43 L15		
3605 E8	S80 F3		
3606 F9	S81 K16		
3607 H8	S85 D15		
3608 H9			
3610 I10			
3611 I9			
3612 I9			
3613 E14			
3614 G14			
3616 E14			
3617 L14			
3620 H14			
3621 D9			
3623 G14			
3624 F14			
3625 I14			
3660 E9			
3661 E10			
3662 J9			
3663 K9			
3664 J8			
3666 K9			
3669 L9			
3670 C10			
3680 B10			
3681 C10			
3682 C9			
3683 C8			
3684 B9			
3685 K14			
3686 E14			
3687 E14			
3688 I14			
3689 J13			
3691 E7			
3692 C13			
3693 D14			
3694 D16			
4601 B10			
4602 D10			
4603 C13			
4604 G16			
4605 B16			
4606 E14			
4693 F16			
5600 A13			
5601 A12			
5614 F15			
5652 H10			
6660 E9			
6661 E10			
7600 A11			
7601 D8			
7604 F8			
7605 E8			
7608 H9			
7610 I10			
7660 J8			
7685 A9			
7693 D15			
9006 G4			
9007 G4			
9008 G5			
9009 G5			
9110 G4			
9111 G7			
9129 C7			
9134 B7			
9135 G4			
9600 H4			
9601 D13			
9602 E5			
9604 B16			
9606 B16			
9608 K13			
9609 B8			
9610 C7			
9611 K8			
9612 C8			
9613 G8			
9614 G5			
9615 B15			
9616 B14			
9808 G5			
9820 K15			
B1-52 C 6			
B1-54 B 6			
B1-82 F 6			
B2-03 L 6			
B2-25 L 6			
B2-26 K17			
B2-28 L 6			
B2-43 K 6			
B2-52 C 6			
B2-54 B 6			
B2-55 E17			
B2-56 E17			
B2-74 D17			
B2-86 C17			
B4-39 G17			
B4-41 G17			
B5-26 K17			
B5-27 L17			
B5-70 H17			
B6-71 I17			
B7-100 I 6			
B7-100 D17			
B7-25 K 6			
B7-52 I 6			
B7-52 I 6			
B7-52 E 6			
B7-52 D 6			
B7-54 E 6			
B7-54 I 6			
B7-54 B 6			

C1 +5STANDBY
(Pin 42 item 7600)
5VDC

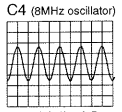
C2 POR (to)
0V 5V
POR (to)
5V 0V

C3 VPULSE



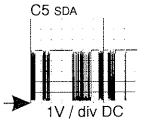
0V5 / div DC
5ms / div

C4 (8MHz oscillator)



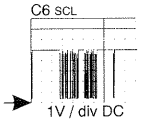
1V / div AC
62.5ns / div

C5 SDA



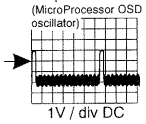
1V / div DC
20ms / div

C6 SCL



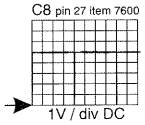
1V / div DC
20ms / div

C7 pin 28 item 7600
(MicroProcessor OSD oscillator)



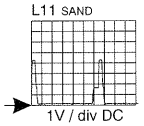
1V / div DC
10µs / div

C8 pin 27 item 7600



1V / div DC
5ms / div

L11 SAND

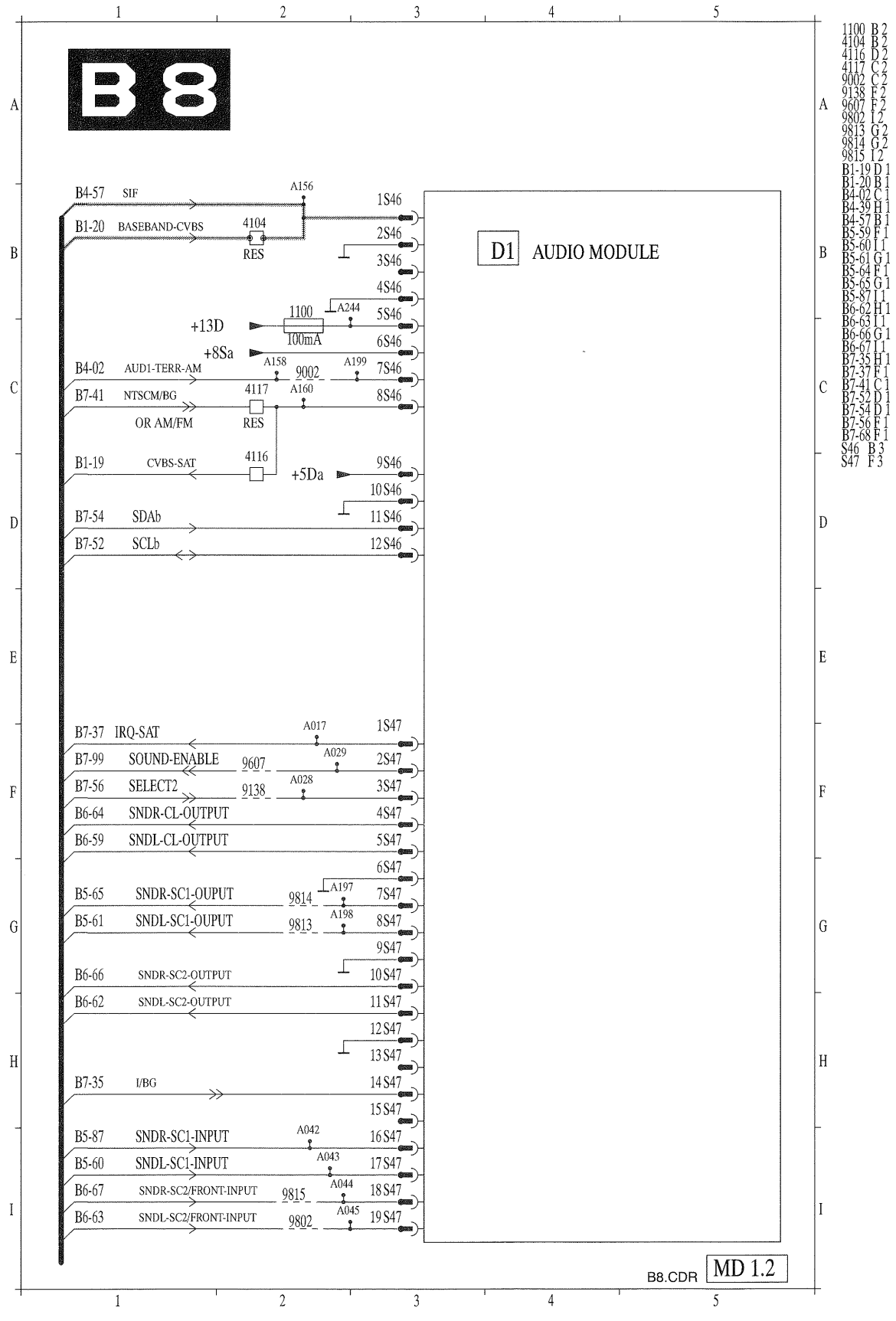


1V / div DC
10µs / div

= 0V

OSC B7.CDR

Connections audio module / Verbindungen Audio Modul / Connections de module audio



B9 TXT

CF702xx

10BIT PROCESSOR

ADAPTIVE SYNC SEPARATOR

FREQUENCY MULTIPLIER

DATA SLICER

OSC 13.8750 Mhz

BIAS

I2C INTERFACE

INDPENDENT LATCHES

55BITx 3k25 ROM

55BITx 3k25 ROM

P26 CHARACTER LOGIC

PAGE STORE 0
PAGE STORE 1
PAGE STORE 2
PAGE STORE 3
PAGE STORE 4
PAGE STORE 5
PAGE STORE 6
PAGE STORE 7

TEMPORARY RAM

MEMORY ACESS CONTROLLER

VIDEO DISPLAY PROCESSOR

CHARACTER FONT RAM

CLOCK

DIGITAL PLL

SYNC SWITCH

TELETEXT FRONT END

TELETEXT
EXTENTION
RESERVED

For NORDIC COUNTRIES

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

T1 pin 2 item 7701
0V5 / div DC
20µs / div

T2 pin 10 item 7701 (TDATA)
1V / div DC
0.5µs / div

T3 SYNC-TXT (TXT=ON)
0V5 / div DC
50µs / div

= 0V

OSC_B9.CDR

MD 1.2

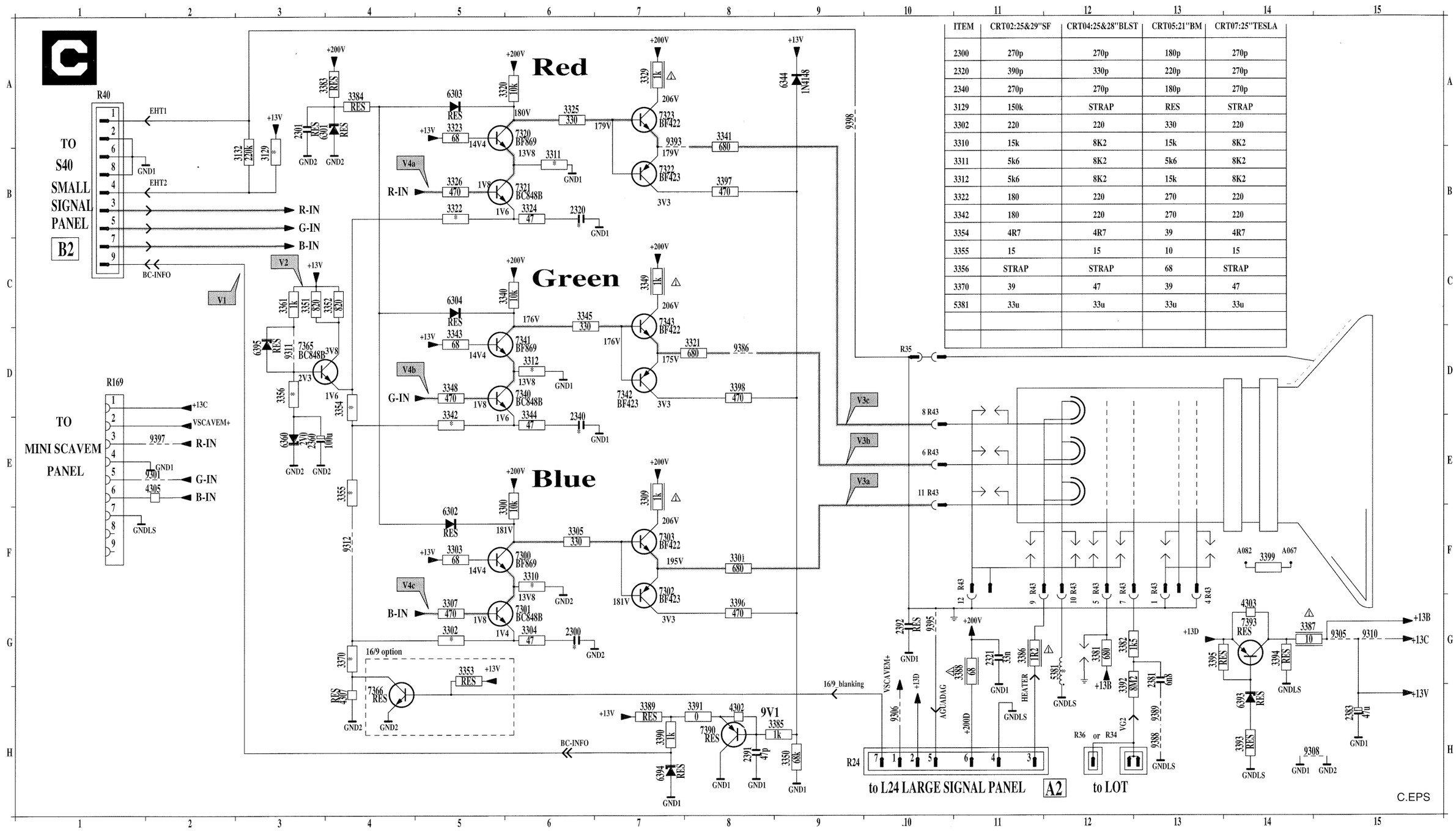
B9.EPS

CRT panel / CRT-Platine / Platine tube cathodique

Chassis MD1.2E **25**

1000 C15 1300 G12 2300 G 6 2301 A 3 2320 B 6 2337 G11 2340 E 6
2360 E 3 2381 G13 2383 H15 2391 H 8 2392 G10 3129 B 3 3132 B 3
3300 E 6 3301 F 8 3302 G 5 3303 F 5 3304 G 6 3305 F 6 3307 G 5
3309 E 7 3310 F 6 3311 D 6 3312 D 6 3320 A 6 3321 D 8 3322 B 5
3323 A 5 3324 B 6 3325 A 6 3326 B 5 3329 A 7 3340 C 6 3341 A 8
3342 E 5 3343 D 5 3344 E 6 3345 C 6 3348 D 5 3349 C 7 3350 H 9
3351 C 3 3352 C 4 3353 G 5 3354 D 4 3355 E 4 3356 D 3 3361 C 3
3370 G 4 3381 G12 3382 G12 3383 A 4 3384 A 4 3385 H 9 3386 G11
3387 G14 3388 G11 3389 H 7 3390 H 7 3391 H 8 3393 H14
3394 G14 3395 G13 3396 G 8 3397 B 8 3398 D 8 3399 E14 4302 H 8
4303 G14 4305 E 2 4307 H 4 5381 G12 6301 A 4 6302 E 5 6303 A 5
6304 C 5 6344 A 9 6360 E 3 6393 H14 6394 H 7 6395 D 3 7300 F 6
7301 G 6 7302 F 7 7303 F 7 7320 A 6 7321 B 6 7322 B 7 7323 A 7
7340 D 6 7341 D 6 7342 D 7 7343 C 7 7365 D 3 7366 H 4 7390 H 8
7393 G14 9301 E 2 9305 G15 9306 H10 9308 H14 9310 G15 9311 D 3
9312 F 4 9386 D 8 9388 H13 9389 H13 9393 A 7 9395 G10 9397 E 2
9398 A 9 A067 F14 A082 F14 A082 F14 R24 H 9 R34 H12 R35 D10
R36 H12 R40 A 1 R43 E10 R169 D1

ITEM	CRT02:25&29"SF	CRT04:25&28"BLST	CRT05:21"BM	CRT07:25"TESLA
2300	270p	270p	180p	270p
2320	390p	330p	220p	270p
2340	270p	270p	180p	270p
3129	150k	STRAP	RES	STRAP
3302	220	220	330	220
3310	15k	8K2	15k	8K2
3311	5k6	8K2	5k6	8K2
3312	5k6	8K2	15k	8K2
3322	180	220	270	220
3342	180	220	270	220
3354	4R7	4R7	39	4R7
3355	15	15	10	15
3356	STRAP	STRAP	68	STRAP
3370	39	47	39	47
5381	33u	33u	33u	33u



CRT panel / CRT-Platine / Platine tube cathodique

V1 BC-INFO
2V / div DC
20µs / div

V2 +13D
+14VDC

V3a BLUE GUN
50V / div AC
20µs / div

V3b GREEN GUN
50V / div AC
20µs / div

V3c RED GUN
50V / div AC
20µs / div

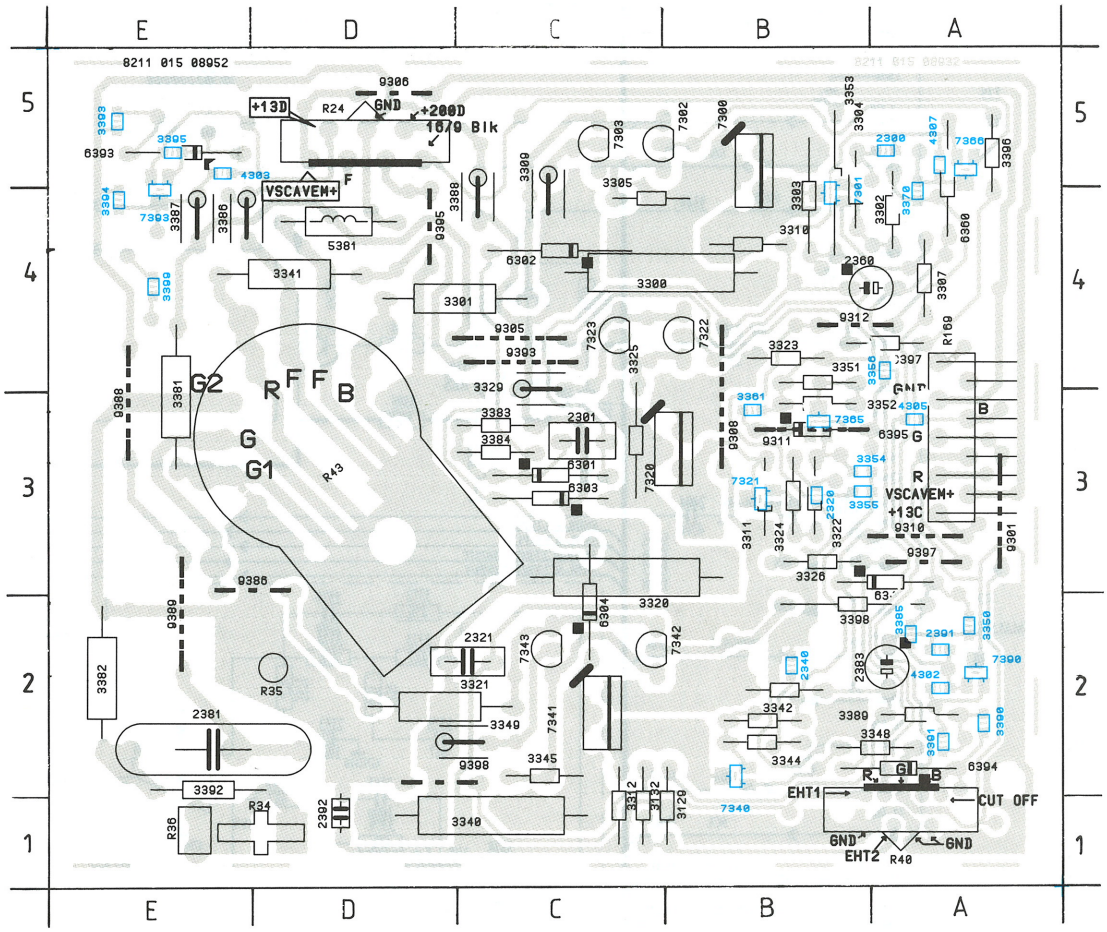
V4a R
from item 7119 (BiMos)
0V5 / div DC
20µs / div

V4b G
from item 7119 (BiMos)
0V5 / div DC
20µs / div

V4c B
from item 7119 (BiMos)
0V5 / div DC
20µs / div

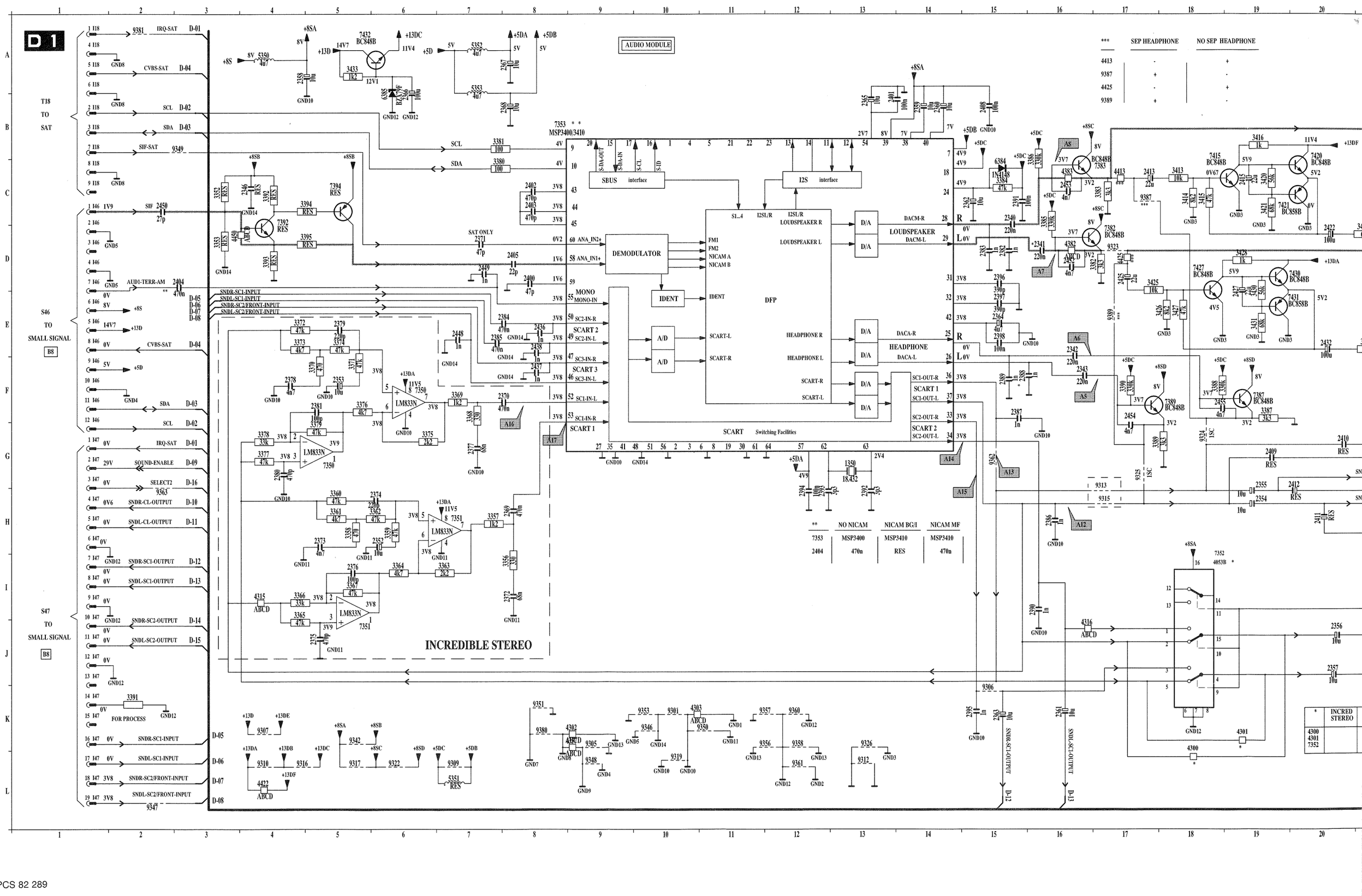
= 0V

OSC_C.CDR



R34	D1	2360	A4	3305	B4	3326	B3	3352	B3	3386	D4	3398	A2	6360	A4	7340	B2*	9310	A3
R35	D2	2381	E2	3307	A4	3329	C3	3353	B4	3387	E4	3399	E4*	6393	E5	7341	C2	9311	B3
R36	E1	2383	A2	3309	C4	3340	C1	3354	A3*	3388	C4	4302	A2*	6394	A2	7342	B2	9312	A4
R40	A1	2391	A2*	3310	B4	3341	D4	3355	A3*	3389	A2	4303	E4*	6395	B3	7343	C2	9386	D2
R43	D3	2392	D1	3311	B3	3342	B2	3356	A4*	3390	A2*	4305	A3*	7300	B4	7365	B3*	9388	E3
R169	A3	3129	B1	3312	C1	3343	B2	3361	B3*	3391	A2*	4307	A5*	7301	B4*	7366	A4*	9389	E2
1300	E3*	3132	C1	3320	C3	3344	B2	3370	A4*	3392	E2	5381	D4	7302	B5	7390	A2*	9393	C4
2300	A5*	3300	B4	3321	D2	3345	C2	3381	E3	3393	E5*	6301	C3	7303	C5	7393	E4*	9395	D4
2301	C3	3301	C4	3322	B3	3348	A2	3382	E2	3394	E4*	6302	C4	7320	B3	9301	A3	9397	A3
2320	B3*	3302	A4	3323	B4	3349	C2	3383	C3	3395	E5*	6303	C3	7321	B3*	9305	C4	9398	D2
2321	C2	3303	B4	3324	B3	3350	A2*	3384	C3	3396	A5	6304	C2	7322	B4	9306	D5	* = SMD	
2340	B2*	3304	A4	3325	C3	3351	B3	3385	A2*	3397	A4	6344	A3	7323	C4	9308	B3	component	

