

**Service
Service
Service**

For commercial / institutional model service information, refer to manual 7603C

7603

ServiceManual

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IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various **CAUTIONS** and **NOTICES** which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these **CAUTIONS** and **NOTICES ARE NOT EXHAUSTIVE**. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done, or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.


** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

WARNING

Critical components having special safety characteristics are identified with a  or "S" by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol  on the schematics or exploded views. Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* **Broken Line** _____

FIRE AND SHOCK HAZARD

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an 'S' by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol  on the schematic diagrams and /or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug). Defeating this safety feature may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc., to be sure the unit may be safely operated without danger of electrical shock.

* **Broken line** _____

LEAKAGE CURRENT COLD CHECK

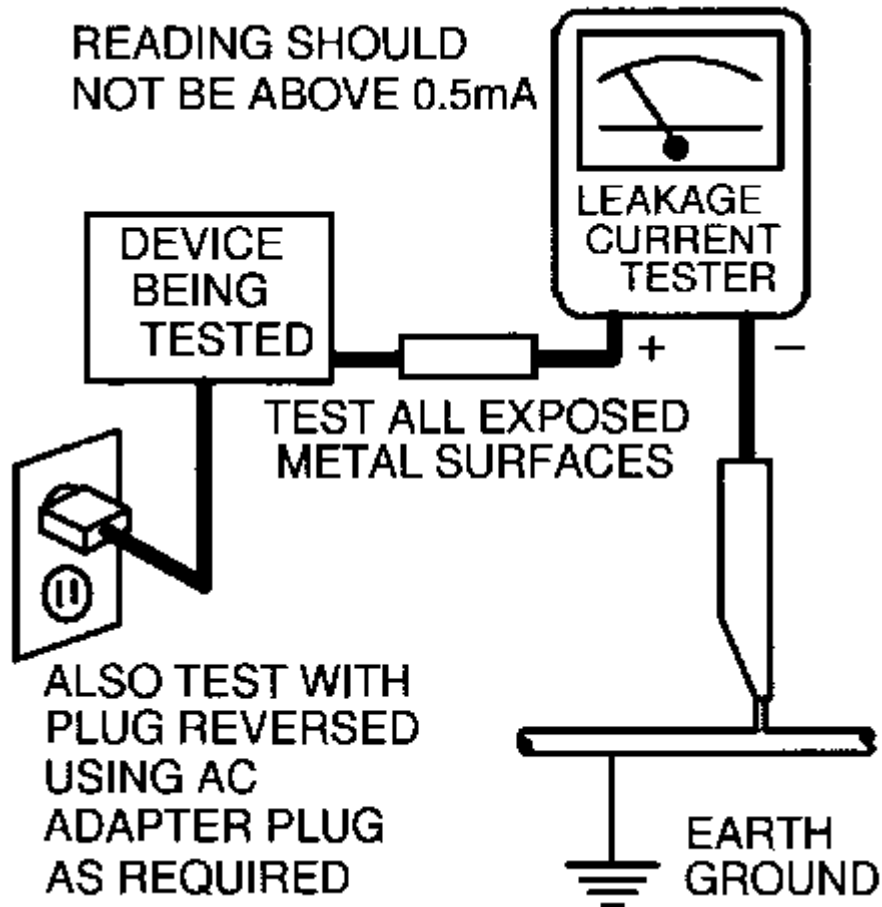
1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.

LEAKAGE CURRENT HOT CHECK

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10W resistor paralleled by a 0.15uF. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown below.
3. Use an ac voltmeter with at least 5000 ohms/volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5mA. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

OR

With the instrument completely reassembled, plug the ac line cord directly into a 120Vac outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument ac switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See the graphic below.



TV SAFETY NOTES

SAFETY CHECKS

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

- Fire and Shock Hazard
- Implosion
- X-Radiation
- Leakage Current Cold Check
- Leakage Current Hot Check
- Picture Tube Replacement
- Parts Replacement

WARNING: Before removing the CRT anode cap, turn the unit OFF and short the HIGH VOLTAGE to the CRT DAG ground.

SERVICE NOTE: The CRT DAG is not at chassis ground.

IMPLOSION

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-RADIATION

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.

5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

PICTURE TUBE REPLACEMENT

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

PARTS REPLACEMENT

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

PRODUCT SAFETY GUIDELINES FOR ALL PRODUCTS

CAUTION: Do not modify any circuit. Service work should be performed only after you are thoroughly familiar with all of the following safety checks. Risk of potential hazards and injury to the user increases if safety checks are not adhered to.

USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

PREVENTION OF ELECTROSTATIC DISCHARGE (ESD)

Some semiconductor solid state devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices, Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate an electrical charge sufficient to damage ES devices.
5. Do not use Freon propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it (most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your feet from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device.)

NOTE to CATV system Installer:

This reminder is provided to call the CATV system installer's attention to article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

PRACTICAL SERVICE PRECAUTIONS

IT MAKES SENSE TO AVOID EXPOSURE TO ELECTRICAL SHOCK. While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.

ALWAYS RESPECT VOLTAGES. While some may not be dangerous in themselves, they can cause unexpected reactions – reactions that are best avoided. Before reaching into the powered color TV set, it is best to test the high voltage insulation. It is easy to do, and is just a good service precaution.

BEFORE POWERING UP THE TV WITH THE BACK OFF (or on a test fixture), attach a clip lead to the CRT DAG ground and to a screwdriver blade that has a well insulated handle. After the TV is powered on and high voltage has developed, probe the anode lead with the blade, starting at the bottom of the High Voltage Transformer (flyback – IFT). Move the blade to within two inches of the connector of the CRT. **IF THERE IS AN ARC, YOU FOUND IT THE EASY WAY, WITHOUT GETTING A SHOCK!** If there is an arc to the screwdriver blade, replace the High Voltage Transformer or the lead, (if removable) whichever is causing the problem.

PICTURE TUBE REPLACEMENT PROCEDURE

Note: a. Two (2) people are required to handle this picture tube.
b. Safety Glasses must be worn during this procedure or whenever directly handling a picture tube.
c. Take care in each step not to damage the CRT or the cabinet.

1. Remove the Chassis and the CRT Socket Board Module from the cabinet.
2. A furniture pad or blanket should be positioned on the floor to support only the CRT Face. This pad or blanket should be high enough to keep the CRT Face approximately 12 to 14 inches off the floor.
3. Using two people, place the cabinet in a front down position with the CRT Face on the pad or blanket.
4. Place padded blocks under each corner of the cabinet to keep it from rocking.
5. Remove the four screws, at the corners of the CRT.
6. With two people lowering the cabinet to the floor, leave the CRT elevated by the pad or blanket.

Note: Take care not to grasp the neck of the CRT during this procedure, as it is extremely fragile.

7. Two (2) people may then lift the CRT from the cabinet.
8. Remove the degaussing coil from the defective CRT and mount on the replacement. Take care to maintain the exact shape and fit.

To install the new CRT, reverse steps 1 to 7.

Technical Specifications, Connections and Chassis Overview

Technical Specifications

Audio ratings

1 W mono
2 x 1 W non-DBX stereo (LC stereo)
2 x 3 W DBX stereo (with SAP)

Reception

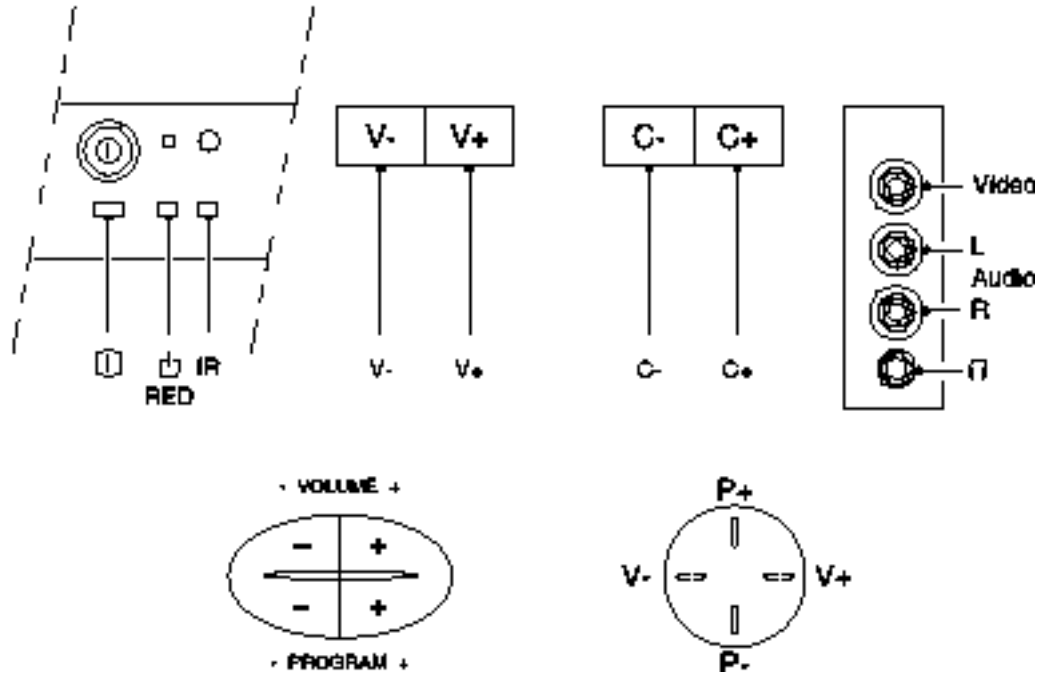
Tuning system : PLL
Color systems : NTSC
Sound systems : FM-mono
 : BTSC non-DBX
 : BTSC DBX
A/V connections : NTSC M
Channel selections : 181 channels, full cable
IF frequency : 45.75 MHz
Aerial input : 75 Ω , Coax

Miscellaneous

AC voltage : 90 - 140 V (± 10 %)
AC frequency : 60 Hz (± 5 %)
Ambient temperature : + 5 to + 45 deg. C
Maximum humidity : 90 %
Power consumption : 36 W (14")
 : 100 W (32")
Standby Power consumption : < 3 W

Connections

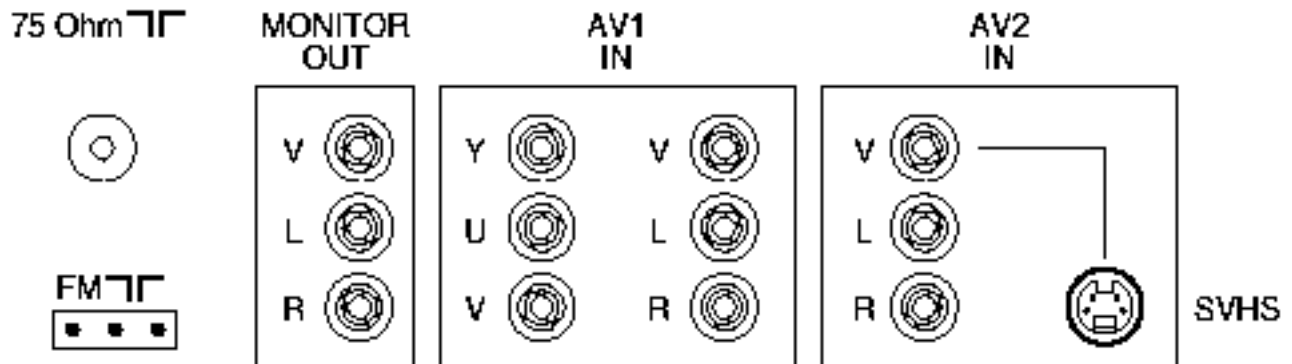
Front Or Top Control, Front Or Side Connections



Audio / Video In

- 1 - Video 1 Vpp / 75 Ω ⊕ ⊙
- 2 - Audio L (0.2 Vrms / 10 kΩ) ⊕ ⊙
- 3 - Audio R (0.2 Vrms / 10 kΩ) ⊕ ⊙
- 4 - Headphone (3.5 mm) 8 - 600 Ω / 4 mW ⊕ ⊙

Rear Connections



Monitor Out

1 - Video	1 Vpp / 75 Ω	↔ ⊙
2 - Audio	L (0.5 Vrms / 1 k Ω)	↔ ⊙
3 - Audio	R (0.5 Vrms / 1 k Ω)	↔ ⊙

YUV In

1 - Y	0.7 Vpp / 75 Ω	↔ ⊙
2 - U	0.7 Vpp / 75 Ω	↔ ⊙
3 - V	0.7 Vpp / 75 Ω	↔ ⊙

AV1 In

4 - Video	1 Vpp / 75 Ω	↔ ⊙
5 - Audio	L (0.5 Vrms / 10 k Ω)	↔ ⊙
6 - Audio	R (0.5 Vrms / 10 k Ω)	↔ ⊙

AV2 In

1 - Video	1 Vpp / 75 Ω	↔ ⊙
2 - Audio	L (0.5 Vrms / 10 k Ω)	↔ ⊙
3 - Audio	R (0.5 Vrms / 10 k Ω)	↔ ⊙

AV2 In (SVHS)

1 -	gnd	⊥
2 -	gnd	⊥
3 - Y	1 Vpp / 75 Ω	↔ ⊙
4 - C	0.3 Vpp / 75 Ω	↔ ⊙

Maintenance Instructions

It is recommended to have a maintenance inspection carried out by qualified service personnel. 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 three to five years.
- When the set is used in an environment with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:
 1. Perform the 'general repair instruction' noted above.
 2. Clean the power supply and deflection circuitry on the chassis.
 3. Clean the picture tube panel and the neck of the picture tube.

Abbreviation list

2CS	2 Carrier (or Channel) Stereo
ACI	Automatic Channel Installation: algorithm that installs TV sets directly from cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AFT	Automatic Fine Tuning
AGC	Automatic Gain Control: algorithm that controls the video input of the featurebox
AM	Amplitude Modulation
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ATS	Automatic Tuning System
AV	External Audio Video
AVL	Automatic Volume Level
BC-PROT	Beam Current Protection
BCL	Beam Current Limitation
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BLC- INFORMATION	Black current information
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
B-TXT	Blue teletext
CC	Closed Caption
ComPair	Computer aided rePair
CRT	Cathode Ray Tube or picture tube
CSM	Customer Service Mode
CTI	Colour Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronisation
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DBX	Dynamic Bass Expander
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for dealers to enter e.g. service mode
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EHT	Extra High Tension
EHT- INFORMATION	Extra High Tensioninformation
EU	Europe


EW	East West, related to horizontal deflection of the set
EXT	External (source), entering the set via SCART or Cinch
FBL	Fast Blanking: DC signal accompanying RGB signals
FILAMENT	Filament of CRT
FLASH	Flash memory
FM	Field Memory
FM	Frequency Modulation
HA	Horizontal Acquisition: horizontal sync pulse coming out of the HIP
HFB	Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection
HP	Headphone
Hue	Colour phase control for NTSC (not the same as 'Tint')
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I2C	Integrated IC bus
IF	Intermediate Frequency
IIC	Integrated IC bus
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.
ITV	Institutional TV
LATAM	Latin America
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LNA	Low Noise Amplifier
LS	Large Screen
LS	Loudspeaker
LSP	Large signal panel
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MSP	Multistandard Sound Processor: ITT sound decoder
MUTE	Mute-Line
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
NTSC	National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments
OB	Option Byte
OC	Open Circuit
OSD	On Screen Display
PAL	Phase Alternating Line. Colour system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
PCB	Printed Circuit board
PIP	Picture In Picture


PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
POR	Power-On Reset
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PTP	Picture Tube Panel (or CRT-panel)
RAM	Random Access Memory
RC	Remote Control handset
RC5	Remote Control system 5, signal from the remote control receiver
RGB	Red Green Blue
ROM	Read Only Memory
SAM	Service Alignment Mode
SAP	Second Audio Program
SC	Sandcastle: pulse derived from sync signals
S/C	Short Circuit
SCAVEM	Scan Velocity Modulation
SCL	Serial Clock
SDA	Serial Data
SDM	Service Default Mode
SECAM	SEquence Couleur Avec Memoire. Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SS	Small Screen
STBY	Standby
SVHS	Super Video Home System
SW	Software
THD	Total Harmonic Distortion
TXT	Teletext
μP	Microprocessor
UOC	Ultimate One Chip
VA	Vertical Acquisition
VBAT	Main supply voltage for the deflection stage (mostly 141 V)
V-chip	Violence Chip
VCR	Video Cassette Recorder
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
YC	Luminance (Y) and Chrominance (C) signal


Schematic notes

"\$" FOR MAINS 120V AC 170V (177V)
220V AC 309V (317V)

 -V NORMAL OPERATION

 (-V) STANDBY OPERATION

 HOT GROUND

 COLD GROUND

Service Modes, Error Codes And Fault Finding

Test Points

The chassis is equipped with test points printed on the circuit board assemblies. These test points refer to the functional blocks:

Test point	Circuit	Diagram
A1-A2-A3-..	Audio processing	A8, A9 / A11
C1-C2-C3-..	Control	A7
F1-F2-F3-..	Frame drive and output	A3
I1-I2-I3-..	Tuner & IF	A4
L1-L2-L3-..	Line drive and output	A2
P1-P2-P3-..	Power supply	A1
S1-S2-S3-..	Synchronisation	A6
V1-V2-V3-..	Video processing	A5, B1

The numbering is in a logical sequence for diagnostics.

Always start diagnosing within a functional block in the sequence of the relevant test points for that block.

Perform measurements under the following conditions:

- Service Default Mode (when this mode is not present, set all controls to 50% and volume select channel 3).
- Service Default Mode.
- Video: color bar signal.
- Audio: 3 kHz left, 1 kHz right.

Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between dealer and customer.

Note: Some L8 and M8 chassis sets use a software version that does not contain the Service Modes (see table). In this case, use the special Factory Mode Remote Control. This can be ordered by service code 4835 310 57511. Complete instructions are included. This remote control will place the TV in the Factory Mode and allow access to all adjustments that a normal Service Mode contains (including setting Option Bytes). Error codes will not be available.

There is also the option of using ComPair, a hardware interface between a computer (see requirements) and the TV chassis. It offers the ability of structured trouble shooting, error code reading and software version readout for all L8 and M8 chassis. Requirements: To run ComPair on a computer (laptop or desktop) requires, as a minimum, a 486 processor, Windows 3.1 and a CD-ROM drive. A Pentium Processor and Windows 95/98 are also acceptable (see also [ComPair](#))

SW. cluster	Software name	UOC-type	Diversity	Remark
1US0	L01UN0-x.y	TDA9587	Stereo, non-DBX, CC	All Service Modes
1US1	L01US1-x.y	TDA9587/TDA9588	Stereo, DBX, CC	Only Com-Pair (*)
2US0	L01UM0-x.y	TDA9587	Mono, CC	All Service Modes
2US1	L01UM1-x.y	TDA9587	Mono, CC	Without CSM (*)
3US0	L01US0-x.y	TDA9588	Stereo, DBX, CC	Only Com-Pair (*)
3US1	L01UN1-x.y	TDA9587	Stereo, non-DBX, CC	Without CSM (*)
Abbreviations in 'Software name': U= USA, N= stereo non-DBX, S= stereo DBX, M= mono				

Service Default Mode (SDM)

Purpose

- To create a predefined setting to get the same measurement results as given in this manual.
- To override SW protections.
- To start the blinking LED procedure.

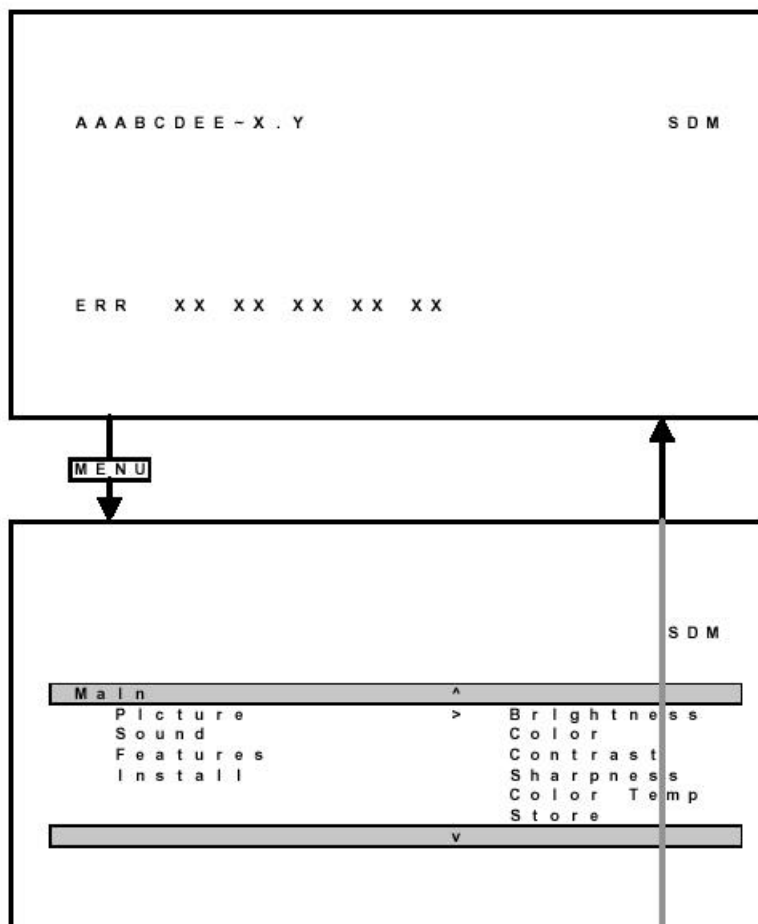
Specifications

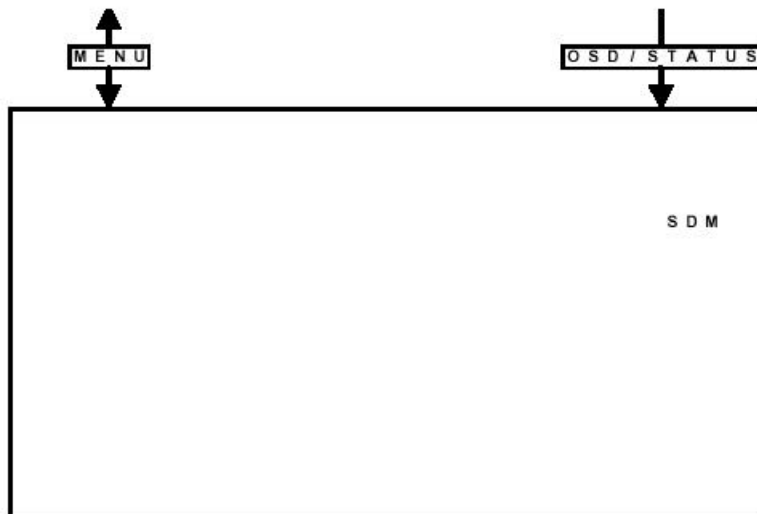
- Tuning frequency: 61.25 MHz (channel 3).
- Color system: NTSC.
- All picture settings at 50 % (brightness, color contrast, hue).
- Bass, treble and balance at 50 %; volume at 25 %.
- All service-unfriendly modes (if present) are disabled, like:
 - (sleep) timer,
 - child/parental lock,
 - blue mute,
 - hotel/hospitality mode
 - auto switch-off (when no 'IDENT' video signal is received for 15 minutes),
 - skip / blank of non-favorite presets / channels,
 - auto store of personal presets,
 - auto user menu time-out.

How to enter SDM

- Use a standard customer RC-transmitter and key in the code 062596 directly followed by the MENU button, or
- Short wires 9631 and 9641 on the mono carrier and switch the set ON apply AC power. Then press the power button (remove short after start-up).
Caution: Entering SDM by shorten wires 9631 and 9641 will override the +8V-protection. Do this only for a short period. When doing this, the service-technician must know exactly what he is doing, as it could lead to damaging the set.
- Or via ComPair

After entering SDM, the following screen is visible, with SDM at the upper right side for recognition.





How to navigate

- When you press the MENU button on the remote control, the set will switch between the SDM and the normal user menu (with the SDM mode still active in the background). Return to the SDM screen with the OSD / STATUS button.
- When you press the OSD / STATUS button on the remote control, the menu will show or hide the error buffer. This feature is available to prevent interference during waveform measurements.
- On the TV press and hold the 'VOLUME down' and press the 'CHANNEL down' for a few from SDM to SAM and reverse.

How to exit

Switch the set to STANDBY by pressing the power button on the remote control transmitter (if you switch the set OFF by removing the AC power, the set will return in SDM when AC power is re-applied). The error buffer is cleared.

Service Alignment Mode (SAM)

Purpose

- To perform alignments.
- To change option settings.
- To display / clear the error code buffer.

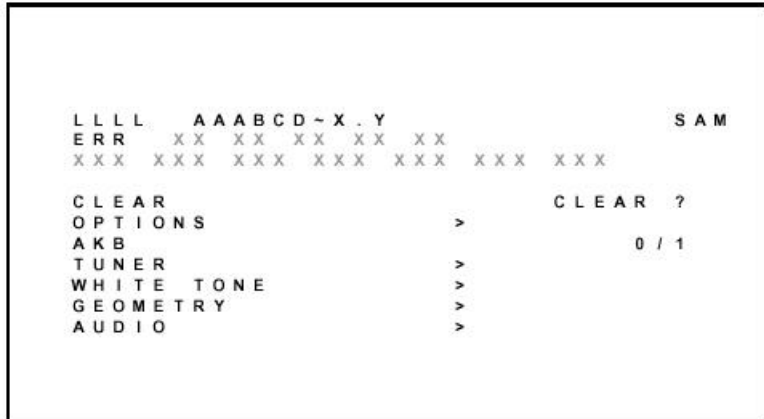
Specifications

- Operation hours counter.
- Software version.
- Option settings.
- Error buffer reading and erasing.
- Software alignments.

How to enter

- Use a standard customer RC-transmitter and key in the code 062596 directly followed by the OSD / STATUS button or
- Via ComPair.

The following screen is visible, with SAM at the upper right side for recognition.



