

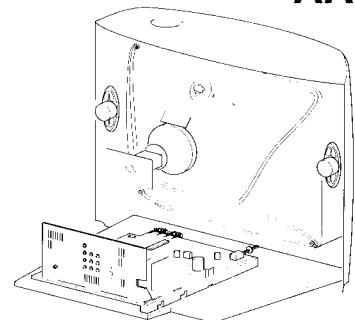
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Service

Service

Service



Service Manual

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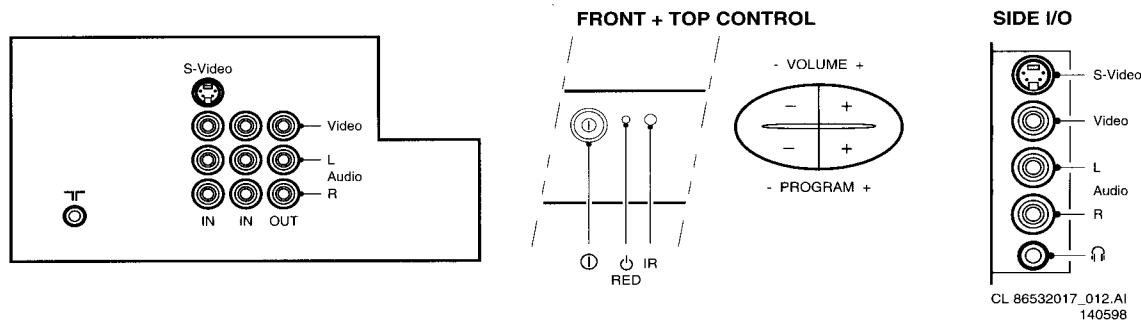

PHILIPS

2 Connection facilities and chassis overview

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2.1 Specification of the terminal sockets



2.1.1 Inputs (AV1, AV2 and Side AV)

- Cinch CVBS (yellow) (1Vpp +/- 3dB 75Ω)
- Cinch Audio R (red) (0.2-2VRMS 10kΩ)
- Cinch Audio L (white) (0.2-2VRMS 10kΩ)



- Jack 32-2000 Ω(10mW)



2.1.2 Outputs (MONITOR out)

- Cinch CVBS (yellow) (1Vpp +/- 3dB 75Ω)
- Cinch Audio R (red) (0.5VRMS < 1kΩ)
- Cinch Audio L (white) (0.5VRMS < 1kΩ)

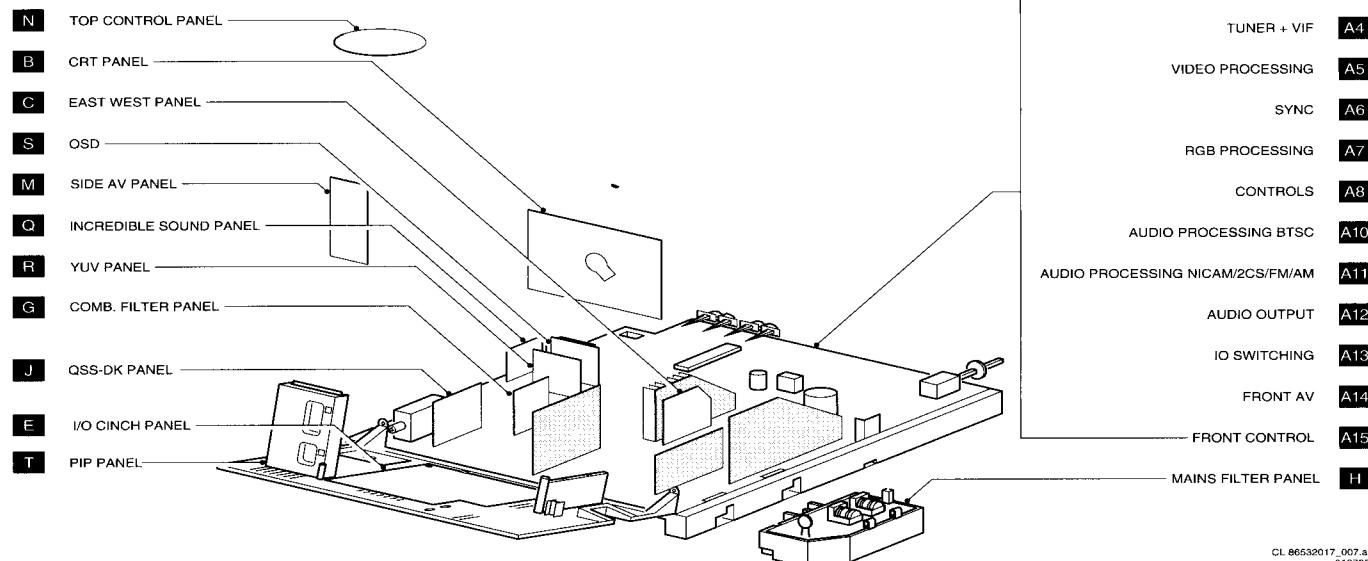


1. Ground
2. Ground
3. Y (1Vpp +/- 3dB 75Ω)
4. C (0.3Vpp +/- 3dB 75Ω)

2.1.3 Headphone

2.1.4 SVHS

2.2 PCB location drawing



3 Safety instructions, Maintenance instruction,

3.1 Safety instructions for repairs



Figure 3-1

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 (see fig. 3.1), 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 MW and 12 MW;
 - 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.

3.2 Maintenance instruction

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.

3.3 Warnings



1. ESD

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

- Available ESD protection equipment:
- anti-static table mat (large 1200x650x1.25mm) 4822 466 10953
- anti-static table mat (small 600x650x1.25mm) 4822 466 10958
- anti-static wristband 4822 395 10223
- connection box (3 press stud connections, 1 M ohm) 4822 320 11307
- extension cable (2 m, 2 M ohm; to connect wristband to connection box) 4822 320 11305
- connecting cable (3 m, 2 M ohm; to connect table mat to connection box) 4822 320 11306
- earth cable (1 M ohm; to connect any product to mat or connection box) 4822 320 11308
- complete kit ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
- wristband tester 4822 344 13999

2. 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. 3.2 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).
3. Together with the deflection unit and any multipole unit, the flat square picture tubes used from 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 during 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.
7. Wear safety goggles during replacement of the picture tube

3.4 Notes

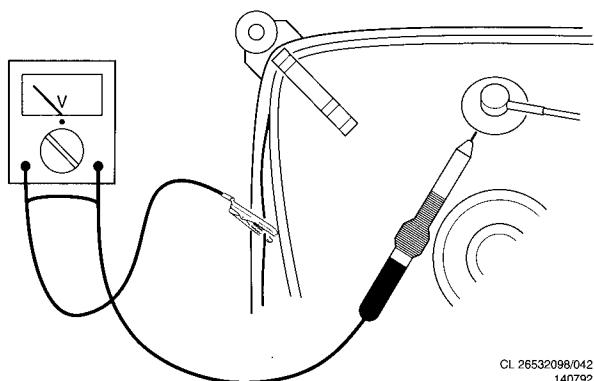
1. The direct voltages and oscilloscopes should be measured with regard to the tuner earth, or hot earth as this is called (see fig. 3.3)
2. The direct voltages and oscilloscopes shown in the diagrams are indicative and should be measured in the Service Default Mode (see chapter 8) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.

3 Safety instructions, Maintenance instruction,

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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 (see fig. 3.3).
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.



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Figure 3-2

	tuner earth tuner aarde la masse du tuner Tuner-Erde massa del tuner tierra del sintonizador		hot earth hete aarde la terre directe heißer Erde massa calda tierra caliente
	with aerial signal met antenne signaal avec signal d'antenne mit Antennensignal con segnale d'antenna con la señal de antena		without aerial signal zonder antenne signaal sans signal d'antenne ohne Antennensignal senza segnale d'antenna sin la señal de antena
	normal condition normaal bedrijf fonctionnement normal normaler Betrieb funcionamiento normale funcionamiento normal		stand by stand by position de veille in Bereitschaft modo di attesa posición de espera

Figure 3-3

4 Mechanical instructions

In this chapter the mechanical provisions of the A8 chassis are described

4.1 Removing the rear cover

In order to remove the rear cover from the A8, all screws at the side, the bottom and the top of the rear cover have to be removed. The screws on the I/O panel should NOT be removed.

Caution: Remember to disconnect subwoofer cable when present

4.2 Service positions

4.2.1 Separate mains filter (figure 4.1)

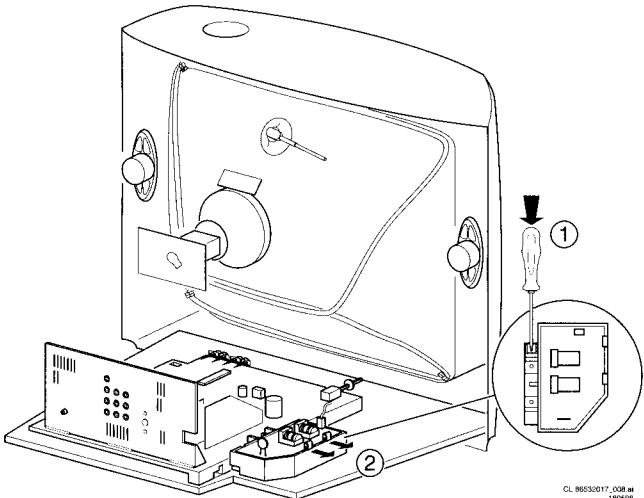


Figure 4-1

CAUTION! Unplug the mains cord before working on the separate mains filter; the separate mains filter carries permanent mains voltage (even when the mains knob is switched OFF).

To disconnect the separate mains filter bracket from the chassis tray:

- firmly depress the click (with a screwdriver) in the chassis tray (1)
- push the mains filter bracket in the direction of the CRT

To remove the separate mains filter panel from its bracket:

- push the 2 clips at the right hand side of the mains filter bracket outside (2)
- lift the panel from its bracket

4.2.2 Mono carrier (figure 4.2)

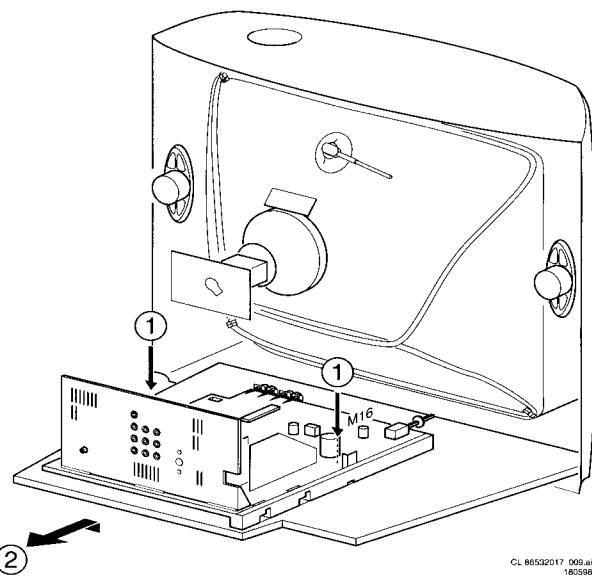


Figure 4-2

To remove the chassis tray from the cabinet:

- disconnect the degaussing coil (connector M16 on the mono carrier)
- pull the clips (1) backward and pull the chassis tray as indicated (2)

The chassis tray should be turned 90 degrees counter clock wise and flipped over to access the copper side of the mono carrier.

4.2.3 Environment independent position (figure 4.3)

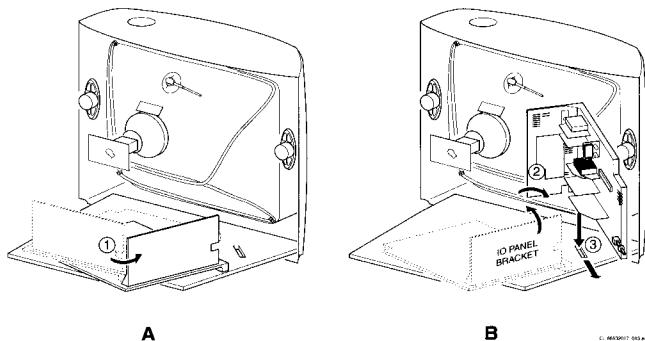


Figure 4-3

For home repair the chassis tray with mono carrier can be fixed in the cabinet.

- turn the chassis tray 90 degrees counter clock wise (1)
- flip the tray with the I/O panel towards the CRT (2)
- press (the hook of) the chassis tray firmly into the designated hole in the cabinet bottom (3) and pull the chassis tray backward (the speaker cables may have to be disconnected)

4 Mechanical instructions

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4.2.4 I/O panel (figure 4.4)

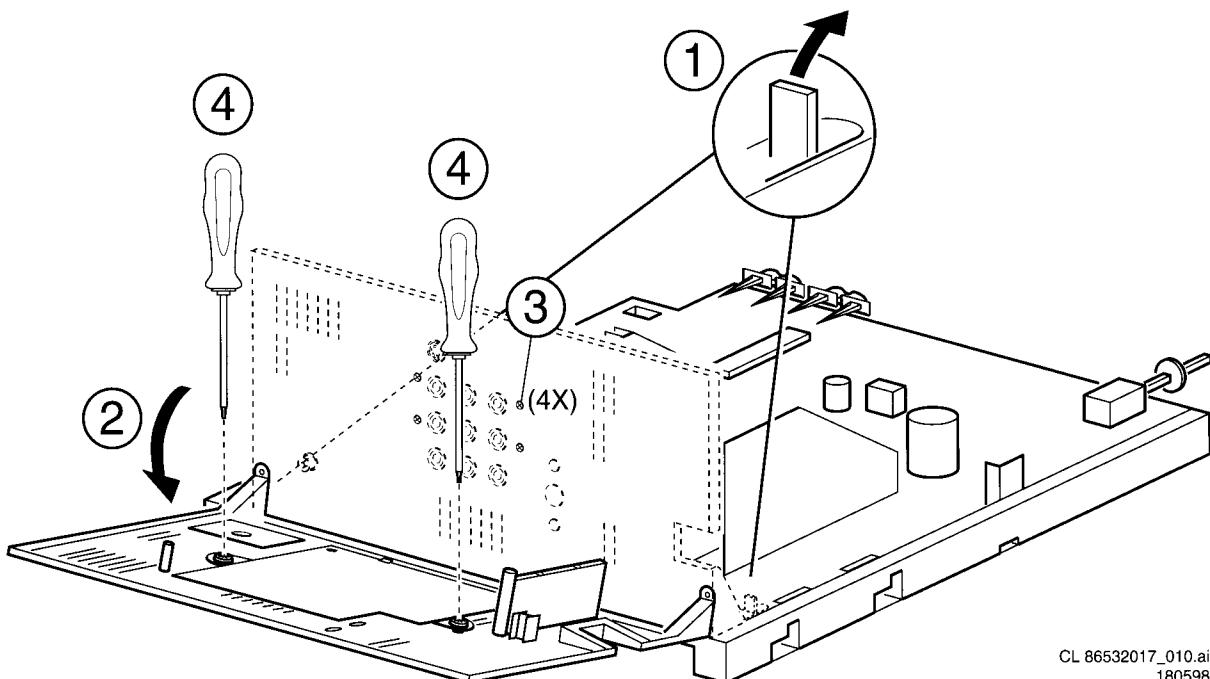


Figure 4-4

4.2.6 Removing the sub woofer box

To access the copper side of the IO panel:

- push the clips (1) in the direction of the CRT (If the clips are broken, the I/O panel can also be screwed to chassis tray)
- slide the I/O panel bracket (2) to its horizontal position

To remove the I/O panel from its bracket:

- remove the 2 screws on the connector side of the panel (3)

To remove the sub woofer box:

- remove the rear cover and disconnect the sub woofer cable
- place the rear cover on a flat surface with the sub woofer faced up
- remove the 2 screws at the top and the 2 screws at the bottom of the sub woofer box

4.2.5 Repairing the mono carrier (figure 4.5)

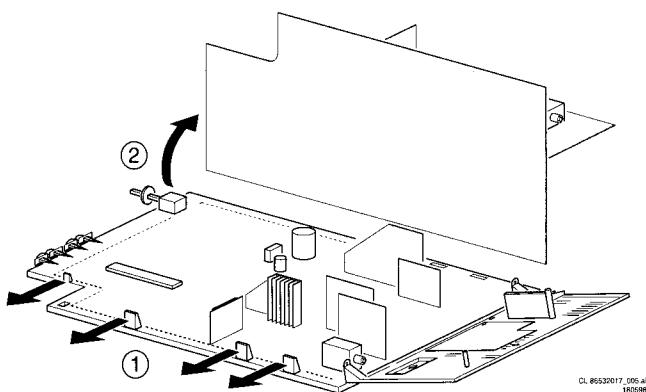


Figure 4-5

For full access to the component and copper side of the mono carrier, it can be removed from the chassis tray.

- push the clicks of the chassis tray outwards (1)
- lift the mono carrier from the tray

To access the copper side of the panel:

- remove the screw above the antenna input at the back of the IO panel bracket
- remove the 2 screws by which the PIP/DW panel is fixed to the IO panel bracket

5 Service modes, error messages and repair tips

In this chapter the following paragraphs are included:

- 5.1 Test points
- 5.2 Service Modes and Dealer Service Tool (DST)
- 5.3 Error code buffer and error codes
- 5.4 The "blinking LED" procedure
- 5.5 Trouble shooting tips
- 5.6 Customer service mode

5.1 Test points

The A8 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
- I1-I2-I3, etc.: Test points for the intermediate frequency 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 points for the teletext circuitry
- V1-V2-V3, etc.: Test points for the video processing circuitry

Measurements are performed under the following conditions:

Video: colour bar signal; audio: 3KHz left, 1KHz right

5.2 Service modes and Dealer Service Tool (DST)

For easy installation and diagnosis the dealer service tool (DST) RC7150 can be used. When there is no picture (to access the error code buffer via the OSD), DST can enable the functionality of displaying the contents of the entire error code buffer via the blinking LED procedure. The ordering number of the DST (RC7150) is 4822 218 21232.

5.2.1 Installation features for the dealer

The dealer can use the RC7150 for programming the TV-set with presets. 10 Different program tables can be programmed into the DST via a GFL TV-set (downloading from the GFL to the DST; see GFL service manuals) or by the DST-I (DST 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 A8 chassis, download code 4 should be used).

5.2.2 Diagnose features for the servicer

A8 sets can be put in the two service modes via the RC7150. These are the Service Default Mode (SDM) and the Service Alignment Mode (SAM). SDM can also be entered by short circuiting the jumpers 9040 and 9041 on the chassis with a screwdriver.

Service Default Mode (SDM)

The purpose of the SDM is:

- provide a situation with predefined settings to get the same measurements as in this manual
- start the blinking LED procedure
- have the possibility to override the 5V protection

Entering the SDM:

- By transmitting the "DEFAULT" command with the RC7150 Dealer Service Tool (this works both while the set is in normal operation mode or in the SAM)
- By shorting jumpers 9040 and 9041 on the monocarrier with a screwdriver while switching on the set

By temporarily shorting jumper 9040 and 9041 when switching the set on, the 5V protection is disabled.

CAUTION ! Overriding the 5V protection should only be used for a short period of time

Blinking LED procedure

When an error code is present in the error buffer, the LED will blink the number of times, equal to the value of the most current error code. For recognition of the SDM, "SDM" is displayed at the upper right side of the screen.

SDM Menu

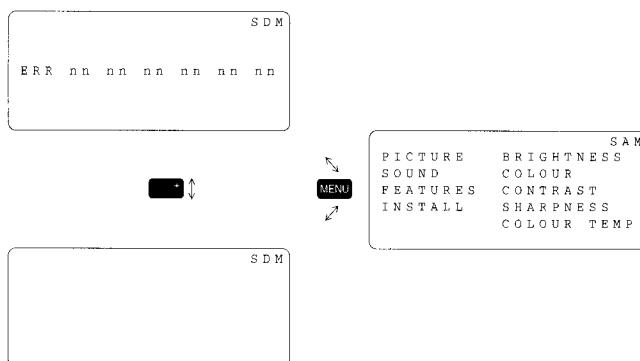


Figure 5-1 Service Default Mode screen

Exit the SDM: Switch the set to Standby (the error buffer is also cleared)

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

The SDM sets the following pre-defined conditions:

- Pal/Secam sets: tuning at 475.25 PAL
- NTSC sets: tuning at channel 3 (61.25MHz)

Volume level is set to 25% (of the maximum volume level). Other picture and sound settings are set to 50%. The following functions are switched off in SDM (and after leaving SDM):

- Timer
- Sleep timer

The following functions are disabled during SDM (and enabled after leaving SDM)

- Parental lock
- Hospitality Mode
- No-ident Timer (normally the set is automatically switched off when no video signal (IDENT) was received for 15 minutes).

All other controls operate normally.

Special functions in SDM

ACCES TO NORMAL USER MENU

Pressing the "MENU" button on the remote control switches between the SDM and the normal user menus (with the SDM mode still active in the background)

CHANNEL SEARCH

Pressing the "P+" button of the remote control starts a tuning search. Search is indicated by a blinking led (this stops when a transmitter is found; the transmitter is stored on the highest channel number, typically this is 99 and the tv switches to this preset)

ERROR BUFFER

Pressing the "OSD" button of the remote control shows/hides the error buffer. OSD can be hidden to prevent interference with oscillogram measurements.

ACCES TO SAM

By pressing the "VOLUME +" and "VOLUME -" buttons on the local keyboard simultaneously the set switches from SDM to SAM.

Service Alignment Mode (SAM)

The purpose of the SAM is to do alignments, option settings, display/clear the error code buffer and reload default values.

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 "VOLUME +" and "VOLUME -" key on the local keyboard simultaneously when the set is in SDM

EXIT SAM:

Switch the set to Standby (the error buffer will be erased)

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

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

5 Service modes, error messages and repair tips

SAM Menu

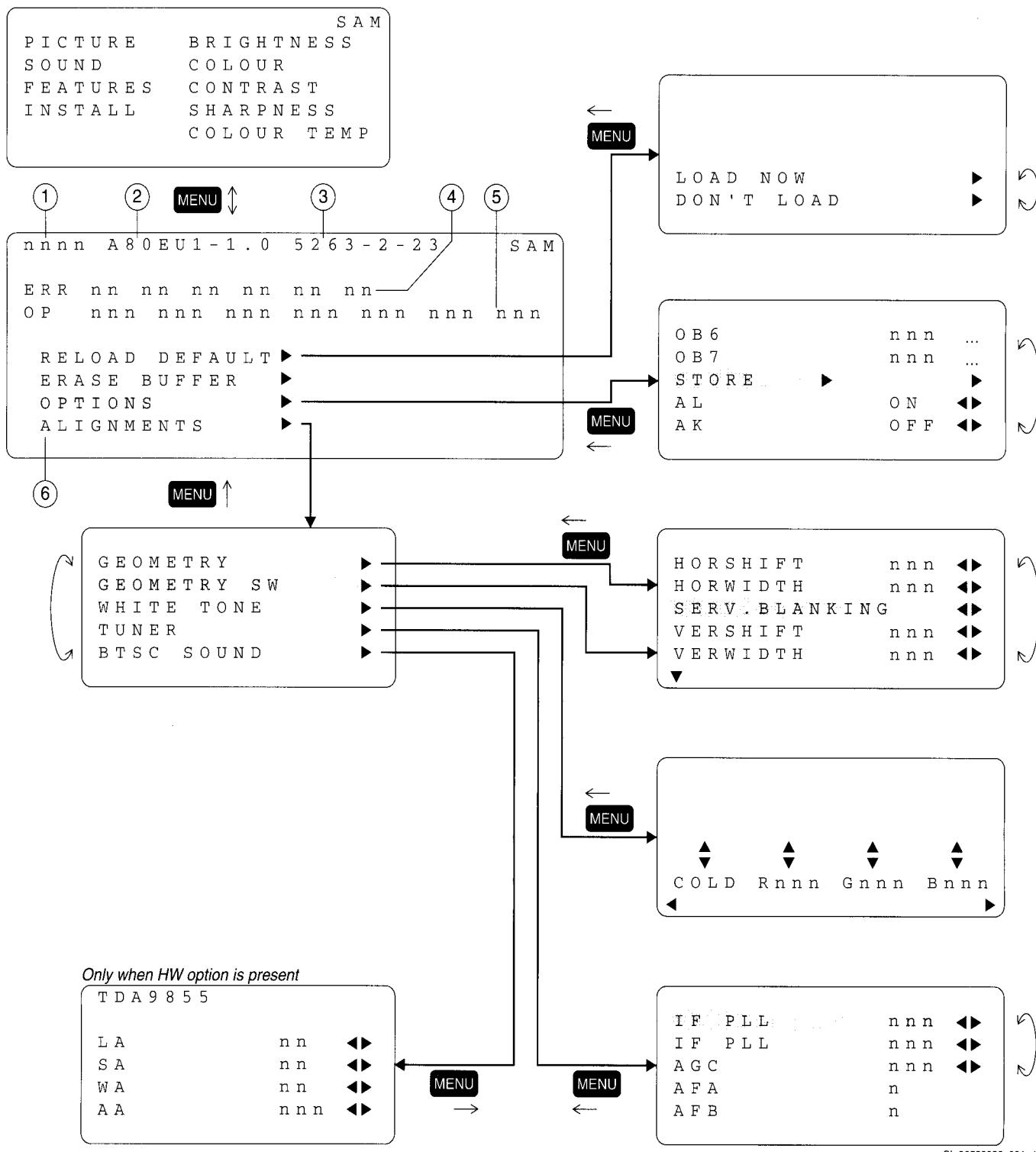


Figure 5-2 Service Alignment Mode screens and structure

Explanation notes/references:

(1) Operation hours timer (hexadecimal)

(2) Software identification of the main micro controller
(A80BBC-X.Y)

- A80 is the chassis name for A8.0A
- BBC is 2 letter and 1 digit combination to indicate the software type and the supported languages:
 - PN1:Pal/Multi; NO teletext; English, Malay and Chinese
 - PN2:Pal/Multi; NO teletext; English and Hindi
 - PN3:Pal/Multi; NO teletext; English and Arabic
 - PT1:Pal/Multi WITH teletext; English, Malay and Chinese
 - NG1:NTSC; 2CS sound; English and Korean
 - NB1:NTSC; BTSC sound; English and Taiwanese
- X = (main version number)
- Y = (subversion number)

(3) Software identification of a separate Teletext micro controller (DDDD E FF) (not applicable for A8.0A)

(4) Error buffer (6 errors possible)

(5) Option bytes (7 codes possible), summary of options are explained below

(6) Sub menus are listed in a scroll-menu.

SAM MENU CONTROL

Menu items can be selected with the cursor UP/DOWN key. The selected item will be highlighted. When not all menu items fit on the screen, moving the cursor UP/DOWN will display the next/previous menu items.

With the cursor LEFT/RIGHT keys, it is possible to:

- (de)activated the selected menu item (e.g. LOAD DEFAULT)
- change the value of the selected menu item
- activate the selected submenu (e.g GEOMETRY)

ACCES TO NORMAL USER MENU

Pressing the "MENU" button on the remote control switches between the SDM and the normal user menus (with the SAM mode still active in the background). Pressing the MENU key in a submenu will go to the previous menu.

The menus and submenus**ERASE BUFFER**

Erasing the contents of the error buffer. Select the ERASE BUFFER menu item and press the MENU RIGHT key. The contents of the error buffer is cleared.

RELOAD DEFAULT

Reloading memory default values. All default settings can be reloaded into the memory (EEPROM). Select the RELOAD DEFAULT menu item and press the MENU RIGHT key. Select LOAD NOW and press MENU RIGHT to reload all settings, then switch the set to STANDBY. The default settings are activated when the set is switched on. CAUTION! Use this menu with extreme care. Otherwise customer settings will be lost.

The functionality of the OPTIONS and ALIGNMENTS (GEOMETRY, GEOMETRY SW, WHITE TONE, TUNER and BTSC SOUND) sub menus is described in chapter 8.

5.3 Error code buffer and error codes**5.3.1 Error code buffer**

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

- when an error occurs that is not yet in the error code buffer, the error is written at the left side and all other errors shift one position to the right
- the error code buffer will be cleared in the following cases:
 - by activating the ERASE BUFFER in SAM menu
 - 1. exiting SDM or SAM with the "Standby" command on the remote control
 - 2. transmitting the commands "DIAGNOSE 99 OK" with the DST (RC7150) or with Compair
- The error buffer will be automatically reset if its contents have not changed for 50 hours
- By leaving SDM or SAM with the mains switch, the error buffer is not reset.

Examples:

ERROR: 0 0 0 0 0: No errors detected

ERROR: 6 0 0 0 0: Error code 6 is the last and only detected error

ERROR: 5 6 0 0 0: Error code 6 was first detected and error code 5 is the last detected (newest) error

5.3.2 Error codes

In case of a non-intermittent faults, clear the error buffer before starting the repair to prevent that "old" error codes are present. When possible check the entire content of the error buffers. In some situations an error code is only the RESULT of another error code (and not the actual cause).

Note: a fault in the protection detection circuitry can also lead to a protection.

Error 0 = No error

Error 1 = X-ray protection, E/W protection and/or Vertical protection. X-ray protection, E/W protection and/or Vertical protection active; set is switched to protection; error code 1 is placed in the error buffer; the LED will blink 1 time (repeatedly). If this happens, isolate each circuit to determine the cause. These circuits are:

- X-Ray protection:
- If this protection is active, the most likely cause is the LOT.
- EW protection:
- If this protection is active, the causes could be one of the following:
 - bad contacts of:
 - horizontal deflection coil
 - linearity coil 5621
 - S-correction capacitor 2629/2630
 - flyback capacitor 2613/2625
 - line output stage
 - short circuit of:
 - flyback diode 6621

5 Service modes, error messages and repair tips

- EW transformer (bridge coil) 5624/5625 or 5680/5682/5683 (version dependent)
- S-correction capacitor 2629/2630
- EW driver 7680
- Vertical protection:
- If this protection is active, the causes could be one of the following (most likely in the vertical output stage):
 - 7700 is faulty
 - poor contact or open circuit of deflection coil
 - +13V_+20V and/or -13V not present

Error 2 = High beam current protection. High beam protection active; set is switched to protection; error code 2 is placed in the error buffer; the LED will blink 2 times (repeatedly). As the name implies, the cause of this protection is a too high beam current (bright screen with flyback lines). Check whether the +200V supply to the CRT panel is present. If the voltage is present, the most likely cause is the CRT panel or the picture tube. Disconnect the CRT panel to determine the cause. If the +200V voltage is not present, check R3840, R3643 and D6641.

Error 3 = Reserved

Error 4 = +5V protection. 5V protection active; set is switched to protection; error code 4 is placed in the error buffer; the LED will blink 4 times (repeatedly). A 5V failure can cause a drop in the 5V supply output, resulting in undefined behaviour of the set. Therefore, all I2C devices connected to the 5V supply are constantly monitored. When none of these devices responds to the micro controller for a prolonged time, the micro controller assumes that there is a failure in the 5V supply. By starting up the set with the service jumpers shorted, the 5V protection is disabled and it is easier to determine the cause.

+5V protection will be activated when these I2C devices fail (no I2C communication):

- Main Tuner 1125 on main panel
- ITT sound processor IC7430 on main panel
- PIP tuner (if present) on DW or YC PIP panel
- OSD generator IC7101 on OSD panel

The following tips are useful to isolate the problem area after overriding the +5V protection. Determine whether:

1. the +5V source is working properly; isolate coil 5430 and jumper 9044 and measure the +5V
2. ITT sound processor circuit is loading the +5V; isolate coil 5430
3. the main tuner, PIP tuner, or OSD circuitry is loading the +5V source; isolate jumper 9044
4. main tuner circuit is loading the +5V source; isolate coil 5100
5. OSD or PIP circuit is loading the +5V source; unplug the panel
6. PIP circuit is loading the +5V source; unplug J9Q2 (DW) or P07 (YC) on panel

Caution! Overriding the 5V protection when there is a 5V failure can increase the temperature in the set and may cause permanent damage to components. Do not override the 5V protection for a prolonged time.

Error 5 = Bimos software protection active (Bimos start-up register is corrupted or the I2C line to the Bimos is always low or no supply at pin 12 of the BiMOS). This error is usually detected during start-up and hence will prevent the set from starting up. Note that this error may also be reported as a result of error codes 1 or 2 (in that case the Bimos might not be the actual problem)

Error 6 = Bimos (TDA884X) I2C error. Note that this error may also be reported as a result of error codes 1 or 2 (in that case the Bimos might not be the actual problem)

Error 7 = General I2C error. This will occur in the following cases:

- SCL or SDA is shorted to ground
- SCL is shorted to SDA
- SDA or SCL connection at the micro controller is open circuit.

Error 8 = Microprocessor internal RAM error. The micro controller internal RAM test indicated an error of the micro controller internal memory (tested during start-up);

Error 9 = OSD generator I2C error (PCA8516). PCA8516 does not respond to the micro controller

Error 10 = NV memory I2C error. NV memory (EEPROM) does not respond to the micro controller

Error 11 = micro controller / NV Memory identification error. During the last start-up the NVM and the micro controller did not recognize each other (e.g. one of them was replaced), therefore the NVM was loaded with default values.

Error 12 = YUV IC I2C error (TDA9178). TDA9178 does not respond to the micro controller

Error 13 = Reserved

Error 14 = Sound processor I2C error (MSP34XX/TDA9855). Sound controller MSP3400, MSP3410 or TDA9855 does not respond to the micro controller

Error 15 = Reserved

Error 16 = PLL tuner I2C error. The PLL tuner does not respond to the micro controller

Error 17 = PIP processor I2C error (MC4446X). PIP processor MC4446x does not respond to the micro controller

Error 18 = 2nd tuner I2C error. The 2nd tuner (PIP/DW) does not respond to the micro controller

Error 19 = Reserved

Error 20 = Reserved

Error 21 = Reserved

Error 22 = Reserved

Error codes 1,2, 4 and 5 are protection codes and in this case supplies of some circuits will be switched off. Also, in protection the LED will blink the number of times equivalent to the most recent error code.

5.3.3 Error code table

Table 5-1

Err or cod e	Error description	Possible defective components
0	No error detected	-
1	X-ray protection / EW and/or Vert protection active	EW/Vertical circuit is defective
2	High beam protection active	CRT amplifier circuit or picture tube, or +200V is missing
3	Reserved	
4	5V protection active	+5V supply line is low or short circuit
5	BIMOS	s/w protection active or BIMOS register is corrupted IC7150
6	BIMOS I2C	error IC7150
7	General I2C bus error	I2C bus s/c or o/c on uP
8	Main uP Internal RAM error	IC7000
9	OSD generator I2C error	IC7101 on OSD panel
10	NVM I2C error	IC7088
11	NVM identification error	IC7088
12	Histogram I2C error	IC7770 on YUV interface panel
13	Reserved	
14	Sound processor I2C error	IC7430 (2CS/Nicam) or IC7437 (BTSC)
15	Reserved	
16	Main tuner I2C error	U1125
17	PIP processor I2C error	IC7350 on PIP panel
18	2nd tuner PIP I2C error	U1126 or U1127 on PIP panel
19	Reserved	
20	Reserved	
21	Reserved	
22	Reserved	

5.4 The "blinking LED" procedure

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:

- When the SDM is entered, the LED will blink the number of times, equal to the value of the last (newest) error code (repeatedly).
- With the DST all error codes in the error buffer can be made visible. 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 6 (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

Error buffer: 8 9 5 0 0 0

- after entering SDM
- blink (8x) - pause - blink (8x) - etc.
- after transmitting "DIAGNOSE 2 OK" with the DST blink (9x) - pause - blink (9x) - etc.
- after transmitting "DIAGNOSE 3 OK" with the DST blink (5x) - pause - blink (5x) - etc.
- after transmitting "DIAGNOSE 4 OK" with the DST nothing happens

NOTE: If errors 1, 2, 4 or 5 occurs the LED ALWAYS blinks the last occurred error, even if the set is NOT in service mode.

5.5 Trouble shooting tips

In this paragraph some trouble shooting tips for the deflection and power supply circuitry are described. For detailed diagnostics, check the fault finding tree.

5.5.1 THE DEFLECTION CIRCUIT:

- Measure the VBAT (140V) is present across 2917 (A1 POWER SUPPLY). If the voltage is not present, disconnect coil 5930 (A1 Power Supply) (whole horizontal deflection stage is disconnected). If the voltage is present then the problem might be caused by the deflection circuit.
Possibilities:
 - Transistor 7620 is faulty
 - The driver circuit around transistor 7610 is faulty
 - No horizontal drive signal coming from the BIMOS 7150-D pin 40
- Note: If the C and E of 7620 is shorted, hick-up noise can be heard from the power supply circuit.
- To determine whether the fault is present in the horizontal deflection circuit (A2 HOR. DEFLECTION+LINE OUTPUT) or in the EW circuit/panel (screen size above 21"), desolder E61 pin 13 or M61 pin 13 (in this case the EW protection is disable) and insert jumpers into positionnumbers 9605 and 9614. If the basic deflection is working (picture is parabolic distorted), then the fault is located in the EW circuit/panel. If there is no hor. deflection, the fault is present in the basic deflection circuitry.
- Also take note of protection circuits in the line output stage. If any of these circuits are activated, the set shutdown. Depending on protections, the LED will blink according to the fault defined. In order to determine which protection circuit is active, isolation of circuits is necessary. These protection circuits are:
 - High beam protection (LED blinks repetitively 2 times): see error code 2 explanation.

- Any of the following protection circuit is active, it will cause LED to blink repetitively 1 times. If this happen, isolate each circuit to determine the cause.; see error code 1.

5.5.2 THE POWER SUPPLY.

To trouble shoot the A8 SMPS, first check the +5V_STBY voltage on IC7907, pin 7. If this voltage is not present, check fuse 1906 and D6917. If 1906 or D6917 is not open circuit, the problem might be caused on the primary side of the switching supply. Check the output of the bridge diodes on the cathode side of D6931/D6903 pin 1 for approximately 300V DC. If this voltage is missing, check the bridge diodes and the fuse 1900 on the mains filter panel (H circuit). If fuse F1900 is found open, check IC7902 (circuit A1) between pins 3 and 2 to make sure that there is no short circuit present. If the 300V DC is present on pin 3 of IC7902, check for a startup voltage of 16V on pin 4 of IC7902. If no startup voltage is present, check if R3917 is open; a short circuit between pin 4 and 5 will also cause this problem. It is necessary to have a feedback signal from the hot secondary side of switch mode transformer T5912 at pin 8 and pin 9 for the power supply to oscillate. If this startup voltage is present on pin 4 of IC7902 and the supply is not oscillating, check R3959 and D6908.

The A8 powersupply has been designed with Over Voltage Protection (OVP). To determined whether OVP is active, check whether +5V standby is present at IC7907 pin 7. If not, check the components 1905, 6914, 6960, 3926 and 3920. If these components are O.K., then replace opto-coupler 7950.

Another way to confirm whether OVP is active is to measure the voltage with an oscilloscope at IC7902 pin 4. If the voltage is fluctuating between 11-14V, then check the components as described in the above mentioned paragraph.

5.6 Customer Service Mode (CSM)

All A8.0 sets are equipped with the "Customer Service Mode" (CSM). CSM is a special service mode that can be activated and deactivated by the customer, upon request of the service technician/dealer during a telephone conversation in order to identify the status of the set. This CSM is a 'read only' mode, therefore modifications in this mode are not possible.

Entering the Customer Service Mode.

The Customer Service Mode can be switched on by pressing simultaneously the button (MUTE) on the remote control and any key on the control buttons (P+, P-, VOL +, VOL -) on the TV for at least 4 seconds.

When the CSM is activated:

- picture and sound settings are set to nominal levels
- modes that interfere with the behaviour of the set are switched off (sleep timer, auto standby, etc.)

Exit the Customer Service Mode.

The Customer Service Mode will switch off after:

- pressing any key on the remote control handset (except "P+" or "P-")

- switching off the TV set with the mains switch.

All settings that were changed at activation of CSM are set back to the initial values

5.6.1 The Customer Service Mode information screen

After switching on the Customer Service Mode the following screen will appear.

CSM Menu

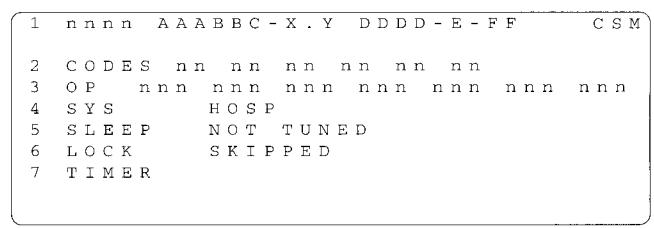


Figure 5-3 Customer Service Mode screen

The Customer Service Menu shows the following information:

- "nnnnn" displayed on line 1

Hexadecimal counter of operating hours. Standby hours are not counted as operating hours.

- "A80BBC-X.Y" displayed on line 1

Software identification of the main micro controller. See paragraph 5.2. Details on available software versions can be found in the chapter "Software Survey" of the publication "Product Survey - Colour Television".

- "CODES xx xx xx xx xx xx" displayed on line 2

Error code buffer (see paragraph 5.3). Displays the last 6 errors of the error code buffer. As soon as the built-in diagnosis software has detected an error the buffer is adapted. The latest (=newest) error is displayed on the leftmost position. Each error code is displayed as a 1 or 2 digit number. When less than 6 errors occur, the rest of the position(s) is(are) displayed as '0'. See paragraph 5.3 of this chapter for a detailed description of the error codes.

- "OP xxx xxx xxx xxx xxx xxx xxx" displayed on line 3

Option bytes. Software and hardware functionality of the A8.0 is controlled by option bits. An option byte or option number represents 8 of those bits. Each option number is displayed as a decimal number between 0 and 255. The set may not work correctly when an incorrect option code is set. See chapter 8 for more information on correct option settings

- "SYS XXXXX" displayed on line 4

Indicates which colour and sound system is installed for this preset:

- AUTO
- PAL BG
- PAL I
- PAL DK
- SECAM DK
- NTSC-M

Complaints that may be caused by an incorrect system setting:

- no colours
- colours not correct
- unstable picture
- noise in picture
- distorted sound / no sound

To change the system setting of a preset:

- press the "MENU" button on the remote control
- select the INSTALL sub menu
- select the MANUAL STORE sub menu
- select and change the SYSTEM setting until picture and sound are correct
- select the STORE menu item

"HOSP" displayed on line 4 of the CSM menu. Indicates that the "hospitality" mode is enabled. Complaints that may be caused by the activation of "hospitality mode":

- "HOSPITALITY ON" displayed on TV screen
- Installation menu does not work
- Personal presets are not automatically stored
- Volume level cannot be increased above a certain level
- Some channels/presets are blanked (only audio)

To switch off the hospitality mode:

- go to preset 38
- press the "OSD" and "MENU" buttons on the local keyboard simultaneously for 3 seconds
- "SLEEP" displayed on line 5 of the CSM screen

Indicates that the sleep timer is running. Complaints that may be caused by the activation of the sleep timer:

- set displays "GOOD BYE" and switches to standby

To switch off the sleep timer:

- press the top left button on the remote control until repeatedly until "SLEEP 0" is displayed in the middle of the screen.
- "NOT TUNED" on line 5 of the CSM screen.

Indicates that the set is not receiving an "ident" signal on this channel / preset. Situations which can will result in the display of "NOT TUNED":

- no or bad antenna signal; connect a proper antenna signal
- antenna not connected; connect the antenna
- no channel / preset is stored at this program number; go to the INSTALL menu and store a proper channel at this program number
- the tuner is faulty (in this case the CODES line will contain number 16); check the tuner and replace/repair if necessary

Note: On some models, BLUE MUTE is displayed (if the BM option is ON) when no signal is received.

- "LOCK" on line 6 of the CSM screen

On Pal/Multi sets:

Indicates that all channels are locked except the selected channel. Complaint that may be caused by locked channels:

- TV cannot be switched on from standby with the local keyboard buttons

- "P+" and "P-" buttons on local keyboard do not function

To disable the LOCK feature:

1. select "FEATURE" menu (with the Remote Control)
2. select "LOCK" (with the RC)
3. set to "OFF"

On NTSC sets:

Indicates if the channel is blocked via the parental or smart lock. To switch off the parental lock

1. select the blocked channel
2. give in the 4 digit access code

To change the parental code when the code is "lost":

1. select "FEATURE" menu
2. select "PARENTAL LOCK"
3. select "SETUP CODE"
4. key in "0711"
5. key in "0711" again

The parental code is now 0711.

- "SKIPPED" displayed on line 6 of the CSM screen.

Indicates that at least one channel is deleted as a preferred channels (by default, all channels are skipped). Note that "SKIPPED" will always be displayed in CSM unless all the channels are not skipped. A channel can be added as a selected channel to the list of preferred channels:

1. select "INSTALL" menu
2. select "CHANNEL EDIT"
3. select "ADD/DELETE"
4. set to "ADD" with the left/right cursor keys
- "TIMER" displayed on line 7 of the CSM screen.

Indicates that the on/off timer is running. Complaints that may be caused by the activation of the sleep timer;

- Without using the remote control of the local keyboard the set is switching:
 - on from standby:
 - to a different channel

To switch off the activation timer:

- select "TIMER" in the "FEATURE" menu
- select "ACTIVATE" in the "TIMER" menu
- set to "OFF" with the left/right cursor keys

5.6.2 Solving other problems

TV switched off or changed channel without any user action. Set switches off after "TV SWITCHING OFF" was displayed. Auto standby switched the set off because:

- there was no ident signal > 15 minutes
- there was no remote control signal received or local key pressed for > 2 hours

See chapter 8 for a description on the options to enable/disable auto standby

Picture problems. Picture too dark or too bright

- Press "Smart Picture" button on the remote control. In case the picture improves, increase / decrease the brightness

value or increase / decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes

- After switching on the Customer Service Mode the picture is OK. Increase / decrease the brightness value or increase / decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes

White line around picture elements and text

- press "Smart Picture" button on the remote control. In case the picture improves, decrease the sharpness value. The new "Personal Preference" value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Decrease the sharpness value. The new "Personal Preference" value is automatically stored after 3 minutes

Snowy picture

- check the "NOT TUNED" section of the Customer Service Mode screen

Snowy picture and/or unstable picture

- a scrambled or decoded signal is received

Black and white picture

- press "Smart Picture" button on the remote control. In case the picture improves, increase the colour value. The new "Personal Preference" value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Increase the colour value. The new "Personal Preference" value is automatically stored after 3 minutes

Menu text not sharp enough

- press "Smart Picture" button on the remote control. In case the picture improves, decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes

Sound problems.

No sound or sound too loud (after channel change / switching on)

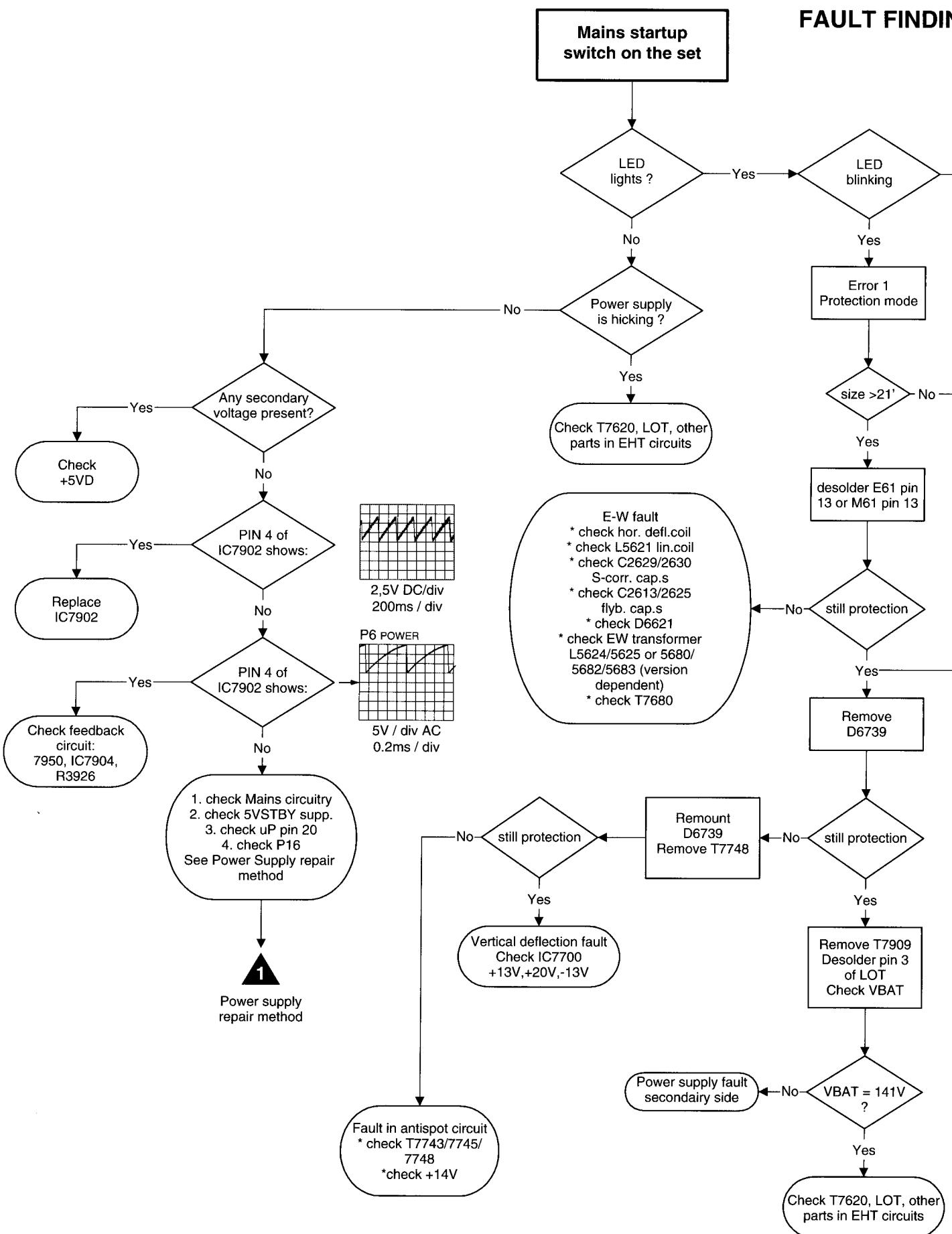
- after switching on the Customer Service Mode the volume is OK. Increase / decrease the volume level. The new "Personal Preference" value is automatically stored after 3 minutes

6 Fault finding trees, diagrams and overviews

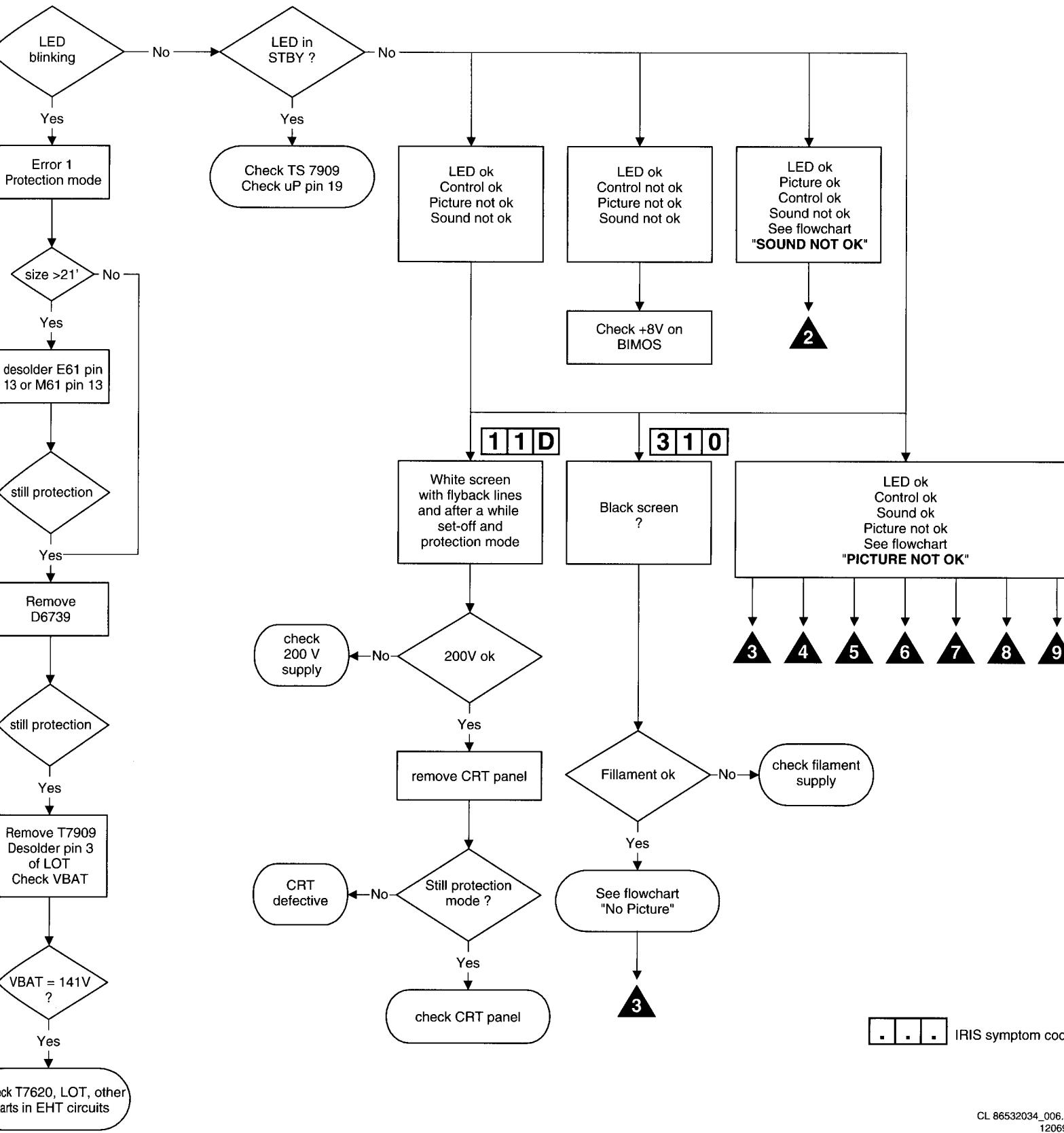
A8.0A

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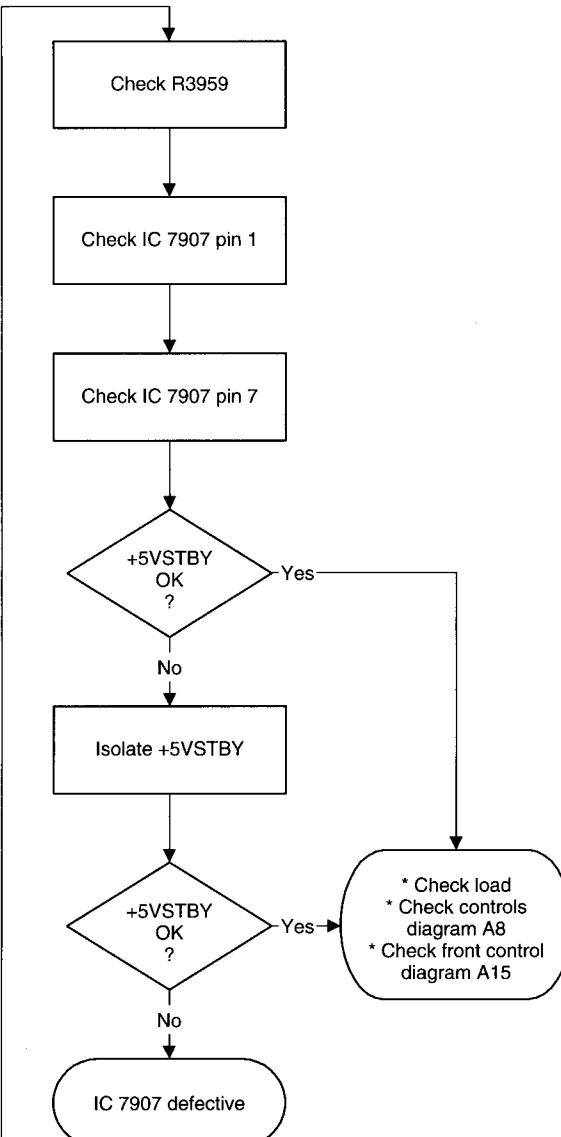
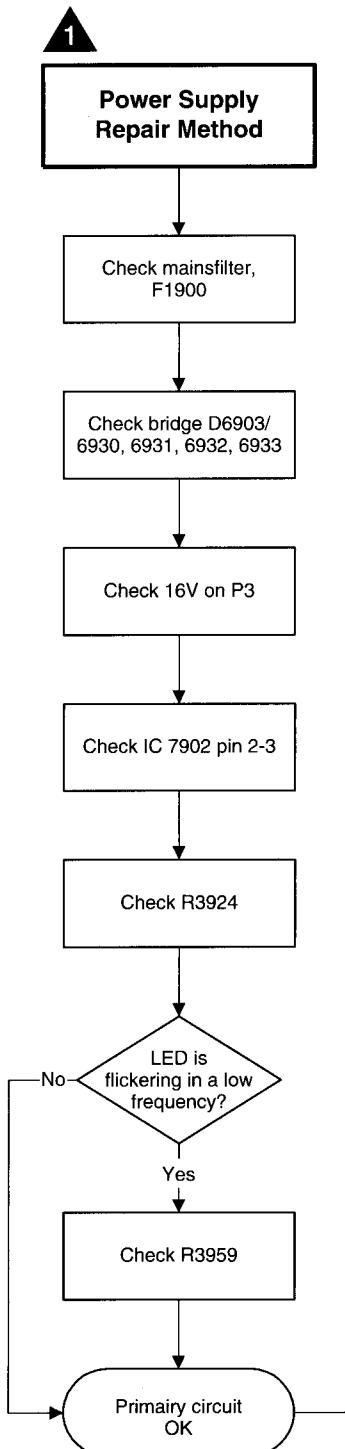
FAULT FINDING TREES