Audio module / Audio Modul / Module audio



AUDIO MODULE

***	SEP HEADPHONE	NO SEP HEADPHONE
4413	-	+
9387	+	-
4425	-	+
9389	+	-

**	NO NICAM	NICAM BG/I	NICAM MF
7353	MSP3400	MSP3410	MSP3410
2404	470n	RES	470n

*	INCRED STEREO	NO INCRED STEREO
4300		
4301		
7352		

SBUS interface
I2S interface
DEMODULATOR
IDENT
DFP
SCART Switching Facilities
LOUDSPEAKER
HEADPHONE
SCART 1
SCART 2
SCART 3
MONO
SNDR-HEADP-OUTPUT
SNDL-HEADP-OUPUT
SOUND-ENABLE
AUDIO-R
AUDIO-L
SCL
SDA
R-MAIN-F
L-MAIN-F
SNDR-CL-OUTPUT
SNDL-CL-OUTPUT
SNDR-CL/VL OUTPUT
SNDL-CL/VL-OUTPUT
SNDL-SC2-OUTPUT
SNDR-SC2-OUTPUT
SELECT2
H44 TO SEPARATE CONTROL PANEL J
L28 TO LARGE SIGNAL A4
D43 TO DOLBY

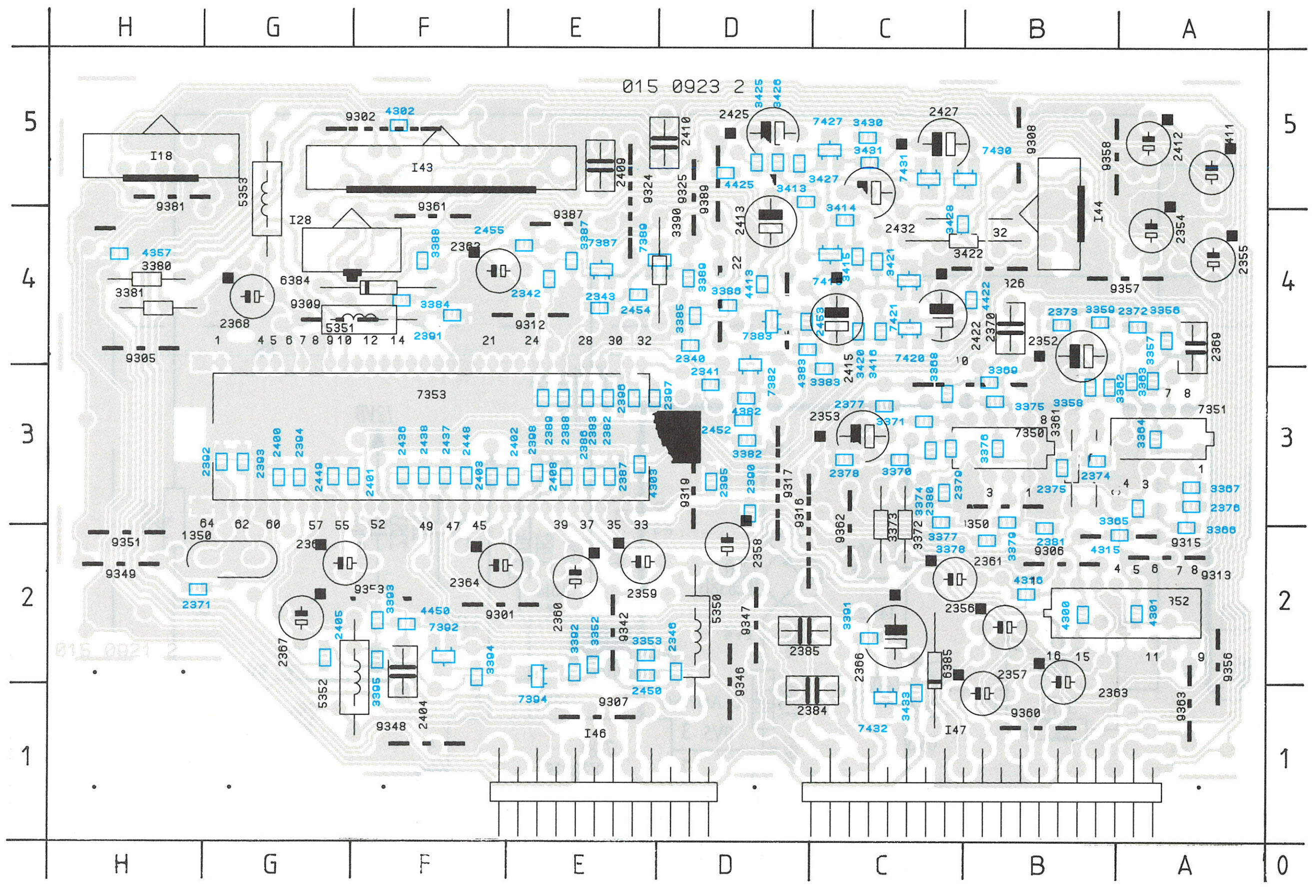
A1 AUDIO-L - 3KHz (volume increased) — 50mV / div AC, 0.5ms / div
A8 pin 28 item 7353 (LOUDSPEAKER-R, 1KHz, incr. volume) — 50mV / div AC, 0.2ms / div
A2 AUDIO-R - 1KHz (volume level increased) — 50mV / div AC, 0.5ms / div
A12 pin 37 item 7353 (SC1-OUT-L, 3KHz) - PAL/STEREO — 1V / div DC, 0.2ms / div
A3 SNDL-HEADPH-OUT (3KHz, HP incr.volume, Incr. Snd OFF) — 0V5 / div AC, 0.2ms / div
A13 pin 36 item 7353 (SC1-OUT-R, 1KHz) — 1V / div DC, 0.2ms / div
A4 SNDR-HEADPH-OUT (1KHz, HP incr. volume, Incr. Snd OFF) — 0V5 / div AC, 0.2ms / div
A14 pin 34 item 7353 (SC2-OUT-L, 3KHz) — 1V / div DC, 0.2ms / div
A5 pin 26 item 7353 (HP-L OUT - 3KHz) — 0V1 / div AC, 0.2ms / div
A15 pin 33 item 7353 (SC2-OUT-R, 1KHz) — 1V / div DC, 0.2ms / div
A6 pin 25 item 7353 (HP-R OUT - 1KHz) — 0V1 / div AC, 0.2ms / div
A16 pin 52 item 7353 (SC1-IN-L, 3KHz, Incr. Sound ON) — 0V2 / div AC, 0.2ms / div
A17 pin 53 item 7353 (SC1-IN-R, 1KHz, Incr. Sound ON)
A7 pin 29 item 7353 (LOUDSPEAKER-L, 3 KHz, incr. volume) — 50mV / div AC, 0.2ms / div

= 0V

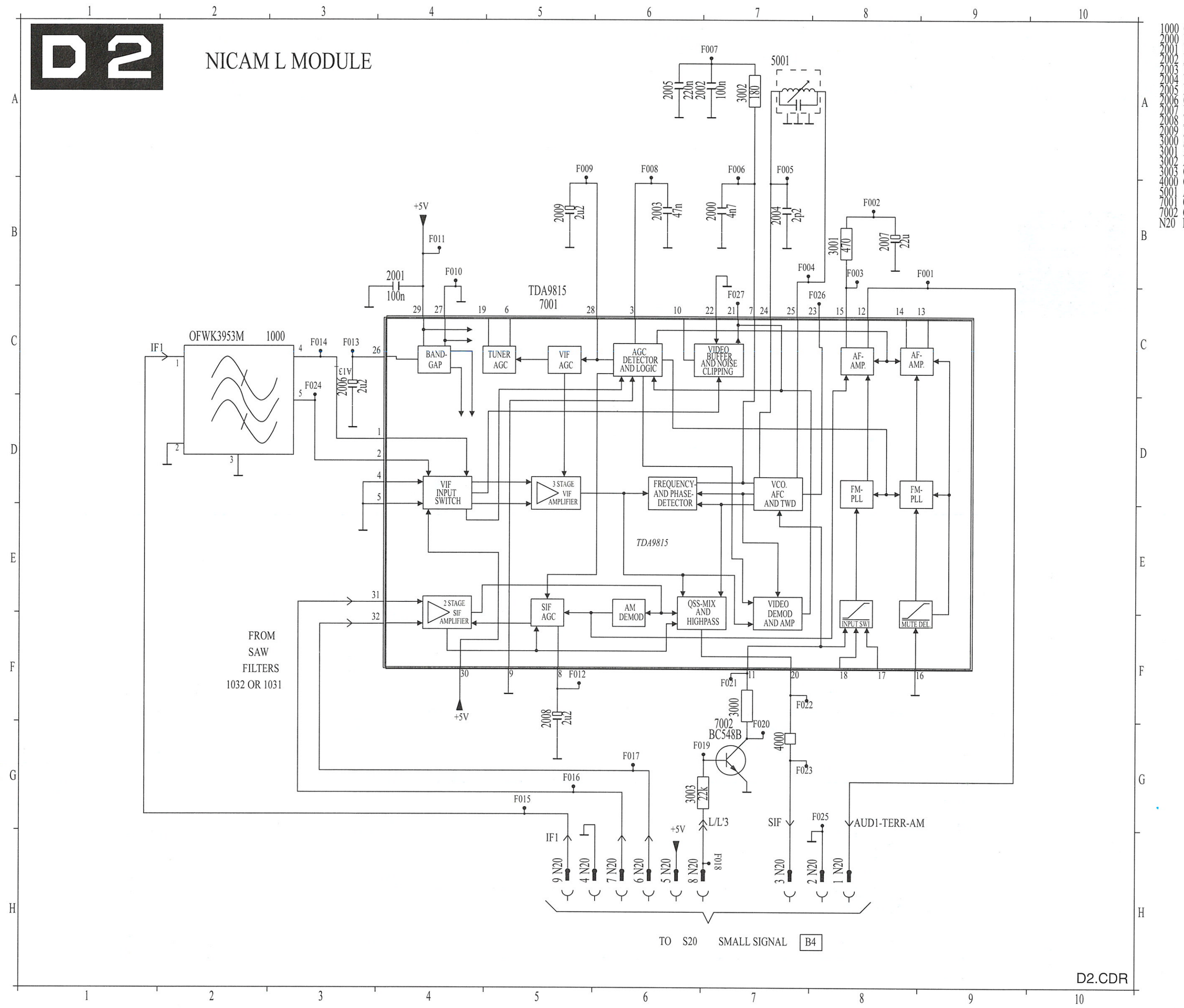
OSC_D1.CDR

D1.EPS

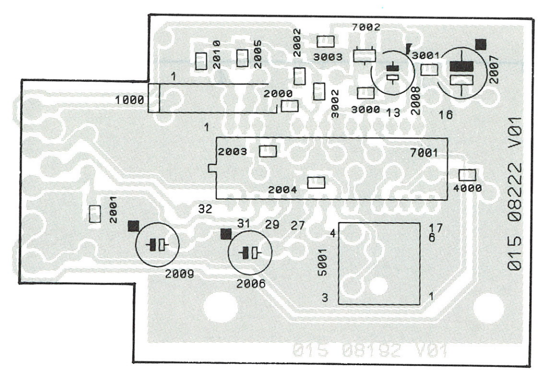
Audio module / Audio Modul / Module audio



Nicam L module / Nicam L Modul / Module Nicam L

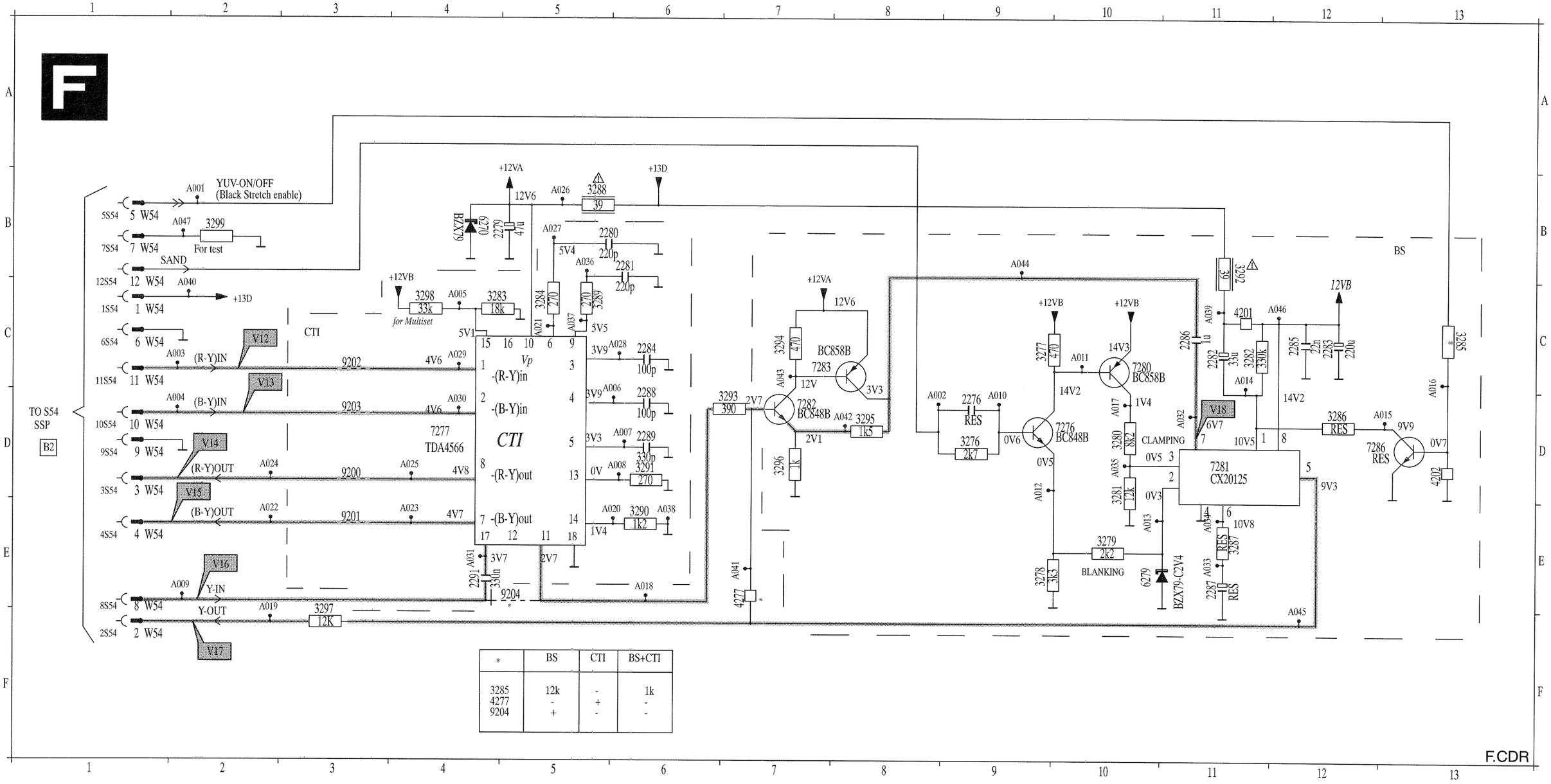


NICAM L MODULE / NICAM L MODUL / MODULE NICAM L



I28	G4	2360	E2	2379	C3*	2398	E3*	2437	F3*	3364	A3*	3383	C4*	3422	C4	4422	B4*	7415	C4*	9317	D3	9361	F5
I43	F5	2361	C2	2380	C3*	2400	G3*	2438	F3*	3365	A3*	3384	F4*	3425	D5*	4425	D5*	7420	C4*	9319	D3	9362	C3
I44	B5	2362	F4	2381	B3*	2401	G3*	2448	F3*	3366	A3*	3385	D4*	3426	D5*	4450	F2*	7421	C4*	9322	D4	9363	A1
I46	E1	2363	B2	2382	E3*	2402	E3*	2449	G3*	3367	A3*	3386	D4*	3427	D5*	5350	D2	7427	C5*	9323	D4	9380	H4
I47	B1	2364	F2	2383	E3*	2403	F3*	2450	E2*	3368	C3*	3387	E4*	3428	C5*	5351	F4	7430	C5*	9324	E5	9381	H5
1350	G2	2365	G2	2384	C2	2404	F2	2452	D3*	3369	B4*	3388	F4*	3430	C5*	5352	F2	7431	C5*	9325	D5	9387	E5
2340	D4*	2366	C2	2385	D2	2405	G2*	2453	D4*	3370	C3*	3389	D4*	3431	C5*	5353	G5	7432	C1*	9326	B4	9389	D5
2341	D3*	2367	G2	2386	E3*	2408	E3*	2454	E4*	3371	C3*	3390	E4	3432	B5	6384	F4	9301	F2	9342	E2		
2342	E4*	2368	G4	2387	E3*	2409	E5	2455	E4*	3372	C3	3391	C2*	3433	C1*	6385	C2	9302	F5	9346	D2	* = SMD component	
2343	E4*	2369	A4	2388	E3*	2410	D5	3352	E2*	3373	C3	3392	E2*	4300	B2*	7350	B3	9305	H4	9347	D2		
2346	D2*	2370	B4	2389	E3*	2411	A5	3353	E2*	3374	C3*	3393	F2*	4301	A2*	7351	A3	9306	B2	9348	F1		
2352	B4	2371	H2*	2390	D3*	2412	A5	3356	A4*	3375	B3*	3394	F2*	4302	F5*	7352	A2	9307	E1	9349	H2		
2353	C3	2372	A4*	2391	F4*	2413	D5	3357	A4*	3376	B3*	3395	F2*	4303	E3*	7353	F3	9308	B5	9350	B3		
2354	A4	2373	B4*	2392	G3*	2415	C4	3358	B3*	3377	C3*	3413	D5*	4315	A3*	7382	D4*	9309	G4	9351	H3		
2355	A4	2374	B3*	2393	G3*	2422	C4	3359	B4*	3378	B2*	3414	C5*	4316	B2*	7383	D4*	9310	B3	9353	F2		
2356	B2	2375	B3*	2394	G3*	2425	D5	3360	B3	3379	B3*	3415	C4*	4357	H4*	7387	E4*	9312	E4	9356	A2		
2357	B1	2376	A3*	2395	D3*	2427	C5	3361	B3	3380	H4	3416	C4*	4382	D3*	7389	E4*	9313	A2	9357	A4		
2358	D2	2377	C3*	2396	E3*	2432	C5	3362	B3*	3381	H4	3420	C4*	4383	D4*	7392	F2*	9315	A3	9358	A5		
2359	E2	2378	C3*	2397	E3*	2436	F3*	3363	A4*	3382	D3*	3421	C4*	4413	D4*	7394	E2*	9316	D3	9360	B1		

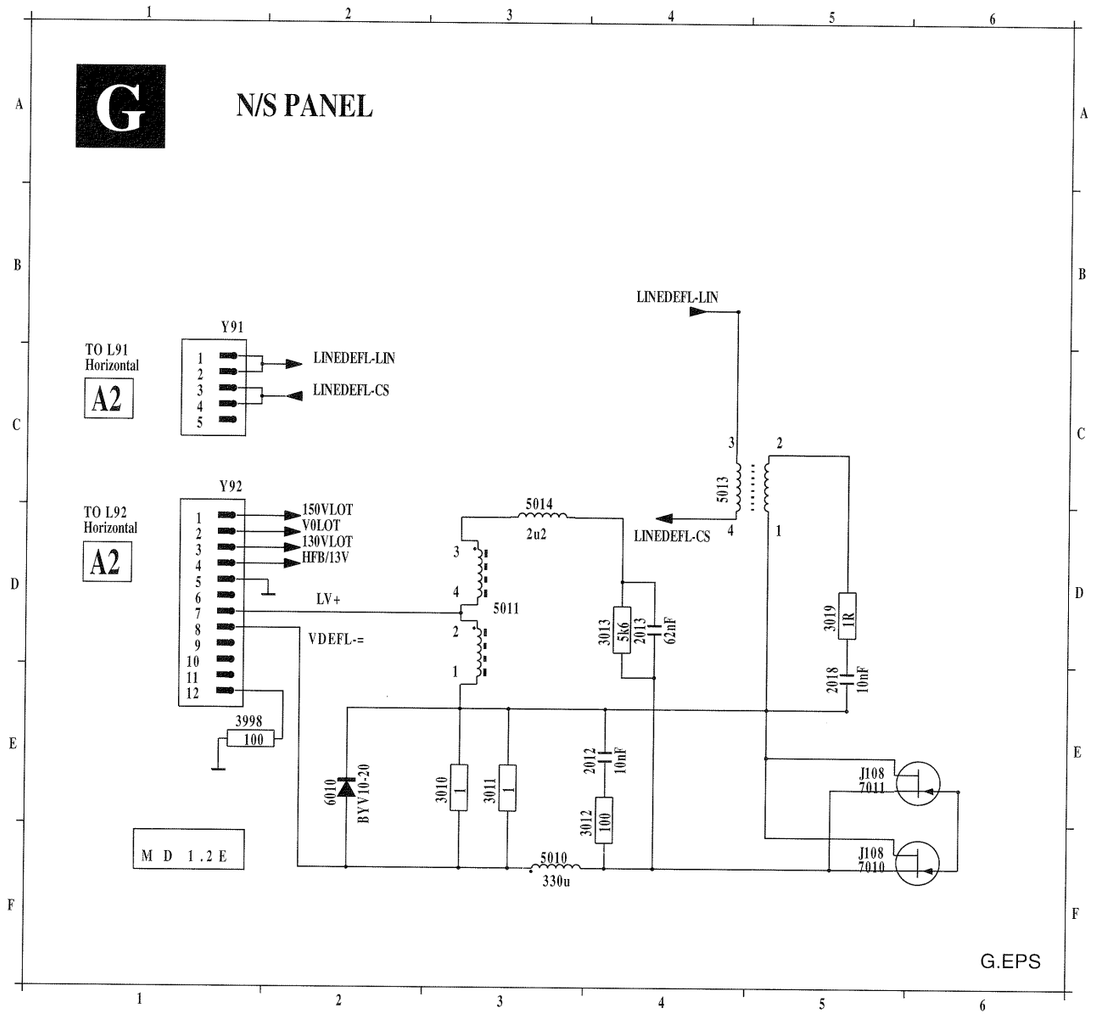
2276 D 9
2279 B 5
2280 B 5
2281 B 6
2282 C11
2283 C12
2284 C 6
2285 C12
2286 C11
2287 E11
2288 D 6
2289 D 6
2291 E 4
3276 D 9
3277 C 9
3278 E 9
3279 E10
3280 D10
3281 D10
3282 C11
3283 C 4
3284 C 5
3285 C13
3286 D12
3287 E11
3288 B 5
3289 C 5
3290 E 6
3291 D 6
3292 B11
3293 D 7
3294 C 7
3295 D 8
3296 D 7
3297 F 3
3298 C 4
3299 B 2
4201 C11
4202 D13
4277 E 7
6270 B 4
6279 E10
7276 D10
7277 D 4
7280 C10
7281 D11
7282 D 7
7283 C 7
7286 D13
9200 D 3
9201 E 3
9202 C 3
9203 D 3
9204 E 5
W54 B 1