1. LLLL This is the operation hours counter. It counts the normal operation hours, not the standby hours.
2. AAABCD-X.Y This is the software identification of the main micro controller
 - A = the project name (L01).
 - B = the region: E = Europe, A = Asia Pacific, U = NAFTA, L = LATAM.
 - C = the software diversity: N = stereo non-DBX, S = stereo DBX, M = mono, D = DVD.
 - D = the language cluster number.
 - E = UOC diversity.
 - X = the main software version number.
 - Y = the sub software version number.
3. SAM Indication of the actual mode.
4. Errors buffer Five errors possible.
5. Option bytes Seven codes possible.
6. Clear Erase the contents of the error buffer. Select the CLEAR menu item and press the CURSOR RIGHT key. The content of the error buffer is cleared.
7. Options To set the Option Bytes. See chapter 8.3.1 for a detailed description.
8. AKB Disable (0) or enable (1) the 'black current loop' (AKB = Auto Kine Bias).
9. Tuner To align the Tuner. See chapter 8.3.2 for a detailed description.
10. White Tone To align the White Tone. See **White tone** for a detailed description.
11. Geometry To align the set geometry. See **Geometry** for a detailed description.
12. Audio No audio alignment is used for NTSC.

How to navigate

- In SAM, select menu items with the CURSOR UP/DOWN key on the remote control transmitter. The selected item will be highlighted. When not all menu items fit on the screen, move the CURSOR UP/DOWN key to display the next / previous menu items.
- With the CURSOR LEFT/RIGHT keys, it is possible to:
 - (De)activate the selected menu item.
 - Change the value of the selected menu item.
 - Activate the selected submenu.
- When you press the MENU button twice, the set will switch to the normal user menus (with the SAM mode still active in the background). To return to the SAM menu press the OSD / STATUS button [i+].
- When you press the MENU key in a submenu, you will return to the previous menu.

How to exit

Switch the set to STANDBY by pressing the power button on the remote control transmitter (if you switch the set OFF by removing the AC power, the set will return in SAM when AC power is re-applied). The error buffer is not cleared.

Customer Service Mode (CSM)

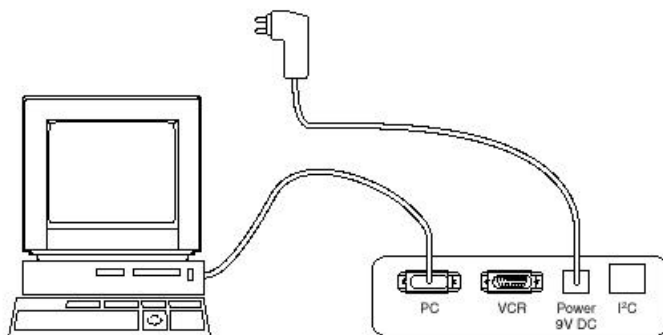
Purpose

The Customer Service Mode is (de-)activated by the customer upon request of the service technician 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.

How to enter

The CSM will be turned on after pressing the MUTE key on the remote control transmitter and any of the control buttons on the TV for at least 4 seconds simultaneously. This activation only works if there is no menu on the screen.

After switching ON the Customer Service Mode, the following screen will appear:



1. Software identification of the main micro controller (see **Service Alignment Mode (SAM)** for an explanation).
2. Error code buffer (see **Error Codes** for more details). Displays the last seven errors of the error code buffer.
3. In this line, the Option Bytes (OB) are visible. Each Option Byte is displayed as a decimal number between 0 and 255. The set may not work correctly when an incorrect option code is set. See **Options** for more information on the option settings.
4. Indicates which color and sound system is installed for the selected pre-set.

5. Indicates if the set is not receiving an 'IDENT' signal on the selected source. It will display 'Not Tuned'.
6. Indicates if the sleep timer is enabled.
7. Indicates if the V-chip feature is enabled.
8. Value indicates parameter levels at CSM entry.
CO = CONTRAST, CL = COLOR, BR = BRIGHTNESS,
HU = HUE, SH = SHARPNESS
9. Value indicates parameter levels at CSM entry.
VL = VOLUME LEVEL, BL = BALANCE LEVEL, AVL LIM
= AUTO VOLUME LEVEL LIMITER
10. Value indicates parameter levels at CSM entry.
DV = DELTA VOLUME, BS = BASS LEVEL, TR = TREBLE LEVEL

How to exit

You can turn the Customer Service Mode off:

- After you press 'any' key of the remote control transmitter with exception of the CHANNEL and VOLUME keys.
- After you switch-off the TV set with the AC power switch.

Problems And Solving Tips (Related To CSM)

Picture Problems

No colors / noise in picture

Check CSM line 4. Wrong color system installed. To change the setting:

1. Select the MANUAL STORE sub menu.
2. Select and change the SYSTEM setting until picture and sound are correct.
3. Select the STORE menu item.

Colors not correct / unstable picture

Check CSM line 4. Wrong color system installed. To change the setting:

1. Press the MENU button on the remote control.
2. Select the INSTALL sub menu.
3. Select the MANUAL STORE sub menu.
4. Select and change the SYSTEM setting until picture and sound are correct.
5. Select the STORE menu item.

TV switches off or changes channel without any user action

The TV set switches off after TV SWITCHING OFF was displayed.

Auto standby switched the set off because:

- There was no 'ident' signal for more than 15 minutes or
- There was no remote control signal received or local key pressed for > 2 hours.

See ***Alignments*** for a description of the options to enable / disable auto standby

Picture too dark or too bright

Increase / decrease the BRIGHTNESS and / or the CONTRAST value when:

- The picture improves after you have pressed the 'Smart Picture' button on the remote control.
- The picture improves after you have switched on the Customer Service Mode

The new 'Personal' preference value is automatically stored.

White line around picture elements and text

Decrease the SHARPNESS value when:

- The picture improves after you have pressed the 'Smart Picture' button on the remote control.
- The picture improves after you have switched on the Customer Service Mode

The new 'Personal' preference value is automatically stored.

Snowy picture

Check CSM line 5. If this line indicates 'Not Tuned', check the following:

- 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 error number 10). Check the tuner and replace / repair if necessary.

Snowy picture and/or unstable picture

- A scrambled or decoded signal is received.

Black and white picture

Increase the COLOR value when:

- The picture improves after you have pressed the 'Smart Picture' button on the remote control.
- The picture improves after you have switched on the Customer Service Mode

The new 'Personal' preference value is automatically stored.

Menu text not sharp enough

Decrease the CONTRAST value when:

- The picture improves after you have pressed the 'Smart Picture' button on the remote control.
- The picture improves after you have switched on the Customer Service Mode

The new 'Personal' preference value is automatically stored.

Sound Problems

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

Increase / decrease the VOLUME level when the volume is OK after you switched on the CSM. The new 'Personal' preference value is automatically stored.

ComPair

Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I²C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I²C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

Specifications

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.

In case of the L8/M8 chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector (located on the Main panel, see **Hardware alignments** suffix D).

The ComPair faultfinding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

1. Automatic (by communication with the television)

ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I²C level. ComPair can access the I²C bus of the television. ComPair can send and receive I²C commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I²C busses of the TV-set.

2. Manually (by asking questions to you)

Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extend. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. Does the screen gives a picture? Click on the correct answer: YES / NO) and showing you examples (e.g. Measure test-point I7 and click on the correct oscillogram you see on the oscilloscope). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some **additional features** like:

- Up- or downloading of presets.
- Managing of preset lists.
- Emulation of the (European) Dealer Service Tool (DST).

- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.

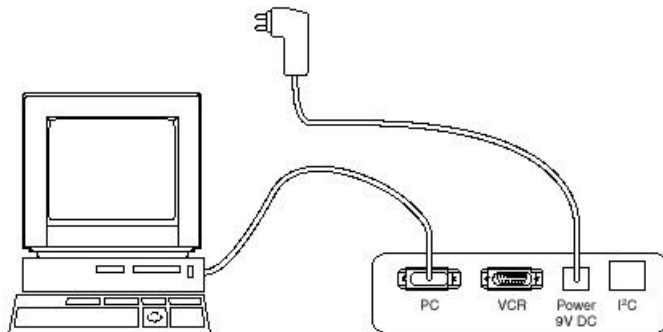
Example: *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Monocarrier.*

Click on the 'Panel' hyperlink to automatically show the PWB with a highlighted capacitor C2568.

Click on the 'Schematic' hyperlink to automatically show the position of the highlighted capacitor.

How To Connect

1. First install the ComPair Browser software (see the Quick Reference Card for installation instructions).
2. Connect the RS232 interface cable between a free serial (COM) port of your PC and the PC connector (marked with 'PC') of the ComPair interface.
3. Connect the AC power adapter to the supply connector (marked with 'POWER 9V DC') on the compare interface.
4. Switch the ComPair interface OFF.
5. Switch the television set OFF, remove the AC power.
6. Connect the ComPair interface cable between the connector on the rear side of the ComPair interface (marked with 'I 2 C') and the ComPair connector on the mono carrier (see **Hardware alignments**_suffix D).
7. Plug the AC power adapter in the AC power outlet and switch on the interface. The green and red LEDs light up together. The red LED extinguishes after approx. 1 second while the green LED remains lit.
8. Start the ComPair program and read the introduction chapter.



How To Order

ComPair order codes:

- Starter kit ComPair + SearchMan software + compare interface (excluding transformer): 4822 727 21629
- ComPair interface (excluding transformer): 4822 727 21631
- Starter kit ComPair software (registration version): 4822 727 21634
- Starter kit SearchMan software: 4822 727 21635
- ComPair CD (update): 4822 727 21637
- SearchMan CD (update): 4822 727 21638
- ComPair interface cable: 3122 785 90004

Error Codes

Introduction

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, it is written at the left side and all other errors shift one position to the right.

The error code buffer is cleared in the following cases:

- By activation of the CLEAR command in the SAM menu:
- When you exit SDM / SAM with the STANDBY command on the remote control (when leaving SDM / SAM, by disconnecting the set from AC power, the error buffer is not reset).
- When you transmit the command DIAGNOSE-99-OK with ComPair.
- If the content of the error buffer has not changed for 50 hours, it resets automatically.

Examples:

ERROR: 0 0 0 0 0: No errors detected.

ERROR: 6 0 0 0 0: Error code 6 is the most recent and only detected error.

ERROR: 9 6 0 0 0: Error code 6 was first detected and error code 9 is the most recent detected error.

You can also make the contents of the error buffer visible via the blinking LED procedure (see ***The Blinking LED Procedure***). This is especially useful when there is no picture.

Error Codes

In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present.

If possible, check the entire contents of the error buffer. In some situations an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).

Err.	Device	Error description	Symptom	Check	Diagram
0	-	No Error	-	-	-
1	-	X-Ray / overvoltage protection	Set will hiccup until it goes to protection mode	2407 & 7402 (LB), 2465 & 7460 (MB)	A2
2	-	High beam current	-	CRT panel, 3340	B1, B2
	-	Horizontal protection	- Set will hiccup until it goes to protection mode - Fly back line after 5 s in protection mode	+200V, LOT 5445, 7460 - 7463, 6467, hor. defl. coil	A2
3	TDA8359 / TDA9302	Vertical protection	- Set will hiccup until it goes to protection mode - One hor. Line after 5 s in protection mode	Viotaux+13V, +50V (M6), 7471, vert. defl. Coil	A2, A3
4	MSP34X5 / TDA9853	MSP I ² C identification error	Set turned on without sound output	Viotaux+5V, +8V, 7831, 3823/33, 7851, 3865/66	A9 or A11
5	TDA95xx	POR / +8V protection	Set will hiccup and goes to protection mode after 8 s	3V3, +8V, 7200, 7560, 7480	A5 - A7, A1, A2
6	I ² C bus	General I ² C bus error	Set is in protection mode	SDA/SCL, 1000, 7200, 7600/91, 3624/25	A7
7	AN7522/3	Power down (over current) protection	Set will hiccup until it goes to protection mode	MainAux, 7501/02, 7561/62	A6, A1
8	-	E/W protection (Large Screen)	Geometry wrong or set in protection mode	Viotaux+11V, 3400, 3405/06, 7400	A2
9	M24C08	NVM I ² C identification error	Set will turn on but is unable to store data	3V3, 7501/02, 3611, 3603/04	A7
10	Tuner	Tuner I ² C identification error	Set will turn on but has no picture and sound	Viotaux+5V, 1000, 7482	A4, A2
11	TDA6107/8	Black current loop protection	Fly back line after 5 s in protection mode	+200V, 7330, HGB amps, CRT	B1, B2
12	M65669	PIP I ² C identification error	Picture in picture does not function	+5V, +8V, 7803, 7890/91	P

The Blinking LED Procedure

Via this procedure you can make the contents of the error buffer visible via the front LED. This is especially useful when there is no picture.

When the SDM is entered, the LED will blink the contents of the error-buffer.

Error-codes ≥ 10 are shown as follows:

- a long blink of 750 ms (which is an indication of the decimal digit),
- a pause of 1.5 s,
- n short blinks ($n = 1 - 9$),
- when all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
- the sequence starts again.

Example of error buffer: 12 9 6 0 0

After entering SDM:

- 1 long blink of 750 ms followed by a pause of 1.5 s,
- 2 short blinks followed by a pause of 3 s,
- 9 short blinks followed by a pause of 3 s,
- 6 short blinks followed by a pause of 3 s,
- 1 long blink of 3 s to finish the sequence,
- the sequence starts again.

Protections

If a fault situation is detected an error code will be generated and if necessary the set will be put in the protection mode. Blinking of the red LED at a frequency of 3 Hz indicates the protection mode. In some error cases the microprocessor does not put the set in the protection mode. The error codes of the error buffer can be read via the service menu (SAM), the blinking LED procedure or via ComPair. The DST diagnose functionality will force the set into the Service-standby, which is similar to the usual standby mode, however the microprocessor has to remain in normal operation completely.

To get a quick diagnosis the chassis has three service modes implemented:

- The Customer Service Mode (CSM).
- The Service Default Mode (SDM). Start-up of the set in a predefined way.
- The Service Alignment Mode (SAM). Adjustment of the set via a menu and with the help of test patterns.

See for a detailed description *Circuit description*

Repair Tips

Below some failure symptoms are given, followed by a repair tip.

- **Set is dead and makes hiccuping sound**

'MainSupply' is available. Hiccupping stops when de-soldering L5561, meaning that problem is in the 'MainSupply' line. No output voltages at LOT, no horizontal deflection. Reason: line transistor 7460 is defective.

- **Set is dead, and makes no sound**

Check power supply IC 7520. Result: voltage at pins 1, 3, 4, 5 and 6 are about 180 V and pin 8 is 0 V. The reason why the voltage on these pins is so high is because the output driver (pin 6) has an open load. That is why MOSFET 7521 is not able to switch. Reason: feedback resistor 3523 is defective. Caution: be careful measuring on the gate of 7521; circuitry is very high ohmic and can easily be damaged!

- **Set is in hiccup mode and shuts down after 8 s.**

Blinking LED (set in SDM mode) indicates error 5. As it is unlikely that 'P 'POR' and '+8V protection' happen at the same time, measure the '+8V'. If this voltage is missing, check transistor 7480.

- **Set is non-stop in hiccup mode**

Set is in over current mode; check the secondary sensing (opto coupler 7515) and the 'MainSupply' voltage. Signal 'Stdby_con' must be logic low under normal operation conditions and goes to high (3.3 V) under standby and fault conditions.

- **Set turns on, but without picture and sound**

The screen shows snow, but OSD and other menus are okay. Blinking LED procedure indicates error 11, so problem is expected in the tuner (pos. 1000). Check presence of supply voltages. As 'Vlotaux+5V' at pin 5 and 7 are okay, 'VT_supply' at pin 9 is missing. Conclusion: resistor 3460 is defective.

- **Set turns on, but with a half screen at the bottom.**

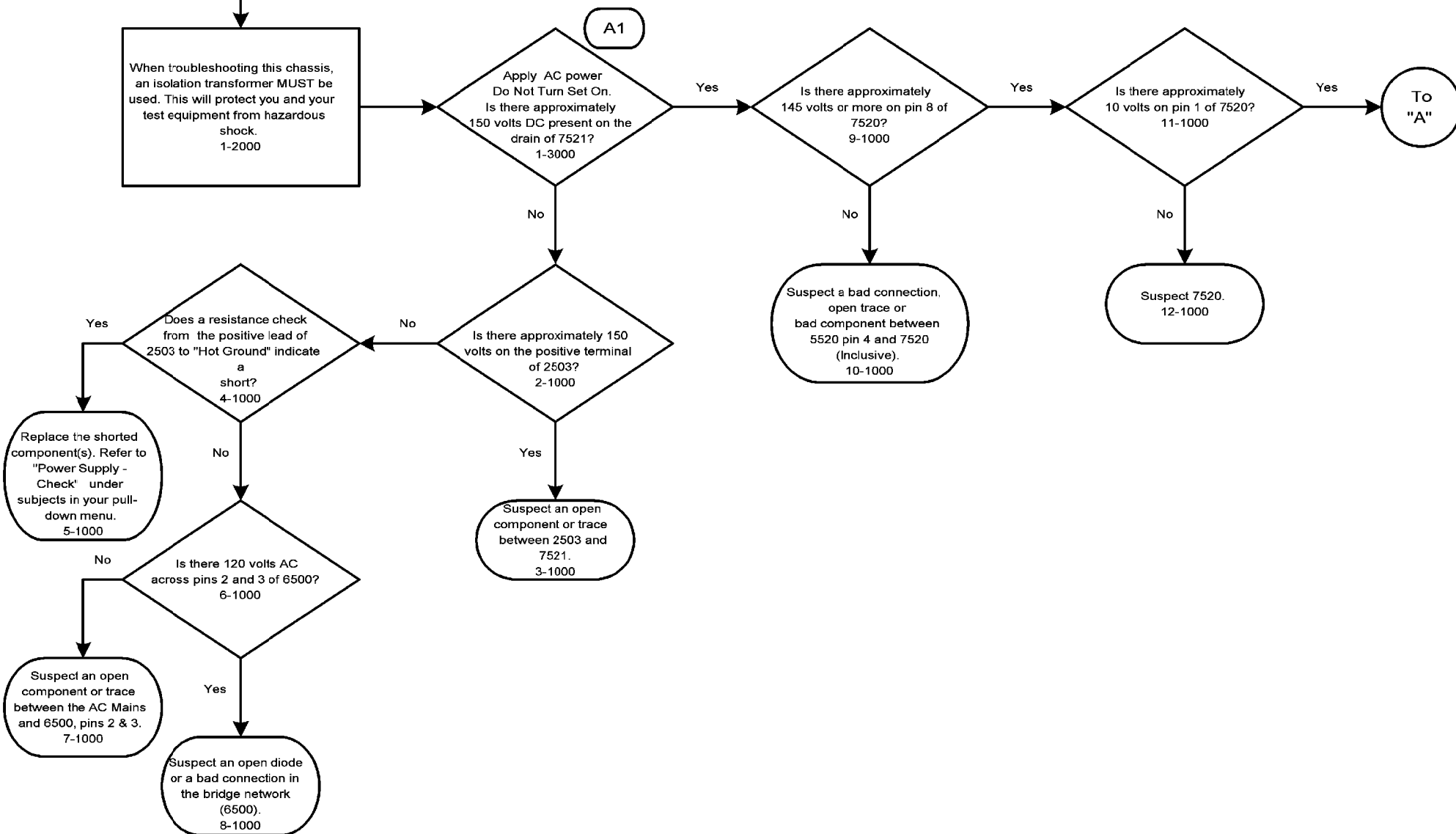
Sound is okay

Blinking LED (set in SDM mode) indicates error 3. Check 'Vlotaux+11V' and '+50V'. If they are okay, problem is expected in the vertical amplifier IC 7471. Measure with a scope the waveform on pin 17 of the UOC. Measure also at pin 1 of IC 7471. If here the signal is missing, a defective resistor R3244 causes the problem.

M-8 Troubleshooting Dead Set 1

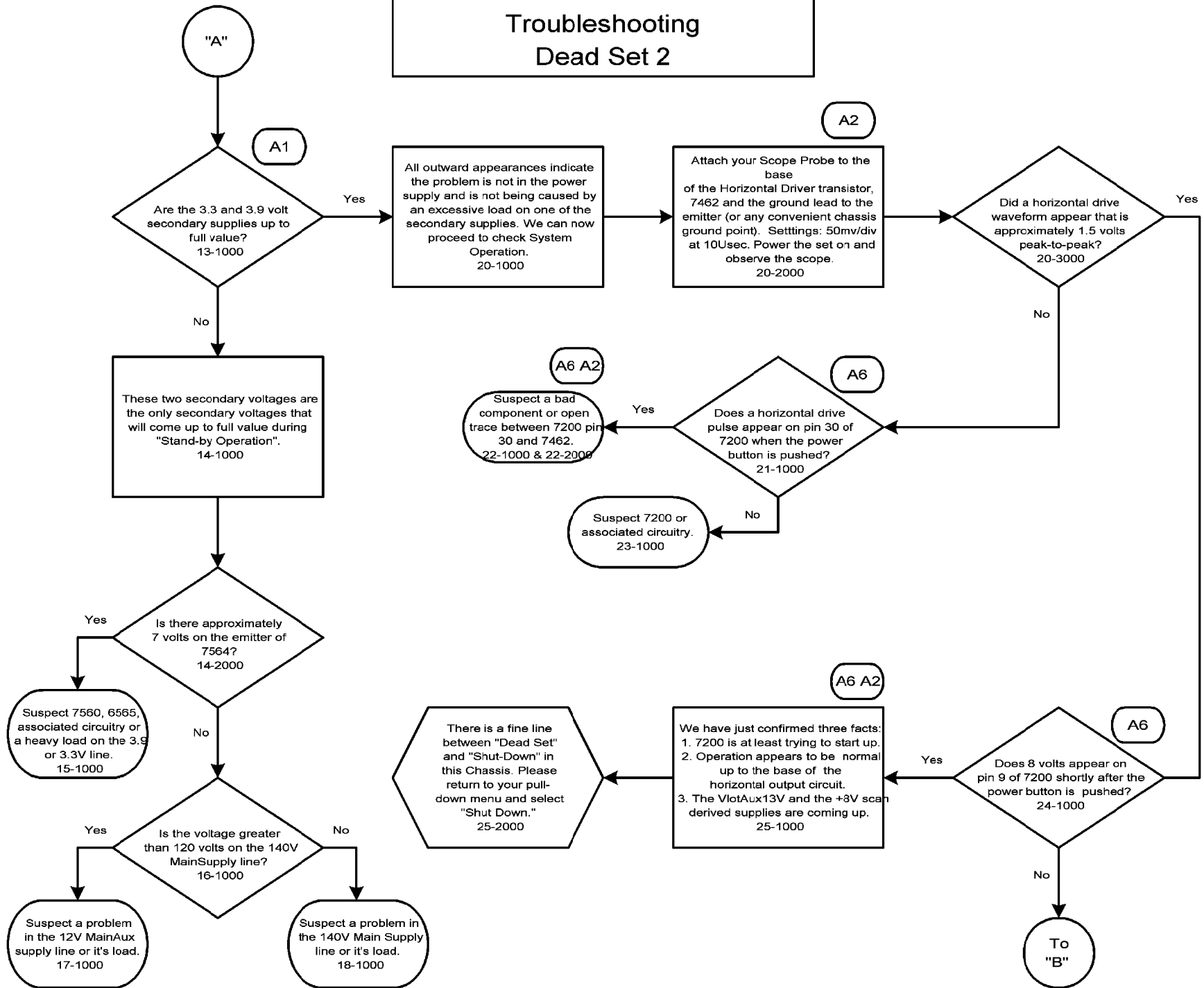
In this section we will troubleshoot the symptom "Dead Set".
1-1000

When troubleshooting this chassis, an isolation transformer **MUST** be used. This will protect you and your test equipment from hazardous shock.
1-2000



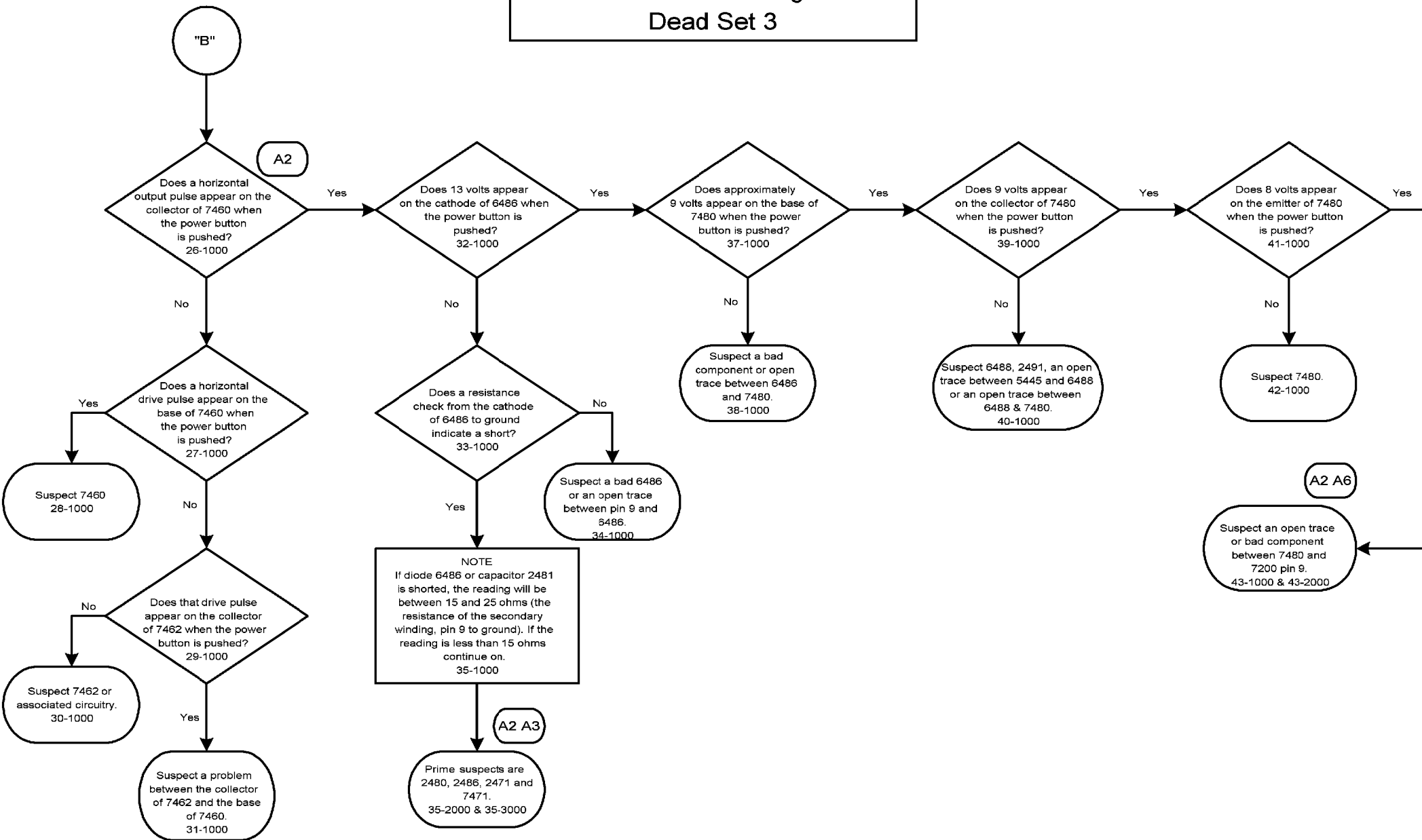
Note: (XX) Indicates the Schematic Page being talked about.