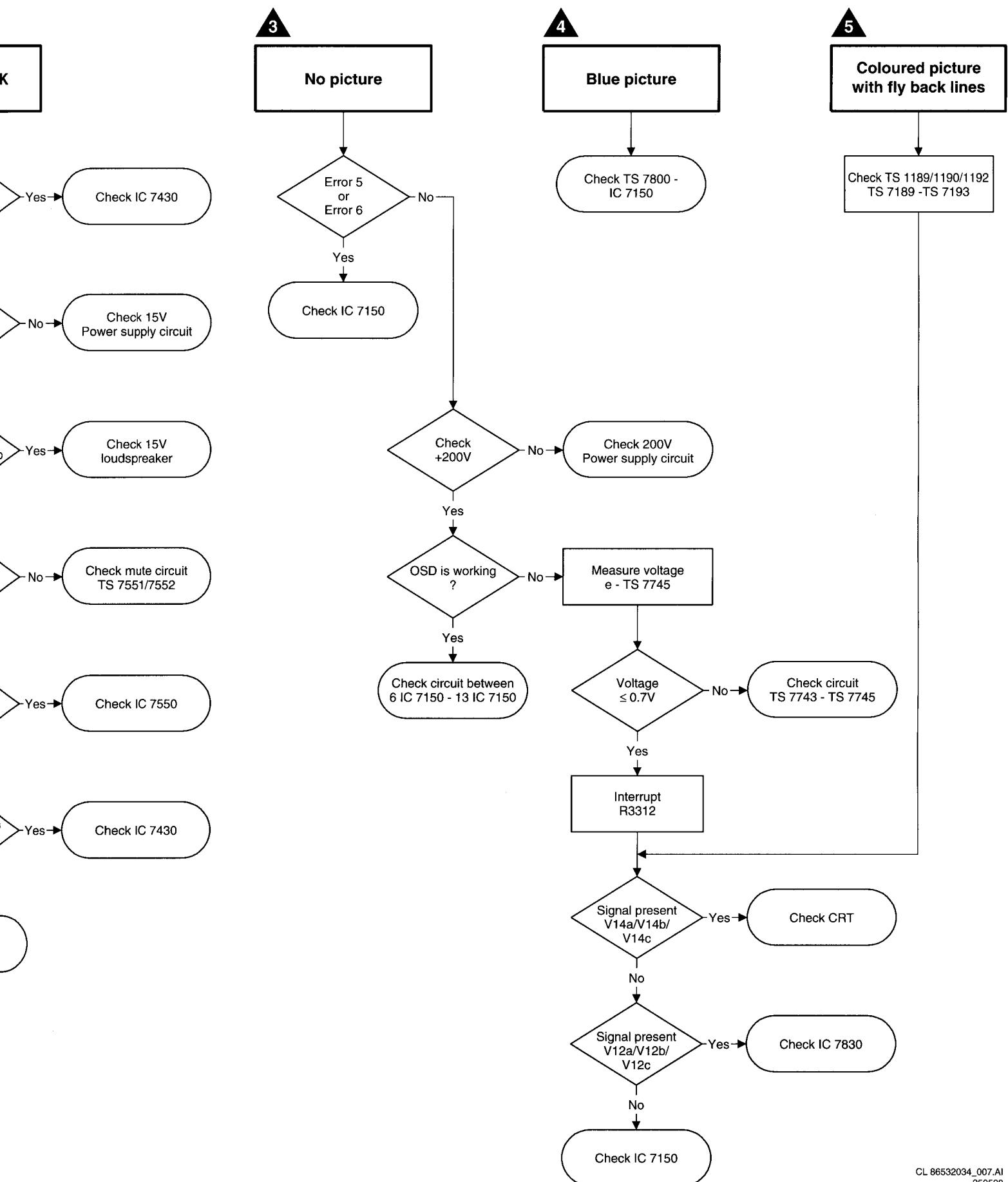
FAULT FINDING TREE LSP A8 CHASSIS



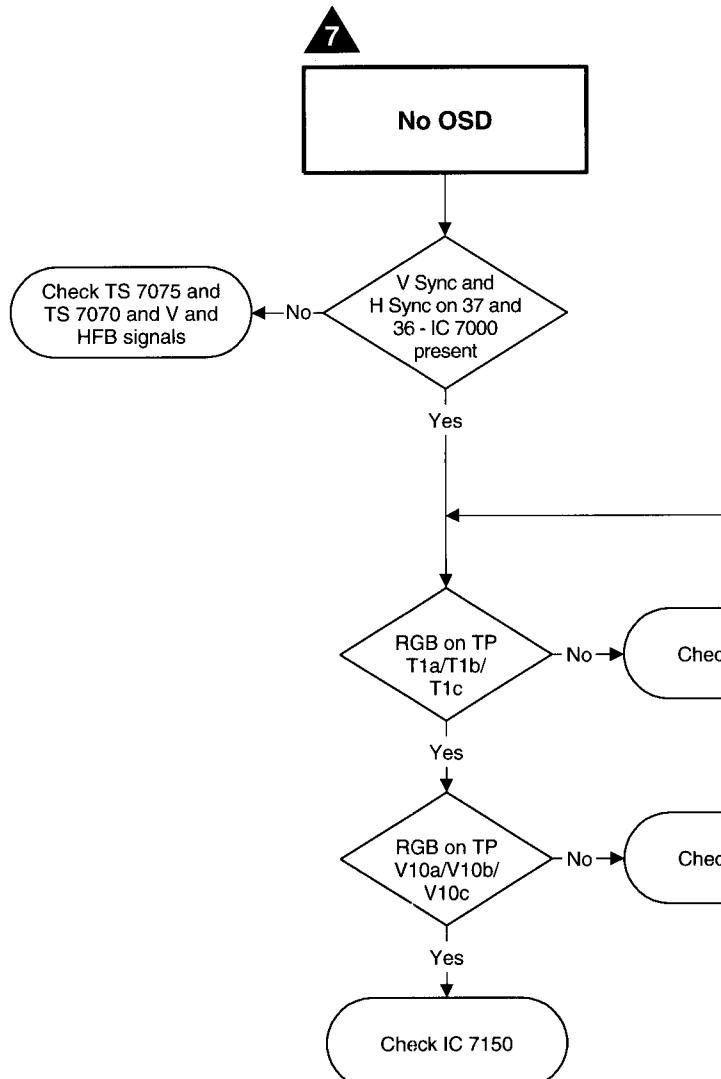
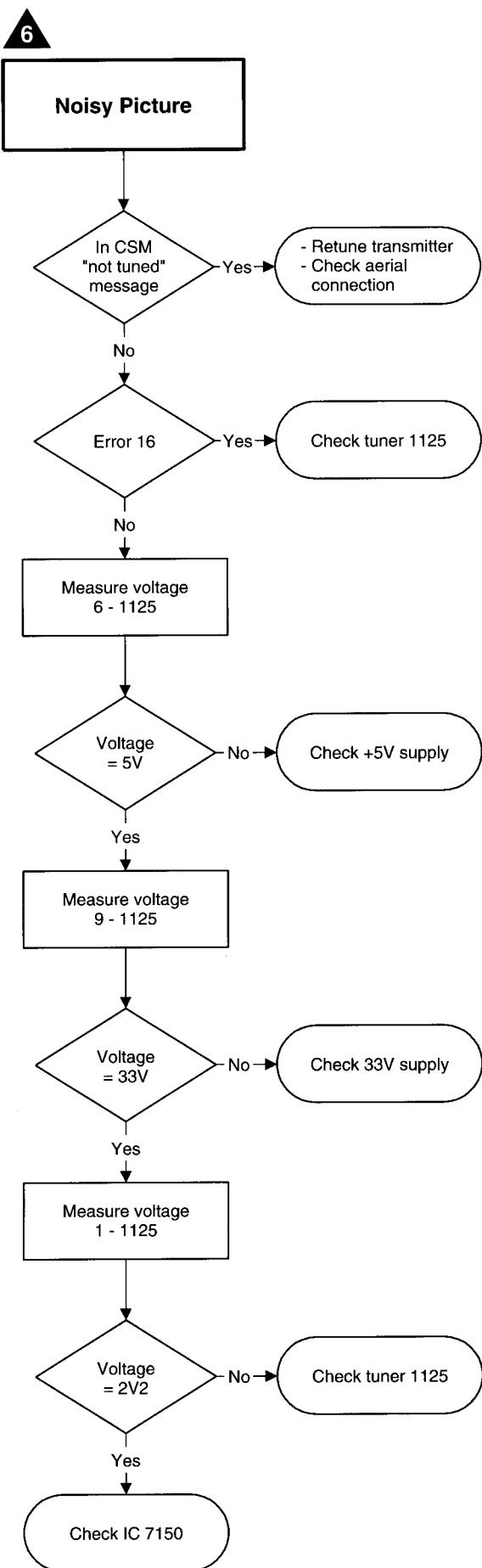
POWER SUPPLY REPAIR METHOD

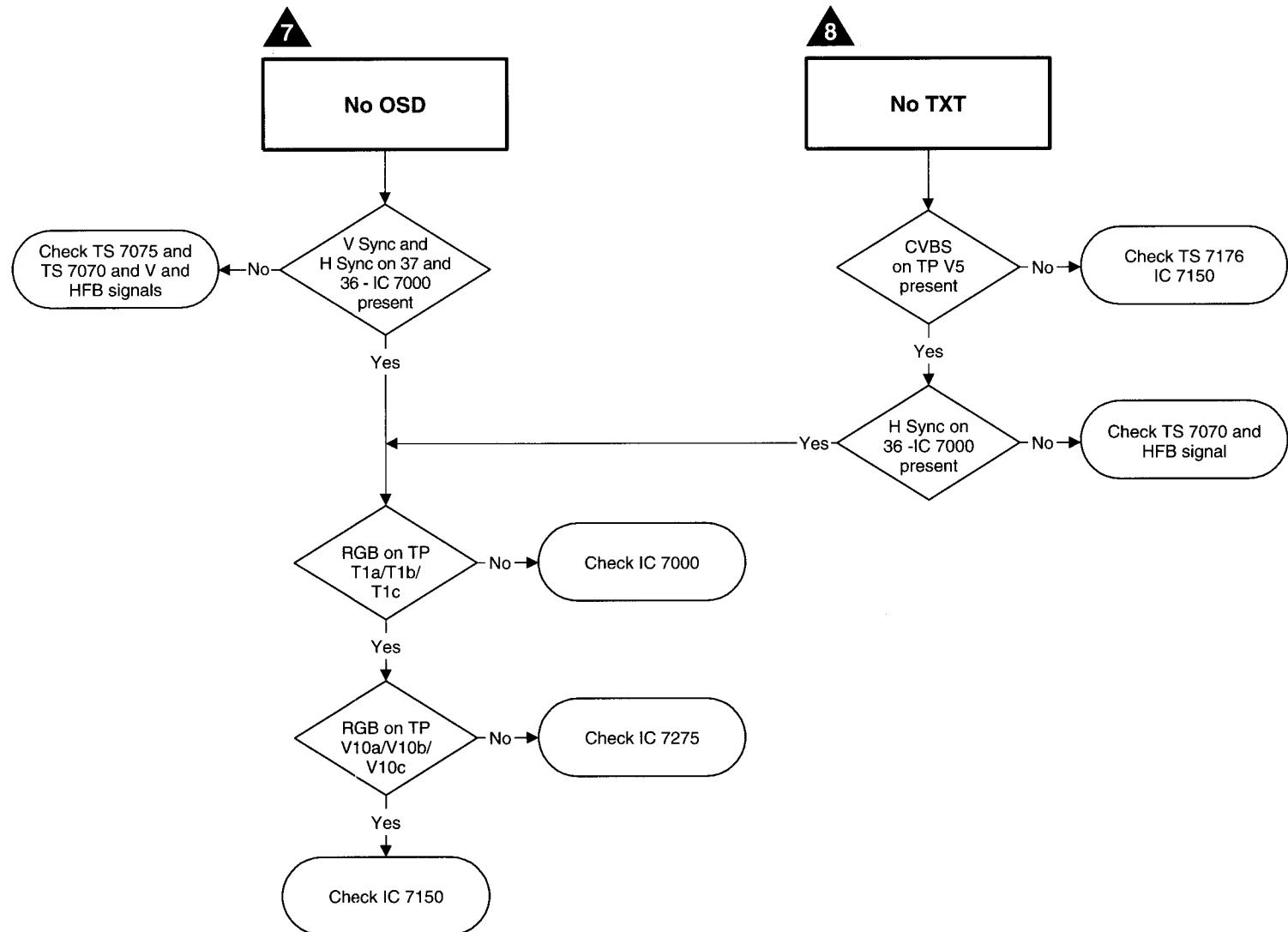


OK

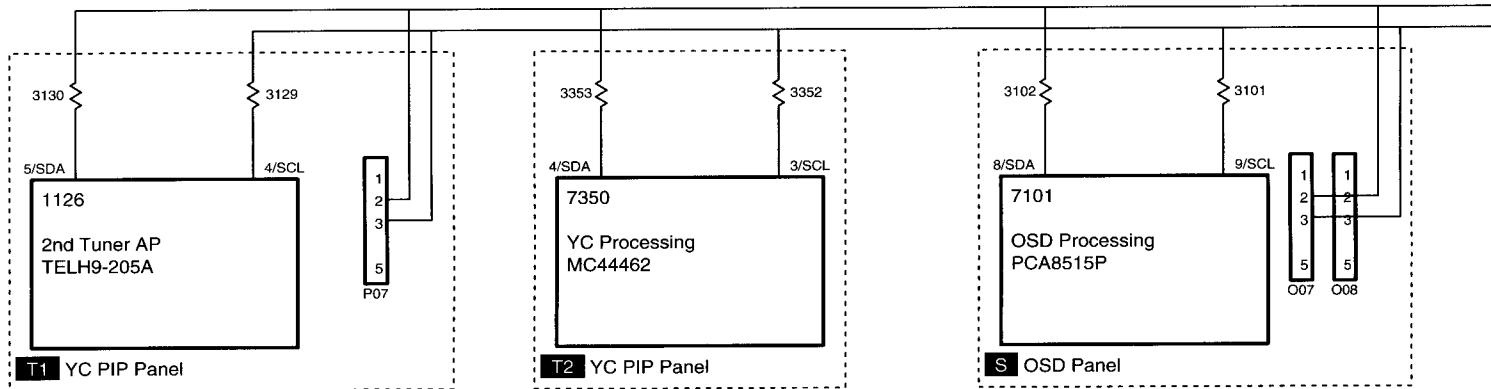
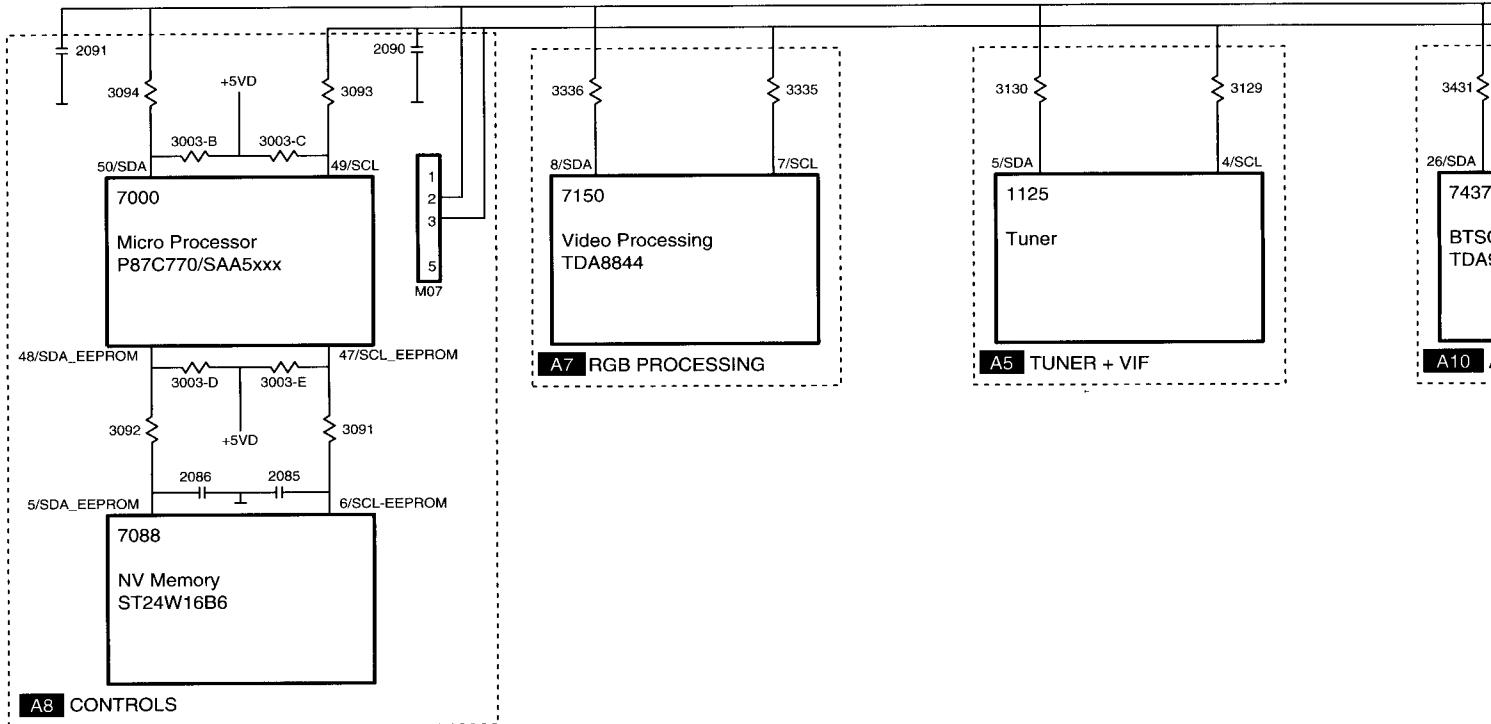
PICTURE NOT OK

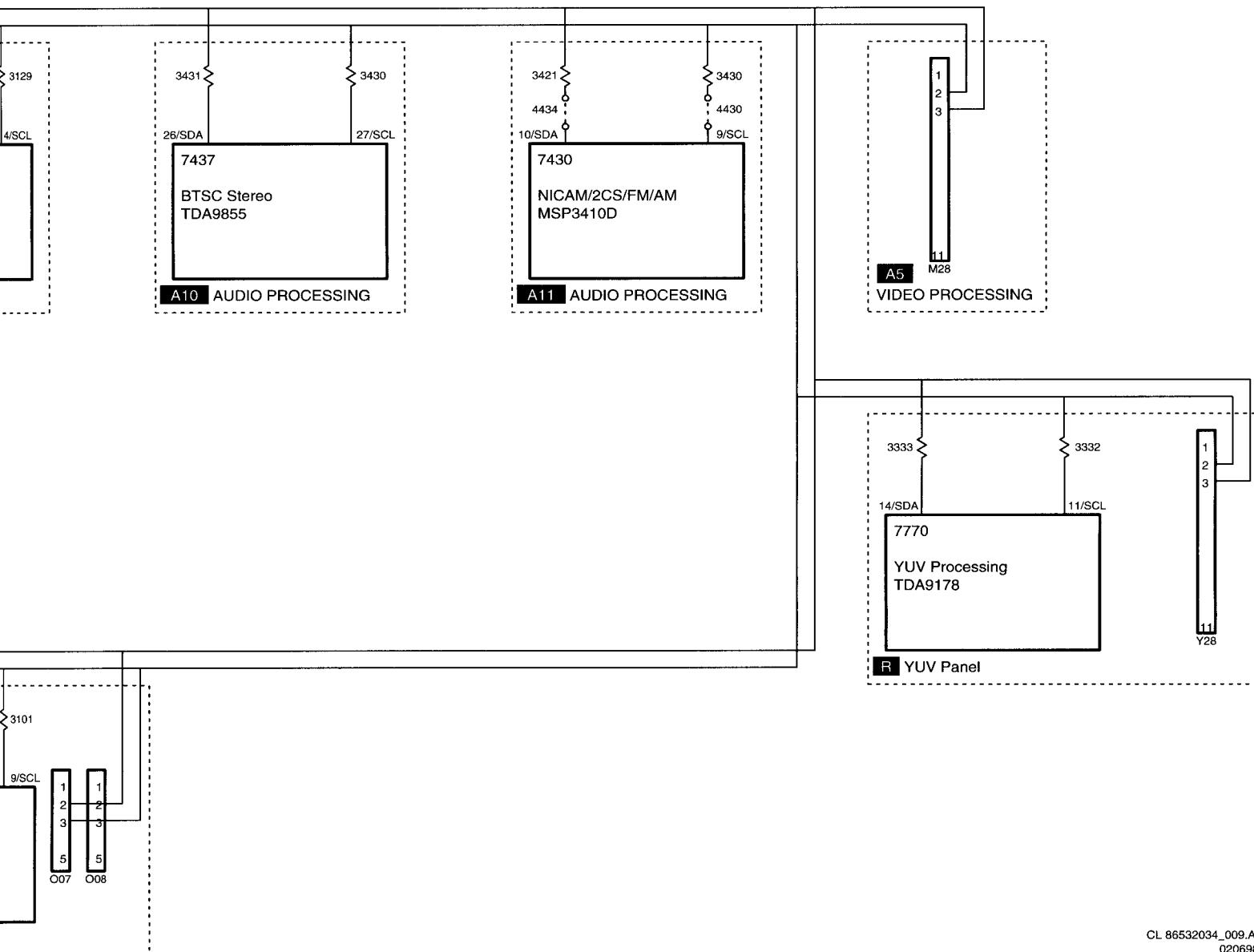
PICTURE NOT OK



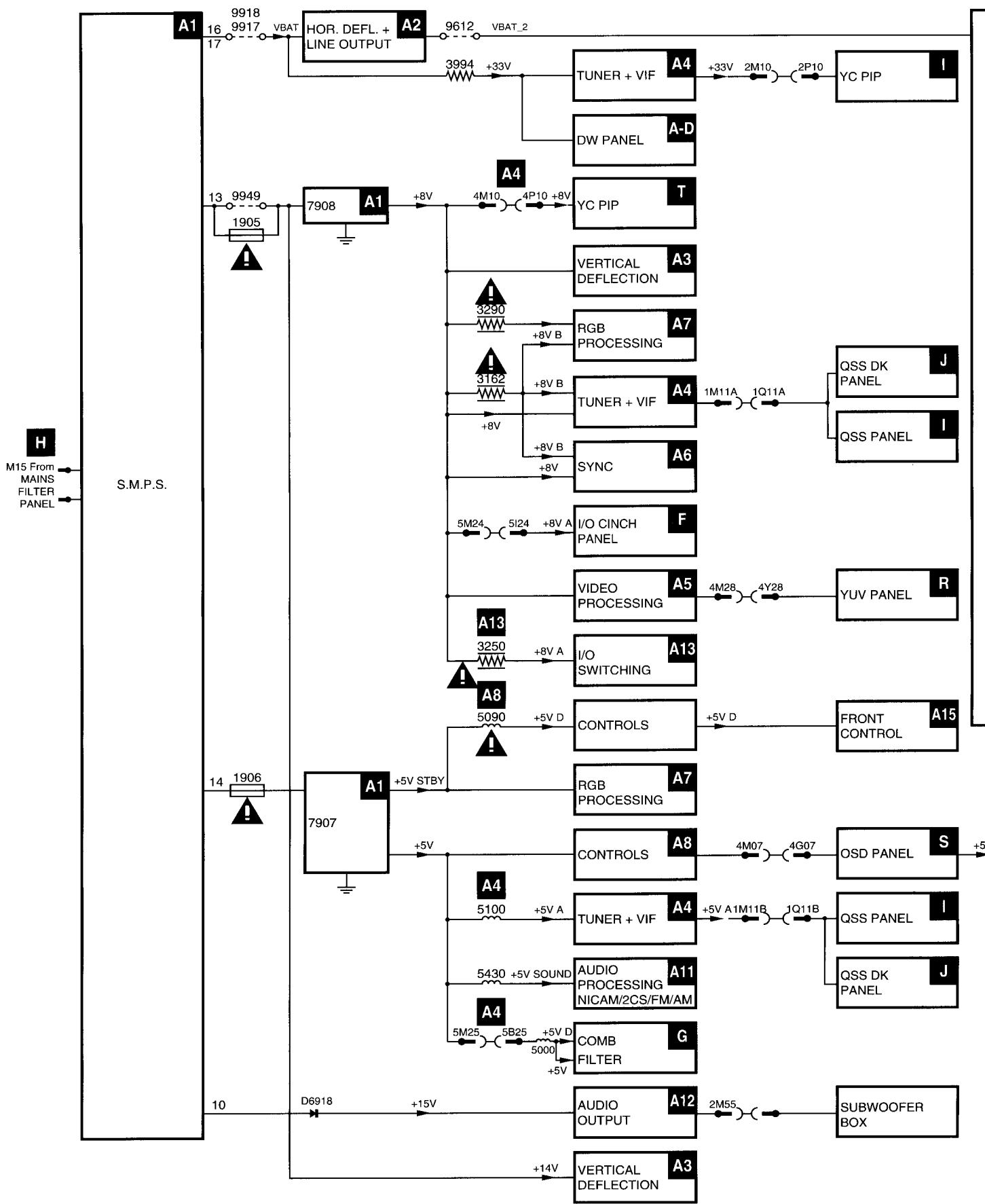
PICTURE NOT OK

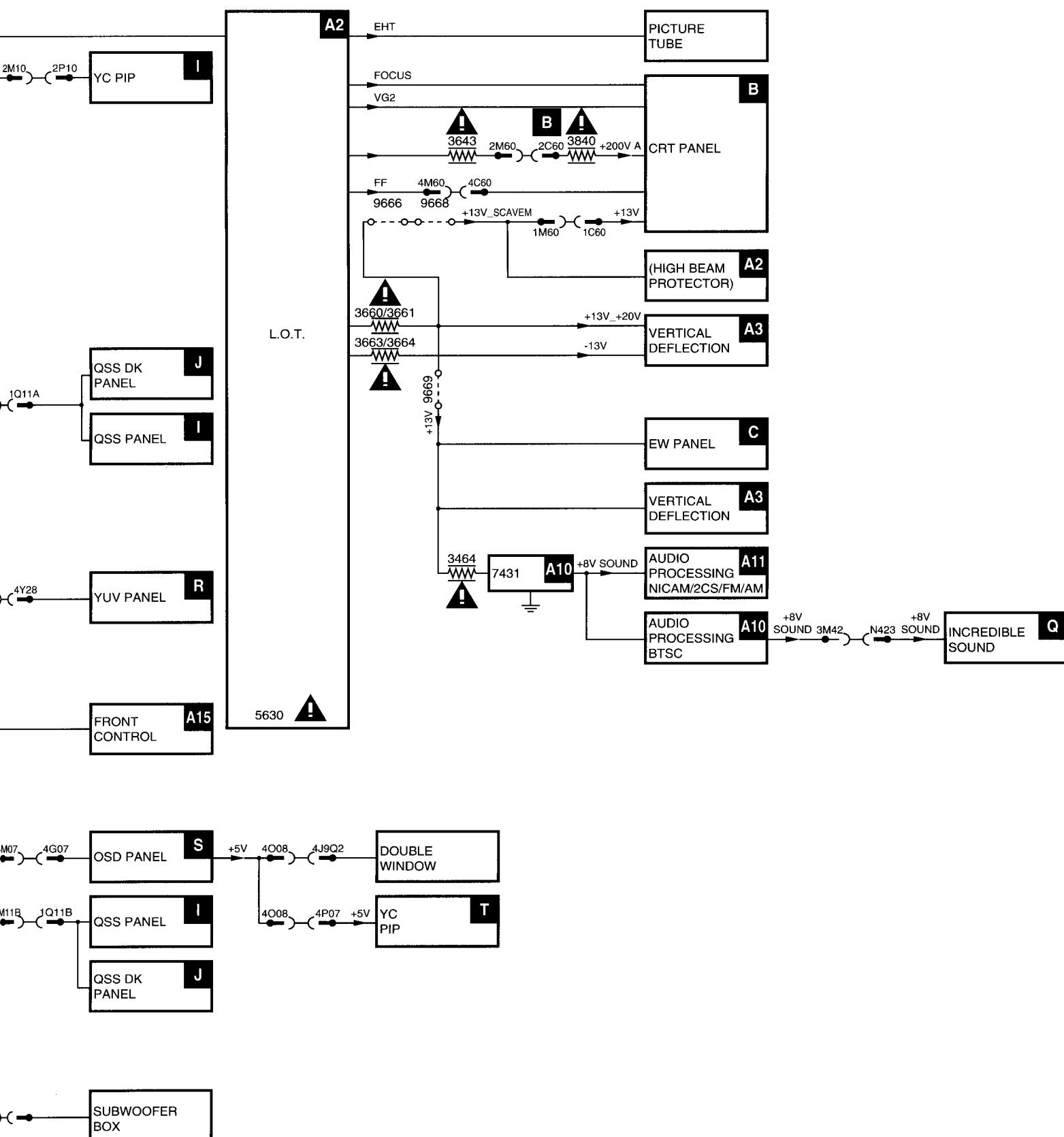
IIC Diagram





SUPPLY VOLTAGE DIAGRAM



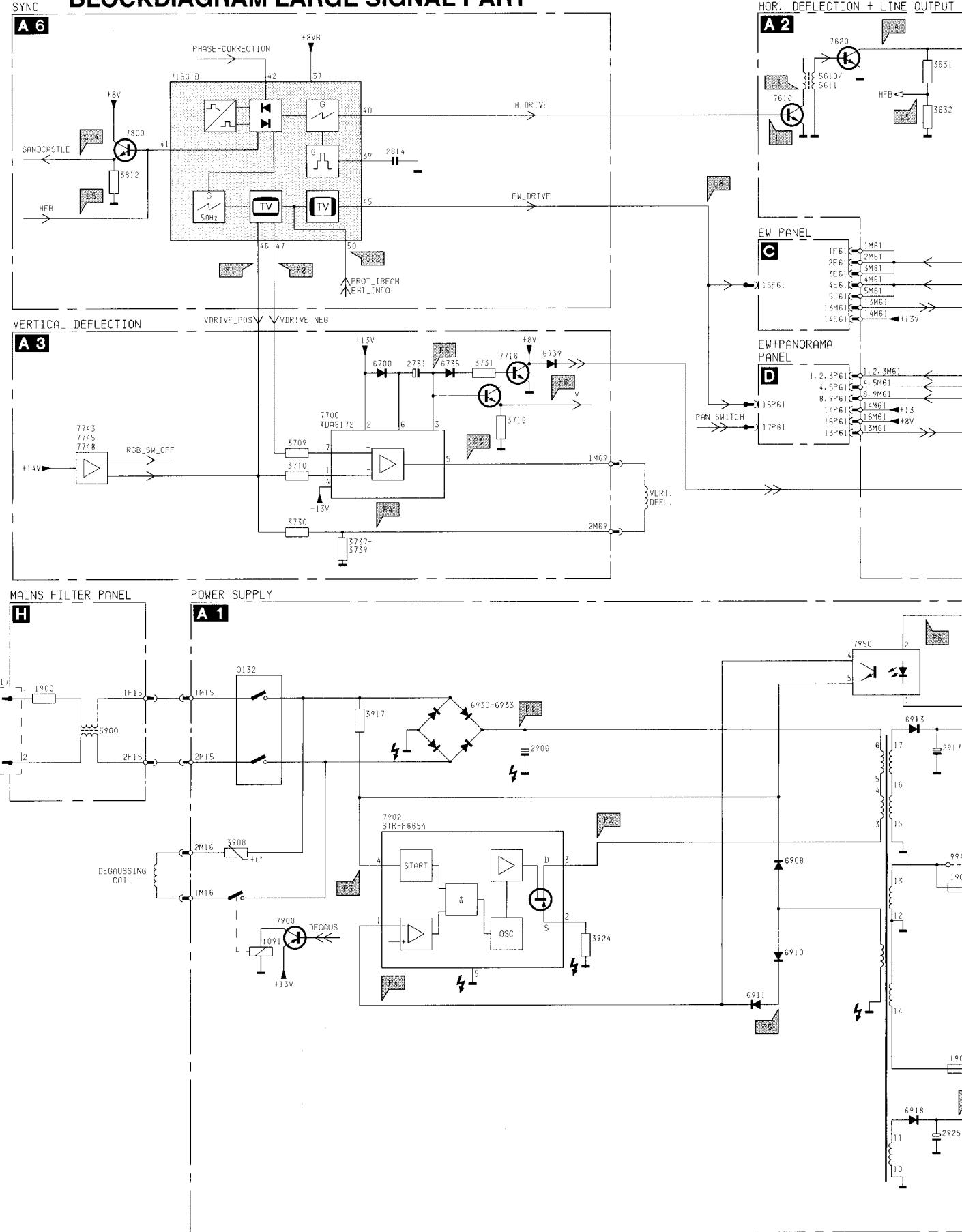


6 Fault finding trees, diagrams and overviews

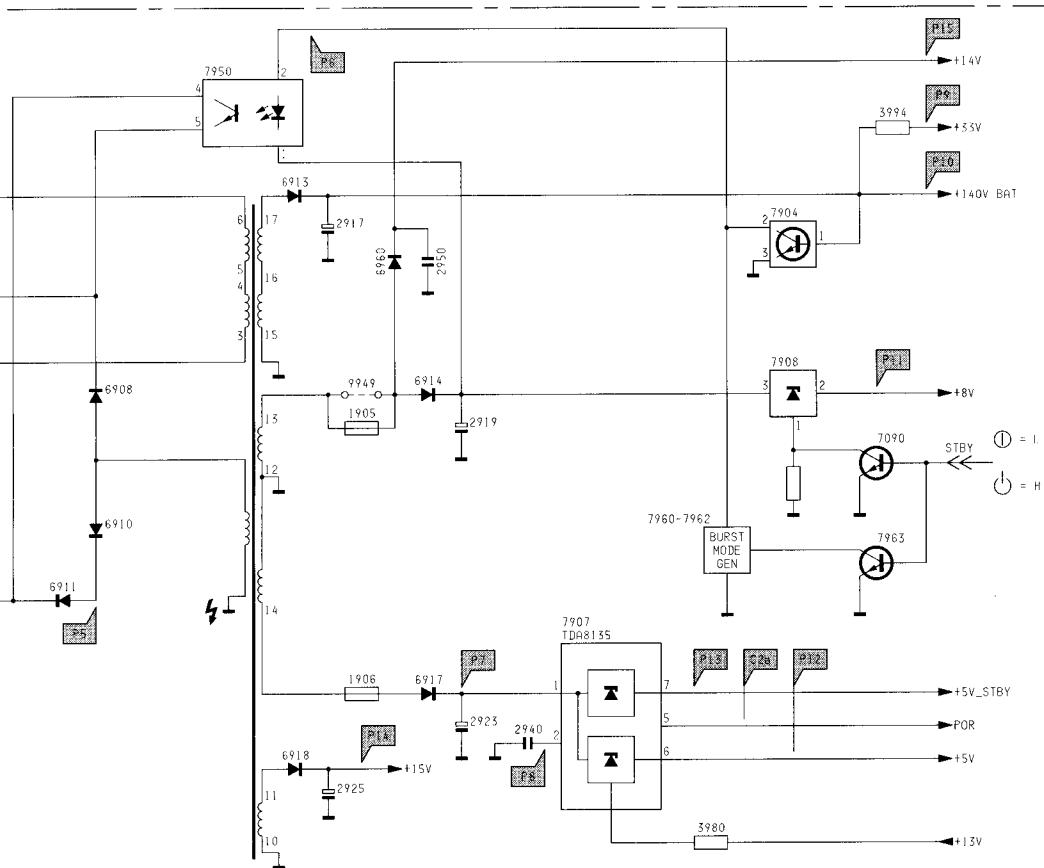
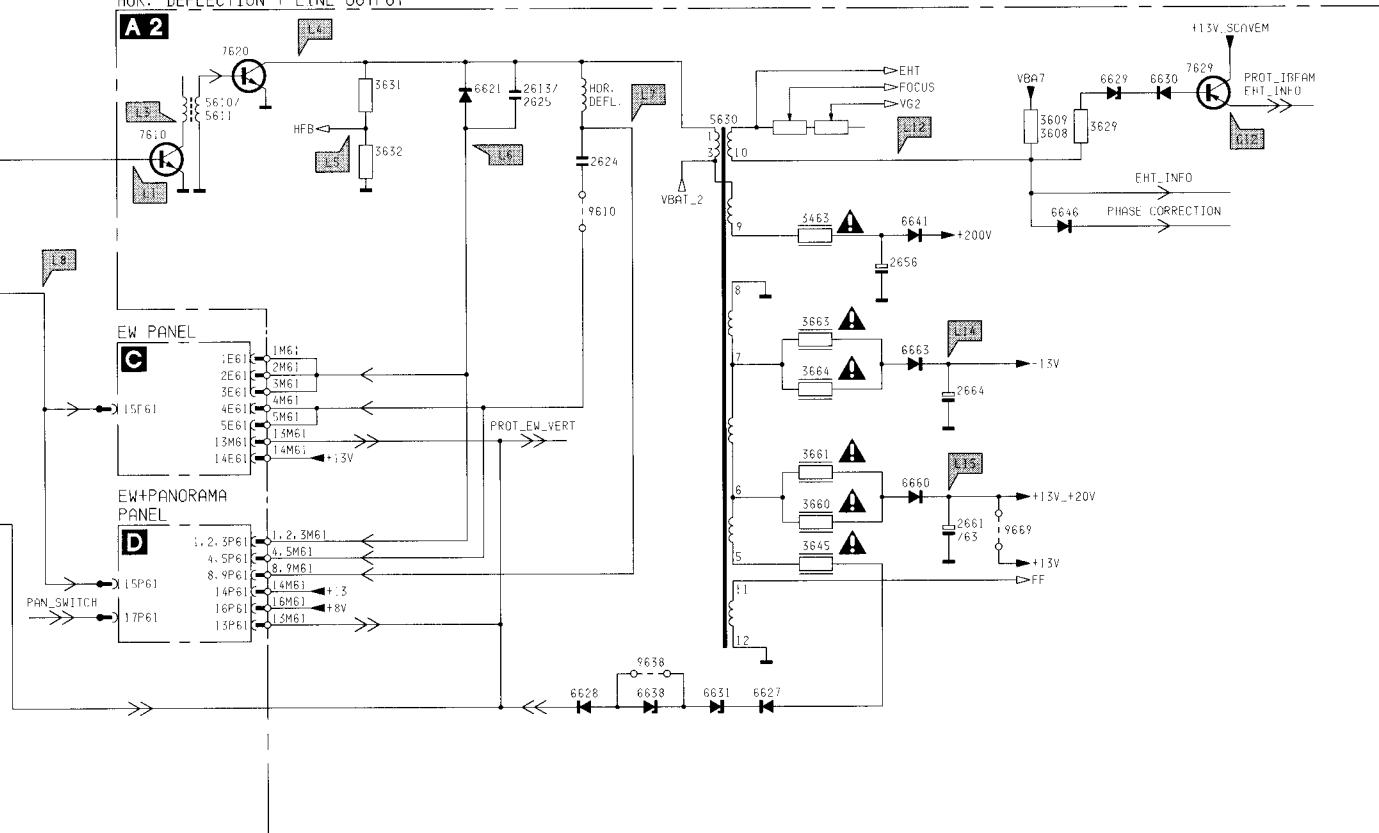
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BLOCKDIAGRAM LARGE SIGNAL PART



HOR. DEFLECTION + LINE OUTPUT



CHASSIS A8.0

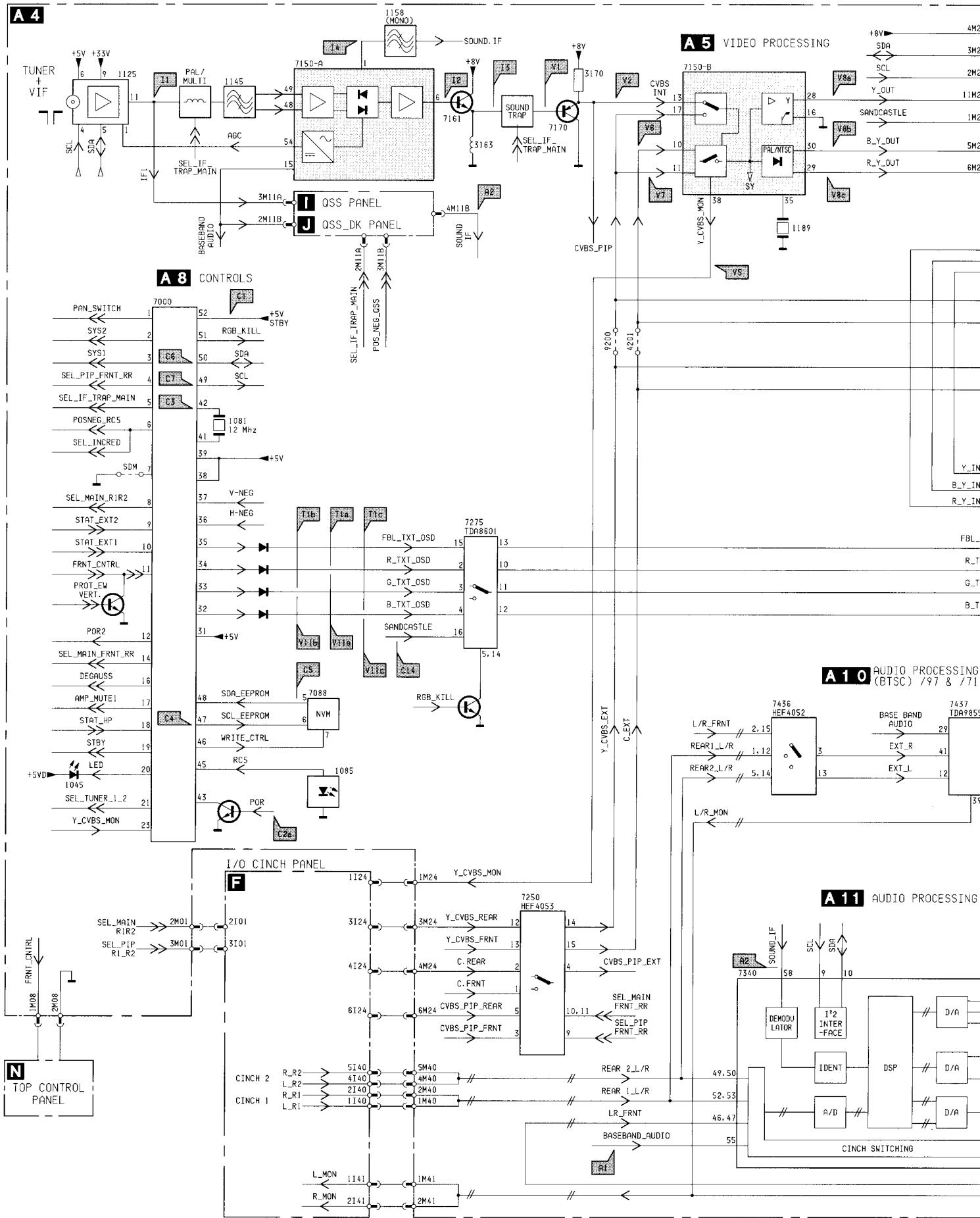
86532026/012,X001
160798

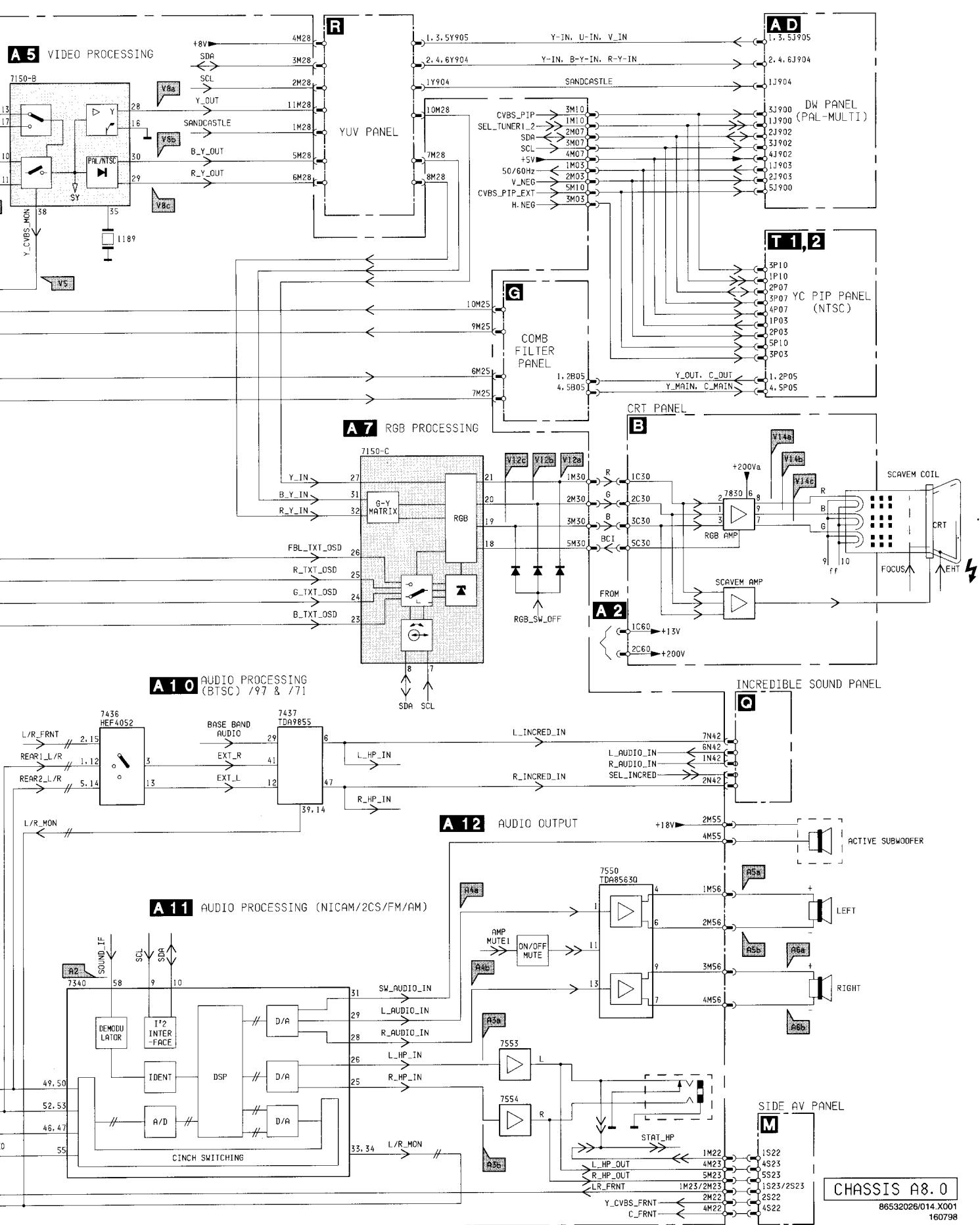
6 Fault finding trees, diagrams and overviews

A8.0A

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BLOCKDIAGRAM SMALL SIGNAL PART

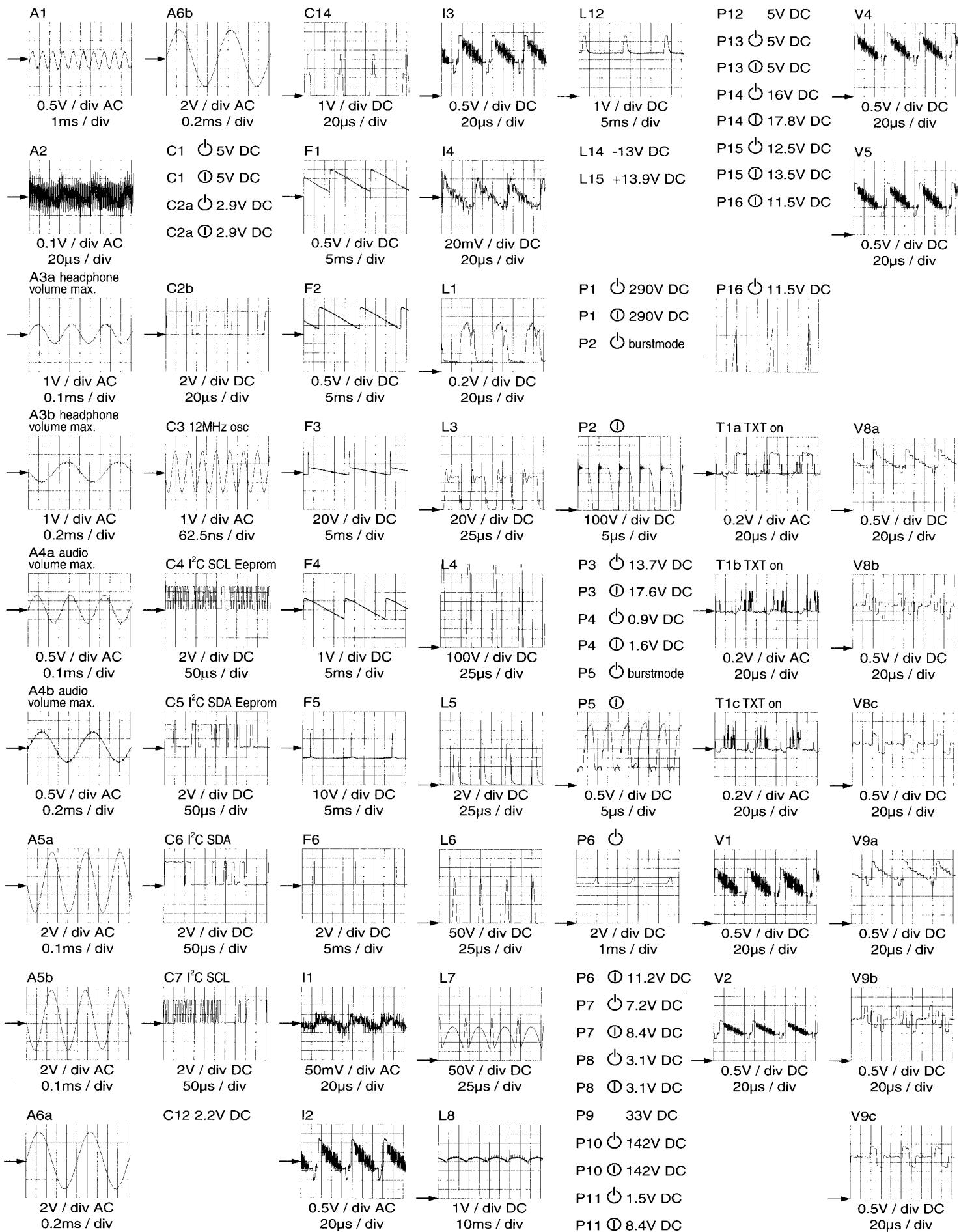


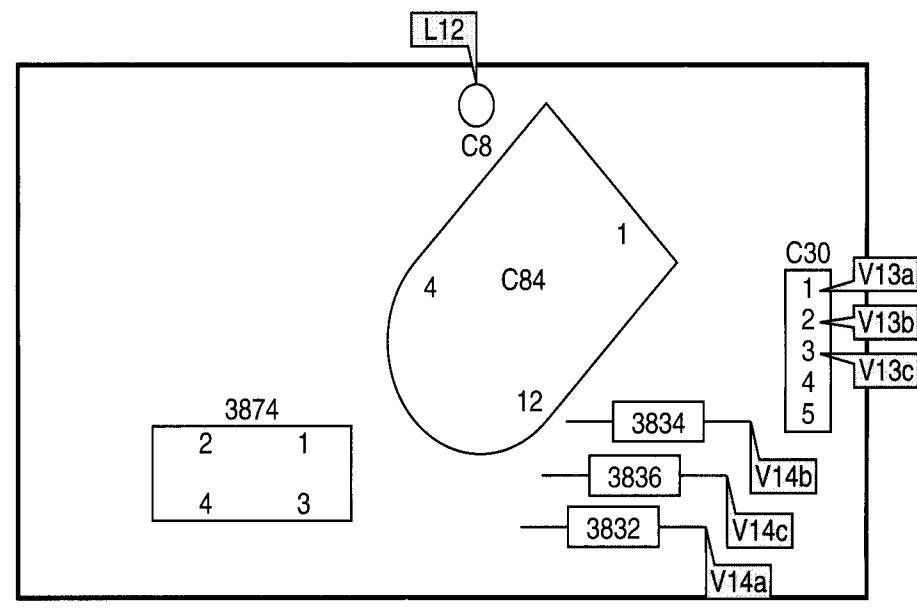
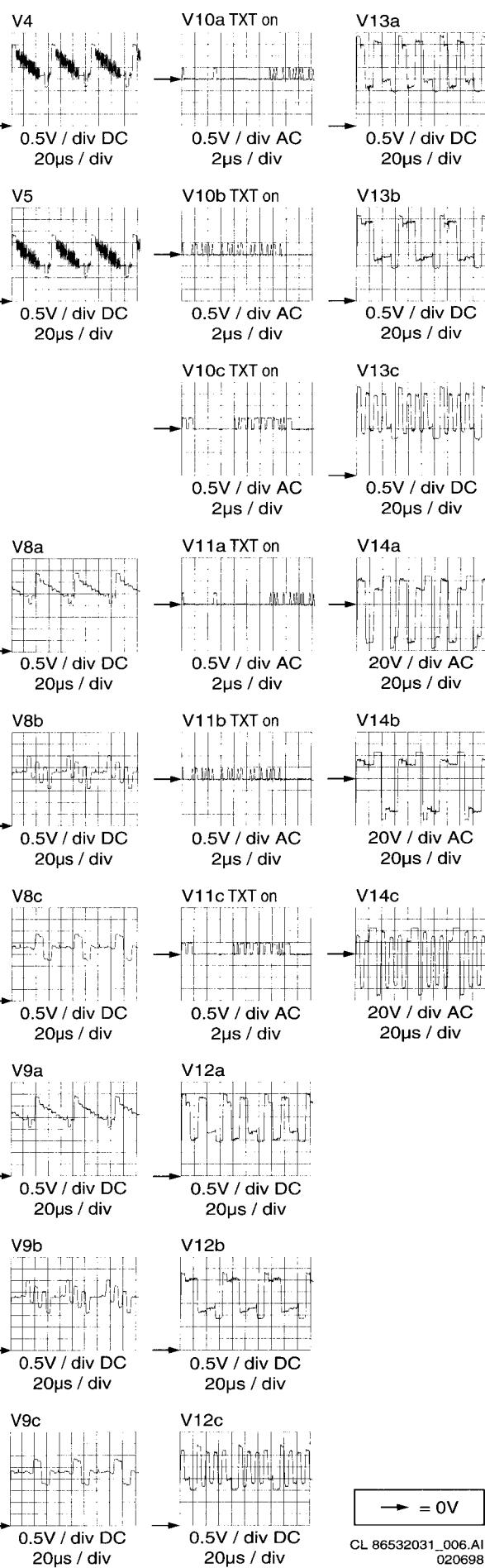


6 Fault finding trees, diagrams and overviews

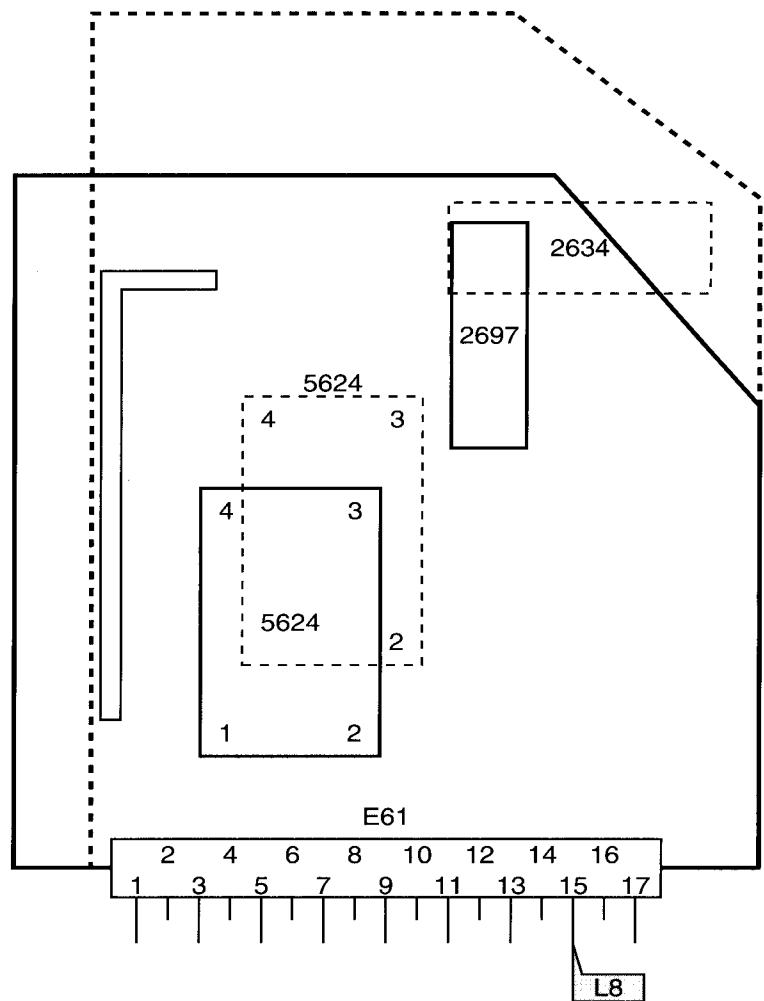
A8.0A

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CL 86532031_002.AI
150598



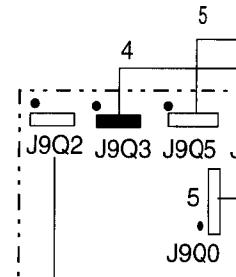
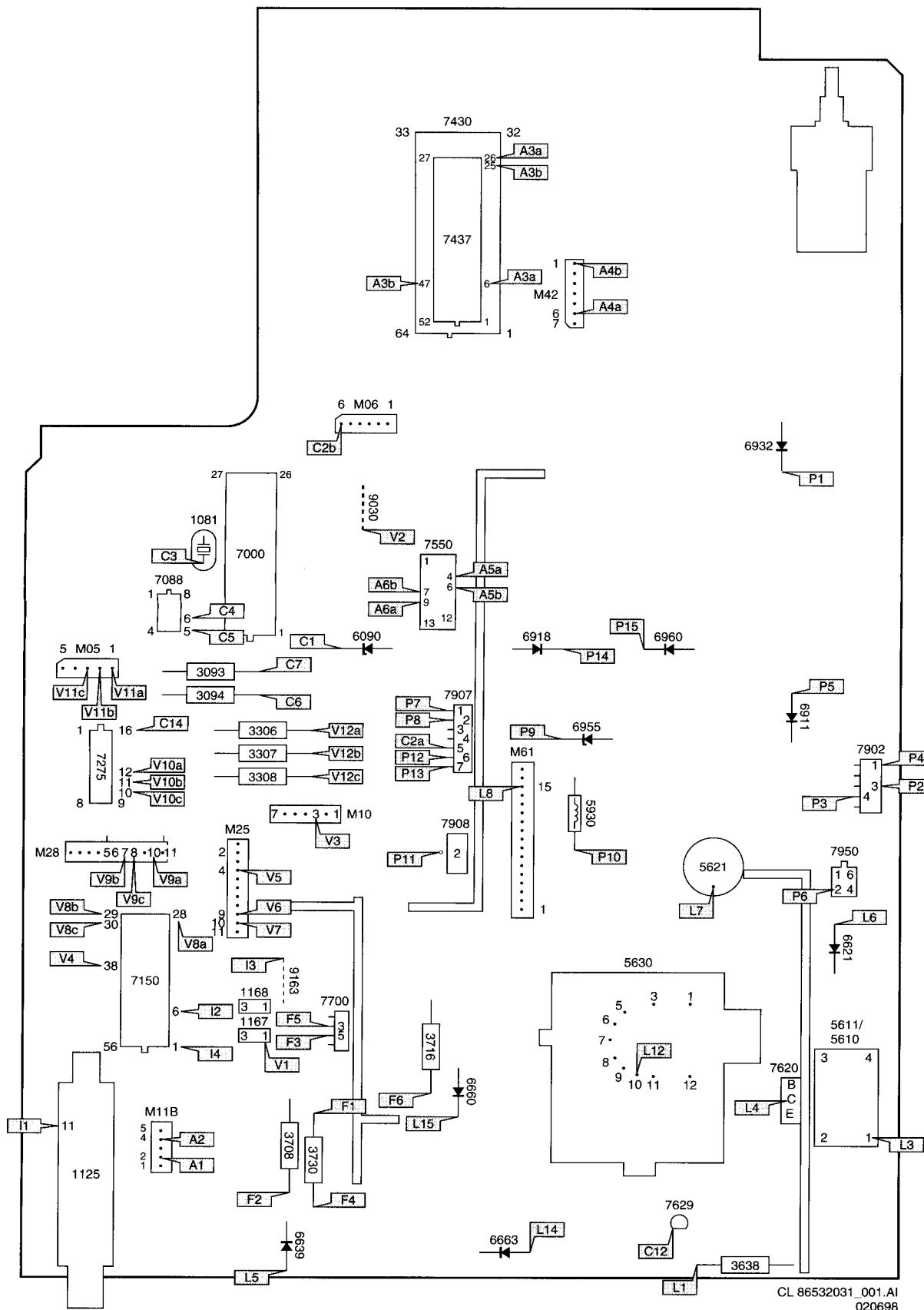
→ = 0V
CL 86532031_006.AI
020698

CL 86532031_003.AI
150598

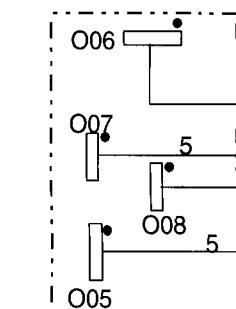
6 Fault finding trees, diagrams and overviews