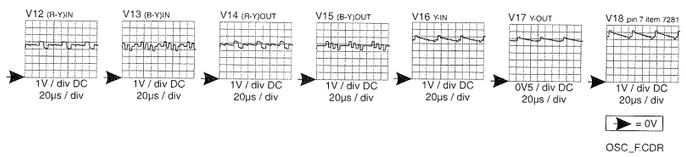


*	BS	CTI	BS+CTI
3285	12k	-	1k
4277	-	+	-
9204	+	-	-

F.CDR

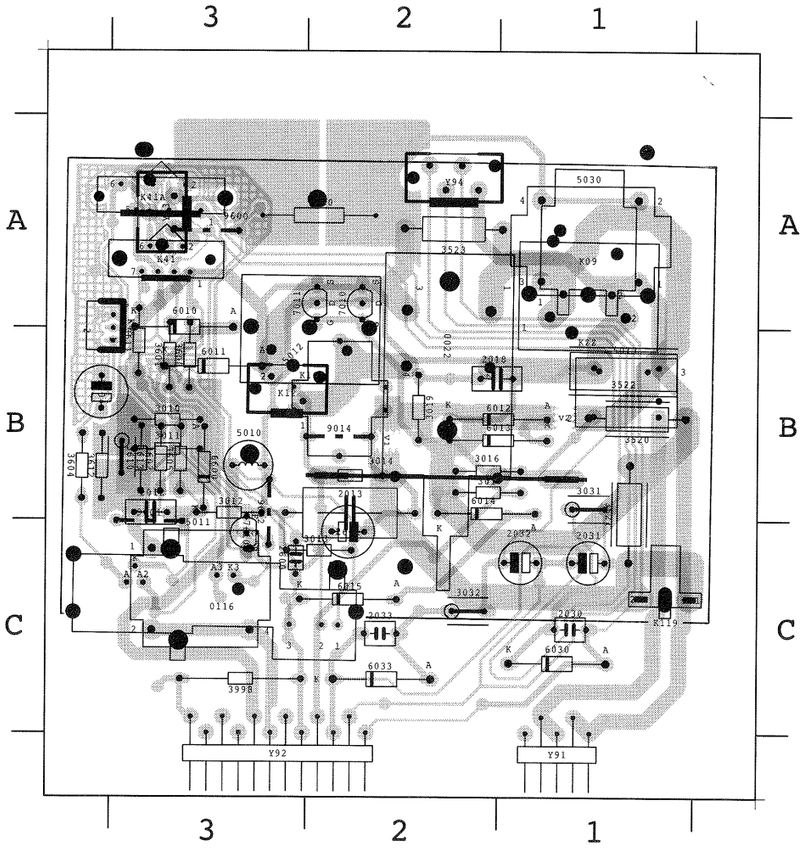
N/S panel / N/S Platine / Platine N/S



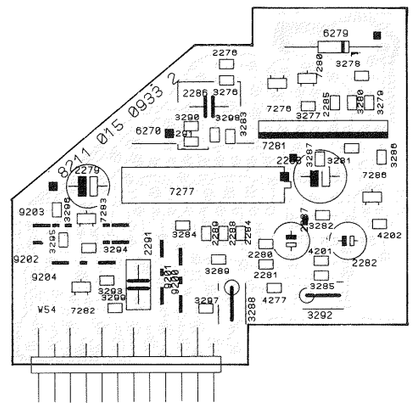


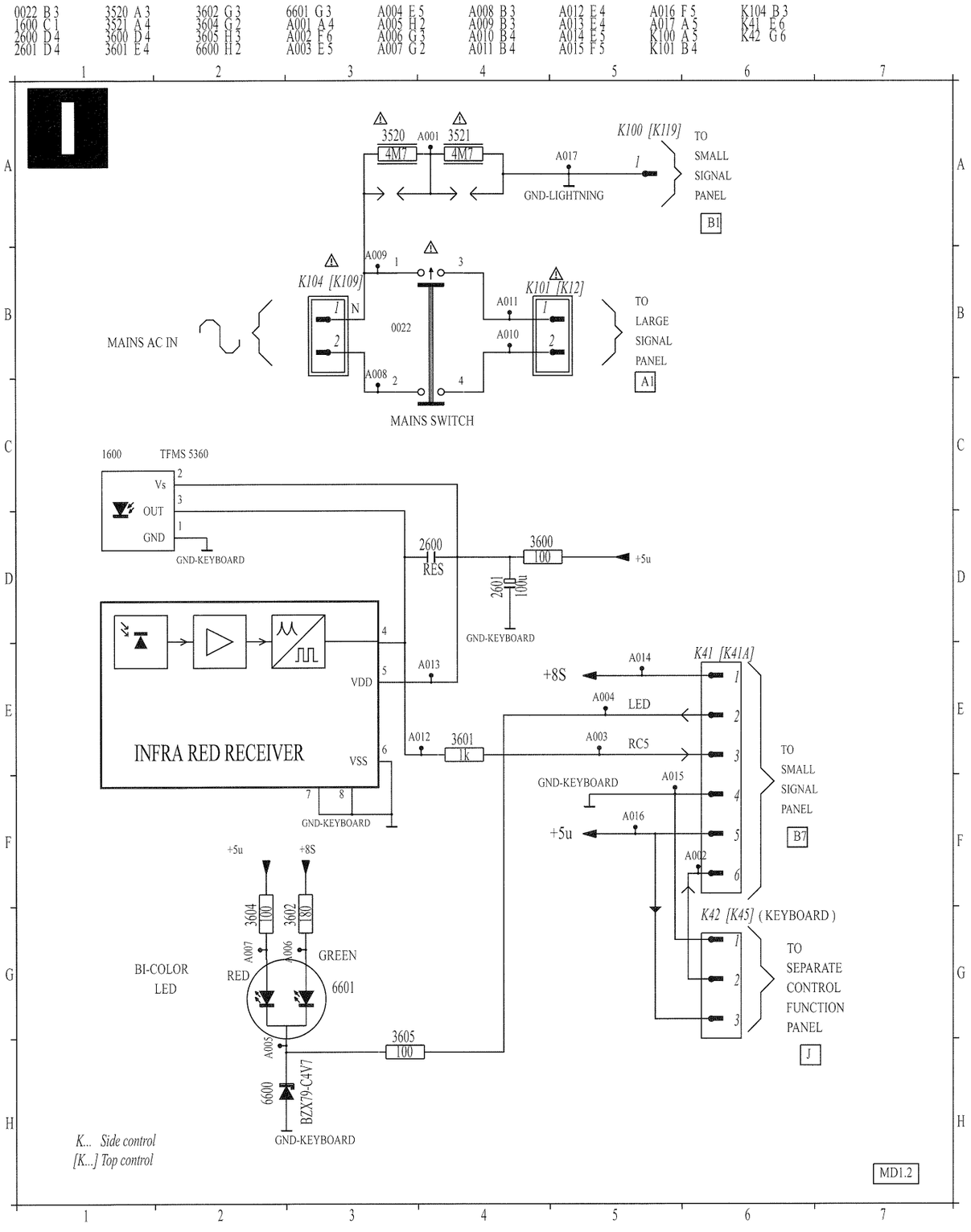
N/S PANEL / N/S PLATINE / PLATINE N/S

2012 B 3 2031 C 1 3011 B 3 3016 B 1 3031 B 1 5011 C 3 6010 B 3 6014 B 1 7010 A 2 Y92 C 2
2013 B 3 2032 C 1 3012 B 3 3017 B 2 3032 C 2 5012 B 2 6011 B 3 6015 C 2 7011 A 2 Y93 A 3
2018 B 1 2033 C 2 3013 C 3 3019 B 2 3998 C 3 5013 B 1 6012 B 1 6030 C 1 9014 B 2 Y94 A 2
2030 C 1 3010 B 3 3014 B 2 3030 A 2 5010 B 3 5030 A 1 6013 B 1 6033 C 2 Y91 C 1

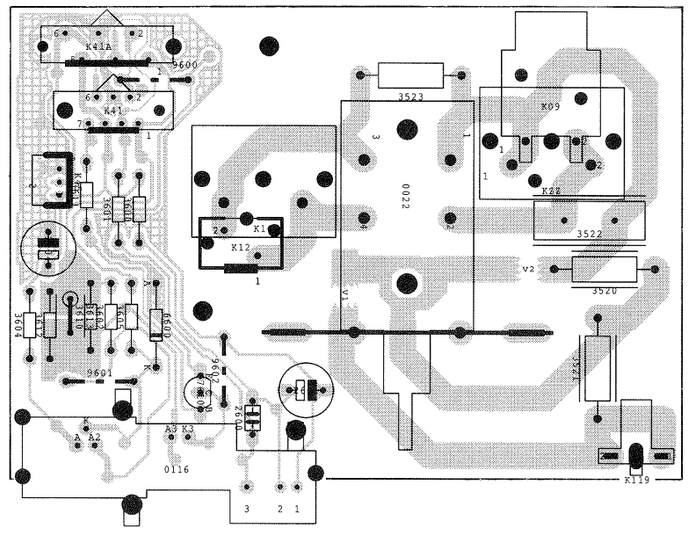


CTI/BLACK STRETCH PANEL / CTI/BLACK STRETCH PLATINE / PLATINE CTI/BLACK STRETCH

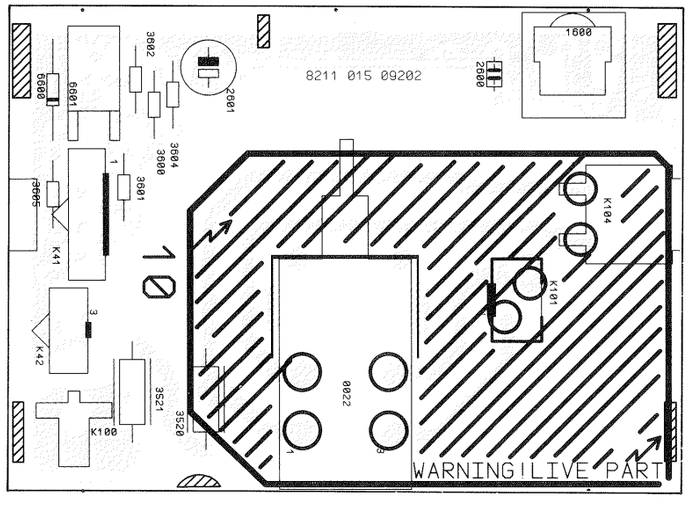


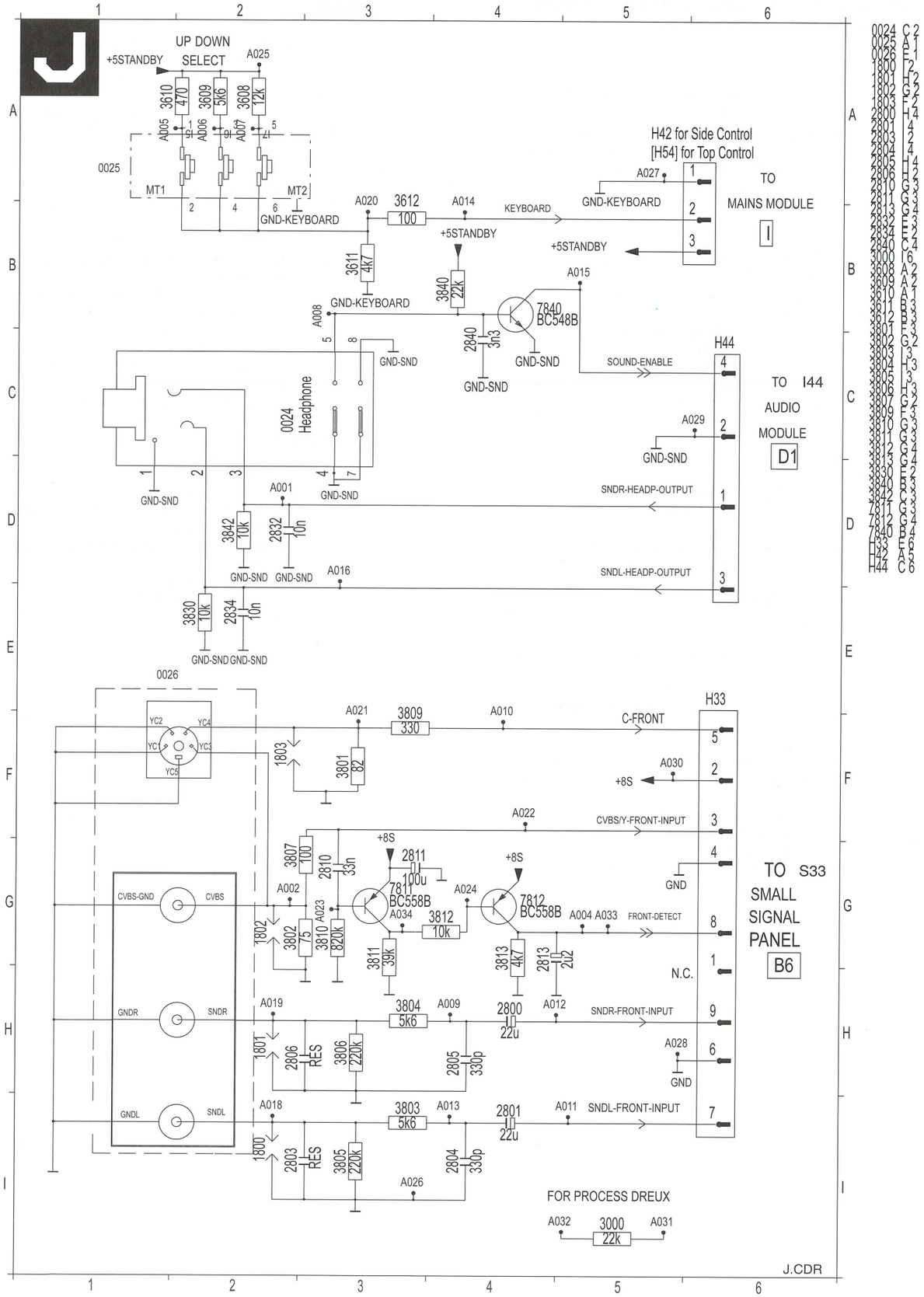


MAINS/RC5/LED PANEL FOR STYLING WITH SIDE I/O AND TOP CONTROL



MAINS/RC5/LED PANEL FOR STYLING WITH SIDE I/O AND SIDE CONTROL

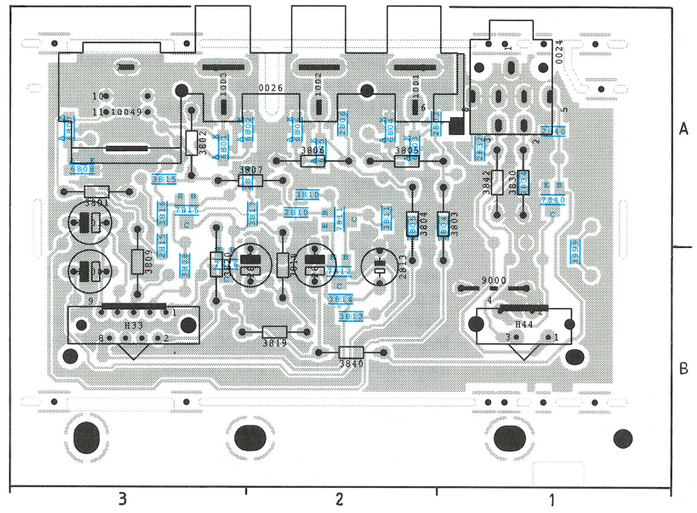




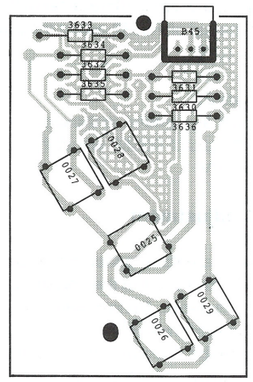
0024 C2
0025 A1
0026 E1
1800 F2
1801 H2
1802 G2
1803 F2
2800 H4
2801 I4
2803 I2
2804 I4
2805 H4
2806 H2
2810 G3
2811 G3
2813 G3
2832 E3
2834 E3
2840 C4
3000 I6
3608 A2
3609 A2
3610 A1
3611 B3
3612 B3
3801 F3
3802 G2
3803 G3
3804 H3
3805 H3
3806 H3
3807 G2
3809 E3
3810 G3
3811 G3
3812 G3
3813 G3
3830 E5
3840 C3
3842 C3
7811 G3
7812 G4
7840 B4
H33 E6
H42 A5
H44 C6

Styling with side Input/Output and top control

SIDE I/O PANEL

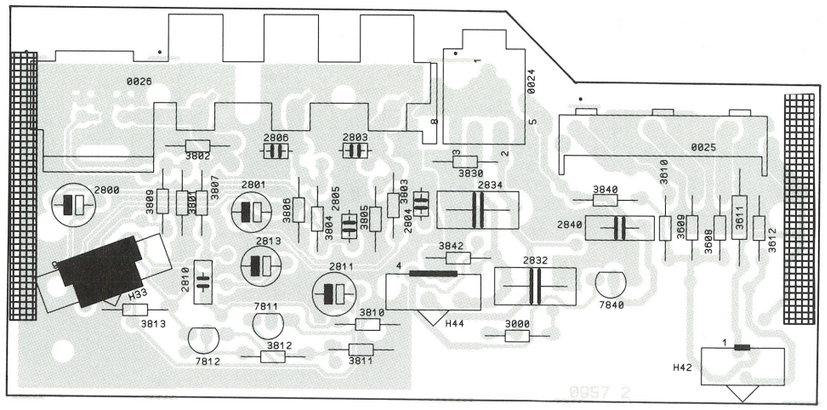


TOP CONTROL PANEL



Styling with side control + side Input/Output

SIDE CONTROL + I/O PANEL



8. Electrical alignments

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 ± 10%, 50Hz ± 5%.
- Warm-up time: ≈ 10 minutes
- The voltages and oscillograms are measured in relation to the tuner earth.
- Test probe: Ri > 10MΩ; Ci < 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 ± 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 ± 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 ± 2V.

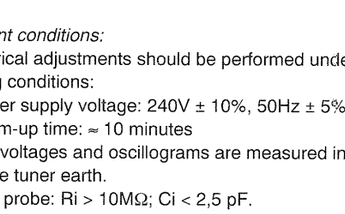


Figure 8.1

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 ↑ / ↓ keys to select an alignment and the ← / → 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.

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.