M-8 Troubleshooting Dead Set 2



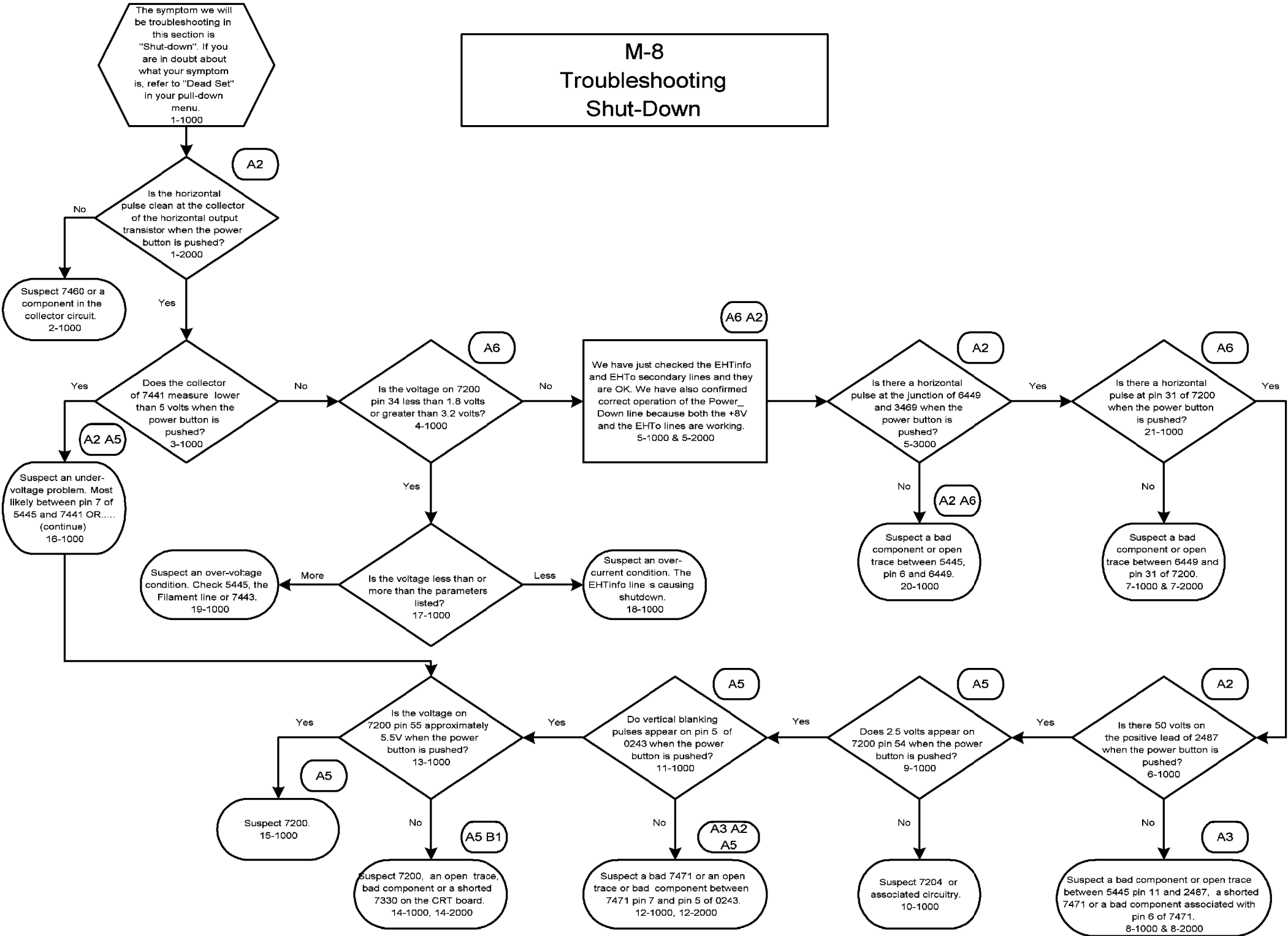
Note: (xx) Indicates the Schematic Page being talked about.

M-8 Troubleshooting Dead Set 3



Note: (xx) Indicates the Schematic Page being talked about.

M-8 Troubleshooting Shut-Down



Note: (xx) Indicates the Schematic Page being talked about.

M-8 Troubleshooting Power Supply Check 1

In this section, we will discover a method of checking the power supply after parts have been replaced and prior to applying AC power.
1-1000

A1

If, while troubleshooting a "Dead Set" symptom, we find fuse 1500 open and FET 7521 shorted, they will obviously have to be replaced. It is good practice to replace resistor 3527 and IC 7520 at this time.
1-2000

Resistor 3527 is a current sensing device and when 7521 shorted, 3527 was subjected to an excessive amount of current flow. This resistor is 1 ohm in resistance at 1% tolerance. It would not take much of a current increase to change the value adversely. This change would not be detected by an ohmmeter.
1-3000

If we examine 7521's circuitry, we can see that when it shorted, the entire value of our raw B+ was placed on pins 5 and 6 of 7520. It would be good practice to replace this IC at this time because of the level of stress it has been subjected to.
1-4000

Now that we have replaced the necessary parts, we must try to figure out any possible causes for the failure that may not be related to the parts we changed.
1-5000

The frequency of operation of 7520 and the conduction (on time) of 7521 is determined by feedback variations from IC 7515 and the feedback circuitry.
1-6000

If we were to apply AC power and the cause of the problem was in our feedback path, we would end up having to replace those same parts again.
1-7000

Our first test in the feedback path will be to determine if 7541, 7542 and 7515 are operating properly.
1-8000

Put the positive lead of your ohmmeter on pin 3 and the negative lead on pin 4 of IC 7515.
1-9000

Place a jumper wire from the cathode of 6569 to the cathode 6562. Apply the positive lead of a variable DC power supply to either end of the jumper wire and the negative lead to chassis (cold) ground. Set the power supply to zero and turn it on. Slowly raise the voltage from zero to seven (7) volts (+ or -) 2 volts.
1-10000

Did the resistance reading on the ohmmeter go down?
1-11000

No

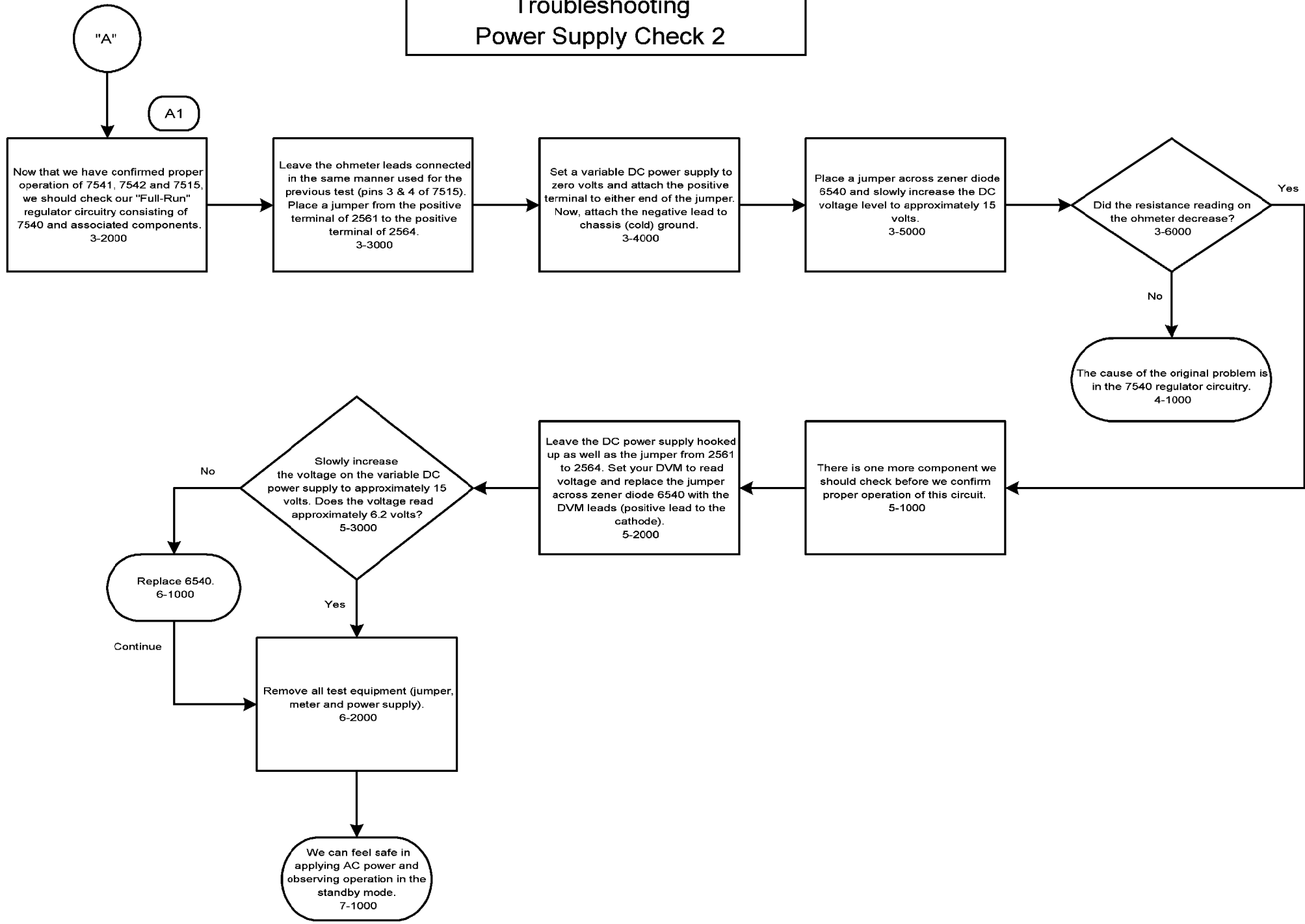
The source of our problem is in the circuitry or associated components under test.
2-1000

The circuitry under test can be considered operational.
3-1000

To
"A"

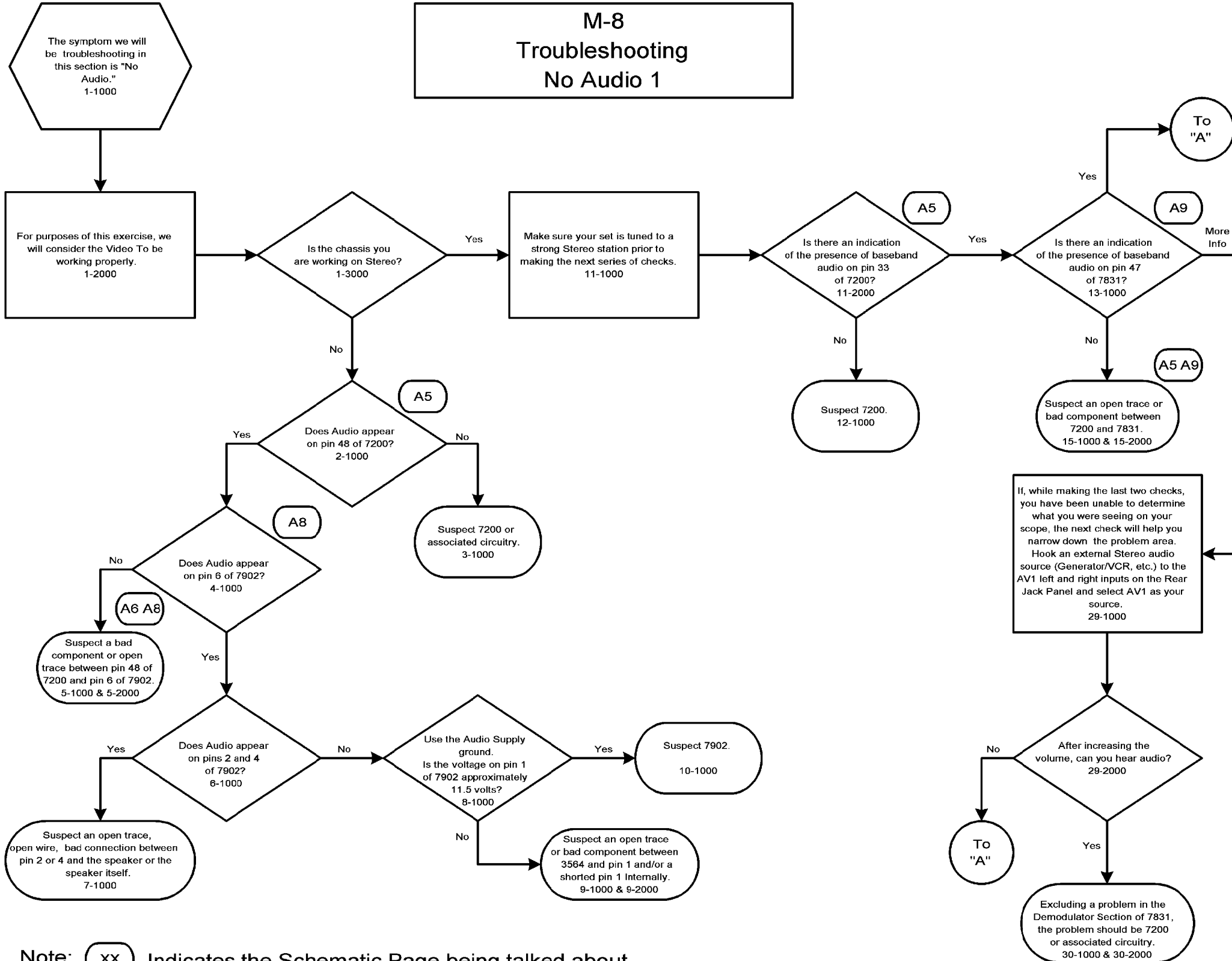
Note: (XX) Indicates the Schematic Page being talked about.

M-8 Troubleshooting Power Supply Check 2



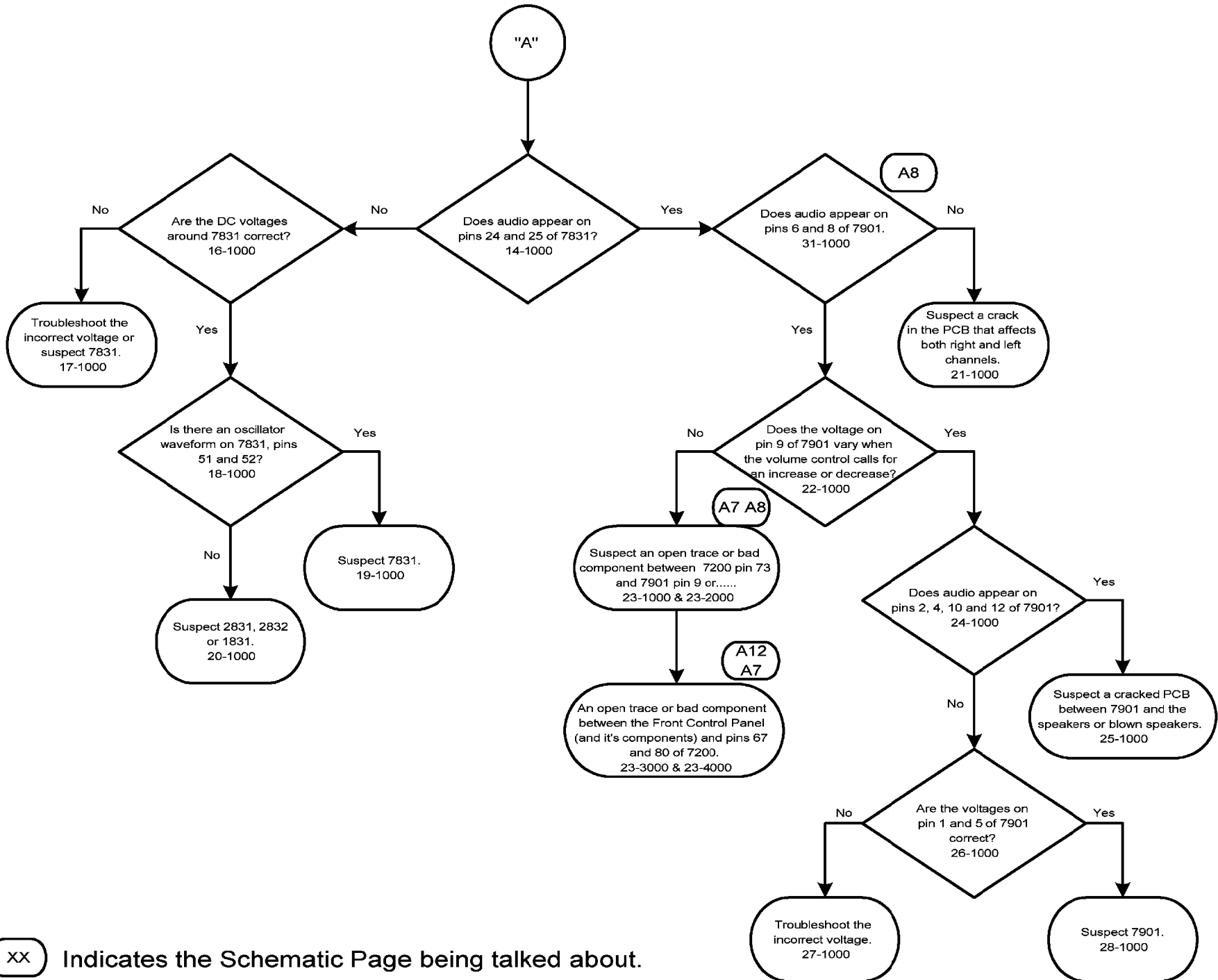
Note: (XX) Indicates the Schematic Page being talked about.

M-8 Troubleshooting No Audio 1



Note: (XX) Indicates the Schematic Page being talked about.

M-8 Troubleshooting No Audio 2



Note: (XX) Indicates the Schematic Page being talked about.

Alignments

Note: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the 'CURSOR UP, DOWN, LEFT or RIGHT' keys of the remote control transmitter.

General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- AC voltage and frequency: 110 V ($\pm 10\%$), 60 Hz ($\pm 5\%$).
- Connect the set to the AC power via an isolation transformer.
- Allow the set to warm up for approximately 20 minutes.
- Measure the voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply). Never use the cooling fins / plates as ground.
- Test probe: $R_i > 10\text{ M}\Omega$; $C_i < 2.5\text{ pF}$.
- Use an isolated trimmer / screwdriver to perform the alignments.

Hardware Alignments

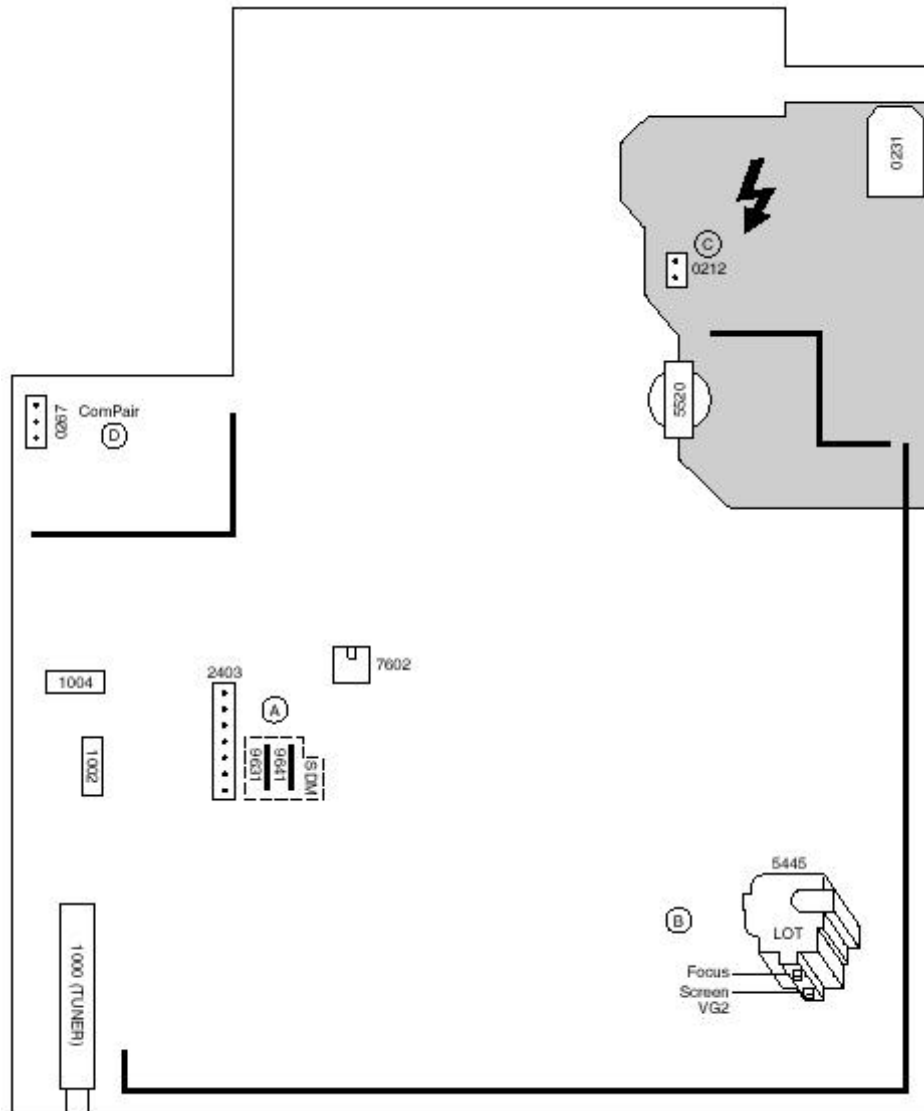


Fig. 1

Vg2 Adjustment

1. Activate the SAM.
2. Go to the WHITE TONE sub menu.
3. Set the values of NORMAL RED, GREEN and BLUE to 40.
4. Go, via the MENU key, to the normal user menu and set
 - CONTRAST to zero.
 - BRIGHTNESS to minimum (OSD just visible in a dark room).

5. Return to the SAM via the MENU key.
6. Connect the RF output of a pattern generator to the antenna input. Test pattern is a 'black' picture (blank screen on CRT without any OSD info).
7. Set the channel of the oscilloscope to 50 V/div and the time base to 0.2 ms (external triggering on the vertical pulse).
8. Ground the scope at the CRT panel and connect a 10:1 probe to one of the cathodes of the picture tube socket (see diagram B).
9. Measure the cut off pulse during first full line after the frame blanking (see Fig. 2). You will see two pulses, one being the cut off pulse and the other being the white drive pulse. Choose the one with the lowest value, this is the cut off pulse.
10. Select the cathode with the highest V_{DC} value for the alignment. Adjust the V_{cutoff} of this gun with the SCREEN potentiometer (see Fig. 1) on the LOT to the correct value (see table below).
11. Restore BRIGHTNESS and CONTRAST to normal (= 31).

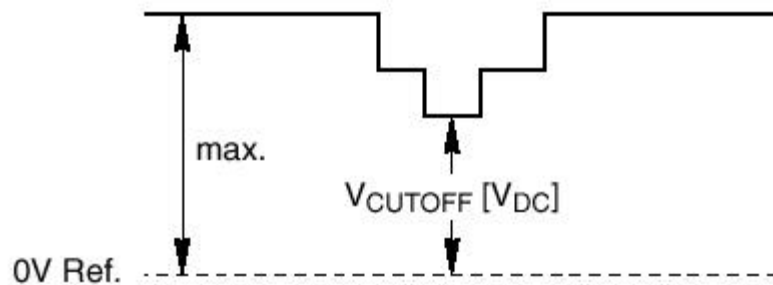


Fig. 2

Screen size	Cut-off [V]
13V, 14", 14RF, 15RF, 17", 19V, 20"	140 ± 4
21" (L8)	150 ± 4
21" (M8), 20RF, 21RF, 24WS, 25BLD, 25HF, 28 BLD, 28WS	125 ± 4
25V, 25BLS, 25RF, 27V, 28BLS, 29", 29RF, 32V, 33", 32WS, 35V	145 ± 10

Focusing

1. Tune the set to a circle or crosshatch test pattern (use an external video pattern generator).
2. Choose picture mode NATURAL (or MOVIES) with the 'SMART PICTURE' button on the remote control transmitter.
3. Adjust the FOCUS potentiometer (see Fig. 1) until the vertical lines at 2/3 from east and west, at the height of the centerline, are of minimum width without visible haze.

Software Alignments And Settings

Enter the Service Alignment Mode (see **Service Modes, Error Codes and Faultfinding**). The SAM menu will now appear on the screen.