A8.0A

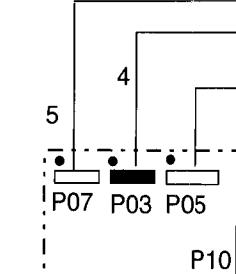
25



DW Panel
PAL MULTI



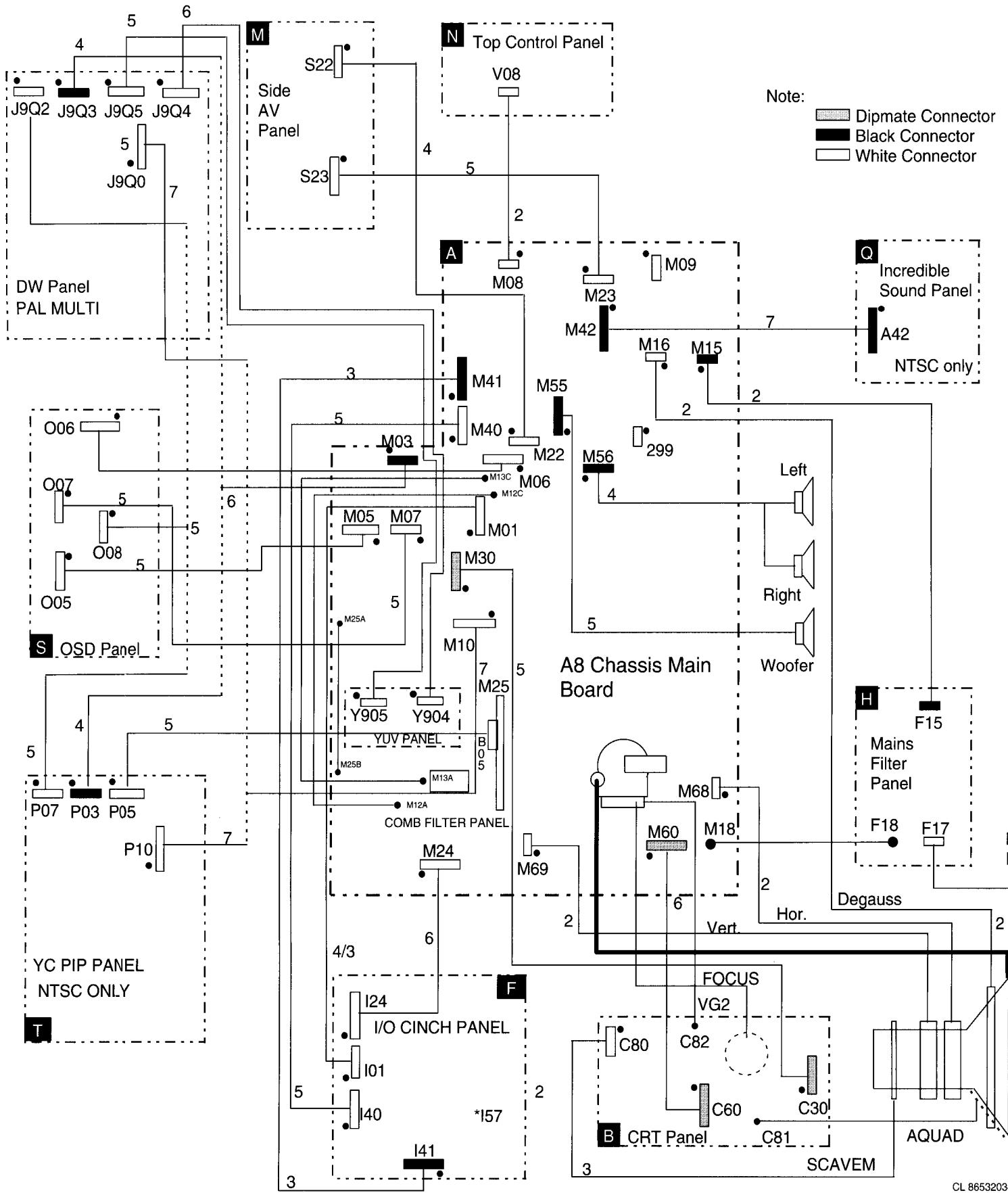
S OSD Panel



YC PIP PANEL
NTSC ONLY

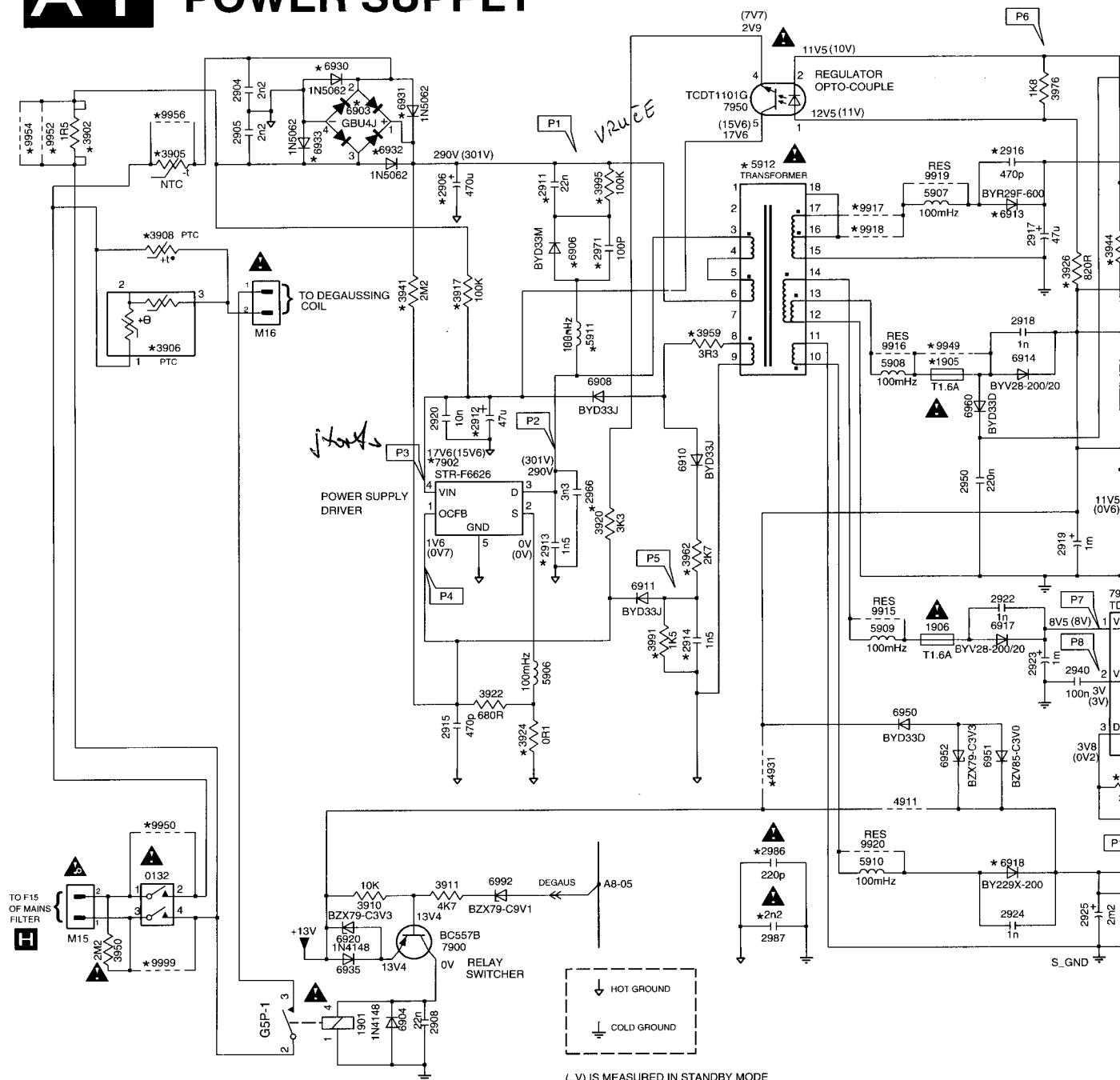
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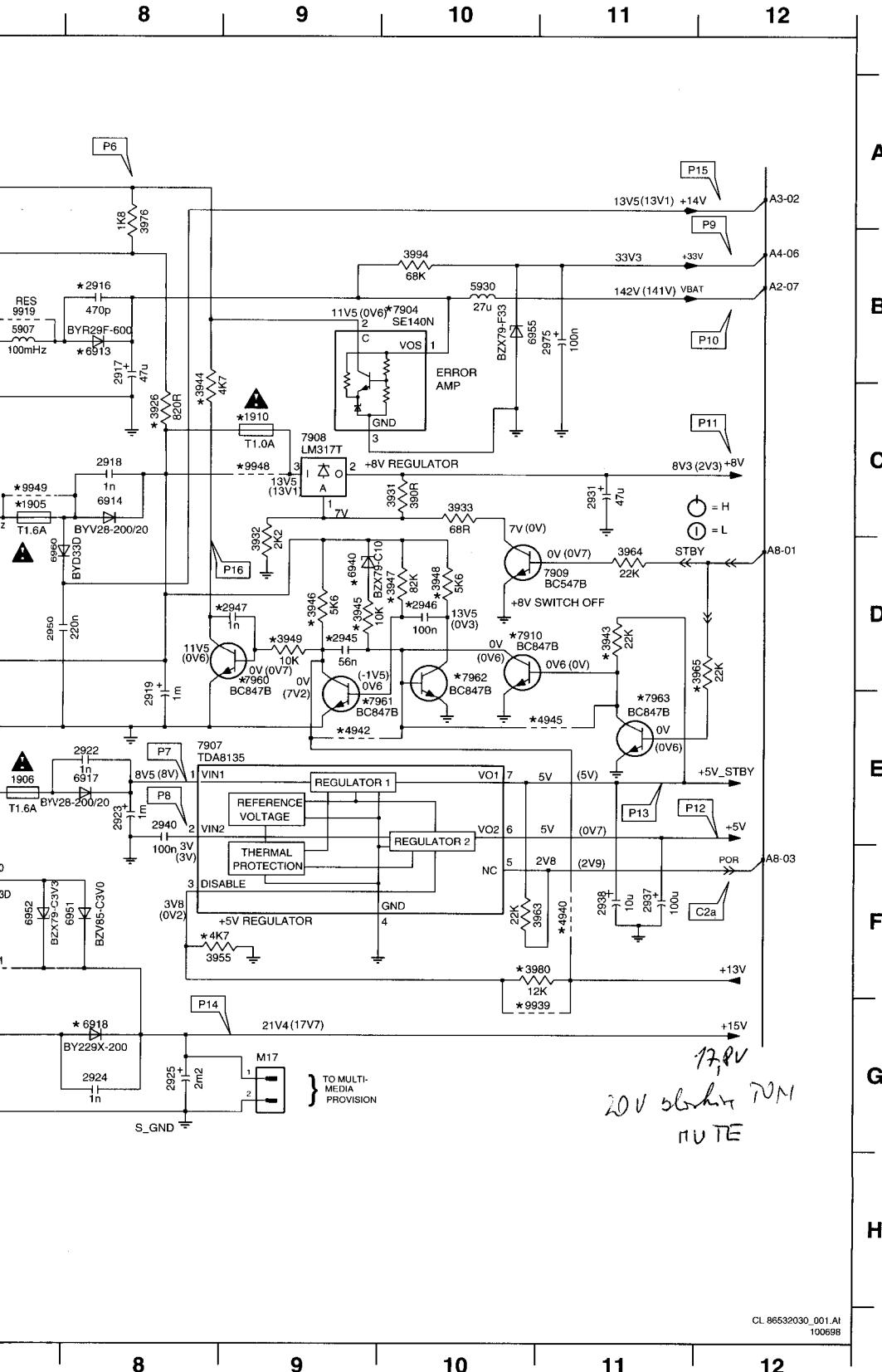
A8 AP WIRE TREE DIAGRAM



1 | **2** | **3** | **4** | **5** | **6** | **7** | **8**

A 1 POWER SUPPLY





CL 86532030_001.AI
100698

C2a	○ 2.9V DC
C2a	○ 2.9V DC
P1	○ 290V DC
P1	○ 290V DC
P2	○ burstmode
P2	○
	100V / div DC 5μs / div
P3	○ 13.7V DC
P3	○ 17.6V DC
P4	○ 0.9V DC
P4	○ 1.6V DC
P5	○ burstmode
P5	○
	0.5V / div DC 5μs / div
P6	○
P6	2V / div DC 1ms / div
P6	○ 11.2V DC
P7	○ 7.2V DC
P7	○ 8.4V DC
P8	○ 3.1V DC
P8	○ 3.1V DC
P9	33V DC
P10	○ 142V DC
P10	○ 142V DC
P11	○ 1.5V DC
P11	○ 8.4V DC
P12	5V DC
P13	○ 5V DC
P13	○ 5V DC
P14	○ 16V DC
P14	○ 17.8V DC
P15	○ 12.5V DC
P15	○ 13.5V DC

7 Electrical diagrams and print lay-outs

A8.0A

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FIG. 1

ITEM NO.	EURO 25, 28, 29, 28WS	USA	A/P S.R.	BR 29SF	EURO 21, 24WS	BR 32V	USA 27V, 32V AMV	BR 27V	A/P F.R.
1905	----	T1.6A	----	T1.6A	----	T1.6A	T1.6A	T1.6A	T1.6A
1906	T1.6A	T1.6A	T1.6A	T2.5A	T1.6A	T2.5A	T1.6A	T2.5A	T2.5A
1910	----	----	----	T1.0A	----	T1.0A	T1.0A	T1.0A	T1.0A
2906	220U/400V	470U/250V	220U/400V	470U/400V	220U/400V	680U/400V	470U/400V	470U/400V	470U/400V
2911	----	----	----	----	----	22N/400V	22N/400V	22N/400V	22N/400V
2912	33U/25V	47U/25V	33U/25V	47U/25V	33U/25V	47U/25V	47U/25V	47U/25V	47U/25V
2913	1N5/2KV	1N5/2KV	1N5/2KV	IN5/2KV	1N5/2KV	1N5/2KV	1N5/2KV	1N5/2KV	1N5/2KV
2914	1N5/50V	1N/50V	1N5/50V	1N/50V	1N5/50V	1N/50V	1N/50V	1N/50V	1N/50V
2916	470P/2KV	470P/2KV	470P/2KV	1N/2KV	470P/2KV	1N/2KV	470P/2KV	1N/2KV	470P/2KV
2937	10U/50V	10U/50V	100U/10V	100U/10V	10U/50V	100U/10V	100U/10V	100U/10V	100U/10V
2945 (SMD)	56N/50V	----	----	----	56N/50V	----	----	----	----
2946 (SMD)	100N/16V	----	----	----	100N/16V	----	----	----	----
2947 (SMD)	2N2/50V	----	----	----	2N2/50V	----	----	----	----
2966	----	3N3/2KV	----	----	2N2/50V	----	----	----	----
2971	----	----	----	----	2N2/50V	----	100P/1KV	100P/1KV	100P/1KV
2986	----	220P/250V	220P/250V	220P/250V	----	220P/250V	----	220P/250V	220P/250V
2987	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V
3902	1R5/7W	----	IR5/7W	----	IR5/7W	----	----	----	----
3905	----	----	2R5/NTC	----	2R5/NTC	----	2R5/NTC	2R5/NTC	2R5/NTC
3906	9R/220V	----	9R/220V	9R/220V	9R/220V	9R/220V	9R/220V	9R/220V	9R/220V
3908	PTC MONO	----	PTC MONO	PTC MONO	PTC MONO	PTC MONO	PTC MONO	PTC MONO	PTC MONO
3908	10R/120V	----	----	----	----	----	----	----	----
3917	150K/3W	100K/3W	150K/3W	100K/3W	150K/3W	100K/3W	100K/3W	100K/3W	100K/3W
3924	0.1R/3W	0.1R/3W	0.15R/3W	0.1R/3W	0.15R/3W	0.1R/3W	0.1R/3W	0.1R/3W	0.1R/3W
3926 (SMD)	820R	1K	1K	820R	1K	1K	1K	1K	1K
3941	----	----	3M3/VR25	----	3M3/VR25	3M3/VR25	3M3/VR25	3M3/VR25	3M3/VR25
3943 (SMD)	22K	22K	----	22K	----	----	----	----	----
3944 (SMD)	4K7	----	----	4K7	4K7	4K7	4K7	4K7	4K7
3945 (SMD)	10K	----	----	----	10K	----	----	----	----
3946	5K6	----	----	----	5K6	----	----	----	----
3947	82K	----	----	----	8K2	----	----	----	----
3948	5K6	----	----	----	5K6	----	----	----	----
3949	10K	----	----	----	10K	----	----	----	----
3955	4K7	----	4K7	4K7	4K7	4K7	4K7	4K7	4K7
3959	3R3	33R	3R3	3R3	3R3	3R3	3R3	3R3	3R3
3962	2K7	1K8	2K7	1K8	2K7	1K8	1K8	1K8	1K8
3965 (SMD)	22K	22K	----	----	22K	----	----	----	----
3980	12K	----	12K	12K	12K	20K	20K	20K	12K
3991	----	----	----	1K5	----	1K5	1K5	1K5	1K5
3995	----	----	----	----	----	100K/3W	----	100K/3W	100K/3W
4931 (SMD)	----	JUMPER	----	----	JUMPER	JUMPER	JUMPER	----	----
4940 (SMD)	----	JUMPER	----	----	----	----	----	----	----
4942 (SMD)	----	JUMPER	----	----	----	----	----	----	----
4945 (SMD)	----	JUMPER	----	----	----	----	----	----	----
5911	----	JUMPER	----	----	----	BEAD/100MHZ	----	BEAD/100MHZ	BEAD/100MHZ
5912	DT441	DT496	DT441	DT446	DT441	DT464	DT464	DT464	DT464
6903	----	GBU4J	----	GBU4J	----	GBU4J	GBU4J	GBU4J	GBU4J
6906	----	----	----	----	----	BYD33M	----	BYD33M	BYD33M
6913	BYV29F-500	BYV29F-400	BYV29F-600	BYV29F-500	BYV29F-600	BYV29F-500	BYV29F-600	BYV29F-500	BYV29F-600
6918	BYW29F-100	BY229X-200	BYW29F-100	BYW29F-100	BYW29F-100	BYW29F-100	BYW29F-200	BYW29F-100	BYW29F-100
6930	1N5062	----	1N5062	----	1N5062	----	----	----	----
6931	1N5062	----	1N5062	----	1N5062	----	----	----	----
6932	1N5062	----	1N5062	----	1N5062	----	----	----	----
6933	1N5062	----	1N5062	----	1N5062	----	----	----	----
6940	BZX79-C10	----	----	----	BZX79-C10	----	----	----	----
7902	STR-F6654	STR-F6626	STR-F6654	STR-F6656	STR-F6654	STR-F6656	STR-F6656	STR-F6656	STR-F6656
7904	SE-140N	SE-130N	SE-140N	SE-140N	SE-140N	SE-130N	SE-130N	SE-130N	SE-140N
7910	BC847B	----	----	----	BC847B	----	----	----	----
7960	BC847B	----	----	----	BC847B	----	----	----	----
7961	BC847B	----	----	----	BC847B	----	----	----	----
7962	BC847B	----	----	----	BC847B	----	----	----	----
7963	BC847B	BC847B	----	----	BC847B	----	----	----	----

TO BE CONTINUED ON FIG. 2

FIG. 2

ITEM NO.	EURO 25, 28, 29, 28WS	USA	A/P S.R.	BR 29SF	EURO 21, 24WS	BR 32V	USA 27V, 32V AMV	BR 27V	A/P F.R.
9917	JUMPER	----	JUMPER	JUMPER	JUMPER	----	----	----	JUMPER
9918	----	JUMPER	----	----	JUMPER	JUMPER	----	----	JUMPER
9939	----	JUMPER	----	----	----	----	----	----	----
9948	JUMPER	JUMPER	JUMPER	----	JUMPER	----	----	----	----
9949	JUMPER	----	----	----	JUMPER	----	----	----	----
9950	----	JUMPER	----	----	----	JUMPER	----	----	----
9952	----	JUMPER	----	----	JUMPER	JUMPER	JUMPER	JUMPER	JUMPER
9954	----	JUMPER	----	----	JUMPER	JUMPER	JUMPER	JUMPER	JUMPER
9956	JUMPER	JUMPER	JUMPER	JUMPER	----	JUMPER	JUMPER	----	----
9999	----	JUMPER	----	----	----	JUMPER	----	----	----

Diversity table for schematic A2

BR 27V	A/P F.R.	BR 36V	USA 36V AMV
T1.6A	T1.6A	T1.6A	T1.6A
T2.5A	T2.5A	T2.5A	T1.6A
T1.0A	T1.OA	T1.0A	T1.0A
470U/400V	470U/400V	680U/400V	470U/400V
		22N/400V	22N/400V
47U/25V	47U/25V	47U/25V	47U/25V
1N5/2KV	1N5/2KV	1N5/2KV	1N5/2KV
1N/50V	1N/50V	1N/50V	1N/50V
1N/2KV	470P/2KV	1N/2KV	470P/2KV
100U/10V	100U/10V	100U/10V	100U/10V
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	100P/1KV	-----	100P/1KV
220P/250V	220P/250V	220P/250V	-----
1N5/250V	1N5/250V	1N5/250V	1N5/250V
-----	-----	1N5/250V	-----
2R5/NTC	2R5/NTC	2R5/NTC	-----
9R/220V	9R/220V	9R/220V	9R/220V
PTC MONO	PTC MONO	PTC MONO	PTC MONO
-----	-----	-----	-----
-----	-----	-----	-----
100K/3W	100K/3W	100K/3W	100K/3W
0.1R/3W	0.1R/3W	0.1R/3W	0.1R/3W
1K	1K	1K	1K
3M3/VR25	3M3/VR25	3M3/VR25	3M3/VR25
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
4K7	4K7	4K7	4K7
3R3	3R3	3R3	3R3
1K8	1K8	1K8	1K8
-----	-----	-----	-----
20K	12K	12K	12K
1K5	1K5	1K5	1K5
-----	100K/3W	-----	100K/3W
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	BEAD/100MHZ	-----	BEAD/100MHZ
DT464	DT464	DT464	DT464
GBU4J	GBU4J	GBU4J	GBU4J
-----	BYD33M	-----	BYD33M
BYV29F-500	BYV29F-600	BYV29F-500	BYV29F-600
BYW29F-100	BYW29F-100	BYW29F-100	BY229X-200
-----	-----	-----	-----
-----	-----	-----	-----
STR-F6656	STR-F6656	STR-F6656	STR-F6656
SE-130N	SE-140N	SE-130N	SE-130N
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----

ITEM NO.	29"SF	27V	25"/28" BLD	32V	35V	24"/28" WIDE	21" EUR	25" BLS
2618/19	2N2	-----	1N8	560P	2N2	2N2	-----	470P
2624	2U2	1U	4U7	1U	1U	2U2	-----	4U7
2625/13	12N	10N	10N	11N	12N	12N	7N5	10N
2629/30	680N	360N	680N	470N	560N	560N	470N	680N
2633/34	1N	390P	390P	820P	1N2	1N5	820P	390P
2635/36	-----	-----	-----	-----	-----	-----	11N	-----
2650	150N	220N	100N	220N	220N	100N	33N	150N
2662	27N	15N	10N	15N	12N	10N	10N	10N
3600	-----	4R7	-----	-----	-----	-----	-----	-----
3601/03	33R	15R	33R	15R	33R	33R	33R	33R
3608	39K	39K	100K	39K	39K	82K	150K	56K
3609/9619	39K	39K	33K	39K	39K	68K	J9619	39K
3610	22K	22K	33K	22K	22K	33K	39K	27K
3612	12K	12K	12K	6K8	12K	10K	18K	12K
3613	15K	15K	10K	6K8	10K	10K	15K	15K
3635/36/37	-----	33K/-/-	-----	33K/-/-	39K/47K/47K	-----	-----	-----
3639	10K	-----	10K	-----	-----	10K	-----	10K
5601	33U	22U	33U	22U	33U	33U	33U	33U
5610/11	..33811	..33811	..30882	..33341	..33341	..33811	..33341	.30882
5621	..53111	..51703	..53111	..53181	..53201	..53221	..51643	..53191
5630	.02282	.20591	.02282	.20591	.02279	.02285	.02285	.02285
		.20621(USA)		.20621(USA)	.02297(USA)			
5643	100U	27U	100U	27U	82U	100U	100U	100U
6621	BY228	BY228	BY228	BY328	BY328	BY228	BY228	BY228
6629	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27
6631	BZX79-B15	BZX79-B18	BZX79-B16	BZX79-B18	BZX79-B18	-----	-----	BZX79-B18
6635	-----	-----	-----	-----	-----	-----	BY328	-----
6638	BZX79-B20	BZX79-B10	BZX79-B18	BZX79-B12	BZX79-B18	J9638	J9638	BZX79-B20
7620	BU2508AF	BU2508AF	BU2508AF	BU2520AF	BU2520DF	BU2508AF	BU2508AF	BU2508AF
9605	OUT	IN	OUT	OUT	OUT	OUT	IN	OUT
9606	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9608	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9609	IN	OUT	IN	IN	IN	IN	IN	IN
9610	IN	OUT	IN	IN	IN	IN	IN	IN
9612	IN	OUT	IN	IN	IN	IN	IN	IN
9613	IN	OUT	IN	IN	IN	IN	OUT	IN
9614	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9615	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9616	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT

FIG. 3

BR 27V	A/P F.R.	BR 36V	USA 36V AMV
-----	JUMPER	-----	-----
-----	JUMPER	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
JUMPER	JUMPER	JUMPER	JUMPER
JUMPER	JUMPER	JUMPER	JUMPER
-----	-----	-----	-----
-----	-----	-----	-----

1

2

3

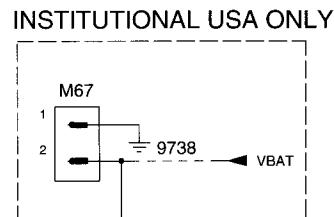
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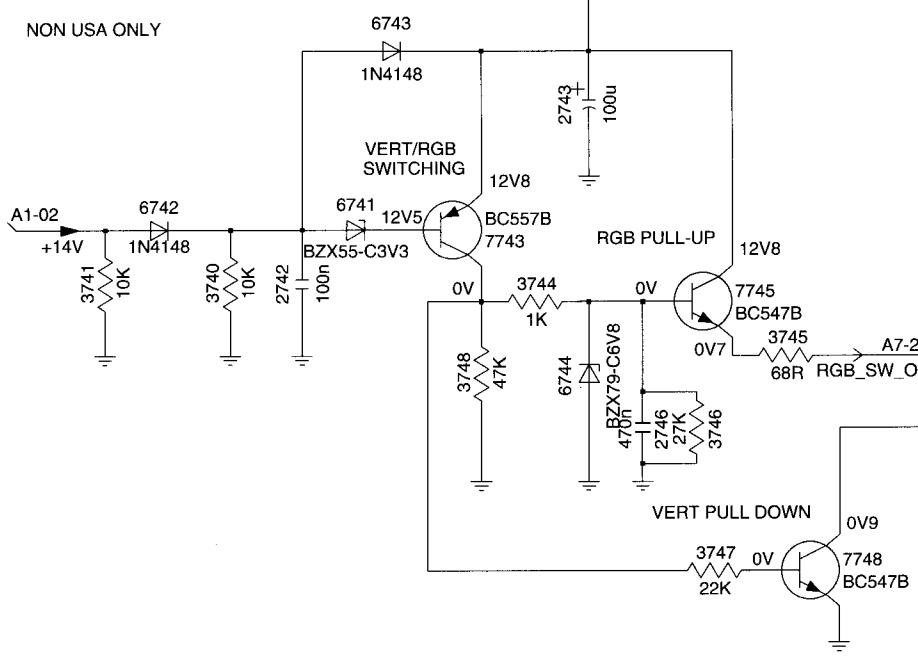
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VERTICAL DEFLECTION

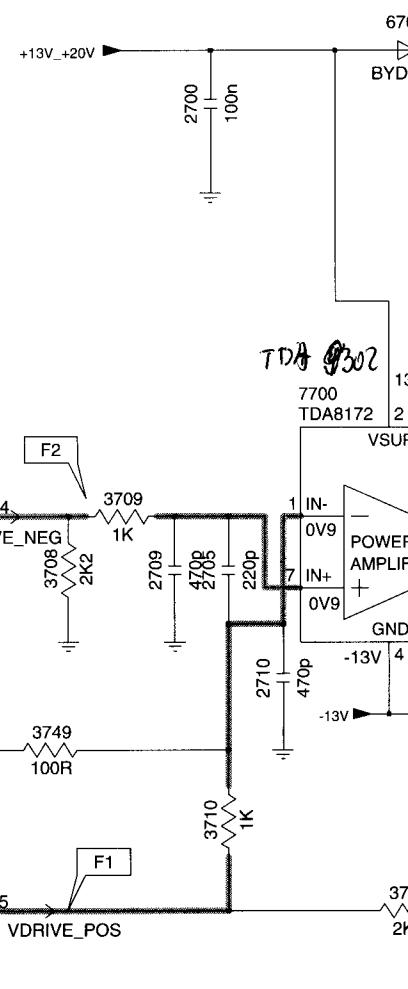
A



B



C



D

E

* ITEM NO	29SF	27V	25/28 BLD	32V	35V	24 WIDE	28 WIDE	21
3737	2R7	3R3	3R3	3R3	3R3	4R7	4R7	3R3
3738	2R7	3R3	2R7	4R7	3R3	4R7	4R7	3R3
3739	2R2	3R3	2R7	2R2	2R2	3R3	4R7	---

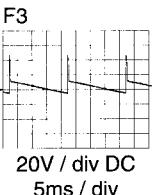
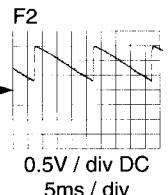
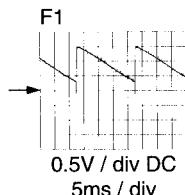
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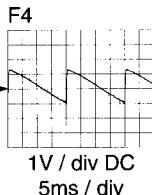
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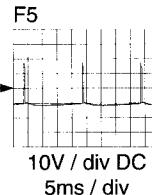
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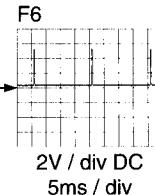
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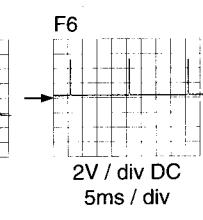
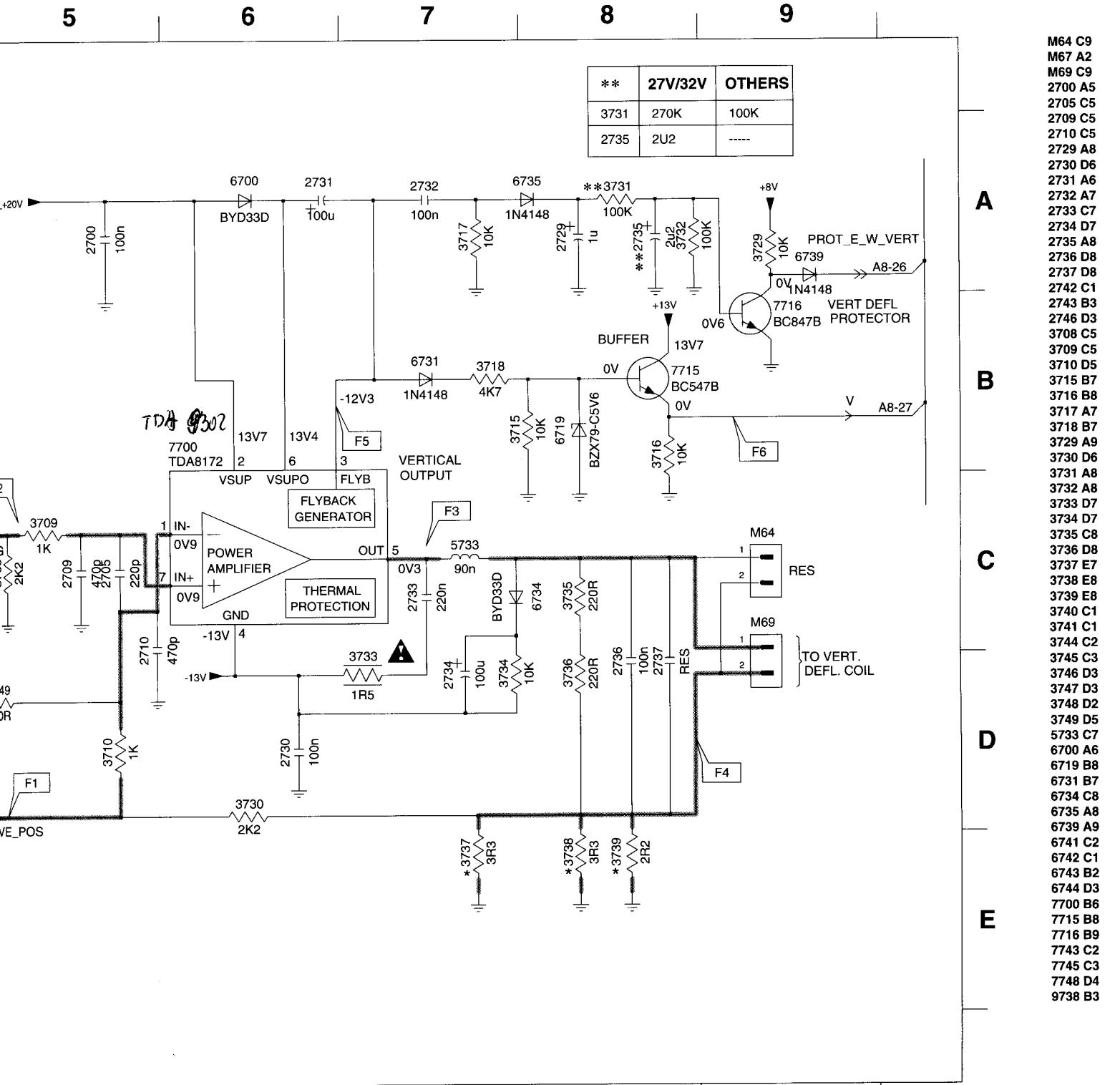


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5ms / div

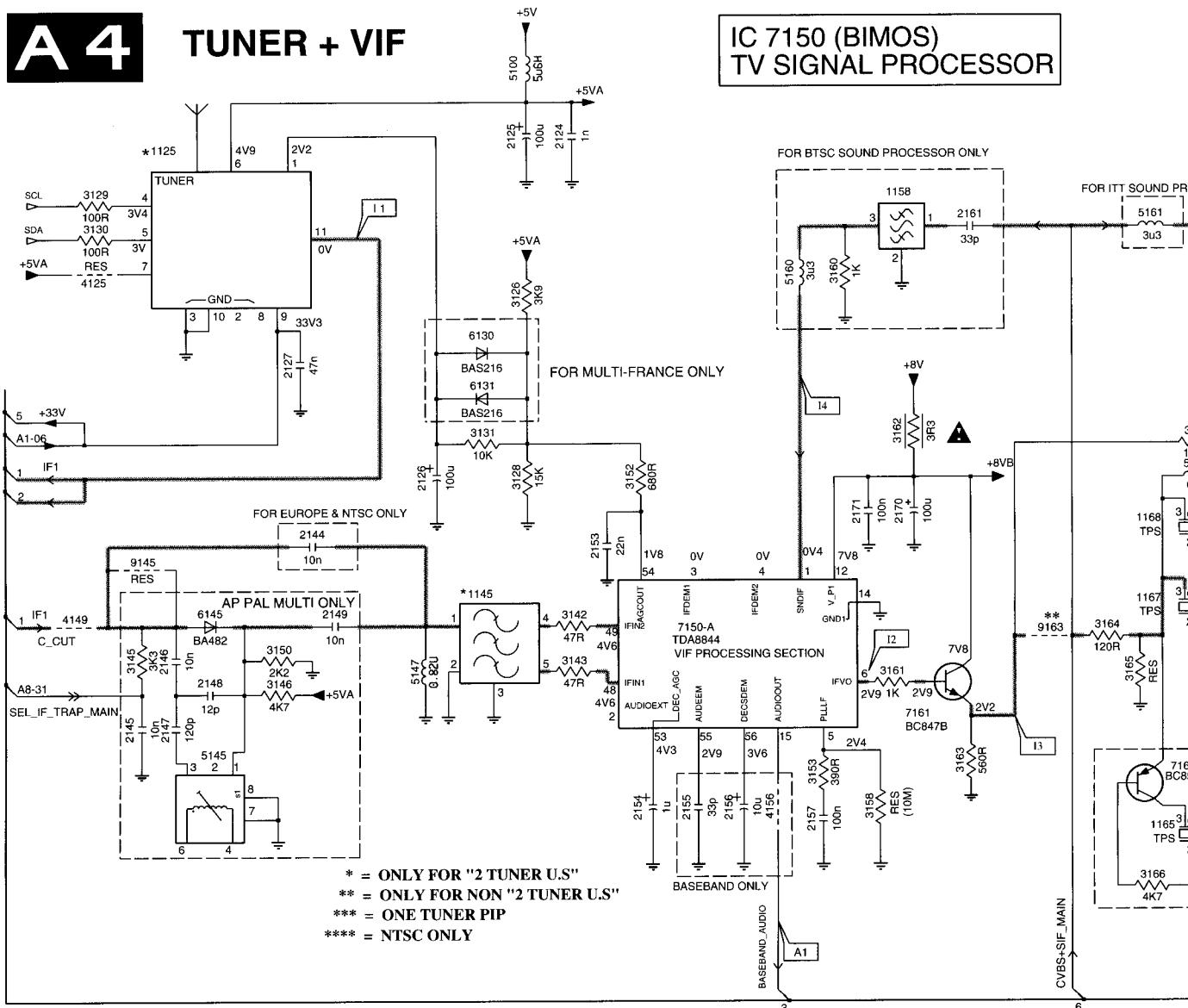




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A 4

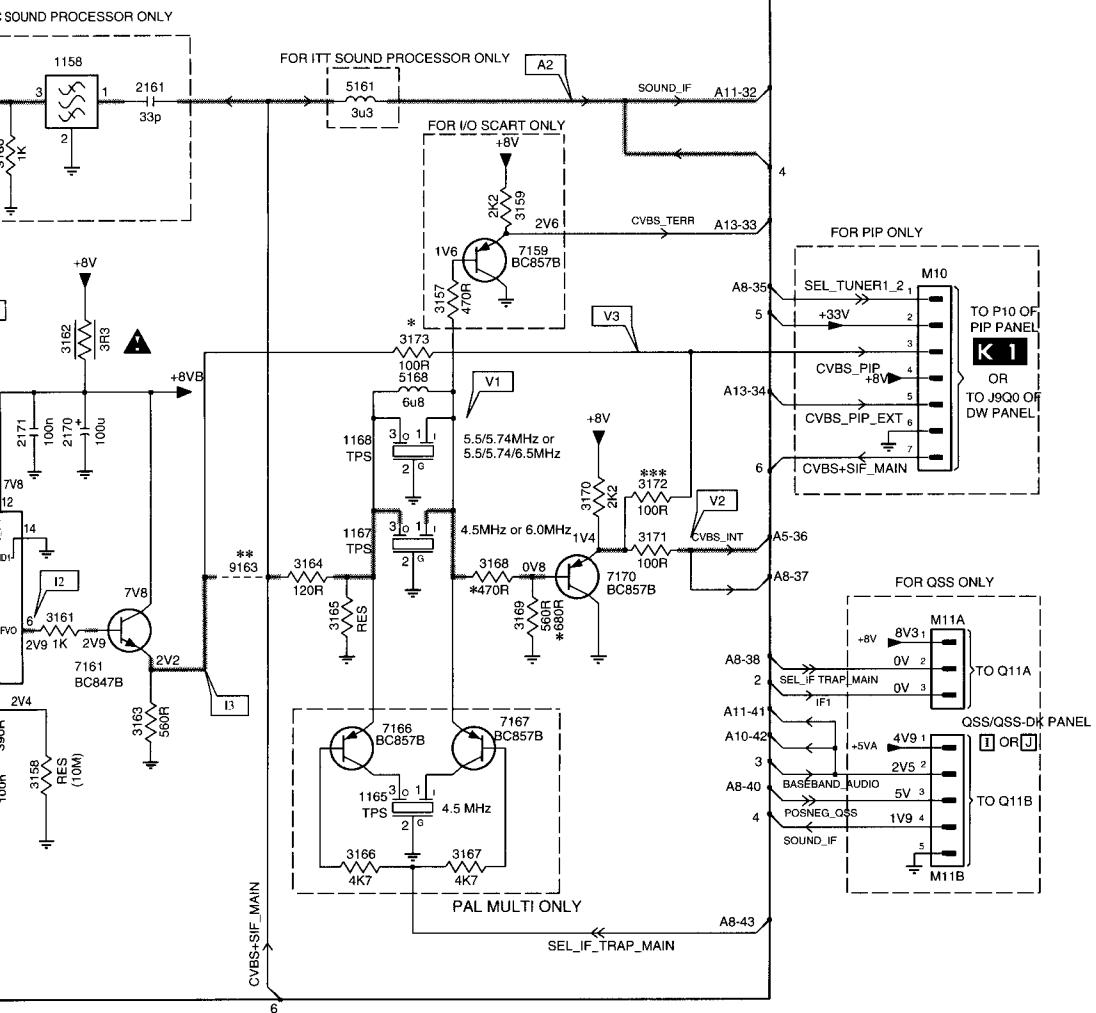
TUNER + VIF



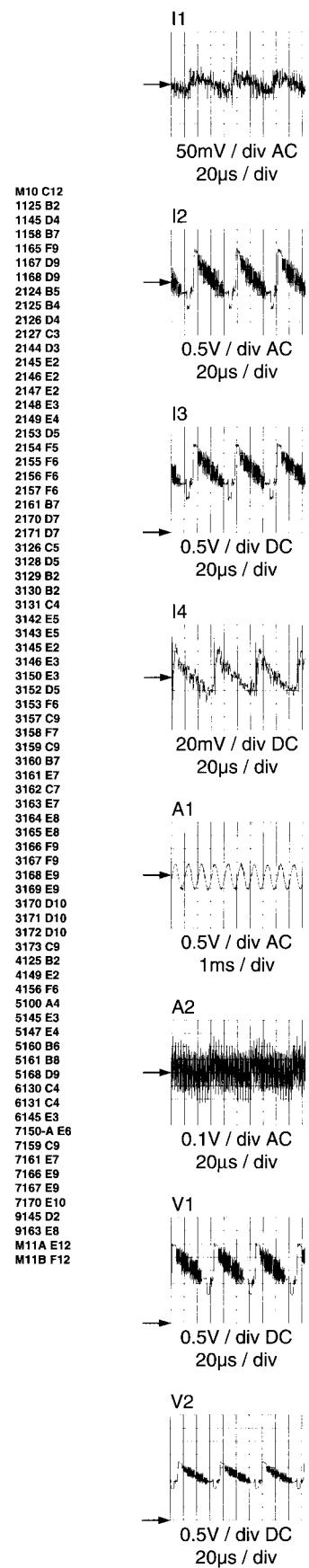
*1125 - TUNER	NON-PIP	PIP
EUROPE	PLL IEC TELE9	----
US	PLL F TELH9	PLL F TELH9
LATAM	----	PLL PHONO TELH9
AP	PLL IEC TELE9	PLL PHONO TELE9
AP - CHINA	PLL IEC 38MHZ	PLL PHONO 38MHZ

* 1145	SYSTEM	REGION
OFWG1984M	NICAM BG	EUROPE/AP
OFWJ1980M	PAL I	EUROPE
OFWK2960M	PAL MULTI/2CS BG	EUROPE/AP
OFWM1967M	NTSC-M	AP/LATAM
OFWM1962M	NTSC-M	NA
OFWK3955M	CHINA-MULTI	AP
OFWK3953M	MULTI-FRANCE	E. EUROPE

**(BIMOS)
FINAL PROCESSOR**



CL 86532030_004.AI
120698



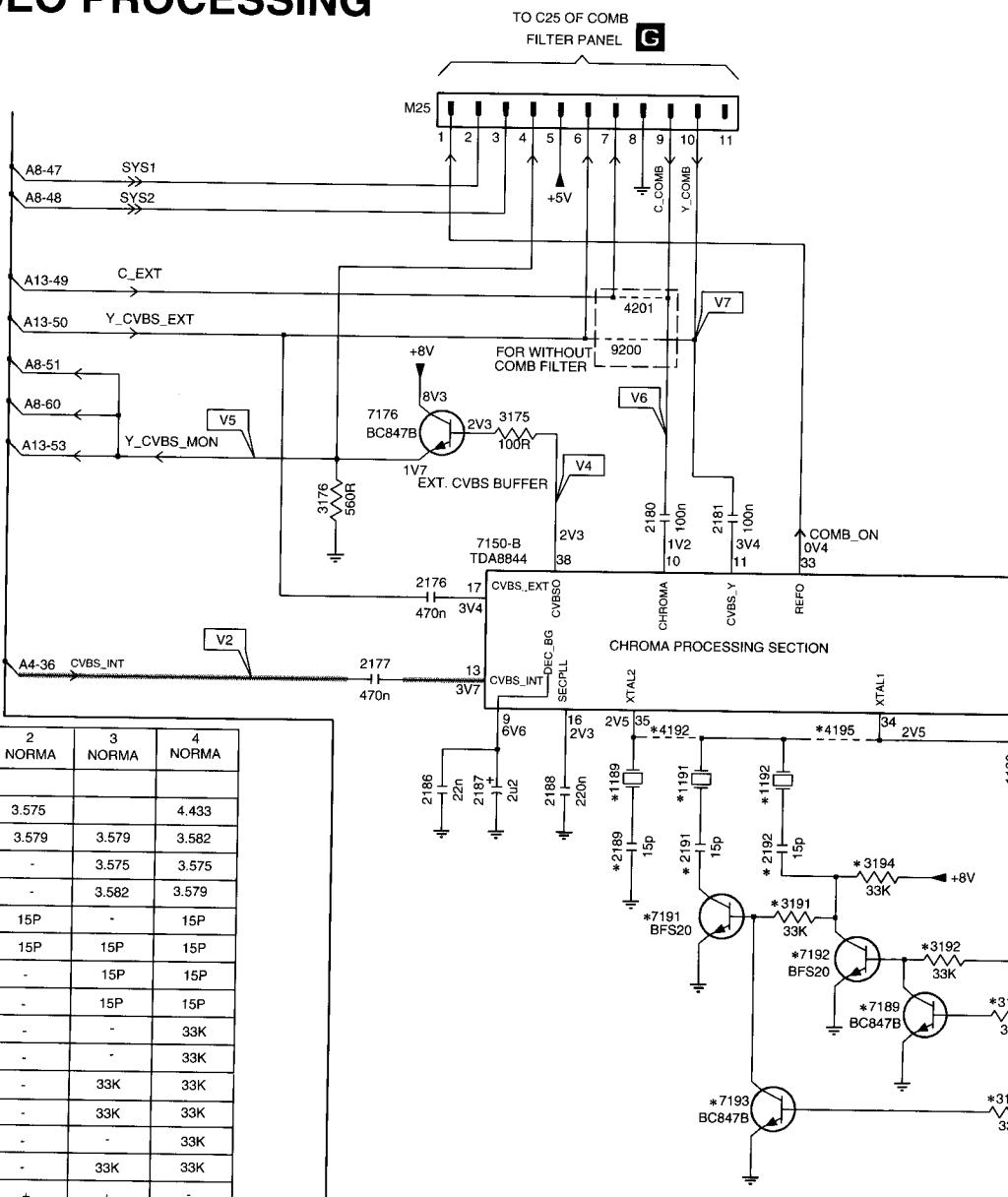
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1 2 3 4 5 6 7 8

A

A 5

VIDEO PROCESSING

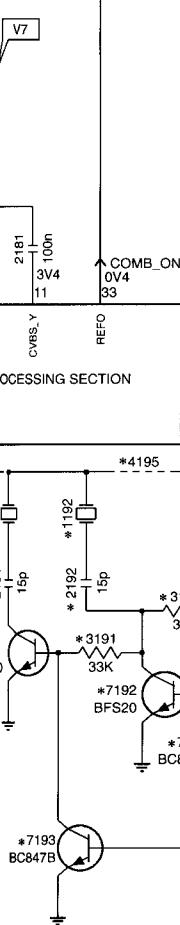


	PAL ONLY	NTSC ONLY	PAL MULTI	2 NORMA	3 NORMA	4 NORMA
*						
1189	4.433	-	4.433	3.575		4.433
1190	-	3.579	3.579	3.579	3.579	3.582
1191	-	-	-	-	3.575	3.575
1192	-	-	-	-	3.582	3.579
2189	18P	-	18P	15P	-	15P
2190	-	15P	18P	15P	15P	15P
2191	-	-	-	-	15P	15P
2192	-	-	-	-	15P	15P
3189	-	-	-	-	-	33K
3190	-	-	-	-	-	33K
3191	-	-	-	-	33K	33K
3192	-	-	-	-	33K	33K
3193	-	-	-	-	-	33K
3194	-	-	-	-	33K	33K
4190	-	+	+	+	+	-
4192	-	-	-	-	+	-
4195	-	-	-	-	-	+
4198	-	-	-	-	-	+
7189	-	-	-	-	-	BC847B
7190	-	-	-	-	-	BFS20
7191	-	-	-	-	BFS20	BFS20
7192	-	-	-	-	BFS20	BFS20
7193	-	-	-	-	-	BC847B

	SYS1	SYS2
PAL M	0	0
PAL BG	0	1
NTSC M	1	0
PAL N	1	1

	FREQUENCY
PAL B/G	4.433619 MHz
PAL M	3.575611 MHz
PAL N	3.582056 MHz
NTSC M	3.579545 MHz

1 2 3 4 5 6 7 8



QUENCY
19 MHz
311 MHz
56 MHz
45 MHz

7 8 9 10 11 12

M25 B5
M28 D10
1189 E6
1190 E8
1191 E6
1192 E7
2176 D5
2177 D5
2180 D6
2181 D7
2186 E5
2187 E5
2188 E6
2189 E6
2190 E8
2191 E6
2192 E7
2196 E9
2197 E9
3175 C5
3176 D5
3189 F8
3190 E9
3191 F7
3192 F8
3193 G8
3194 E7
3197 E9
4190 F8
4192 E6
4195 E7
4198 G9
4201 B6
4225 D10
4226 D10
4227 E10
7150-B D5
7176 C5
7189 F8
7190 E9
7191 F6
7192 F7
7193 G7
9200 C6

A

B

C

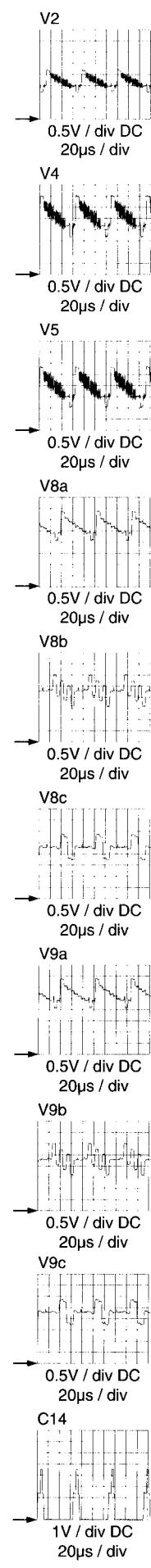
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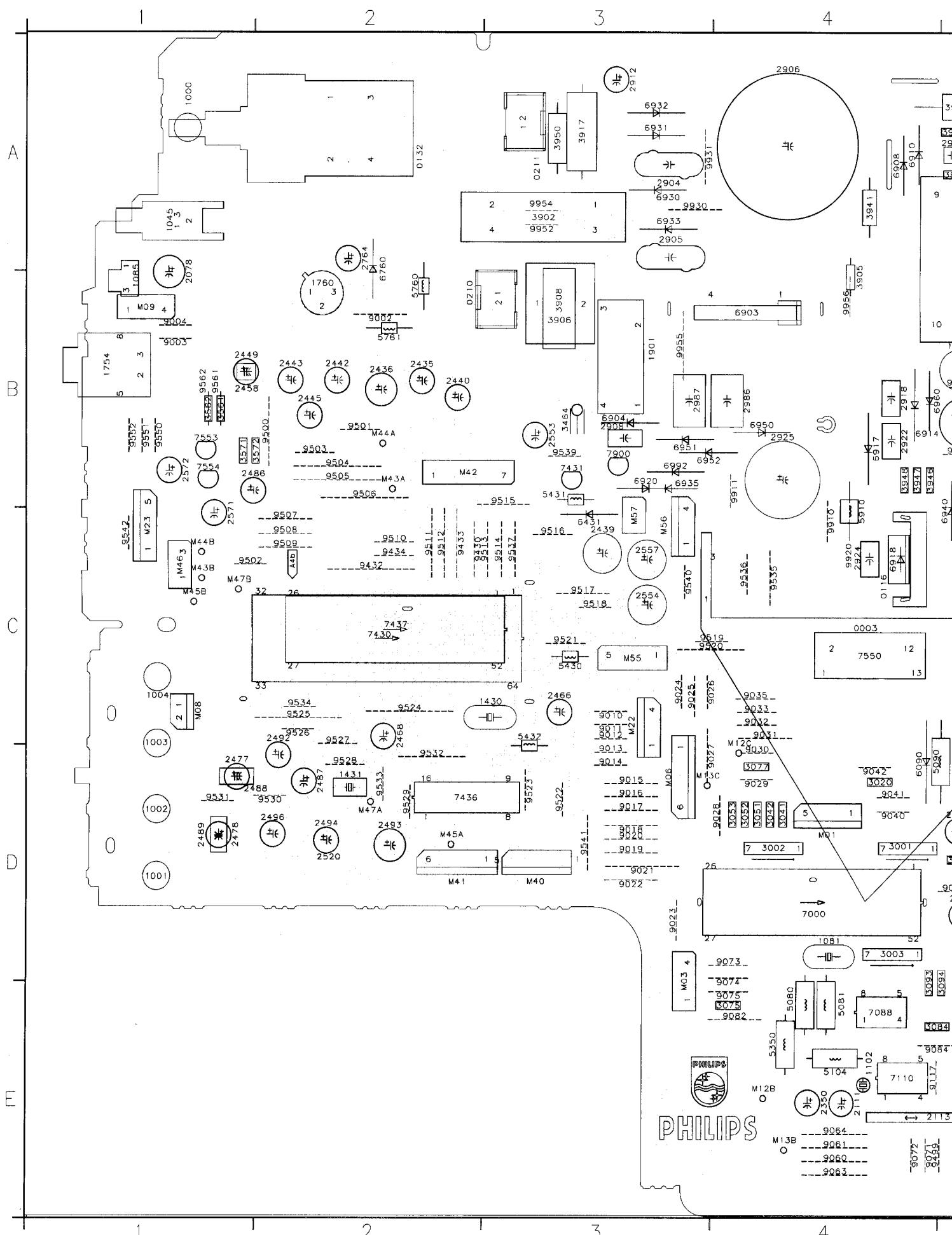
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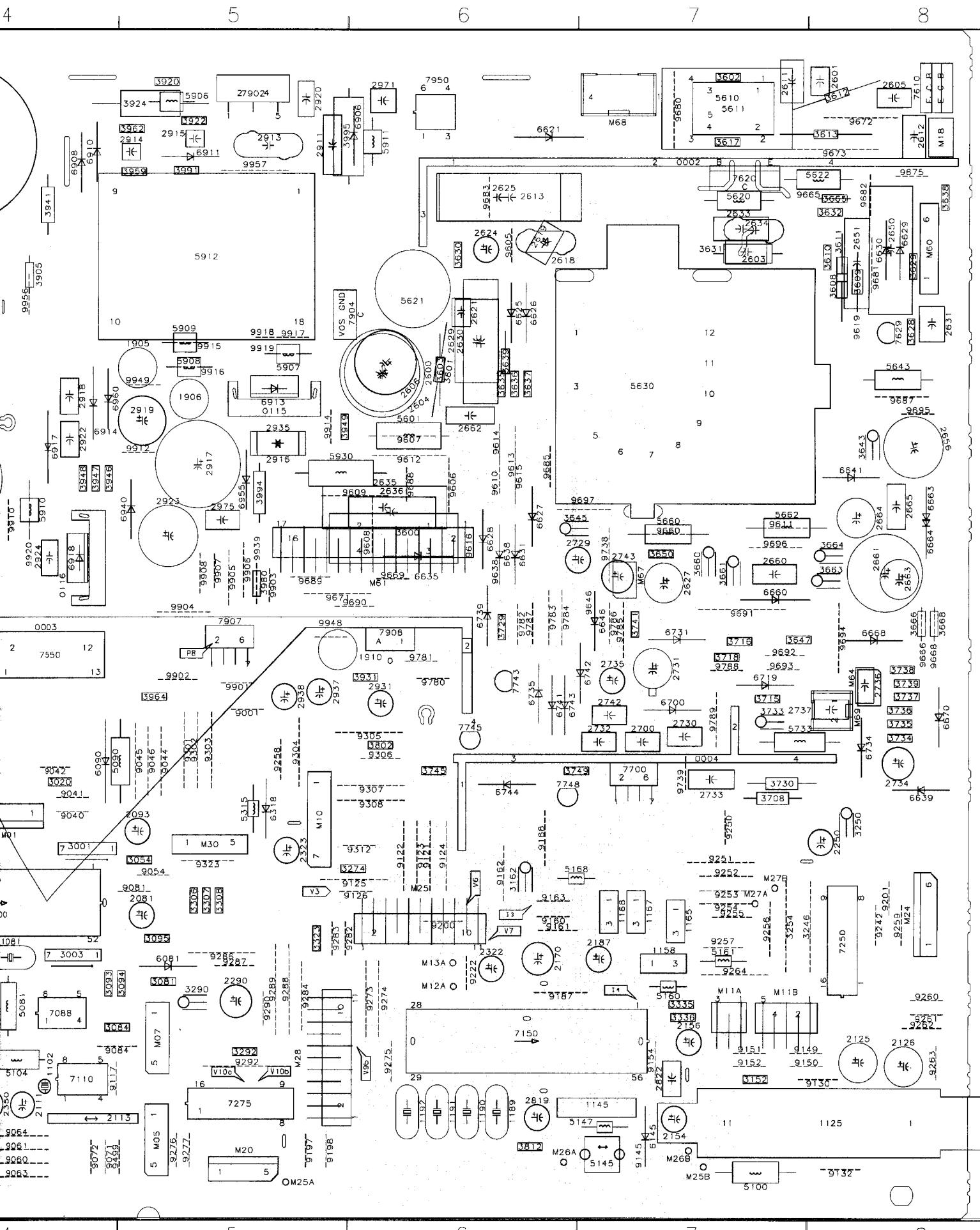


7 Electrical diagrams and print lay-outs

A8.0A

32





7 Electrical diagrams and print lay-outs

A8.0A

33

2	A7	2557	C3	3001	D4	3734	C8	6625	B6	7908	C6	9222	D6	9529	D2	9906	C5
3	C4	2571	C1	3002	D4	3735	C8	6626	B6	7950	A6	9242	D8	9530	D2	9907	C5
4	D7	2572	B1	3003	D4	3736	C8	6627	C6	9001	C5	9250	D7	9531	D1	9908	C5
115	B5	2600	B6	3020	D4	3737	C8	6628	C6	9002	B2	9251	D7	9532	D2	9910	C4
116	C4	2601	A8	3041	D4	3738	C8	6629	A8	9003	B1	9252	D7	9533	D2	9911	B4
132	A2	2603	A7	3042	D4	3739	C8	6630	A8	9004	B1	9253	D7	9534	C2	9912	B5
210	B2	2604	B6	3051	D4	3741	C7	6631	C6	9010	C3	9254	D7	9535	C4	9914	B5
211	A3	2605	A8	3052	D4	3745	D6	6635	C6	9011	C3	9255	D7	9536	C4	9915	B5
1000	A1	2606	B6	3053	D4	3749	D6	6638	C6	9012	C3	9256	D7	9537	C3	9916	B5
1001	D1	2611	A7	3054	D5	3802	D6	6639	D8	9013	D3	9257	D7	9539	B3	9917	B5
1002	D1	2612	A8	3075	E4	3812	E6	6641	B8	9014	D3	9258	D5	9540	C3	9918	B5
1003	C1	2613	A6	3077	D4	3902	A3	6646	C7	9015	D3	9259	D8	9541	D3	9919	B5
1004	C1	2618	A6	3081	D5	3905	B4	6660	C7	9016	D3	9260	E8	9542	C1	9920	C4
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1754	B1	2661	C8	3335	E7	3980	C5	6904	B3	9033	C4	9290	E5	9616	C6	M09	B1
1760	B2	2662	B6	3336	E7	3991	A5	6906	A6	9035	C4	9292	E5	9619	B8	M10	D5
1901	B3	2663	C8	3464	B3	3994	B5	6908	A4	9040	D4	9301	D5	9638	C6	M11A	E7
1905	B5	2664	C8	3561	B1	3995	A5	6910	A4	9041	D4	9302	D5	9646	C7	M11B	E7
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2520	D2	2975	B5	3729	C6	6318	D5	7902	A5	9198	E5	9526	C2	9903	C5	M68	A7
2553	B3	2986	B4	3730	D7	6431	C3	7904	B6	9200	D6	9527	C2	9904	C5	M69	C8
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C12.2.