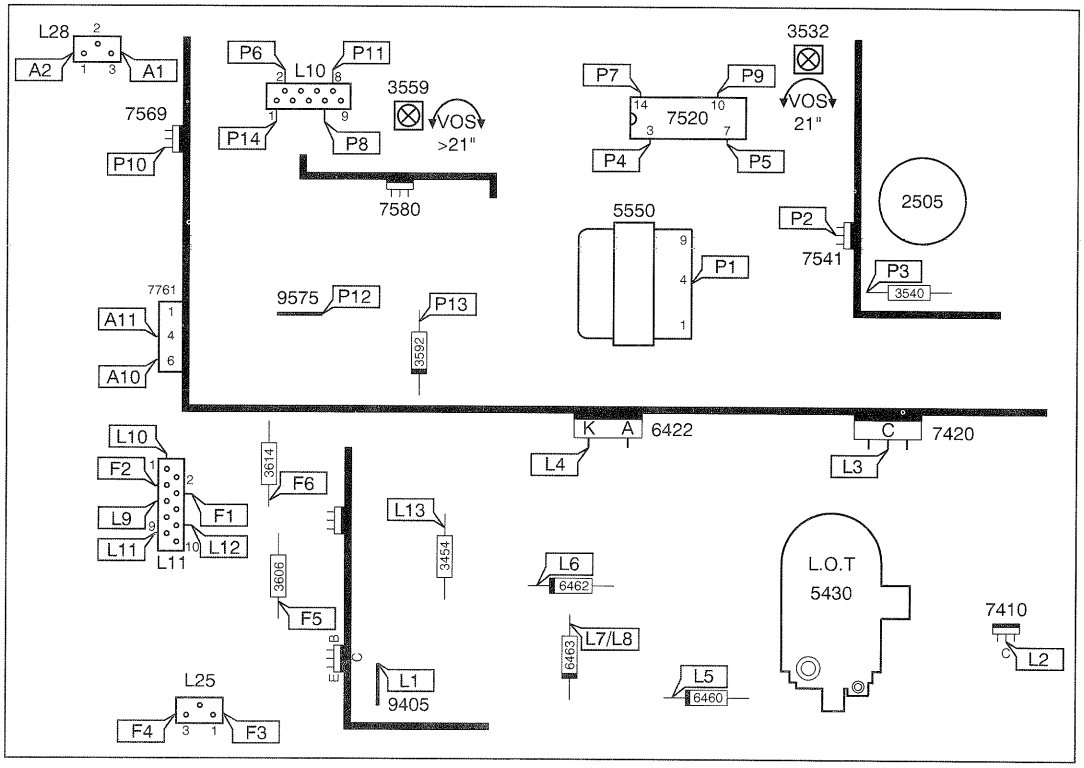
For sets with a screen size larger than 21", the following alignments can be done as well. For 21" sets these alignments have no function.
HW : East-west width
Align the picture width with this.
HP : East-west parabola correction
Set this so that the vertical lines at the sides of the screen are straight.
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

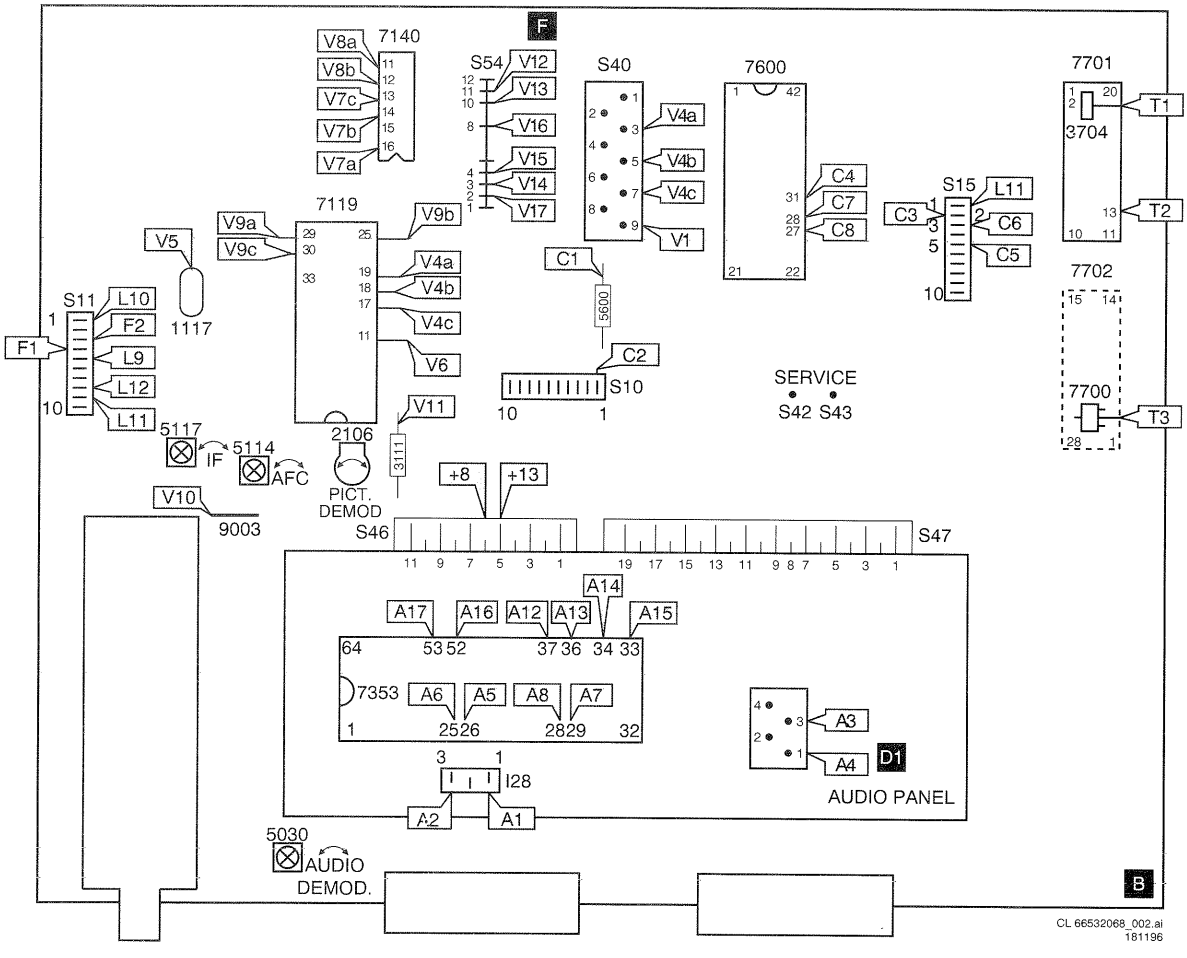
E2 : Number of Euro/Scart connectors (options N or Y)
N 1 Euro/Scart connector present
Y 2 Euro/Scart connectors present
UO : Tuner type
N UHF/VHF tuner (item 1000 is UV916S)
Y UHF tuner (item 1000 is UV944S).
Used in the United Kingdom (/05 sets)
LL : Nicam L (options N or Y)
N Nicam L not present
Y 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

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



CL 66532051_002.ai
190996

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
DEMOD	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
I²C	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

List of abbreviations

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	I²C Clock signal
SCLI	Serial clock pulse
SDA	I²C data
SDAa	To every other module, serial data
SDAI	Serial data pulse
SECAM	SEquentiel Coleur 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

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)

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	100μF 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	2200μF 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	2200μF 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	6Ω8 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	2Ω2 5% 0.33W
3461▲	4822 052 11158	1Ω5 5% 0.5W
3462▲	4822 052 10228	2Ω2 5% 0.33W
3464▲	4822 052 11568	5Ω6 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 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	2Ω2 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	4Ω7 1% 0.6W
3484▲	4822 050 24708	4Ω7 1% 0.6W
3487	4822 116 52219	330Ω 5% 0.5W
3500▲	4822 116 21224	1MA/387V VDR
3502▲	4822 052 10338	3Ω3 5% 0.33W
3503	4822 111 20403	470Ω 10%
3505	4822 117 12074	7W 1Ω5 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
3588▲	4822 052 11338	3Ω3 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
3593	4822 050 11002	1k 1% 0.4W
3594	4822 116 83864	10k 5% 0.5W
3595	4822 116 52303	8k2 5% 0.5W
3596	4822 050 11002	1k 1% 0.4W
3597	4822 116 83864	10k 5% 0.5W
3598	4822 116 52234	100k 5% 0.5W
3601	4822 116 81039	1Ω8 5% 0.5W
3601	4822 116 81154	2Ω2 5% 0.5W
3601	4822 116 81155	3Ω9 5% 0.5W
3602	4822 116 81039	1Ω8 5% 0.5W
3602	4822 116 81154	2Ω2 5% 0.5W
3602	5322 116 53564	3Ω3 5% 0.5W
3603	4822 116 81154	2Ω2 5% 0.5W
3603	4822 116 81155	3Ω9 5% 0.5W
3603	5322 116 53564	3Ω3 5% 0.5W
3604	4822 116 80176	1Ω 5% 0.5W
3605	4822 116 52186	22Ω 5% 0.5W
3606	4822 050 11002	1k 1% 0.4W
3607	4822 116 52226	560Ω 5% 0.5W
3608	4822 050 11002	1k 1% 0.4W
3609	4822 116 81682	2M 2 5% 0.5W
3610	4822 116 52249	1k8 5% 0.5W
3611	4822 116 52249	1k8 5% 0.5W
3612	4822 116 52283	4k7 5% 0.5W
3613	4822 116 83864	10k 5% 0.5W
3614	4822 116 52243	1k5 5% 0.5W
3615	4822 116 52276	3k9 5% 0.5W
3616	4822 116 52284	47k 5% 0.5W
3617	4822 116 83874	220k 5% 0.5W
3618	4822 116 83872	220Ω 5% 0.5W
3619	4822 116 83872	220Ω 5% 0.5W
3620	4822 116 52175	100Ω 5% 0.5W
3621	4822 116 80176	1Ω 5% 0.5W
3623	4822 116 52234	100k 5% 0.5W
3624	4822 116 52256	2k2 5% 0.5W
3752▲	4822 052 10828	8Ω2 5% 0.33W
3753▲	4822 052 10828	8Ω2 5% 0.33W
3754	4822 116 52256	2k2 5% 0.5W
3756	4822 116 52269	3k3 5% 0.5W
3757	4822 116 52279	4k3 5% 0.5W
3758	4822 116 52257	22k 5% 0.5W
3759	4822 116 52291	56k 5% 0.5W
3760	4822 050 11002	1k 1% 0.4W
3760	4822 116 52249	1k8 5% 0.5W
3761	4822 116 52256	2k2 5% 0.5W
3761	4822 116 52269	3k3 5% 0.5W
3762	4822 116 52206	120Ω 5% 0.5W
3762	4822 116 52283	4k7 5% 0.5W
3763	4822 116 52257	22k 5% 0.5W
3764	4822 116 52303	8k2 5% 0.5W
3765	4822 116 52283	4k7 5% 0.5W
3766	4822 116 52239	120k 5% 0.5W
3767	4822 116 52256	2k2 5% 0.5W

5400	4822 157 71401	27μH
5401	4822 157 71403	15μH
5410▲	4822 142 40351	Line drive transf.
5421▲	4822 157 63079	LC coil (21")
5421▲	4822 157 10992	LC coil (other)
5424▲	4822 157 53069	Balance coil
5430▲	4822 140 10595	LOT ELDOR (21")
5430▲	4822 140 10584	LOT CML16P
5463	4822 156 20915	33μH
5463	4822 157 52392	27μH
5480▲	4822 158 10728	Bridge coil. 11μH
5503▲	4822 142 40315	Mains filter
5525	4822 157 70826	2.4μH
5542	4822 157 70826	2.4μH
5544	4822 157 70826	2.4μH
5545	4822 157 70826	2.4μH
5550▲	4822 146 10366	Transf. CE425V
5550▲	4822 146 31469	transf. 10290250
5567	4822 157 70826	2.4μH
5572	4822 157 10452	10μH 10%
5572	4822 157 71466	2.2μH 20%
5750	4822 157 10452	10μH 10%
5751	4822 157 10452	10μH 10%

6423▲	4822 130 41275	BY228/20
6424▲	4822 130 41602	BYW95C/20
6425	4822 130 42488	BYD33D
6426	4822 130 42488	BYD33D
6441	4822 130 42488	BYD33D
6450	4822 130 34281	BZX79-C15
6457▲	4822 130 30621	1N4148
6460	4822 130 42488	BYD33D
6462	4822 130 70055	BYV27-400
6463	4822 130 70055	BYV27-400
6480▲	4822 130 30621	1N4148
6481▲	4822 130 30621	1N4148
6482	4822 130 34258	BZX79-C56
6501	4822 130 34281	BZX79-C15
6503	4822 130 34281	BZX79-C15
6507	4822 130 42488	BYD33D
6508	4822 130 42606	BYD33J
6509	4822 130 80655	BZX79-F2V4
6510▲	4822 130 31933	1N5061
6511▲	4822 130 31933	1N5061
6512▲	4822 130 31933	1N5061
6513▲	4822 130 31933	1N5061
6524▲	4822 130 31631	BYV10-20
6525	4822 130 42488	BYD33D
6530▲	4822 130 30621	1N4148
6542	4822 130 42606	BYD33J
6545	4822 130 41487	BYV95C
6560	4822 130 34174	BZX79-C4V7
6561	4822 130 42488	BYD33D
6562	4822 130 42488	BYD33D
6567	4822 130 70055	BYV27-400
6567	4822 130 81123	BY229F-800
6571▲	4822 130 31982	BYV27-100
6572	4822 130 80791	BYV28-200/20
6580	4822 130 42488	BYD33D
6590	4822 130 42606	BYD33J
6591▲	4822 130 30621	1N4148
6592	4822 130 83704	BZX79-F13
6600▲	4822 130 30621	1N4148
6601▲	4822 130 30621	1N4148
6763▲	4822 130 30621	1N4148
6764	4822 130 34281	BZX79-C15

7410	4822 130 42159	BF819
7420▲	4822 130 63271	BU2508AF
7421▲	4822 130 10779	BU1506DX
7450▲	4822 130 44197	BC558B
7480	4822 130 63726	MTP3055EFI
7507	4822 130 20296	BT137-600D
7520▲	4822 209 90025	MC44603P
7540	4822 130 63787	STP4NA60FI
7541	4822 130 63698	STH8NA60FI
7555	4822 209 81397	TL431CLP
7556▲	4822 130 10025	CNX82A
7560	4822 209 72042	MC78L05ACP
7561▲	4822 130 44197	BC558B
7569	4822 209 90281	L78MXX
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	TDA2616Q/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/BG)
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

2004	4822 122 33797	47nF 20% 50V
2008▲	4822 124 40196	220μF 20% 16V (BGLI)
2008	4822 124 81029	100μF 20% 25V (other)
2009▲	4822 124 41579	10μF 20% 50V
2032	4822 124 40756	1μF 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	10μF 20% 50V
2037	4822 124 80791	470μF 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	1μF 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	100μF 20% 25V
2125▲	4822 122 33177	10nF 20% 50V
2126	4822 124 40756	1μF 20% 100V
2127▲	4822 124 41579	10μF 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	47μF 20% 16V
2156	4822 126 13161	100nF 10% 25V
2157	4822 126 13161	100nF 10% 25V
2158▲	4822 124 40433	47μF 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	100μF 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	1μF 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	47μF 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	10μF 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	1μF 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	10μF 20% 50V
2716▲	4822 124 41579	10μF 20% 50V
2800	4822 122 31175	1nF 10% 500V
2801	4822 122 31175	1nF 10% 500V
2805	4822 124 41596	22μF 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	10μF 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	22μF 20% 50V
2855	4822 126 13597	330pF 10% 500V
2856	4822 124 41596	22μF 20% 50V
2857	4822 126 13597	330pF 10% 500V
2858	4822 124 41596	22μF 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	4Ω7 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	4Ω7 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	4Ω7 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
3190▲	4822 051 20332	3k3 5% 0.1W
3191	4822 050 11002	1k 1% 0.4W
3192	4822 051 20562	5k6 5% 0.1W
3193▲	4822 051 20008	0Ω (jumper)
3196	4822 051 20101	100Ω 5% 0.1W
3602	4822 116 83864	10k 5% 0.5W
3603	4822 051 20331	330Ω 5% 0.1W
3604	4822 116 83864	10k 5% 0.5W
3605	4822 116 52283	4k7 5% 0.5W
3606	4822 116 83864	10k 5% 0.5W
3607	4822 116 52224	470Ω 5% 0.5W
3608	4822 116 52283	4k7 5% 0.5W
3610	4822 116 52283	4k7 5% 0.5W
3611	4822 116 52264	27k 5% 0.5W
3612	4822 051 20512	5k1 5% 0.1W
3613▲	4822 051 20472	4k7 5% 0.1W
3614▲	4822 051 20472	4k7 5% 0.1W
3616▲	4822 051 20472	4k7 5% 0.1W
3617▲	4822 051 20472	4k7 5% 0.1W
3621	4822 116 52283	4k7 5% 0.5W
3623▲	4822 051 20472	4k7 5% 0.1W
3624▲	4822 051 20472	4k7 5% 0.1W
3627	4822 116 52175	100Ω 5% 0.5W
3660	4822 116 83864	10k 5% 0.5W
3661	4822 051 20224	220k 5% 0.1W
3662	4822 050 11002	1k 1% 0.4W
3663	4822 117 11139	1k5 1% 0.1W
3664	4822 116 52231	820Ω 5% 0.5W
3666	4822 117 11139	1k5 1% 0.1W
3669	4822 117 11139	1k5 1% 0.1W
3670▲	4822 051 20472	4k7 5% 0.1W
3680▲	4822 051 20472	4k7 5% 0.1W
3681	4822 051 20101	100Ω 5% 0.1W
3682	4822 051 20101	100Ω 5% 0.1W
3683	4822 117 11449	2k2 1% 0.1W
3684	4822 117 11449	2k2 1% 0.1W
3685	4822 116 52283	4k7 5% 0.5W
3686	4822 117 10833	10k 1% 0.1W
3687	4822 051 20473	47k 5% 0.1W
3688	4822 116 52175	100Ω 5% 0.5W
3689	4822 116 52284	47k 5% 0.5W
3691▲	4822 051 20472	4k7 5% 0.1W
3692▲	4822 051 20472	4k7 5% 0.1W
3693	4822 116 52283	4k7 5% 0.5W
3694	4822 116 52228	680Ω 5% 0.5W
3700	4822 051 20101	100Ω 5% 0.1W
3701	4822 051 20331	330Ω 5% 0.1W
3702	4822 050 11002	1k 1% 0.4W
3703	4822 051 20393	39k 5% 0.1W
3704▲	4822 051 20008	0Ω (jumper)
3705	4822 051 10102	1k 2% 0.25W
3706	4822 116 52175	100Ω 5% 0.5W
3707	4822 116 52175	100Ω 5% 0.5W
3708	4822 051 20221	220Ω 5% 0.1W
3709	4822 051 10102	1k 2% 0.25W
3710	4822 116 83961	6k8 5%
3714	4822 116 83872	220Ω 5% 0.5W
3715	4822 116 83872	220Ω 5% 0.5W
3716	4822 051 20221	220Ω 5% 0.1W
3800	4822 116 52219	330Ω 5% 0.5W
3801	4822 116 52219	330Ω 5% 0.5W
3802	4822 051 20224	220k 5% 0.1W
3803	4822 051 20224	220k 5% 0.1W
3805▲	4822 052 10109	10Ω 5% 0.33W
3806	4822 116 52224	470Ω 5% 0.5W
3808	4822 051 20221	220Ω 5% 0.1W
3810	4822 116 52199	68Ω 5% 0.5W
3812	4822 116 52289	5k6 5% 0.5W
3813	4822 116 52289	5k6 5% 0.5W
3814	4822 116 52201	75Ω 5% 0.5W
3815	4822 116 52202	82Ω 5% 0.5W
3816	4822 116 83961	6k8 5%
3817▲	4822 051 20472	4k7 5% 0.1W
3818	4822 116 52201	75Ω 5% 0.5W
3819	4822 116 52202	82Ω 5% 0.5W
3820	4822 116 52202	82Ω 5% 0.5W
3821	4822 116 52175	100Ω 5% 0.5W
3822	4822 116 52219	330Ω 5% 0.5W
3823	4822 116 52202	82Ω 5% 0.5W
3824	4822 116 52201	75Ω 5% 0.5W
3825	4822 116 52201	75Ω 5% 0.5W
3826▲	4822 051 20121	120Ω 5% 0.1W
3827	4822 116 52219	330Ω 5% 0.5W
3828	4822 050 11002	1k 1% 0.4W
3830	4822 051 20223	22k 5% 0.1W
3831	4822 117 11449	2k2 1% 0.1W
3832	4822 051 20471	470Ω 5% 0.1W
3833	4822 051 20471	470Ω 5% 0.1W
3834	4822 051 20471	470Ω 5% 0.1W
3835	4822 116 52219	330Ω 5% 0.5W
3836	4822 116 52219	330Ω 5% 0.5W
3837	4822 116 83864	10k 5% 0.5W
3840	4822 116 52219	330Ω 5% 0.5W
3841	4822 116 52219	330Ω 5% 0.5W
3842	4822 051 20224	220k 5% 0.1W
3843	4822 051 20224	220k 5% 0.1W
3847▲	4822 052 10109	10Ω 5% 0.33W
3848	4822 116 52224	470Ω 5% 0.5W
3850	4822 051 20471	470Ω 5% 0.1W
3851	4822 051 20821	820Ω 5% 0.1W
3852	4822 051 20681	680Ω 5% 0.1W
3853	4822 116 52199	68Ω 5% 0.5W
3855	4822 116 80175	4k7 5% 0.5W
3856	4822 051 20224	220k 5% 0.1W
3857	4822 116 80175	4k7 5% 0.5W
3858	4822 051 20224	220k 5% 0.1W
3859	4822 116 83961	6k8 5%
3860▲	4822 051 20472	4k7 5% 0.1W
3863	4822 116 52201	75Ω 5% 0.5W
3865	4822 116 52202	82Ω 5% 0.5W
3866	4822 116 52219	330Ω 5% 0.5W
3867	4822 050 11002	1k 1% 0.4W
3869	4822 116 52202	82Ω 5% 0.5W
3875	4822 116 83872	220Ω 5% 0.5W
3879	4822 116 52175	100Ω 5% 0.5W
3888	4822 051 20224	220k 5% 0.1W

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/BGI)
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	47µF 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	5k6 5% 0.5W
3311	4822 116 52303	8k2 5% 0.5W
3312	4822 116 52289	5k6 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	4Ω7 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	3k9 5% 0.1W
3370	4822 051 20399	39Ω 5% 0.1W
3381	4822 111 30991	680Ω 10%
3382	4822 117 11896	1k5 20% 0.5W
3385	4822 051 10102	1k 2% 0.25W
3386▲	4822 052 10128	1Ω2 5% 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	4Ω7 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	1k2 5% 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	4k7 5% 0.5W
3362	4822 051 20473	47k 5% 0.1W
3363	4822 117 11449	2k2 1% 0.1W
3364▲	4822 051 20472	4k7 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	1k2 5% 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	4k7 5% 0.5W
3374	4822 051 20473	47k 5% 0.1W
3375	4822 117 11449	2k2 1% 0.1W
3376▲	4822 051 20472	4k7 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	3k3 5% 0.1W
3383▲	4822 051 20332	3k3 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	3k3 5% 0.1W
3388	4822 051 20334	330k 5% 0.1W
3389▲	4822 051 20332	3k3 5% 0.1W
3390	4822 116 52272	330k 5% 0.5W
3391	4822 051 20563	56k 5% 0.1W
3391	4822 051 20822	8k2 5% 0.1W
3395▲	4822 051 20008	0Ω (jumper)
3413	4822 117 10833	10k 1% 0.1W
3414	4822 051 20822	8k2 5% 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	8k2 5% 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	5322 209 10576	HEF4053BP
7353	4822 209 14894	MSP3410B-F7 (Nicam)
7353	4822 209 90562	MSP3400-TC15 (non-Nicam)
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 41982	BC848B
7430▲	5322 130 41982	BC848B
7431	5322 130 41983	BC858B
7432▲	5322 130 41982	BC848B

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/BlStr. 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
3288▲	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. TFMS5360

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 Bi.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

Colour television

Chassis

Service
Service
Service

MD1.2E
AA
SUPPLEMENT

Service Manual

Supplement for Chassis Manual MD1.2E AA 4822 727 20979

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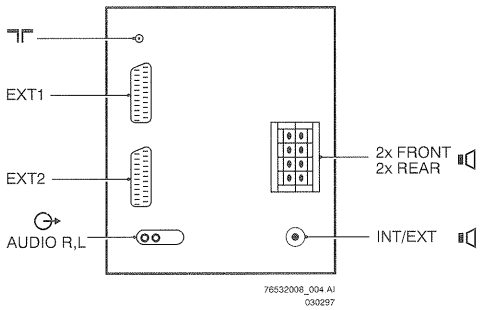
2. Connection facilities

DOLBY SURROUND
PRO • LOGIC

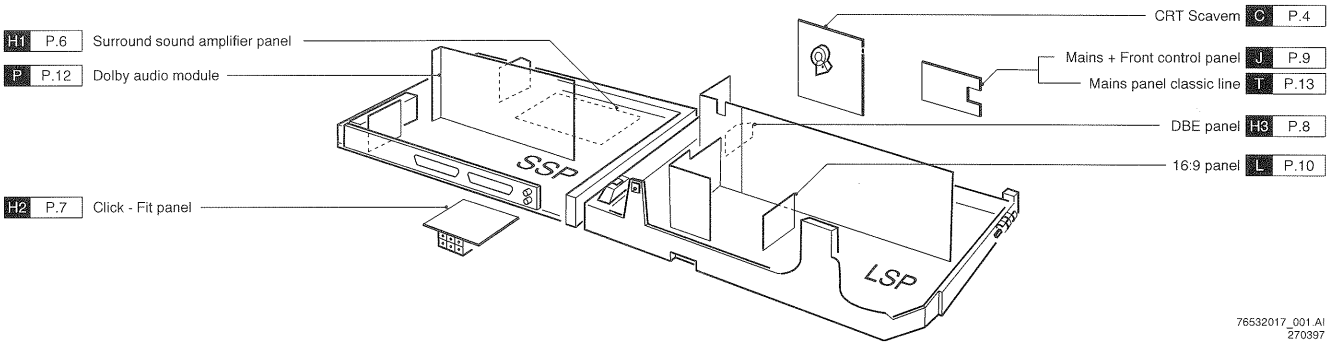
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Rear connections (Dolby Pro Logic)



PWB location drawing



4. Mechanical instructions

The service positions for the MD1.2E are described in Service Manual MD1.2E AA. Here are several supplements for 16:9 and Dolby sets.