Select one of the following alignments:

Options

Option Byte Chart

	OB1	OB2	OB3	OB4	OB5	OB6	OB7
MS2530C121	000	005	000	001	192	009	000
MS2530C125	000	005	000	001	192	009	000
MS2730C121	000	005	000	001	192	009	000
MS3250C121	000	215	129	162	164	088	000
MS3250C129	000	215	129	162	164	088	000
MS3650C129	000	215	129	162	164	088	000
MT2501C121	000	005	000	000	000	008	000
MT2501C125	000	005	000	000	000	008	000
20RF50S3	000	023	129	162	252	152	000
20RFL160/35R	000	023	129	162	252	152	000
21PV3022	016	023	129	162	252	152	000
24RF50S1	000	023	129	162	252	152	000
25PS40S121	000	023	001	01	144	153	000
25PS50S121	000	023	001	162	252	152	000
25PV5022	016	023	129	162	252	152	000
26LL500121	016	023	001	001	144	153	000
26LW502221	016	023	001	162	252	152	000
27PS50B121	000	023	001	162	252	152	000
27PS55S121	000	023	001	162	252	152	000
27PS60S121	000	023	001	162	253	152	000
27RF50S121	000	023	129	162	252	152	000
27RF50S125	000	023	129	162	252	152	000
29LL600121	016	023	001	162	252	152	000
29PV702225	016	023	129	162	252	152	000
32PS60S121	000	023	129	162	253	152	000
32PS60S129	000	023	129	162	253	152	000
32PS61S121	000	023	129	162	253	152	000
32PS61S129	000	023	129	162	253	152	000
33LL881121	016	023	129	162	253	152	000
36L150/35R	000	087	129	162	196	024	000



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

How to change an Option Byte

An Option Byte represents a number of different options.

Changing these bytes directly makes it possible to set all options very fast. All options are controlled via seven option bytes. Select the option byte (OB1.. OB7) with the MENU UP/DOWN keys, and enter the new value.

Leaving the OPTION submenu saves changes in the Option Byte settings. Some changes will only take effect after the set has been switched OFF and ON with the AC power switch (cold start).

How to calculate the value of an Option Byte

Calculate an Option Byte value (OB1 .. OB7) in the following way:

1. Check the status of the single option bits (OP): are they enabled (1) or disabled (0).
2. When an option bit is enabled (1) it represents a certain value (see column 'Dec. value' in table below). When an option bit is disabled, its value is 0.
3. The total value of an Option Byte is formed by the sum of its eight option bits.

OPTION BYTE STRUCTURE									TOTAL VALUE
Bit	7	6	5	4	3	2	1	0	
Dec. value	128	64	32	16	8	4	2	1	
OB1	OP17	OP16	OP15	OP14	OP13	OP12	OP11	OP10	Sum (OP10 to OP17)
OB2	OP27	OP26	OP25	OP24	OP23	OP22	OP21	OP20	Sum (OP20 to OP27)
OB3	OP37	OP36	OP35	OP34	OP33	OP32	OP31	OP30	Sum (OP30 to OP37)
OB4	OP47	OP46	OP45	OP44	OP43	OP42	OP41	OP40	Sum (OP40 to OP47)
OB5	OP57	OP56	OP55	OP54	OP53	OP52	OP51	OP50	Sum (OP50 to OP57)
OB6	OP67	OP66	OP65	OP64	OP63	OP62	OP61	OP60	Sum (OP60 to OP67)
OB7	OP77	OP76	OP75	OP74	OP73	OP72	OP71	OP70	Sum (OP70 to OP77)

Option Bit Assignment

Following are the option bit assignments for all L01 software clusters.

- Option Byte 1 (OB1)
 - OP10: CHINA
 - OP11: VIRGIN_MODE
 - OP12: UK_PNP
 - OP13: ACI
 - OP14: ATS
 - OP15: LNA
 - OP16: FM_RADIO
 - OP17: PHILIPS_TUNER
- Option Byte 2 (OB2)
 - OP20: HUE
 - OP21: COLOR_TEMP
 - OP22: CONTRAST_PLUS
 - OP23: TILT
 - OP24: NOISE_REDUCTION
 - OP25: CHANNEL_NAMING
 - OP26: SMART_PICTURE
 - OP27: SMART_SOUND
- Option Byte 3 (OB3)
 - OP30: AVL
 - OP31: WSSB
 - OP32: WIDE_SCREEN
 - OP33: SHIFT_HEADER_SUBTITLE
 - OP34: CONTINUOUS_ZOOM
 - OP35: COMPRESS_16_9
 - OP36: EXPAND_4_3
 - OP37: EW_FUNCTION
- Option Byte 4 (OB4)
 - OP40: STEREO_NON_DBX
 - OP41: STEREO_DBX
 - OP42: STEREO_PB
 - OP43: STEREO_NICAM_2CS
 - OP44: DELTA_VOLUME
 - OP45: ULTRA_BASS
 - OP46: VOLUME_LIMITER
 - OP47: INCR_SUR

- Option Byte 5 (OB5)
 - OP50: PIP
 - OP51: HOTEL_MODE
 - OP52: SVHS
 - OP53: CVI
 - OP54: AV3
 - OP55: AV2
 - OP56: AV1
 - OP57: NTSC_PLAYBACK
- Option Byte 6 (OB6)
 - OP60: Reserved (value = 0)
 - OP61: SMART_TEXT
 - OP62: SMART_LOCK
 - OP63: VCHIP
 - OP64: WAKEUP_CLOCK
 - OP65: SMART_CLOCK
 - OP66: SMART_SURF
 - OP67: PERSONAL_ZAPPING
- Option Byte 7 (OB7)
 - OP70: SOUND_SYSTEM_AP_3 /MULTI_STANDARD_EUR / SYSTEM_LT_2
 - OP71: SOUND_SYSTEM_AP_2 / WEST_EU/ SYSTEM_LT_1
 - OP72: SOUND_SYSTEM_AP_1
 - OP73: COLOR_SYSTEM_AP
 - OP74: Reserved (value = 0)
 - OP75: Reserved (value = 0)
 - OP76: TIME_WIN2
 - OP77: TIME_WIN1

Option bit definition

- OP10: CHINA
 - 0 : Tuning is not for China set, or this option bit is not applicable,
 - 1 : Tuning is for China set,
 - Default setting : 0.
- OP11: VIRGIN_MODE 0 :
 - Virgin mode is disabled or not applicable,
 - 1 : Virgin mode is enabled. Plug and Play menu item will be displayed to perform installation at the initial startup of the TV when VIRGIN_MODE is set to 1. After installation is finished, this option bit will be automatically set to 0,
 - Default setting : 0.
- OP12: UK_PNP
 - 0 : UK's default Plug and Play setting is not available or not applicable, 1 : UK's default Plug and Play setting is available.
 - When UK_PNP and VIRGIN_MODE are set to 1 at the initial setup, LANGUAGE = ENGLISH, COUNTRY = GREAT BRITAIN and after exiting from menu, VIRGIN_MODE will be set automatically to 0 while UK_PNP remains 1,
 - Default setting : 0.

- OP13: ACI
 - 0 : ACI feature is disabled or not applicable,
 - 1 : ACI feature is enabled,
 - Default setting : 0.
- OP14: ATS
 - 0 : ATS feature is disabled or not applicable, 1 : ATS feature is enabled. When ATS is enabled, it sorts the program in an ascending order starting from program 1,
 - Default setting : 0.
- OP15: LNA
 - 0 :Auto Picture Booster is not available or not applicable,
 - 1: Auto Picture Booster is available,
 - Default setting : 0.
- OP16: FM_RADIO
 - 0 : FM radio feature is disabled or not applicable,
 - 1 : FM radio feature is enabled,
 - Default setting : 0.
- OP17: PHILIPS_TUNER
 - 0 : ALPS / MASCO compatible tuner is in use,
 - 1 : Philips compatible tuner is in use,
 - Default setting : 0.
- OP20: HUE
 - 0 : Hue/Tint Level is disabled or not applicable,
 - 1 : Hue/Tint Level is enabled,
 - Default setting : 0.
- OP21: COLOR_TEMP
 - 0 : Color Temperature is disabled or not applicable,
 - 1 : Color Temperature is enabled,
 - Default setting : 0.
- OP22: CONTRAST_PLUS
 - 0 : Contrast+ is disabled or not applicable,
 - 1 : Contrast+ is enabled,
 - Default setting : 0.
- OP23: TILT
 - 0 : Rotate Picture is disabled or not applicable,
 - 1 : Rotate Picture is enabled,
 - Default setting : 0.
- OP24: NOISE_REDUCTION
 - 0 : Noise Reduction (NR) is disabled or not applicable,
 - 1 : Noise Reduction (NR) is enabled,
 - Default setting : 0.

- OP25: CHANNEL_NAMING
 - 0 : Name FM Channel is disabled or not applicable,
 - 1 : Name FM Channel is enabled,
 - Default setting : 0.
 - Note : Name FM channel can be enabled only when FM_RADIO = 1.
- OP26: SMART_PICTURE
 - 0 : Smart Picture is disabled or not applicable,
 - 1 : Smart Picture is enabled,
 - Default setting : 1
- OP27: SMART_SOUND
 - 0 : Smart Sound is disabled or not applicable,
 - 1 : Smart Sound is enabled,
 - Default setting : 1
- AP30: AVL
 - 0 : AVL is disabled or not applicable,
 - 1 : AVL is enabled,
 - Default setting : 0.
- OP31: WSSB
 - 0 : WSSB is disabled or not applicable,
 - 1 : WSSB is enabled,
 - Default setting : 0.
 - Note : This option bit can be set to 1 only when WIDE_SCREEN = 1.
- OP32: WIDE_SCREEN
 - 0 : Software is used for 4:3 set or not applicable,
 - 1 : Software is used for 16:9 set,
 - Default setting : 0.
- OP33: SHIFT_HEADER_SUBTITLE
 - 0 : Shift Header / Subtitle is disabled or not applicable,
 - 1 : Shift Header / Subtitle is enabled,
 - Default setting : 0.
 - Note : This option bit can be set to 1 only when WIDE_SCREEN = 1.
- OP34: CONTINUOUS_ZOOM
 - 0 : Continuous Zoom is disabled or not applicable,
 - 1 : Continuous Zoom is enabled,
 - Default setting : 0.
 - Note : This option bit can be set to 1 only when WIDE_SCREEN = 1.
- OP35: COMPRESS_16_9
 - 0 : COMPRESS 16:9 selection is not applicable. Item should not be in the FORMAT menu list,
 - 1 : COMPRESS 16:9 selection is applicable. Item should not be in the FORMAT menu list,
 - Default setting : 0.
- OP36: EXPAND_4_3
 - 0 : Expand 4:3 selection is not applicable. Item should not be in the FORMAT menu list,
 - 1 : Expand 4:3 selection is applicable. Item should be in the FORMAT menu list,
 - Default setting : 0.

- OP37: EW_FUNCTION
 - 0 : EW function is disabled. In this case, only Expand 4:3 is allowed, Compress 16:9 is not applicable.
 - 1 : EW function is enabled. In this case, both Expand 4:3 and Compress 16:9 are applicable.
 - Default setting : 0.
- OP40: STEREO_NON_DBX
 - 0 : For AP_NTSC, chip TDA 9853 is not present,
 - 1 : For AP_NTSC, chip TDA 9853 is present,
 - Default setting : 0.
- OP41: STEREO_DBX
 - 0 : For AP_NTSC, chip MSP 3445 is not present,
 - 1 : For AP_NTSC, chip MSP 3445 is present, Default setting : 0.
- OP42: STEREO_PB
 - 0 : For AP_PAL, chip MSP3465 is not present,
 - 1 : For AP_PAL, chip MSP3465 is present,
 - Default setting : 0.
- OP43: STEREO_NICAM_2CS
 - 0 : For EU and AP_PAL, chip MSP 3415 is not present,
 - 1 : For EU and AP_PAL, chip MSP 3415 is present,
 - Default setting : 0.
- OP44: DELTA_VOLUME
 - 0 : Delta Volume Level is disabled or not applicable,
 - 1 : Delta Volume Level is enabled,
 - Default setting : 0.
- OP45: ULTRA_BASS
 - 0 : Ultra Bass is disabled or not applicable,
 - 1 : Ultra Bass is enabled,
 - Default setting : 0.
- OP46: VOLUME_LIMITER
 - 0 : Volume Limiter Level is disabled or not applicable,
 - 1 : Volume Limiter Level is enabled,
 - Default setting : 0.
- OP47: INCR_SUR
 - 0 : Incredible Surround feature is disabled,
 - 1 : Incredible Surround feature is enabled,
 - Default setting : 1
- OP50: PIP
 - 0 : PIP is disabled or not applicable,
 - 1 : PIP is enabled,
 - Default setting : 0.
- OP51: HOTEL_MODE
 - 0 : Hotel mode is disabled or not applicable,
 - 1 : Hotel mode is enabled,
 - Default setting : 0.

- OP52: SVHS
 - 0 : SVHS source is not available,
 - 1 : SVHS source is available,
 - Default setting : 0.
 - Note : This option bit is not applicable for EU.
- OP53: CVI
 - 0 : CVI source is not available,
 - 1 : CVI source is available,
 - Default setting : 0.
- OP54: AV3
 - 0 : Side/Front AV3 source is not present,
 - 1 : Side/Front AV3 source is present,
 - Default setting : 0.
- OP55: AV2
 - 0 : AV2 source is not present,
 - 1 : AV2 source is present,
 - Default setting : 0.
 - Note : For EU, when AV2=1, both EXT2 and SVHS2 should be included in the OSD loop.
- OP56: AV1
 - 0 : AV1 source is not present,
 - 1 : AV1 source is present,
 - Default setting : 0.
- OP57: NTSC_PLAYBACK
 - 0 : NTSC playback feature is not available,
 - 1 : NTSC playback feature is available,
 - Default setting : 0.
- OP60: Reserved
 - Default setting : 0.
- OP61: SMART_TEXT
 - 0 : Smart Text Mode and Favorite Page are disabled or not applicable,
 - 1 : Smart Text Mode and Favorite Page are enabled,
 - Default setting : 1.
- OP62: SMART_LOCK
 - 0 : Child Lock and Lock Channel are disabled or not applicable for EU,
 - 1 : Child Lock and Lock Channel are enabled for EU,
 - Default setting : 1.
- OP63: VCHIP
 - 0 : VCHIP feature is disabled,
 - 1 : VCHIP feature is enabled,
 - Default setting : 1.
- OP64: WAKEUP_CLOCK
 - 0 : Wake up clock feature is disabled or not applicable,
 - 1 : Wake up clock feature is enabled,
 - Default setting : 1.

- OP65: SMART_CLOCK
 - 0 : Smart Clock Using Teletext and Smart Clock Using PBS is disabled or not applicable,
 - 1 : Smart Clock Using Teletext and Smart Clock Using PBS is enabled. For NAFTA, menu item AUTOCHRON is present in the INSTALL submenu,
 - Default setting : 0.
- OP66: SMART_SURF
 - 0 : Smart Surf feature is disabled or not applicable,
 - 1 : Smart Surf feature is enabled,
 - Default setting : 0.
- OP67: PERSONAL_ZAPPING
 - 0 : Personal Zapping feature is disabled or not applicable,
 - 1 : Personal Zapping feature is enabled,
 - Default setting : 0.
- OP70: MULTI_STANDARD_EUR
 - 0 : Not for Europe multi standard set, or this option bit is not applicable,
 - 1 : For Europe multi standard set.
 - Default setting : 0.
 - Note : This option bit is used to control the SYSTEM selection in Manual Store : If MULTI_STANDARD_EUR = 1 then SYSTEM = Europe, West Europe, East Europe, UK, France otherwise SYSTEM = 'Europe, West Europe, UK for West Europe' (WEST_EU=1) or SYSTEM = 'Europe, West Europe, East Europe for East Europe' (WEST_EU=0)
- OP71: WEST_EU
 - 0 : For East Europe set, or this option bit is not applicable,
 - 1 : For West Europe set,
 - Default setting : 0.
- OP71 and 70: SYSTEM_LT_1, SYSTEM_LT_2
 - These two option bits are allocated for LATAM system selection.
 - 00 : NTSC-M
 - 01 : NTSC-M, PAL-M
 - 10 : NTSC-M, PAL-M, PAL-N
 - 11 : NTSC-M, PAL-M, PAL-N, PAL-BG
 - Default setting : 00
- OP70, 71 and 72: SOUND_SYSTEM_AP_1, SOUND_SYSTEM_AP_2, SOUND_SYSTEM_AP_3
 - These three option bits are allocated for AP_PAL sound system selection.
 - 000 : BG
 - 001 : BG / DK
 - 010 : I / DK
 - 011 : BG / I / DK
 - 100 : BG / I / DK / M
 - Default setting : 00
- OP73: COLOR_SYSTEM_AP
 - This option bit is allocated for AP-PAL color system selection.
 - 0 : Auto, PAL 4.43, NTSC 4.43, NTSC 3.58
 - 1 : Auto, PAL 4.43, NTSC 4.43, NTSC 3.58, SECAM
 - Default setting : 0

- OP74: Reserved
Default setting : 0.
- OP75: Reserved
Default setting : 0.
- OP77 and 76: TIME_WIN1, TIME_WIN2
00 :The time window is set to 1.2s
01 : The time window is set to 2s
10 : The time window is set to 5s
11 : not in use
Default setting : 01
Note :The time-out for all digit entries depend on this setting.

Tuner

Note: Described alignments are only necessary when the NVM (item 7602) is replaced.

IF PLL

This adjustment is auto-aligned. Therefore, no action is required.

AFW (AFC window)

Fixed value is OFF.

AGC (AGC take over point)

Set the external pattern generator to a color bar video signal and connect the RF output to aerial input. Set amplitude to 10 mV and set frequency to 61.25 MHz (channel 3).

Connect a DC multimeter to pin 1 of the tuner (item 1000 on the main panel).

1. Activate the SAM.
2. Go to the TUNER sub menu.
3. Select AFW with the UP/DOWN cursor keys and set to ON.
4. Select AGC with the UP/DOWN cursor keys.
5. Adjust the AGC-value (default value is 27) with the LEFT/RIGHT cursor keys until the voltage at pin 1 of the tuner lies between 3.8 and 2.3 V.
6. Select AFW with the UP/DOWN cursor keys and set to OFF.
7. Switch the set to STANDBY.

YD (Y-delay adjustment)

Always set to 3.

CL (Cathode drive level)

Always set to 4.

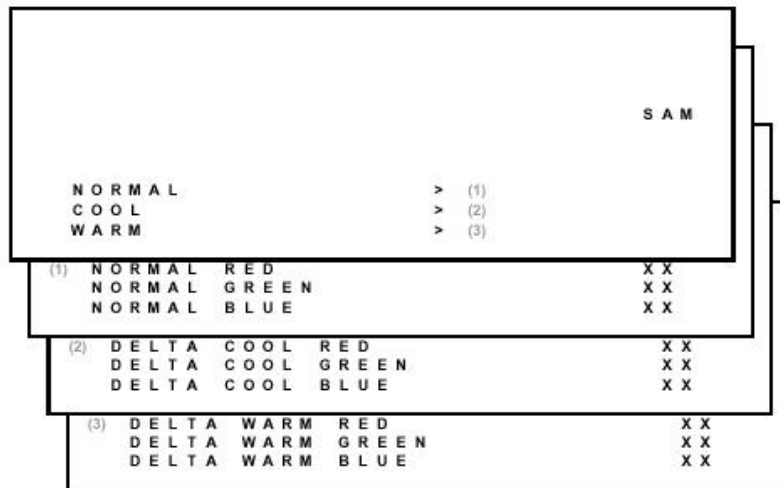
AFA

Read only bit, for monitoring purpose only.

AFB

Read only bit, for monitoring purpose only.

White Tone



In the WHITE TONE sub menu, the values of the black cut off level can be adjusted. Normally, no alignment is needed for the WHITE TONE. You can use the given default values.

The color temperature mode (NORMAL, COOL and WARM) and the color (R, G, and B) can be selected with the UP/DOWN RIGHT/LEFT cursor keys. The value can be changed with the LEFT/RIGHT cursor keys. First, select the values for the NORMAL color temperature. Then select the values for the COOL and WARM mode. After alignment, switch the set to standby, in order to store the alignments.

Default settings:

1. **NORMAL** (color temperature = 10500 K):
 - NORMAL R = 40
 - NORMAL G = 40
 - NORMAL B = 40
2. **COOL** (color temperature = 14000 K):
 - DELTA COOL R = -2
 - DELTA COOL G = 0
 - DELTA COOL B = 6
3. **WARM** (color temperature = 8200 K):
 - DELTA WARM R = 2
 - DELTA WARM G = 0
 - DELTA WARM B = -7

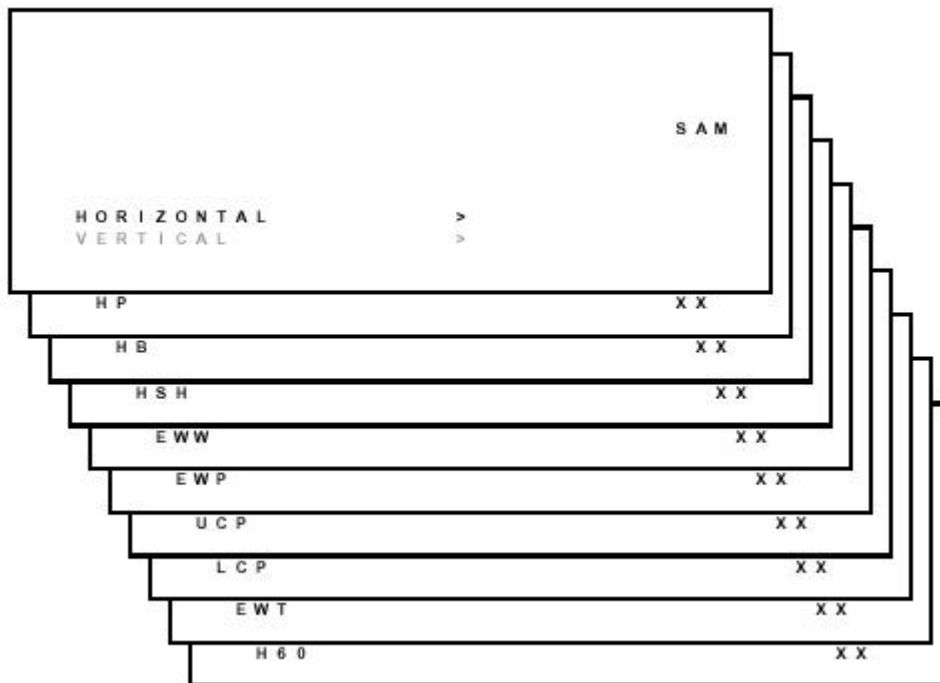
Geometry

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

Connect an external video pattern generator to the aerial input of the TV-set and input a crosshatch test pattern. Set the generator amplitude to at least 1 mV and set frequency to 61.25 MHz (channel 3).

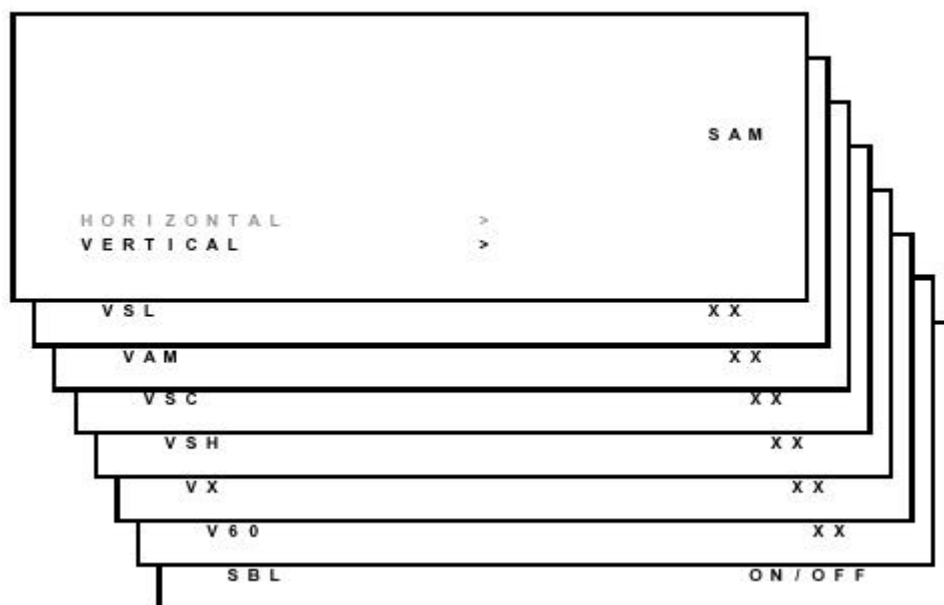
1. Set 'Smart Picture' to NATURAL (or MOVIES).
2. Activate the SAM menu (see **Service Modes, Error Codes and Faultfinding**).
3. Go to the GEOMETRY sub menu.
4. Choose HORIZONTAL or VERTICAL alignment

Now the following alignments can be performed:



Horizontal:

- **Horizontal Parallelogram (HP)** Align straight vertical lines in the top and the bottom; vertical rotation around the center.
- **Horizontal Bow (HB)** Align straight horizontal lines in the top and the bottom; horizontal rotation around the center.
- **Horizontal Shift (HSH)** Align the horizontal center of the picture to the horizontal center of the CRT.
- **East West Width (EWW)** Align the picture width until the complete test pattern is visible.
- **East West Parabola (EWP)** Align straight vertical lines at the sides of the screen.
- **Upper Corner Parabola (UCP)** Align straight vertical lines in the upper corners of the screen.
- **Lower Corner Parabola (LCP)** Align straight vertical lines in the lower corners of the screen.
- **East West Trapezium (EWT)** Align straight vertical lines in the middle of the screen.
- **H60** Align straight horizontal lines if NTSC system is used (60 Hz) i.s.o. PAL (50 Hz).