2

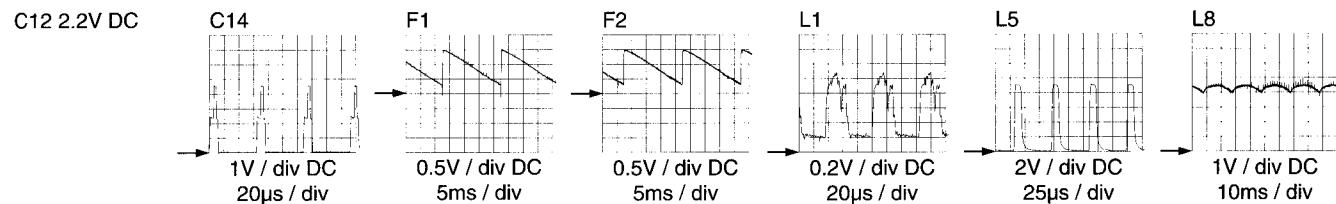
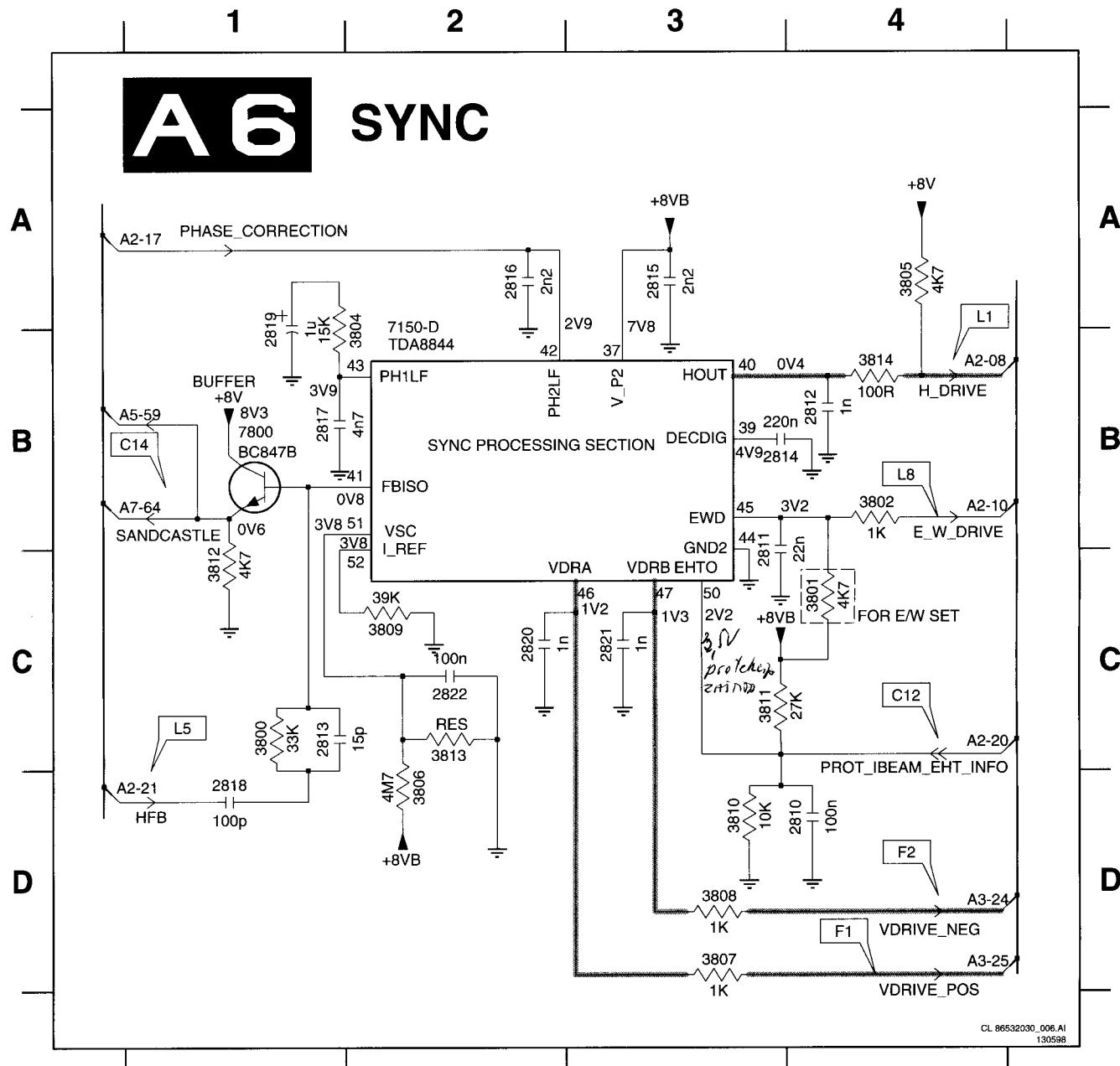
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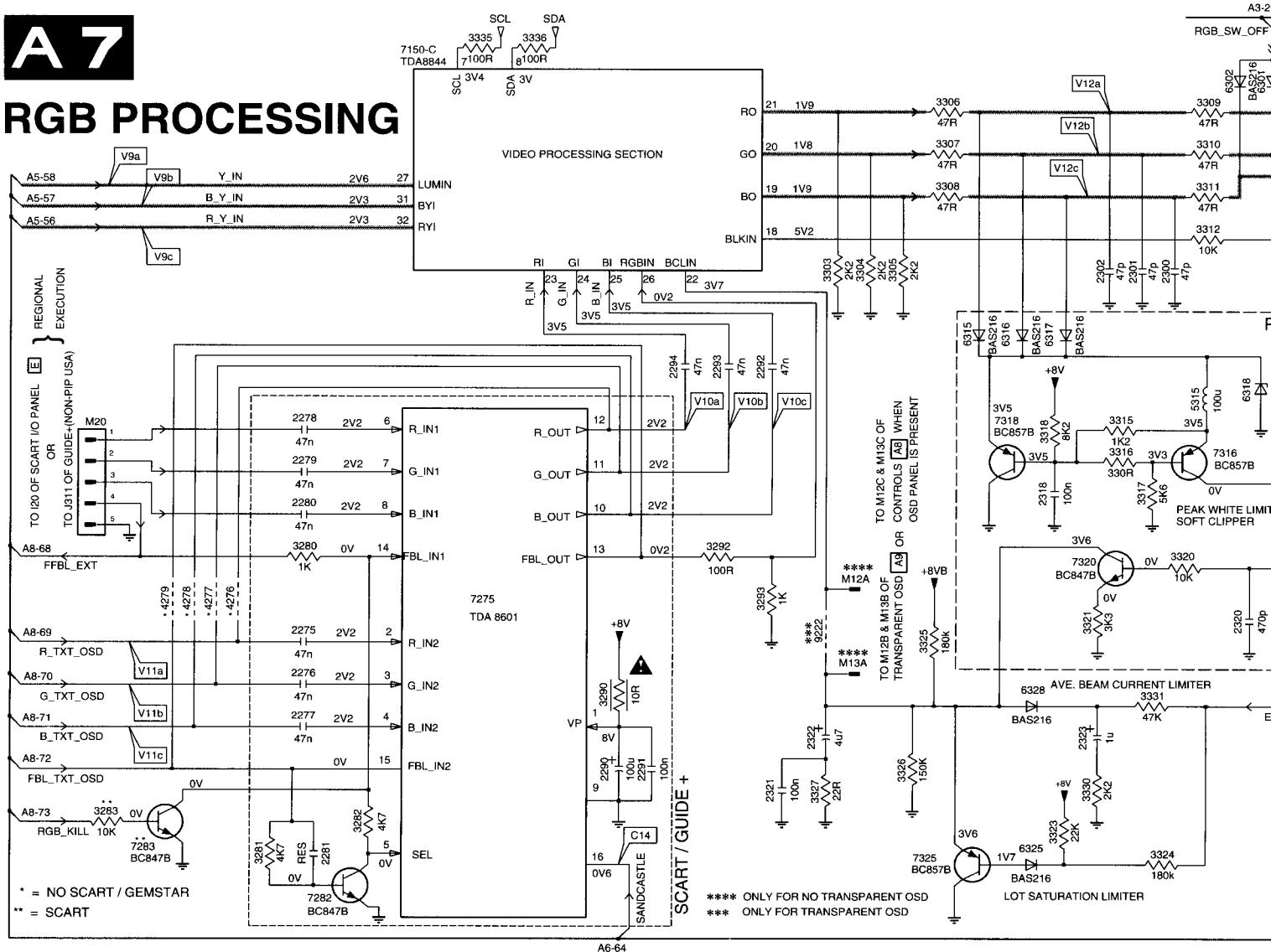
C

A

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2811 B3	2814 B3	2817 B1	2820 C2	3800 C1	3804 B2	3807 D3	3810 D3	3813 C2	7800 B1
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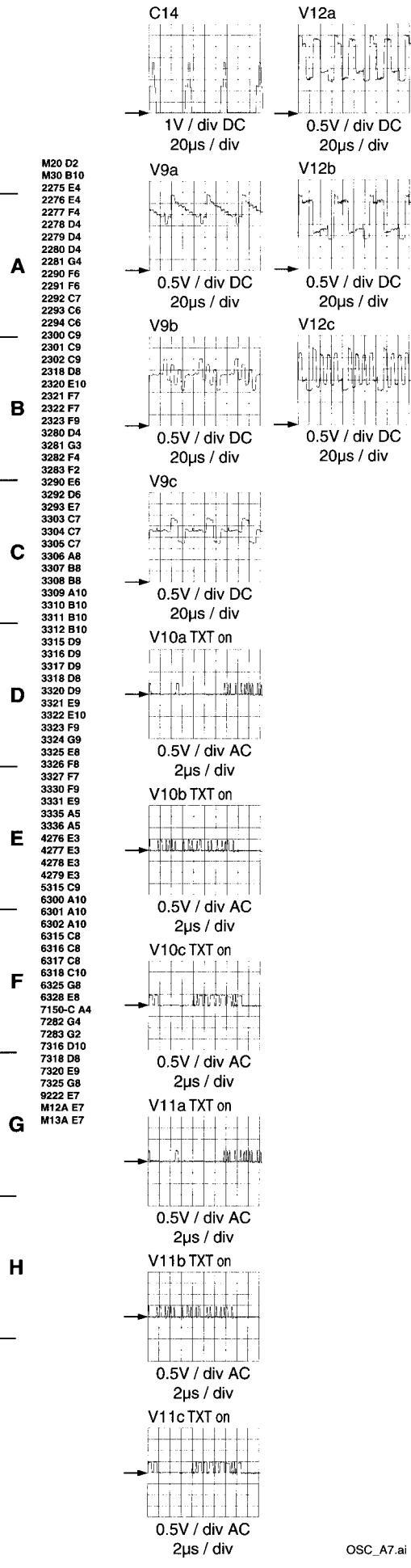
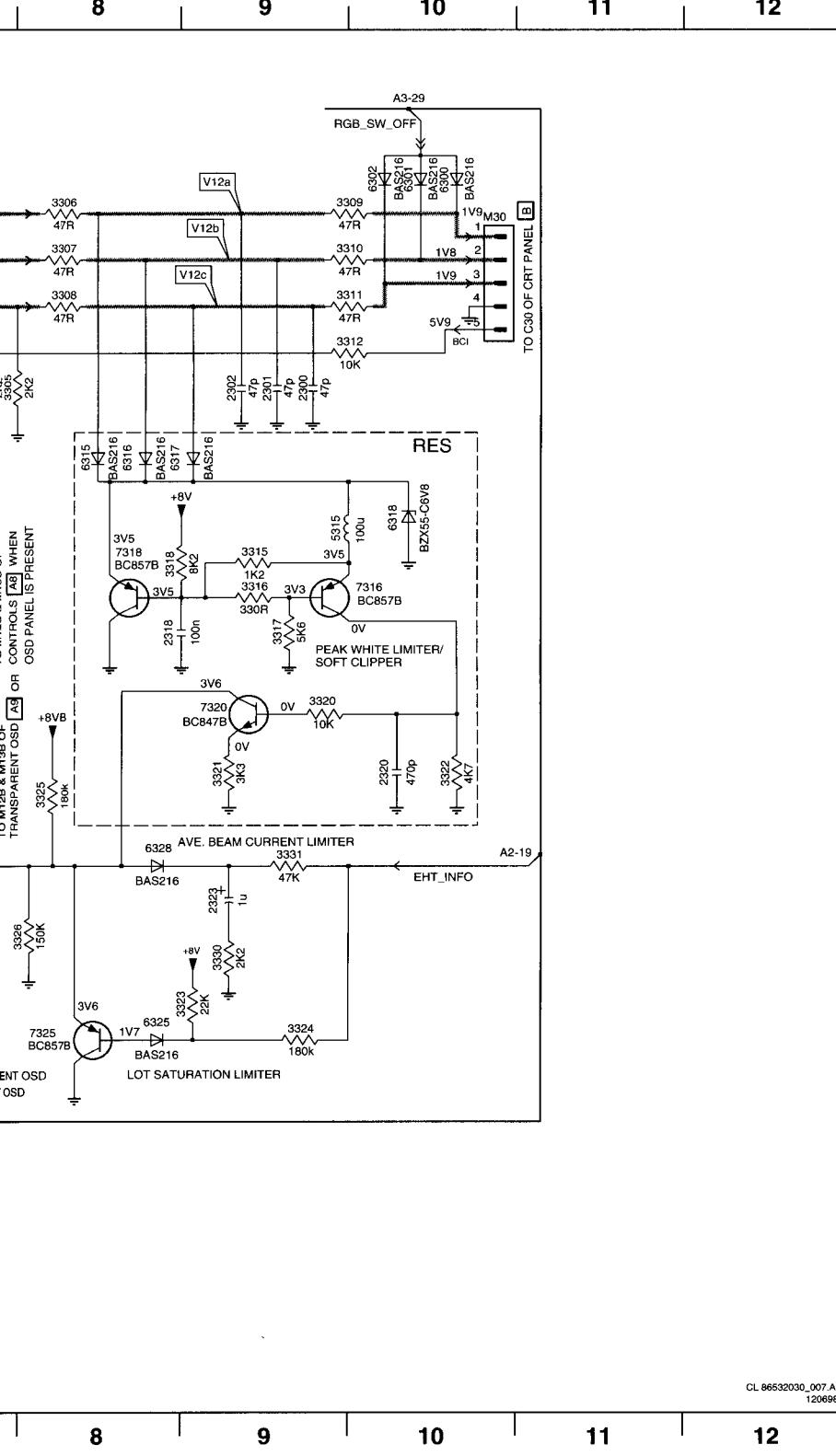


2 3 4 5 6 7 8 9

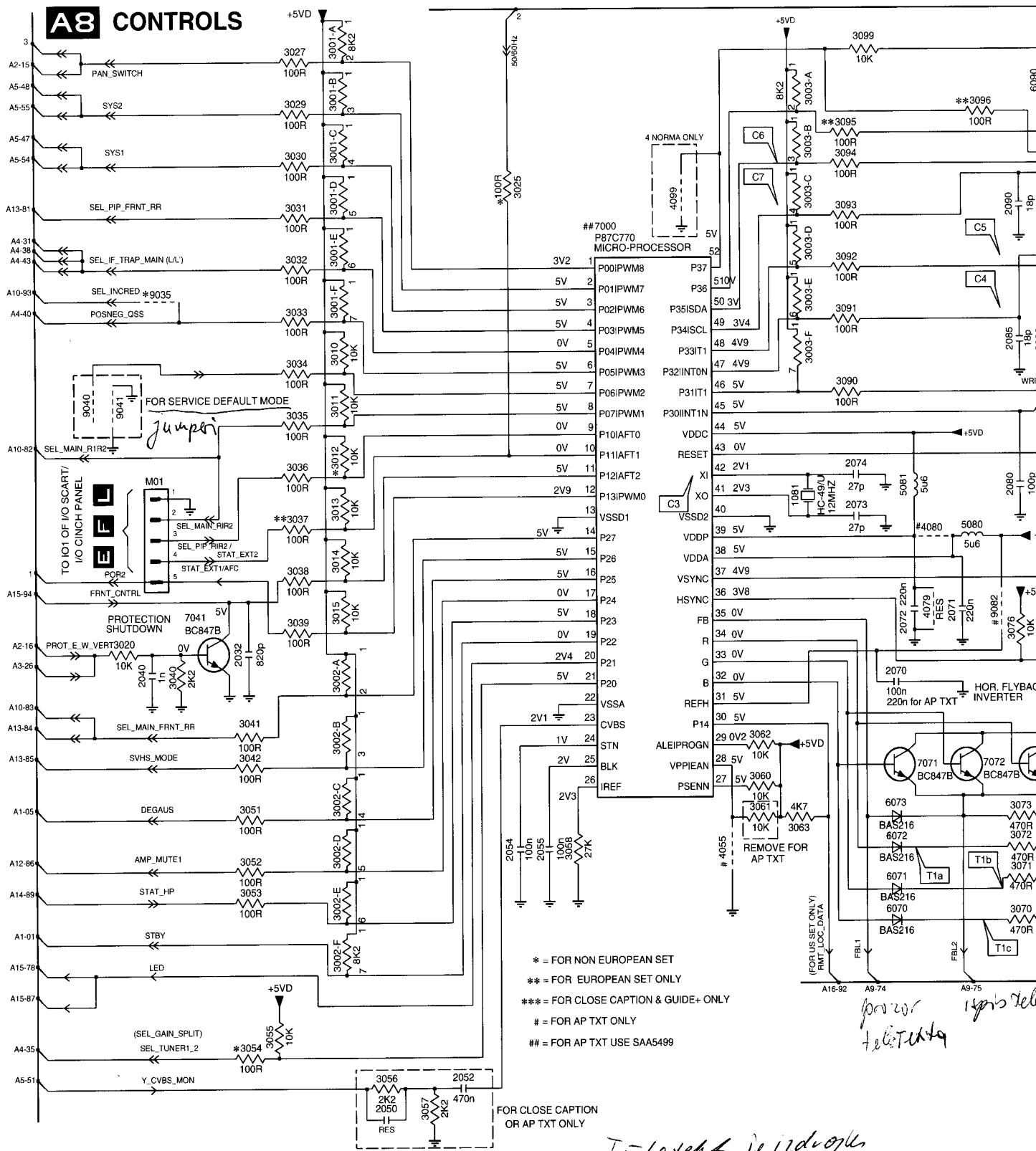
A 7**RGB PROCESSING**

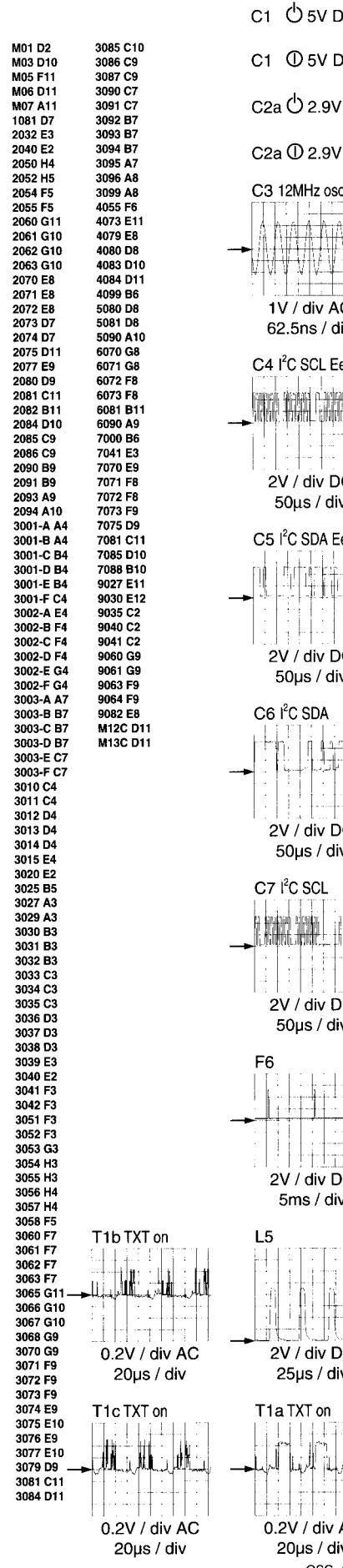
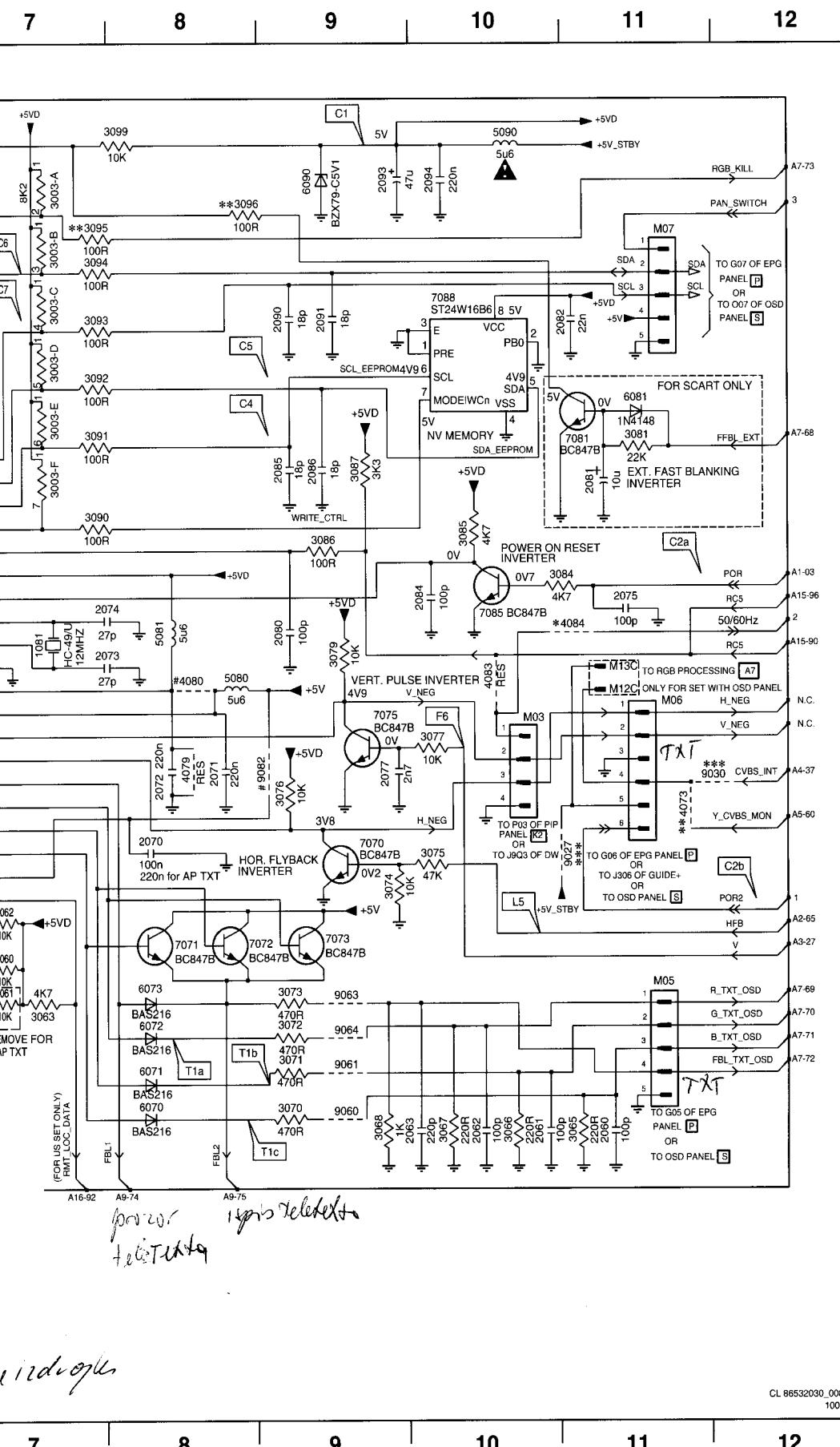
RGB_KILL	FBL_TXT OSD	FFBL_EXT	SEL	RGB_OUT
0	0	0	0	TXT/OSD
0	0	1	1	EXT RGB
0	1	0	0	TXT/OSD
0	1	1	0	TXT/OSD
1	X	X	0	TXT/OSD

2 3 4 5 6 7 8 9



1 2 3 4 5 6 7 8





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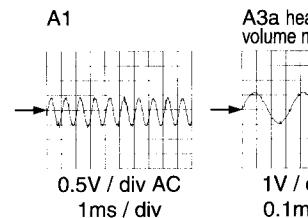
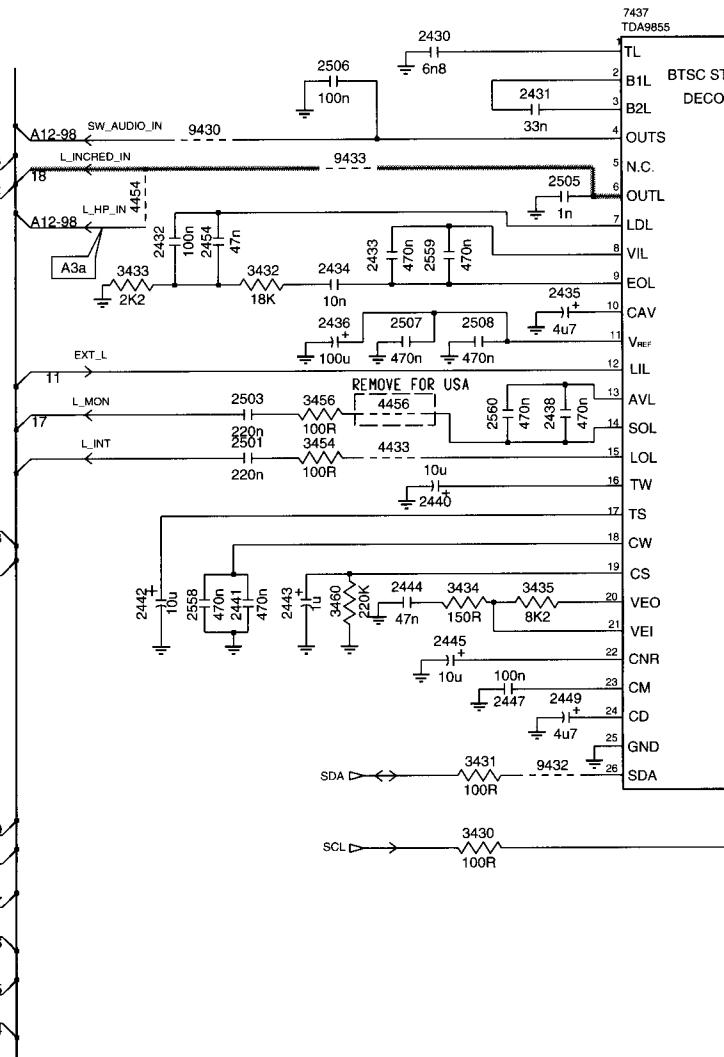
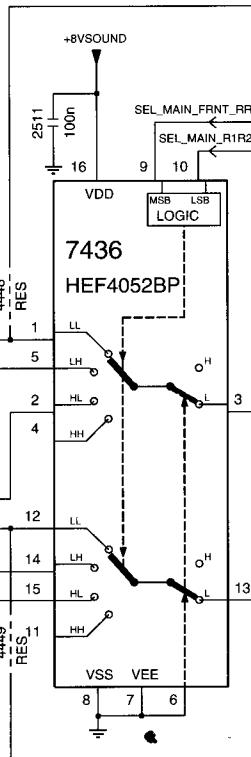
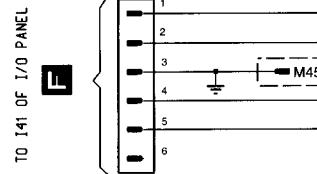
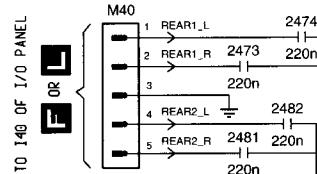
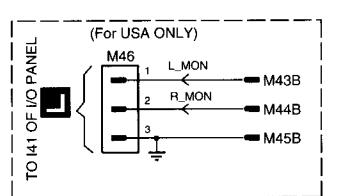
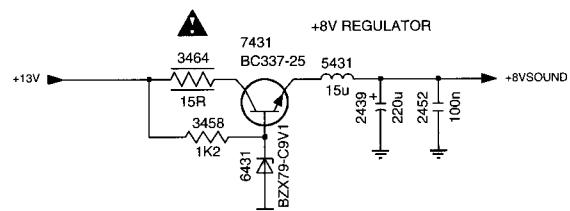
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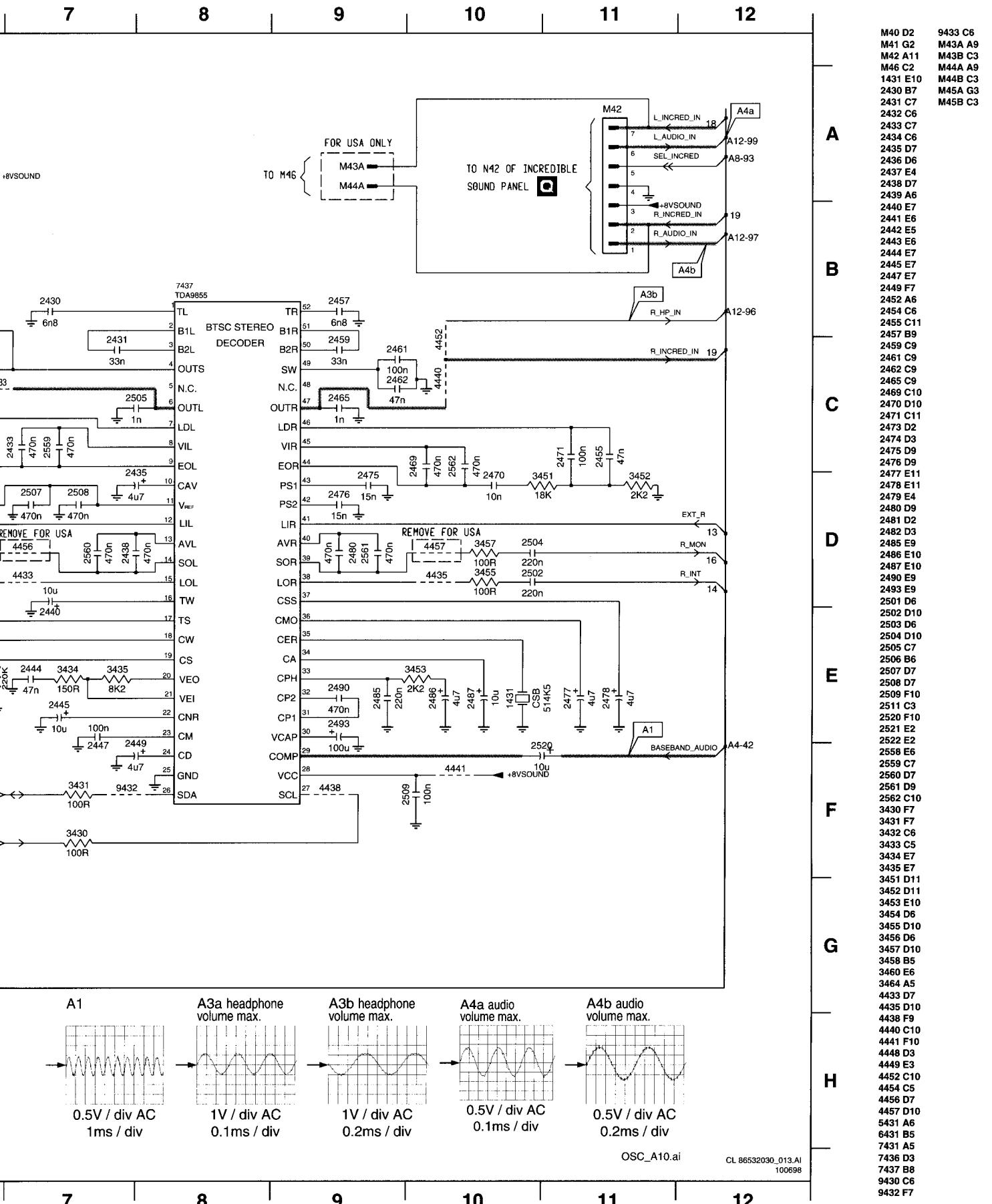
AUDIO PROCESSING

BTSC

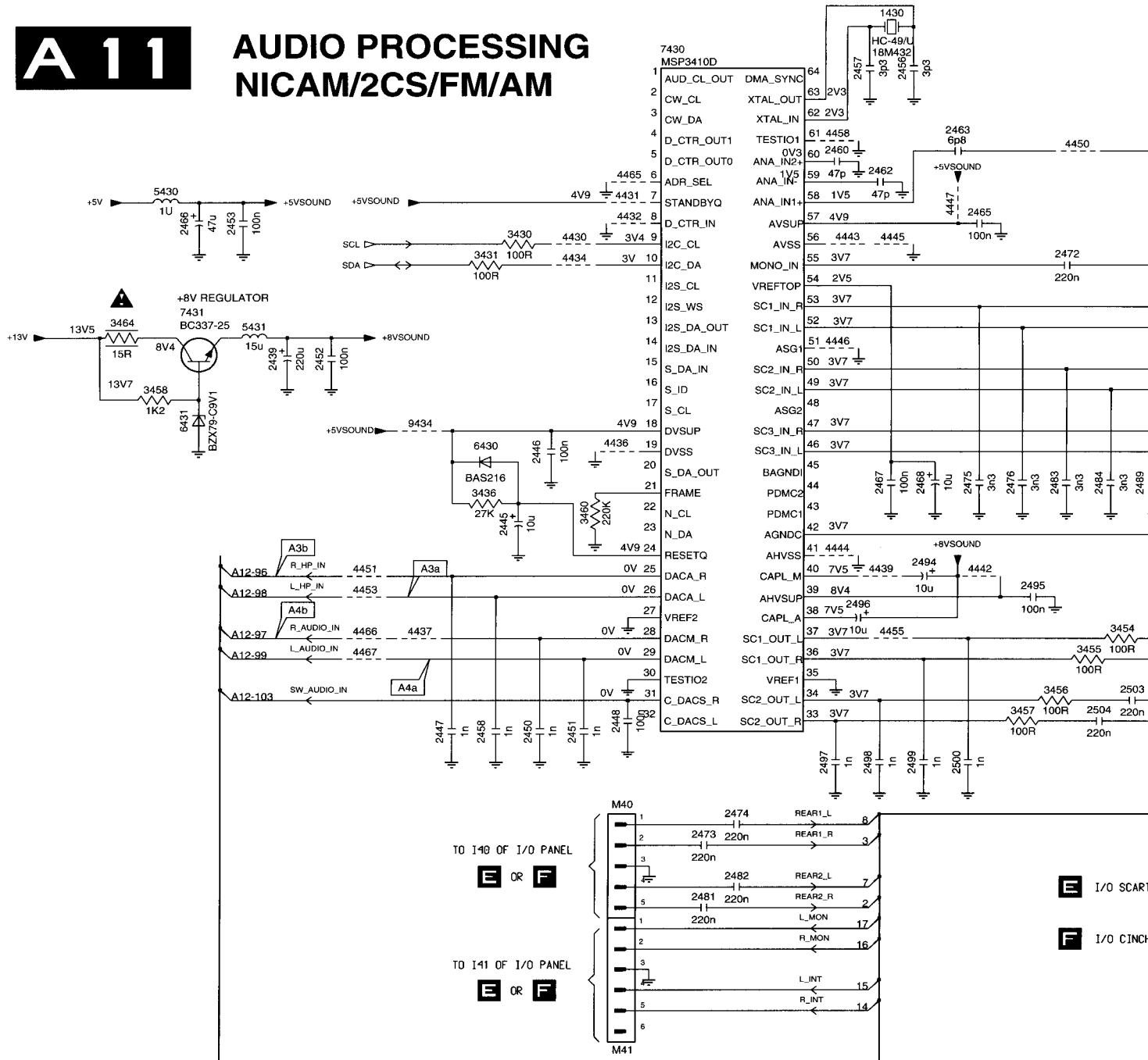


F I/O CINCH - LATAM/AP NTSC

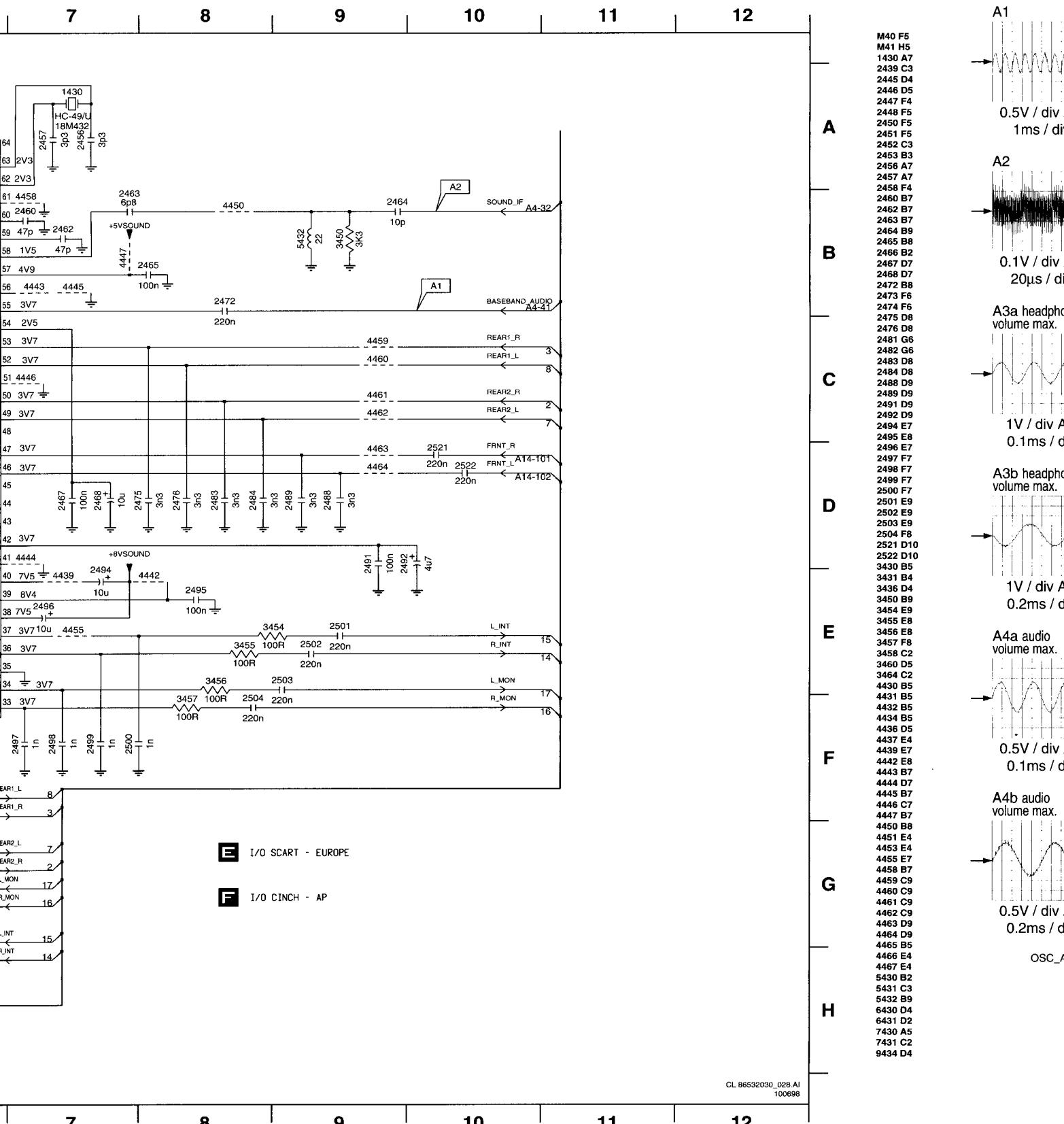
L I/O CINCH - USA



1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

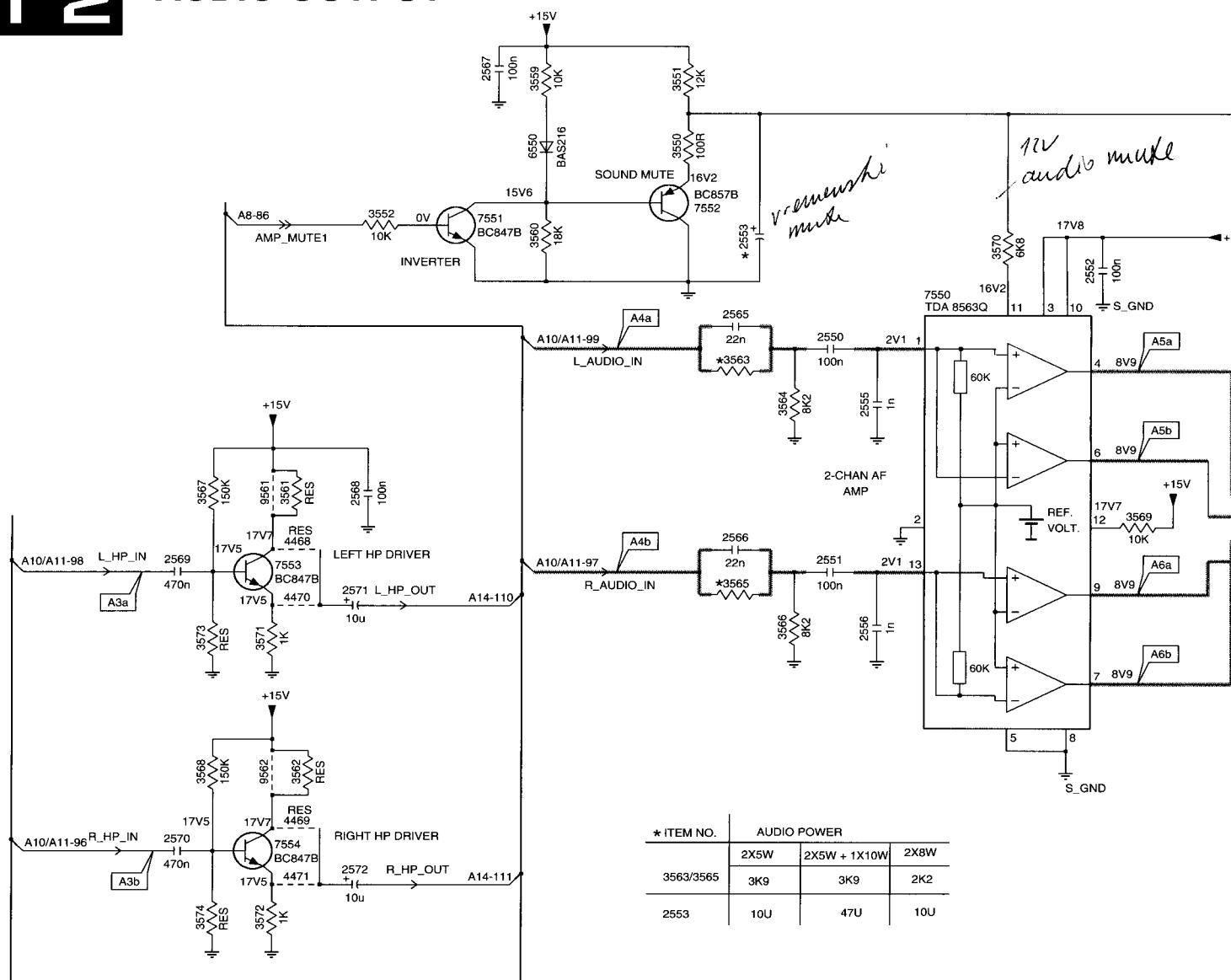
A 11**AUDIO PROCESSING
NICAM/2CS/FM/AM**

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

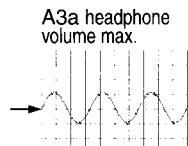
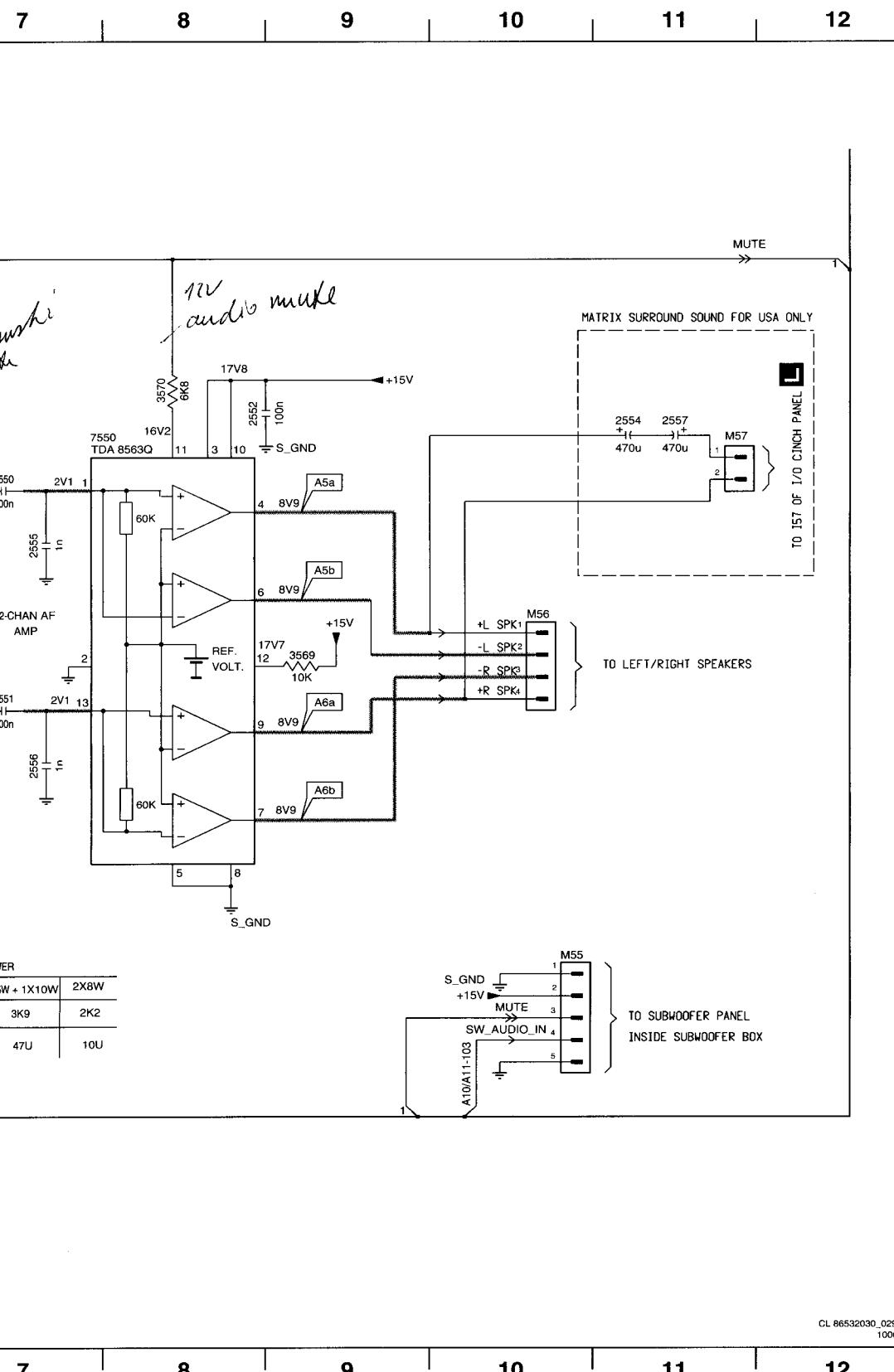


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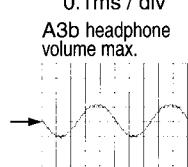
A 1 2 AUDIO OUTPUT



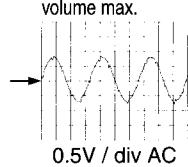
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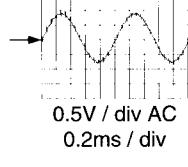
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M57 C11
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2551 E7
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2553 B6
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2555 D7
2556 E7
2557 C11
2558 C6
2556 D6
2557 A5
2558 D6
2569 E3
2570 F3
2571 E4
2572 G4
3550 B6
3551 A6
3552 B4
3559 A5
3560 B5
3561 D4
3562 F4
3563 C6
3564 D7
3565 E6
3566 E7
3567 D3
3568 F3
3569 D9
3570 C8
3571 E3
3572 G3
3573 E3
3574 G3
4468 D4
4469 F4
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7553 E4
7554 F4
9561 D3
9562 E3



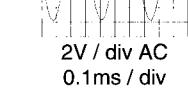
1V / div AC
0.2ms / div



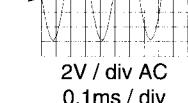
0.1ms / div
A4b audio



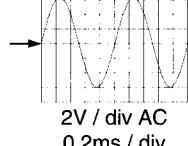
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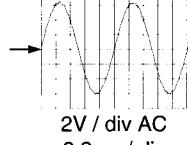
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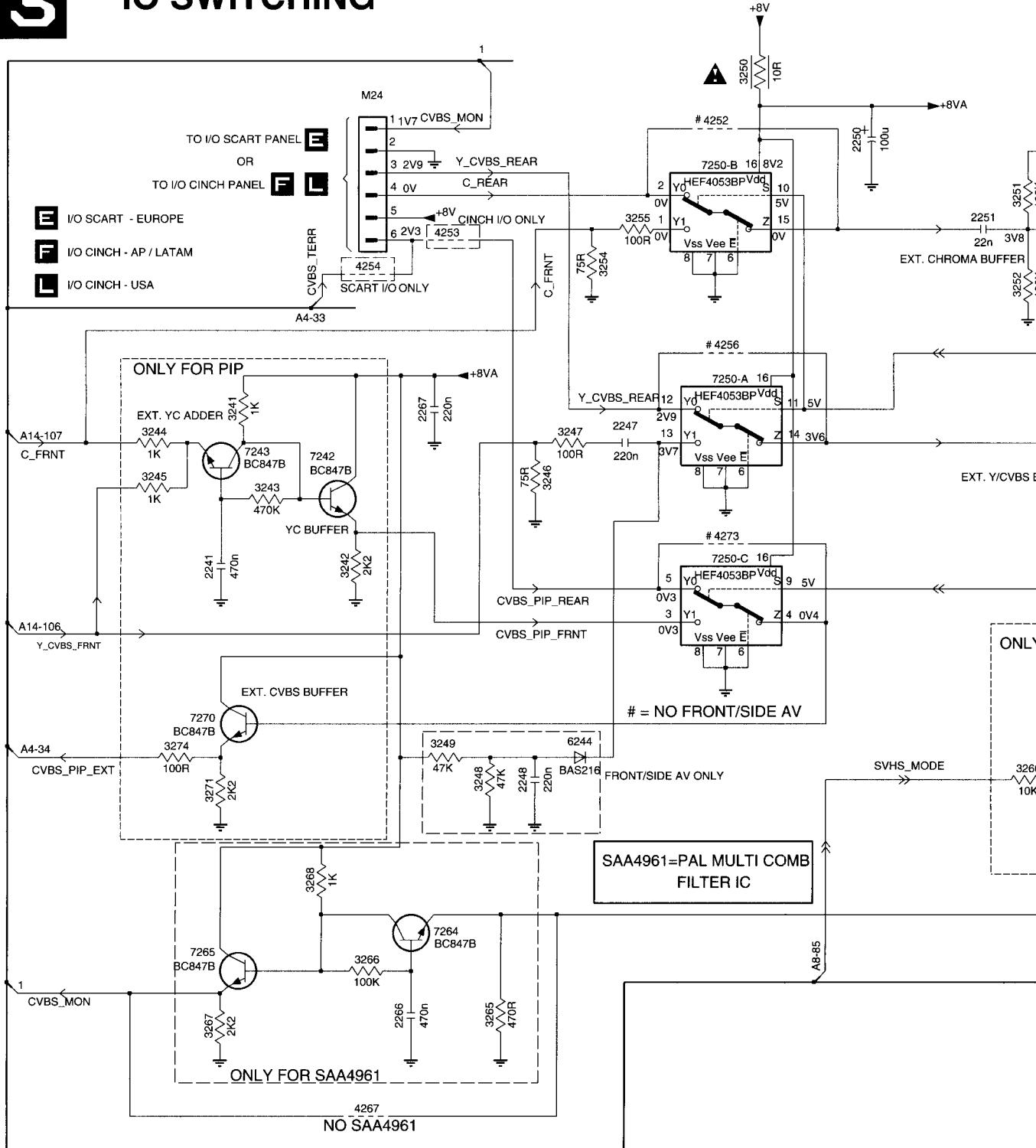
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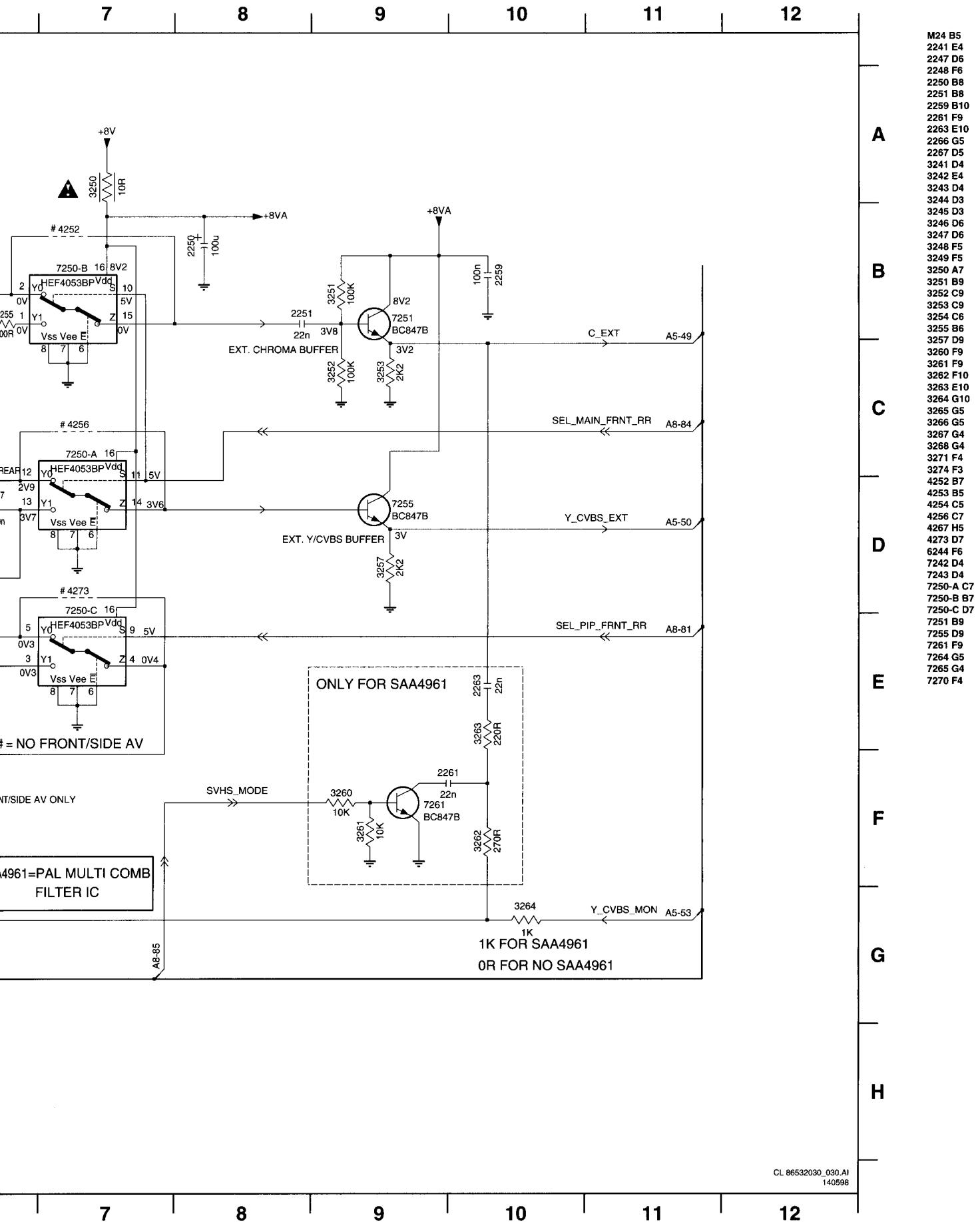


A6b



OSC_A12.a

A 1 3**IO SWITCHING**





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7 Electrical diagrams and print lay-outs

A8.0A

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2032	B4	2302	B5	2560	C2	3056	B3	3244	A7	3551	D3	4032	A5	4267	B7	4521	B2	7243	A7
2040	B4	2318	B5	2561	C2	3057	B3	3245	A7	3552	D3	4039	B4	4273	B7	4522	B2	7251	B7
2050	B3	2320	B5	2562	C2	3058	B3	3247	A7	3559	D3	4041	B4	4274	B7	4523	B2	7255	B7
2052	B3	2321	A6	2565	D2	3060	B3	3248	A7	3560	D2	4043	B1	4275	A5	4524	B2	7261	B7
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2062	A4	2432	D2	2570	D2	3066	A4	3255	A7	3567	D1	4053	B4	4280	A5	4529	B2	7283	A5
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2085	A4	2452	C3	2763	D2	3087	A4	3280	A5	3671	B7	4083	A3	4438	C2	4647	C7	7551	D2
2086	A4	2453	C3	2765	D2	3090	B4	3281	A5	3672	B7	4084	B4	4439	B2	4747	B6	7552	D3
2088	B4	2454	D2	2766	D2	3091	B4	3282	A5	3673	B7	4085	B4	4440	C3	4815	A6	7715	C7
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2091	A5	2456	C3	2769	E2	3096	B4	3293	A6	3710	B7	4088	A4	4442	B2	4902	C4	7760	D2
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2124	A7	2459	C2	2771	E2	3098	B4	3304	A6	3731	C6	4117	A5	4444	C2	4904	D5	7909	C5
2127	A7	2460	C2	2772	E2	3099	B4	3305	A6	3732	C7	4124	B6	4445	B2	4906	D5	7910	C5
2144	A7	2461	C2	2810	A7	3110	A4	3309	B5	3740	C7	4125	A7	4446	C2	4910	D4	7960	D5
2145	A7	2462	C2	2811	A6	3111	A4	3310	B5	3744	C6	4126	A7	4447	C3	4911	D3	7961	C5
2146	A7	2463	C2	2812	A6	3116	A4	3311	B5	3746	C6	4127	A7	4448	B2	4920	D6	7962	C5
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2241	A7	2498	C1	3018	E1	3167	B7	3358	A4	3811	A6	4192	A6	4471	D1	6430	C2		
2247	A7	2499	C1	3025	B4	3168	B7	3360	A3	3813	A7	4195	A6	4500	D2	6550	D2		
2248	A7	2500	C2	3027	B4	3169	B7	3361	A4	3814	A6	4198	A6	4501	C1	7041	B4		
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2259	B7	2502	C1	3030	B4	3171	B6	3430	C2	3911	D3	4225	A6	4503	C2	7071	A4		
2261	B7	2503	C1	3031	B4	3172	B6	3431	C2	3926	E6	4226	A5	4504	C2	7072	A4		
2263	B7	2504	C1	3032	B4	3173	B6	3432	D2	3932	C6	4227	A6	4505	C2	7073	A4		
2266	B7	2505	C2	3033	B4	3174	B7	3433	D2	3933	C6	4230	D1	4506	C2	7075	B3		
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2281	A5	2550	D3	3043	B1	3194	A5	3454	C1	3976	E6	4256	B7	4514	D2	7176	B6		
2291	A5	2551	D3	3044	B1	3197	A6	3455	C2	4001	C1	4257	B7	4515	C3	7189	A6		
2292	A5	2552	C4	3045	B1	3239	D1	3456	C2	4003	C1	4258	A7	4516	C2	7190	A6		
2293	A5	2555	C4	3046	B1	3240	D1	3457	C1	4004	D2	4260	B7	4517	C1	7191	A6		
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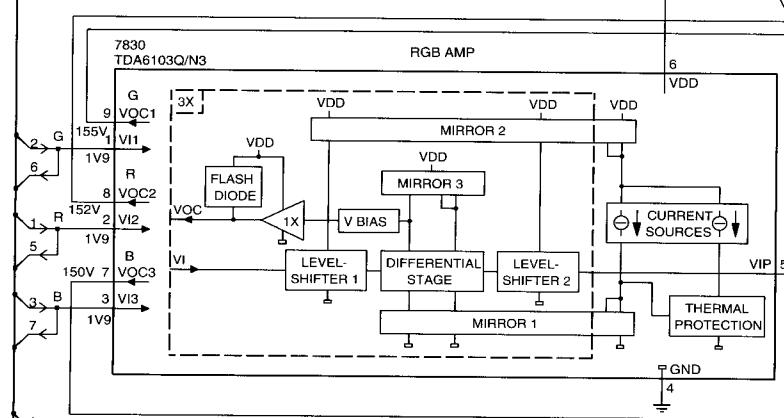
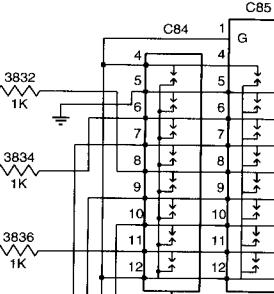
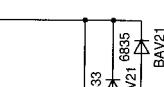
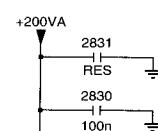
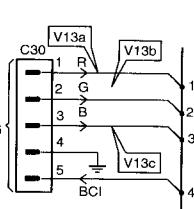
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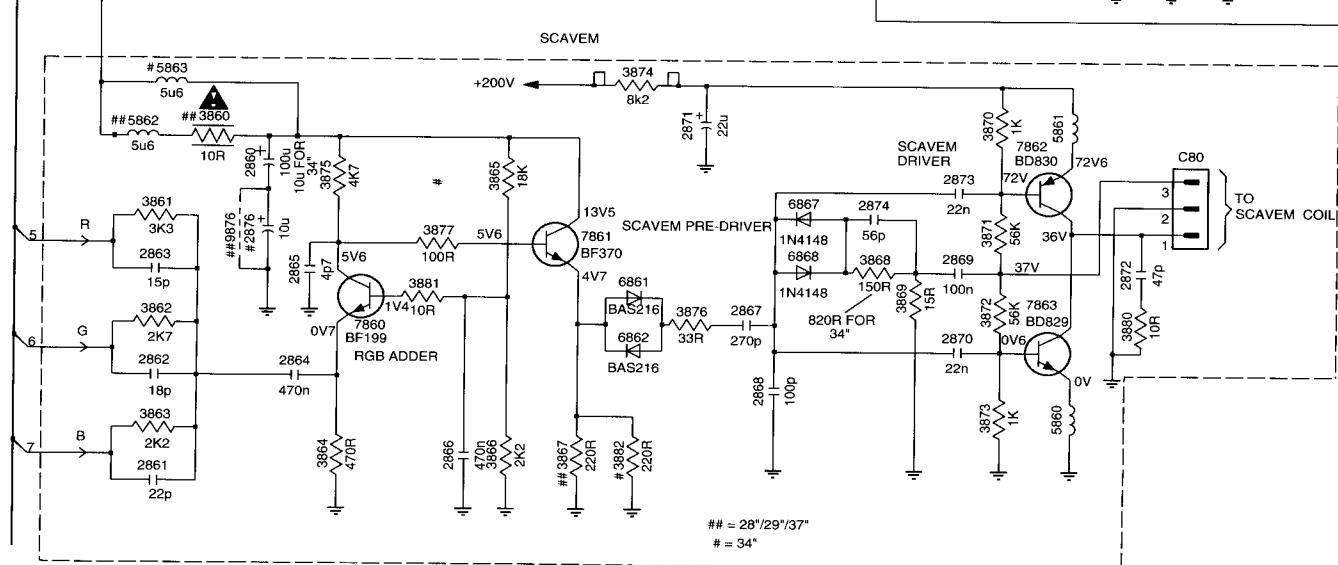
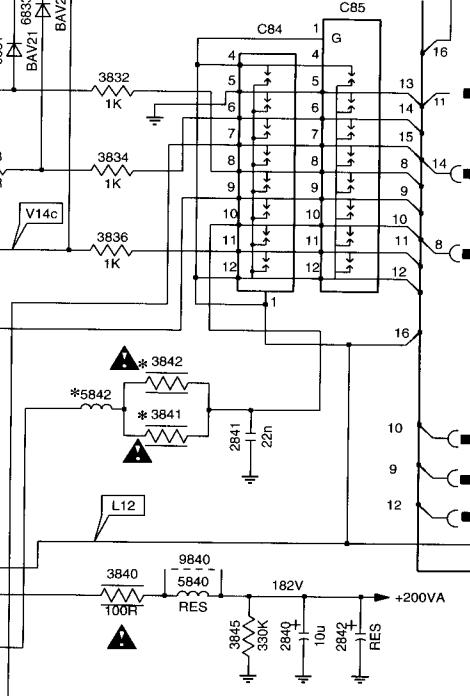
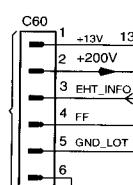
B