4.1 16:9 sets with rotation coil

To put sets with a rotation coil into the various service positions the connection between the rotation coil and connector F93 on the 16:9 panel has to be disconnected. The set will continue to function normally, but the picture can no longer be tilted.

4.2 Dolby Pro Logic sets

4.2.1 Click-fit panel

The click-fit panel is fitted to the cover plate by screws located above and below the loudspeaker connections.

4.2.2 DBE module

The DBE module can be removed for repair, module replacement, or for making repairs to the LSP in the vicinity of the DBE module. If the DBE is removed the set will continue to function normally but without sound.

4.2.3 Surround Sound Amplifier (Fig. 4.1)

The Surround Sound Amplifier panel can be removed from the bracket in the following manner:
1. Press click (1) inwards;
2. Pull bracket (2) outwards;
3. The Surround Sound Amplifier panel can now be pulled forward (3).

4.2.4 Component side Small Signal Panel (SSP)

To access the component side of the SSP it is necessary to remove the Surround Sound Amplifier, including the bracket:
1. Press the click (4) inwards;
2. Lift the bracket and pull it forward (5).

The component side of the SSP is now accessible.

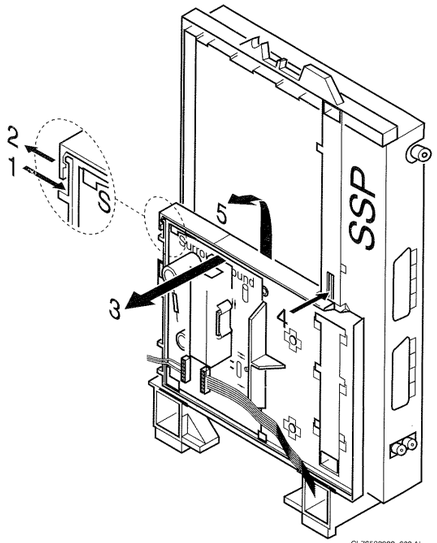
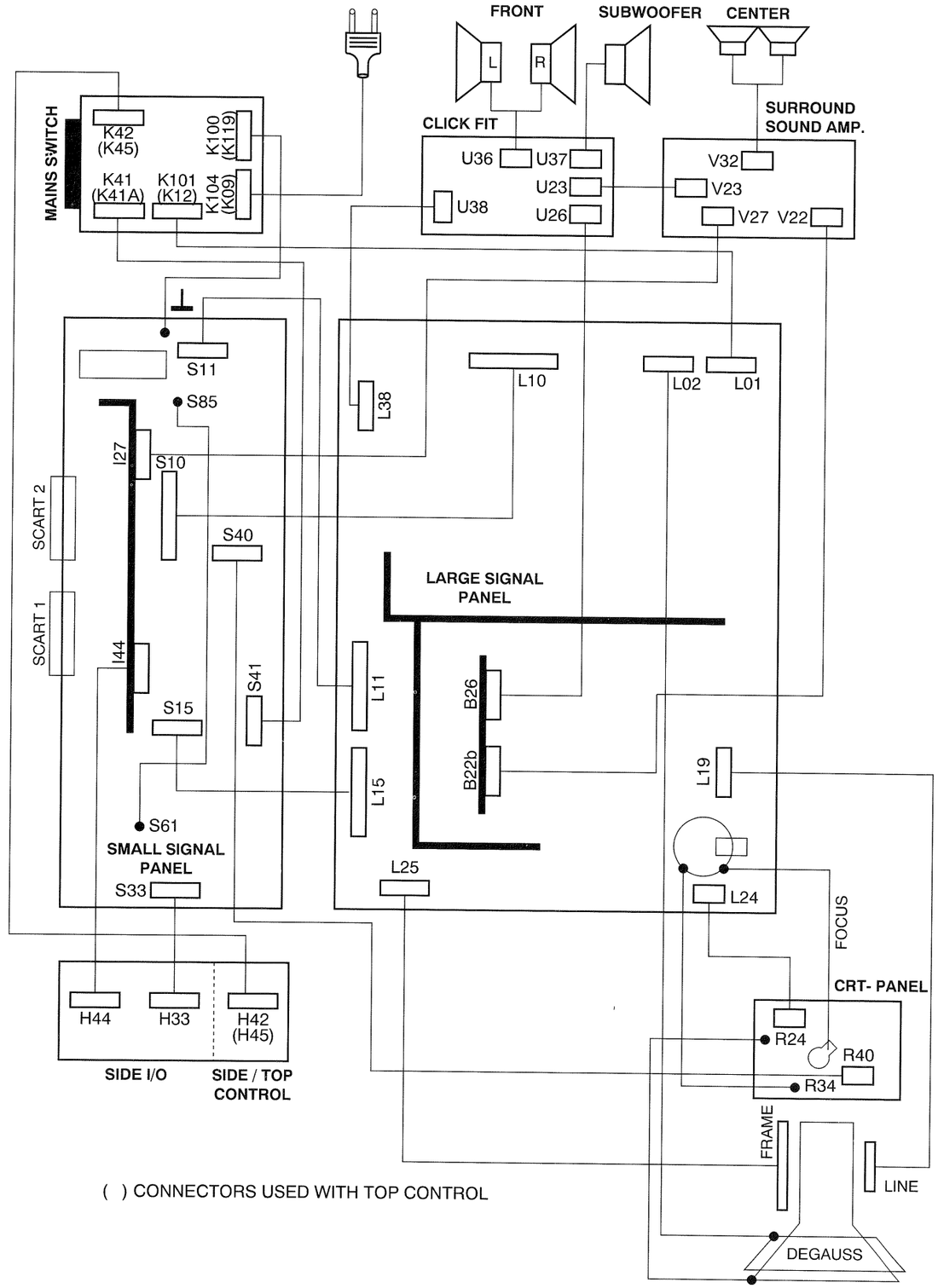
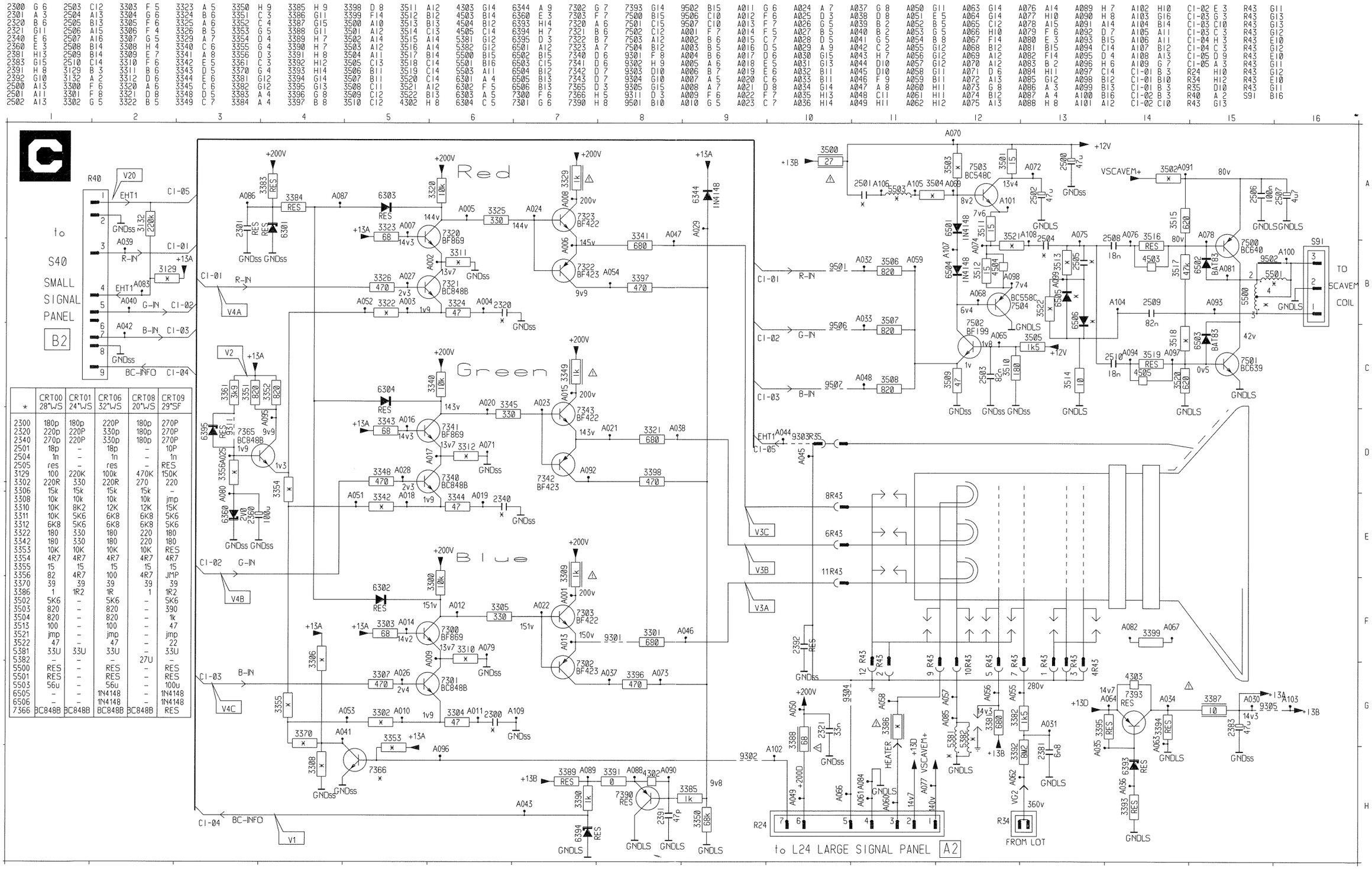


Fig. 4.1

5. Wiring diagram / Verdrahtungsschema / Schéma de câblage



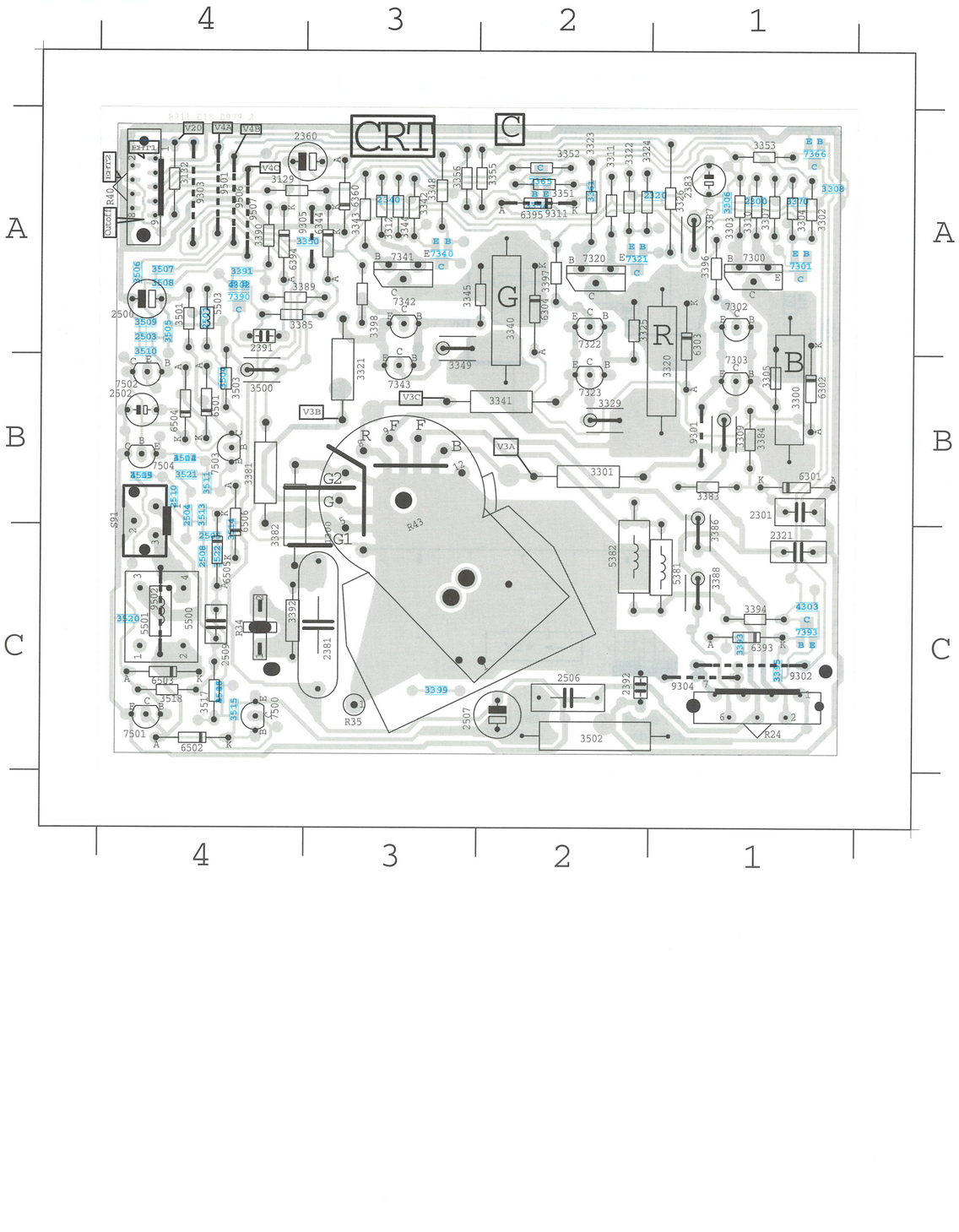
CRT/SCAVEM panel / Bildröhren- +



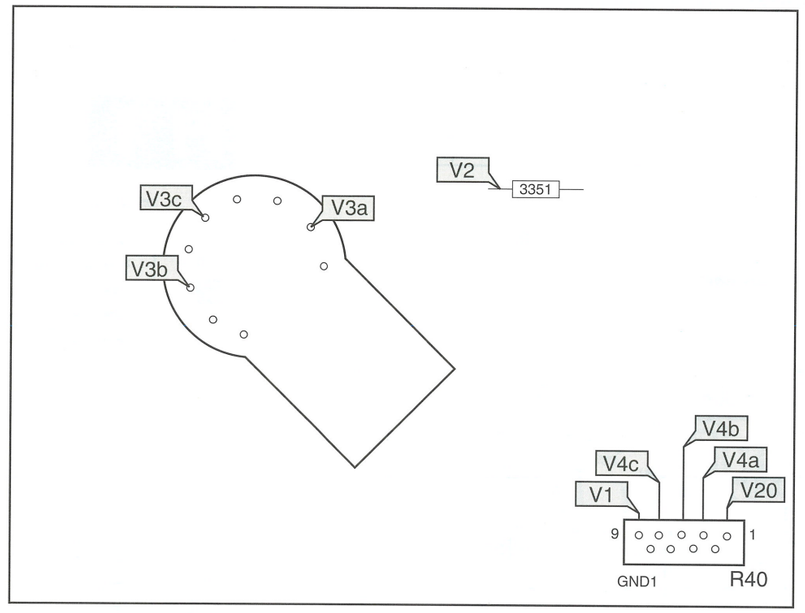
*	CRT00 28"WS	CRT01 24"WS	CRT06 32"WS	CRT08 20"WS	CRT09 29"SF
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2320	220p	220P	330p	180p	270P
2340	270p	220P	330p	180p	270P
2501	18p	-	18p	-	10P
2504	1n	-	1n	-	1n
2505	res	-	res	-	RES
3129	100	220K	100k	470K	150K
3302	220R	330	220R	270	220
3306	15k	15k	15k	15k	-
3308	10k	10k	10k	10k	jmp
3310	10K	8K2	12K	12K	15K
3311	10K	5K6	6K8	6K8	5K6
3312	6K8	5K6	6K8	6K8	5K6
3322	180	330	180	220	180
3342	180	330	180	220	180
3353	10K	10K	10K	10K	RES
3354	4R7	4R7	4R7	4R7	4R7
3355	15	15	15	15	15
3356	82	4R7	100	4R7	JMP
3370	39	39	39	39	39
3386	1	1R2	1R	1	1R2
3502	5K6	-	5K6	-	5K6
3503	820	-	820	-	390
3504	820	-	820	-	1k
3513	100	-	100	-	47
3521	jmp	-	jmp	-	jmp
3522	47	-	47	-	22
5381	33U	33U	33U	-	33U
5382	-	-	-	27U	-
5500	RES	-	RES	-	RES
5501	RES	-	RES	-	RES
5503	56u	-	56u	-	100u
6505	-	-	1N4148	-	1N4148
6506	-	-	1N4148	-	1N4148
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CRT/SCAVEM panel / Bildröhren- +

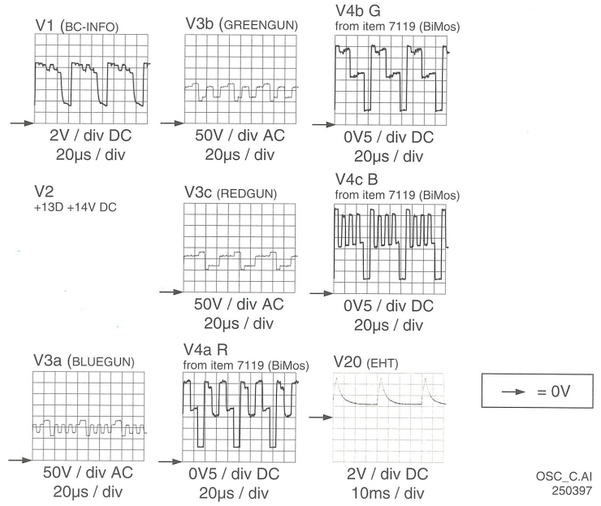
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2321 C 1	2504 B 4	3302 A 1	3320 A 1	3343 A 3	3356 A 3	3389 A 3	3500 B 4	3511 B 4	3522 C 4	6301 B 1	6503 C 4	7323 B 2	7502 B 4	9506 A 4
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2360 A 3	2506 C 2	3304 A 1	3322 A 2	3345 A 2	3370 A 1	3391 A 4	3502 C 2	3513 B 4	4303 C 1	6303 B 1	6505 C 4	7341 A 3	7504 B 4	R24 C 1
2381 C 3	2507 C 2	3305 A 1	3323 A 2	3348 A 3	3381 B 4	3392 C 4	3503 B 4	3514 C 4	4503 C 4	6304 A 2	6506 B 4	7342 A 3	9301 B 1	R34 C 4
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2392 C 2	2510 B 4	3308 A 1	3326 A 1	3351 A 2	3384 B 1	3395 C 1	3506 A 4	3517 C 4	5381 C 1	6393 C 1	7302 A 1	7366 A 1	9304 C 1	R43 B 3
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SCAVEM-Platine / Platine CRT + SCAVEM



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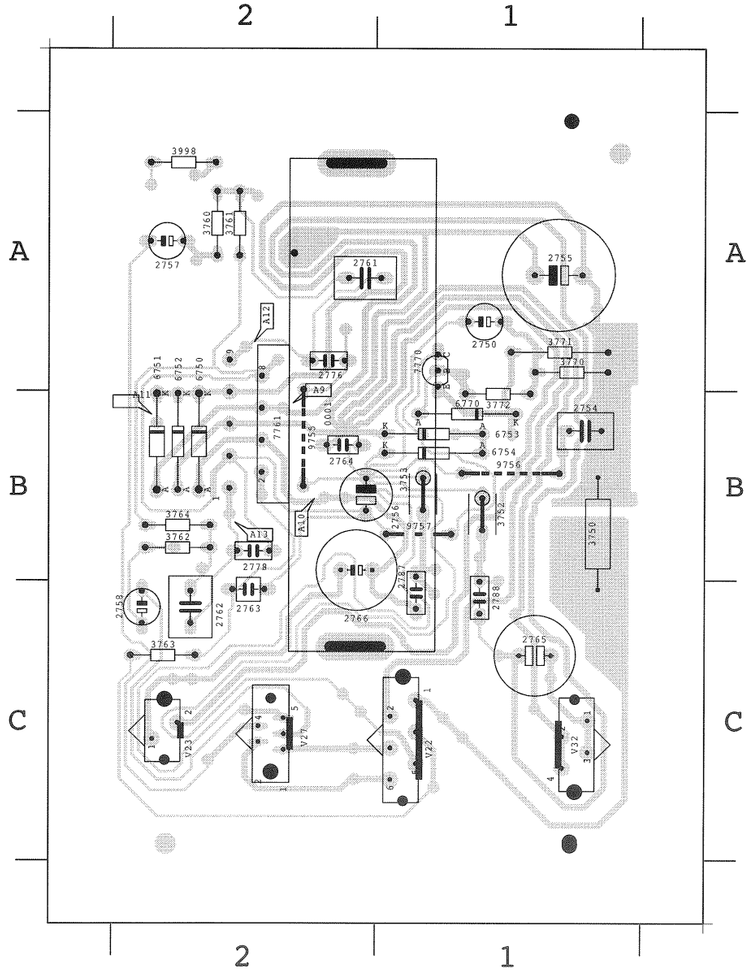