Vertical:

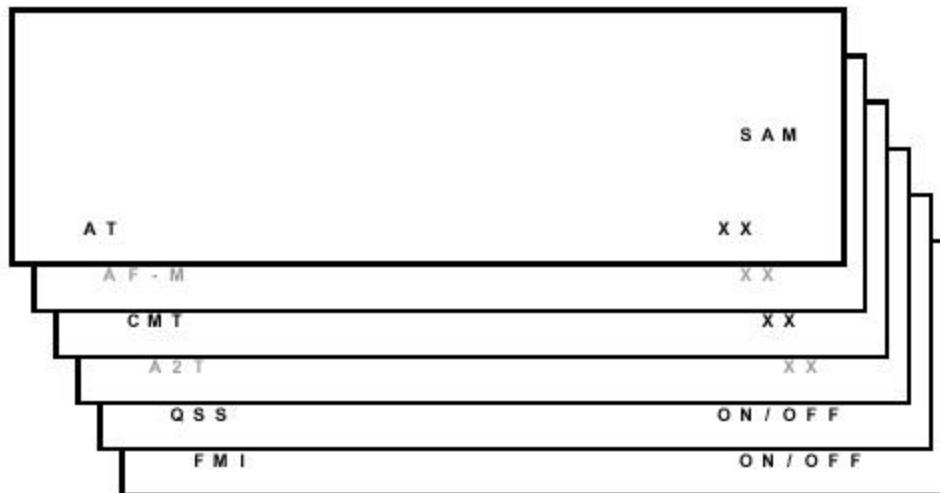
- **Vertical slope (VSL)** Align the vertical center of the picture to the vertical center of the CRT. This is the first of the vertical alignments to perform. For an easy alignment, set SBL to ON.
- **Vertical Amplitude (VAM)** Align the vertical amplitude so that the complete test pattern is visible.
- **Vertical S-Correction (VSC)** Align the vertical linearity, meaning that vertical intervals of a grid pattern must be equal over the entire screen height.
- **Vertical Shift (VSH)** Align the vertical centering so that the test pattern is located vertically in the middle. Repeat the 'vertical amplitude' alignment if necessary.
- **Vertical Zoom (VX)** The vertical zoom is added in for the purpose of development. It helps the designer to set a proper values for the movie expand or movie(16x9) compress. Default value is 25.
- **V60** Align straight vertical lines if NTSC system (60 Hz) is used i.s.o. PAL (50 Hz).
- **Service blanking (SBL)** Switch the blanking of the lower half of the screen ON or OFF (to be used in combination with the vertical slope alignment).

In the table below, you will find the GEOMETRY default values for the different sets.

DEFAULT GEOMETRY VALUES (L01 LARGE SCREEN)															
Alignment	Description	21"	20RF/21RF	24WS	25V	25"	25RF	28"	28WS	27V/29"	27RF/29RF	29" SF	32V/33"	32WS	35V
HP	Hor. Parallelogram	31	31	35	31	31	31	31	47	31	31	31	31	32	45
HB	Hor. Bow	31	31	32	31	31	31	31	32	31	31	31	31	32	25
HSH	Hor. Shift	35	35	27	35	35	35	35	27	35	35	35	35	24	23
EWV	East West Width	34	34	39	-	34	34	34	36	-	34	34	45	39	45
EWP	East West Parabola	33	33	25	-	33	33	33	21	-	33	33	23	21	23
UCP	Upper Corner Parabola	35	35	25	-	35	35	35	26	-	35	35	25	23	25
LCP	Lower Corner Parabola	35	35	25	-	35	35	35	30	-	35	35	31	30	31
EWT	East West Trapezium	35	35	30	-	35	35	35	28	-	35	35	24	26	24
VSL	Vert. Slope	33	33	42	25	33	33	33	42	25	33	33	19	35	19
VAM	Vert. Amplitude	26	26	20	32	26	26	26	30	32	26	26	31	23	31
VSC	Vert. S-correction	23	23	24	23	23	23	23	24	23	23	23	27	24	27
VSH	Vert. Shift	31	31	23	28	31	31	31	18	28	31	31	26	23	26
VX	Vert. Zoom	25	25	25	-	25	25	25	25	-	25	25	25	25	25
H60	Hor. Shift offset (60 Hz)	9	9	9	0	9	9	9	9	9	9	9	9	9	0
V60	Vert. Shift offset (60 Hz)	-2	-2	-2	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	0

Abbreviations: V= visual, RF= Real Flat, SF= Super Flat, WS= Wide Screen (16:9)

Audio



No alignments are needed for the audio sub menu. Use the given default values.

AT

Default value is 8.

CMT

Default value is 42.

QSS

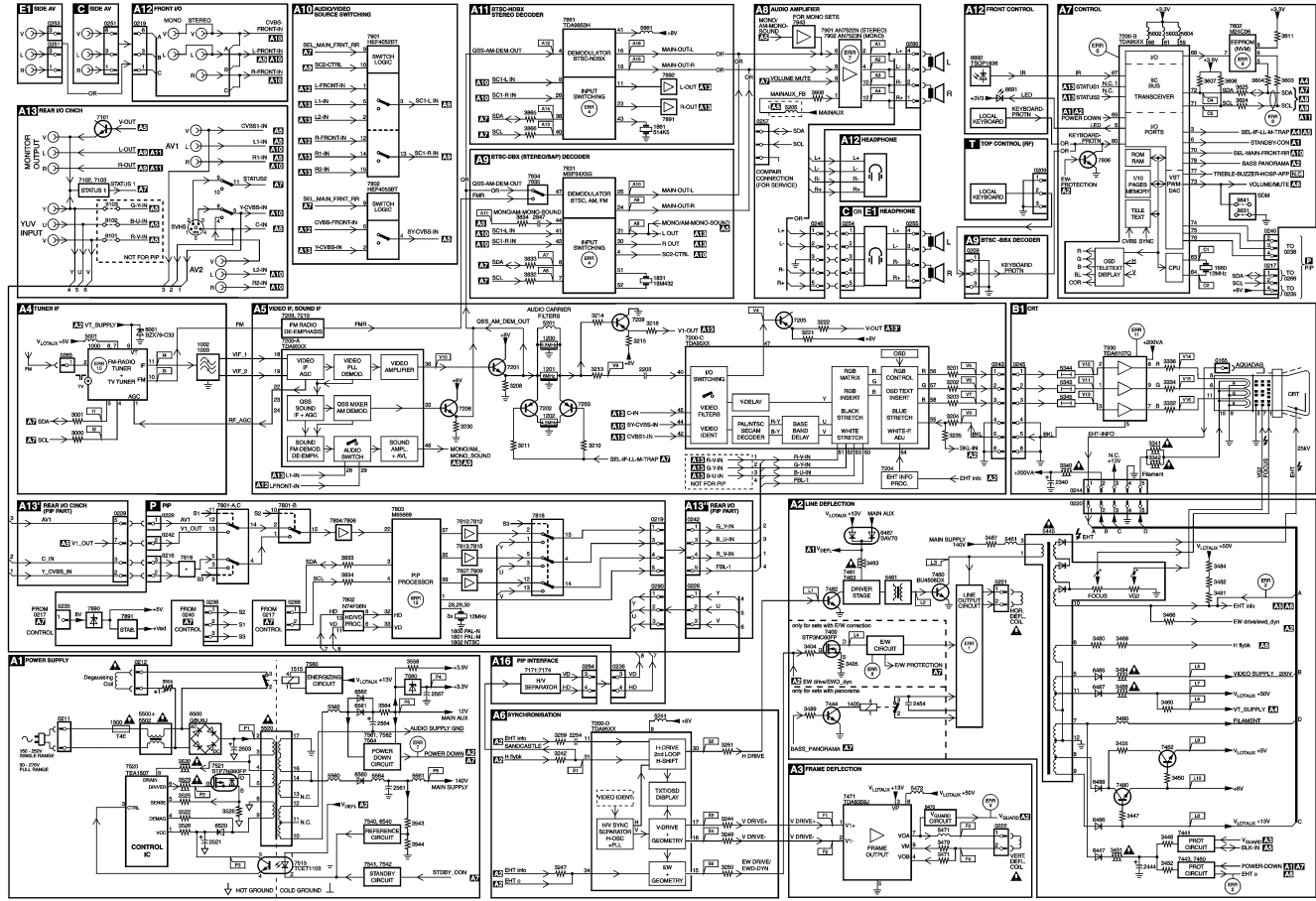
OFF for mono sets, ON for stereo sets.

FMI

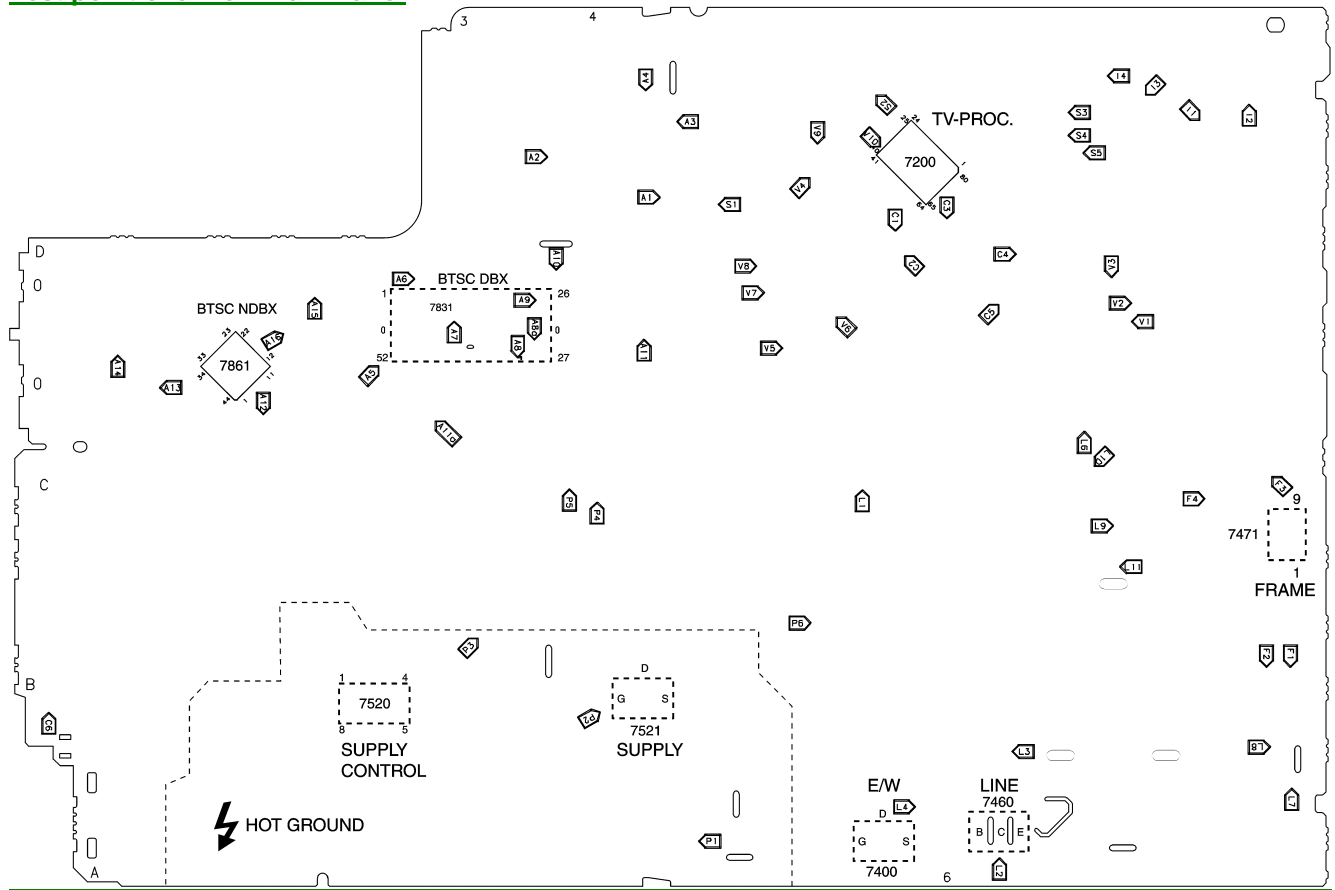
OFF for mono sets, ON for stereo sets.

Circuit Description

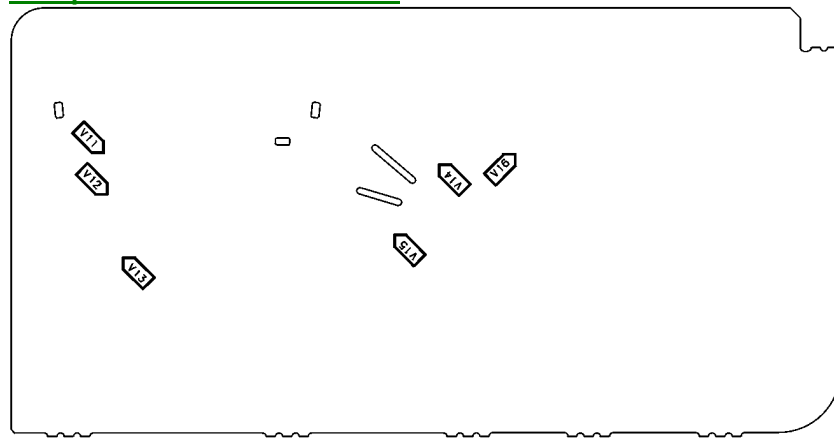
Block Diagram



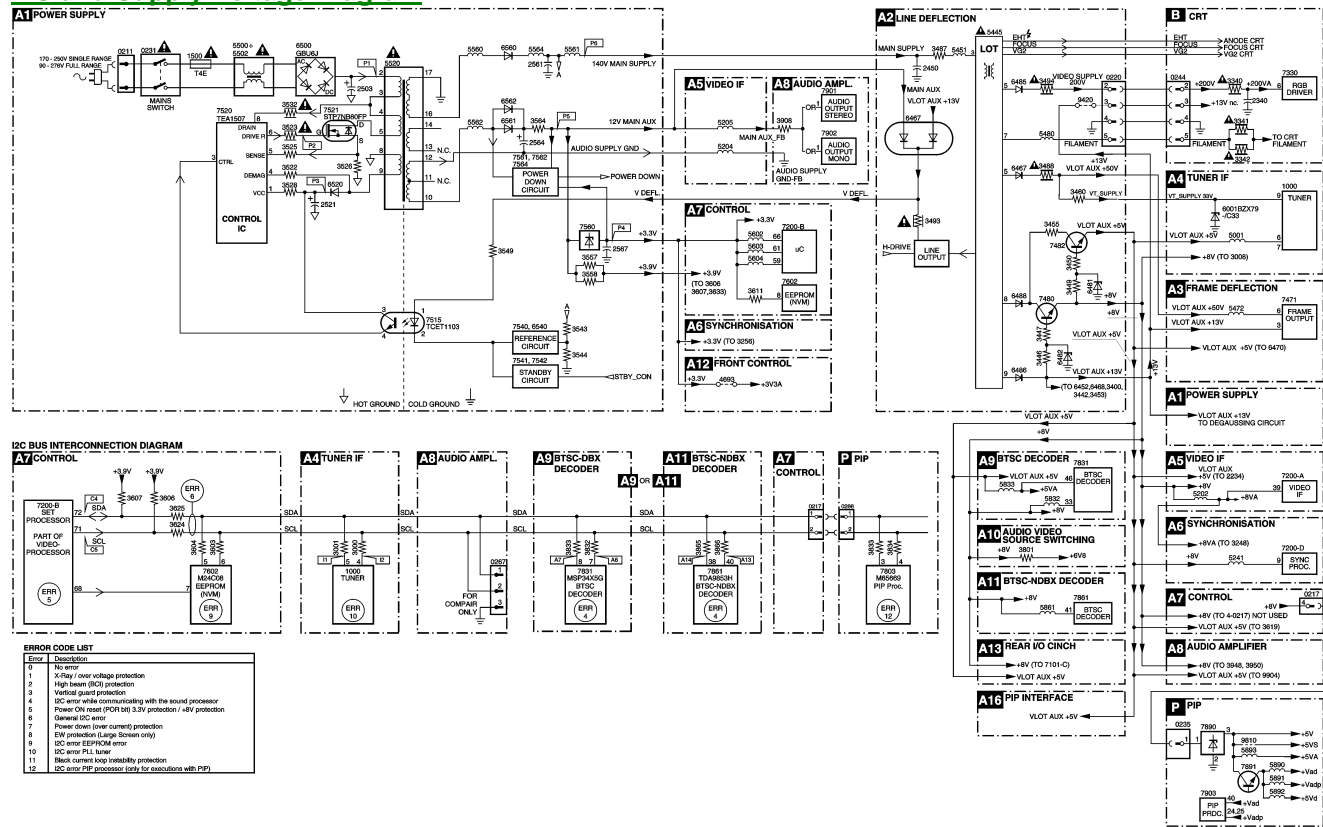
Test point overview Main Panel



Test point overview CRT Panel



I2C and Supply Voltage Diagram



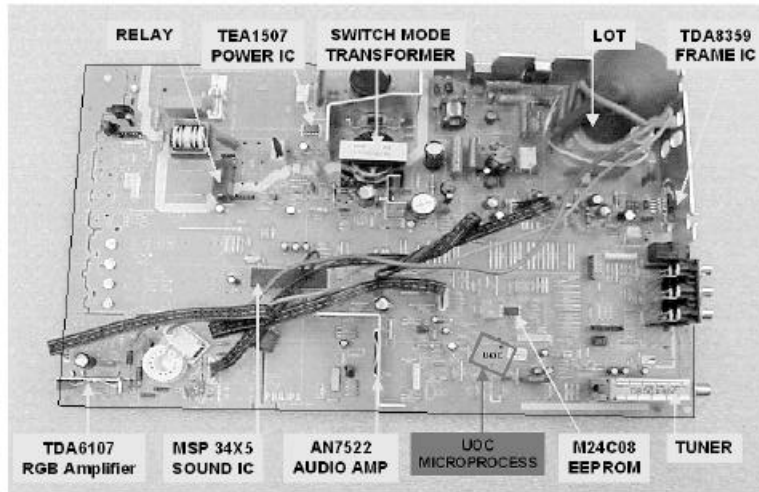
Note: For a good understanding of the following circuit descriptions, please use the block diagram or the electrical diagrams. Where necessary, you will find a separate drawing for clarification.

Introduction

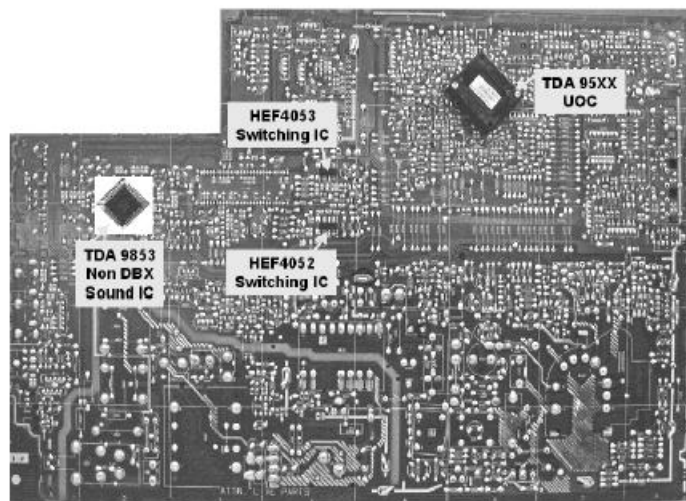
The L8/M8 chassis is a global TV chassis for the model year 2001 and is used for TV sets with screen sizes from 25" - 36" (large screen), in Super Flat, Real Flat and Wide Screen executions.

The standard architecture consists of a Main panel, a Picture Tube panel, a Side I/O panel and a Top Control panel. In some executions, a Picture In Picture (PIP) panel is used.

The Main panel consists primarily of conventional components with hardly any surface mounted devices.



The functions for video processing, microprocessor (μP) and teletext (TXT) decoder are combined in one IC (TDA958xH), the so-called Ultimate One Chip (UOC). This chip is (surface) mounted on the copper side of the LSP.



The L8/M8 is divided into 2 basic systems, i.e. mono and stereo sound. While the audio processing for the mono sound is done in the audio block of the UOC, an external audio processing IC is used for stereo sets. The tuning system features 181 channels with on-screen display. The main tuning system uses a tuner, a microcomputer, and a memory IC mounted on the main panel.

The microcomputer communicates with the memory IC, the customer keyboard, remote receiver, tuner, signal processor IC and the audio output IC via the I²C bus. The memory IC retains the settings for favorite stations, customer-preferred settings, and service / factory data. The on-screen graphics and closed caption decoding are done within the microprocessor, and then sent to the signal processor IC to be added to the main signal.

The chassis utilizes a Switching Mode Power Supply (SMPS) for the main voltage source. The chassis has a 'hot' ground reference on the primary side and a cold ground reference on the secondary side of the power supply and the rest of the chassis.

Audio Signal Processing

Stereo

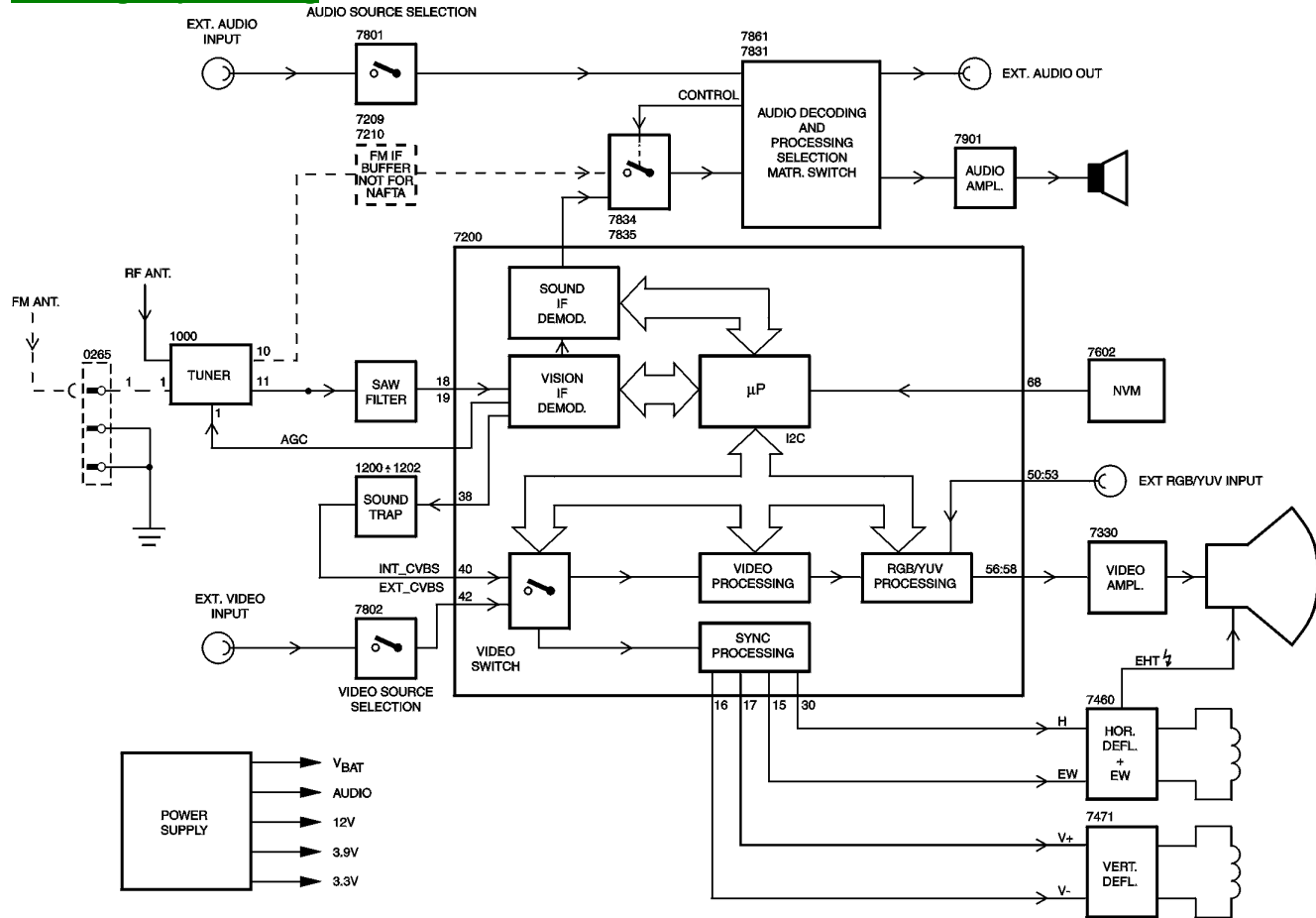
In stereo sets, the signal goes via the SAW filter (position 1002), to the audio demodulator part of the UOC IC 7200. The audio output on pin 48 goes to the stereo decoder 7831 or 7861. The switch inside this IC selects either the internal decoder or an external source.

There are two stereo decoders used:

1. a BTSC DBX stereo/SAP decoder (MSP34X5 at position 7831) for the highest specified sets and
2. a BTSC non-DBX stereo decoder (TDA 9853 at position 7861) for BTSC Economic.

The output is fed to the audio amplifier (AN7522 at position 7901). The volume level is controlled at this IC (pin 9) by a control line (VolumeMute) from the microprocessor. The audio signal from 7901 is then sent to the speaker / headphone output panel.

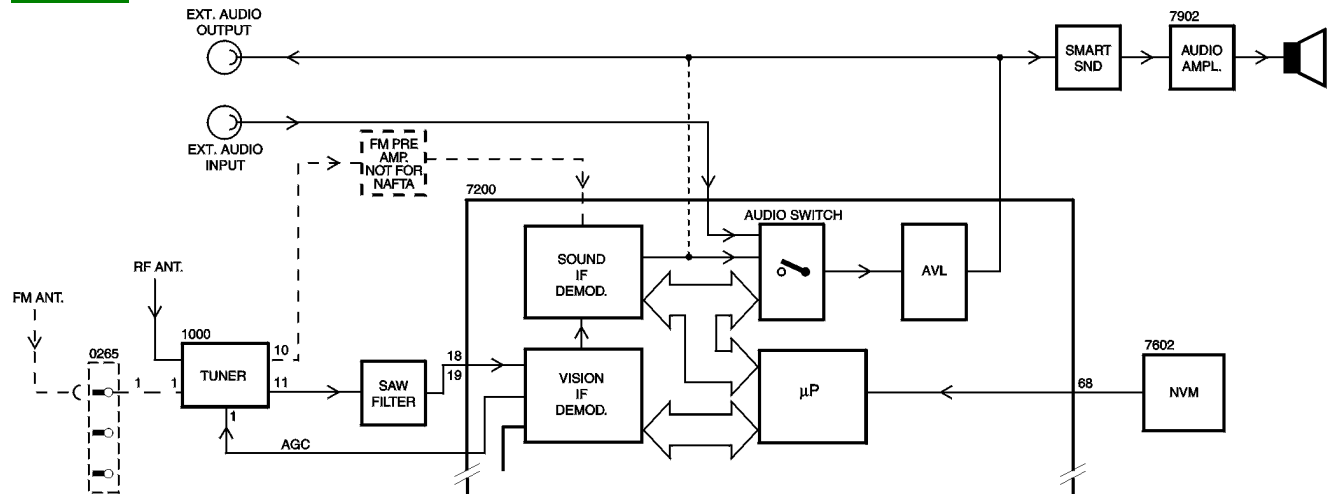
Audio signal processing



Mono

In mono sets, the signal goes via the SAW filter (position 1002), to the audio demodulator part of the UOC IC 7200. The audio output on pin 48 goes, via the smart sound circuit (7941 for Bass and 7942 for Treble) and buffer 7943, to the audio amplifier (AN7523 at position 7902). The volume level is controlled at this IC (pin 9) by a 'VolumeMute' control line from the microprocessor. The audio signal from IC 7902 is then sent to the speaker / headphone output panel.