CRT PANEL

TO M30 OF
RGB PROCES
A7



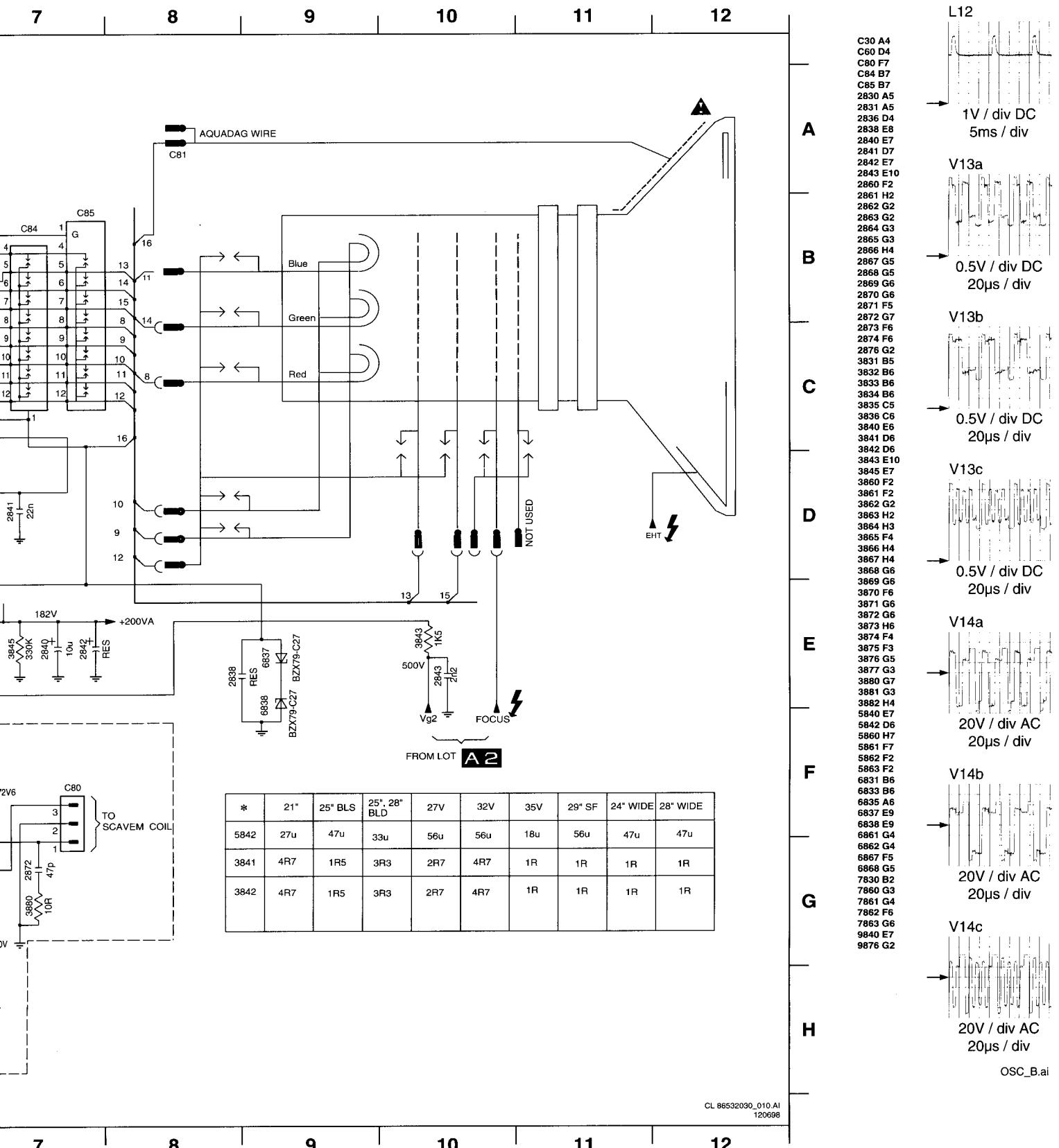
TO M60 OF
HOR. DEFL +

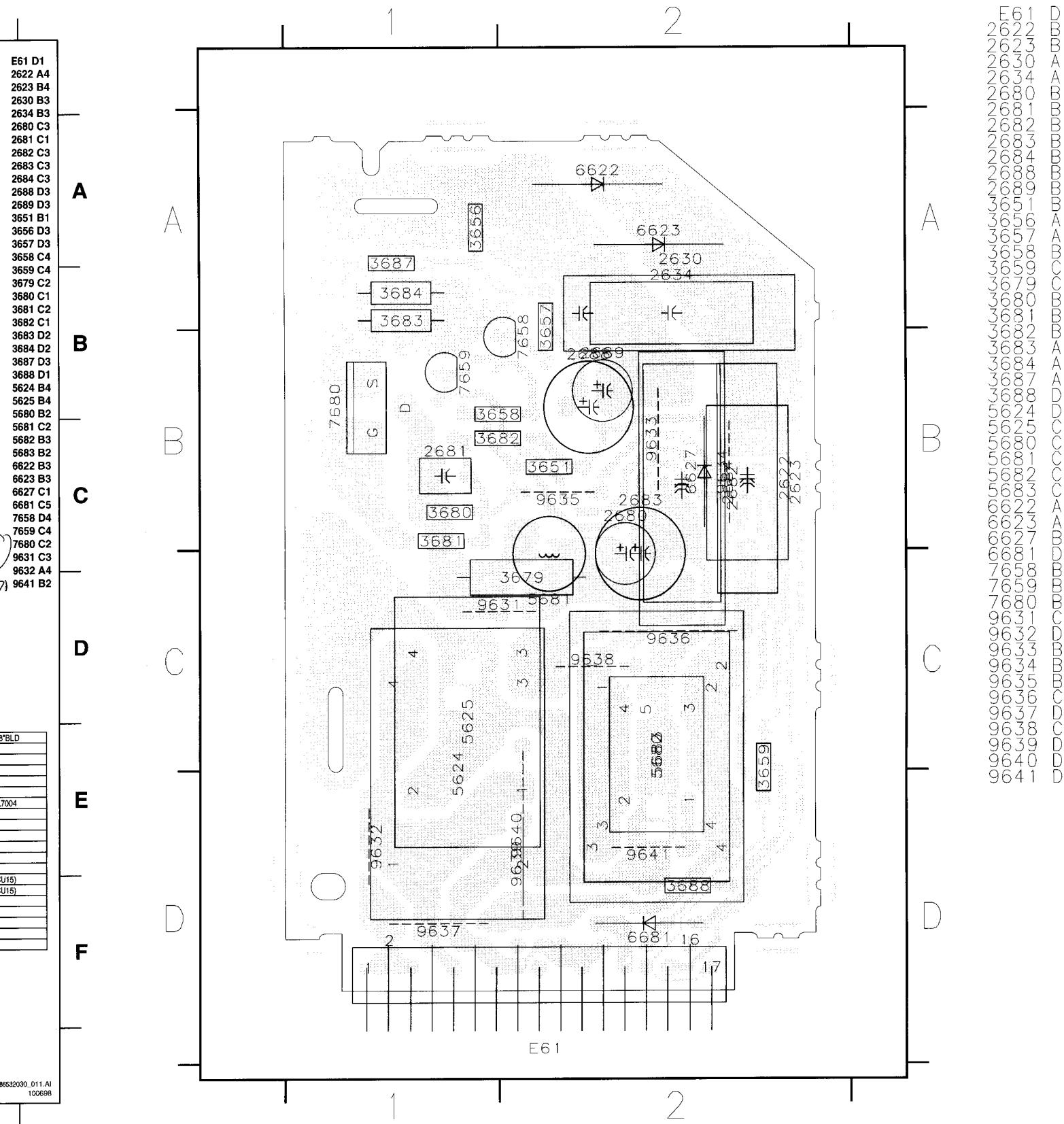


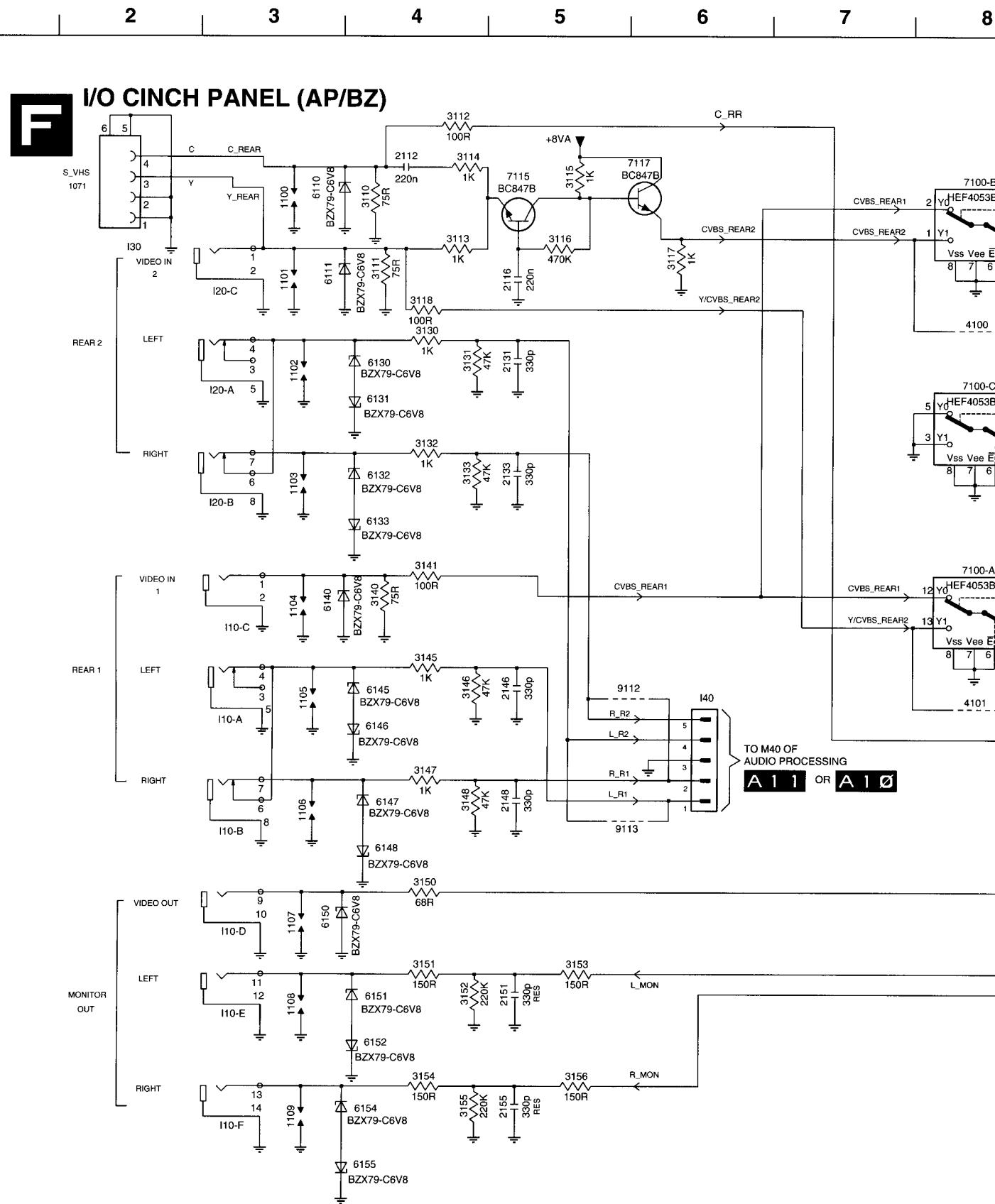
*
5842
3841
3842

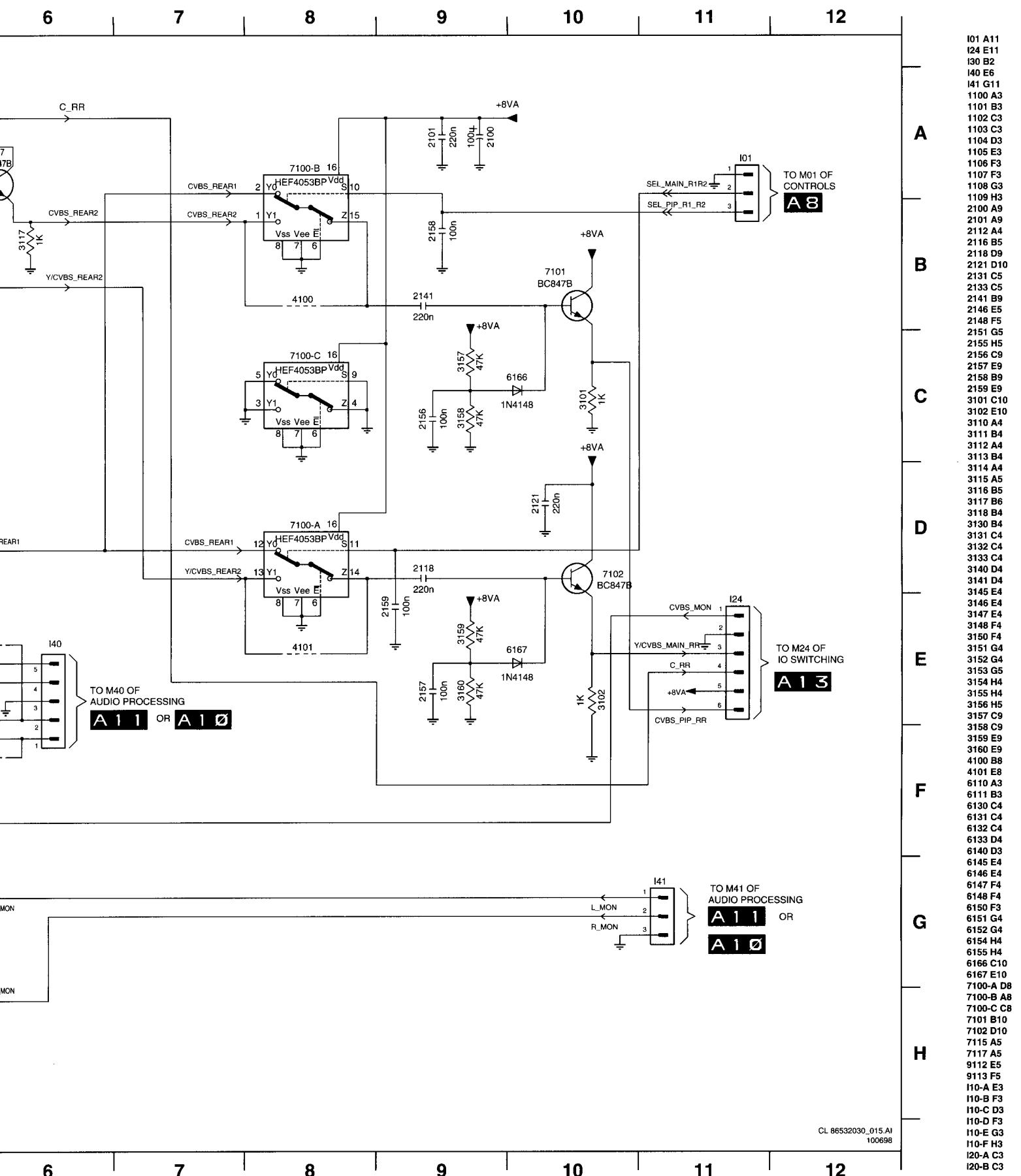
= 28"/29"/37"

= 34

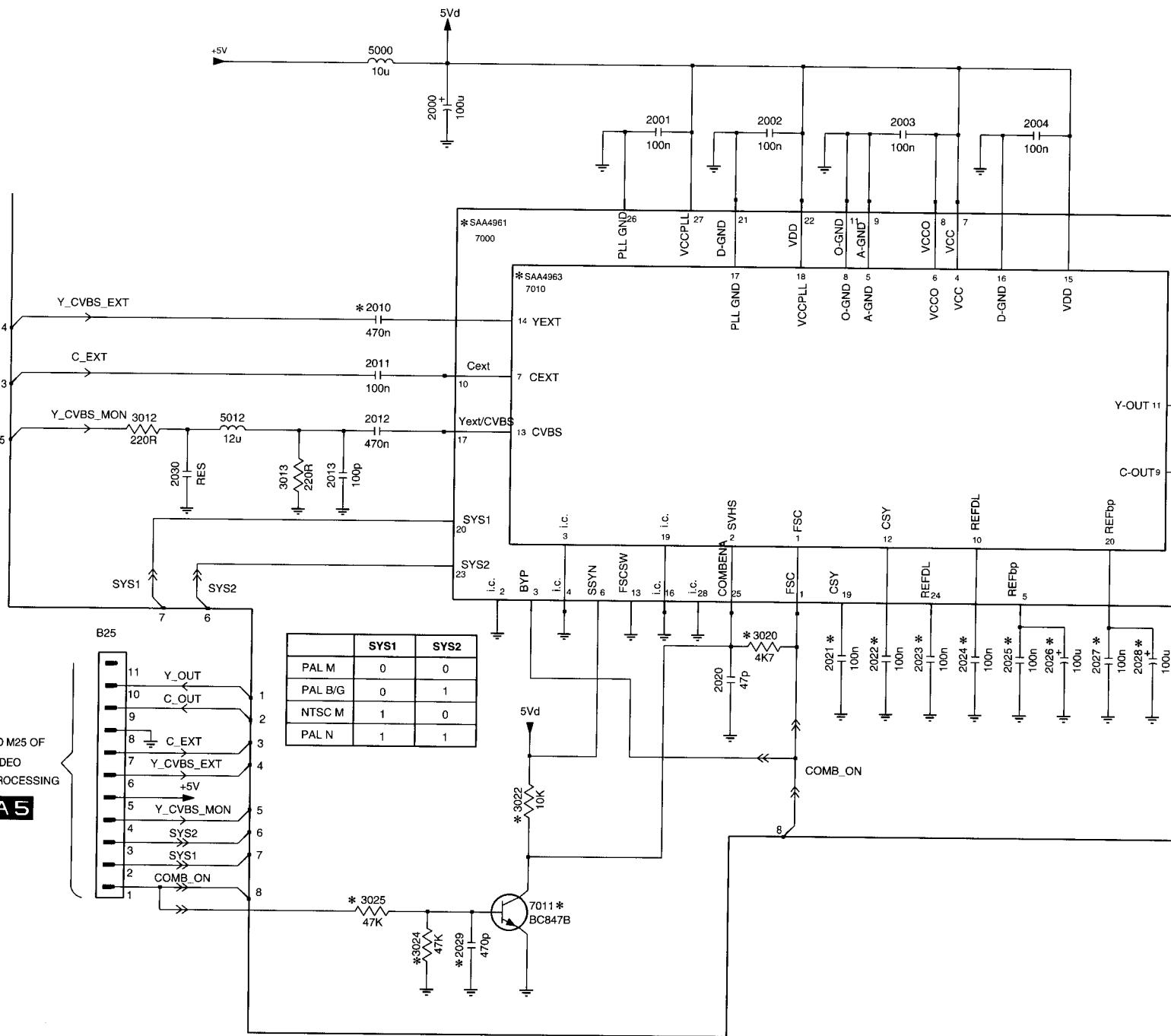




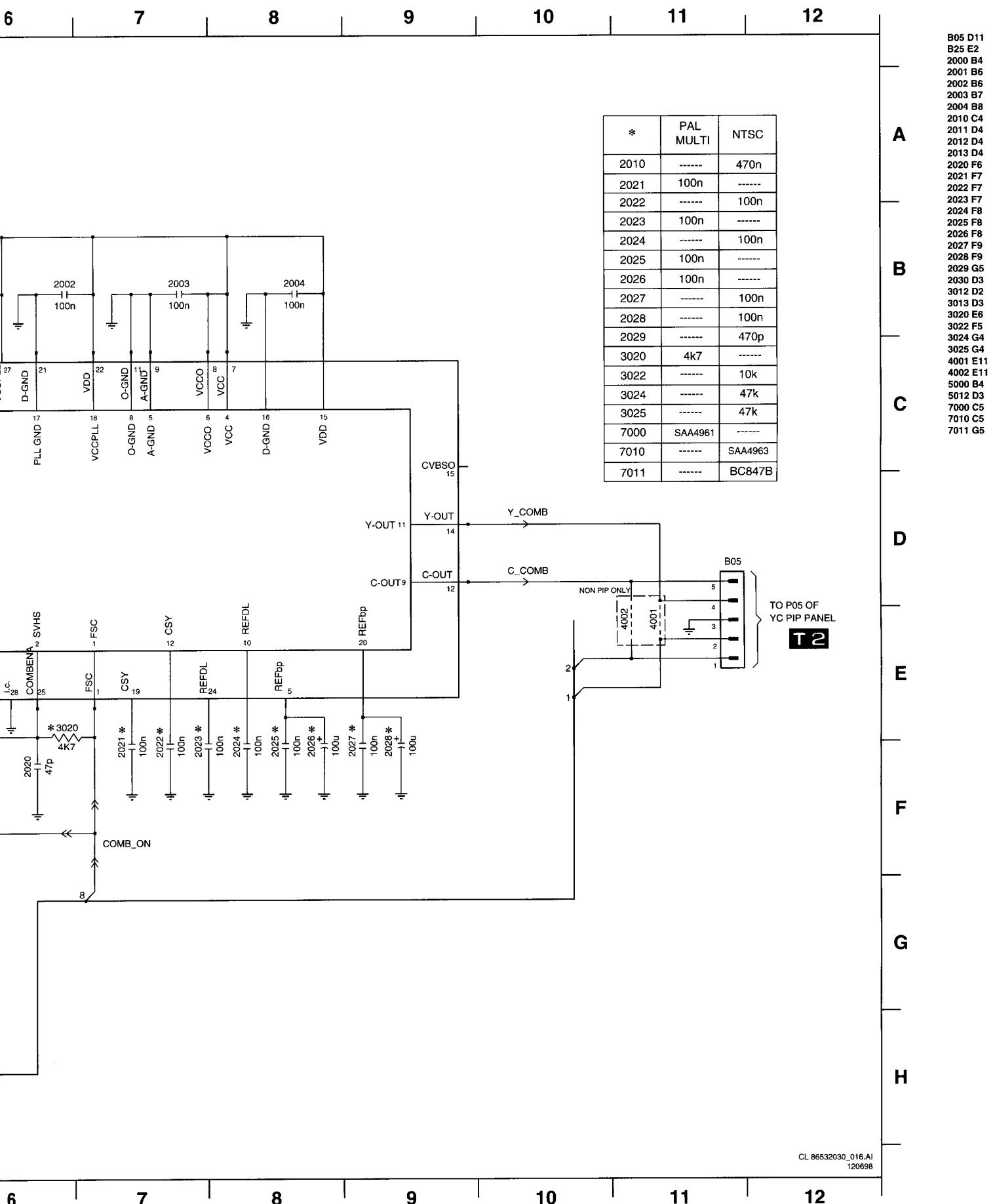




2 3 4 5 6 7 8 9

G**COMB FILTER PANEL**

2 3 4 5 6 7 8 9



PCB Comb filter

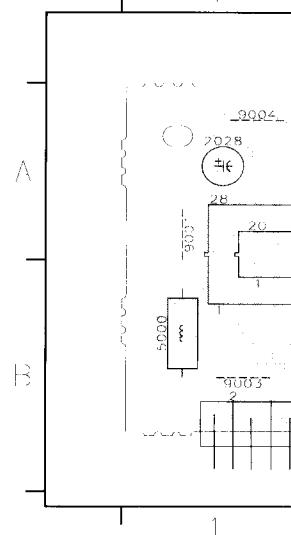
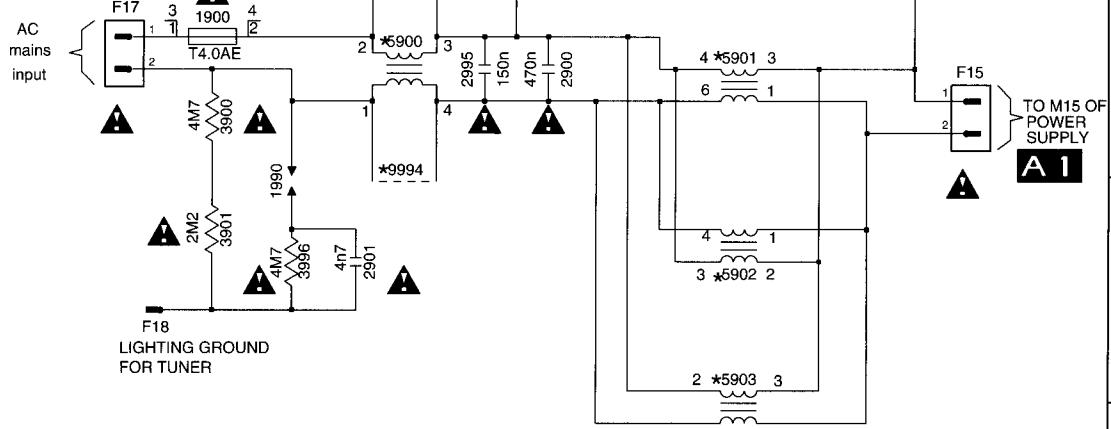
F15 B5 1900 B1 2900 B3 2902 A2 2995 B3 3901 C2 3996 C2 5901 B4 5902 C4 5903 C4 6993 A4 9993 B2

F17 B1

1 2 3 4 5



MAINS FILTER PANEL

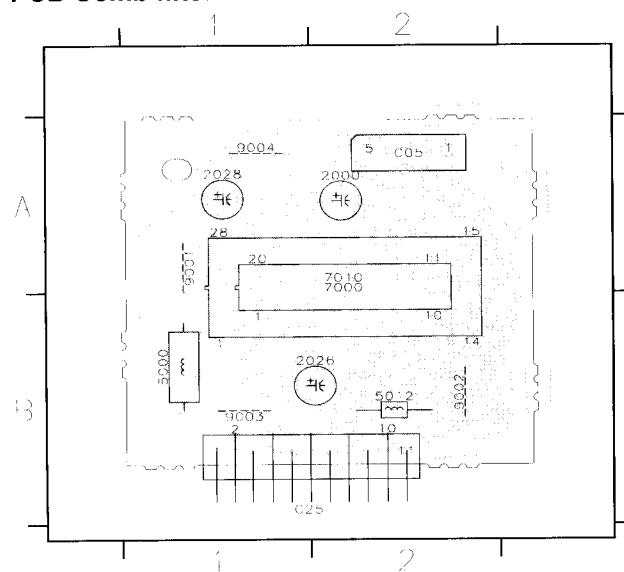


* ITEM NO.	TAIWAN/KOREA	EUROPE	U.S./BRAZIL	AP/LATAM
	CISPR (F.R.)	CISPR (S.R.)	NON-CISPR (L.S.)	NON-CISPR
5900	DMF-2405	DMF-2405	-----	-----
5901	DMF-3515	-----	-----	-----
5902	-----	DMF-2830	DMF-2805	-----
5903	-----	-----	-----	DMF-2405
9993	-----	-----	JUMPER	JUMPER
9994	-----	-----	JUMPER	JUMPER

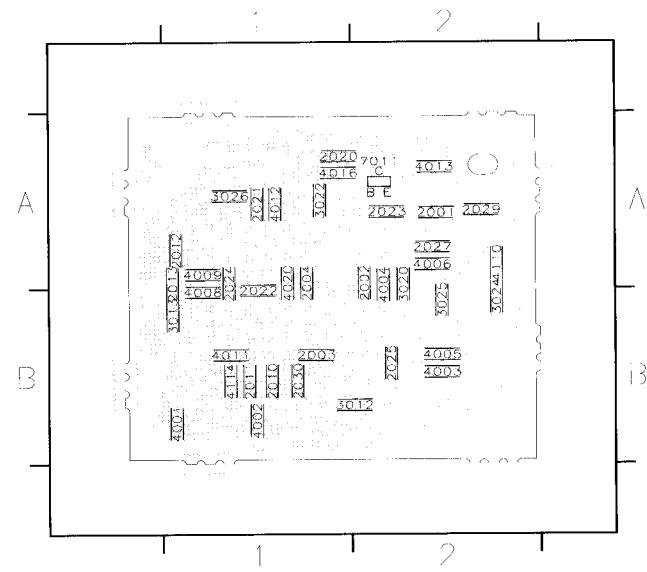
CL 86532030_017 AI
100698

1 2 3 4 5

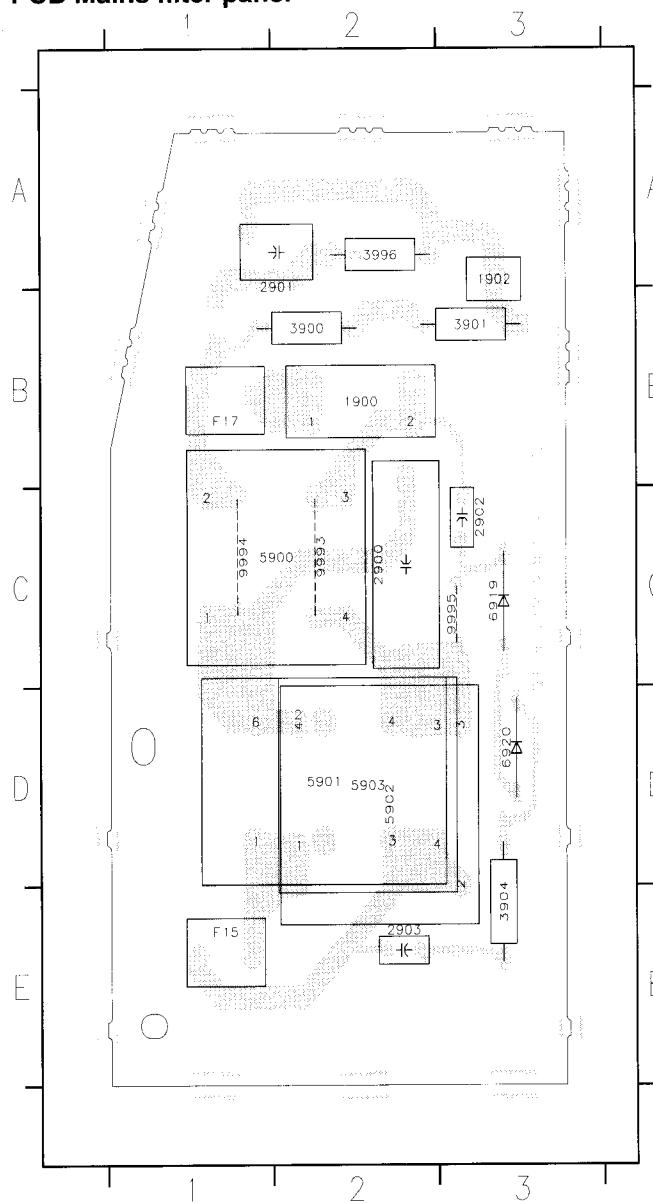
PCB Comb filter

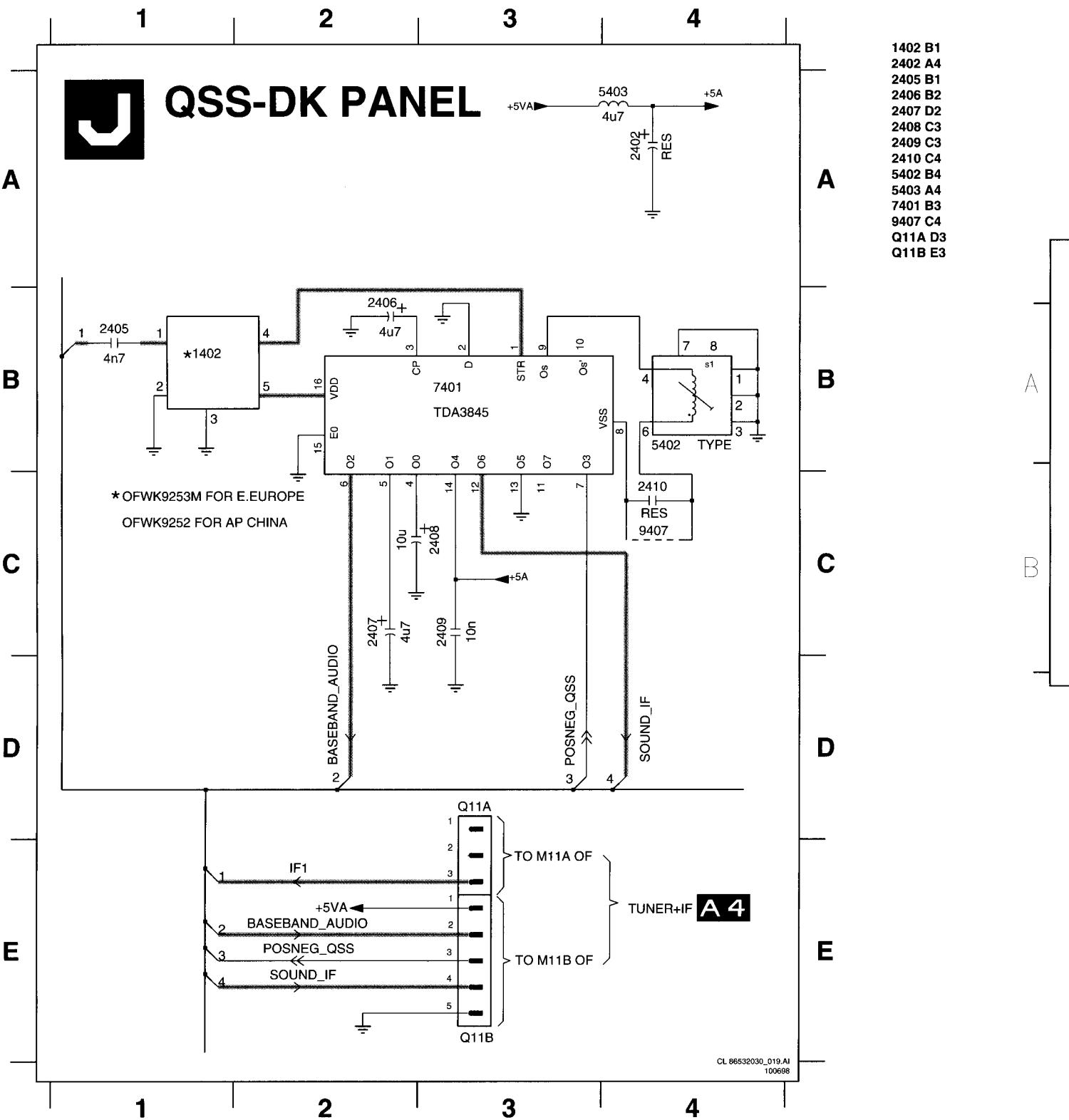


PCB Comb filter

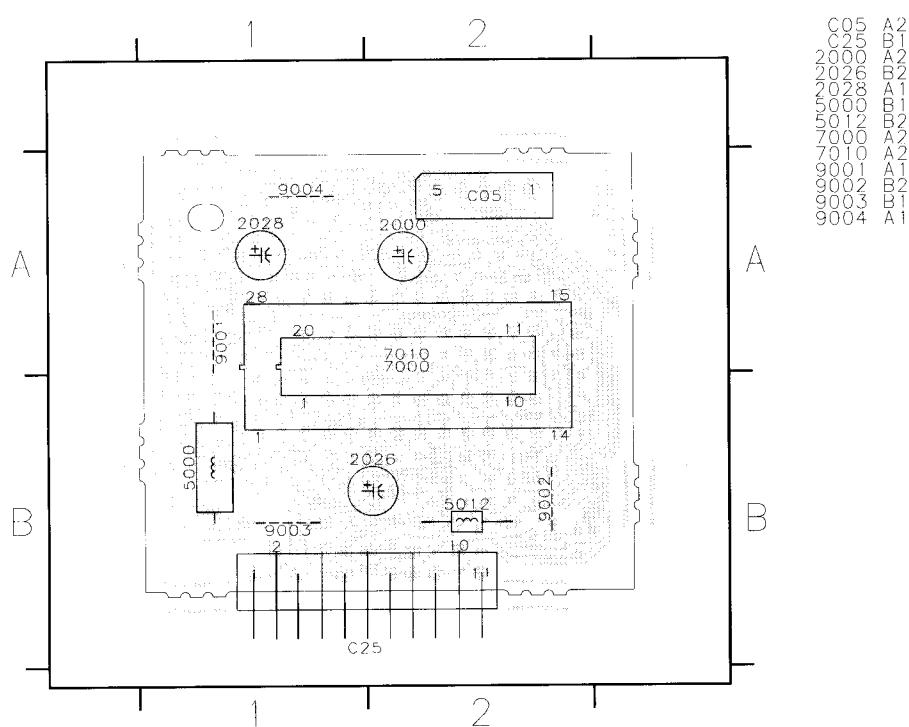


PCB Mains filter panel





02 B1
02 A4
05 B1
06 B2
07 D2
08 C3
09 C3
10 C4
02 B4
03 A4
01 B3
07 C4
1A D3
1B E3





SIDE AV PANEL

S22 A4	2241 E2	3233 C3	3237 A3	4238 E2	6231 D2	6235 A2	S755-C B1	SG03 C1	SG07 E1
S23 B4	2242 E3	3234 B3	3238 C2	4239 E2	6232 C2	S754 E1	S756 A1	SG04 D1	
2230 D3	3231 D3	3235 B3	3241 E2	4240 E2	6233 C2	S755-A D1	SG01 A2	SG05 D1	
2233 C3	3232 B2	3236 A3	3242 E3	6230 D2	6234 B2	S755-B C1	SG02 B2	SG06 E1	

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4

A

A

B

B

C

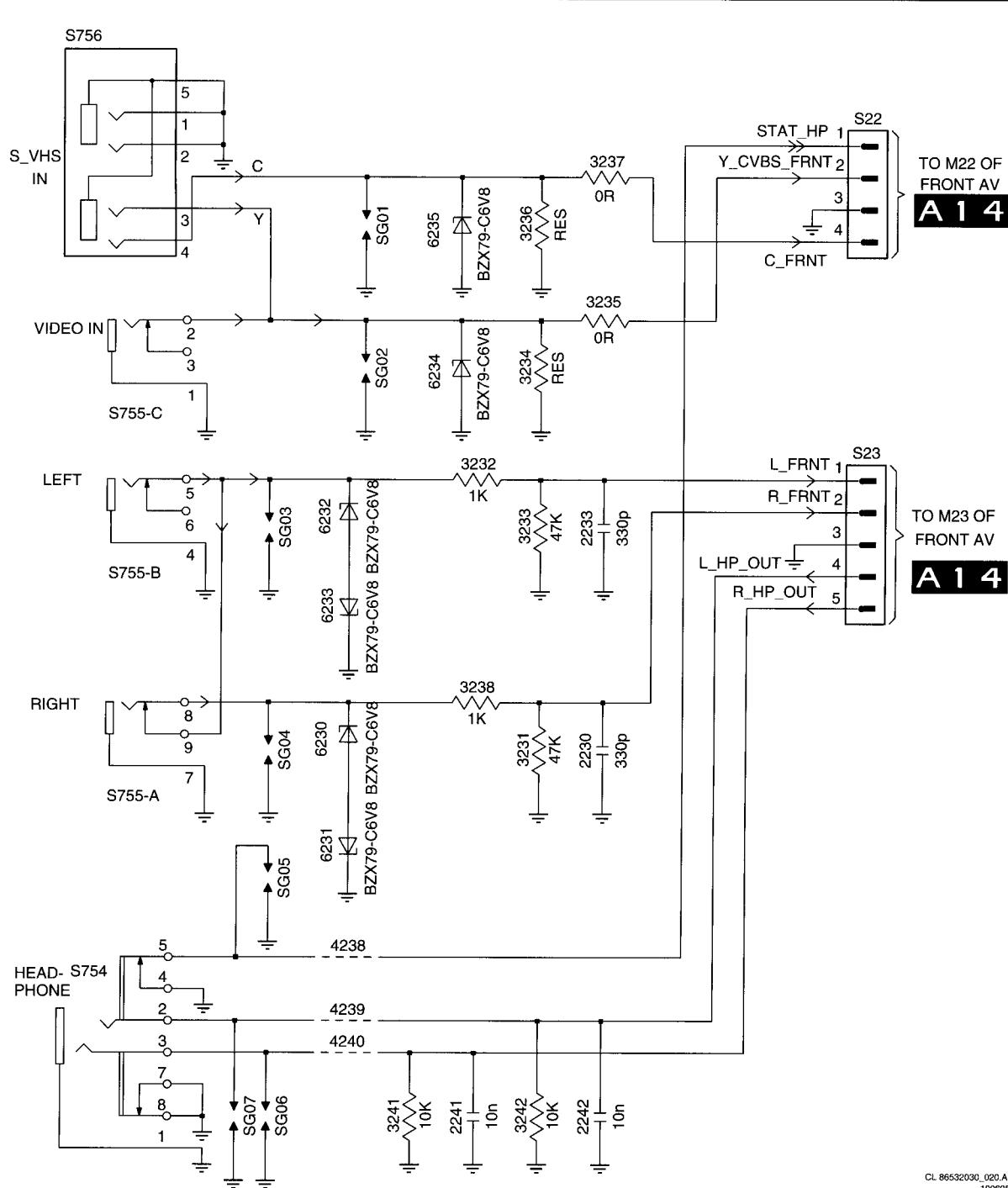
C

D

D

E

E

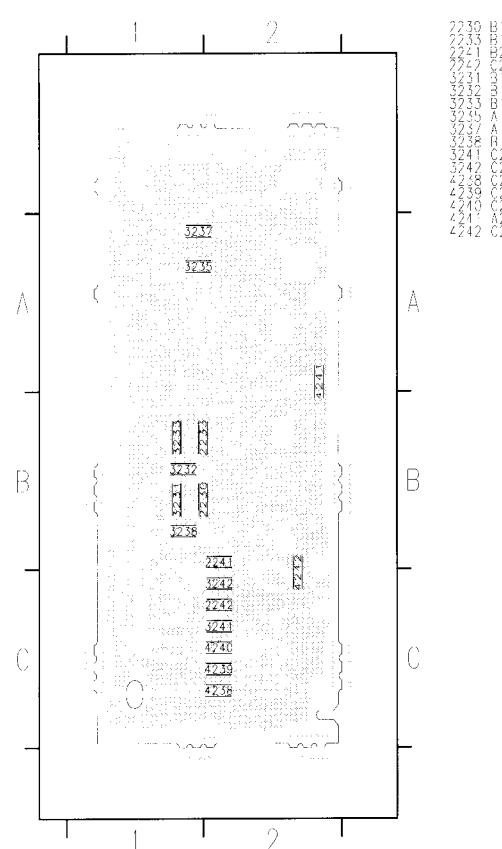
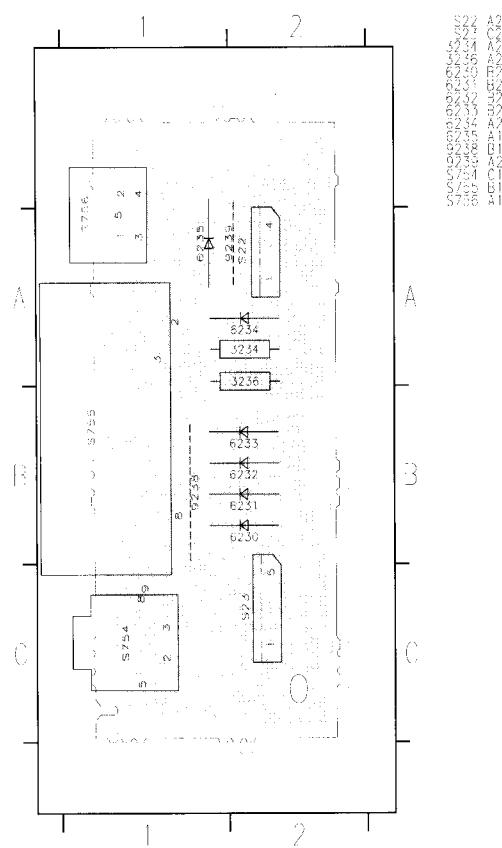


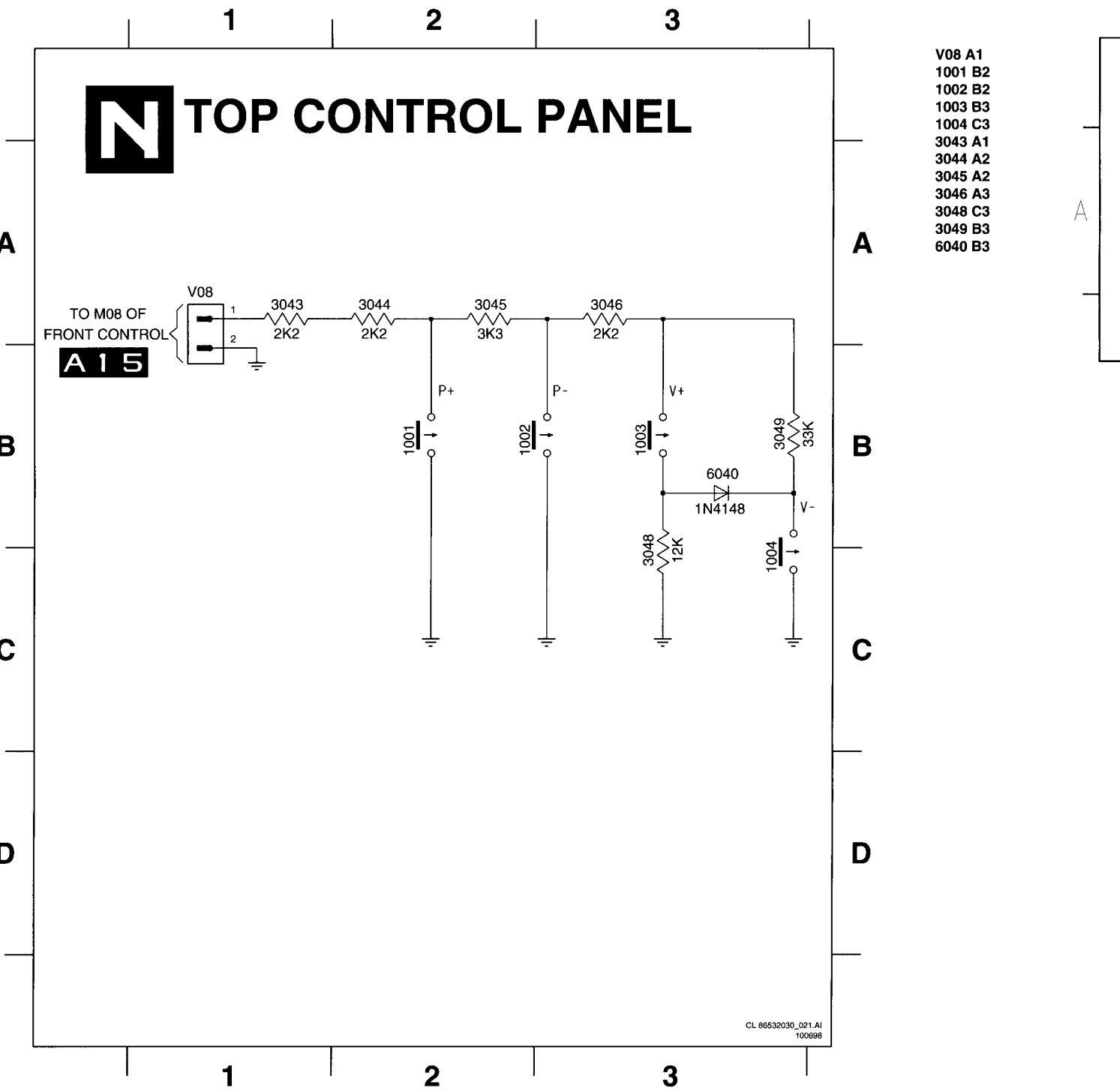
07 E1

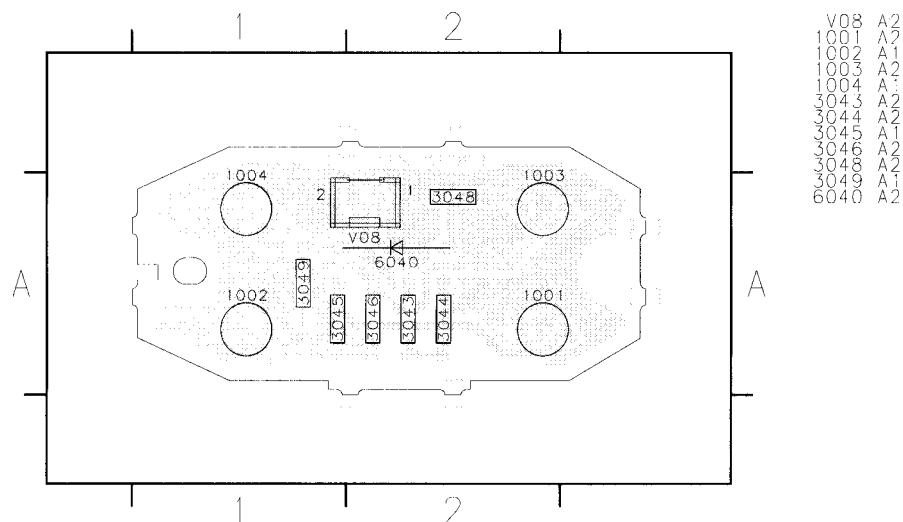
OF
W
4OF
W
4

D

E

L020.A1
100698



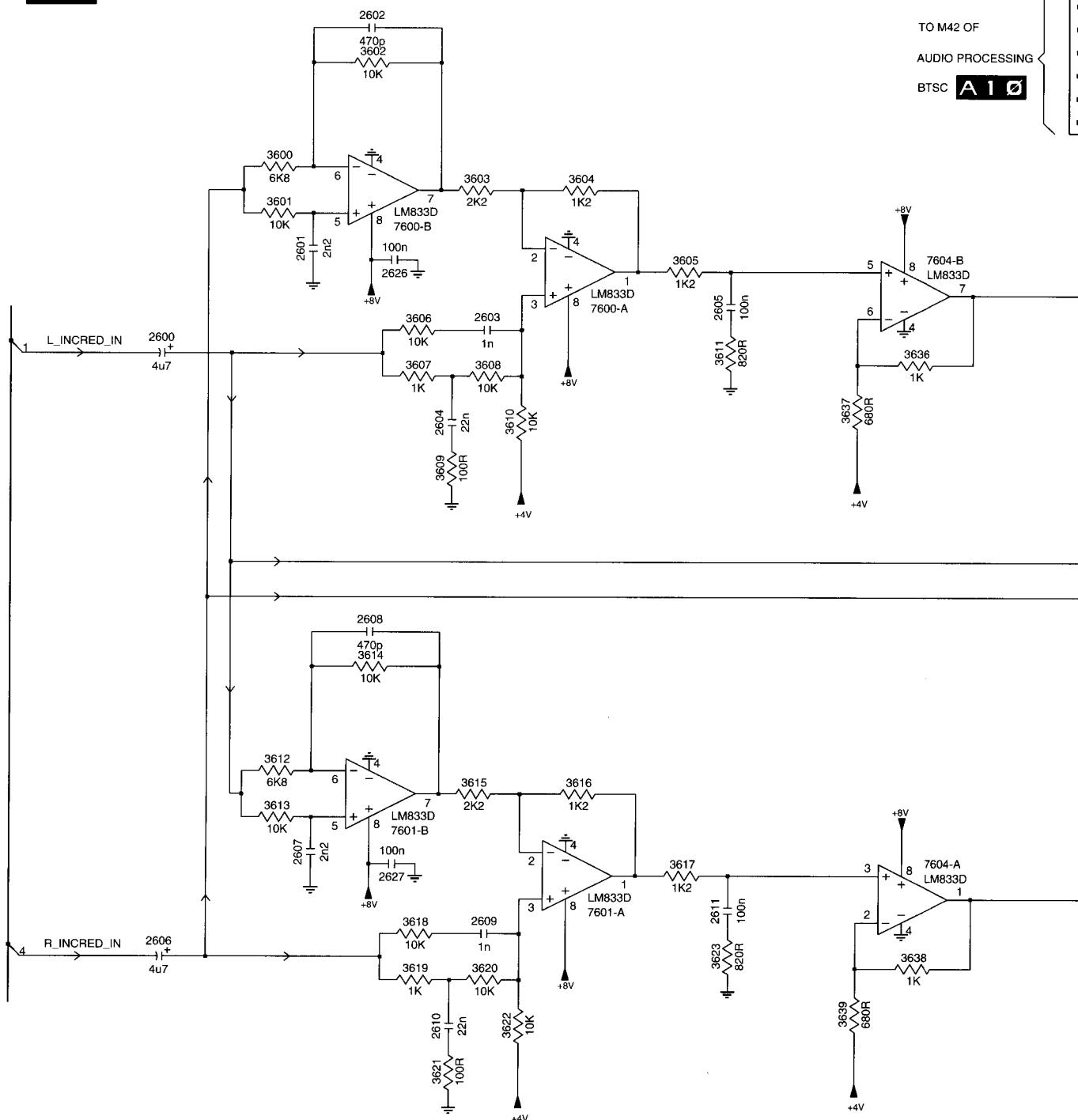


V08	A2
1001	A2
1002	A1
1003	A2
1004	A1
3043	A2
3044	A2
3045	A1
3046	A2
3048	A2
3049	A1
6040	A2

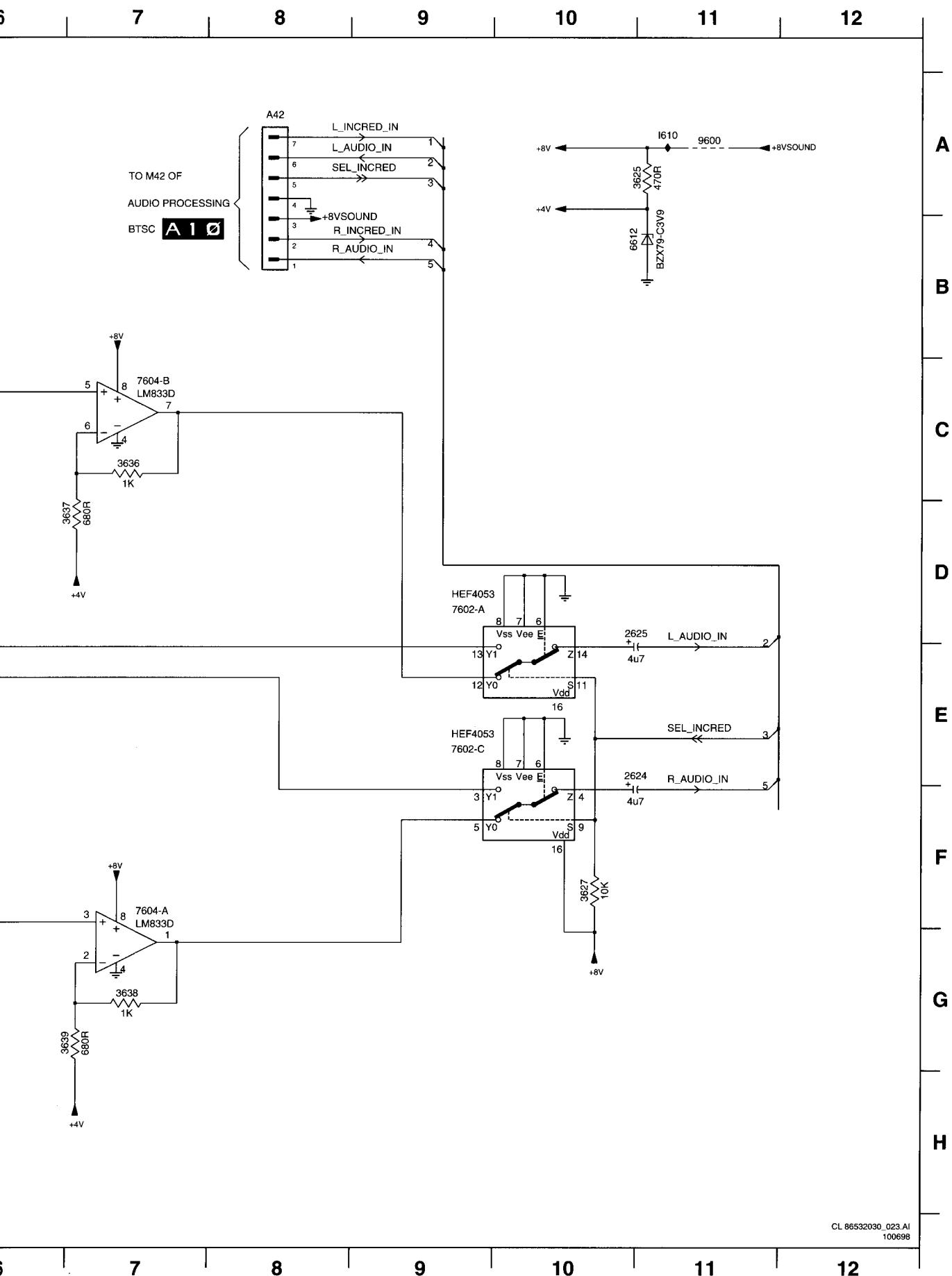
1 2 3 4 5 6 7



INCREDIBLE SOUND



1 2 3 4 5 6 7



A05 C11
A07 B11
A42 A8
2600 C2
2601 C3
2620 A4
2603 C4
2604 D4
2605 C6
2606 G2
2607 F3
2608 E4
2609 G4
2610 G4
2611 G6
2624 E10
2625 D10
2626 C4
2627 F4
3600 B3
3601 B3
3602 A4
3603 B4
3604 B5
3605 C6
3606 C4
3607 C4
3608 C4
3609 D4
3610 D4
3611 C6
3612 F3
3613 F3
3614 E4
3615 F4
3616 F5
3617 F6
3618 G4
3619 G4
3620 G4
3621 H4
3622 G4
3623 G6
3625 A11
3627 F2
3636 C7
3637 D7
3638 G7
3639 G7
6612 B10
7600-A C5
7600-B B4
7601-A G5
7601-B F4
7602-A D9
7602-C E9
7604-A F7
7604-B C9
9600 A11

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YUV PANEL

A

B

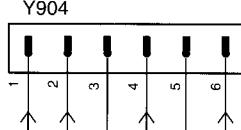
C

D

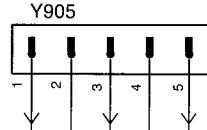
E

ECO DOUBLE WINDOW PANEL

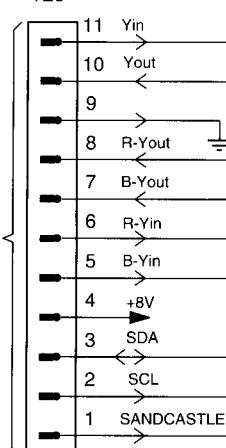
TO J9Q4 OF



TO J9Q5 OF



Y28



4336

4337

4338

= NON PIP ONLY

4334

4335

4229

4330

4331

3333

100R

3332

100R

3225

100R

1

2

3

4

5

5

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7

8

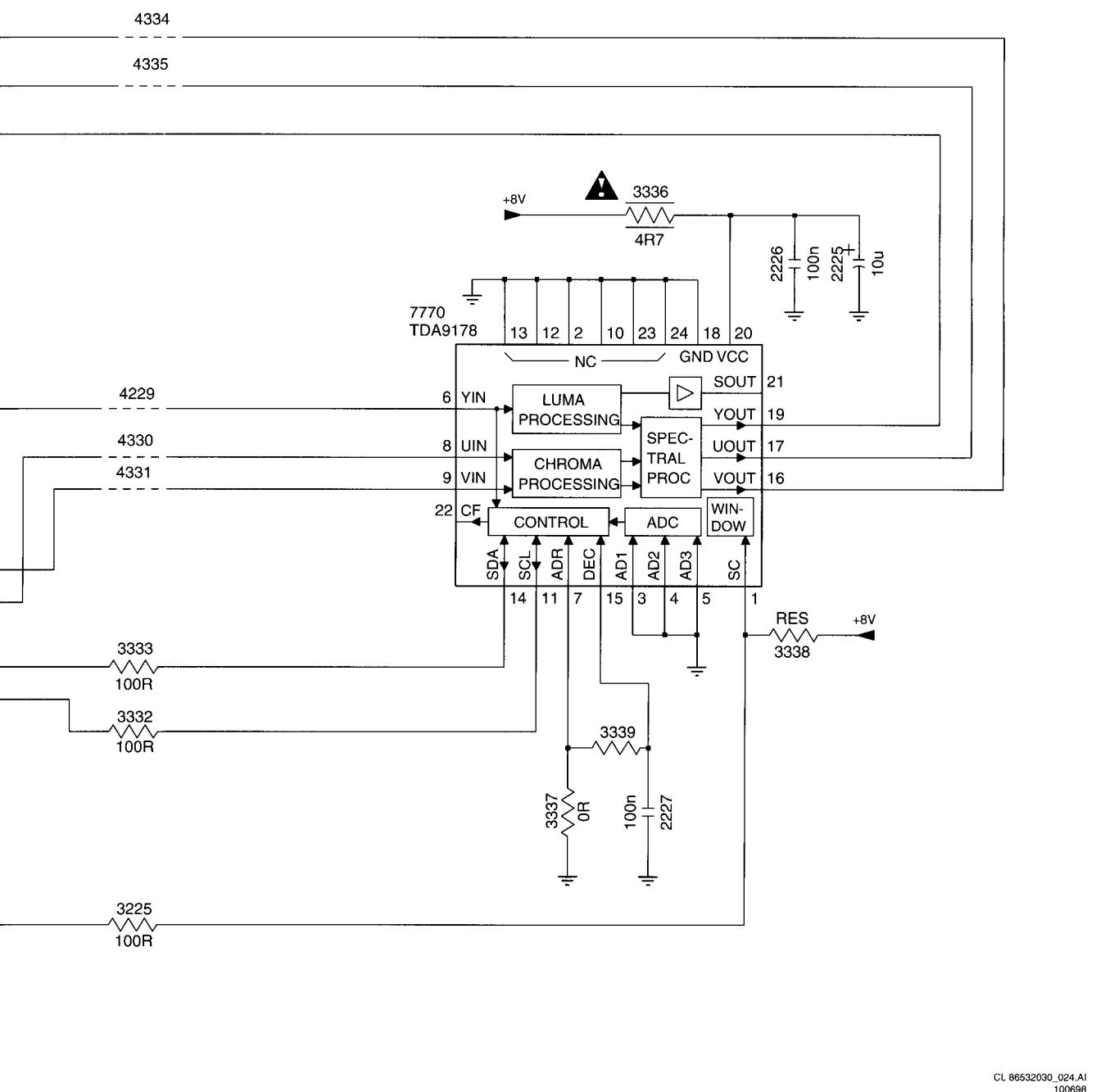
A

B

C

D

E



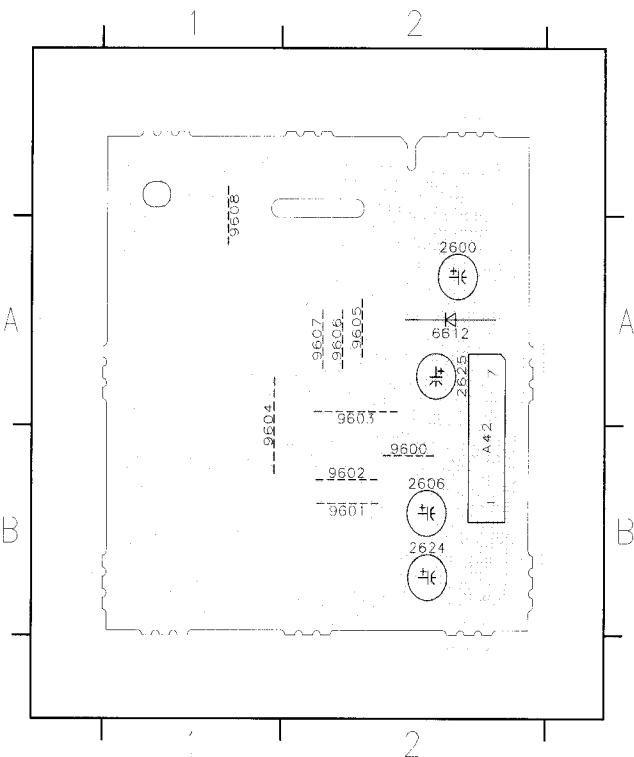
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 2225 B8
 2226 B8
 2227 D7
 3225 E5
 3332 D5
 3333 D5
 3336 B7
 3337 D7
 3338 D8
 3339 D7
 4229 C5
 4330 C5
 4331 C5
 4334 A5
 4335 A5
 4336 C2
 4337 C2
 7770 B6
 Y904 B1
 Y905 B3