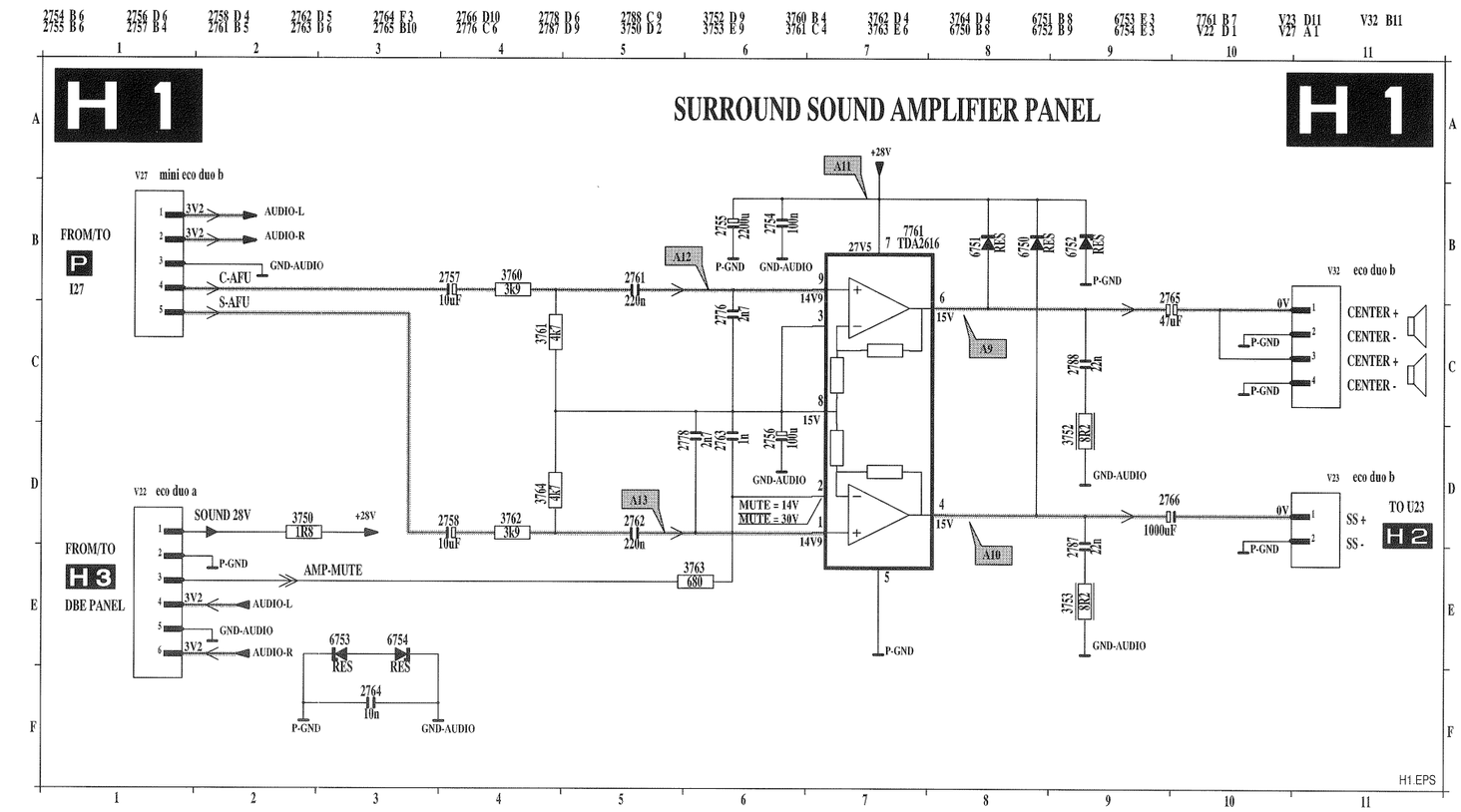
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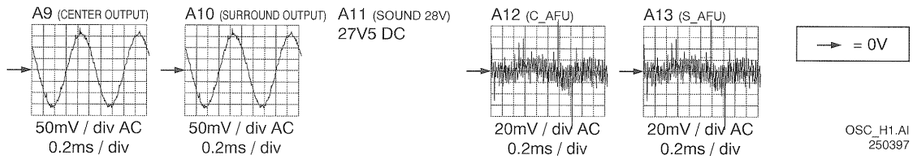
Surround sound amplifier panel / Surround-Ton-Verstärker-Platine /

Platine amplificateur son surround

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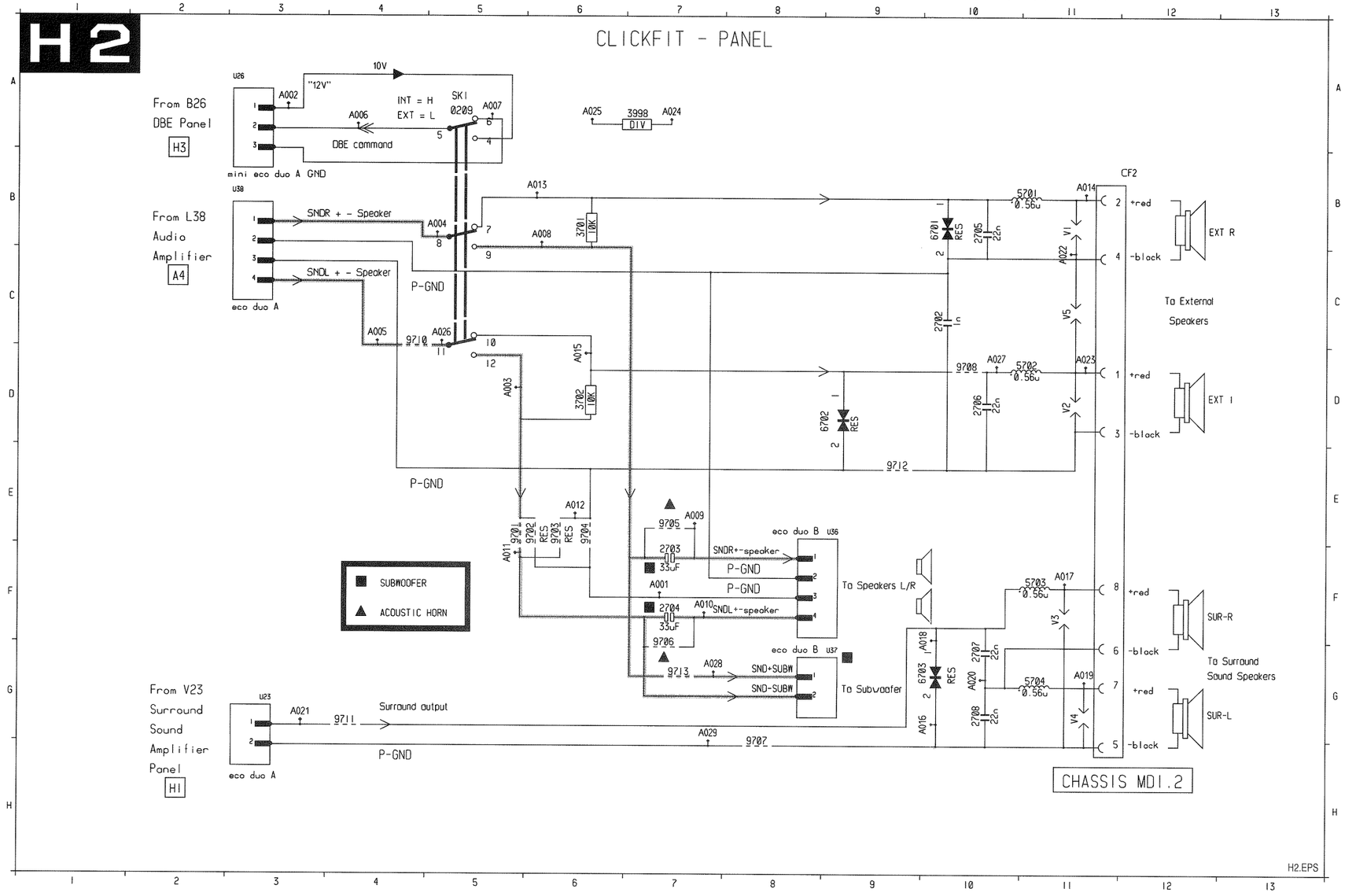




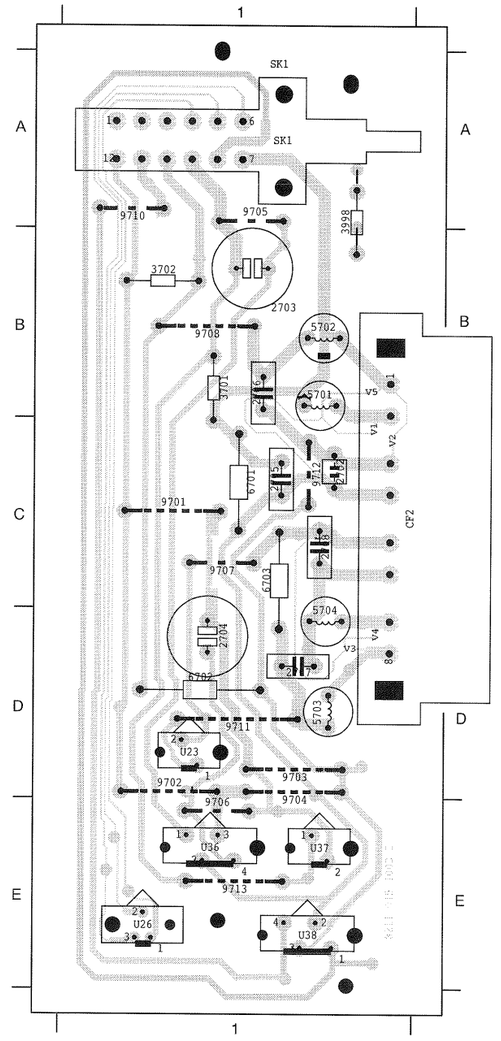
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Platine borne de raccordement

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2703 F 7 2707 G10 3998 A 7 5704 G11 9701 E 5 9705 E 7 9710 C 4 A001 F 7 A005 C 4 A009 E 7 A013 B 6 A017 F11 A021 G 3 A025 A 6 A029 G 7 U26 A 3 V1 B11 V5 C11
2704 F 7 2708 G10 5701 B11 6701 C10 9702 E 6 9706 G 7 9711 G 4 A002 A 3 A006 A 4 A010 F 7 A014 B11 A018 F10 A022 C11 A026 C 5 CF2 B11 U36 E 9 V2 D11
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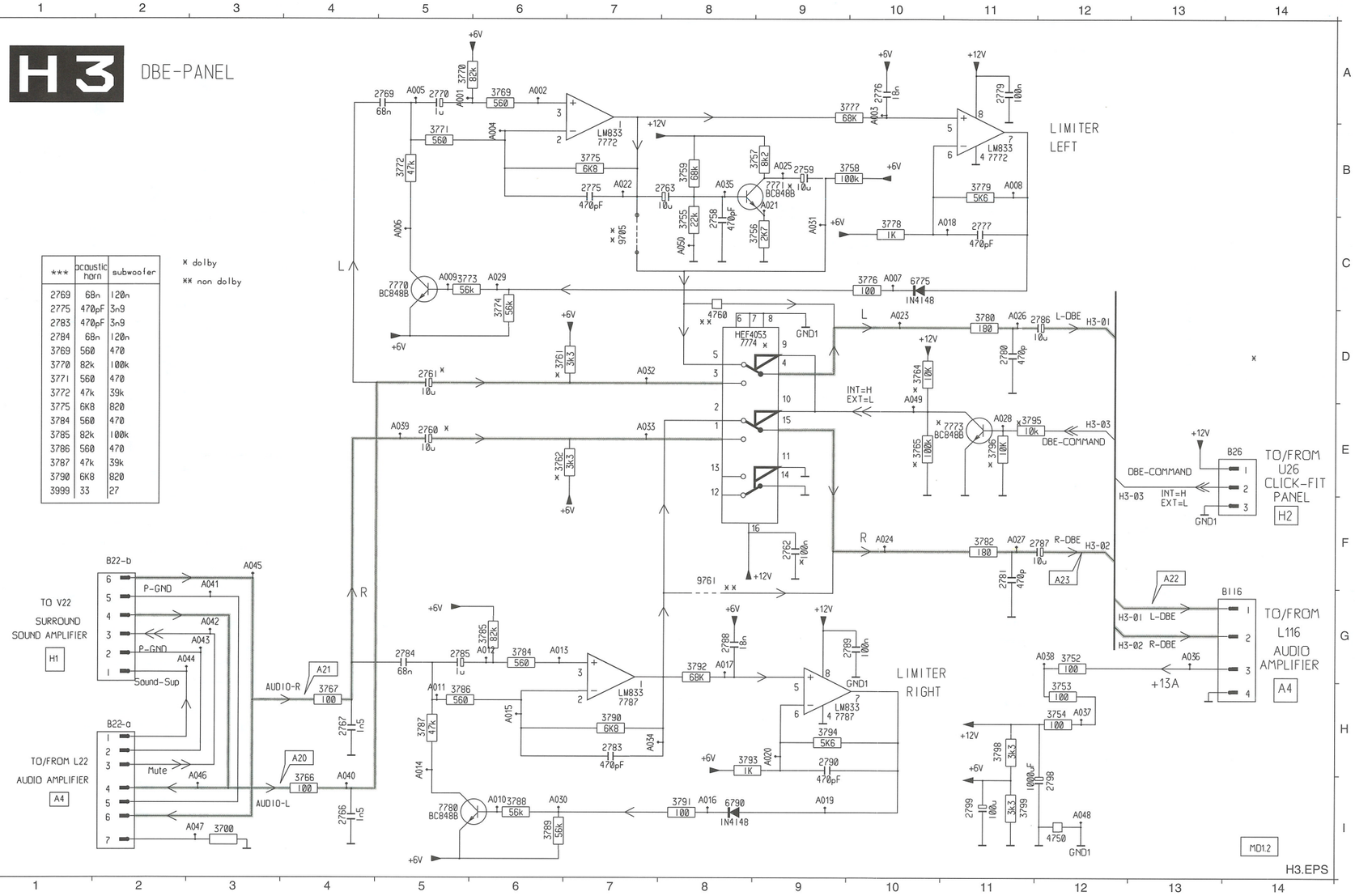
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2705 C 1 3998 B 1 6702 D 1 9705 A 1 9712 C 1 U36 E 1
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DBE panel / DBE-Platine / Platine DBE

2758 C 8 2759 B 9 2760 E 5 2761 D 5 2762 F 9 2763 B 8 2766 I 4 2767 H 4 2769 A 5 2770 A 5 2775 B 7 2776 A10 2777 C11 2779 A11 2780 D11 2781 F11 2783 H 7 2784 G 5 2785 G 5 2786 D12 2787 F12 2788 G 8 2789 G10 2790 H 9 2798 I12 2799 I11 3700 I 3 3752 G12 3753 H12 3754 H12 3755 C 8 3756 C 9 3757 B 9 3758 B10 3759 B 8 3761 D 6 3762 E 6 3764 D10 3765 E10 3766 I 4 3767 H 4 3769 A 6 3770 A 5 3771 B 5 3772 B 5 3773 C 5 3774 C 6 3775 B 7 3776 C10 3777 A10 3778 C10 3779 B11 3780 D11 3782 F11 3784 G 6 3785 G 6 3786 H 5 3787 H 5 3788 I 6 3789 I 6 3790 H 7 3791 I 8 3792 G 8 3793 H 8 3794 H 9 3795 E12 3796 E11 3798 H11 3799 I11 4750 I12 4760 D 8 6775 C10 6790 I 8 7770 C 5 7771 B 9 7772 B11 7772 B 7 7773 E11 7774 D 8 7780 I 5 7787 H 9 7787 H 7 9705 C 7 9761 F 8 A001 A 5 A002 A 6 A003 A10 A004 B 6 A005 A 5 A006 C 5 A007 C10 A008 B11 A009 C 5 A010 I 6 A011 H 5 A012 G 6 A013 E12 A015 H 6 A016 I 8 A017 G 8 A018 C11 A019 I 9 A020 H 9 A021 B 9 A022 B 7 A023 D10 A024 F10 A025 B 9 A026 D11 A027 F11 A028 E12 A029 C 6 A030 I 6 A031 C 9 A032 D 7 A033 E 7 A034 H 7 A035 B 8 A036 G13 A037 H12 A038 G12 A039 E 5 A040 I 4 A041 F 3 A042 G 3 A043 I 3 A044 I 2 A045 G 3 A046 G 2 A047 I 3 A048 I12 A049 D10 A050 C 8 B22 H 2 B26 D14 B116 G13 H3-01 D12 H3-02 F12 H3-02 G13

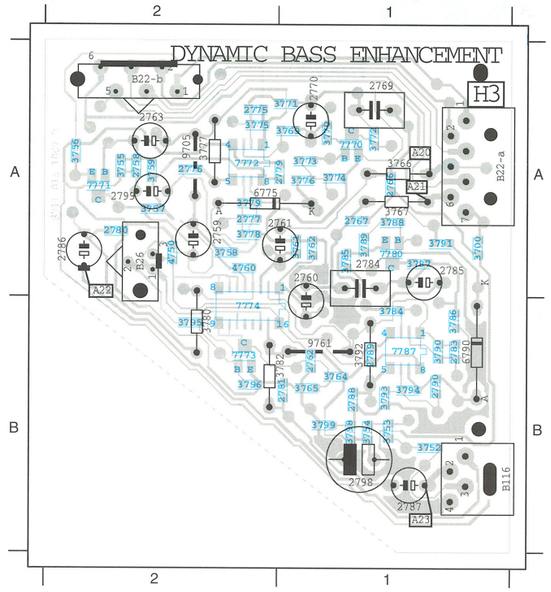
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***	acoustic horn	subwoofer
2769	68n	120n
2775	470pF	3n9
2783	470pF	3n9
2784	68n	120n
3769	560	470
3770	82k	100k
3771	560	470
3772	47k	39k
3775	6K8	820
3784	560	470
3785	82k	100k
3786	560	470
3787	47k	39k
3790	6K8	820
3999	33	27

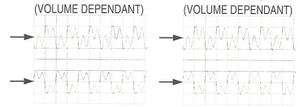
x dolby

xx non dolby



A22 (L-DBE)
A23 (R-DBE)
(VOLUME DEPENDANT)

A20 (AUDIO-L)
A21 (AUDIO-R)
(VOLUME DEPENDANT)



1V / div DC
0.5ms / div

1V / div DC
0.5ms / div

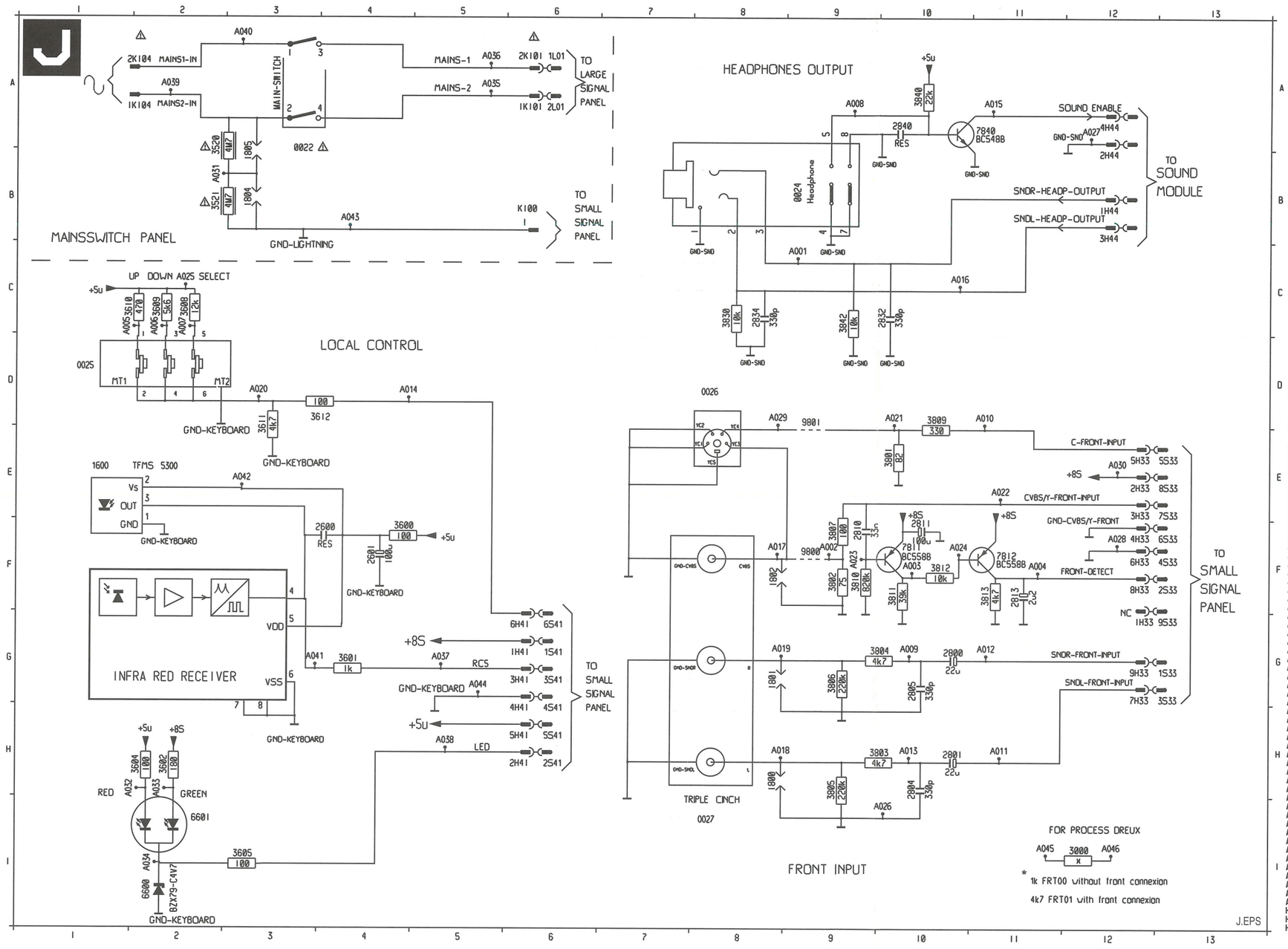
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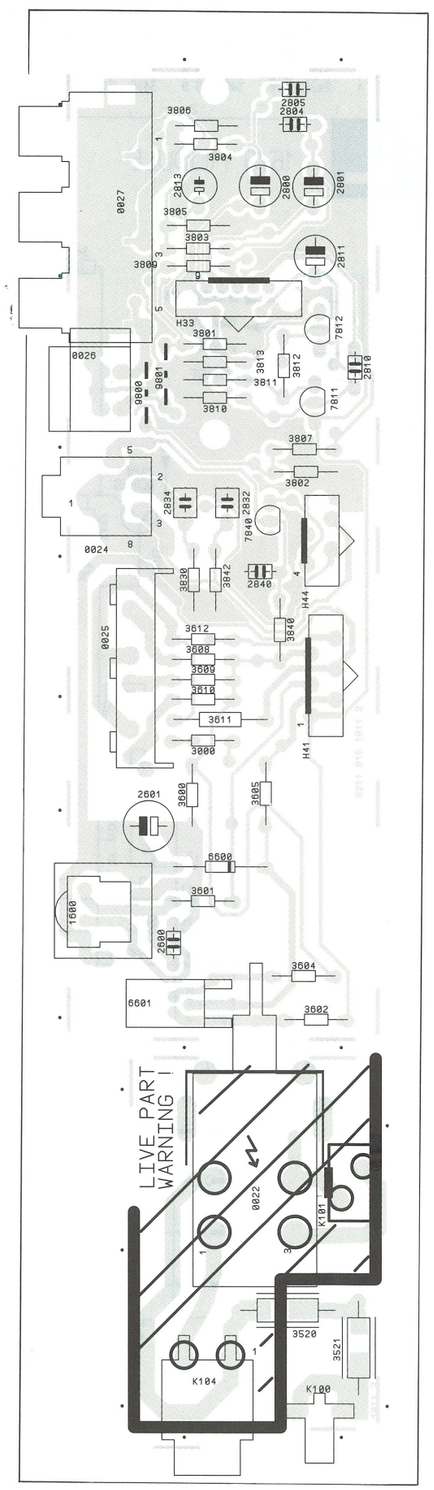
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250397