Mono set



Video Signal Processing

The processing circuits listed above are all integrated in the UOC TV processor. The surrounding components are for the adaptation of the selected application. The I²C bus is for defining and controlling the signals.

RF signal processing

The incoming RF signal goes to the tuner (pos. 1000), where the 45.75 MHz IF signal is developed and amplified. The IF signals then exit the tuner from pin 11 to pass through the SAW filters (pos. 1002). The shaped signal is then applied to the IF processor part of the UOC (pos. 7200).

Tuner AGC (Automatic Gain Control) will reduce the tuner gain and thus the tuner output voltage when receiving strong RF signals. Adjust the AGC takeover point via the Service Alignment Mode (SAM). The tuner AGC starts working when the video-IF input reaches a certain input level. Adjust this level via the I²C bus. The tuner AGC signal goes to the tuner (pin 1) via the open collector output (pin 22) of the UOC.

The IC also generates an Automatic Frequency Control (AFC) signal that goes to the tuning system via the I²C bus, to provide frequency correction when needed. The demodulated composite video signal is available at pin 38 and then buffered by transistor 7201.

Video source selection

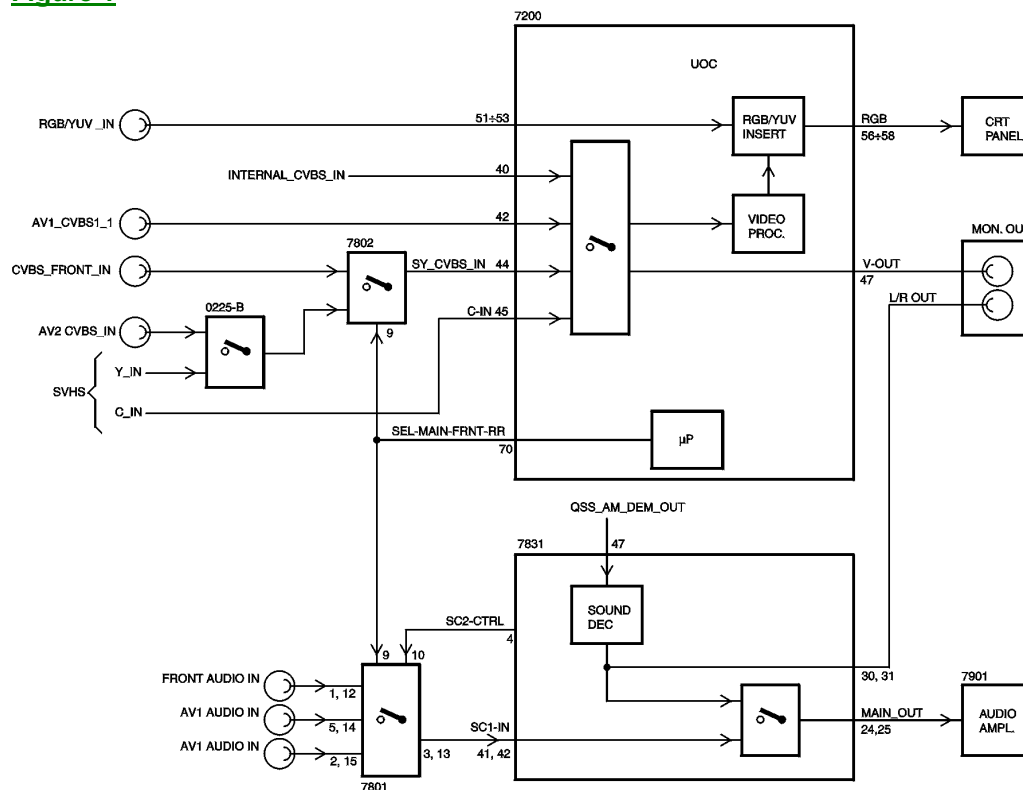
The Composite Video Blanking Signal (CVBS) from buffer 7201 goes to the audio carrier trap filters (1200, 1201, or 1202 depending on the system used) to remove the audio signal. The signal then goes to pin 40 of IC 7200. The internal input switch selects the following input signals:

- Pin 40: terrestrial CVBS input
- Pin 42: external AV1 CVBS input
- Pin 44: external Side I/O CVBS or AV2 Luminance (Y) input

Once the signal source is selected, a chroma filter calibration is performed. The received color burst sub-carrier frequency is used for this. Correspondingly, the chroma band pass filter for PAL/NTSC processing or the cloche filter for SECAM processing is switched on. The selected luminance (Y) signal is supplied to the horizontal and vertical synchronization processing circuit and to the luminance processing circuit. In the luminance-processing block, the luminance signal goes to the chroma trap filter. This trap is switched 'on' or 'off' depending on the color burst detection of the chroma calibration circuit.

The group delay correction part can be switched between the BG and a flat group delay characteristic. This has the advantage that in multi-standard receivers no compromise has to be made for the choice of the SAW filter.

Figure 1



Video demodulation

The color decoder circuit detects whether the signal is a PAL, NTSC or SECAM signal. The result is made known to the auto system manager. The PAL/NTSC decoder has an internal clock generator, which is stabilized to the required frequency by using the 12 MHz clock signal from the reference oscillator of the microcontroller / teletext decoder.

The base-band delay line is used to obtain a good suppression of cross color effects.

The Y signal and the delay line outputs U and V are applied to the luminance / chroma signal processing part of the TV processor.

Luminance / Chrominance signal processing

The output of the YUV separator is fed to the internal YUV switch, which switches between the output of the YUV separator or the external YUV (for DVD or PIP) on pins 51-53. Pin 50 is the input for the insertion control signal called 'FBL-1'. When this signal level becomes higher than 0.9 V (but less than 3 V), the RGB signals at pins 51, 52 and 53 are inserted into the picture by using the internal switches.

Also some picture improvement features are implemented in this part:

- **Black stretch** This function corrects the black level of incoming signals, which have a difference between the black level and the blanking level. The amount of extension depends upon the difference between actual black level and the darkest part of the incoming video signal level. It is detected by means of an internal capacitor.
- **White stretch** This function adapts the transfer characteristic of the luminance amplifier in a non-linear way depending on the average picture content of the luminance signal. It operates in such a way that maximum stretching is obtained when signals with a low video level are received. For bright pictures, stretching is not active.
- **Dynamic skin tone correction** This circuit corrects (instantaneously and locally) the hue of those colors which are located in the area in the UV plane that matches the skin tone. The correction is dependent on the luminance, saturation and distance to the preferred axis.

The YUV signal is then fed to the color matrix circuit, which converts it to R, G and B signals. The OSD/TXT signal from the microprocessor is mixed with the main signal at this point, before being output to the CRT board (pins 56, 57 and 58).

Picture in picture (if present)

The PIP controller M65669FP is an NTSC video processor for TV applications. It contains all of the analog signal processing, control logic and memory, necessary to provide sub-picture insertion from a second, non-synchronized, video source into the main picture of the TV. This can be an external source (via the rear I/O inputs) or the video signal of the tuner.

Sync signals are derived from the sandcastle signal and separated by circuit 7171-7174 on the PIP-interface, and then fed to pins 32 and 33 of the PIP processor 7803.

RGB control

The RGB control circuit enables the picture parameters contrast, brightness and saturation to be adjusted, by using a combination of the user menus and the remote control.

Additionally automatic gain control for the RGB signals via cut-off stabilization is achieved in this functional block to obtain an accurate biasing of the picture tube. Therefore this block inserts the cut-off point measuring pulses into the RGB signals during the vertical retrace period.

The following additional controls are used:

- **Black current calibration loop** Because of the 2-point black current stabilization circuit, both the black level and the amplitude of the RGB output signals depend on the drive characteristics of the picture tube. The system checks whether the returning measuring currents meet the requirements, and adapt the output level and gain of the circuit when necessary. After stabilization of the loop, the RGB drive signals are switched on. The 2-point black level system adapts the drive voltage for each cathode in such a way that the two measuring currents have the right value. This is done with the measurement pulses during the frame flyback. During the first frame, three pulses with a current of 8 μA are generated to adjust the cut off voltage. During the second frame, three pulses with a current of 20 μA are generated to adjust the 'white drive'. This has as a consequence, that a change in the gain of the output stage will be compensated by a gain change of the RGB control circuit. Pin 55 (BLKIN) of the UOC is used as the feedback input from the CRT base panel.
- **Blue stretch** This function increases the color temperature of the bright scenes (amplitudes which exceed a value of 80% of the nominal amplitude). This effect is obtained by decreasing the small signal gain of the red and green channel signals, which exceed this 80% level.
- **Beam current limiting** A beam current limiting circuit inside the UOC handles the contrast and brightness control for the RGB signals. This prevents the CRT from being overdriven, which could otherwise cause serious damage in the line output stage. The reference used for this purpose is the DC voltage on pin 54 (BLCIN) of the TV processor. Contrast and brightness reduction of the RGB output signals is therefore proportional to the voltage present on this pin. Contrast reduction starts when the voltage on pin 54 is lower than 2.8 V. Brightness reduction starts when the voltage on pin 54 is less than 1.7 V. The voltage on pin 54 is normally 3.3 V (limiter not active). During set switch-off, the black current control circuit generates a fixed beam current of 1 mA. This current ensures that the picture tube capacitance is discharged. During the switch-off period, the vertical deflection is placed in an over-scan position, so that the discharge is not visible on the screen.

RGB amplifier

From outputs 56, 57 and 58 of IC 7200 the RGB signals are applied to the integrated output amplifier (7330) on the CRT panel. Via the outputs 7, 8 and 9 the picture tube cathodes are driven.

The supply voltage for the amplifier is +200 V and is derived from the line output stage.

Synchronization

Inside IC 7200 part D the vertical and horizontal sync pulses are separated. These 'H' and 'V' signals are synchronised with the incoming CVBS signal. They are then fed to the H-and V-drive circuits and to the OSD/TXT circuit for synchronization of the On Screen Display and Teletext (CC) information.

Deflection

Horizontal drive

The horizontal drive signal is obtained from an internal VCO, which is running at twice the line frequency. This frequency is divided by two, to lock the first control loop to the incoming signal.

When the IC is switched 'on', the 'Hdrive' signal is suppressed until the frequency is correct.

The 'Hdrive' signal is available at pin 30. The 'Hflybk' signal is fed to pin 31 to phase lock the horizontal oscillator, so that Q7462 cannot switch 'on' during the flyback time.

The 'EWdrive' signal for the E/W circuit (if present) is available on pin 15, where it drives transistor 7400 to make linearity corrections in the horizontal drive.

When the set is switched on, the '+8V' voltage goes to pin 9 of IC 7200. The horizontal drive starts up in a soft start mode. It starts with a very short TON time of the horizontal output transistor. The TOFF of the transistor is identical to the time in normal operation. The starting frequency during switch on is therefore about 2 times higher than the normal value. The 'on' time is slowly increased to the nominal value in 1175 ms.

When the nominal value is reached, the PLL is closed in such a way that only very small phase corrections are necessary. The 'EHTinformation' line on pin 11 is intended to be used as a 'X-ray' protection. When this protection is activated (when the voltage exceeds 6 V), the horizontal drive (pin 30) is switched 'off' immediately. If the 'H-drive' is stopped, pin 11 will become low again. Now the horizontal drive is again switched on via the slow start procedure.

The 'EHTinformation' line (Aquadag) is also fed back to the UOC IC 7200 pin 54, to adjust the picture level in order to compensate for changes in the beam current.

The 'filament' voltage is monitored for 'no voltage' or 'excessive voltage'. This voltage is rectified by diode 6447 and fed to the emitter of transistor 7443. If this voltage goes above 6.8 V, transistor 7443 will conduct, making the 'EHT0' line 'high'. This will immediately switch off the horizontal drive (pin 30) via the slow stop procedure.

The horizontal drive signal exits IC 7200 at pin 30 and goes to 7462, the horizontal driver transistor. The signal is amplified and coupled to the base circuit of 7460, the horizontal output transistor. This will drive the line output transformer (LOT) and associated circuit. The LOT provides the extra high voltage (EHT), the VG2 voltage and the focus and filament voltages for the CRT, while the line output circuit drives the horizontal deflection coil.

Vertical drive

A divider circuit performs the vertical synchronization. The vertical ramp generator needs an external resistor (R3245, pin 20) and capacitor (C2244, pin 21). A differential output is available at pins 16 and 17, which are DC-coupled with the vertical output stage. During the insertion of RGB signals, the maximum vertical frequency is increased to 72 Hz so that the circuit can also synchronize on signals with a higher vertical frequency like VGA.

To avoid damage of the picture tube when the vertical deflection fails, the guard output is fed to the beam current limiting input. When a failure is detected the RGB-outputs are blanked. When no vertical deflection output stage is connected this guard circuit will also blank the output signals.

These 'V_DRIVE+' and 'V_DRIVE-' signals are applied to the input pins 1 and 2 of IC 7471 (full bridge vertical deflection amplifier). These are voltage driven differential inputs. As the driver device (IC 7200) delivers output currents, R3474 and R3475 convert them to voltage. The differential input voltage is compared with the voltage across measuring resistor R3471 that provides internal feedback information. The voltage across this measuring resistor is proportional to the output current, which is available at pins 4 and 7 where they drive the vertical deflection coil (connector 0222) in phase opposition. IC 7471 is supplied by +13 V. The vertical flyback voltage is determined by an external supply voltage at pin 6 (VlotAux+50V). This voltage is almost totally available as flyback voltage across the coil, this being possible due to the absence of a coupling capacitor (which is not necessary, due to the 'bridge' configuration).

Deflection corrections

The linearity correction

A constant voltage on the horizontal deflection coil should result in a sawtooth current. This however is not the case as the resistance of the coil is not negligible. In order to compensate for this resistance, a pre-magnetised coil L5457 is used. R3485 and C2459 ensure that L5457 does not excite, because of its own parasite capacitance. This L5457 is called the 'linearity coil'.

The Mannheim effect

When clear white lines are displayed, the high-voltage circuit is heavily loaded. During the first half of the flyback, the high voltage capacitors are considerably charged. At that point in time, the deflection coil excites through C2465. This current peak, through the high-voltage capacitor, distorts the flyback pulse. This causes synchronisation errors, causing an oscillation under the white line.

During t3 - t5, C2490//2458 is charged via R3459. At the moment of the flyback, C2490//2458 is subjected to the negative voltage pulses of the parabola as a result of which D6465 and D6466 are conducting and C2490//2458 is switched in parallel with C2456//2457. This is the moment the high-voltage diodes are conducting. Now extra energy is available for excitation through C2465 and the line deflection.

As a consequence the flyback pulse is less distorted.

The S-Correction

Since the sides of the picture are further away from the point of deflection than from the centre, a linear sawtooth current would result in a non-linear image being scanned (the center would be scanned slower than the sides). For the center-horizontal line, the difference in relation of the distances is larger than those for the top and bottom lines. An S-shaped current will have to be superimposed onto the sawtooth current. This correction is called finger-length correction or S-correction.

C2456//2457 is relatively small, as a result of which the sawtooth current will generate a parabolic voltage with negative voltage peaks. Left and right, the voltage across the deflection coil decreases, and the deflection will slow down; in the center, the voltage increases and deflection is faster.

The larger the picture width, the higher the deflection current through C2456//2457. The current also results in a parabolic voltage across C2484//2469, resulting in the fingerlength correction proportionally increasing with the picture width.

The east/west drive signal will ensure the largest picture width in the center of the frame. Here the largest correction is applied.

East/West correction

In the M8, there are three types of CRTs, namely the 100°, 110° and wide screen CRTs. The 100° CRT is raster-correction-free and does not need East/West correction.

The 110°4:3 CRT comes with East/West correction and East/West protection.

The wide screen TV sets have all the correction of the 110 4:3 CRT and also have additional picture format like the 4:3 format, 16:9, 14:9, 16:9 zoom, subtitle zoom and the Super- Wide picture format A line, written at the upper- or lower side of the screen, will be larger at the screen center when a fixed deflection current is used. Therefore the amplitude of the deflection current must be increased when the spot approaches the center of the screen. This is called the East/West or pincushion correction.

The 'Ewdrive' signal from pin 15 of IC 7200 takes care for the correct correction. It drives FET 7400. It also corrects breathing of the picture, due to beam current variations (the EHT varies dependent of the beam current). This correction is derived from the 'EHTinformation' line.

Two protections are built-in for the E/W circuit: over-current and over-voltage protection. See ***Luminance / Chrominance signal processing***.

Panorama

The panorama function is only used in 16:9 sets. This is a function to enable the 4:3 and Super-Wide feature. It drives the 'Bass_panorama' line, to activate relay 1400. When this relay is switched on, the capacitors 2453//2454 are added in parallel to the default S-correction capacitors 2456//2457.

This results in an increased capacitance, a lower resonance frequency of the line deflection coil and the S-correction capacitors and therefore a less steep S-corrected line deflection current.

Power Supply

Figure 1

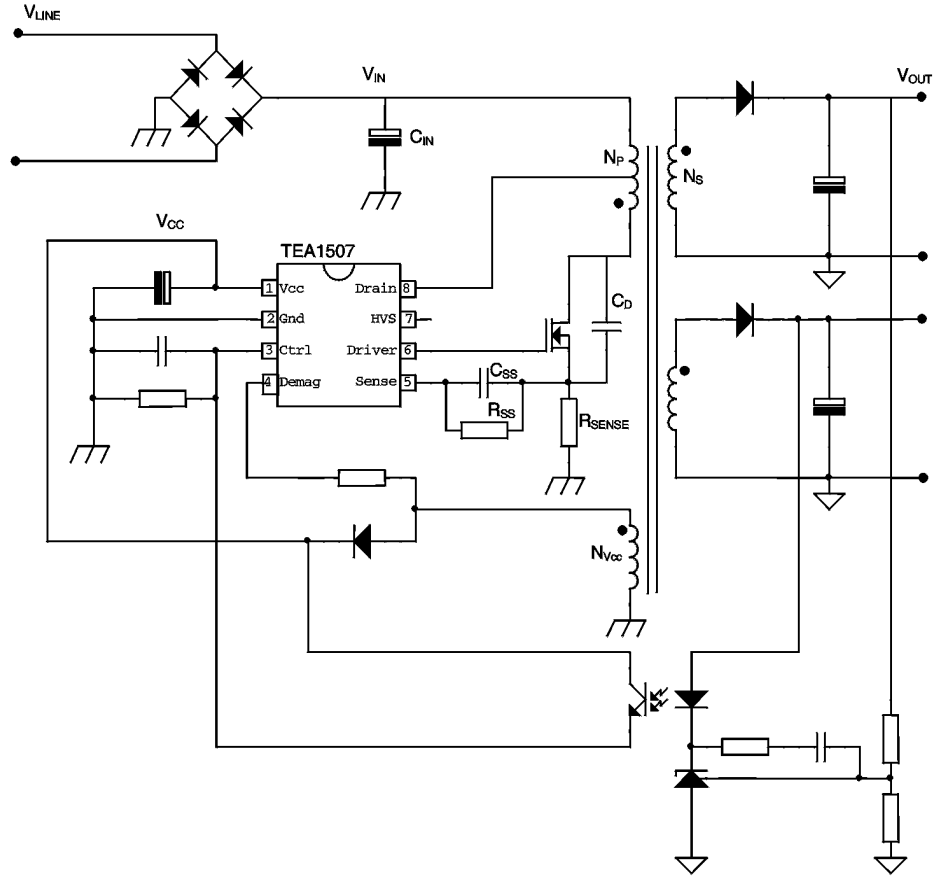
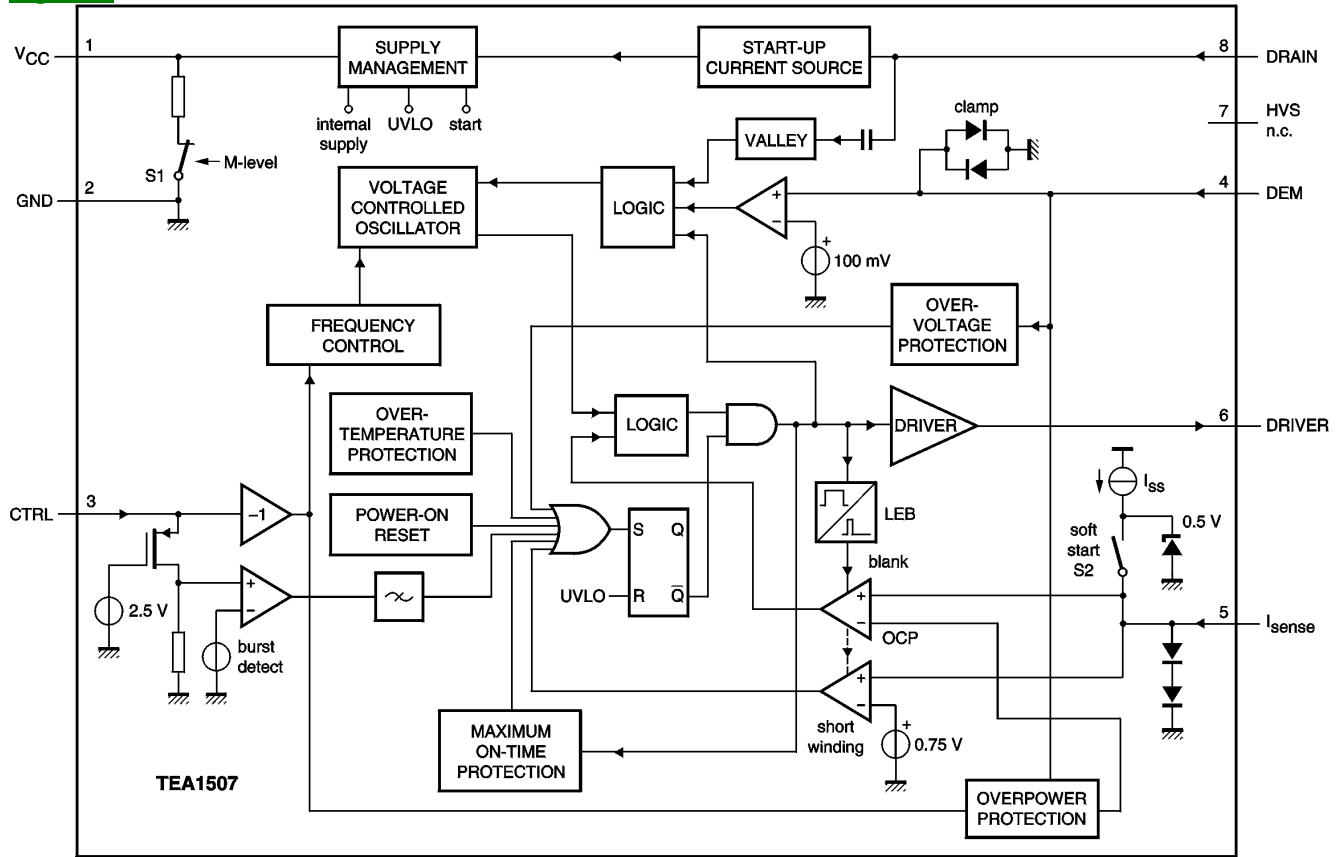


Figure 2



Introduction

The supply is a Switching Mode Power Supply (SMPS). The frequency of operation varies with the circuit load. This 'Quasi-Resonant Flyback' behavior has some important benefits compared to a 'hard switching' fixed frequency Flyback converter. The efficiency can be improved up to 90%, which results in lower power consumption. Moreover the supply runs cooler and safety is enhanced.

The power supply starts operating when a DC voltage goes from the rectifier bridge via T5520, R3532 to pin 8. The operating voltage for the driver circuit is also taken from the 'hot' side of this transformer.

The switching regulator IC 7520 starts switching the FET 'on' and 'off', to control the current flow through the primary winding of transformer 5520. The energy stored in the primary winding during the 'on' time is delivered to the secondary windings during the 'off' time.

The 'MainSupply' line is the reference voltage for the power supply. It is sampled by resistors 3543 and 3544 and fed to the input of the regulator 7540 / 6540. This regulator drives the feedback optocoupler 7515 to set the feedback control voltage on pin 3 of 7520.

The power supply in the set is 'on' any time AC power goes to the set.