Electrical diagrams and print lay-outs

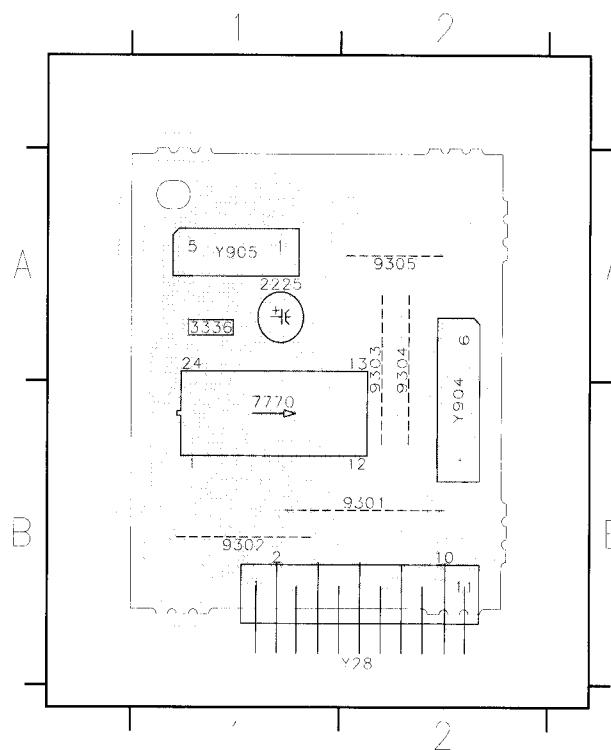
A8.0A

53

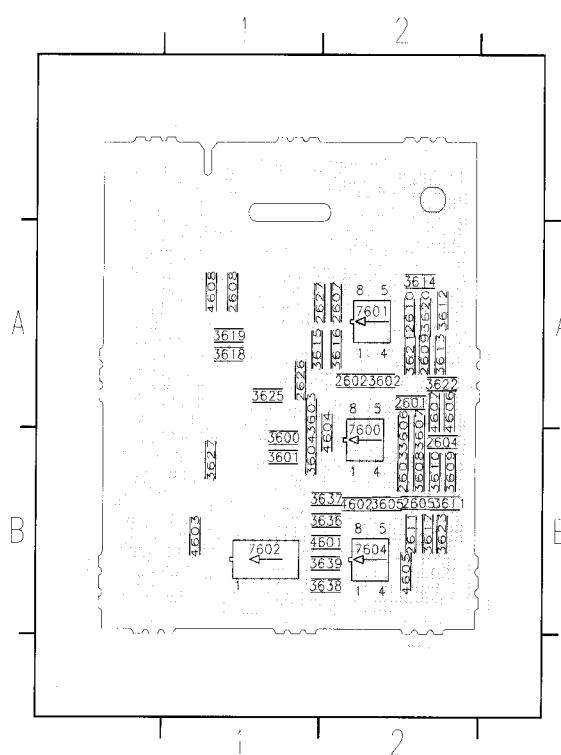
PCB Incredible sound



PCB YUV panel

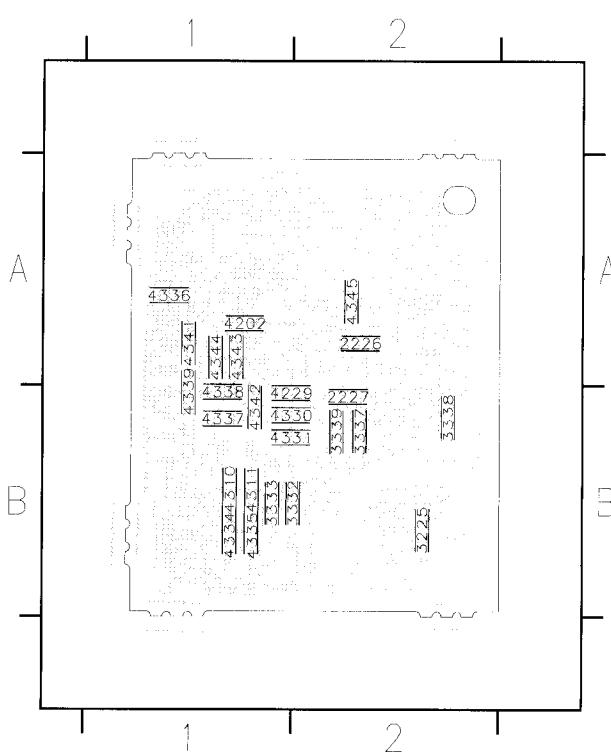


PCB Incredible sound

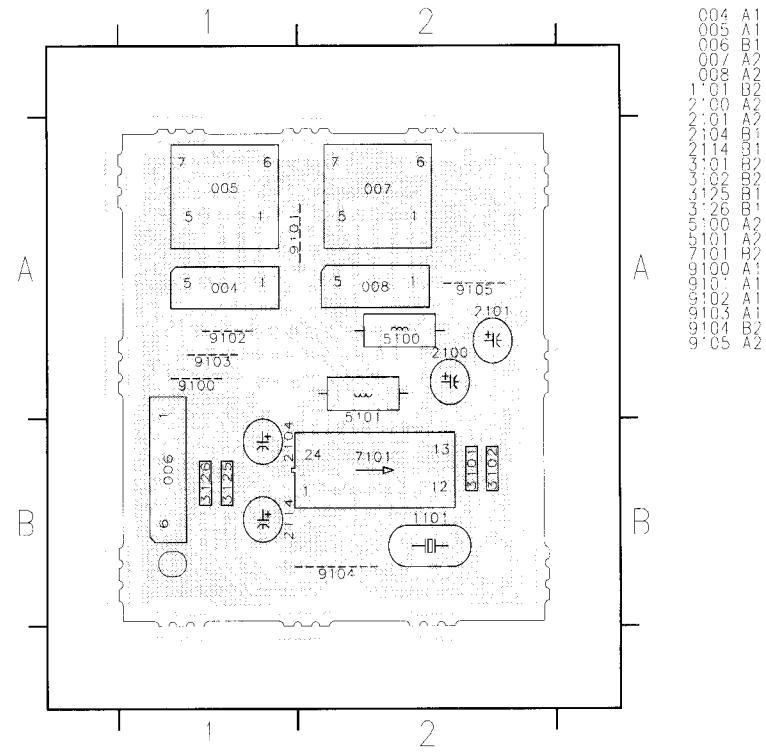
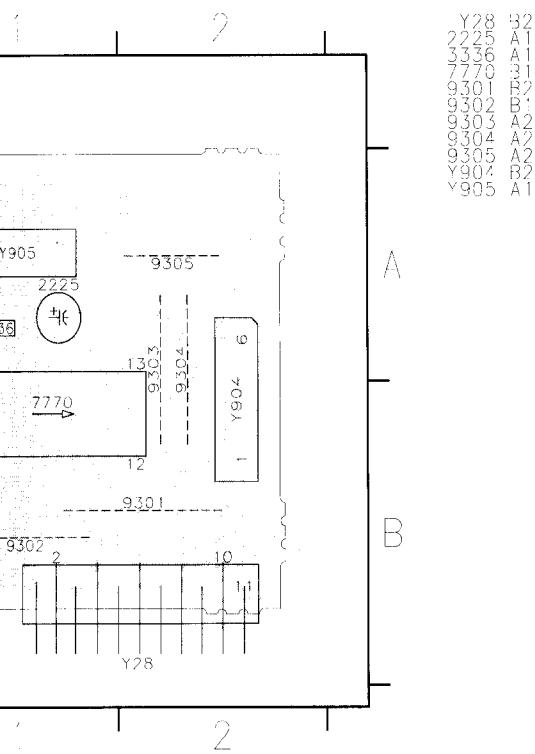


26001	A2	4606	A
26002	A2	4607	A
26003	B2	4608	B
26004	B2	4609	B
26005	B2	4601	B
26007	A2	4602	B
26008	A'	7604	B
26009	A2		
26100	A2		
26111	B2		
26226	A1		
36227	A1		
36300	B1		
36301	B1		
36302	A2		
36304	B2		
36305	B2		
36306	B2		
36307	B2		
36308	B2		
36309	B2		
36310	B2		
36311	B2		
36312	A2		
36313	A2		
36314	A2		
36315	A2		
36316	A2		
36317	B2		
36318	A1		
36319	A1		
36320	A2		
36321	A2		
36322	A2		
36323	B2		
36325	A1		
36326	B2		
36327	B2		
36328	B2		
36329	B2		
46001	D2		
46002	D2		
46003	B2		
46004	B2		
46005	B2		

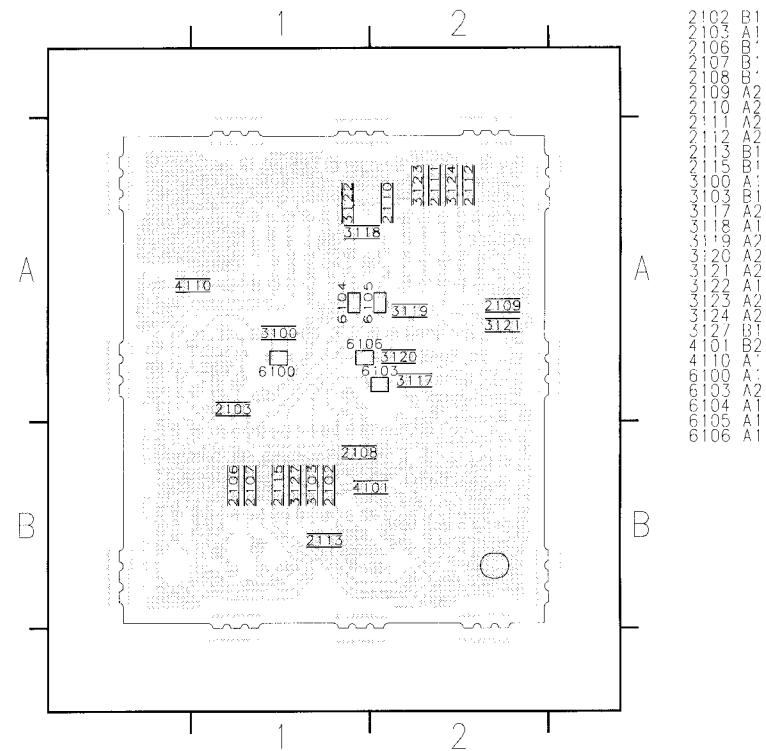
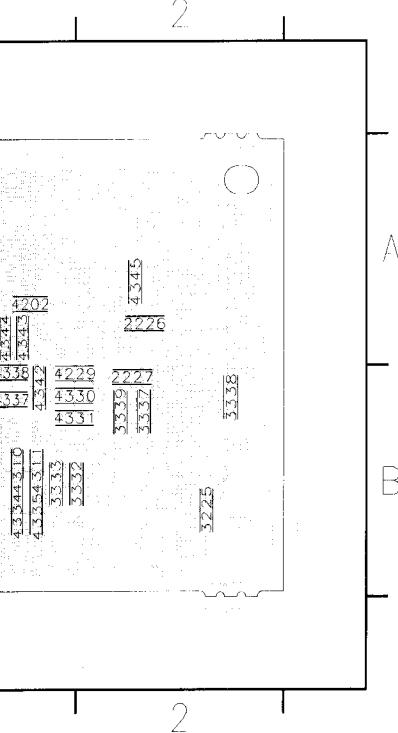
PCB YUV panel

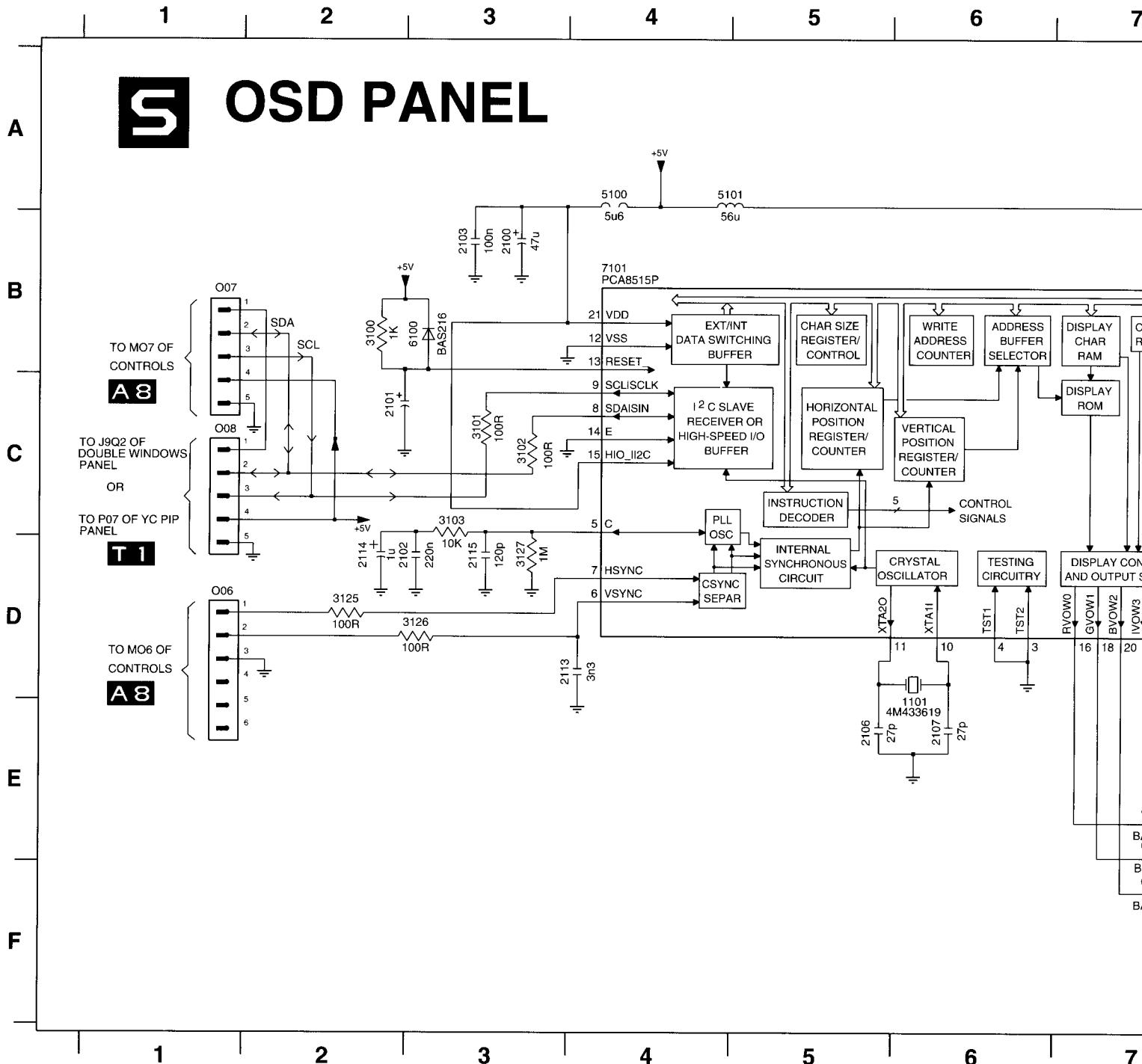


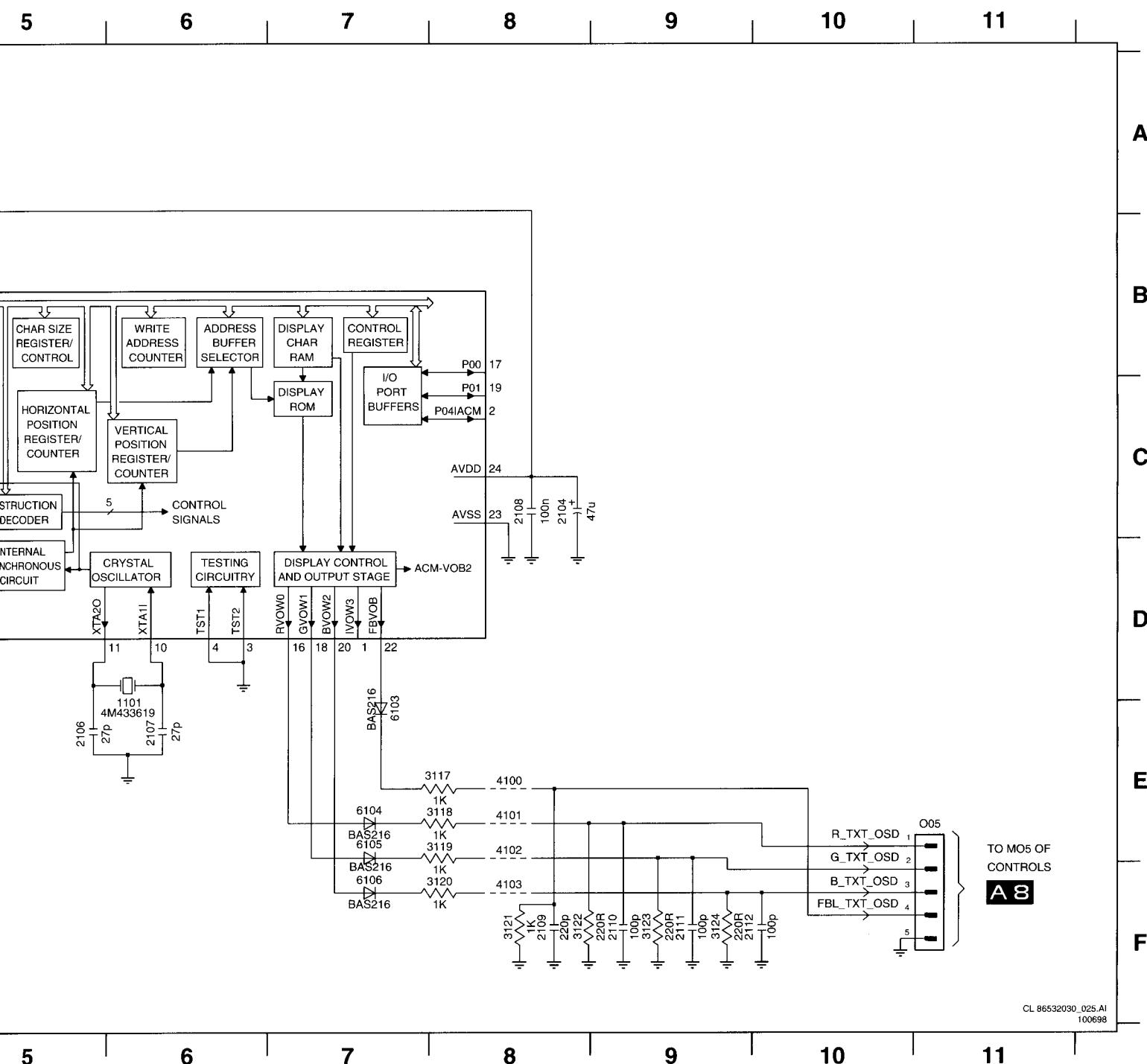
PCB OSD panel



PCB OSD panel

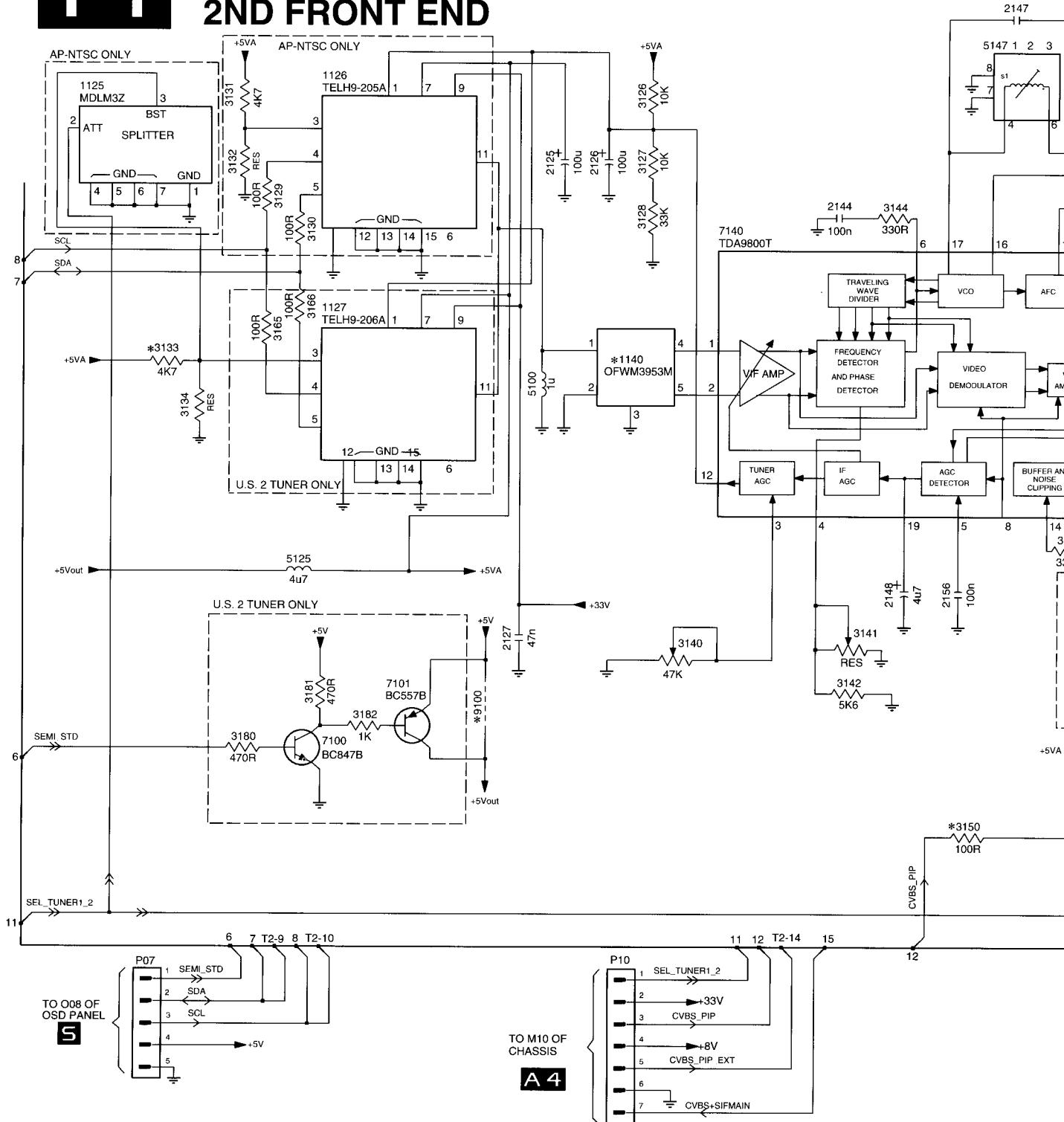






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**T 1 YC PIP PANEL
2ND FRONT END**



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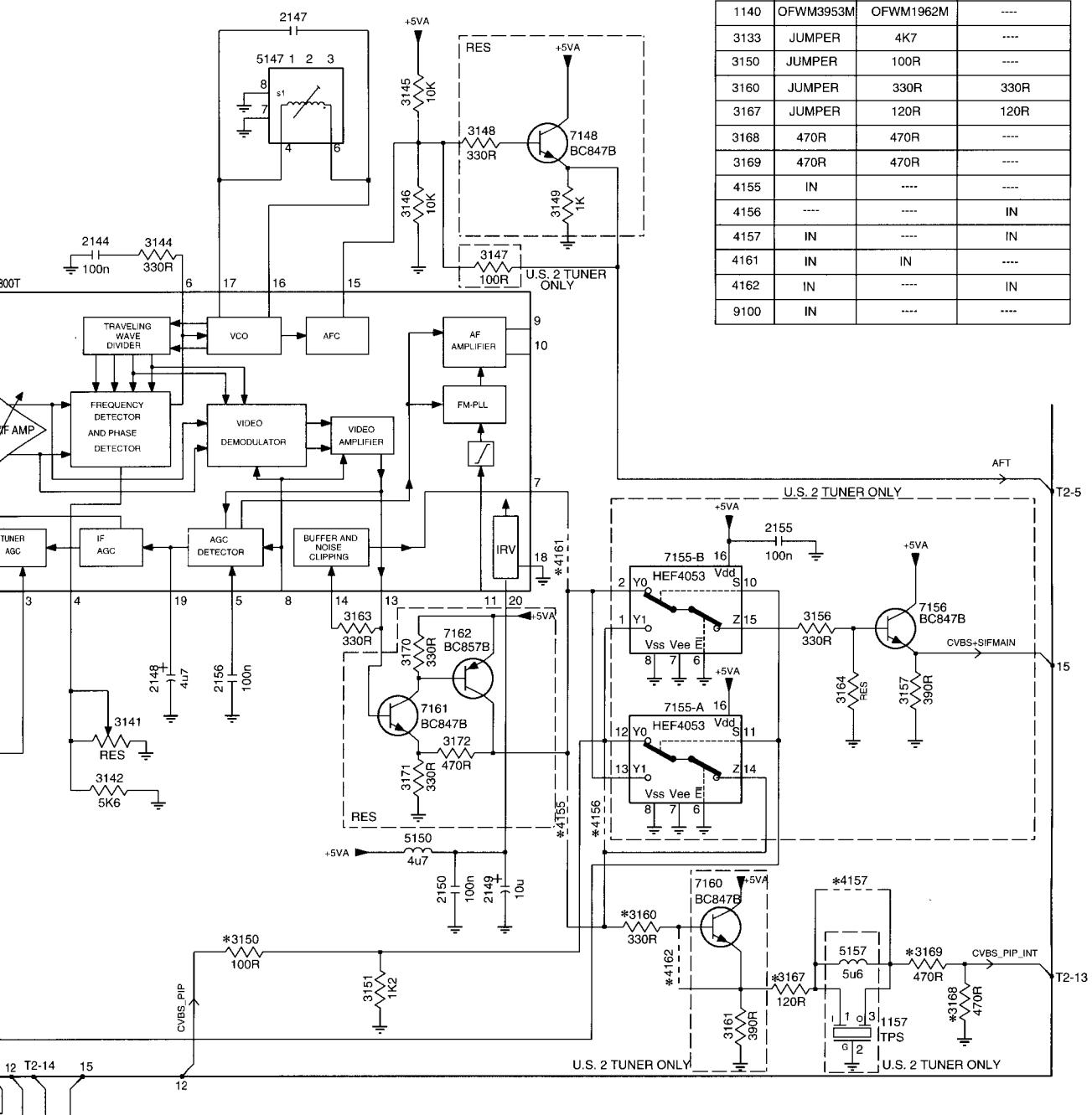
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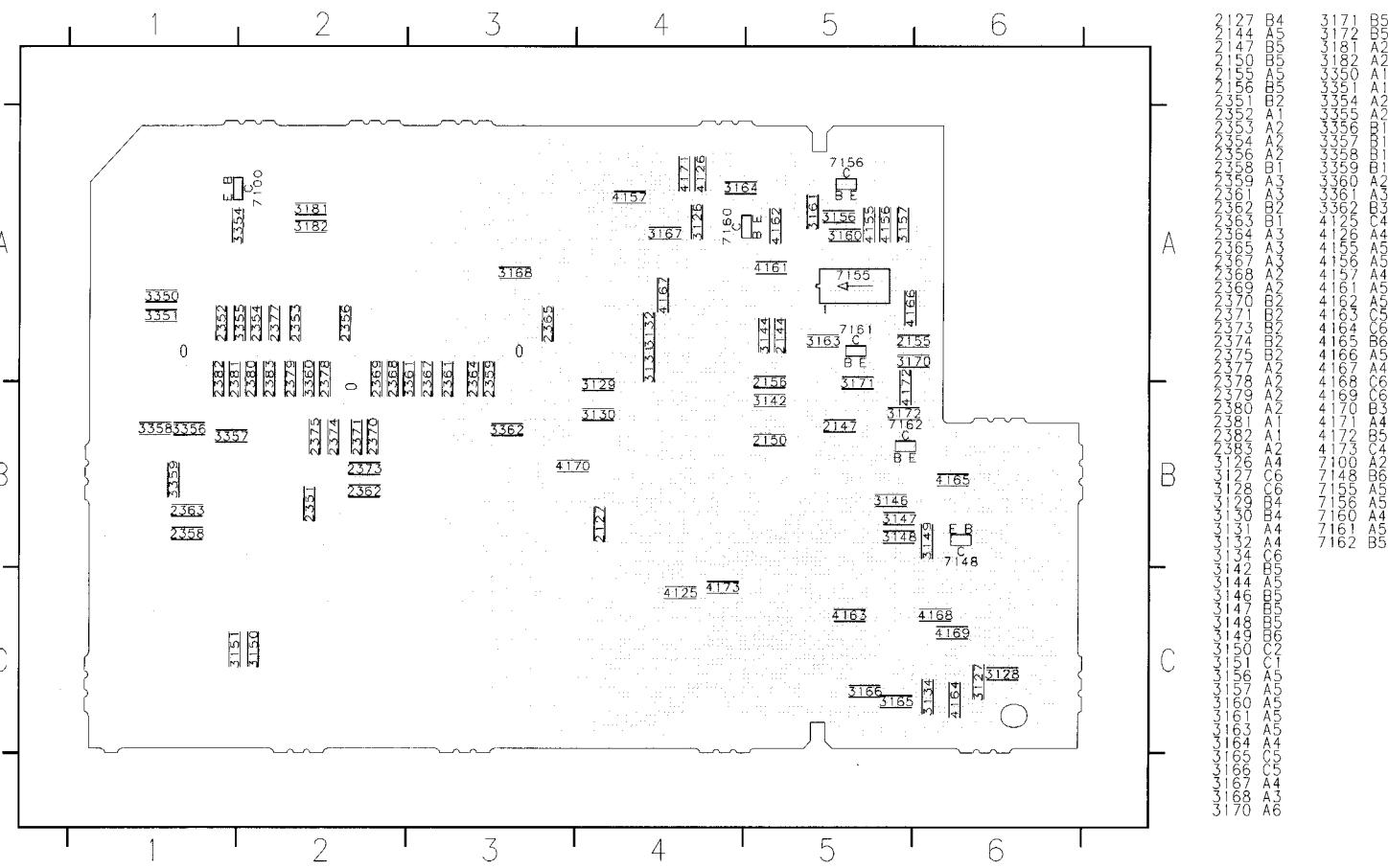
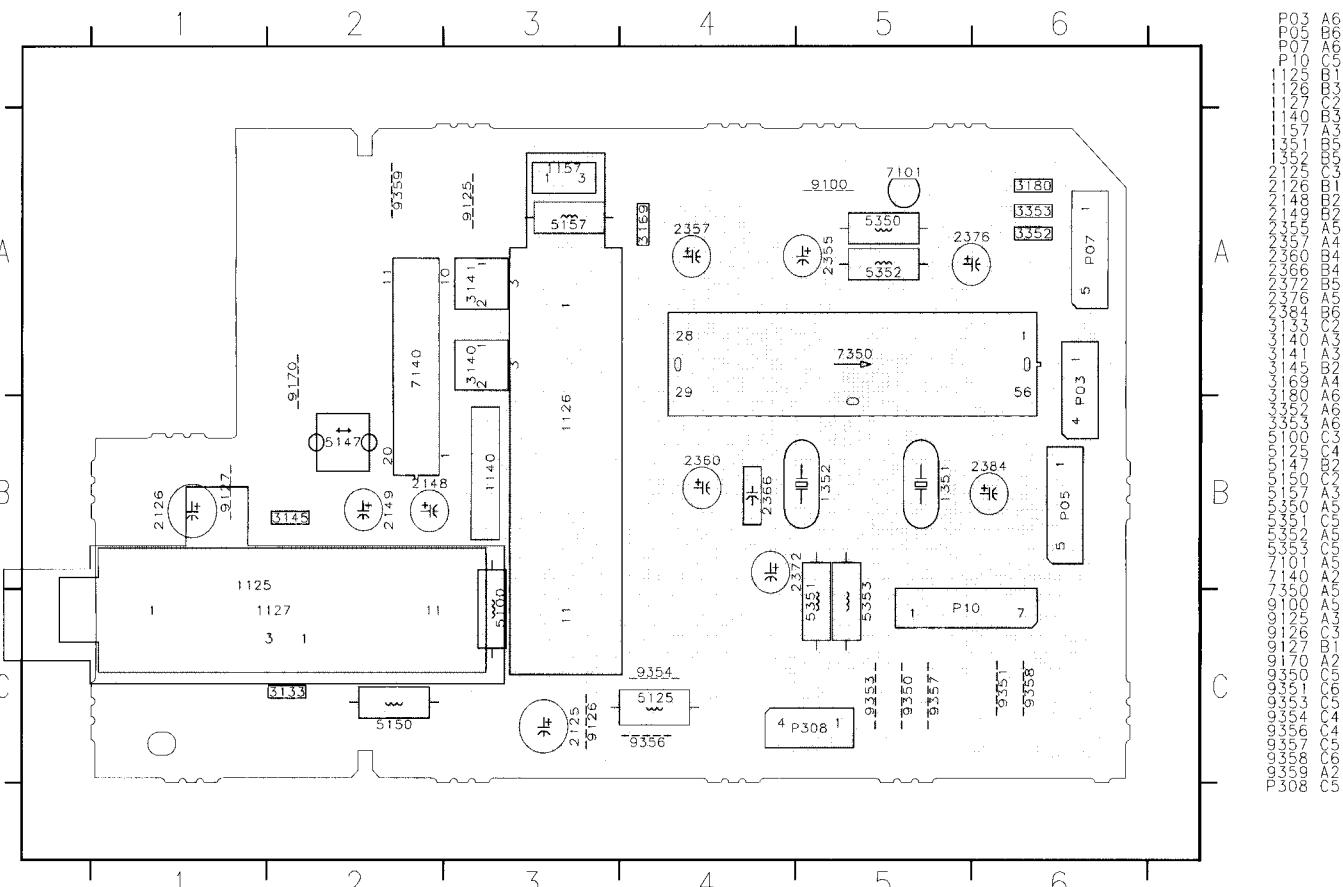


* ITEM	AP-NTSC	U.S. 2 TUNER	U.S. NON TUNER
1140	OFWM3953M	OFWM1962M	----
3133	JUMPER	4K7	----
3150	JUMPER	100R	----
3160	JUMPER	330R	330R
3167	JUMPER	120R	120R
3168	470R	470R	----
3169	470R	470R	----
4155	IN	----	----
4156	----	----	IN
4157	IN	----	IN
4161	IN	IN	----
4162	IN	----	IN
9100	IN	----	----

P07 G2
P10 G5
1125 A2
1126 A3
1127 C3
1140 C5
1157 G11
2125 B5
2126 B5
2127 E4
2144 B6
2147 A8
2148 E7
2149 F9
2150 F9
2155 D10
2156 E7
3126 A5
3127 B5
3128 B5
3129 B3
3130 B3
3131 A3
3132 B3
3133 C2
3134 C2
3140 E6
3141 E7
3142 E7
3144 B7
3145 AB
3146 B8
3147 B9
3148 B9
3149 B9
3150 F7
3151 F8
3156 D11
3157 E11
3160 F10
3161 G10
3163 D8
3164 E11
3165 C3
3166 C3
3167 F11
3168 G11
3169 F11
3170 E8
3171 E8
3172 E9
3180 F3
3181 E3
3182 E3
4155 E9
4156 E9
4157 F11
4161 D9
4162 F10
5100 C4
5125 D3
5147 A7
5150 F8
5157 F11
7100 F3
7101 E4
7140 B6
7148 B9
7155-A E10
7155-B D10
7156 D11
7160 F10
7161 E8
7162 D8
9100 F4

6

Electrical diagrams and print lay-outs



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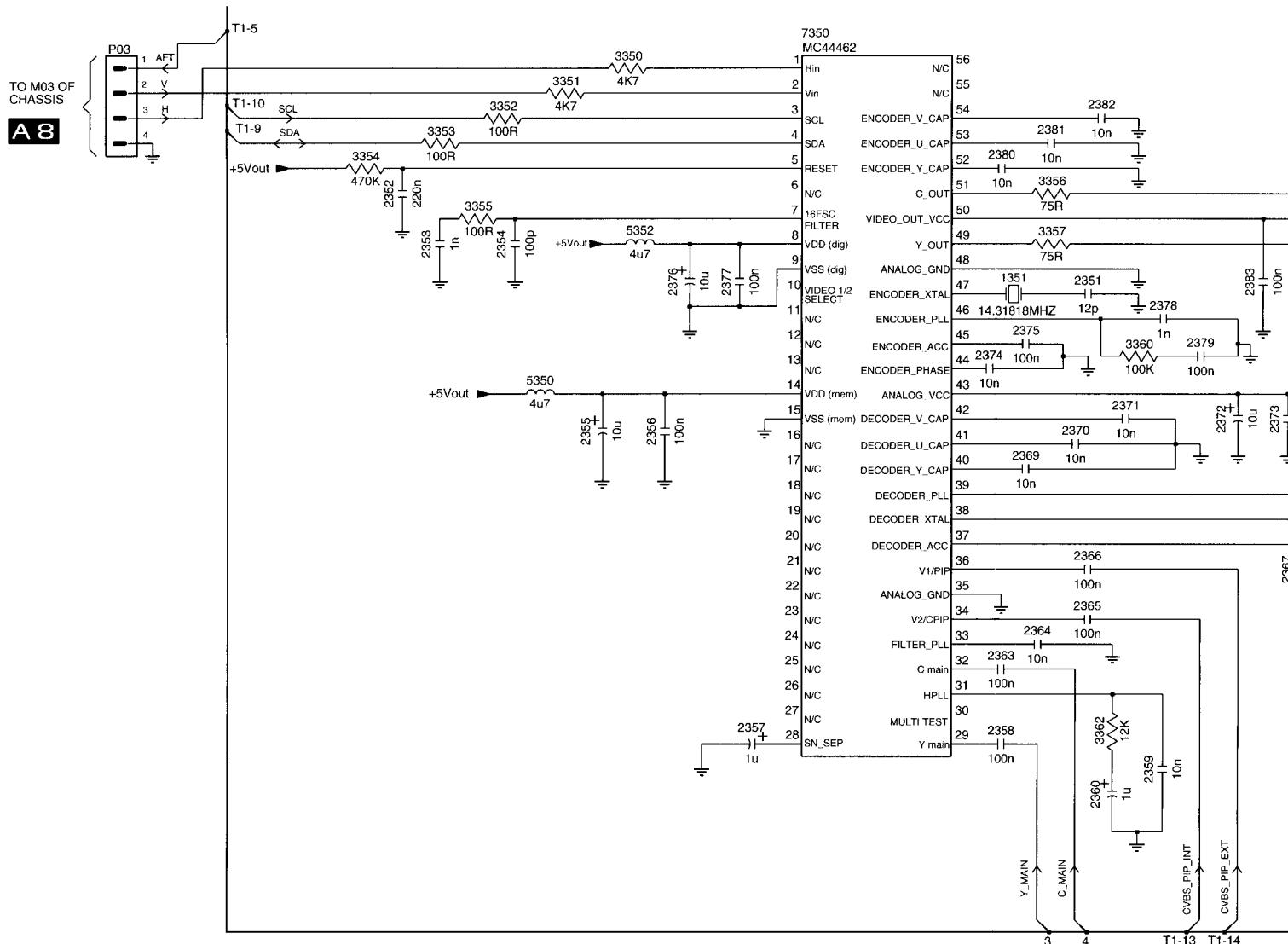
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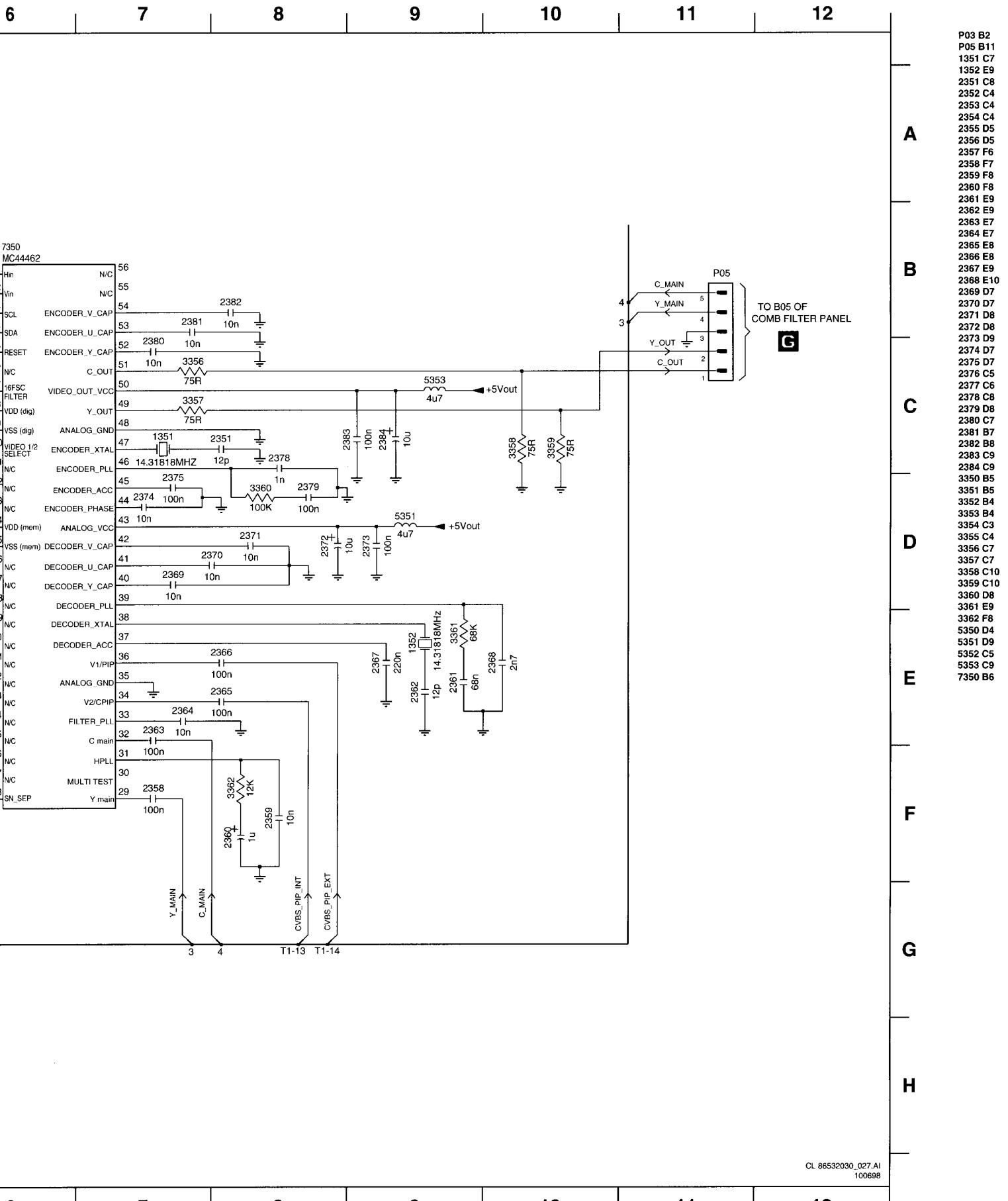
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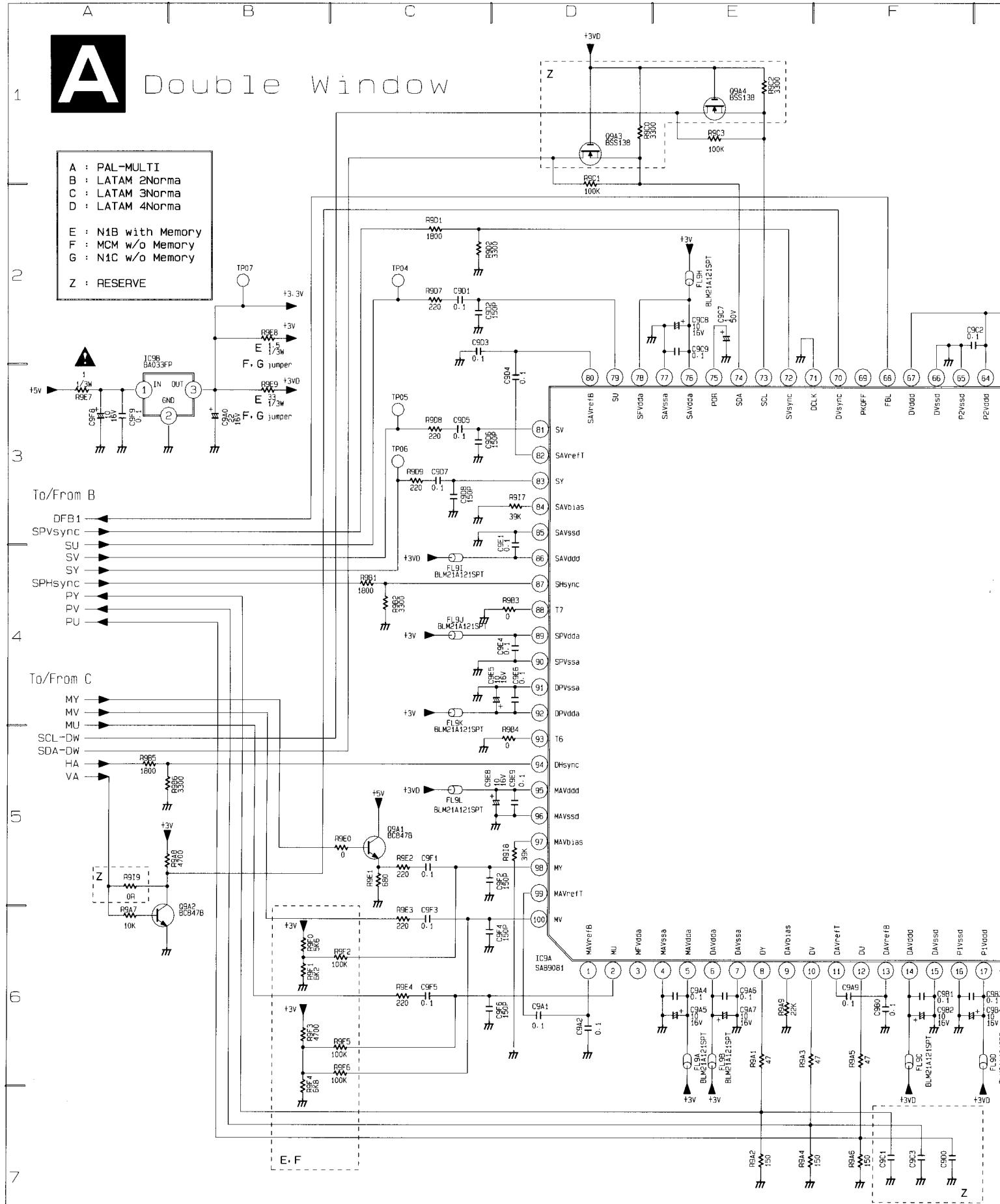
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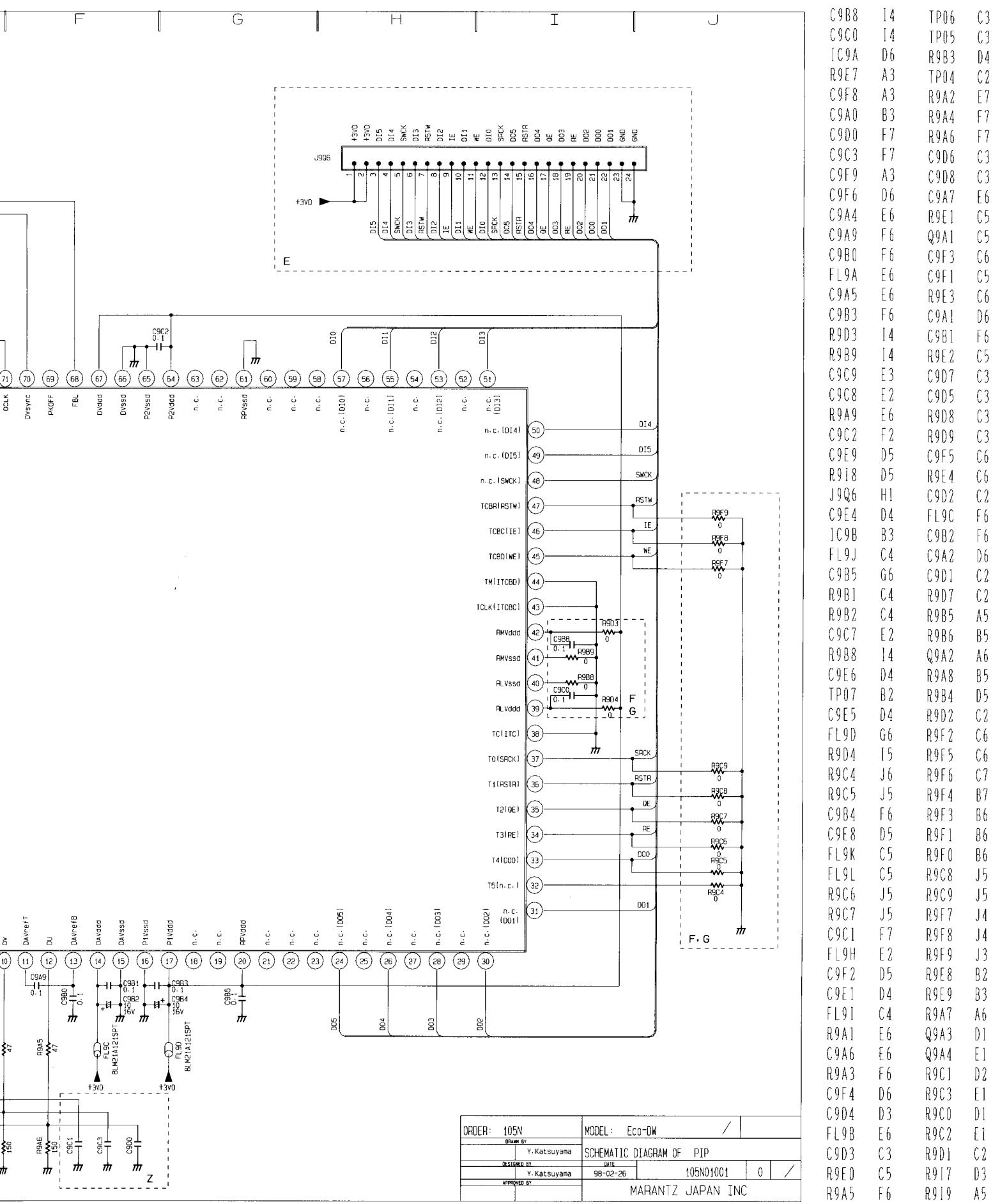
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T 2 YC PIP PANEL YC PROCESSING









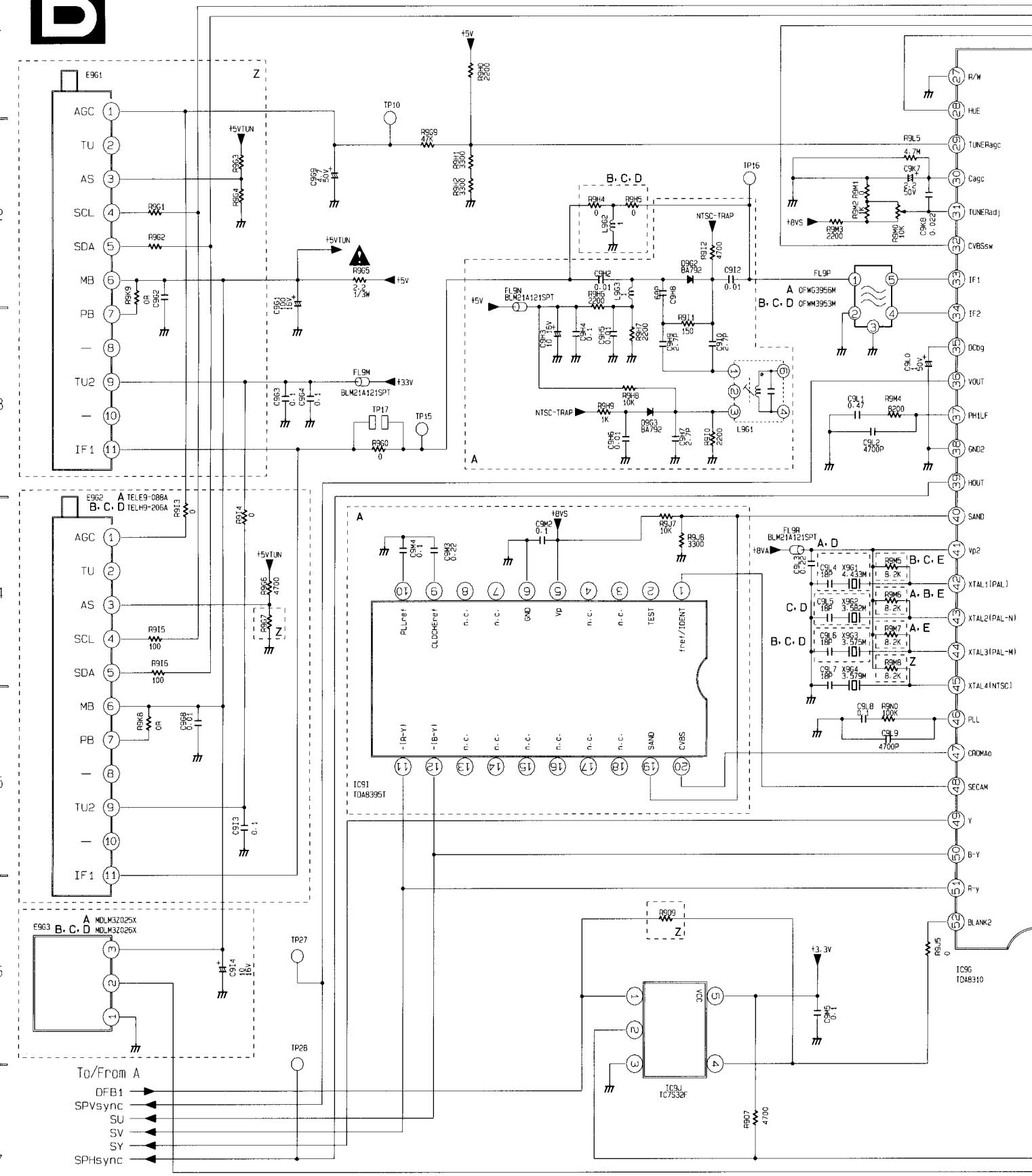
7 Electrical diagrams and print lay-outs

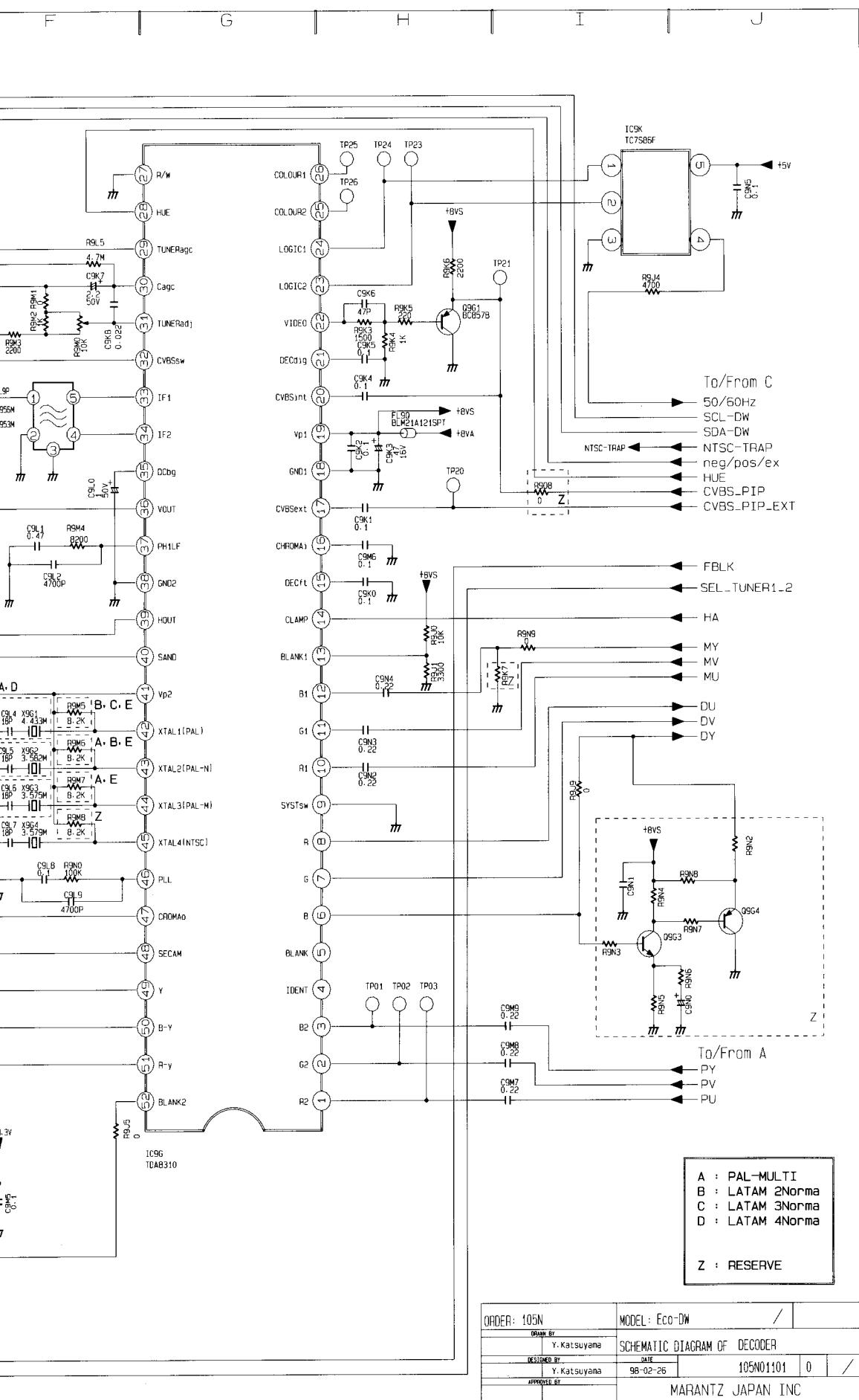
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B