Mains + Front control panel / Netzeingang- + Frontbedienungsplatine /

Supplement MD1.2E 9

Platine Rescan + Platine commande par l'avant





2400 I 7 2401 E 8 2402 C14 2403 C 6 2404 C 6 2405 C 3 2406 E 4 2407 I 4
2408 I 4 2409 J 3 2420 E 4 2421 C 6 2422 A 4 2424 C14 2425 C13 2426 HI0
3400 E 8 3401 I 6 3402 DI2 3403 G 7 3404 I14 3405 D 9 3406 D 9 3407 G 8
3408 CI0 3409 DI0 3410 DI0 3411 C 7 3412 C 4 3413 C 5 3414 C 7 3415 DI6
3416 C 8 3417 BI0 3418 DI6 3419 E 3 3420 D 5 3421 I 4 3422 CII 3423 E 5
3424 E 6 3425 CI2 3426 CI3 3427 J 3 3428 D 6 3429 D 6 3430 E 6 3431 C 3
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3448 CI6 3449 B 5 3450 B 5 3451 H 7 3452 H 8 3465 B 6 3466 C 5 3471 A 3
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7400 III 7401 CI2 7402 C 5 7403 C 7 7405 F 9 7406 F 6 7407 CI3
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A071 F10 A072 A 3 A073 A 4 F90 J 5 F91 J 5 F92 F 5 F93 BI3 F94 B 1

16/9 MODULE

F94: 1 LINEDEFL-LIN, 2 150VLOT, 3 VOCONN, 4 130VLOT

12V 9402 12VA — A070 4200 GND1 — 14V A069 4201 14VA

3471 10k A072 — 2422 10n A073 — 7421 BC848B — 3472 150k — 2421 100n — GND

12VA — 3449 2k2 — 3450 2k2 — A007 — 6412 BZX79-8v2 — 3413 6k8 — GND

3466 RES A006 3465 RES — A062 — 6401 IN4148 — A005 6402 IN4148 A041

12V 7420 BC848B — A009 — 2405 100n — 3431 100k — A004 — 3412 1k — A008 — 7402 BC848B — GND

2404 6n2 — 2403 100n — A001 — 3411 x — 3414 330k — 7403 BC848B — 3416 68k

BC848B 7404 — A060 — 9403 — 3446 RES — 12V — 3417 A061 22k

A059 3406 1k — 3405 56 — A058 — 3408 1k2 — 3409 RES — 3410 1k5

3432 4k7 — GND — A013

for zoom progress

12VA — 3420 4K7 — A038 — 3429 x — A026 — 3428 2k2 — A002 12VA

3444 150k — A022 — 7410 BC858B — A039 — 2401 RES — 3400 RES

A019 — 7409 BC858B — A025 — 7411 BC848B — 6404 IN4148 — A015 — 3424 100k — 3423 100k — 6405 IN4148 — A020

A024 — 3430 10k — A021 — 7406 BC848B

V21 — A049 — 3419 1k — A048 — 2406 10u — 2420 10n — GND

V22 — V23 — A057 — A040

F92 — 3440 for process DRELUX — A035

12 SCL — A017 — 3438 100 — A055

11 SDA — A018 — 3439 100 — A023

9 SAND 1

8 FRAME DEFL-R

7 NC — 14V

6 BLANCKING 16/9

5 130VLOT — A012 — 6407 BYD33G — A036

4 VOCONN — A010 — 3421 10 — A011 — 2407 22u — 2408 22u — A029

3 150VLOT — A034 — 6400 BYD33G — A030 — A031 — 5402

2 14V — 3427 47 — only for DCshift — 12V — 2409 220u — GND1

1

TO DC SHIFT SWITCH — F90

3401 82 — A032 — 2400 100n — A028 — 3442 1M — BYD33G 6410

LINEDEFL-LIN — BRIDGE — NC NC — F91

TO L91 HORIZONTAL (LSP) A2

3403 33k — 3407 100k — A014

A037 — 3451 1k — A033 — 6406 E0102 — 6411 BYD33D — 3452 22k — GND1

12V — 3434 1K5 — A064 — 5V1 — 6420 BZX79-5v1 — GND1 — 2426 100u — GND1

VDD — POWER-ON RESET — VSS — GND1

INTERRUPT LOGIC — LP FILTER — FILTER — I2C CONTROL — 8 BIT LATCH — I/O PORTS

P0 P1 P2 P3 P4 P5 P6 P7 — A045

write pulse — read pulse

A003 — 7400 BF422 — GND1 — A056 — 3404 4k7 — 12V

TO ROTATION COIL — 1 2 F93

7401 BC858B — A047 3426 8k2 — 2425 10n — A050 — A051 — 3433 8k2 — A046 — 7408 BC858B — 2424 10n — A063

2402 RES

A065 3443 12k — A066 — 3437 47k — A052 — 7407 BC548B — A053 — 7412 BC548B — A054

3448 47k — A067 — 3415 12k — A068

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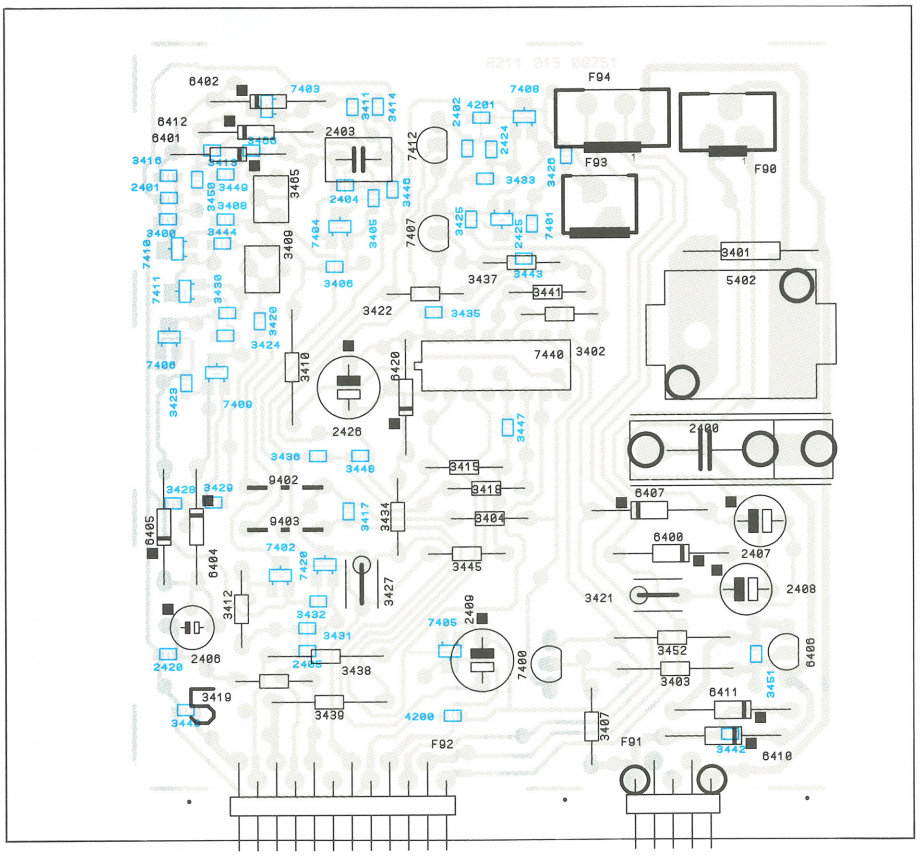
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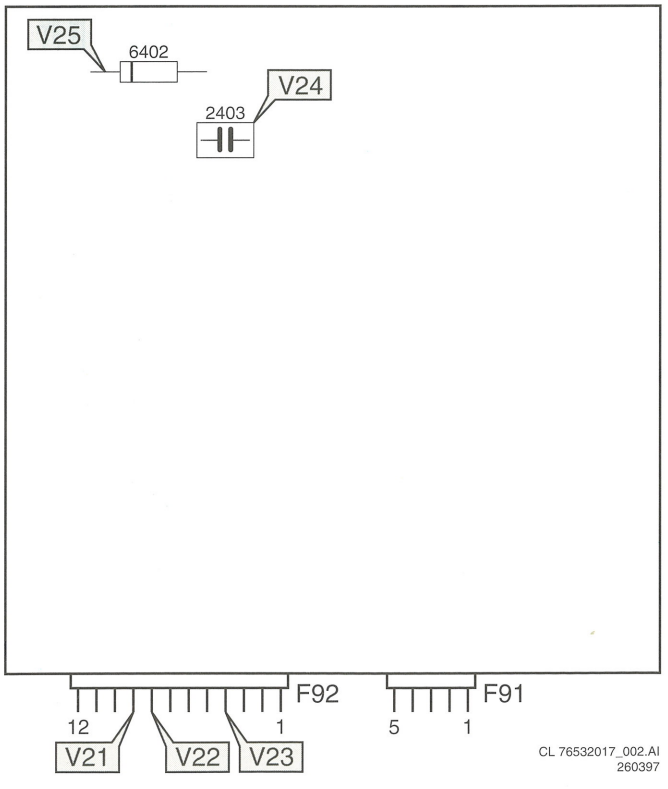
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MD1.2

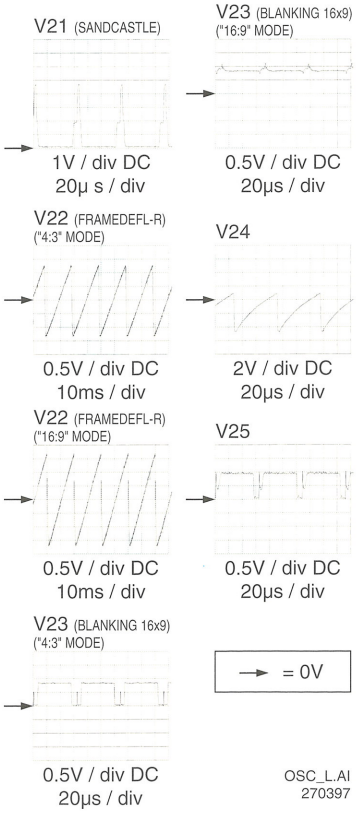
TO L92 HORIZONTAL (LSP) A2

16:9 panel / 16:9 Platine / Platine 16:9





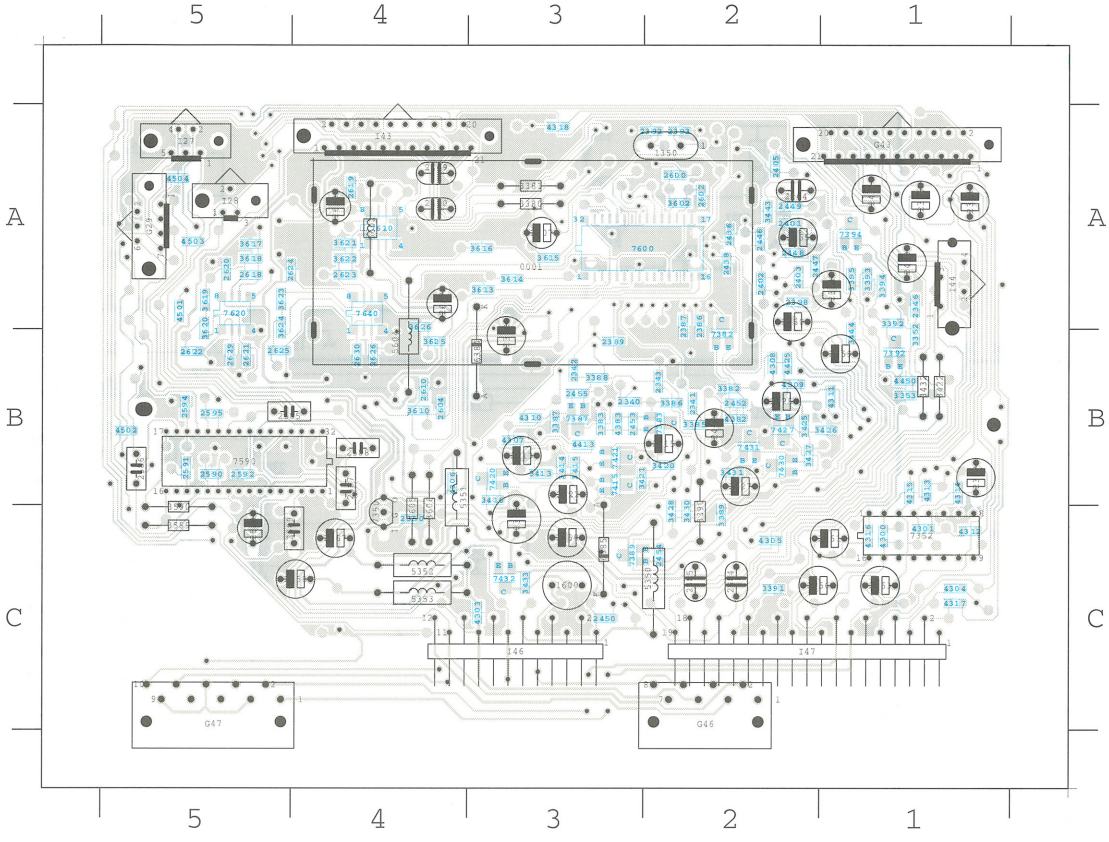
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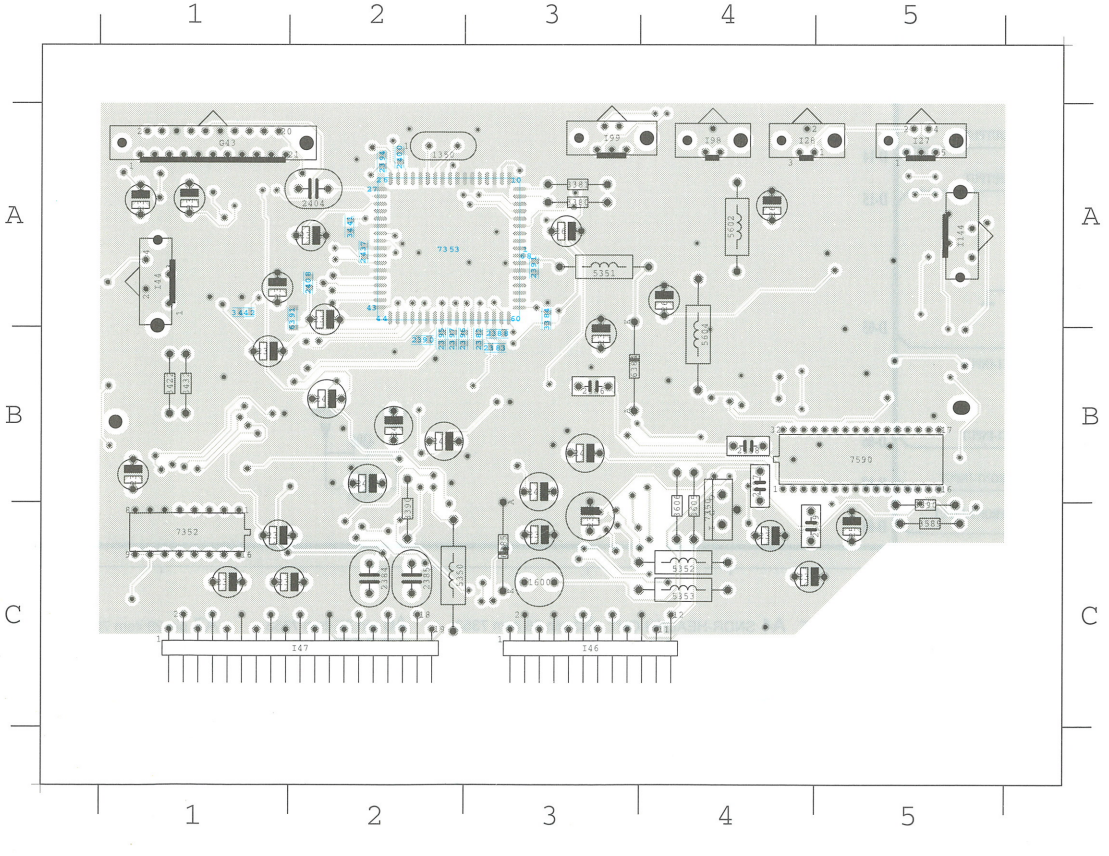
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Audio module (Dolby) / Audio Module / Module audio

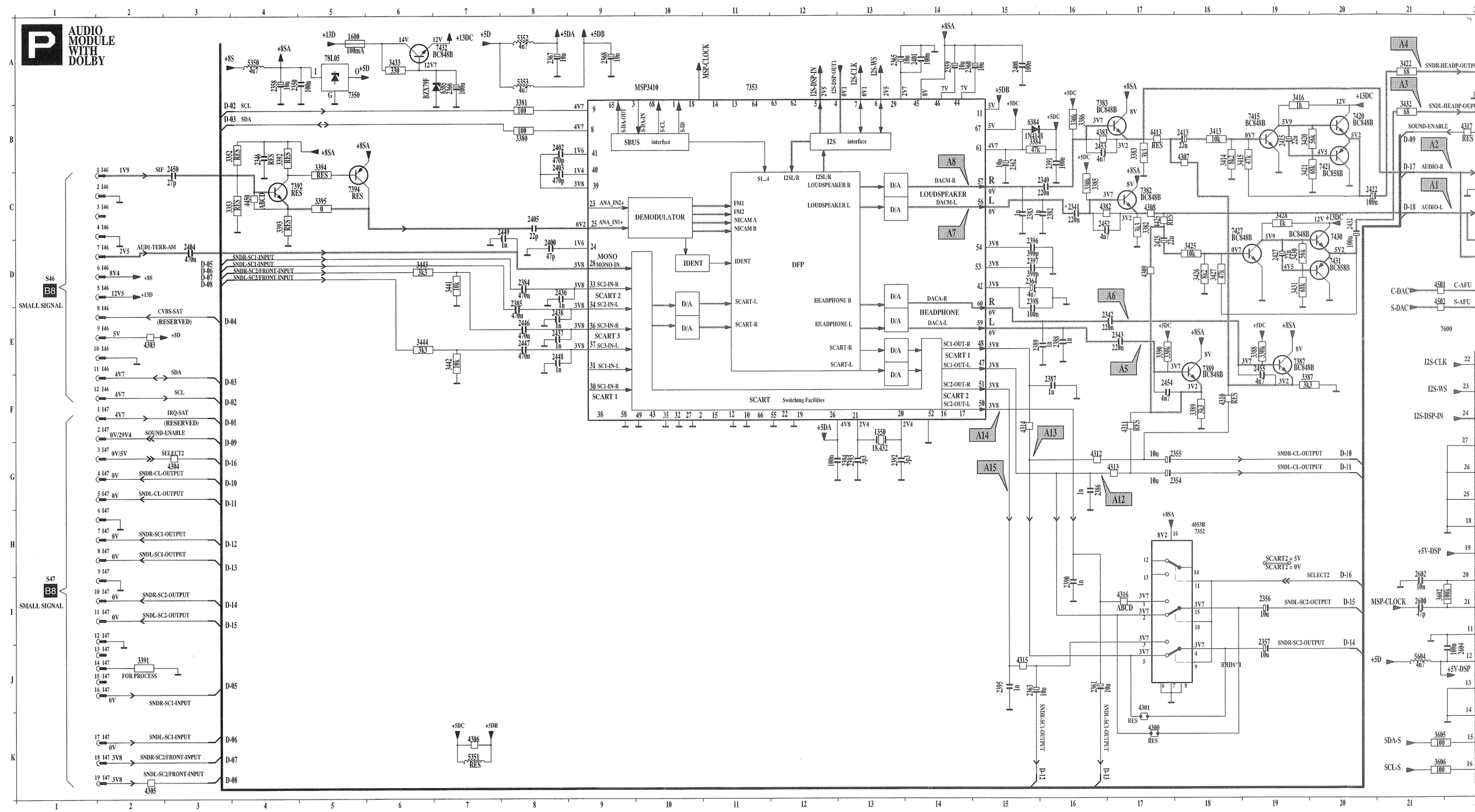
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1600 C 3 2360 A 2 2389 B 3 2413 B 3 2452 B 2 2594 B 5 2624 A 4 3385 B 2 3415 B 3 3443 A 2 3618 A 5 4305 C 2 4318 A 3 5353 C 3 7415 B 3 G43 A 1
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Audio module (Dolby) / Audio Module (Dolby) / Module audio (Dolby)



A1 AUDIO-L - 3KHz (volume increased)
50mV / div AC
0.5ms / div

A2 AUDIO-R - 1KHz (volume level increased)
50mV / div AC
0.5ms / div

A3 SNDL-HEADPH-OUT (3KHz, HP incr.volume, Incr. Snd OFF)
0V5 / div AC
0.2ms / div

A4 SNDR-HEADPH-OUT (1KHz, HP incr. volume, Incr. Snd OFF)
0V5 / div AC
0.2ms / div

A5 pin 26 item 7353 (HP-L OUT - 3KHz)
0V1 / div AC
0.2ms / div

A6 pin 25 item 7353 (HP-R OUT - 1KHz)
0V1 / div AC
0.2ms / div

A7 pin 29 item 7353 (LOUDSPEAKER-L, 3 KHz, incr. volume)
50mV / div AC
0.2ms / div

A8 pin 28 item 7353 (LOUDSPEAKER-R, 1KHZ, incr. volume)
50mV / div AC
0.2ms / div

A12 pin 37 item 7353 (SC1-OUT-L, 3KHz) - PAL/STEREO
1V / div DC
0.2ms / div

A13 pin 36 item 7353 (SC1-OUT-R, 1KHz)
1V / div DC
0.2ms / div

A14 pin 34 item 7353 (SC2-OUT-L, 3KHz)
1V / div DC
0.2ms / div

A15 pin 33 item 7353 (SC2-OUT-R, 1KHz)
1V / div DC
0.2ms / div

→ = 0V

OSC_P.CDR

Module audio (Dolby)