Derived Voltages

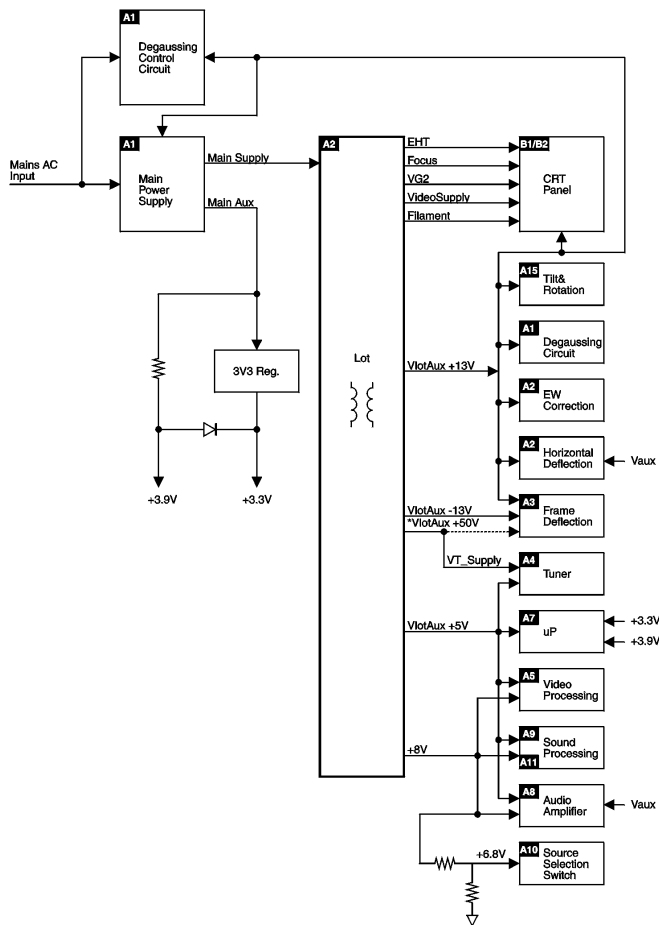
The voltages supplied by the secondary windings of T5520 are:

- 'MainAux' for the audio circuit (voltage depends on set execution, see table below),
- 3.3 V and 3.9 V for the microprocessor and
- 'MainSupply' for the horizontal output (voltage depends on set execution, see table below).

Other supply voltages are provided by the LOT. It supplies +50 V (only for large screen sets), +13 V, +8 V, +5 V and a +200 V source for the video drive. The secondary voltages of the LOT are monitored by the 'EHTinformation' lines. These lines are fed to the video processor part of the UOC IC 7200 on pins 11 and 34.

This circuit will shut 'off' the horizontal drive in case of over- voltage or excessive beam current.

Figure 3



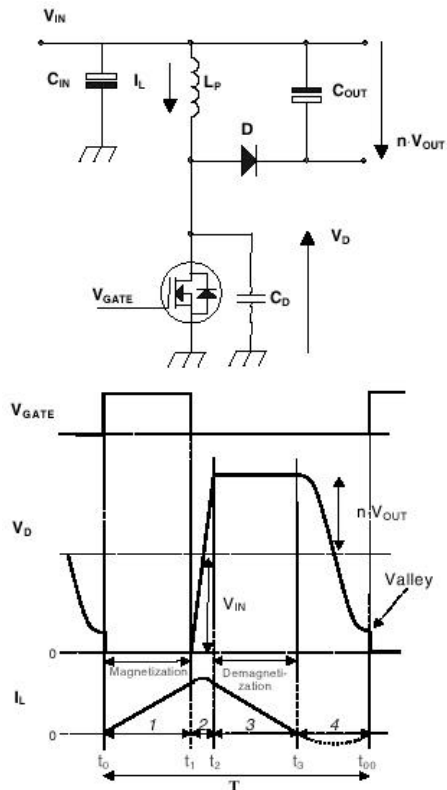
Power supply voltages				
Screen Size	Voltage name	Measuring point	Value	Remark
14", 15RF, 17", 20", 21"	MainSupply	P6 (C2561)	95 V	
	MainAux	P5 (C2564)	11 V	Stereo 2x3 W and Mono 1x2 W, 3 W, 4 W
			10 V	Stereo 2x1 W and Mono 1x1 W
All of them	MainSupply	P6 (C2561)	130 V	21/25/29RF and 25/27/32/35V
			143 V	25/28/29BF, 25/28BLD, 25/28BLS, 28/32WS, 24/28BLDWS & BL9WS
	MainAux	P5 (C2564)	12 V	Stereo 2x1 W, 3 W, 5 W
			10 V	Mono 1x1 W

Degaussing

When the set is switched on, the degaussing relay 1515 is immediately activated as transistor 7580 is conducting. Due to the RC-time of R3580 and C2580, it will last about 3 to 4 seconds before transistor 7580 is switched off.

Basic IC Functionality

For a clear understanding of the Quasi-Resonant behavior, it is possible to explain it by a simplified circuit diagram (see Figure below). In this circuit diagram, the secondary side is transferred to the primary side and the transformer is replaced by an inductance L_P . C_D is the total drain capacitance including the resonance capacitor C_R , parasitic output capacitor C_{OSS} of the MOSFET and the winding capacitance C_W of the transformer. The turns ratio of the transformer is represented by n (N_P/N_S).



In the Quasi-Resonant mode each period can be divided into four different time intervals, in chronological order:

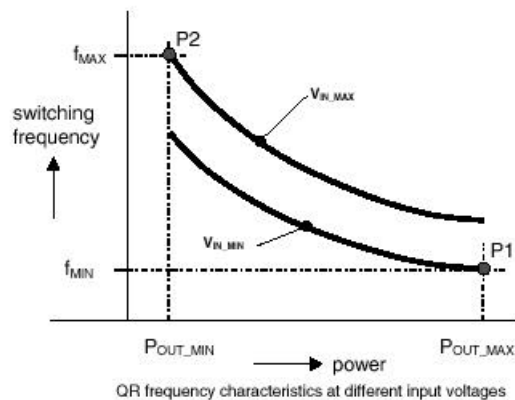
- **Interval 1: $t_0 < t < t_1$ primary stroke** At the beginning of the first interval, the MOSFET is switched 'on' and energy is stored in the primary inductance (magnetization). At the end, the MOSFET is switched 'off' and the second interval starts.
- **Interval 2: $t_1 < t < t_2$ commutation time** In the second interval, the drain voltage will rise from almost zero to $V_{IN} + n \cdot (V_{OUT} + V_F)$. V_F is the forward voltage drop of the diode that will be omitted from the equations from now on. The current will change its positive derivative, corresponding to V_{IN}/L_P , to a negative derivative, corresponding to $-n \cdot V_{OUT}/L_P$.
- **Interval 3: $t_2 < t < t_3$ secondary stroke** In the third interval, the stored energy is transferred to the output, so the diode starts to conduct and the inductive current I_L will decrease. In other words, the transformer will be demagnetized. When the inductive current has become zero the next interval begins.
- **Interval 4: $t_3 < t < t_{00}$ resonance time** In the fourth interval, the energy stored in the drain capacitor C_D will start to resonate with the inductance L_P . The voltage and current waveforms are sinusoidal waveforms. The drain voltage will drop from $V_{IN} + n \cdot V_{OUT}$ to $V_{IN} - n \cdot V_{OUT}$.

Frequency Behavior

The frequency in the QR-mode is determined by the power stage and is not influenced by the controller (important parameters are L_P and C_D). The frequency varies with the input voltage V_{IN} and the output power P_{OUT} . If the required output power increases, more energy has to be stored in the transformer. This leads to longer magnetizing t_{PRIM} and demagnetizing t_{SEC} times, which will decrease the frequency.

See the frequency versus output power characteristics below. The frequency characteristic is not only output power-, but also input voltage dependent. The higher the input voltage, the smaller t_{PRIM} , so the higher the frequency will be.

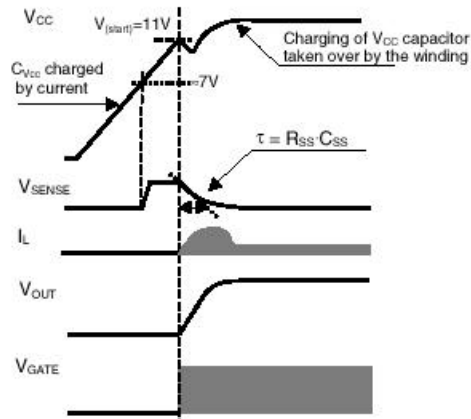
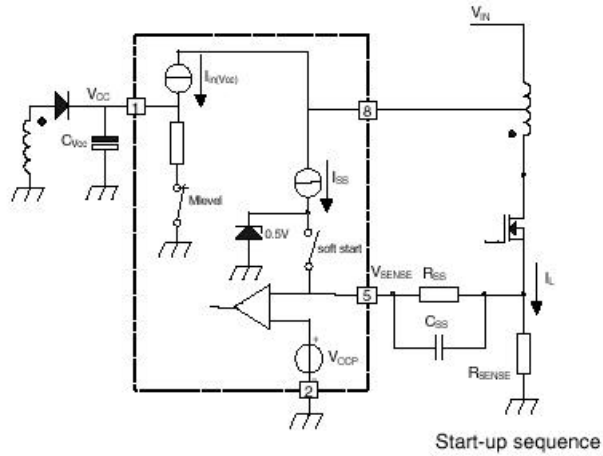
Point P1 is the minimum frequency f_{MIN} that occurs at the specified minimum input voltage and maximum output power required by the application. Of course the minimum frequency has to be chosen above the audible limit (>20 kHz).



Start-Up Sequence

When the rectified AC voltage V_{IN} (via the center tap connected to pin 8) reaches the Mains dependent operation level (Mlevel: between 60 and 100 V), the internal 'Mlevel switch' will be opened and the start-up current source is enabled to charge capacitor C_{2521} at the VCC pin as shown below.

The 'soft start' switch is closed when the VCC reaches a level of 7 V and the 'soft start' capacitor CSS (C2522, between pin 5 and the sense resistor R3526), is charged to 0.5 V. Once the VCC capacitor is charged to the start-up voltage VCC-start (11 V), the IC starts driving the MOSFET. Both internal current sources are switched 'off' after reaching this start-up voltage. Resistor RSS (3524) will discharge the 'soft start' capacitor, such that the peak current will slowly increase. This to prevent 'transformer rattle'. During start-up, the VCC capacitor will be discharged until the moment that the primary auxiliary winding takes over this voltage.



The moment that the voltage on pin 1 drops below the 'under voltage lock out' level (UVLO = ±9 V), the IC will stop switching and will enter a safe restart from the rectified mains voltage.

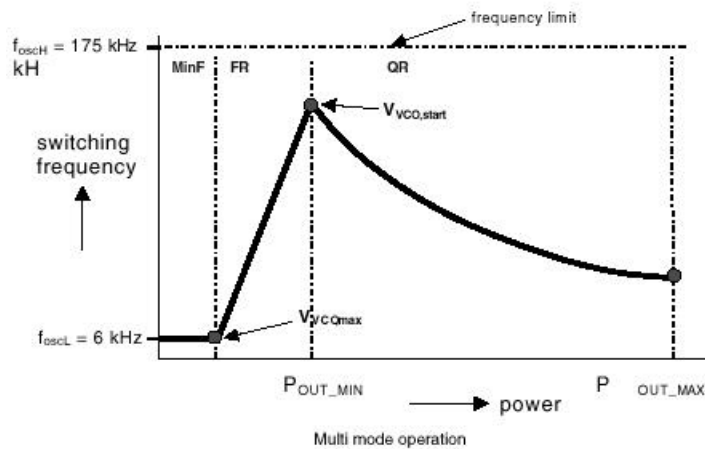
Operation

The supply can run in three different modes depending on the output power:

- **Quasi-Resonant mode (QR)** The QR mode, described above, is used during normal operation. This will give a high efficiency.
- **Frequency Reduction mode (FR)** The FR mode (also called VCO mode) is implemented to decrease the switching losses at low output loads. In this way the efficiency at low output powers is increased, which enables power consumption smaller than 3 W during stand-by. The voltage at the pin 3 (Ctrl) determines where the frequency reduction starts. An external Ctrl voltage of 1.425 V corresponds with an internal VCO level of 75 mV. This fixed VCO level is called $V_{VCO,start}$.

The frequency will be reduced in relation to the VCO voltage between 75 mV and 50 mV (at levels larger than 75 mV, Ctrl voltage < 1.425V, the oscillator will run on maximum frequency $f_{oscH} = 175$ kHz typically). At 50 mV ($V_{VCO,max}$) the frequency is reduced to the minimum level of 6 kHz. Valley switching is still active in this mode.

- **Minimum Frequency mode (MinF)** At VCO levels below 50 mV, the minimum frequency will remain on 6 kHz, which is called the MinF mode. Because of this low frequency, it is possible to run at very low loads without having any output regulation problems.



Safe-Restart Mode

This mode is introduced to prevent the components from being destroyed during eventual system fault conditions. It is also used for the Burst mode. The Safe-Restart mode will be entered if it is triggered by one of the following functions:

- Over voltage protection,
- Short winding protection,
- Maximum 'on time' protection,
- VCC reaching UVLO level (fold back during overload),
- Detecting a pulse for Burst mode,
- Over temperature protection.

When entering the Safe-Restart mode, the output driver is immediately disabled and latched. The VCC winding will not charge the VCC capacitor anymore and the VCC voltage will drop until UVLO is reached. To recharge the VCC capacitor, the internal current source ($I_{(restart)(VCC)}$) will be switched 'on' to initiate a new start-up sequence as described before. This Safe-Restart mode will persist until the controller detects no faults or burst triggers.

Standby

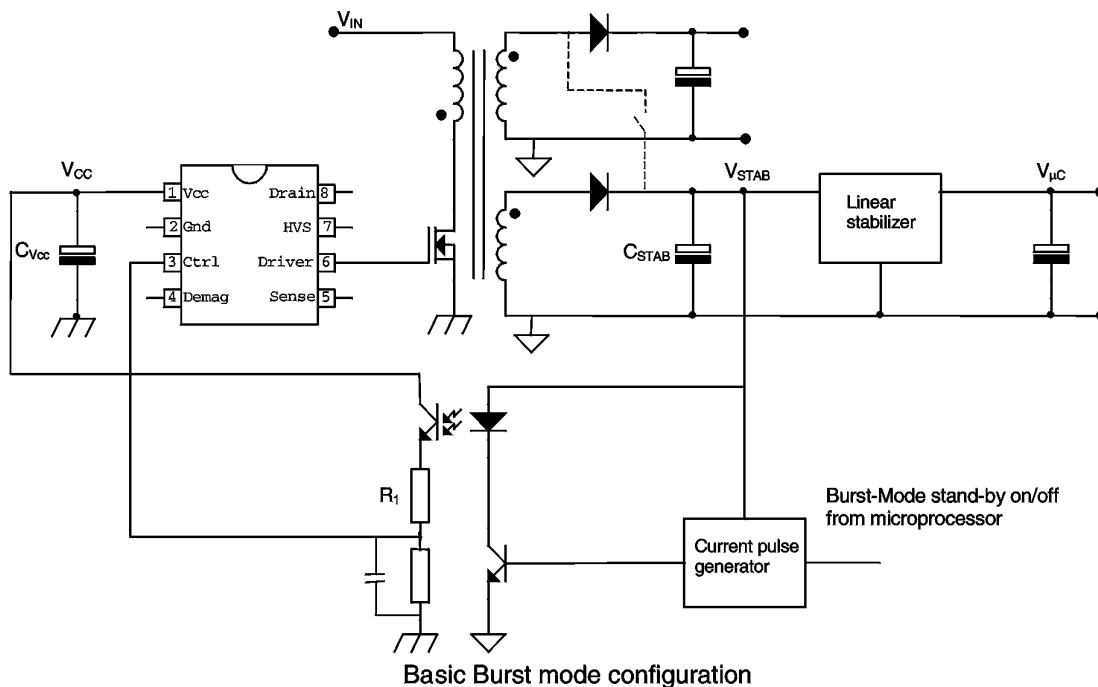
The set goes to Standby in the following cases:

- After pressing the 'standby' key on the remote control.
- When the set is in protection mode.

In Standby, the power supply works in 'burst mode'. Burst mode can be used to reduce the power consumption below 1 W at stand-by. During this mode, the controller is active (generating gate pulses) for only a short time and for a longer time inactive waiting for the next burst cycle.

In the active period the energy is transferred to the secondary and stored in the buffer capacitor C_{STAB} in front of the linear stabilizer (see Figure below). During the inactive period, the load (e.g. microprocessor) discharges this capacitor. In this mode, the controller makes use of the Safe-Restart mode.

Basic Burst mode configuration



The system enters burst mode standby when the microprocessor activates the 'Stdby_con' line. When this line is pulled high, the base of Q7541 is allowed to go high. This is triggered by the current from collector Q7542. When Q7541 turns 'on', the opto-coupler (7515) is activated, sending a large current signal to pin 3 (Ctrl). In response to this signal, the IC stops switching and enters a 'hiccup' mode.

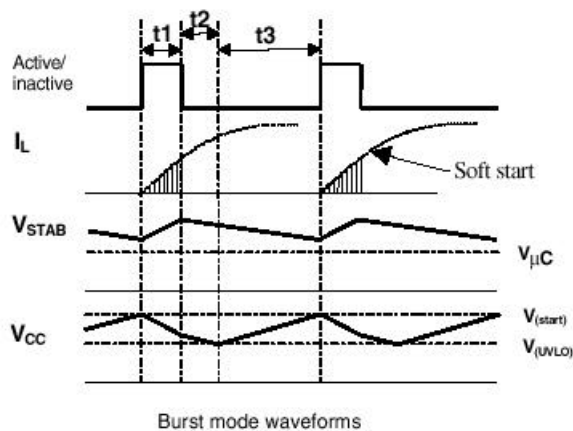
This burst activation signal should be present for longer than the 'burst blank' period (typically 30 μ s): the blanking time prevents false burst triggering due to spikes.

Burst mode standby operation continues until the microcontroller pulls the 'Stdby_con' signal low again. The base of Q7541 is unable to go high, thus cannot turn 'on'.

This will disable the burst mode. The system then enters the start-up sequence and begins normal switching behavior.

For a more detailed description of one burst cycle, three time intervals are defined:

- **t1: Discharge of VCC when gate drive is active** During the first interval, energy is transferred, which result in a ramp-up of the output voltage (V_{STAB}) in front of the stabilizer. When enough energy is stored in the capacitor, the IC will be switched 'off' by a current pulse generated at the secondary side. This pulse is transferred to the primary side via the opto coupler. The controller will disable the output driver (safe restart mode) when the current pulse reaches a threshold level of 16 mA into the Ctrl pin. A resistor R1 (R3519) is placed in series with the opto coupler, to limit the current going into the Ctrl pin. Meanwhile the VCC capacitor is discharged but has to stay above V_{UVLO} .
- **t2: Discharge of VCC when gate drive is inactive**
During the second interval, the VCC is discharged to V_{UVLO} . The output voltage will decrease depending on the load.
- **t3: Charge of VCC when gate drive is inactive** The third interval starts when the UVLO is reached. The internal current source charges the VCC capacitor (also the soft start capacitor is recharged). Once the VCC capacitor is charged to the start-up voltage, the driver is activated and a new burst cycle is started.



Protection Events

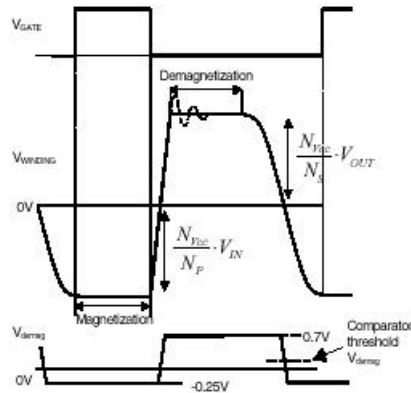
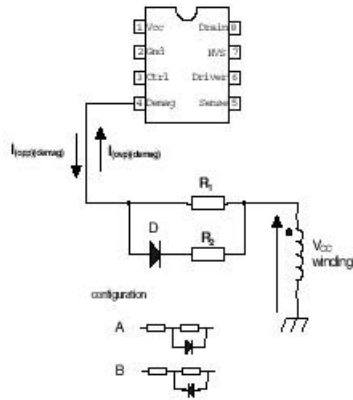
The SMPS IC 7520 has the following protection features:

Demagnetization sense

This feature guarantees discontinuous conduction mode operation in every situation. The oscillator will not start a new primary stroke until the secondary stroke has ended. This is to ensure that FET 7521 will not turn on until the demagnetization of transformer 5520 is complete. The function is an additional protection feature against:

- saturation of the transformer,
- damage of the components during initial start-up,
- an overload of the output.

The demag(netization) sense is realized by an internal circuit that guards the voltage (V_{demag}) at pin 4 that is connected to VCC winding by resistor R1 (R3522). The Figure below shows the circuit and the idealized waveforms across this winding.



Over Voltage Protection

The Over Voltage Protection ensures that the output voltage will remain below an adjustable level. This works by sensing the auxiliary voltage via the current flowing into pin 4 (DEM) during the secondary stroke. This voltage is a well-defined replica of the output voltage. Any voltage spikes are averaged by an internal filter.

If the output voltage exceeds the OVP trip level, the OVP circuit switches the power MOSFET 'off'.

Next, the controller waits until the 'under voltage lock out' level ($UVLO = \pm 9\text{ V}$) is reached on pin 1 (VCC). This is followed by a safe restart cycle, after which switching starts again. This process is repeated as long as the OVP condition exists. The output voltage at which the OVP function trips, is set by the demagnetization resistor R3522.

Over Current Protection

The internal OCP protection circuit limits the 'sense' voltage on pin 5 to an internal level.

Over Power Protection

During the primary stroke, the rectified AC input voltage is measured by sensing the current drawn from pin 4 (DEM). This current is dependent on the voltage on pin 9 of transformer 5520 and the value of R3522. The current information is used to adjust the peak drain current, which is measured via pin ISENSE.

Short Winding Protection

If the 'sense' voltage on pin 5 exceeds the short winding protection voltage (0.75 V), the converter will stop switching. Once VCC drops below the UVLO level, capacitor C2521 will be recharged and the supply will start again. This cycle will be repeated until the short circuit is removed (safe restart mode). The short winding protection will also protect in case of a secondary diode short circuit. This protection circuit is activated after the leading edge blanking time (LEB).

LEB time

The LEB (Leading Edge Blanking) time is an internally fixed delay, preventing false triggering of the comparator due to current spikes. This delay determines the minimum 'on' time of the controller.

Over Temperature protection

When the junction temperature exceeds the thermal shutdown temperature (typ. 140° C), the IC will disable the driver. When the VCC voltage drops to UVLO, the VCC capacitor will be recharged to the V(start) level. If the temperature is still too high, the VCC voltage will drop again to the UVLO level (Safe-Restart mode). This mode will persist until the junction temperature drops 8 degrees typically below the shutdown temperature.

Mains dependent operation enabling level

To prevent the supply from starting at a low input voltage, which could cause audible noise, a mains detection is implemented (Mlevel). This detection is provided via pin 8, that detects the minimum start-up voltage between 60 and 100 V. As previous mentioned, the controller is enabled between 60 and 100 V.

An additional advantage of this function is the protection against a disconnected buffer capacitor (CIN). In this case, the supply will not be able to start-up because the VCC capacitor will not be charged to the start-up voltage.

Control

Introduction

The microprocessor part of the UOC, has the complete control and teletext on board. User menu, Service Default Mode, Service Alignment Mode and Customer Service Mode are generated by the μ P. Communication to other ICs is done via the I²C-bus.

I²C-Bus

The main control system, which consists of the microprocessor part of the UOC (7200), is linked to the external devices (tuner, NVM, MSP, etc) by means of the I²C- bus. An internal I²C-bus is used to control other signal processing functions, like video processing, sound IF, vision IF, synchronization, etc.

User Interface

The L8/M8 uses a remote control with RC5 protocol. The incoming signal is connected to pin 67 of the UOC. The 'Top Control' keyboard, connected to UOC pin 80, can also control the set. Button recognition is done via a voltage divider. The front LED (6691) is connected to an output control line of the microprocessor (pin 5). It is activated to provide the user information about whether or not the set is working correctly (e.g., responding to the remote control, normal operation (USA only) or fault condition).

In- And Output Selection

For the control of the input and output selections, there are three lines:

- **STATUS1** This signal provides information to the microprocessor on whether a video signal is available on the SCART1 AV input and output port (only for Europe). This signal is not connected in NAFTA sets.
- **STATUS2** This signal provides information to the microprocessor on whether a video signal is available on the SCART2 AV input and output port (only for Europe). For sets with an SVHS input it provides the additional information if a Y/C or CVBS source is present. The presence of an external Y/C source makes this line 'high' while a CVBS source makes the line 'low'.
- **SEL-MAIN-FRNT-RR** This is the source select control signal from the microprocessor. This control line is under user control or can be activated by the other two control lines.

Power Supply Control

The microprocessor part is supplied with 3.3 V and 3.9 V both derived from the 'MainAux' voltage via a 3V3 stabilizer (7560) and a diode.

Two signals are used to control the power supply:

- **Stdbby_con** This signal is generated by the microprocessor when over-current takes place at the 'MainAux' line. This is done to enable the power supply into standby burst mode, and to enable this mode during a protection. This signal is 'low' under normal operation conditions and goes to 'high' (3.3 V) under 'standby' and 'fault' conditions.
- **POWER_DOWN** This signal is generated by the power supply. Under normal operating conditions this signal is 'high' (3.3 V). During 'standby' mode, this signal is a pulse train of approx. 10 Hz and a 'high' duration of 5 ms. It is used to give information to the UOC about the fault condition in the Audio amplifier supply circuit. This information is generated by sensing the current on the 'MainAux' line (using voltage drop across R3564 to trigger Q7562). This signal goes 'low' when the DC-current on the 'MainAux' line exceeds 1.6 - 2.0 A. It is also used to give an early warning to the UOC about a power failure. Then the information is used to mute the sound amplifier to prevent a switch off noise and to solve the switch-off spot.

Protection Events

Several protection events are controlled by the UOC:

- **BC protection**, to protect the picture tube from a too high beam current. The UOC has the capability of measuring the normal back level current during the vertical flyback. So if for some reason the CRT circuit is malfunctioning (i.e. high beam current), the normal black current will be out of the 75 μ A range, and the UOC will trigger the power supply to shut down. However, this is a high beam-current situation, the TV screen will be bright white before the set is shut down.
- **E/W protection**, two protection mechanisms are built in, over-current and over-voltage.
 - In case of over-current due to defective parts in the line deflection output stage, a high current will flow through resistors 3405//3406. If this current is large enough to create a voltage drop of 0.7 V across 3405//3406, transistor Q7606 (in A7 diagram) will conduct and pin 80 of the UOC will be pulled down. Thereafter, the UOC will shut down the power supply. In case of further current increase, the fused resistor 3411 is built-in for double protection.