Double Window



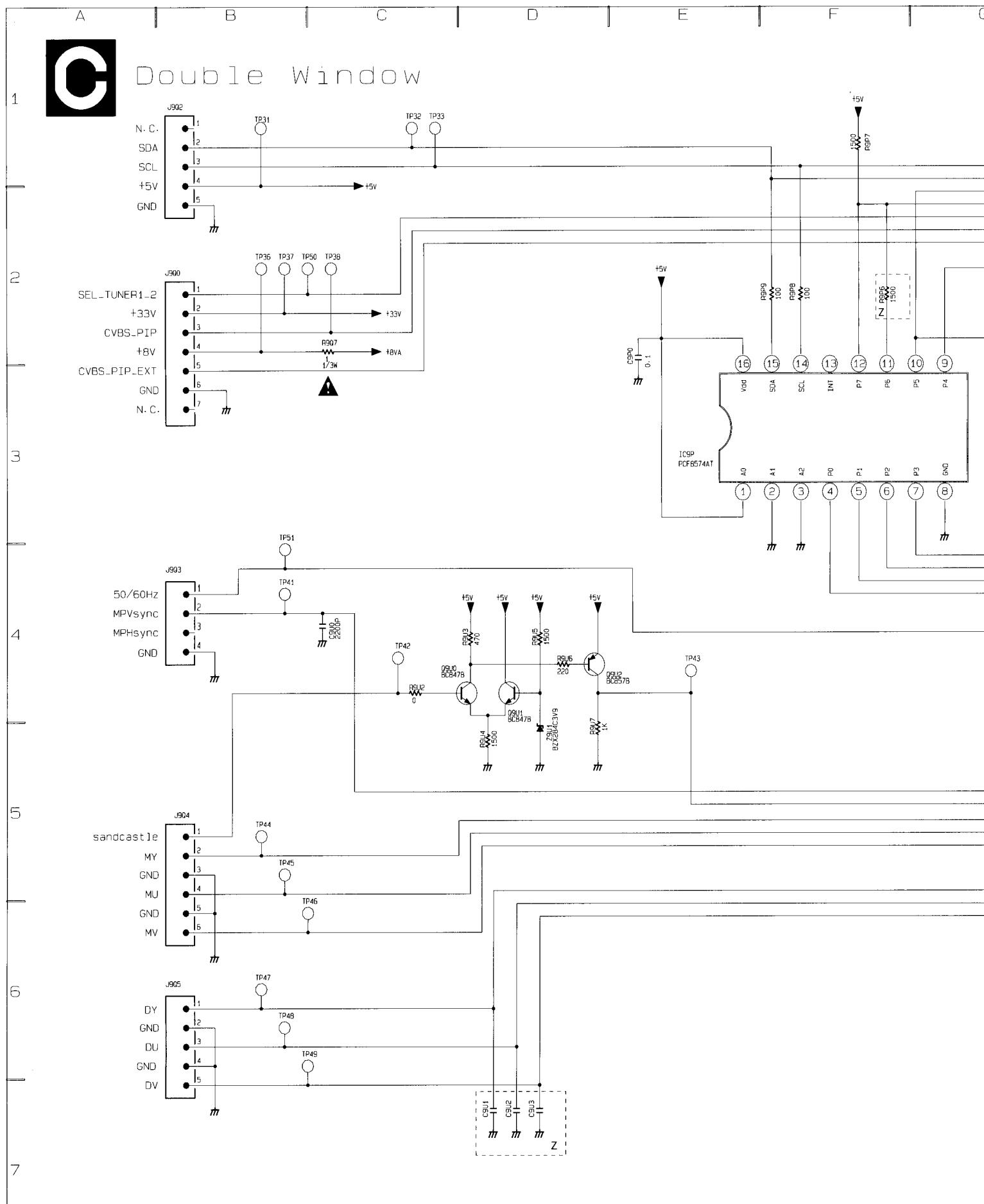


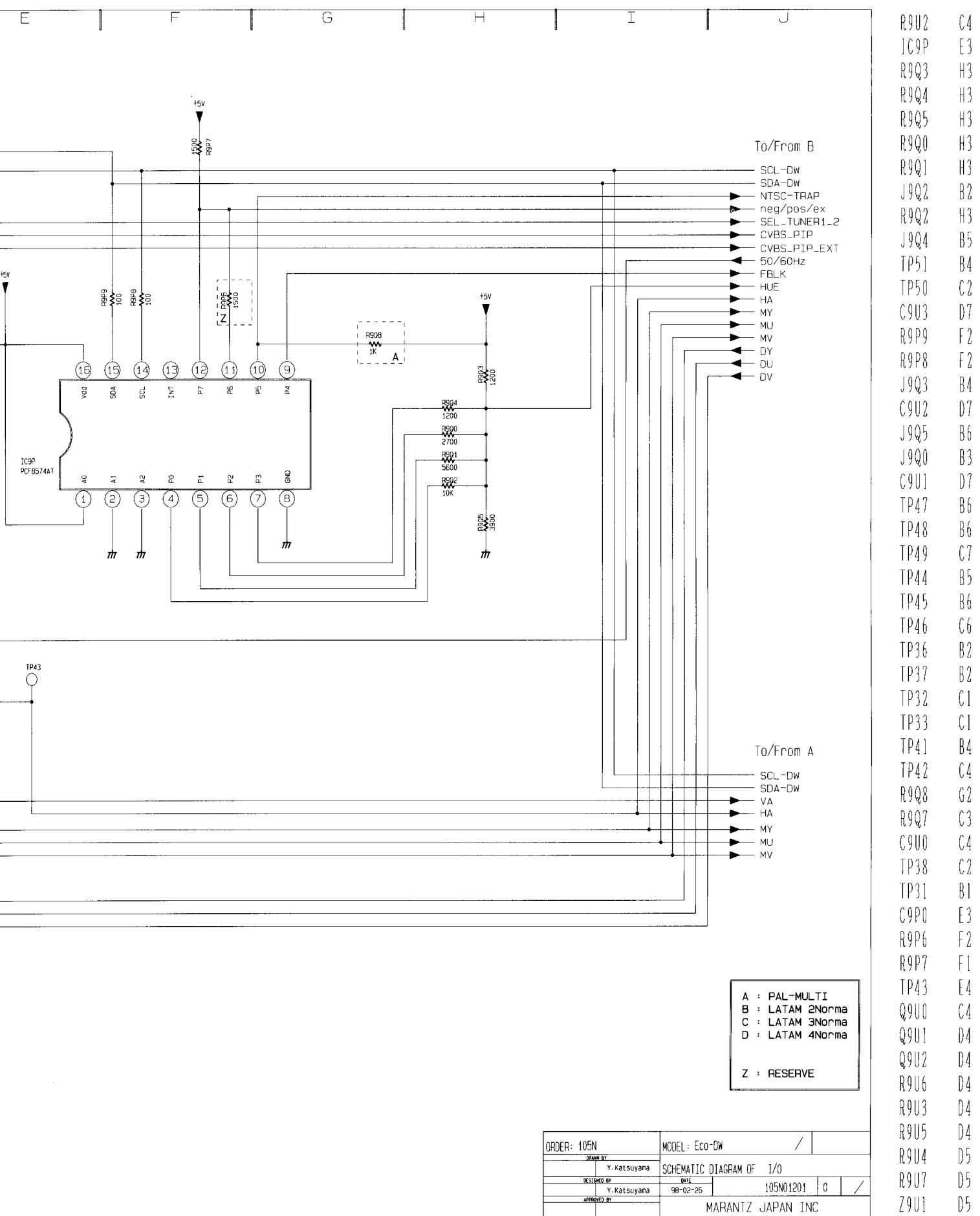
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R 9G9	C 2	D 9G2	E 2
R 9I3	B 4	C 9H8	E 2
R 9N0	F 5	C 9H9	E 3
C 9M5	F 6	T P27	B 6
I C9G	H 6	C 9I0	E 3
R 9N2	J 5	C 9H7	E 3
R 9H2	D 2	C 9H6	D 3
R 907	E 7	D 9G3	E 3
T P01	H 5	R 9H9	D 3
R 9G5	C 2	R 9H8	D 3
R 9G1	B 2	R 9I0	E 3
R 9K3	H 2	R 9I1	E 3
C 9K6	H 2	C 9I2	E 2
C 9K5	H 2	T P10	C 2
C 9K4	H 2	F L9P	F 3
C 9K0	H 3	R 9J5	F 6
C 9K1	H 3	T P15	C 3
T P02	H 5	C 9K7	F 2
R 9K5	H 2	R 9L5	F 2
Q 9G1	H 2	R 9M1	F 2
L 9G1	E 3	R 9M0	F 2
R 9M3	F 2	C 9K8	F 2
R 9K6	H 2	R 9M2	F 2
F L9N	D 3	C 9M6	H 3
C 9K2	H 3	R 9I5	B 4
C 9K3	H 3	R 9I6	B 5
F L9Q	H 3	R 9G7	B 4
R 9N9	I 4	R 9I4	B 4
X 9G1	F 4	C 9I3	B 5
X 9G2	F 4	R 9G6	B 4
X 9G3	F 4	I C9I	E 4
X 9G4	F 5	E 9G3	A 6
C 9L7	F 5	T P21	I 2
C 9L6	F 4	T P20	H 3
C 9L5	F 4	C 9G8	B 5
C 9L4	F 4	C 9M4	C 4
R 9J7	E 4	C 9M3	C 4
R 9H4	D 2	C 9M2	D 4
R 9H5	D 2	E 9G1	A 2
L 9G2	D 2	E 9G2	A 4
R 9M6	F 4	C 9I4	B 6
R 9M7	F 4	C 9L8	F 5
R 9G2	B 2	R 909	E 6
R 9M8	F 4	T P25	H 1
R 9M5	F 4	T P26	H 2
C 9L3	F 4	T P24	H 1
F L9R	F 4	T P23	H 1
C 9L0	F 3	R 9H1	D 2
R 9M4	F 3	R 9H0	D 1
R 9J8	E 4	I C9K	I 1
F L9M	C 3	C 9N4	H 4
R 9K9	A 3	R 9J0	H 4
R 9G4	B 2	R 9J1	H 4
R 9G3	B 2	R 9K7	I 4
C 9G4	C 3	C 9N3	H 4
C 9G2	B 3	Q 9G3	I 5
C 9G1	B 3	R 9K4	H 2
C 9L2	F 3	Q 9G4	J 5
R 908	I 3	R 9N3	I 5
T P03	H 5	C 9N2	H 4
C 9G3	B 3	R 9J9	I 4
R 9G0	C 3	R 9N5	I 5
T P28	B 7	R 9N6	J 5
C 9L1	F 3	R 9N8	J 5
C 9L9	F 5	R 9N7	J 5
C 9G9	C 2	R 9N4	I 5
C 9H2	D 2	C 9M8	I 6
C 9H5	D 3	C 9M7	I 6
R 9H7	E 3	C 9M9	I 5
R 9I2	E 2	R 9J4	I 2
L 9G3	E 3	C 9N1	I 5
T P16	E 2	C 9N0	J 5
C 9H3	D 3	C 9N5	J 1
C 9H4	D 3	R 9K8	B 5

7 Electrical diagrams and print lay-outs

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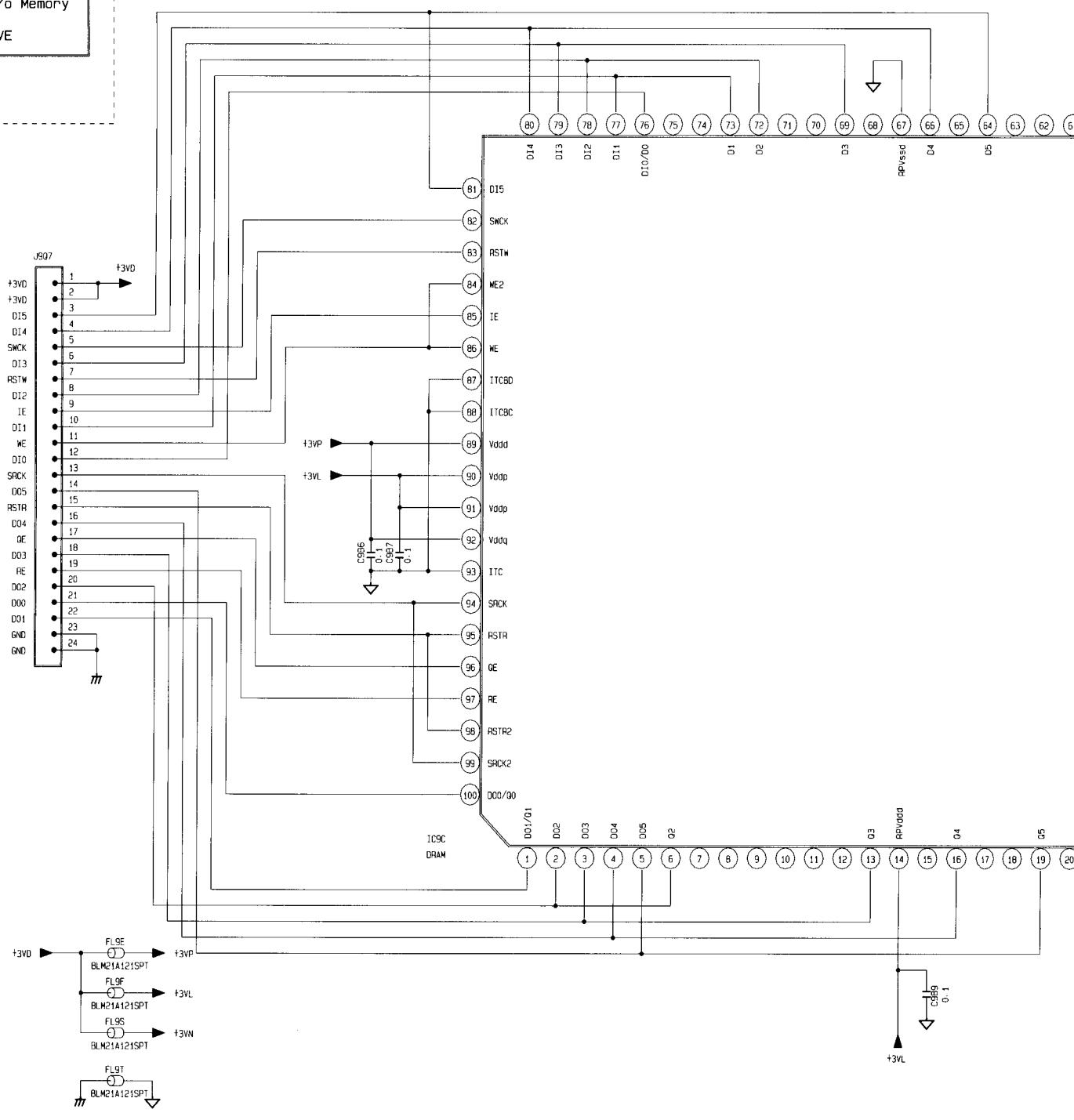
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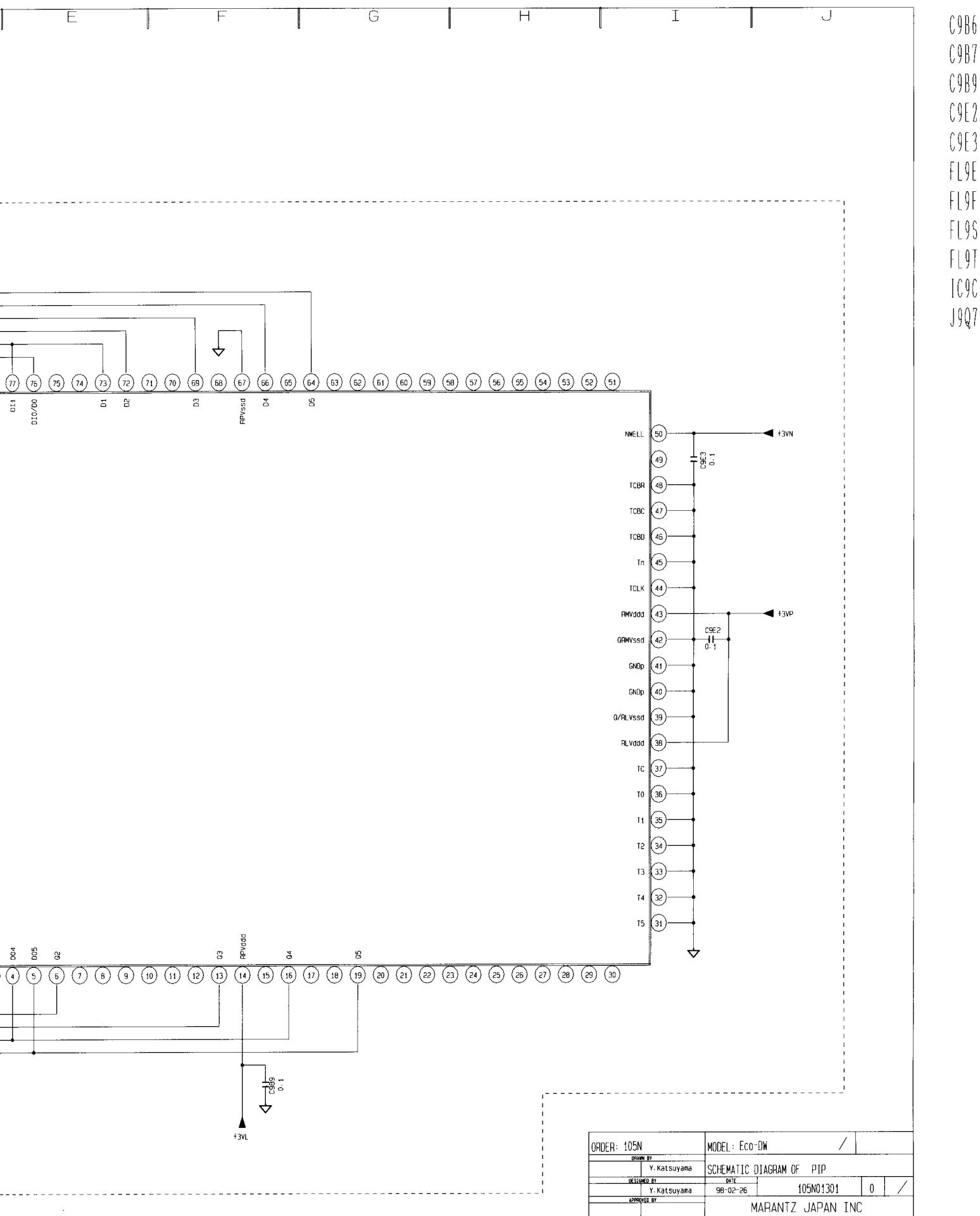
Double Window (External Memory)

A : PAL-MULTI
 B : LATAM 2Norma
 C : LATAM 3Norma
 D : LATAM 4Norma

 E : N1B with Memory
 F : MCM w/o Memory
 G : N1C w/o Memory

 Z : RESERVE

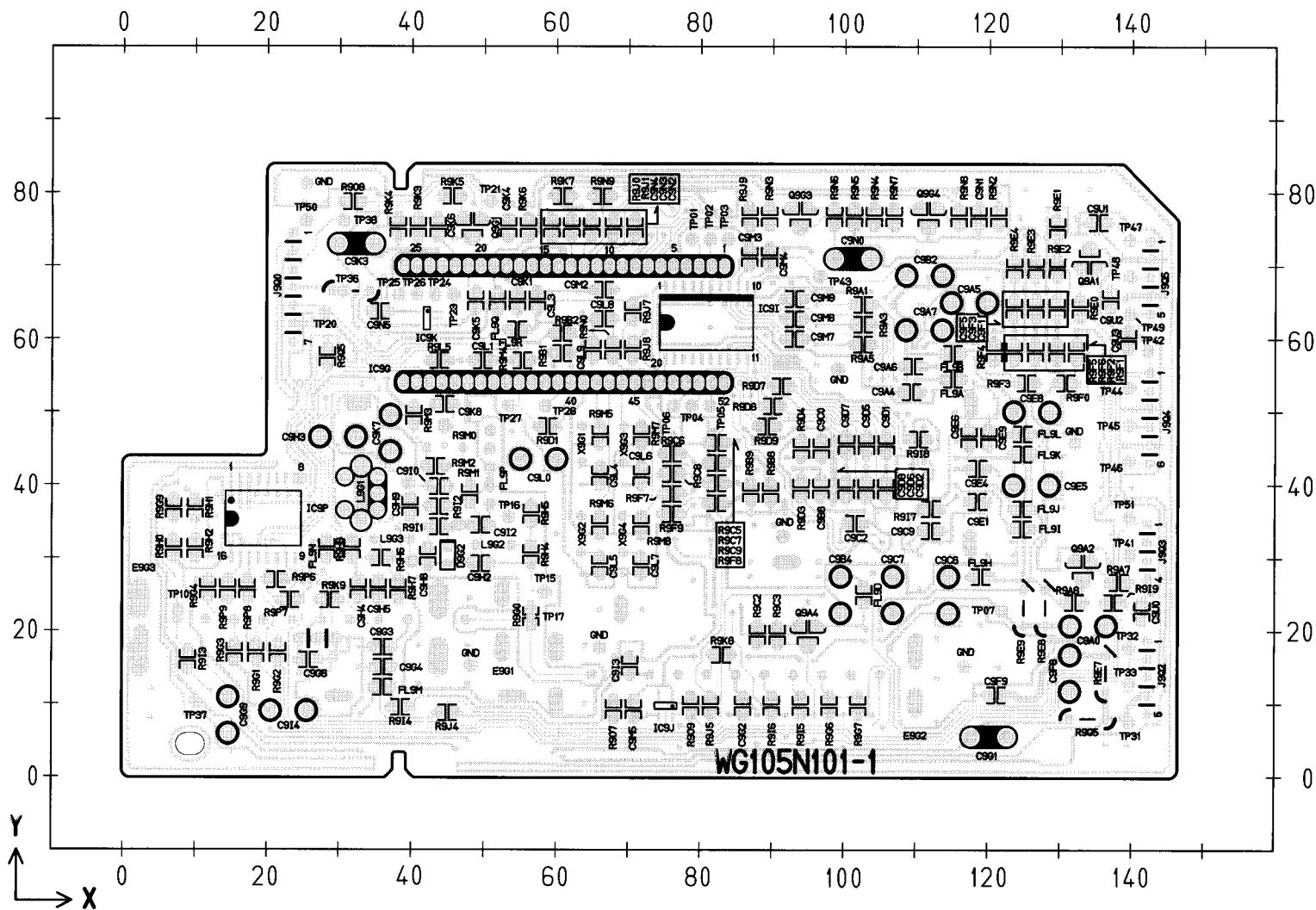




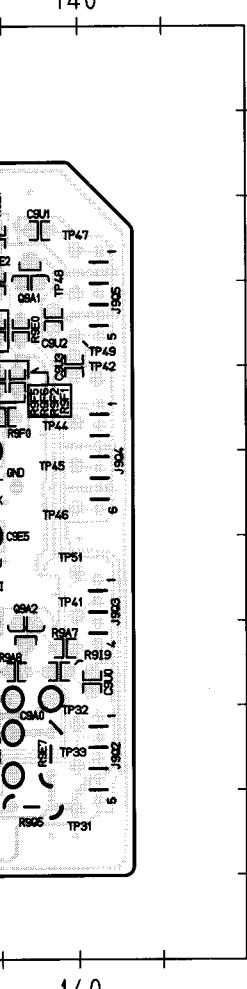
7 Electrical diagrams and print lay-outs

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DW23.eps



DW23.eps

Part id	Pnt-X	Pnt-Y	Part id	Pnt-X	Pnt-Y	Part id	Pnt-X	Pnt-Y	Part id	Pnt-X
C9A4	109.3	52.8	C9N5	35.5	63.8	R9F0	130.8	54.0	R9M6	66.0
C9A6	109.5	56.3	C9U0	141.5	22.8	R9F1	132.3	58.3	R9M7	71.8
C9B8	96.8	39.5	C9U1	135.3	76.0	R9F2	129.5	58.3	R9M8	71.8
C9C0	96.8	45.0	C9U2	137.0	65.5	R9F3	125.3	54.0	R9N0	67.8
C9C2	101.5	34.8	C9U3	139.5	60.0	R9F4	120.8	58.3	R9N2	121.3
C9C9	112.0	33.8	D9G2	45.0	30.3	R9F5	123.5	58.3	R9N3	89.5
C9D1	105.8	45.5	FL9A	115.0	54.5	R9F6	126.5	58.3	R9N4	104.0
C9D2	105.8	39.5	FL9B	115.0	58.0	R9F7	76.0	38.8	R9N5	101.3
C9D5	103.0	45.5	FL9D	102.8	25.0	R9F8	82.3	37.5	R9N6	98.5
C9D6	103.0	39.5	FL9H	119.0	27.5	R9F9	76.0	36.0	R9N7	106.8
C9D7	100.3	45.5	FL9I	124.8	34.0	R9G0	56.5	22.0	R9N8	115.8
C9D8	100.3	39.5	FL9J	124.8	36.8	R9G1	18.5	17.0	R9N9	66.3
C9E1	118.5	37.8	FL9K	124.8	44.3	R9G2	21.5	17.0	R9O7	68.0
C9E4	118.5	42.3	FL9L	124.8	47.0	R9G3	15.5	17.0	R9O8	31.8
C9E6	117.3	46.5	FL9M	36.0	12.3	R9G4	11.8	25.8	R9O9	78.8
C9E9	120.0	46.5	FL9N	28.3	31.3	R9G6	98.0	9.8	R9P6	21.3
C9F1	129.5	64.3	FL9Q	51.8	65.3	R9G7	102.0	9.8	R9P7	23.1
C9F3	126.5	64.3	FL9R	54.5	61.3	R9G9	7.0	36.8	R9P8	17.3
C9F5	123.5	64.3	IC91	80.8	62.3	R9H0	7.0	31.3	R9P9	14.5
C9F9	121.3	11.3	IC9J	75.3	9.8	R9H1	10.0	36.8	R9Q5	28.3
C9G2	86.0	9.8	IC9K	42.0	62.8	R9H2	10.0	31.3	TP01	78.7
C9G3	36.0	17.8	IC9P	15.0	30.3	R9H4	56.5	30.5	TP02	81.3
C9G4	36.0	15.0	Q9A1	134.0	71.0	R9H5	56.5	36.0	TP03	83.8
C9G8	25.8	16.0	Q9A2	133.3	28.5	R9H6	35.8	30.0	TP04	78.7
C9H2	49.5	29.3	Q9A4	95.0	19.5	R9H7	38.1	25.8	TP05	81.3
C9H4	32.6	25.8	Q9G1	48.3	75.3	R9H8	31.8	31.3	TP06	76.2
C9H5	35.4	25.8	Q9G3	93.8	76.8	R9H9	43.8	34.3	TP07	121.9
C9H8	42.3	30.3	Q9G4	111.5	76.8	R9I2	43.8	37.0	TP10	7.6
C9H9	39.8	37.0	R9A1	102.5	64.8	R9I3	9.0	16.0	TP15	58.4
C9I0	43.8	39.8	R9A3	102.5	62.0	R9I4	38.5	9.5	TP16	53.3
C9I2	49.5	34.5	R9A5	102.5	59.3	R9I5	94.0	9.8	TP20	27.9
C9I3	70.3	15.3	R9A7	138.3	26.8	R9I6	90.0	9.8	TP21	50.8
C9K1	54.5	65.3	R9A8	132.0	24.0	R9I7	112.0	36.8	TP23	45.7
C9K4	53.3	75.3	R9B1	60.8	58.0	R9I8	110.3	46.3	TP24	43.2
C9K5	48.8	65.3	R9B2	60.8	60.8	R9I9	137.5	24.0	TP25	38.1
C9K6	43.5	75.3	R9B8	89.8	39.0	R9J0	59.3	75.3	TP26	40.6
C9K8	44.5	51.0	R9B9	87.0	39.0	R9J1	62.0	75.3	TP27	53.3
C9L1	49.8	57.0	R9C2	88.0	19.5	R9J4	45.0	8.8	TP28	58.4
C9L3	57.3	65.3	R9C3	90.8	19.5	R9J5	81.5	9.8	TP31	139.7
C9L4	66.0	41.3	R9C5	82.3	45.8	R9J7	70.5	63.8	TP32	139.7
C9L5	66.0	29.0	R9C6	76.0	44.3	R9J8	70.5	58.5	TP33	139.7
C9L6	71.8	41.3	R9C7	82.3	43.0	R9J9	86.8	76.8	TP36	30.5
C9L7	71.8	29.0	R9C8	76.0	41.5	R9K3	40.8	75.3	TP37	10.2
C9L8	66.5	62.8	R9C9	82.3	40.3	R9K4	38.0	75.3	TP38	30.5
C9L9	65.0	58.5	R9D1	58.8	48.0	R9K5	45.5	79.5	TP41	139.7
C9M2	66.5	66.8	R9D3	94.0	39.5	R9K6	56.0	75.3	TP42	142.2
C9M3	86.8	71.3	R9D4	94.0	45.0	R9K7	60.8	79.5	TP43	96.5
C9M4	89.5	71.3	R9D7	91.3	53.5	R9K8	83.0	16.8	TP44	139.7
C9M5	70.8	9.3	R9D8	90.0	50.8	R9K9	28.6	24.3	TP45	139.7
C9M7	93.0	60.0	R9D9	89.3	48.0	R9L5	43.8	57.0	TP46	139.7
C9M8	93.0	62.8	R9E0	132.8	64.3	R9M1	48.0	38.8	TP47	139.7
C9M9	93.0	65.5	R9E1	129.5	75.3	R9M2	43.3	42.5	TP48	139.7
C9N1	118.5	76.8	R9E2	129.5	69.8	R9M3	40.3	49.5	TP49	139.7
C9N2	70.8	75.3	R9E3	126.5	69.8	R9M4	55.3	57.0	TP50	25.4
C9N3	67.8	75.3	R9E4	123.5	69.8	R9M5	66.0	46.8	TP51	139.7

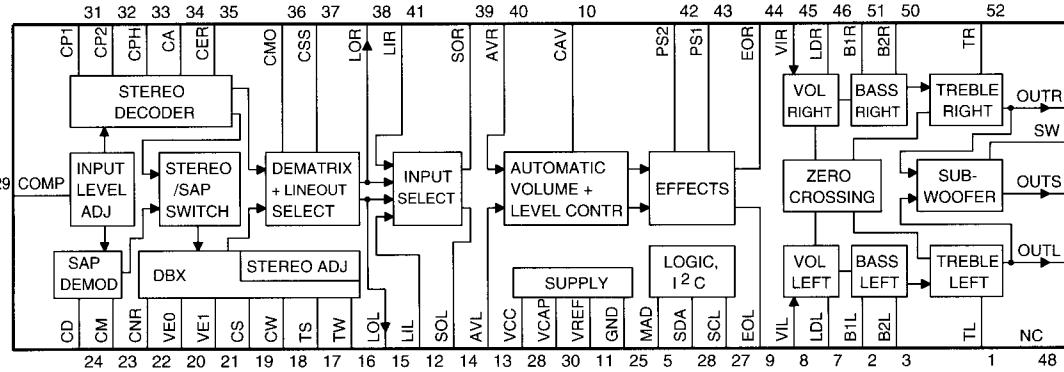
Electrical diagrams and print lay-outs

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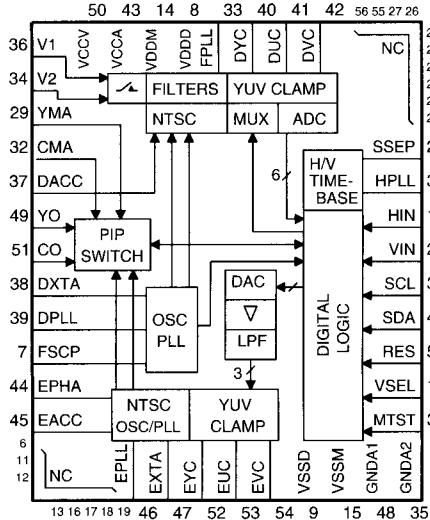
TDA9855 IIC-BUS CONTROLLED BTSC STEREO/SAP DECODER AND AUDIO PROCESSOR
IC 7437 on Audio processing BTSC

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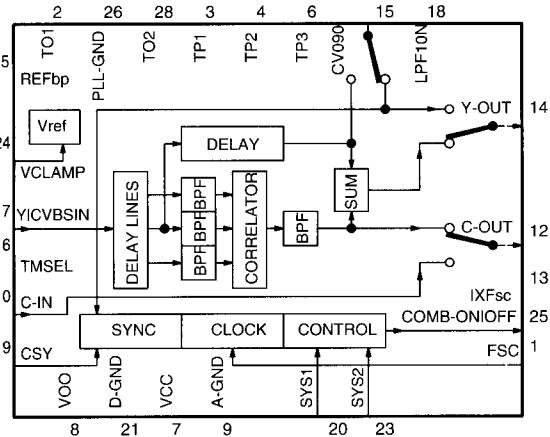
MC44462
IC 7350 on YC processing

T2



SAA4961 MULTI-STANDARD COMB FILTER
IC 7000 on COMB filter panel

G



TDA8844 PAL/NTSC/SECAM TV PROCESSOR

IC 7150 on Tuner+IF , Video processing

A4

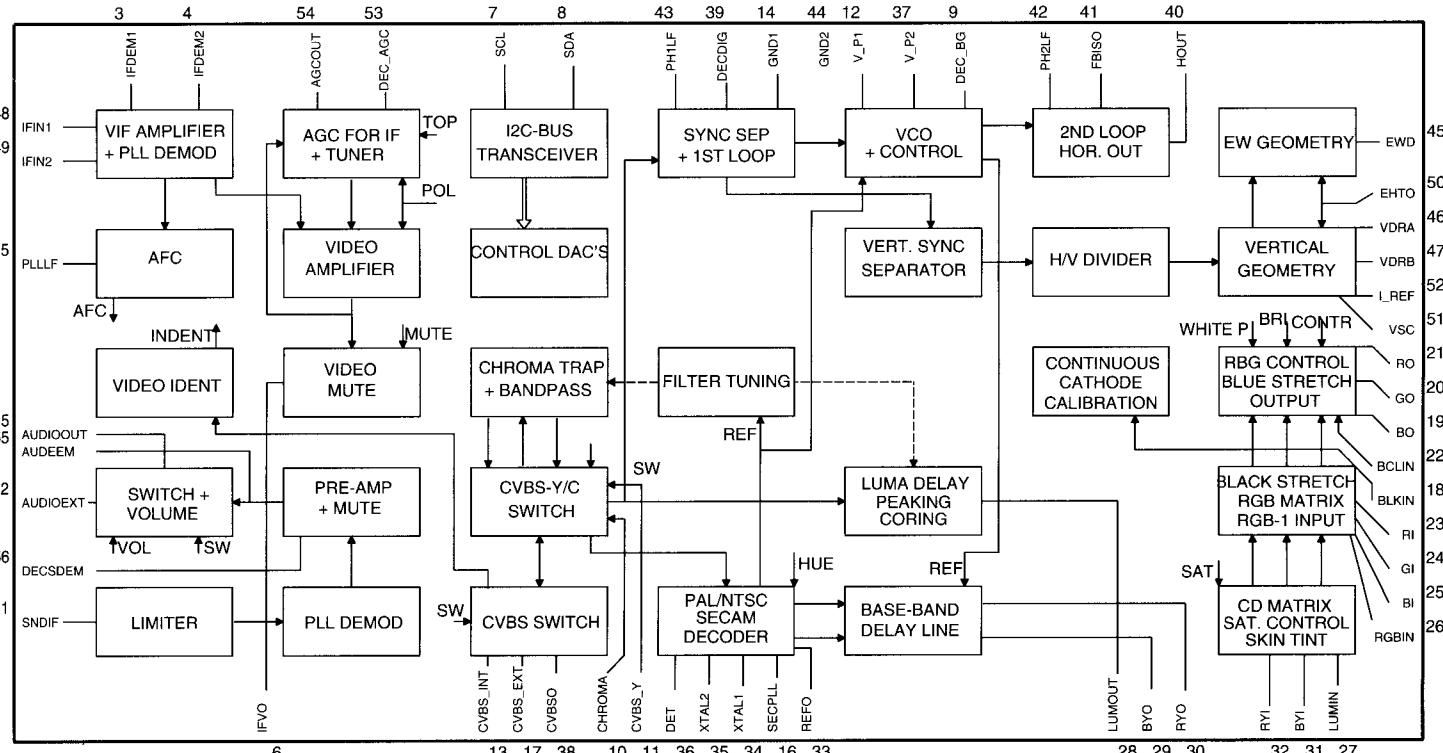
, Synchronisation

A5

, and RGB processing

A6

A7



General: the Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5.

8.1 Alignment conditions

All electrical adjustments should be performed under the following conditions:

- Warm-up time: 10 minutes
- The voltages and oscillograms are measured in relation to the tuner earth.
- Test probe: $R_i > 10M\Omega$ $C_i < 2.5 \text{ pF}$.

8.2 Electrical alignments

8.2.1 VG2

Rough alignment

Using a pattern generator displaying a circle pattern, adjust the VG2 potmeter of LOT L5630 to obtain normal picture.

Fine adjustment

Connect RF output of the pattern generator to antenna. Test pattern: blank pattern (blank screen on CRT). Set brightness, colour and contrast to minimum. Set the time base of the oscilloscope to 0.5ms with external triggering of the vertical pulse. Measure the black level pulse during the vertical flyback at the RGB cathodes of the CRT.

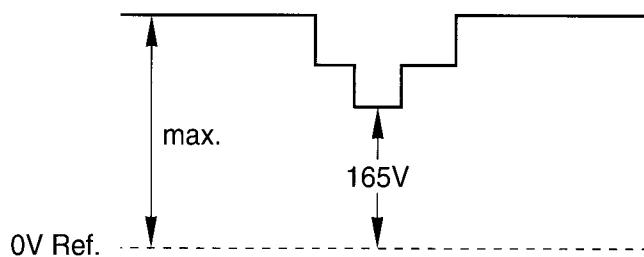


Figure 8.1: Black level pulse

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Adjust the value of the highest of the three guns with the VG2 pot meter of the LOT to 165Vdc.

8.2.2 Focus

- Set the smart picture setting to natural.
- Using a pattern generator displaying a crosshatch pattern, adjust the focus potmeter of LOT L5630 in such a way that the haze on the vertical lines at 2/3 from the left and right edges of the screen (just) disappears.

8.2.3 Alignment of IF sound trap (34.4MHz and 33.5MHz)

- Disconnect jumper 4149
- Inject a sinewave of 34.4MHz (PAL Multi) or 33.5MHz (/93) to anode of D6145 via the following network:

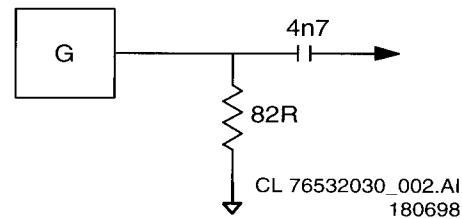
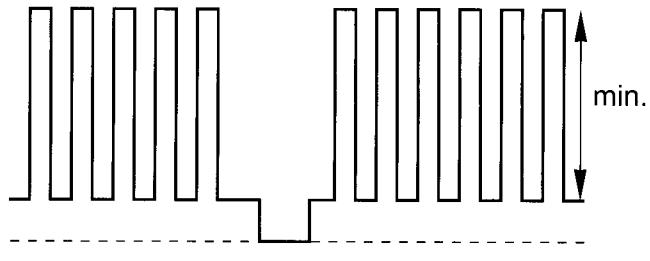


Figure 8.2: Measurement network

- Connect an oscilloscope to pin 1 & 2 of 1145
- Adjust coil 5145 for minimum output at 1145.

8.2.4 QSS demodulator (DK system sets)

- Tune the set to a particular station with NICAM DK transmission
- Connect an oscilloscope at pin 4 of M11B
- Adjust coil 5402 till minimum video content is reached at pin 4 of M11B



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Figure 8.3: Signal at L5402

8.3 YC PIP

Before alignment, make sure following voltages are present:

- +5V at pin 4 of P07
- +8V at pin 4 of P10
- insert an external 5V DC source at pin 1 of P07

VCO alignment

1. Connect an IF signal (no modulation) of 45.75 MHz 107dBuV to pin 1 of item 1140
2. Adjust S5147 till the DC voltage is 2.35V +/- 100mV at pin 15 of IC7140

AGC alignment

1. Connect an IF signal (no modulation) of 45.75MHz 107dBuV to pin 1 of item 1140
2. Adjust 3140 till 3V +/- 0.3V DC at pin 1 of tuner 1126

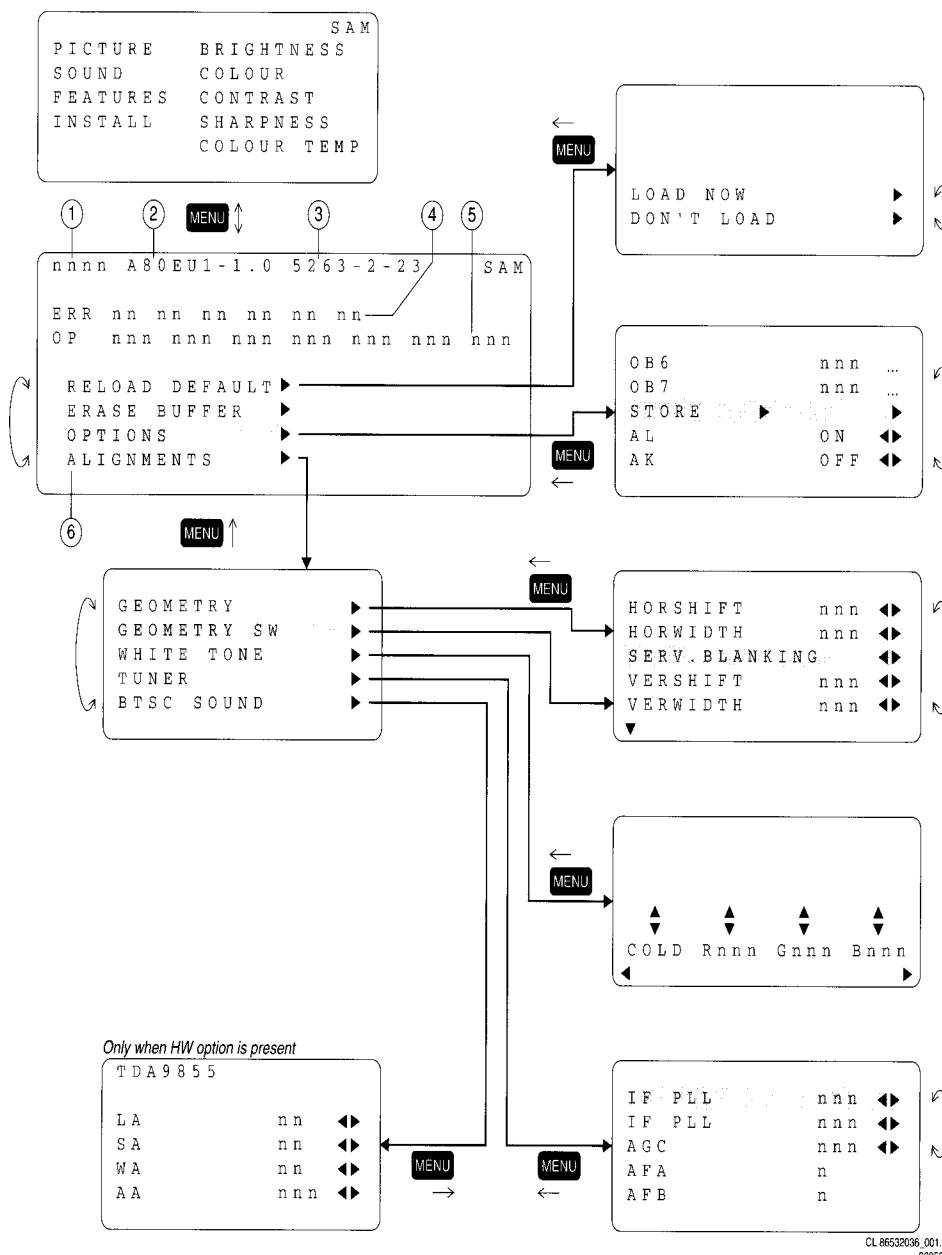
Phase alignment

1. Connect a current meter between pin 6 of IC7140 and an external DC source of 2.5V
2. Connect pin 19 of IC7140 to 5V
3. Adjust potmeter 3141 at pin 4 to (minimum) current reading of approximately 0 +/- 0.2A

8.4 Software alignments (Service Alignment Mode)

With the software alignments of the Service Alignment Mode the geometry, white tone, tuner (IF) and BTSC sound settings can be aligned.

SAM Menu



Picture 8.4: Service Alignments Mode screens and structure

8.4.1 Geometry alignments

The geometry alignments menu contains 11 items to align a correct picture geometry. In widescreen sets, the GEOMETRY SW is available for separate alignments of the superwide (panorama) mode. The geometry alignments are:

- HORSHIFT (horizontal shift): align the horizontal centre of the picture to the horizontal centre of the CRT
- HORWIDTH (horizontal width): align the picture width (*)

- SERV.BLANKING (service blanking): switch on/off the blanking of the lower half of the screen (can be used in combination with the vertical alignments)
- VERSHIFT (vertical shift): align the vertical centre of the picture to the vertical centre of the CRT
- VERHEIGHT (vertical width): align the picture height (other vertical alignments are NOT compensated)
- VERSLOPE (Vertical slope): Align the vertical centre of the picture to the vertical centre of the CRT. (This is the first alignment to be performed of the vertical alignments)
- EW PARABO (E/W parabola): align straight vertical lines at the sides of the screen (*)
- EW TRAPEZ (E/W trapezium): align straight vertical lines in the middle of the screen (*)

8 Alignments

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- EW CORNER (E/W corner): align straight vertical lines in the corners of the screen (*)
- VER S-COR (vertical S-correction): align the vertical linearity, meaning that vertical intervals of a grid-pattern must be equal over the entire height.
- VERZOOM (vertical zoom): align the picture height (other vertical alignments are compensated)

Easy way to adjust vertical geometry. (4:3)

- Set VER S-COR to value 13
- Set VERZOOM to value 25
- Set SERV.BLANKING to 'ON'
- Adjust VERSLOPE till the test pattern centre line touches the centre edge
- Adjust VERSHIFT and VERHEIGHT till best fix the screen

8.4.2 White tone

In the white tone sub menu the colour values for the colour temperature values can be changed.

The colour temperature mode (NORMAL, WARM , COLD) or the colour (R, G, B) can be selected with the RIGHT/LEFT cursor keys. The mode or value can be changed with the UP/DOWN cursor keys.

First the values for the NORMAL colour temperature should be selected. Than the offset values for the COLD and WARM mode can be selected. Note that the alignment values are non-linear

0 represent the middle value (no offset difference)

1-127 represent a positive offset (127 is the maximum positive offset) 128-256 represent a negative offset (128 is the maximum negative offset)

Scale:

Negative << 128, 256, 0, 1,..., 127 >> Positive (0 = no offset)

8.4.3 Tuner

IF alignment; The IF PLL and IF PLL L' alignments are done automatically by the TDA8844. Changing the value has no effect

AGC alignment; With the AGC alignment, the automatic gain control crossover can be aligned. Adapt this setting in case the signal of a strong local transmitter is distorted.

AFA and AFB display the status of the automatic frequency control. Since this is automatically adjusted, these values do not have to be used.

8.4.4 BTSC adjustment

Composite level adjustment

- Connect RF output of the pattern generator PM5418 to antenna
- Adjust pattern generator to the following settings:
 - Frequency: 187.25MHz (channel 9)
 - RF amplitude: 1mVrms
 - Pattern: blank (no pattern is selected)
 - System: NTSC M
 - Carrier: ON
 - Test data: L=R=300Hz
- Set the TV set to MONO and SAP to OFF

- Activate SAM, select ALIGNMENT and then BTSC SND
- Measure at pin 15 or pin 38 of IC7437 TDA9855
- Adjust LA (level adjust) values until the output level is 500mVrms
- Press MENU keys on RC to store adjusted value

Stereo separation adjustment

1. Connect RF output of the pattern generator PM5418 to antenna
2. Adjust pattern generator to the following settings:
 - Frequency: 187.25MHz (channel 9)
 - RF amplitude: 1mVrms
 - Pattern: blank (no pattern is selected)
 - System: NTSC M
 - Carrier: ON
 - Test data: L=300 Hz R=3.1 kHz
3. Set the TV set to STEREO and SAP to OFF
4. Activate SAM, select ALIGNMENT and then BTSC SND
5. Connect pin 15 and pin 38 of IC7437 TDA9855 to ground
6. Select AA (auto adjust) and wait for at least one second
7. Notice that the SA (Spectral) and WA (wideband) will change. If necessary, adjust SA or WA for optimal result
8. Press MENU keys on RC to store adjusted values

8.5 Options

Options are used to control the presence / absence of certain features and hardware. There are two ways to change the option settings. The various option configurations and the descriptions of the two character-codes are explained in chapter 8 of the manual.

Changing a single option

An option can be selected with the MENU UP/DOWN keys and its setting can be changed with the MENU LEFT/RIGHT keys

Changing multiple options by changing option byte values

Option bytes make it possible to set very fast all options. An option byte represents a number of different options. All options of the A8 are controlled via 7 option bytes. Select the option byte (OB1, OB2, OB3, OB4, OB5, OB6 or OB7) and key in the new value.

Changes in the options and option bytes settings are saved by selected STORE and pressing the MENU RIGHT key. All changes are disregarded when the OPTION submenu is left without using the STORE command. Some changed will only take affect after the set has been switched OFF and ON with the mains switch.

8.5.1 List of options

Unless otherwise stated ON means present (or yes), OFF means not present (or no)

8 Alignments

Table 8-1

Option	Functionality
AK	Auto Standby (after 2 hours of no activity via RC or keyboard)
AN	Auto Standby when 15 minutes no picture
AV	>1 AV Source
BM	Blue mute
CF	must be always ON when a PIP panel is present
CH	IF at 38.0MHz (ON = IF at 38.0MHz, OFF = IF at 38.9MHz) (not for NTSC sets)
CL	Child Lock (in FEATURE menu)
CM	Compress 16:9
CS	Customer Service Mode
DN	Dynamic Noise Reduction (in FEATURE menu)
DS	Preset downloading with Dealer Service Tool possible
EX	Expand 14:9 (via RC SCREEN MODE button)
HO	Hospitality Mode
IM	Incredible Picture (when YUV panel is present) or Contrast Plus (no YUV panel present) item in FEATURE menu
IP	YUV panel present
PI	PIP (MC44462) or DW (SAB9081) present
PL	Parental Lock (only in NTSC sets)
PS	PIP Surf
PT	2nd PIP Tuner (when ON, the CF options should also be ON)
SC	Smart Clock / Timer
SR	Incredible Surround sound
VS	Vertical Sync slicing level; NTSC: always ON; PAL-MULTI: always OFF
W1	ECO PIP Double Window 4:3 mode (only in Pal/Multi sets in combination with PI=ON)
W2	ECO PIP Double Window 16:9 mode (only in Pal/Multi sets in combination with PI=ON)

S0,S1,S2 Number of AV sources (see below)

Table 8-2

S0	S1	S2	REAR	SIDE
OFF	OFF	OFF	SVHS1/ AV1	AV2
OFF	ON	ON	SVHS1/ AV1	SVHS2/ AV2
ON	ON	ON	SVHS1/ AV1 AV2	SVHS2/ AV3

SA, SBSound decoding system (see below)

Table 8-3

SA	SB	Sound	ICStereo
ON/OFF	ON	MSP3400C	2CS only
ON	OFF	MSP3410D	2CS and Nicam
OFF	ON/OFF	MSP3410D	2CS only

8.5.2 Option bits/bytes

Option bits (Pal/Multi sets)

OB1 bits 8, 7, ..., 1: AK, AN, AV, BM, DN, DS, CM, CS

OB2 bits 8, 7, ..., 1: EX, HO, IP, PI, CL, PS, PT, SA

OB3 bits 8, 7, ..., 1: SB, S0, S1, S2, SC, SR, W1, W2

OB4 bits 8, 7, ..., 1: CF, IM, VS, CH(/43 & /57), (res), (res), (res), (res)

OB5 bits 8, 7, ..., 1: (reserved)

OB6 bits 8, 7, ..., 1: (reserved)

OB7 bits 8, 7, ..., 1: (reserved)

Option bits (NTSC sets)

OB1 bits 8, 7, ..., 1: AK, AN, BM, DS, CM, CS, DN, EX

OB2 bits 8, 7, ..., 1: HO, IP, PI, PL, PS, PT, S0, S1

OB3 bits 8, 7, ..., 1: S2, SR, IM, VS, CF, SA(/61), SB(/61), (res)

OB4 bits 8, 7, ..., 1: (reserved)

OB5 bits 8, 7, ..., 1: (reserved)

OB6 bits 8, 7, ..., 1: (reserved)

OB7 bits 8, 7, ..., 1: (reserved)

An option byte value is calculated in the following way:

- value "option bit 1" x 1 =.....
- value "option bit 2" x 2 =.....
- value "option bit 3" x 4 =.....
- value "option bit 4" x 8 =.....
- value "option bit 5" x 16 =.....
- value "option bit 6" x 32 =.....
- value "option bit 7" x 64 =.....
- value "option bit 8" x 128 =.....+
- value "option byte" =.....

9 Circuit description

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9.1 Training Manual

The A8 circuitry is described in detail in the A8 Training Manual. In the Training Manual, the following topics are covered:

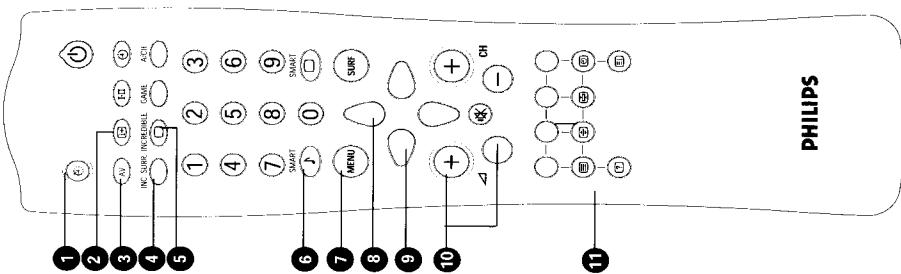
1. Introduction
2. Mechanical
3. Control
4. Power supply
5. Video processing
6. Synchronisation
7. Audio processing
8. Audio output stage
9. Horizontal Deflection
10. Vertical Deflection
11. Teletext and on screen display
12. Wide screen view modes

The order code of the A8 Training Manual is 4822 727 21613.

10 Directions for use

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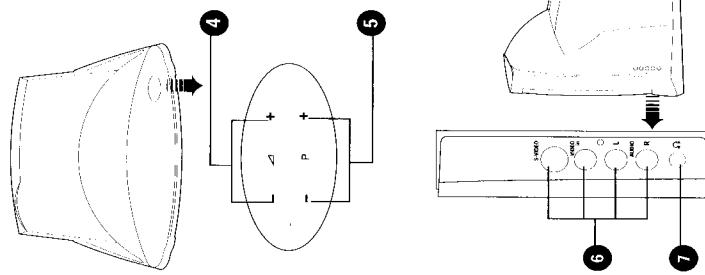
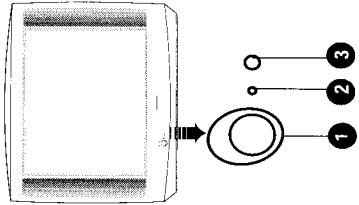
FUNCTIONS OF REMOTE CONTROL



- 1 Mains Power button**
Switch mains power on or off.
- 2 Standby light indicator**
Indicate red light when standby mode is activated.
- 3 Remote Sensor**
Aim remote control handset at remote sensor when operating the TV.
- 4 Volume + / - button**
Adjust sound volume louder/softer.
- 5 P (Programme) + / - button**
Select channel in ascending/descending order.
Note
You can enter the main menu by pressing both the **Volume + / -** buttons at the same time.
• Press **Programme + / -** button to select sub-menu.
• Press **Volume + / -** button to activate sub-menu.
- 6 AV in sockets**
Connect to VIDEO out and AUDIO out sockets of VCR/laser disc player.
- 7 Headphone socket**
Connect headphone jack to socket for personal listening.

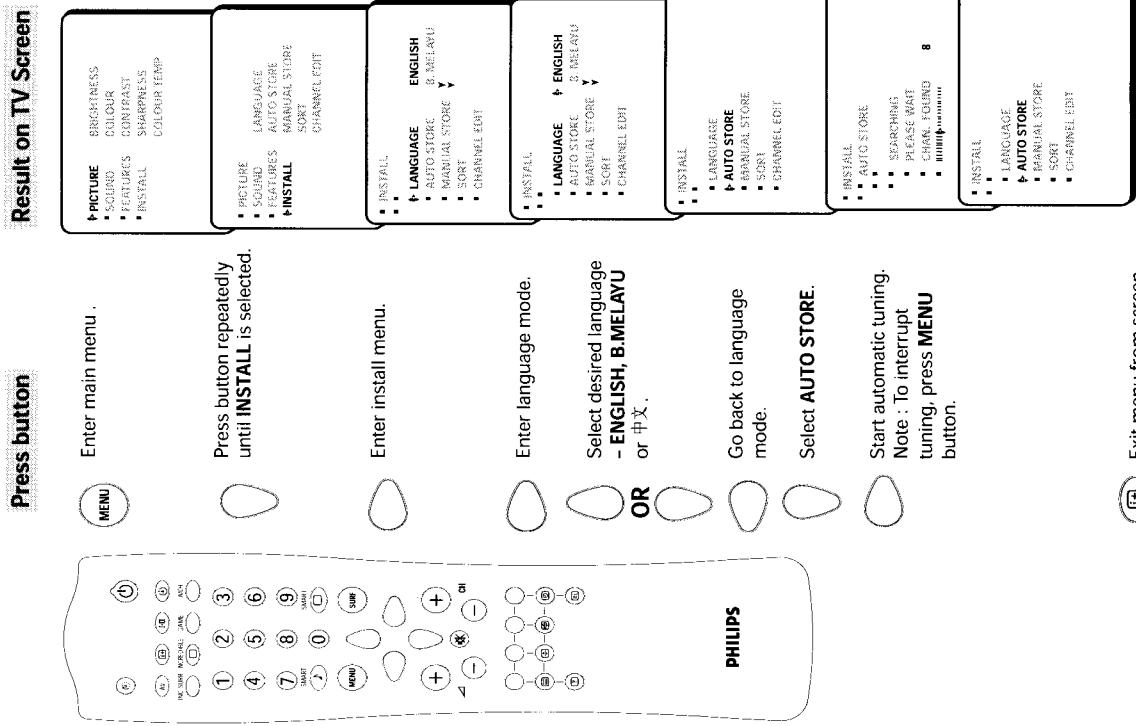
FUNCTIONS OF TV CONTROLS/SOCKETS

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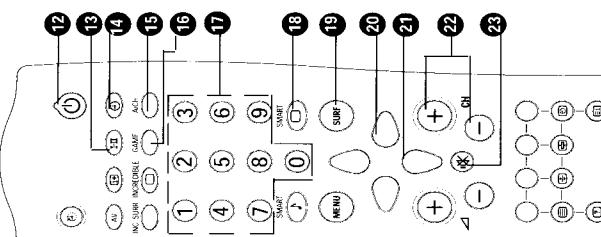


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- 1 SLEEPSMART**
Allows you to select a time period after which the set will switch to standby mode automatically. You can set the timer in steps of 15 minutes from OFF mode up to a maximum of 120 minutes.
- 2 OSD (On-Screen Display)**
Displays :
- channel number.
- remaining time of the sleep timer.
- programme name.
- information line transmission mode.
- viewed channel respectively.
- 3 AV**
Selects S-VID1, AV1, AV2, S-VID3, AV3 and the last viewed channel respectively.
- 4 INCREDIBLE SURROUND**
Allows you to select incredible surround sound when transmission is in stereo mode.
- 5 INCREDIBLE PICTURE**
Allows you to view a more vivid and realistic picture with better contrast when the "ON" function is selected.
- 6 SMART SOUND**
Allows you to select 4 types of sound settings
- 7 MENU**
Allows you to adjust picture and sound settings and activate the features and install the channels automatically.
- 8 CURSOR UP**
Allows you to select the sub-menus.
- 9 CURSOR LEFT**
Allows you to access or adjust the sub-menus.
- 10 VOLUME + / -**
Increases/Decreases volume.
- 11 TELETEXT**
Allows you to select teletext information.

LANGUAGE SELECTION / AUTOMATIC TUNING OF TV CHANNELS 7**How to tune in the channels automatically (Auto Store)****5****FUNCTIONS OF REMOTE CONTROL**

- 12 STANDBY** Switch set off temporarily to standby mode. (The red light indicator lights up when set is on standby mode). To switch on set from standby mode, press and hold button for a few seconds.
- 13 HI** Allows you to switch from Stereo to Mono sound (stereo transmission) or to choose between language I and language II.
- 14 TIMER** Not applicable.
- 15 A/CH** Alternates between last viewed channel and present channel.
- 16 GAME** Allows you to select Video mode as input for video games.
- 17 DIGIT (0 - 9)** Allows you to select a channel. For a 2-digit channel number, the second digit must be entered before the " - " sign disappears.
- 18 SMART PICTURE** Allows you to select 4 types of picture settings.
- 19 SURF** Allows you to select up to a maximum of 10 channels and view quickly the selected channels.
- 20 CURSOR RIGHT** Allows you to access or adjust the sub-menus.
- 21 CURSOR DOWN** Allows you to select the sub-menus.
- 22 CHANNEL + / -** Allows you to select channel in ascending or descending order.
- 23 MUTE** Mutes sound. To restore sound, press button again.



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PICTURE AND SOUND ADJUSTMENTS

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SMART CONTROLS

Smart Picture

Smart Picture offers you a choice of 4 picture settings – PERSONAL, RICH, NATURAL and SOFT.

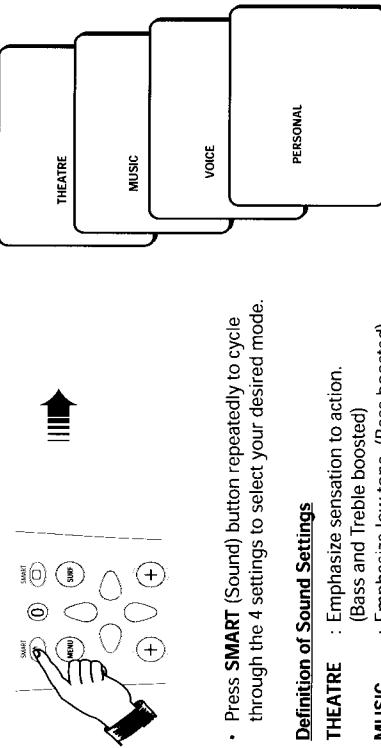


- Press **SMART** (Picture) button repeatedly to cycle through the 4 settings to select your desired mode.

Definition of Picture Settings

PERSONAL	Ficture settings are set to your preference.
RICH	Emphasize very vibrant colours. (Suitable for AV mode in brightly-lit room)
NATURAL	Emphasize original colours.
SOFT	Emphasize "warm" colours. (Suitable for dim room condition and gives cinema-like effect) Light is switched off

Smart Sound
offer



through the 4 settings to select your desired mode.

Definition of Sound Settings

THEATRE	: Emphasize sensation to action. (Bass and Treble boosted)
MUSIC	: Emphasize low tone. (Bass boosted)
VOICE	: Emphasize high tone. (Treble boosted)
PERSONAL	: Sound settings are set to your preference.

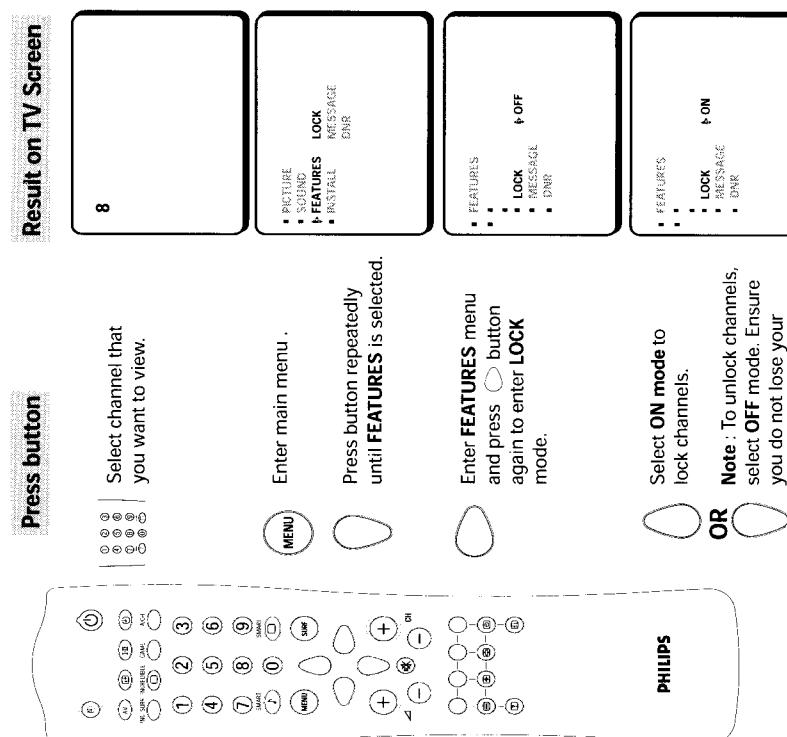
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FEATURES (LOCK FEATURE)

The **FEATURES** menu allows you access to the **LOCK**, **MESSAGE** and **DNR** (Dynamic Noise Reduction) features.

The **LOCK** feature allows you to lock all channels except for one selected channel. When "ON" mode is selected in the **LOCK** menu, the TV can only be switched on with the remote control. The **P (Programme)** + / - buttons on top of the TV cannot be used to select a TV channel. The remote control must be kept out of reach to prevent any unauthorised use of your TV.

How to use the Lock feature



remote control as you can **ONLY** unlock all the channels through the remote control.

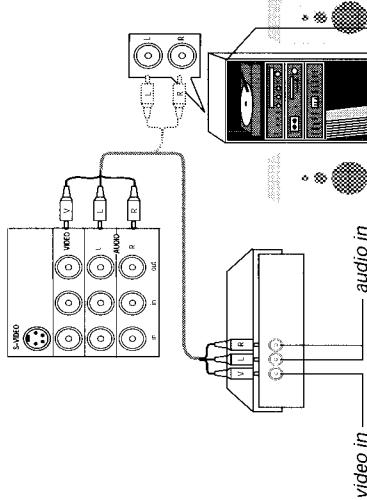
 Exit menu from screen.