P

MSP3410 7353

MSP-CLOCK

I2S-DSP-IN I2S-DSP-OUT1 I2S-CLK I2S-WS

S-DA-OUT S-DA-IN S-CL S-ID

SBUS interface

I2S interface

DEMODULATOR

FM1 FM2 NICAM A NICAM B

IDENT

DFP

LOUDSPEAKER R LOUDSPEAKER L

HEADPHONE R HEADPHONE L

SCART-L SCART-R

SCART-R SCART-L

SCART Switching Facilities

D/A

DACM-R DACM-L LOUDSPEAKER

DACA-R DACA-L HEADPHONE

SCART 1 SCART 2

SCI-OUT-R SCI-OUT-L SC2-OUT-R SC2-OUT-L

A4 SNDR-HEADP-OUTPUT TO J H44

A3 SNDL-HEADP-OUTPUT

SOUND-ENABLE RES

A2 D-09 D-17 AUDIO-R

A1 D-18 AUDIO-L TO A IN "NO DOLBY" SETS L28

TO H1 IN "DOLBY" SETS L28

C-DAC C-AFU

S-DAC S-AFU

SNDR-CL-OUTPUT D-10

SNDL-CL-OUTPUT D-11

SELECT2 D-16

SNDL-SC2-OUTPUT D-15

SNDR-SC2-OUTPUT D-14

SNDR-SC1-OUTPUT D-12

SNDL-SC1-OUTPUT D-13

SCART2 = 5V
SCART2 = 0V

7600

SAA7710T

I2S-CLK I2S-WS I2S-DSP-IN

IIS_BCKIN1 IIS_WSIN1 IIS_DATAIN1 IIS_BCKIN2 IIS_WSIN2 IIS_DATAIN2 VSS_XTAL VDD_XTAL XTAL OSC VSS2 VDD2 TSCAN A0 SDA SCL

VDD3 VSS3 IIS_DATAOUT3 IIS_DATAOUT2 IIS_DATAOUT1 IIS_WSOUT1 IIS_BCKOUT1 RTCB SHTCB VDD1 VSS1 DSP_IN1 DSP_IN2 DSP_OUT1 DSP_OUT2 DSP_RESET

+5V-DSP LR-EXT I2S-DSP-OUT2 I2S-DSP-OUT1 I2S-WS-OUT1 I2S-CLK-OUT1

TDA1387 DATA VDD WS IOR BCK IOL GND BEE 7610

LM833 7620 7640

S-DAC C-DAC

SDA-S SCL-S MSP-CLOCK

CHASSIS MD2

CL66532022/030,Paudio 050396

P.EPS

A8 pin 28 item 7353 (LOUDSPEAKER-R, 1KHZ, incr. volume) 50mV / div AC 0.2ms / div

A12 pin 37 item 7353 (SC1-OUT-L, 3KHz) - PAL/STEREO 1V / div DC 0.2ms / div

A13 pin 36 item 7353 (SC1-OUT-R, 1KHz) 1V / div DC 0.2ms / div

A14 pin 34 item 7353 (SC2-OUT-L, 3KHz) 1V / div DC 0.2ms / div

A15 pin 33 item 7353 (SC2-OUT-R, 1KHz) 1V / div DC 0.2ms / div

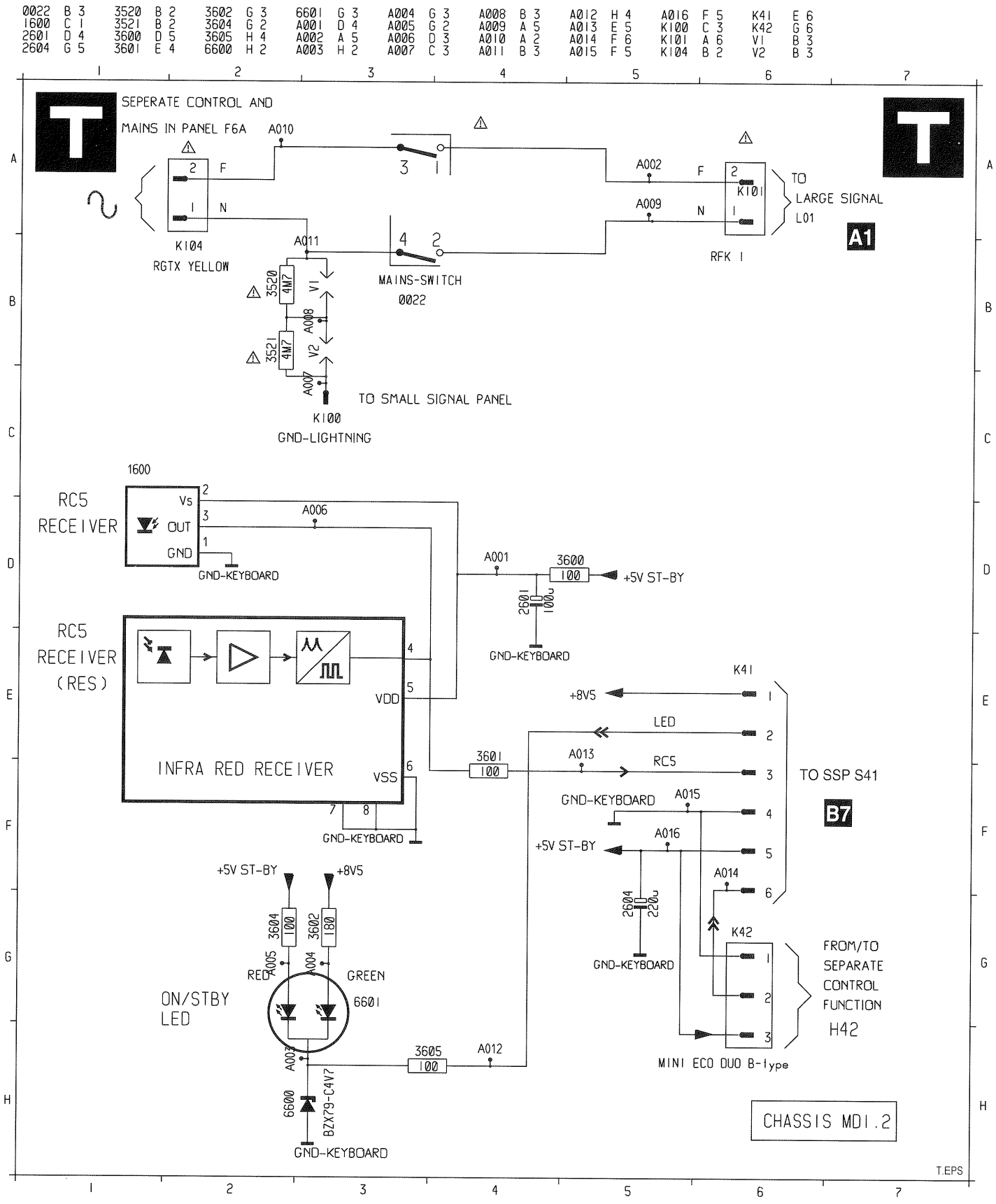
= 0V

OSC_P.CDR

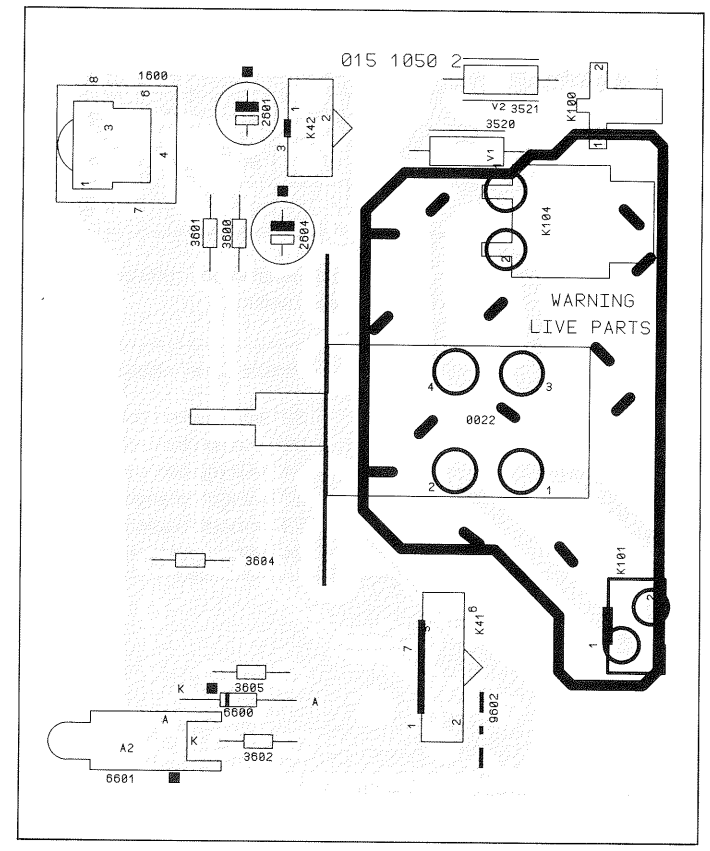
Classic line mains/RC5/LED panel / Netz/RC5/LED Classic Line Platine /

Platine Rescan/RC5/LED Classic line

0022	B 3	3520	B 2	3602	G 3	6601	G 3	A004	G 3	A008	B 3	A012	H 4	A016	F 5	K41	E 6
1600	C 1	3521	B 2	3604	G 2	A001	D 4	A005	G 2	A009	A 5	A013	E 5	K100	C 3	K42	G 6
2601	D 4	3600	D 5	3605	H 4	A002	A 5	A006	D 3	A010	A 2	A014	F 6	K101	A 6	V1	B 3
2604	G 5	3601	E 4	6600	H 2	A003	H 2	A007	C 3	A011	B 3	A015	F 5	K104	B 2	V2	B 3



MAINS/RC5/LED PANEL FOR CLASSIC LINE



8. Alignments

See Service Manual MD1.2E AA for a description of the basic alignments for the MD1.2E AA software.

Software version:
M12BAx-4.x
M12COx-3.2 4:3 sets (NO flashing LED procedure, replaced by M12COx-4.0)
M12COx-4.0 4:3 sets (WITH flashing LED procedure, replaces M12COx-3.2)

In the Service Default and Service Alignment Mode widescreen sets switch to WideScreen format. All the geometry alignments also have to made in the WideScreen mode.

In this supplement the additional options for 16:9 and Dolby Pro Logic sets with the following software are described:
M12COx-5.1
(or later) 16:9 sets (also suitable for 4:3 sets)
M12DOx-1.0
(or later) Dolby Pro Logic sets (4:3 and 16:9)

8.1 Options and alignments

HI Histogram option. This option is not used and is not selectable.

WB Format detection for 4:3, 14:9 or 16:9 picture (16:9 sets only) and Dolby Pro Logic sound (Dolby Pro Logic sets only) by the teletext IC.
Y Automatic detection on
N Automatic detection off
Automatic 16:9 detection via the Scart cable also functions if 'WB N' is set.

16 Picture tube aspect ratio
Y 16:9 picture tube
N 4:3 picture tube
If '16 N' is set, parameters WB*, RT, SS, D1, D2, D3 and D4 automatically become blue and are made non-selectable.

* In Dolby Pro Logic sets the WB option can be selected independently of the 16 option, as the automatic sound detection can also be switched on and off in this manner.

RT Rotation coil (picture tilt)
Y Rotation coil present; An option to tilt the picture appears under the YELLOW key in the operating menu.
N No rotation coil present.

D1 HD-value deviation in 4:3, Zoom 14:9 and Zoom 16:9 in relation to WideScreen mode.

D2 HD-value deviation in SuperWide (panorama) format in relation to WideScreen mode.

D3 HP-value deviation in 4:3, Zoom 14:9 and Zoom 16:9 in relation to WideScreen mode.

D4 HP-value deviation in SuperWide (panorama) format in relation to WideScreen mode.

The alignment settings are dependent on picture tube format:

Picture tube format	20"	24"	28"	32"
D1	12	9	9	8
D2	2	3	3	5
D3	10	9	9	8
D4	7	9	9	8

SS Picture dimension and rotation coil dependent setting.

SS	Picture tube / rotation coil
1	32" with rotation coil
2	28" with rotation coil
3	24" with rotation coil
4	32" without rotation coil
5	28" without rotation coil
6	24" without rotation coil

9. Circuit description

16/9 Module circuit description

4 functions are located on the 16/9 module:

- Blanking line and frame
- Picture rotation
- Panorama mode
- Line DC shift

IC 7440 (I^2C control of functions) controls the picture rotation, panorama mode switching and the blanking enable signal.

9.1 Line and frame blanking (Fig. 9.1 & 9.2)

9.1.1 Line blanking (Horizontal blanking)

Horizontal blanking is used to completely blank-out the left and right bars in case of 4:3 or 14:9 view-mode. This is realised by making a wider fast blanking pulse FBL (signal 'A'). This wider pulse is creating by starting the pulse earlier (indicated by extra pulse-width '3') and delaying the pulse stop (indicated by a additional pulse '2'). The delay on the blanking pulse (time slot '2') causes blanking at the left side of the picture, the earlier start of pulses causes blanking at the right side of the picture. The corrected (= widened) FBL pulse is supplied to the video controller pin 24 IC7119-4C that controls the blanking of the RGB-outputs.

A 0V at the 'BLANKING 16/9' line (connector F92-4) blanks the video signal. This is the case when TS7405 is conducting.

9.1.1.1 Blanking during the normal sandcastle pulse (1)

During the normal sandcastle pulse the picture has to be blanked; If the base of TS7420 is high (sandcastle present), TS7420 and TS7402 are conducting. In this way the collector of TS7403 is connected to ground by D6401. This will force TS7404 out of conduction and TS7405 in conduction. If TS7405 is conducting the picture will be blanked.

9.1.1.2 Blanking the left side of the picture (2)

To blank the left side of the picture, the sandcastle pulse has to be present longer. If TS7402 is conducting, C2404 is discharged (resetted). If the sandcastle pulse at the base of TS7420 is gone, TS7402 will block and C2404 is charged via R3413, R3449 and R3450. This will create a sawtooth shaped voltage over C2404. This Voltage is also present at the collector of TS7403. The picture is blanked till the voltage on the collector of TS7404 is 0V7 higher than the voltage on the emitter of TS7404. During the time that TS7404 is out of conduction the picture is blanked. By regulating the voltage on the emitter of TS7404 with R3409 (if present), the time to blank the left-side of the picture can be adjust.

9.1.1.3 Blanking the right side of the picture (3)

To blank the right of the picture, the sandcastle pulse has to start earlier; Because the positive charged side of C2403 (the side connected to C2404) is connected to ground, the sawtooth on point B is shifted to a negative voltage. Now the voltage on the negative point (C) will increase (following point B). This goes on until the voltage on point C is 0V7.
Then TS7403 starts to conduct and TS7404 will block; the picture will be blanked. So prior to the normal sandcastle pulse, point C exceeds the 0V7 and starts to blank the picture.

9.1.2 Frame-blanking (vertical blanking)

Vertical blanking is used to avoid vertical overscan (scanning against the top and bottom of the CRT, outside the visible area) in 14:9 and 16:9 WIDESCREEN view-mode. Scanning outside the visible area should be avoided since it influences the EHT-INFO (and thus white limiting), leading to unwanted contrast reduction. It can even lead to EHT-losses (line output stage loaded to heavy) and röntgen-radiation.
The vertical blanking is controlled by the sawtooth on pin 8F92. This sawtooth is symmetrical around 0V. The value of the sawtooth is shifted between 0V and 1V4 by capacitor C2406. In normal conditions (writing of the picture) TS7406 and TS7409 are conducting. This will cause a voltage drop over R3423 and force TS7411 in conduction. This will bring TS7410 and TS7404 in conduction. No blanking will take place at this moment because the base of TS7405 is 'low'.
If the sawtooth voltage becomes very high or very low TS7409 or TS7406 are driven out of conduction. If the sawtooth voltage is higher than the emitter voltage of TS7409, TS7409 is blocked. Consequentially, there is no voltage drop across R3424 and TS7411 is out of conduction. TS7410 and TS7404 are also out of conduction. Now the base of TS7405 is supplied by R3417; TS7405 goes in conduction, resulting in blanking of the picture.

9.2 Frame rotation

To compensate the frame rotation caused by the earth magnetism, a frame rotation circuitry can be applied. The circuitry compensates the earth magnetism with an equal but opposite magnetic force. For this purpose a coil is fitted to the picture tube through which a current flows; the strength and direction of this current is adjustable.
This circuitry is situated on the 16:9 module around IC 7440 and the circuitry with TS7401, TS7407, TS7408 and TS7412.

Operation

IC7440 is an I/O-expander. Left or right tilting is realised by driving TS7407 (and thus TS7408) or TS7412 (and thus TS7401) (more or less) into conduction. Combinations of driving both TS7407 and TS7412 are also possible.

In total there are 9 states:

Side A or B represent an upward correction on the left or right side of the picture (direction depends on the polarity of the deflection coil).

The other 7 states of the 16 states true table are not valid as they do not give other correction states:

0000 = 0101 = 1010 = 1111 → 0101, 1010 and 1111 not used
1110 = 0100 et 1101 = 1000 → 1110 and 1101 not used
1011 = 0001 et 0111 = 0010 → 1011 and 1011 not used

A	B	C	D	Correction
0	0	0	0	No correction at all
0	1	0	0	Small correction to side A
1	0	0	0	Medium correction to side A
1	1	0	0	High correction to side A
0	0	0	1	Small correction to side B
0	0	1	0	Medium correction to side B
0	0	1	1	High correction to side B
0	1	1	0	Small correction to side A corrected by medium correction to side B, so in total a very small correction to side B (smaller than at 0001)
1	0	0	1	Medium correction to side A corrected by small correction to side B, so in total a very small correction to side A (smaller than at 0100)

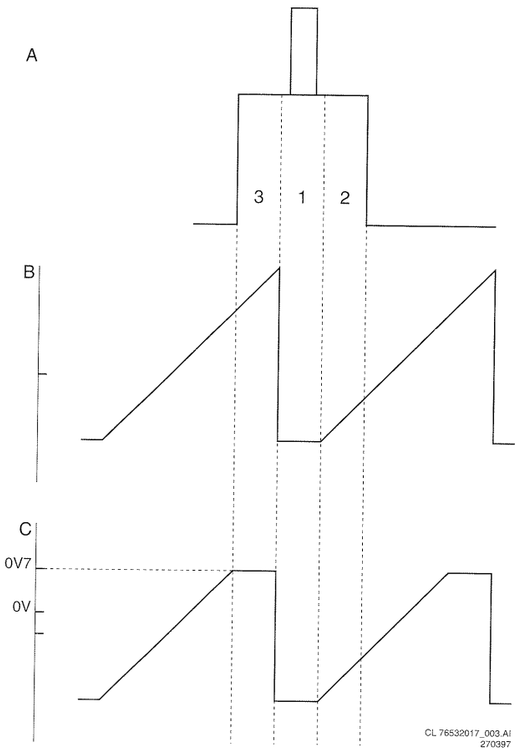


Fig. 9.1

9.3 Panorama mode

An additional capacitor (C2400) is add to the diode modulator by thyristor 6406. This is controlled by transistor TS7400 which is controlled by the I/O expander. In this way the S-correction can be installed. In SUPERWIDE mode C2400 is disconnected from the diode-modulator. This results in more deflection at the edges of the screen than in the middle of the screen.
When transistor TS7400 is conducting, T6406 can not be triggered. This means that C2400 is not added to the diode modulator. When flyback takes places, a part of the flyback-pulse is present at the gate of the thyristor. This will trigger the thyristor and C2400 is added to the diode modulator. During the first part of the line scan the thyristor is conducting. In the second part of the scan, the current changes direction and C2400 is added to the diode modulator by diode 6410.

9.4 DC-shift

In case of bad centring of the picture, a DC-current can be injected in the line network through L5402. The direction of the current can be chosen by connecting pin 2F90 to 3F90 or to 1F90. If this is not enough, an extra DC shift module can be add on connector F94.

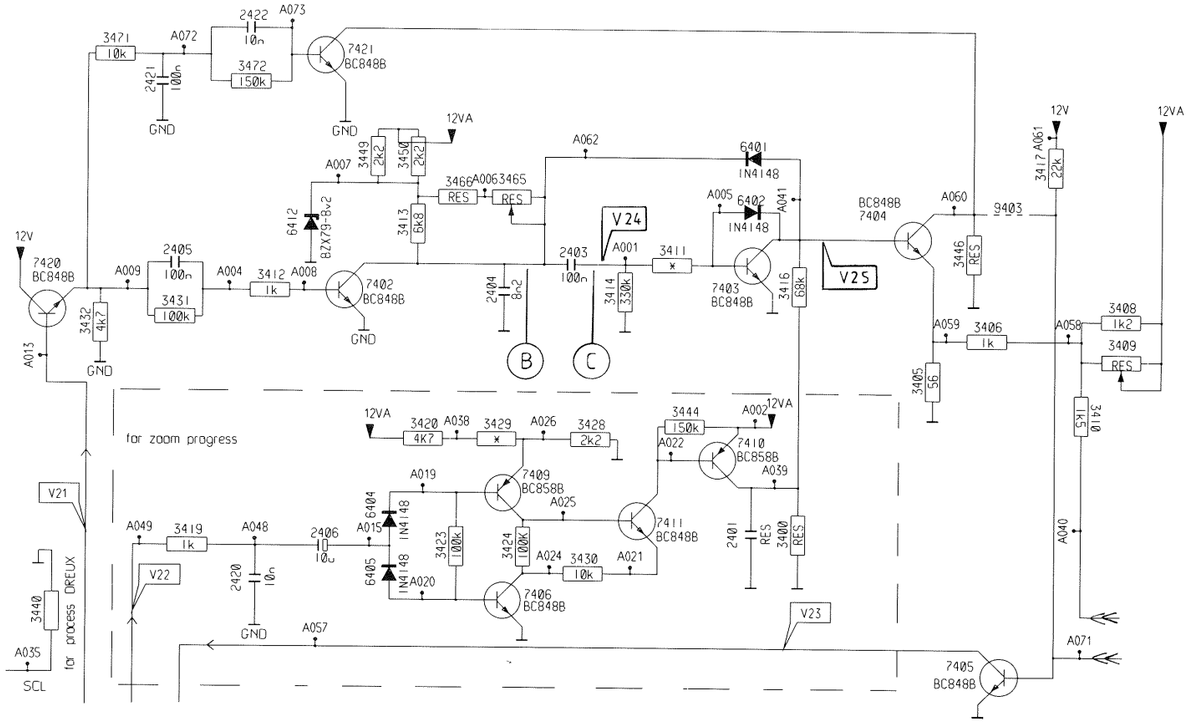


Fig. 9.2