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CONNECTING PERIPHERAL EQUIPMENT

Recording programmes from TV to VCR

- Connect your equipment to the sockets at **VIDEO out**. To enhance the sound of your television, connect the **AUDIO L** and **R** sockets to an external amplifier instead of to the video cassette recorder. For mono equipment, connect only the **AUDIO L** (left) socket.



Back of VCR

External amplifier

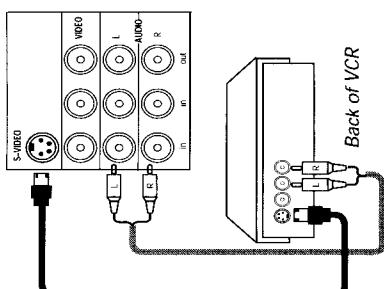
Before calling service

Symptom	Check/Action
Colour patch (unevenness)	<ul style="list-style-type: none"> • Switch off TV by the mains power button. Wait for 20 minutes before switching on again.
No power	<ul style="list-style-type: none"> • Check TV's AC power cord is plugged into mains socket. If there is still no power, disconnect plug. Wait for 60 seconds and re-insert plug. Switch on TV again.
No picture	<ul style="list-style-type: none"> • Check antenna connection at rear of the TV. • Possible faulty TV station. Try another channel. • Increase the contrast setting first and then the brightness setting.
Good picture but no sound	<ul style="list-style-type: none"> • Try increasing the volume. • Check whether sound is switched on.
Good sound but poor or abnormal colour or no picture	<ul style="list-style-type: none"> • Increase the contrast setting first and then the brightness setting.
Snowish picture and noise	<ul style="list-style-type: none"> • Check antenna connection at rear of the TV.
Horizontal dotted lines	<ul style="list-style-type: none"> • Possible electrical interference (e.g. hairdryer, nearby neon lights, etc). Switch off equipment.
'Ghosts' or double image	<ul style="list-style-type: none"> • Possible poor positioning of antenna. Using a highly directional antenna may improve reception.
TV not responding to remote control handset	<ul style="list-style-type: none"> • Check life span of batteries. • Aim remote control handset directly at remote control sensor lens on the TV set.

Playback programmes from VCR to TV

- Connect the **S-VIDEO in** socket from the television to the **Output** socket (if available) of the VCR to enhance the picture quality.

- Connect **AUDIO L** and **R** in sockets to the **Output** sockets of the VCR to playback programmes.



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GENERAL INFORMATION/TIPS

Safety

Disconnect mains plug when :

- the RED light below the screen is flashing continuously and the TV cannot be switched on.
- a bright white line is displayed across the screen.
- cleaning the TV screen. Never use abrasive cleaning agents. Use a slight damp chamois leather.
- there is a lightning storm.
- the set is left unattended for an extended period of time.

Caution : Never attempt to repair a defective TV yourself. Always consult a skilled service personnel.

Switch off your TV overnight via the POWER ON/OFF button instead of leaving it on standby. You save energy and at the same time demagnetise the picture tube. A demagnetised picture tube supports good picture quality. When the set is switched on, do not shift, move or turn (e.g. on a swivel base) the set around because an unevenness in colour in some parts of the screen may occur. This can be eliminated by switching off the set by the mains power button. Wait for 20 minutes before switching on again. If symptom still exists, call service.

11 List of Abbreviations

List of abbreviations			
+13V	+13V derived from LOT. It also used for disable the +5V supply	L/R_INCRED_IN	Left/Right audio input for incredible sound processing
+13V_+20V	+13V or +20V (picture tube dependent) supply derived from the LOT to the vertical deflection output stage	L/R_MON	Left/Right audio output for the monitor (WYSIWYG)
+13V_SCAVEM	+13V supply for the SCAVEM circuit in the CRT panel	LED	LED driving signal
+14V	+14V for the RGB kill circuit	MUTE	MUTE switching signal for sub woofer
+15V	+15V power supply for sound output stage	P2	Together with D2_P1 connection form a parallel network (of resistor & capacitor) across the S-correction capacitor of 2624. This is used on widescreen set
+200V	+180V supply voltage for the RGB amplifier	PAN_SWITCH	Panorama switching signal from uP
+33V	+33V for tuning voltage, derived from VBAT	PHASE_CORRECTI ON	Horizontal phase correction signal for the BIMOS
+5V	+5V power supply for small signal circuit	PHASE_CORRECTI ON	Horizontal phase correction signal from line output stage
+5V_STBY	+5V standby voltage	POR	Power On Reset signal for uP
+5VA	Derived from +5V via 5100	POSNEG_QSS	Positive or Negative modulation of Quasi-Split Sound
+5VD	Derived from +5V_STBY via 5090	PROT_E_W_VERT	Protection switching signal to the uP. It is connected with 3 protection circuits of EW protection, vertical protection and x-ray protection
+5VSOUND	Derived from +5V via 5430	PROT_IBEAM_EHT_ INFO	High beam current protection switching signal to the BIMOS pin 50
+8V	+8V power supply for small signal circuit	R_IN	Red insert signal to TDA8844
+8VA	Derived from +8V via 3250	R_TXT OSD	Red signal for teletext or on-screen display
+8VB	Derived from +8V via 3162	R_Y_IN	R-Y input signal to TDA8844
+8VSOUND	+8V source regulated from +13V	R_Y_OUT	R-Y output signal from TDA8844
-13V	-13V supply to the vertical deflection output stage	RC5	RC5 signal from infer-red receiver
50/60Hz	50 Hz or 60 Hz switching signal from DW panel	REAR1_L	Left audio source from rear input cinch 1
AMP_MUTE1	Switching signal for muting sound amplifier circuitry	REAR1_R	Right audio source from rear input cinch 1
B_IN	Blue insert signal TDA8844	REAR2_L	Left audio source from rear input cinch 2
B_TXT OSD	Blue signal for teletext or on-screen display	REAR2_R	Right audio source from rear input cinch 2
B_Y_IN	B-Y input signal to TDA8844	RGB_KILL	Red, Green and Blue suppression of main picture signal
B_Y_OUT	B-Y output signal from TDA8844	RGB_SW_OFF	RGB switch off DC voltage to the RGB amplifier. It only works during switching off the TV set
BASEBAND_AUDIO	Baseband audio out signal (BTSC & mono set)	S_GND	Sound grounding for output stage
C_EXT	External chrominance signal	SCL	I2C clock line
C_FRNT	External chrominance signal from Side AV	SDA	I2C data line
C_REAR	External chrominance signal from IO rear	SEL_IF_TRAP_MAIN	Switching signal to suppress 34.4 MHz on PAL/multi set and to select 4.5 MHz sound trap
CU1/2/3	Copper track 1, 2 or 3. Not meaningful to service	SEL_INCRED	Incredible sound on/off switching signal
CVBS+SIF_MAIN	Main composite video baseband signal plus sound IF signal	SEL_MAIN_FRNT_R	
CVBS_INT	Internal source composite baseband signal		AP-NTSC SOUND: Switching signal of external sound source from rear I/O or side AV; AP-PAL/MULTI: Switching signal of external Y/CVBS source from rear I/O or side AV
CVBS_MON	Composite video baseband signal for monitor (WYSIWYG)		AP-NTCS SOUND: Switching signal of external sound source from cinch 1 or 2
CVBS_PIP	Composite Video Baseband Signal for PIP	SEL_MAIN_R1R2	Selection signal of PIP external source from rear I/O or side AV
CVBS_PIP_EXT	External source of Composite Video	SEL_PIP_FRNT_RR	Switching signal of PIP external source from cinch 1 or 2
CVBS_PIP_FRNT	Baseband Signal for PIP from rear IO	SEL_PIP_R1R2	Switching signal between main tuner or PIP 2nd tuner
D1	External source of Composite Video	SEL_TUNER1_2	Sound Intermediate Frequency
D2_P1	Baseband Signal for PIP from Side AV	STAT_HP	Status signal from headphone socket
	Connection of anode of 6621 to the modulating diode of EW panel	SVHS_MODE	Switching signal to YC adder circuit
DEGAUS	Connection of anode of "Mannheim-effect" diode 6626 and the bridge coil on EW panel	SW_AUDIO_IN	Sub woofer audio input
E_W_DRIVE	Degaussing switching signal	SYS1	System selection for PAL/M/BG/N or NTSC-M
EHT_INFO	East West Drive signal for EW panel	SYS2	System selection for PAL/M/BG/N or NTSC-M
EXT_R/L	EHT info related to the beam current	V	Vertical reference signal for OSD
FBL_TXT OSD	Left/right audio external source to TDA9855 (BTSC)	V_NEG	Inverted Vertical signal
FBL1/2	Fast blanking signal for teletext or on-screen display	VBAT	+140V power supply for line output stage
	Fast blanking signals for contrast reduction	VBAT_2 = VBAT	+140V derive from VBAT
FF	OSD	VDRIVE_NEG	Negative vertical drive signal from BIMOS pin 47
FRNT_CNTRL	Filament supply voltage		
G_IN	Top control button signal		
G_TXT OSD	Green insert signal to TDA8844		
GND_LOT	Green signal for teletext or on-screen display		
H_DRIVE	Return path of filament current		
H_NEG	Horizontal drive signal		
HFB	Inverted Horizontal signal		
IF1	Horizontal flyback signal		
L/R_AUDIO_IN	Intermediate frequency from tuner		
L/R_FRNT	Left/Right audio input for sound amplifier		
L/R_HP_IN	Left/Right external audio source from side-AV		
L/R_HP_OUT	Left/Right audio input for headphone buffer		
	Left/Right audio output for headphone		

11 List of Abbreviations

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VDRIVE_POS	Positive vertical drive signal from BIMOS pin 46
Y_CVBS_EXT	External Luminance or composite video baseband signal
Y_CVBS_FRNT	External Luminance or composite video baseband signal from Side AV
Y_CVBS_MON	Monitor out signal of luminance or composite video baseband signal
Y_CVBS_REAR	External composite video baseband signal or luminance signal source from rear IO
Y_IN	Luminance input signal from TDA8844
Y_OUT	Luminance output signal from TDA8844

12 Spare parts list

chassis [A]**Various**

0132Δ	4822 276 13603	Mains switch
0148Δ	4822 402 11116	Heatsink bracket
0151	4822 256 10336	LED holder
0200	4822 267 10933	7P Male
0205Δ	4822 267 10888	5P Male
0206Δ	4822 267 10889	6P Male
0208Δ	4822 267 10888	5P Male
0210	4822 267 10891	6P Male
0212Δ	4822 267 10888	5P Male
0222	4822 267 31673	Headphone plug
0223Δ	4822 267 10892	4P Male
0224	4822 267 10928	5P Male
0233	4822 255 70281	NTC holder
0245Δ	4822 267 10775	2P Male (black)
0246Δ	4822 265 20723	2P conn. BM vert.
0247Δ	4822 267 10892	4P Male
0248	4822 267 10929	5P Female
0249	4822 267 10929	5P Female
0284	4822 267 10931	7P Male
0293Δ	4822 267 10889	6P Male
0317Δ	4822 532 61201	Spacer (EHT cable)
1081	4822 242 10694	crystal 12MHz
1085	4822 218 11573	remote control
		GP1U28QP
1125Δ	4822 210 10823	tuner UV IEC
		TELE9-087A
1125Δ	4822 210 10826	tuner UV CHI IEC
		TELE9-108A
1125Δ	4822 210 10827	tuner UV PH TELE9-
		088A
1125Δ	4822 210 10828	tuner UV PH TELH9-
		206A
1125Δ	4822 210 10829	tuner UV CHI PH
		TELE9-106A
1125Δ	4822 210 10837	tuner UV F TELH9-
		205A
1145	4822 242 10357	SAW fit.
		OFWK2960M
1145	4822 242 10783	SAW fit.
		OFWK3955M
1145	4822 242 10874	SAW fit.
		OFWM1967M
1145	4822 242 81637	SAW fit.
		OFWG3952M
1145	4822 242 81964	SAW fit.
		OFWG1984M
1158	4822 242 10363	cer. fit. 4.5MHz
		SFSH
1165	4822 242 81978	cer. fit. 4.5MHz TPS
1167	4822 242 10315	cer. fit. 5.5/5.7/
		6.5MHz TPT
1167	4822 242 81712	cer. fit. TPWA04B
1168	4822 242 81572	cer. fit. PTS6
1168	4822 242 81978	cer. fit. 4.5MHz TPS
1189	4822 242 10695	cr. 4.433619 MHz
1190	4822 242 10776	cr. 3.579545 MHz
1430	4822 242 10769	crystal 18.432 MHz
1431	4822 242 10359	cer. res. 514.5KHz
1901Δ	4822 280 10367	relay
1905Δ	4822 071 51602	Fuse 1.6A
1906Δ	4822 071 51602	Fuse 1.6A
1906Δ	4822 071 52502	Fuse 2.5A
1910Δ	4822 071 51002	Fuse 1A

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2032Δ	5322 122 34123	1nF 10% 50V
2040Δ	5322 122 34123	1nF 10% 50V
2052	4822 126 13482	470nF 16V
2054Δ	4822 126 10002	100nF 20% 25V
2055Δ	4822 126 10002	100nF 20% 25V
2060	5322 122 32531	100pF 5% 50V
2061	5322 122 32531	100pF 5% 50V
2062	5322 122 32531	100pF 5% 50V
2063	4822 126 13692	47pF 1% 63V
2070Δ	4822 126 10002	100nF 20% 25V
2070	4822 126 13473	220nF 50V
2071	4822 126 13473	220nF 50V
2072	4822 126 13473	220nF 50V
2073	5322 122 32658	22pF 5% 50V
2074	5322 122 32658	22pF 5% 50V
2075	5322 122 32531	100pF 5% 50V
2077Δ	4822 122 32627	2.7nF 10% 50V
2078	4822 124 81029	100μF 20% 25V
2080	5322 122 32531	100pF 5% 50V
2082	4822 126 13473	220nF 50V
2084	5322 122 32531	100pF 5% 50V
2085	4822 126 13689	18pF 1% 63V
2086	4822 126 13689	18pF 1% 63V
2093Δ	4822 124 40433	47μF 20% 25V
2094	4822 126 13473	220nF 50V
2125	4822 124 81029	100μF 20% 25V
2126	4822 124 81029	100μF 20% 25V
2127Δ	4822 126 12944	47nF 10% 50V
2144Δ	4822 122 33177	10nF 20% 50V
2145Δ	4822 122 33177	10nF 20% 50V
2146Δ	4822 122 33177	10nF 20% 50V

2147	5322 122 33861	120pF 10% 50V
2148	4822 122 32139	12pF 2% 63V
2149Δ	4822 122 33177	10nF 20% 50V
2153Δ	5322 122 32654	22nF 10% 63V
2154	4822 124 40242	1μF 20% 63V
2155	5322 122 32659	33pF 5% 50V
2156Δ	4822 124 41579	10μF 20% 50V
2157	4822 126 14087	100nF 10% 63V
2161	5322 122 32659	33pF 5% 50V
2170	4822 124 81029	100μF 20% 25V
2171	4822 126 14087	100nF 10% 63V
2176	4822 126 13482	470nF 16V
2177	4822 126 13482	470nF 16V
2180Δ	5322 122 34123	1nF 10% 50V
2181Δ	4822 126 10002	100nF 20% 25V
2186Δ	5322 122 32654	22nF 10% 63V
2187	4822 124 41576	2.2μF 20% 50V
2188	4822 126 13473	220nF 50V
2189	4822 126 13689	18pF 1% 63V
2190	4822 126 13689	18pF 1% 63V
2191	4822 126 13473	220nF 50V
2192	4822 126 13473	220nF 50V
2193	4822 126 10002	100nF 20% 25V
2194	5322 122 32531	100pF 5% 50V
2196Δ	4822 124 41579	10μF 20% 50V
2197	4822 126 10002	100nF 20% 25V
2198	4822 126 13482	470nF 16V
2199	4822 126 13473	220nF 50V
2200	4822 126 10002	100nF 20% 25V
2201	4822 126 13473	220nF 50V
2202	4822 126 13473	220nF 50V
2203	4822 126 10002	100nF 20% 25V
2204	4822 126 13473	220nF 50V
2205	4822 126 10002	100nF 20% 25V
2206	4822 126 13473	220nF 50V
2207	4822 126 13473	220nF 50V
2208	4822 126 10002	100nF 20% 25V
2209	4822 126 13473	220nF 50V
2210	4822 126 13473	220nF 50V
2211	4822 126 10002	100nF 20% 25V
2212	4822 126 13473	220nF 50V
2213	4822 126 10002	100nF 20% 25V
2214	4822 126 13473	220nF 50V
2215	4822 126 10002	100nF 20% 25V
2216	4822 126 13473	220nF 50V
2217	4822 126 10002	100nF 20% 25V
2218	4822 126 13473	220nF 50V
2219	4822 126 10002	100nF 20% 25V
2220	4822 126 13473	220nF 50V
2221	4822 126 10002	100nF 20% 25V
2222	4822 126 13473	220nF 50V
2223	4822 126 10002	100nF 20% 25V
2224	4822 126 13473	220nF 50V
2225	4822 126 10002	100nF 20% 25V
2226	4822 126 13473	220nF 50V
2227	4822 126 10002	100nF 20% 25V
2228	4822 126 13473	220nF 50V
2229	4822 126 10002	100nF 20% 25V
2230	4822 126 13473	220nF 50V
2231	4822 126 10002	100nF 20% 25V
2232	4822 126 13473	220nF 50V
2233	4822 126 10002	100nF 20% 25V
2234	4822 126 13473	220nF 50V
2235	4822 126 10002	100nF 20% 25V
2236	4822 126 13473	220nF 50V
2237	4822 126 10002	100nF 20% 25V
2238	4822 126 13473	220nF 50V
2239	4822 126 10002	100nF 20% 25V
2240	4822 126 13473	220nF 50V
2241	4822 126 10002	100nF 20% 25V
2242	4822 126 13473	220nF 50V
2243	4822 126 10002	100nF 20% 25V
2244	4822 126 13473	220nF 50V
2245	4822 126 10002	100nF 20% 25V
2246	4822 126 13473	220nF 50V
2247	4822 126 10002	100nF 20% 25V
2248	4822 126 13473	220nF 50V
2249	4822 126 10002	100nF 20% 25V
2250	4822 126 13473	220nF 50V
2251	4822 126 10002	100nF 20% 25V
2252	4822 126 13473	220nF 50V
2253	4822 126 10002	100nF 20% 25V
2254	4822 126 13473	220nF 50V
2255	4822 126 10002	100nF 20% 25V
2256	4822 126 13473	220nF 50V
2257	4822 126 10002	100nF 20% 25V
2258	4822 126 13473	220nF 50V
2259	4822 126 10002	100nF 20% 25V
2260	4822 126 13473	220nF 50V
2261	4822 126 10002	100nF 20% 25V
2262	4822 126 13473	220nF 50V
2263	4822 126 10002	100nF 20% 25V
2264	4822 126 13473	220nF 50V
2265	4822 126 10002	100nF 20% 25V
2266	4822 126 13473	220nF 50V
2267	4822 126 10002	100nF 20% 25V
2268	4822 126 13473	220nF 50V
2269	4822 126 10002	100nF 20% 25V
2270	4822 126 13473	220nF 50V
2271	4822 126 13473	220nF 50V
2272	4822 126 13473	220nF 50V
2273	4822 126 13473	220nF 50V
2274	4822 126 13473	220nF 50V
2275	4822 126 13473	220nF 50V
2276	4822 126 13473	220nF 50V
2277	4822 126 13473	220nF 50V
2278	4822 126 13473	220nF 50V
2279	4822 126 13473	220nF 50V
2280	4822 126 13473	220nF 50V
2281	4822 126 13473	220nF 50V
2282	4822 126 13473	220nF 50V
2283	4822 126 13473	220nF 50V
2284	4822 126 13473	220nF 50V
2285	4822 126 13473	220nF 50V
2286	4822 126 13473	220nF 50V
2287	4822 126 13473	220nF 50V
2288	4822 126 13473	220nF 50V
2289	4822 126 13473	220nF 50V
2290	4822 126 13473	220nF 50V
2291	4822 126 13473	220nF 50V
2292	4822 126 13473	220nF 50V
2293	4822 126 13473	220nF 50V
2294	4822 126 13473	220nF 50V
2295	4822 126 13473	220nF 50V
2296	4822 126 13473	220nF 50V
2297	4822 126 13473	220nF 50V
2298	4822 126 13473	220nF 50V
2299	4822 126 13473	220nF 50V
2300	4822 126 13473	220nF 50V
2301	4822 116 90885	8k2
3002	4822 116 90885	8k2
3003	4822 117 12168	2k2
3010	4822 117 10833	10k 1% 0.1W
3011	4822 117 10833	10k 1% 0.1W
3012	4822 117 10833	10k 1% 0.1W
3014	4822 117 10833	10k 1% 0.1W

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3090Δ	4822 051 20101	100Ω 5% 0.1W	3560	4822 117 10965	18k 1% 0.1W	3877Δ	4822 051 20101	100Ω 5% 0.1W	6628Δ	4822 130 30621	1N4148
3091Δ	4822 051 20101	100Ω 5% 0.1W	3563Δ	4822 051 20472	4k7 5% 0.1W	3880	4822 116 52176	10Ω 5% 0.5W	6629	4822 130 34379	BZX79-B27
3092Δ	4822 051 20101	100Ω 5% 0.1W	3564	4822 051 20822	8k2 5% 0.1W	3881Δ	4822 051 20109	10Ω 5% 0.1W	6630Δ	4822 130 30621	1N4148
3093	4822 116 52175	100Ω 5% 0.5W	3565Δ	4822 051 20472	4k7 5% 0.1W	3882	4822 116 83872	220Ω 5% 0.5W	6631Δ	4822 130 31024	BZX79-B18
3094	4822 116 52175	100Ω 5% 0.5W	3566	4822 051 20822	8k2 5% 0.1W	3902	4822 117 12074	1Ω5 10%	6631	4822 130 34281	BZX79-B15
3099	4822 117 10833	10k 1% 0.1W	3567	4822 051 20154	150k 5% 0.1W	3905	4822 116 30451	NTC	6638Δ	4822 130 34197	BZX79-B12
3126	4822 051 20392	3k9 5% 0.1W	3568	4822 051 20154	150k 5% 0.1W	3906	4822 116 10075	9Ω 220V	6638Δ	4822 130 34499	BZX79-B20
3128Δ	4822 051 20153	15k 5% 0.1W	3569	4822 117 10833	10k 1% 0.1W	3910	4822 117 10833	10k 1% 0.1W	6639Δ	4822 130 30621	1N4148
3129Δ	4822 051 20008	0Ω jumper	3570	4822 117 11507	6k8 1% 0.1W	3911	4822 117 11449	2k2 1% 0.1W	6641	4822 130 42806	BYD33J
3130Δ	4822 051 20008	0Ω jumper	3571	4822 050 11002	1k 1% 0.4W	3911	4822 117 12955	2k7 1% 0.1W	6646Δ	4822 130 30621	1N4148
3131Δ	4822 051 20008	0Ω jumper	3572	4822 050 11002	1k 1% 0.4W	3917	4822 053 12104	100k 5% 3W	6660Δ	4822 130 41602	BYW95C
3141Δ	4822 051 20008	0Ω jumper	3575Δ	4822 051 20109	10Ω 5% 0.1W	3917	4822 117 13425	150k 10% 3W	6663Δ	4822 130 82029	LTL307P
3142Δ	4822 051 20008	0Ω jumper	3576Δ	4822 051 20109	10Ω 5% 0.1W	3920	4822 116 52269	3k3 5% 0.5W	6664Δ	4822 130 41602	BYW95C
3143Δ	4822 051 20008	0Ω jumper	3601	4822 053 11159	15Ω 5% 2W	3922	4822 116 52228	68Ω 0.5% 0.5W	6700	4822 130 42488	BYD33D
3145Δ	4822 051 20332	3k3 5% 0.1W	3601Δ	4822 053 11339	33Ω 5% 2W	3924Δ	4822 113 80525	OR15 10% 3W	6719Δ	4822 130 34173	BZX79-B5V6
3146Δ	4822 051 20472	4k7 5% 0.1W	3602	4822 116 52289	5k6 5% 0.5W	3924Δ	4822 113 80633	ΩΩ1 5% 3W	6731Δ	4822 130 30621	1N4148
3149	4822 051 10102	1k 2% 0.25W	3608	4822 050 13303	33Ω 1% 0.4W	3926	4822 051 10102	1k 2% 0.25W	6734	4822 130 42488	BYD33D
3150	4822 117 11449	2k2 1% 0.1W	3608	4822 050 13903	39k 1% 0.4W	3931	4822 116 83881	39Ω 0.5% 0.5W	6735Δ	4822 130 30621	1N4148
3152	4822 116 52228	68Ω 0.5% 0.5W	3609	4822 050 13903	39k 1% 0.4W	3932	4822 117 11449	2k2 1% 0.1W	6739Δ	4822 130 30621	1N4148
3153	4822 051 20391	39Ω 0.5% 0.1W	3610	4822 050 12203	22k 1% 0.4W	3933	4822 051 20689	68Ω 0.5% 0.1W	6741	4822 130 31253	BZX79-C2V4
3160	4822 051 10102	1k 2% 0.25W	3612	4822 053 12123	12k 5% 3W	3941	4822 053 20335	3M3 5% 0.25W	6742Δ	4822 130 30621	1N4148
3161	4822 051 10102	1k 2% 0.25W	3612	4822 117 12106	6k8 5% 3W	3950Δ	4822 053 21225	2M2 5% 0.5W	6743Δ	4822 130 30621	1N4148
3162Δ	4822 052 10338	3Ω3 5% 0.33W	3613Δ	4822 053 12153	15Ω 5% 3W	3955Δ	4822 051 20472	4k7 5% 0.1W	6744	4822 130 34278	BZX79-B6V8
3163	4822 051 20561	56Ω 0.5% 0.1W	3613	4822 117 12106	6k8 5% 3W	3959	4822 111 31051	3Ω3 5%	6861Δ	4822 130 83757	BAS216
3164Δ	4822 051 20121	12Ω 0.5% 0.1W	3616	4822 117 11507	6k8 1% 0.1W	3962	4822 116 52249	1k8 5% 0.5W	6862Δ	4822 130 83757	BAS216
3166Δ	4822 051 20472	4k7 5% 0.1W	3617	4822 116 52191	33Ω 5% 0.5W	3962	4822 116 52263	2k7 5% 0.5W	6867Δ	4822 130 30621	1N4148
3167Δ	4822 051 20472	4k7 5% 0.1W	3618	4822 051 10102	1k 2% 0.25W	3963Δ	4822 051 20472	4k7 5% 0.1W	6868Δ	4822 130 30621	1N4148
3168	4822 051 20561	56Ω 0.5% 0.1W	3628	4822 050 11002	1k 1% 0.4W	3964	4822 116 52257	22k 5% 0.5W	6903	4822 130 11185	GBU4J
3169	4822 051 20561	56Ω 0.5% 0.1W	3629	4822 116 52272	33Ω 5% 0.5W	3976	4822 051 20182	1k8 5% 0.1W	6904Δ	4822 130 30621	1N4148
3170	4822 117 11449	2k2 1% 0.1W	3630	4822 116 52228	68Ω 0.5% 0.5W	3980	4822 116 52238	12k 5% 0.5W	6906Δ	4822 130 32896	BYD33M
3171Δ	4822 051 20101	100Ω 5% 0.1W	3631Δ	4822 053 21334	33Ω 0.5% 0.5W	3991	4822 116 52243	1k5 5% 0.5W	6908	4822 130 42488	BYD33D
3175Δ	4822 051 20101	100Ω 5% 0.1W	3632	4822 116 52271	33Ω 5% 0.5W	3994	4822 053 10683	68Ω 5% 1W	6910	4822 130 42488	BYD33D
3176	4822 051 20561	56Ω 0.5% 0.1W	3632	4822 116 52303	8k2 5% 0.5W	3995	4822 053 12104	100k 5% 3W	6911	4822 130 42488	BYD33D
3197	4822 051 20104	100Ω 5% 0.1W	3638	4822 116 52175	100Ω 5% 0.5W	4xxx	4822 051 10008	0Ω 5% 0.25W	6913	4822 130 11365	BYR29F-600
3241	4822 051 10102	1k 2% 0.25W	3639Δ	4822 053 10103	10k 5% 1W	4xxx	4822 051 20008	0Ω 5% 0.25W	6914Δ	4822 130 80791	BYV28-200/20
3242	4822 117 11449	2k2 1% 0.1W	3643Δ	4822 052 11108	1Ω 5% 0.5W	7017Δ	4822 130 80791	BYV28-200/20	6918	4822 130 80982	BYW29F-100
3244	4822 051 10102	1k 2% 0.25W	3647	4822 116 52304	82k 5% 0.5W	7018Δ	4822 130 80791	BYV28-200/20	6919	4822 130 80982	BYW29F-100
3245	4822 051 10102	1k 2% 0.25W	3650	4822 116 83864	10k 5% 0.5W	7020Δ	4822 157 51216	5.6μH	6930	4822 130 31083	BYW55
3247Δ	4822 051 20101	100Ω 5% 0.1W	3660Δ	4822 052 11108	1Ω 5% 0.5W	7021Δ	4822 157 51216	5.6μH	6931	4822 130 31083	BYW55
3248	4822 117 10834	47k 1% 0.1W	3661Δ	4822 052 11108	1Ω 5% 0.5W	7022Δ	4822 157 52259	5.6μH	6932	4822 130 31083	BYW55
3249	4822 117 10834	47k 1% 0.1W	3663Δ	4822 052 11108	1Ω 5% 0.5W	7023Δ	4822 157 51216	5.6μH	6933	4822 130 31083	BYW55
3250Δ	4822 052 10109	10Ω 5% 0.33W	3664Δ	4822 052 11108	1Ω 5% 0.5W	7024Δ	4822 157 70439	Adj. coil	6935Δ	4822 130 30621	1N4148
3251	4822 051 20104	100k 5% 0.1W	3666	4822 116 52175	100Ω 5% 0.5W	7025Δ	4822 157 11676	22μH 5%	6950	4822 130 42488	BYD33D
3252	4822 051 20104	100k 5% 0.1W	3668	4822 116 52175	100Ω 5% 0.5W	7026Δ	4822 157 11671	3.3μH 5%	6952	5322 130 31504	BZX79-B3V3
3253Δ	4822 051 20471	47Ω 0.5% 0.1W	3708	4822 050 22202	2k2 1% 0.6W	7027Δ	4822 157 11676	3.3μH 5%	6955	4822 130 34142	BZX79-B33
3255Δ	4822 051 20101	100Ω 5% 0.1W	3709	4822 051 10102	1k 2% 0.25W	7028Δ	4822 157 11676	3.3μH 5%	6960	4822 130 42488	BYD33D
3257Δ	4822 051 20471	47Ω 0.5% 0.1W	3710	4822 051 10102	1k 2% 0.25W	7029Δ	4822 157 11518	5.6μH 5%	6992	4822 130 30862	BZX79-B9V1
3260	4822 117 10833	10k 1% 0.1W	3715	4822 116 83864	10k 5% 0.5W	7030Δ	4822 157 52333	100μH	7041	4822 130 60511	BC847B
3261	4822 117 10833	10k 1% 0.1W	3716	4822 116 83864	10k 5% 0.5W	7031Δ	4822 157 53302	1μH	7070	4822 130 60511	BC847B
3262	4822 117 11504	27Ω 0.1% 0.1W	3717	4822 117 10833	10k 1% 0.1W	7032Δ	4822 157 51216	15μH 5%	7070Δ	4822 130 209 73852	PMBT2369
3263	4822 117 11503	22Ω 0.1% 0.1W	3718	4822 116 52283	4k7 5% 0.5W	7033Δ	4822 157 10158	1Ω5 5% 0.33W	7075	4822 130 60511	BC847B
3264Δ	4822 051 20008	0Ω jumper	3730	4822 050 22202	2k2 1% 0.6W	7034Δ	4822 157 10102	1k 2% 0.25W	7075	4822 130 60511	BC847B
3265Δ	4822 051 20471	47Ω 0.5% 0.1W	3731	4822 051 20104	100k 5% 0.1W	7035Δ	4822 157 20474	47Ω 5% 0.1W	7076Δ	4822 130 60511	BC847B
3266	4822 051 20474	47Ω 0.5% 0.1W	3731	4822 051 20274	27k 5% 0.1W	7036Δ	4822 157 20474	47Ω 5% 0.1W	7077Δ	4822 130 60511	BC847B
3267	4822 117 11449	2k2 1% 0.1W	3732	4822 051 20104	100k 5% 0.1W	7037Δ	4822 157 20474	47Ω 5% 0.1W	7078Δ	4822 130 209 14928	ST24W16B6
3268	4822 051 10102	1k 2% 0.25W	3733Δ	4822 052 10158	1Ω5 5% 0.33W	7038Δ	4822 157 160171	Bead 100mH	7150	4822 209 16704	TDA8844/N2
3271	4822 117 11449	2k2 1% 0.1W	3734	4822 116 83864	10k 5% 0.5W	7039Δ	4822 157 11671	Lin. coil 29"	7161	4822 130 60511	BC847B
3274	4822 116 52175	100Ω 5% 0.5W	3735	4822 116 52175	100Ω 5% 0.5W	7040Δ	4822 157 11712	Lin. coil 33"	7166	5322 130 60508	BC857B
3274	4822 116 52195	47Ω 5% 0.5W	3736	4822 116 81755	2Ω2 5% 0.25W	7041	4822 146 10469	LOT (pow. slot) 34"	7167	5322 130 60508	BC857B
3303	4822 051 20479	47Ω 5% 0.1W	3741	4822 116 83864	10k 5% 0.5W	7042	4822 157 63507	0.18μH	7176	4822 130 60511	BC847B
3310	4822 051 20479	47Ω 5% 0.1W	3744	4822 051 10102	1k 2% 0.25W	7043Δ	4822 157 63507	0.18μH	7242	4822 130 60511	BC847B
3311	4822 051 20479	47Ω 5% 0.1W	3745	4822 116 52199	68Ω 0.5% 0.5W	7044Δ	4822 157 51216	5.6μH	7243	4822 130 60511	BC847B
3312	4822 117 10833	10k 1% 0.1W	3746	4822 051 202							

12 Spare parts list

7908Δ 4822 209 80591 LM317T
 7909 4822 130 60511 BC847B
 7950Δ 4822 209 16708 TCDT1103G

CRT panel [B]

Various

0218 4822 255 10411 10P Female
 1019 4822 212 11856 CRT panel 29"
 1019 4822 212 11754 CRT panel 34"



2830 4822 121 51473 470nF 20% 63V
 2838Δ 4822 126 13451 2.2nF 10% 2KV
 2840 4822 124 11565 10μF 20% 250V
 2843Δ 4822 126 13451 2.2nF 10% 2KV



3831 4822 116 52175 100Ω 5% 0.5W
 3832 4822 117 11635 1k 10% 0.5W
 3833 4822 116 52175 100Ω 5% 0.5W
 3834 4822 117 11635 1k 10% 0.5W
 3835 4822 116 52175 100Ω 5% 0.5W
 3836 4822 117 11635 1k 10% 0.5W
 3840Δ 4822 052 10101 100Ω 5% 0.33W
 3841Δ 4822 052 10108 112 5% 0.33W
 3842Δ 4822 052 10108 112 5% 0.33W
 3843 4822 117 11896 1k5 20% 0.5W
 3845 4822 116 52272 330k 5% 0.5W



5842 4822 157 11447 56μH
 5842 4822 157 71703 82μH



6831 4822 130 30842 BAV21
 6833 4822 130 30842 BAV21
 6835 4822 130 30842 BAV21
 6837 4822 130 34379 BZX79-B27
 6838 4822 130 34379 BZX79-B27



7830 4822 209 16321 TDA6107Q/N1

EW panel [C]

Various

0239 4822 267 10899 17P Male
 1150 4822 212 11757 EW panel (29")
 1150 4822 212 11772 EW panel (34")



2623Δ 4822 121 10781 470nF 5% 250V
 2634Δ 4822 121 40488 22nF 10% 400V
 2634Δ 4822 121 70365 39nF 10% 400V
 2681 4822 122 31177 470pF 10% 500V
 2682 4822 121 42035 4.7μF 10% 100V
 2683 4822 124 12246 10μF 20% 160V
 2688 4822 124 12247 47μF 20% 100V



3651 4822 116 52243 1k5 5% 0.5W
 3651 4822 116 83883 470Ω 5% 0.5W
 3656 4822 116 52238 12k 5% 0.5W
 3657 4822 116 83864 10k 5% 0.5W
 3658 4822 116 52234 100k 5% 0.5W
 3659 4822 116 83864 10k 5% 0.5W
 3679Δ 4822 053 11682 6k8 5% 2W
 3680 4822 050 11204 120k 1% 0.4W
 3680 4822 116 52304 82k 5% 0.5W
 3681 4822 050 11002 1k 1% 0.4W
 3682 4822 116 52234 100k 5% 0.5W
 3682 4822 116 52304 82k 5% 0.5W
 3683Δ 4822 050 24708 4k7 1% 0.6W
 3684Δ 4822 050 24708 4k7 1% 0.6W
 3687 4822 116 52283 4k7 5% 0.5W
 3688 4822 116 52234 100k 5% 0.5W
 3688 4822 116 52297 68k 5% 0.5W



5624 4822 157 71681 Bridge coil
 5680 4822 157 11711 Choke coil
 5680Δ 4822 158 10728 Transf. 11μH



6622Δ 4822 130 41602 BYW95C
 6623Δ 4822 130 41602 BYW95C
 6627Δ 4822 130 61219 BZX79-B10
 6681Δ 4822 130 30621 1N4148



7658 4822 130 40959 BC547B
 7659 4822 130 40959 BC547B
 7680 4822 130 11336 STP16NE06FP

IO cinch [E]

Various

0130Δ 4822 466 12028 Rear brkt PIP
 0130Δ 4822 466 12029 Rear brkt non-PIP
 0265 4822 265 11388 6P Female
 0266 4822 265 11389 3P Female
 0267 4822 265 11391 4P Female
 0295 4822 265 11392 3P Male
 0296 4822 267 10895 5P Male
 0297 4822 267 10898 6P Male
 0298 4822 265 11393 3P Male
 1130 4822 212 11753 IO cinch PIP
 1130 4822 212 11756 IO cinch no-PIP



2100 4822 124 22726 4.7μF 35V
 2101 4822 126 13473 220nF 50V
 2112 4822 126 13473 220nF 50V
 2116 4822 126 13473 220nF 50V
 2118 4822 126 13473 220nF 50V
 2121 4822 126 13473 220nF 50V
 2131 5322 122 31863 330pF 5% 50V
 2133 5322 122 31863 330pF 5% 50V
 2141 4822 126 13473 220nF 50V
 2146 5322 122 31863 330pF 5% 50V
 2148 5322 122 31863 330pF 5% 50V
 2151 5322 122 31863 330pF 5% 50V
 2155 5322 122 31863 330pF 5% 50V
 2156Δ 4822 126 10002 100nF 20% 25V
 2157Δ 4822 126 10002 100nF 20% 25V
 2158Δ 4822 126 10002 100nF 20% 25V
 2159Δ 4822 126 10002 100nF 20% 25V



2000 4822 124 41584 100μF 20% 10V
 2001Δ 4822 126 10002 100nF 20% 25V
 2002Δ 4822 126 10002 100nF 20% 25V
 2003Δ 4822 126 10002 100nF 20% 25V
 2004Δ 4822 126 10002 100nF 20% 25V
 2010 4822 126 13482 470nF 16V
 2011Δ 4822 126 10002 100nF 20% 25V
 2012Δ 4822 126 10002 100nF 20% 25V
 2012 4822 126 13482 470nF 16V
 2013 5322 122 32531 100pF 5% 50V
 2020 4822 126 13692 47pF 1% 63V
 2021Δ 4822 126 10002 100nF 20% 25V
 2022Δ 4822 126 10002 100nF 20% 25V
 2023Δ 4822 126 10002 100nF 20% 25V
 2024Δ 4822 126 10002 100nF 20% 25V
 2025Δ 4822 126 10002 100nF 20% 25V
 2026 4822 124 41584 100μF 20% 10V
 2027Δ 4822 126 10002 100nF 20% 25V
 2028 4822 124 41584 100μF 20% 10V
 2029 5322 122 32268 470pF 10% 50V



3101 4822 051 10102 1k 2% 0.25W
 3102 4822 051 10102 1k 2% 0.25W
 3110 4822 116 52201 75Ω 5% 0.5W
 3111 4822 116 52201 75Ω 5% 0.5W
 3112Δ 4822 051 20101 100Ω 5% 0.1W
 3113 4822 051 10102 1k 2% 0.25W
 3114 4822 051 10102 1k 2% 0.25W
 3115 4822 051 10102 1k 2% 0.25W
 3116 4822 051 20474 470k 5% 0.1W
 3117 4822 051 10102 1k 2% 0.25W
 3118Δ 4822 051 20101 100Ω 5% 0.1W
 3130 4822 051 10102 1k 2% 0.25W
 3131 4822 051 20223 22k 5% 0.1W
 3132 4822 051 10102 1k 2% 0.25W
 3133 4822 051 20223 22k 5% 0.1W
 3140 4822 116 52201 75Ω 5% 0.5W
 3141Δ 4822 051 20101 100Ω 5% 0.1W
 3145 4822 051 10102 1k 2% 0.25W
 3146 4822 051 20223 22k 5% 0.1W
 3147 4822 051 10102 1k 2% 0.25W
 3148 4822 051 20223 22k 5% 0.1W
 3150 4822 116 52199 68Ω 5% 0.5W
 3151 4822 117 10353 150Ω 1% 0.1W
 3152 4822 051 20104 100k 5% 0.1W
 3153 4822 117 10353 150Ω 1% 0.1W
 3154 4822 117 10353 150Ω 1% 0.1W
 3155 4822 051 20104 100k 5% 0.1W
 3156 4822 117 10353 150Ω 1% 0.1W
 3157 4822 117 10834 47k 1% 0.1W
 3158 4822 117 10834 47k 1% 0.1W
 3159 4822 117 10834 47k 1% 0.1W
 3160 4822 117 10834 47k 1% 0.1W



5000Δ 4822 157 51462 10μH
 5012 4822 157 11515 12μH 5%
 5012 4822 157 11516 15μH 5%



7000 4822 209 12998 SAA4961/V3/S1
 7010 4822 209 16815 SAA4963/V1
 7011 4822 130 60511 BC847B



6140 4822 130 34278 BZX79-B6V8
 6145 4822 130 34278 BZX79-B6V8
 6146 4822 130 34278 BZX79-B6V8
 6147 4822 130 34278 BZX79-B6V8
 6148 4822 130 34278 BZX79-B6V8
 6150 4822 130 34278 BZX79-B6V8
 6151 4822 130 34278 BZX79-B6V8
 6152 4822 130 34278 BZX79-B6V8
 6154 4822 130 34278 BZX79-B6V8
 6155 4822 130 34278 BZX79-B6V8
 6166Δ 4822 130 30621 1N4148
 6167Δ 4822 130 30621 1N4148



7100 5322 209 10576 HEF4053BD
 7101 4822 130 60511 BC847B
 7102 4822 130 60511 BC847B
 7115 4822 130 60511 BC847B
 7117 4822 130 60511 BC847B

Comb filt. [G]

Various

0243Δ 4822 267 10888 5P Male
 0254 4822 267 10927 11P Male F-pin
 1130 4822 212 11763 Comb filt. NTSC
 1130 4822 212 11773 Comb filt. Pal/Multi



2000 4822 124 41584 100μF 20% 10V
 2001Δ 4822 126 10002 100nF 20% 25V
 2002Δ 4822 126 10002 100nF 20% 25V
 2003Δ 4822 126 10002 100nF 20% 25V
 2004Δ 4822 126 10002 100nF 20% 25V
 2010 4822 126 13482 470nF 16V
 2011Δ 4822 126 10002 100nF 20% 25V
 2012Δ 4822 126 10002 100nF 20% 25V
 2013 5322 122 32531 100pF 5% 50V
 2020 4822 126 13692 47pF 1% 63V
 2021Δ 4822 126 10002 100nF 20% 25V
 2022Δ 4822 126 10002 100nF 20% 25V
 2023Δ 4822 126 10002 100nF 20% 25V
 2024Δ 4822 126 10002 100nF 20% 25V
 2025Δ 4822 126 10002 100nF 20% 25V
 2026 4822 124 41584 100μF 20% 10V
 2027Δ 4822 126 10002 100nF 20% 25V
 2028 4822 124 41584 100μF 20% 10V
 2029 5322 122 32268 470pF 10% 50V



3012 4822 117 11503 220Ω 1% 0.1W
 3013 4822 117 11503 220Ω 1% 0.1W
 3020Δ 4822 051 20472 4K7 5% 0.1W
 3022 4822 117 10833 10K 1% 0.1W
 3024 4822 117 10834 47K 1% 0.1W
 3025 4822 117 10834 47K 1% 0.1W
 4xxx 4822 051 10008 0Ω 5% 0.25W
 4xxx 4822 051 20008 0Ω 5% 0.25W



5000Δ 4822 157 51462 10μH
 5012 4822 157 11515 12μH 5%
 5012 4822 157 11516 15μH 5%



7000 4822 209 12998 SAA4961/V3/S1
 7010 4822 209 16815 SAA4963/V1
 7011 4822 130 60511 BC847B

Mains [H]

Various

0234Δ 4822 256 92053 Fuse holder
 0262Δ 4822 267 10775 2P Male (black)
 0263Δ 4822 265 20723 2P conn. BM vert.
 0301Δ 4822 402 11113 Mains flt. brkt
 1140 4822 122 11755 Mains CISPR(SR) pnl
 1140 4822 122 11764 Mains CISPR(SR) pnl
 1140 4822 212 11774 Mains non-CISPR pnl
 1900 4822 070 34002 Fuse 4A



2900Δ 4822 121 10787 150nF 20% 275V
 2901Δ 4822 126 14084 4.7nF 20% 250V
 2903 4822 121 70141 33nF 5% 400V



3900Δ 4822 053 21475 4M7 5% 0.5W
 3901Δ 4822 053 21225 2M2 5% 0.5W
 3904 4822 117 12181 470L 20% 0.5W
 3996Δ 4822 053 21475 4M7 5% 0.5W



5900Δ 4822 157 11523 5mH /2A

5901Δ 4822 157 11004 Line flt. 15mH

5902Δ 4822 157 10999 Line flt. 30mH

5903Δ 4822 157 11523 5mH /2A

6919Δ 4822 130 34499 BZX79-B20
 6920Δ 4822 130 34499 BZX79-B20



5402 4822 157 11709 9mH z

5403 4822 157 53139 4.7μH



7401 5322 209 62234 TDA3845/V3

Side AV [M]

Various

1120 4822 212 11685 Side AV panel
 0225 4822 267 31014 Headphone socket
 0226 4822 265 11336 3P Fem. cinch
 0289 4822 265 11337 4P Fem. m.din
 0291Δ 4822 267 10888 5P Male
 0306 4822 402 11115 Side AV brkt.



2230 4822 122 33805 330pF 10% 63V
 2233 4822 122 33805 330pF 10% 63V
 2241Δ 5322 122 32654 22nF 10% 63V
 2242Δ 5322 122 32654 22nF 10% 63V



3231 4822 051 20223 22k 5% 0.1W

3232 4822 051 10102 1k 2% 0.25W

3233 4822 051 20223 22k 5% 0.1W

3234 4822 116 52201 75Ω 5% 0.5W

3235Δ 4822 051 20008 0Ω jumper

3236 4822 116 52201 75Ω 5% 0.5W

3237Δ 4822 051 20008 0Ω jumper

3238 4822 051 10102 1k 2% 0.25W

3241 4822 117 10833 10k 1% 0.1W

3242 4822 117 10833 10k

12 Spare parts list

A8.0A

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6235	4822 130 34278	BZX79-B6V8	3118	4822 051 10102	1k 2% 0.25W	3130Δ	4822 051 20101	100Ω 5% 0.1W	2352	4822 126 14087	100nF 10% 63V
Top ctrl [N]											
Various											
81	4822 441 12227	Brkt. & cover	3119	4822 051 10102	1k 2% 0.25W	3131Δ	4822 051 20472	4k7 5% 0.1W	2353	4822 126 14087	100nF 10% 63V
1001	4822 276 13775	Switch	3120	4822 051 10102	1k 2% 0.25W	3140	4822 101 11193	47k 30% 0.1W	2354	4822 126 14087	100nF 10% 63V
1002	4822 276 13775	Switch	3125	4822 116 52175	100Ω 5% 0.5W	3141	4822 101 11191	10k 30% 0.1W	2355	4822 124 11947	10μF 20% 16V
1003	4822 276 13775	Switch	3126	4822 116 52175	100Ω 5% 0.5W	3144	4822 051 20331	330Ω 5% 0.1W	2356	4822 126 14087	100nF 10% 63V
1004	4822 276 13775	Switch	3127	4822 051 20105	1M 5% 0.1W	3145	4822 116 52257	22k 5% 0.5W	2358	4822 124 11947	10μF 20% 16V
1110	4822 212 11759	Top ctrl pnl	4xxx	4822 051 10008	0Ω 5% 0.25W	3146	4822 051 20223	22k 5% 0.1W	2359	4822 126 14087	100nF 10% 63V
			4xxx	4822 051 20008	0Ω 5% 0.25W	3160Δ	4822 051 20008	0Ω jumper	2361	4822 126 14087	100nF 10% 63V
3043	4822 116 52256	2k2 5% 0.5W	5100	4822 157 51216	5.6μH	3163	4822 051 20331	330Ω 5% 0.1W	2362	5322 122 33538	150pF 2% 63V
3044	4822 116 52256	2k2 5% 0.5W	5101	4822 157 51216	5.6μH	3167Δ	4822 051 20008	0Ω jumper	2363	4822 126 14087	100nF 10% 63V
3045	4822 116 52269	3k3 5% 0.5W				3168Δ	4822 051 20472	470Ω 5% 0.1W	2364	5322 122 33538	150pF 2% 63V
3046	4822 116 52256	2k2 5% 0.5W				3169	4822 116 83883	470Ω 5% 0.5W	2365	4822 126 14087	100nF 10% 63V
3048	4822 116 52238	12k 5% 0.5W				3350Δ	4822 051 20472	4k7 5% 0.1W	2366	5322 122 33538	150pF 2% 63V
3049	4822 116 52271	33k 5% 0.5W				3351Δ	4822 051 20472	4k7 5% 0.1W	2368	4822 124 11947	10μF 20% 16V
						3352	4822 116 52175	100Ω 5% 0.5W	2369	4822 126 14087	100nF 10% 63V
3043	4822 116 52256	2k2 5% 0.5W	6100Δ	4822 130 83757	BAS216	3353	4822 116 52175	100Ω 5% 0.5W	2371	4822 124 22726	4.7μF 35V
3044	4822 116 52256	2k2 5% 0.5W	6103Δ	4822 130 83757	BAS216	3354	4822 051 20474	470k 5% 0.1W	2373	4822 126 14087	100nF 10% 63V
3045	4822 116 52269	3k3 5% 0.5W	6104Δ	4822 130 83757	BAS216	3355Δ	4822 051 20101	100Ω 5% 0.1W	2374	4822 126 14087	100nF 10% 63V
3046	4822 116 52256	2k2 5% 0.5W	6105Δ	4822 130 83757	BAS216	3356	4822 051 20759	75Ω 5% 0.1W	2378Δ	4822 122 33177	10nF 20% 50V
3048	4822 116 52238	12k 5% 0.5W	6106Δ	4822 130 83757	BAS216	3357	4822 051 20759	75Ω 5% 0.1W	2379Δ	4822 124 12032	4.7μF 20% 50V
						3358	4822 051 20759	75Ω 5% 0.1W	2382	5322 122 34098	10nF 10% 63V
7101	4822 209 16911	PCA8516P/028	5100	4822 157 53302	1μH	2383	5322 122 31873	2.7pF 100V	2388	4822 126 13694	68pF 1% 63V
7101	4822 209 16922	PCA8516P/030	7101	4822 209 16923	PCA8516P/032	2389	5322 122 31873	2.7pF 100V	2390	5322 122 31873	2.7pF 100V
7101	4822 209 16924	PCA8516P/029				2392	5322 122 34098	10nF 10% 63V	2393	4822 126 14087	100nF 10% 63V
						2394	4822 124 11947	10μF 20% 16V	2399	4822 124 11947	10μF 20% 16V
YUV panel [R]											
Various											
0241Δ	4822 267 10888	5P Male	5100	4822 157 53302	1μH	2400	4822 126 14087	100nF 10% 63V	2405	4822 126 14087	100nF 10% 63V
0242Δ	4822 267 10889	6P Male	5125	4822 157 53139	4.7μH	2401	4822 126 14087	100nF 10% 63V	2406	4822 126 13692	47pF 1% 63V
0256	4822 267 10927	11P Male F-pin	5147	4822 157 11713	91.5mH z	2402	4822 126 14087	100nF 10% 63V	2407	4822 124 22652	2.2μF 20% 50V
1100	4822 212 11762	YUV PIP pnl	5150	4822 157 53139	4.7μH	2403	4822 124 81286	47μF 20% 16V	2408Δ	5322 122 32654	22nF 10% 63V
1100	4822 212 11766	YUV non-PIP pnl	5151	4822 157 53139	4.7μH	2404	4822 126 14087	100nF 10% 63V	2410	4822 124 22651	1.0μF 20% 50V
			5152	4822 157 53139	4.7μH	2405	4822 126 14087	100nF 10% 63V	2411	4822 126 13869	470nF 20% 16V
2225Δ	4822 124 41579	10μF 20% 50V	7140	4822 209 31532	TDA9800/V3	2412Δ	5322 126 10223	4.7nF 10% 63V	2413	4822 126 13061	220nF 20% 25V
2226Δ	4822 126 10002	100nF 20% 25V	7350	4822 209 16817	MC44462B	2414	4822 126 13689	18pF 1% 63V	2417	4822 126 13689	18pF 1% 63V
2227Δ	4822 126 10002	100nF 20% 25V				2418	4822 126 14087	100nF 10% 63V	2419Δ	5322 126 10223	4.7nF 10% 63V
			1351	4822 242 71861	cr. 14.31818MHz)	2422	4822 126 14087	100nF 10% 63V	2423	4822 126 13061	220nF 20% 25V
3225Δ	4822 051 20101	100Ω 5% 0.1W	2125	4822 124 81029	100μF 20% 25V	2425	4822 126 14087	100nF 10% 63V	2426	4822 126 14087	100nF 10% 63V
332Δ	4822 051 20101	100Ω 5% 0.1W	2126	4822 124 81029	100μF 20% 25V	2427	4822 126 13061	220nF 20% 25V	2428	4822 126 13061	220nF 20% 25V
333Δ	4822 051 20101	100Ω 5% 0.1W	2127Δ	4822 126 12944	47nF 10% 50V	2429	4822 126 13061	220nF 20% 25V	2432	4822 126 13061	220nF 20% 25V
3336Δ	4822 052 10478	4Ω7 5% 0.33W	2144Δ	4822 126 10020	100nF 20% 25V	2433	4822 126 13061	220nF 20% 25V	2434	4822 126 13061	220nF 20% 25V
3337Δ	4822 051 20008	0Ω jumper	2148Δ	4822 124 40246	4.7fF 20% 63V	2435	4822 126 14087	100nF 10% 63V	2436	4822 126 14087	100nF 10% 63V
			2149Δ	4822 124 41579	10μF 20% 50V	2437	4822 212 11789	Eco DW pnl	2439	4822 126 14087	100nF 10% 63V
7770	4822 209 16814	TDA9178/N1	2150Δ	4822 126 10002	100nF 20% 25V	2440	4822 212 11791	Eco DW pnl (93)	2442	4822 126 14087	100nF 10% 63V
			2156Δ	4822 126 10002	100nF 20% 25V	2443	4822 210 10827	Tuner UV PH TELE9	2450	4822 122 33175	2.2nF 20% 50V
OSD panel [S]											
Various											
0201	4822 267 10932	5P Female	2151	4822 124 40423	47μF 20% 25V	3301	4822 051 20479	47Ω 5% 0.1W	3302	4822 117 10353	150Ω 1% 0.1W
0204	4822 267 10932	5P Female	2152	4822 124 40423	33μF 20% 16V	3303	4822 051 20479	47Ω 5% 0.1W	3304	4822 117 10353	150Ω 1% 0.1W
0207Δ	4822 267 10889	6P Male	2153	4822 124 40423	33μF 20% 16V	3305	4822 051 20479	47Ω 5% 0.1W	3306	4822 117 10353	150Ω 1% 0.1W
0231Δ	4822 267 10888	5P Male	2154	4822 124 40423	33μF 20% 16V	3309	4822 051 20223	22k 5% 0.1W	3311	4822 051 20182	1K8 5% 0.1W
1101	4822 212 10947	crystal 4MHz	2155	4822 122 33177	10nF 20% 50V	3312Δ	4822 051 20332	3K3 5% 0.1W	3317	4822 117 11503	220Ω 1% 0.1W
1160	4822 212 11767	OSD p. EN/MAL/CHIN	2156Δ	4822 126 10002	100nF 20% 25V	3318	4822 117 11503	220Ω 1% 0.1W	3319	4822 117 11503	220Ω 1% 0.1W
1160	4822 212 11768	OSD p. EN/ARAB	2157Δ	4822 126 10002	100nF 20% 25V	3321	4822 117 11503	680Ω 5% 0.1W	3322	4822 117 11503	220Ω 1% 0.1W
1160	4822 212 11769	OSD p. EN/HANGUL	2158Δ	4822 126 10002	100nF 20% 25V	3323	4822 117 11503	220Ω 1% 0.1W	3323	4822 117 11503	220Ω 1% 0.1W
1160	4822 212 11771	OSD p. EN/TW	2159Δ	4822 126 10002	10nF 20% 50V	3324	4822 051 20332	3K3 5% 0.1W	3324	4822 117 11503	220Ω 1% 0.1W
			2160Δ	4822 124 40433	47μF 20% 25V	3325	4822 117 11503	220Ω 1% 0.1W	3325	4822 117 11503	220Ω 1% 0.1W
2101	4822 124 40433	47μF 20% 25V	2161	4822 124 40433	47μF 20% 25V	3326	4822 124 40478	100nF 10% 63V	3327	4822 117 11449	2K1 1% 0.1W
2103Δ	4822 126 10002	100nF 20% 25V	2162	4822 124 40433	10μF 20% 50V	3328	4822 124 40478	100nF 10% 63V	3328	4822 117 11449	2K1 1% 0.1W
2104Δ	4822 124 40433	47μF 20% 25V	2163	4822 126 10002</							

12 Spare parts list

3364Δ	4822 051 20472	4k7 5% 0.1W
3367	4822 117 10833	10k 1% 0.1W
3368Δ	4822 051 20332	3k3 5% 0.1W
3373	4822 117 11139	1k5 1% 0.1W
3374	4822 051 10102	1k 2% 0.25W
3375	4822 117 11503	220Ω 1% 0.1W
3376	4822 117 11449	2k2 1% 0.1W
3385	4822 051 20475	4M7 5% 0.1W
3390	4822 100 11676	10k 30% 0.2W
3392	4822 051 10102	1k 2% 0.25W
3393	4822 117 11449	2k2 1% 0.1W
3394	4822 051 20822	8k2 5% 0.1W
3396	4822 051 20822	8k2 5% 0.1W
3397	4822 051 20822	8k2 5% 0.1W
3400	4822 051 20104	100k 5% 0.1W
3427	4822 117 11139	1k5 1% 0.1W
3428Δ	4822 051 20101	100Ω 5% 0.1W
3429Δ	4822 051 20101	100Ω 5% 0.1W
3430	4822 117 12955	2k7 1% 0.1W 0805
3431	4822 051 20562	5k6 5% 0.1W 0805
3432	4822 117 10833	10k 1% 0.1W
3433	4822 051 20122	1k2 5% 0.1W
3434	4822 051 20122	1k2 5% 0.1W
3435	4822 051 20392	3k9 5% 0.1W
3437Δ	4822 051 10108	1Q 5% 0.33W
3438	4822 051 10102	1k 2% 0.25W
3443Δ	4822 051 20471	470Ω 5% 0.1W
3444	4822 117 11139	1k5 1% 0.1W
3445	4822 117 11139	1k5 1% 0.1W
3446	4822 117 11503	220Ω 1% 0.1W
3447	4822 051 10102	1k 2% 0.25W
3451	4822 051 20182	1k8 5% 0.1W
3452Δ	4822 051 20332	3k3 5% 0.1W
3455	4822 051 20182	1k8 5% 0.1W
3456Δ	4822 051 20332	3k3 5% 0.1W
3461Δ	4822 051 20101	100Ω 5% 0.1W
3463Δ	4822 051 20101	100Ω 5% 0.1W
3487Δ	4822 051 20472	4k7 5% 0.1W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5300	4822 157 11506	100mH
5301	4822 157 11506	100mH
5302	4822 157 11506	100mH
5303	4822 157 11506	100mH
5304	4822 157 11506	100mH
5305	4822 157 11506	100mH
5306	4822 157 11506	100mH
5307	4822 157 11506	100mH
5308	4822 157 11506	100mH
5309	4822 157 11506	100mH
5310	4822 157 11506	100mH
5311	4822 157 11506	100mH
5312	4822 157 11506	100mH
5313	4822 157 70439	Adj. coil
5315	4822 157 53302	1μH
5316	4822 157 11506	100mH
5317	4822 157 11506	100mH
5318	4822 157 11506	100mH
5319Δ	4822 051 20008	jumper



6300 4822 130 11366 BZX284-C3V9



7300	4822 130 10414	BA792
7301	4822 130 10414	BA792
7302	4822 209 16821	SAB9061H/N1
7303	4822 209 16824	BA033FP
7304	4822 209 90031	TDA8310/N1
7305	4822 209 90036	TDA8395T/N2
7306	4822 209 61751	TC7S32F
7307	4822 209 31754	TC7S86F
7308	5322 209 33172	PCF8574AT
7309	4822 130 60511	BC847B
7310	5322 130 60508	BC857B
7311	4822 130 60511	BC847B
7312	4822 130 60511	BC847B
7313	5322 130 60508	BC857B
7318	4822 209 16822	SAB9062H/N1