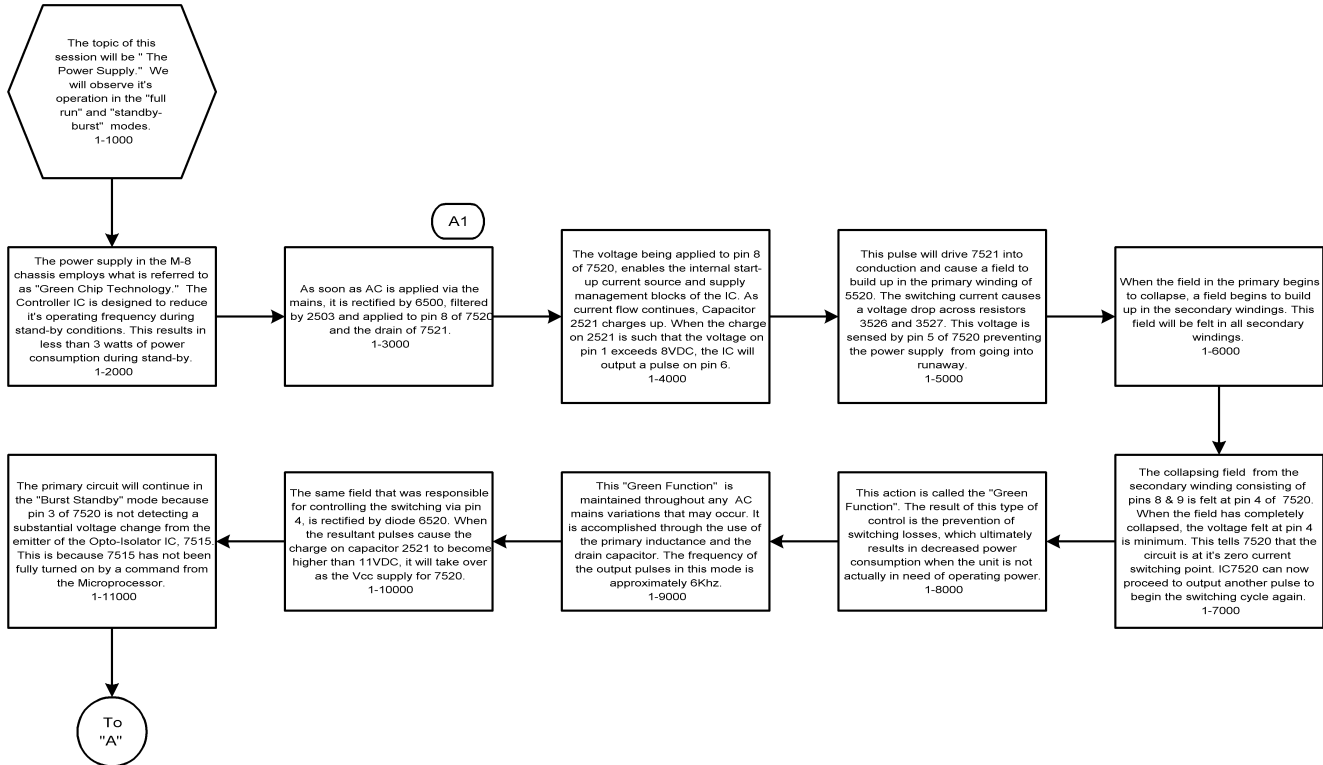
- In case of a high voltage appearing across capacitor 2401 (dependent of the tube size), which is high enough to trigger zener diode 6401 into conduction, transistor Q7606 (in A7 diagram) will conduct and UOC is triggered to shut down the power supply.
- **I²C protection**, to check whether all I²C IC's are functioning.

In case one of these protections is activated, the set will go into 'standby'.

The 'on' and 'standby' LEDs are controlled via the UOC.

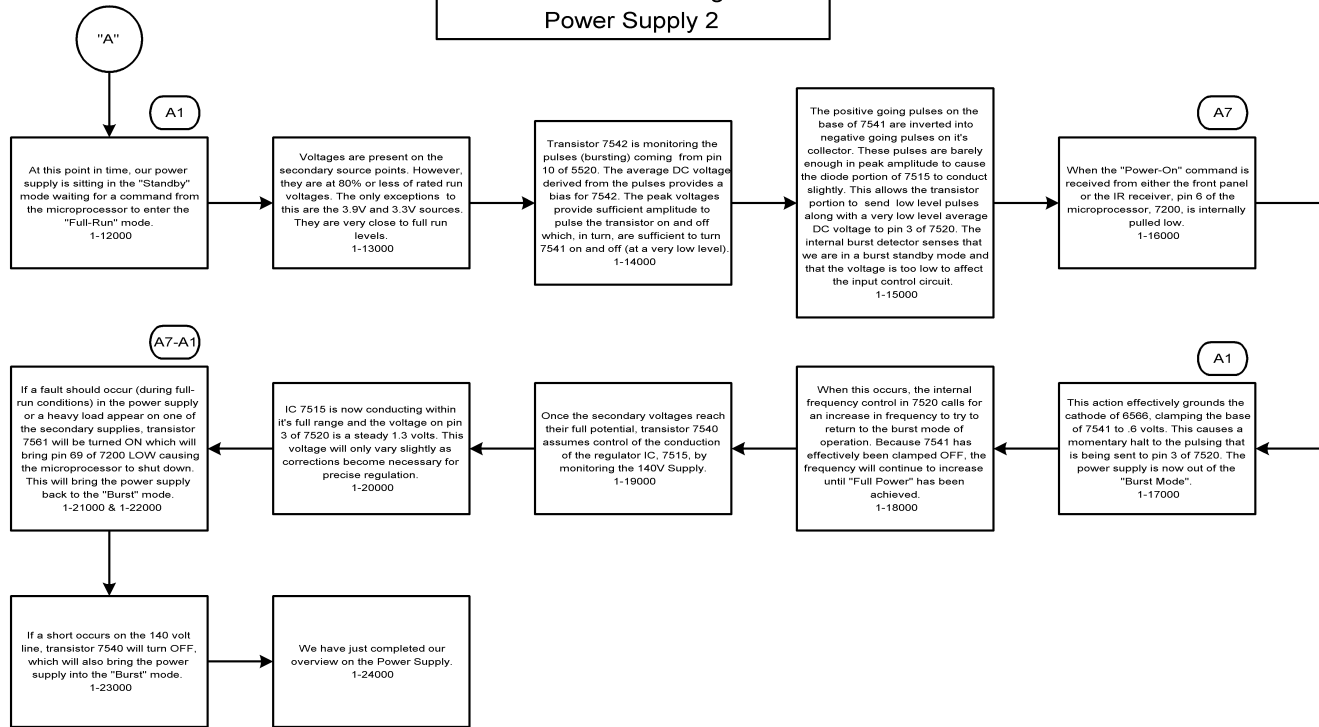
SCHEMATIC BLOCK BY BLOCK CIRCUIT DESCRIPTION

M-8
Generic Training
Power Supply 1



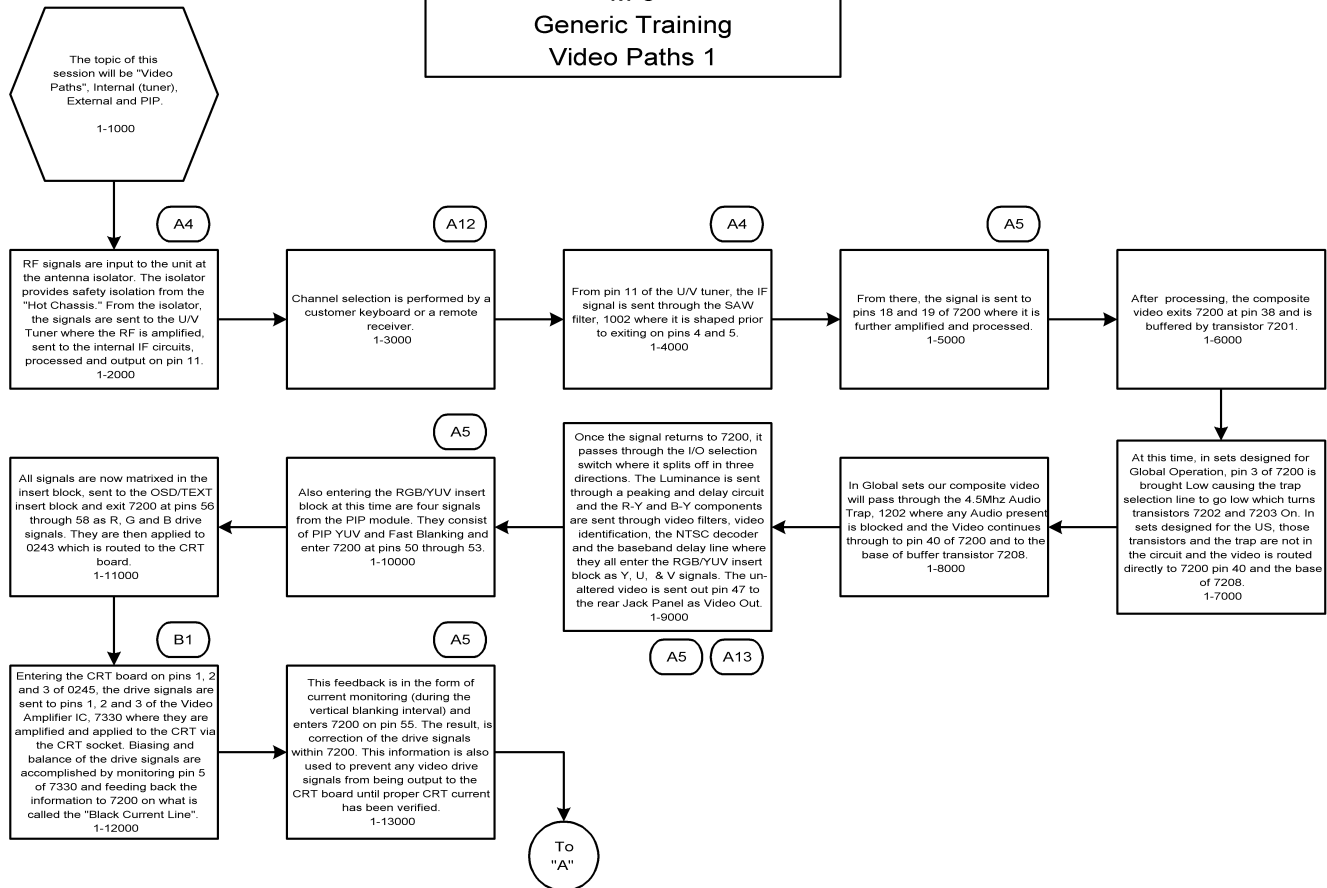
Note: (XX) Indicates the Schematic Page being talked about.

M-8 Generic Training Power Supply 2



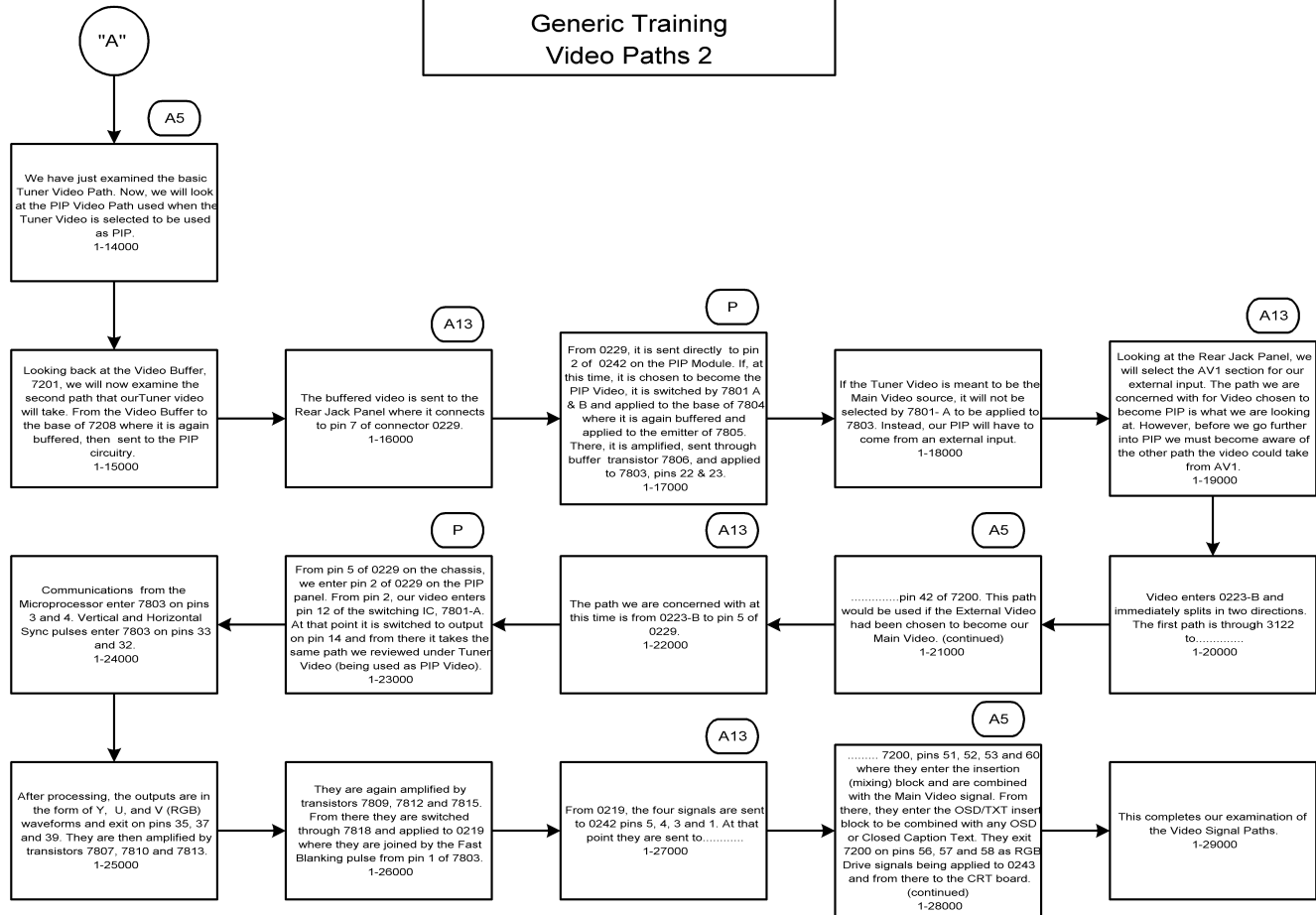
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M-8 Generic Training Video Paths 1



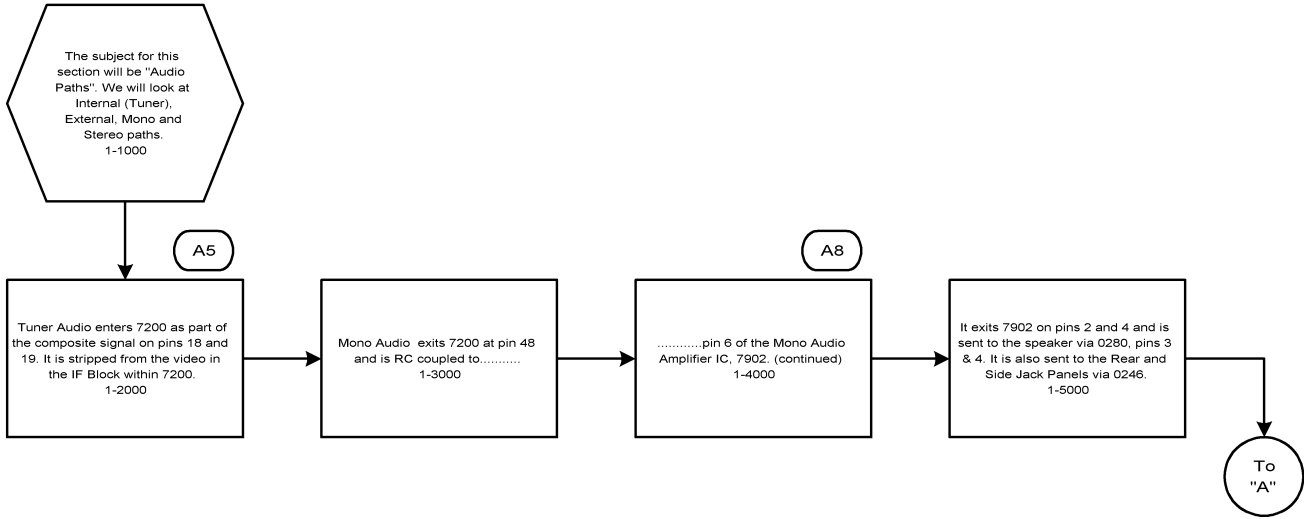
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M-8 Generic Training Video Paths 2



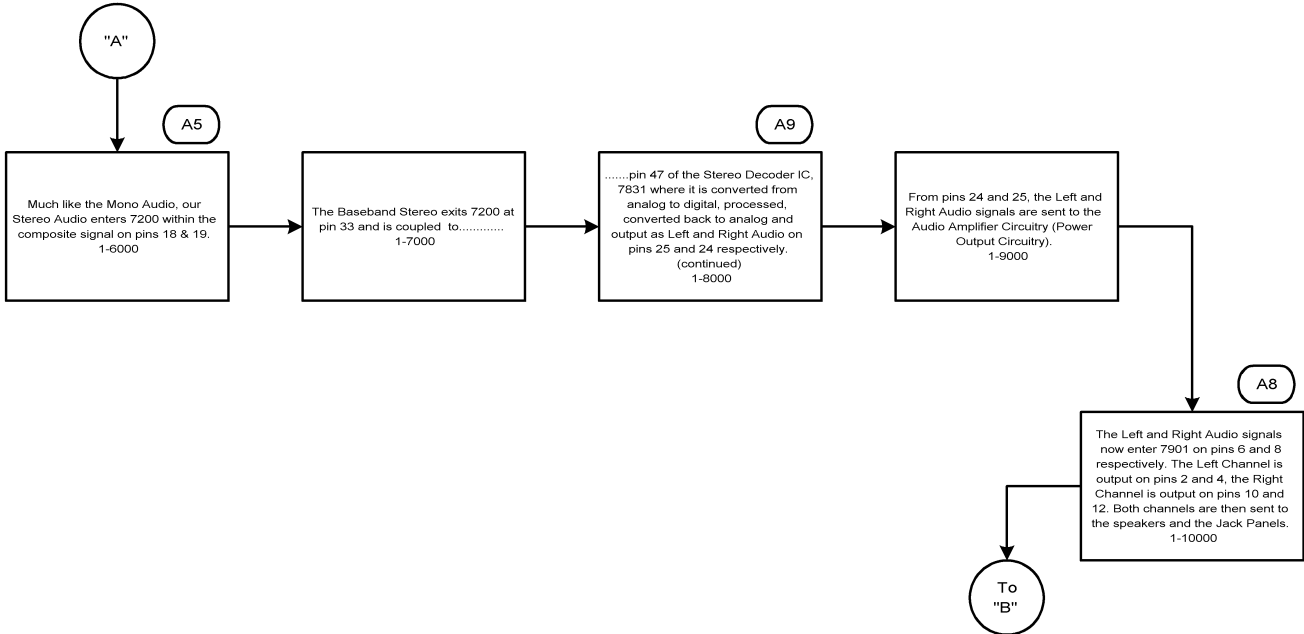
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M-8
Generic Training
Audio Paths 1



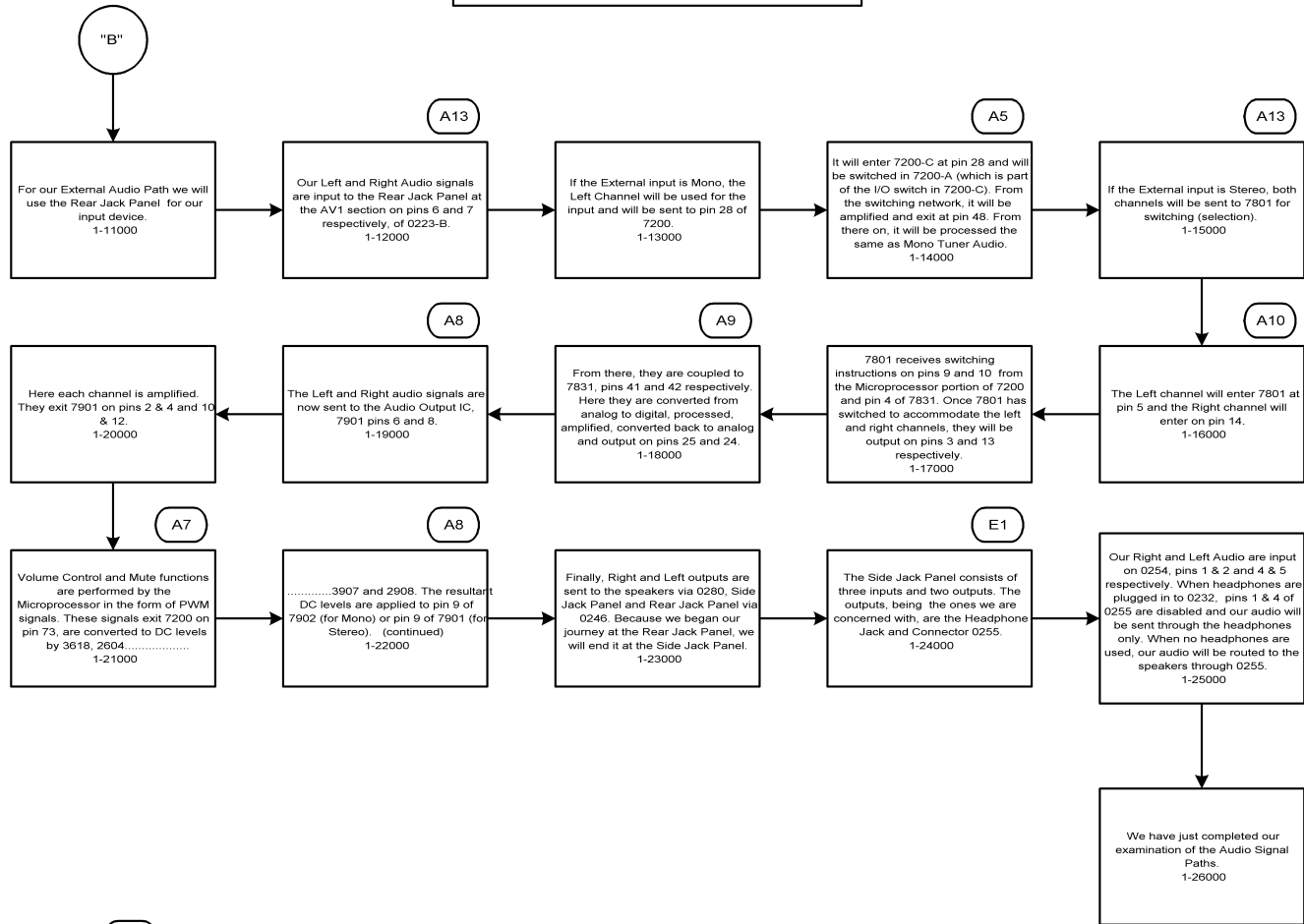
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M-8
Generic Training
Audio Paths 2



Note: (XX) Indicates the Schematic Page being talked about.

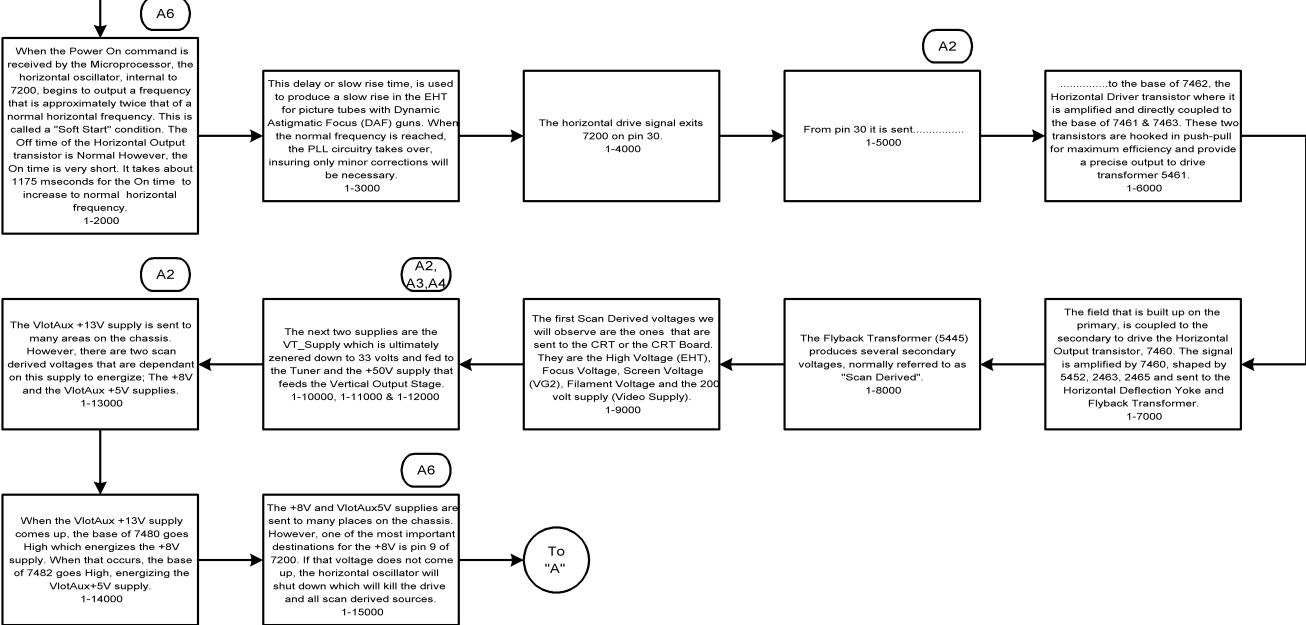
M-8 Generic Training Audio Paths 3



Note: (XX) Indicates the Schematic Page being talked about.

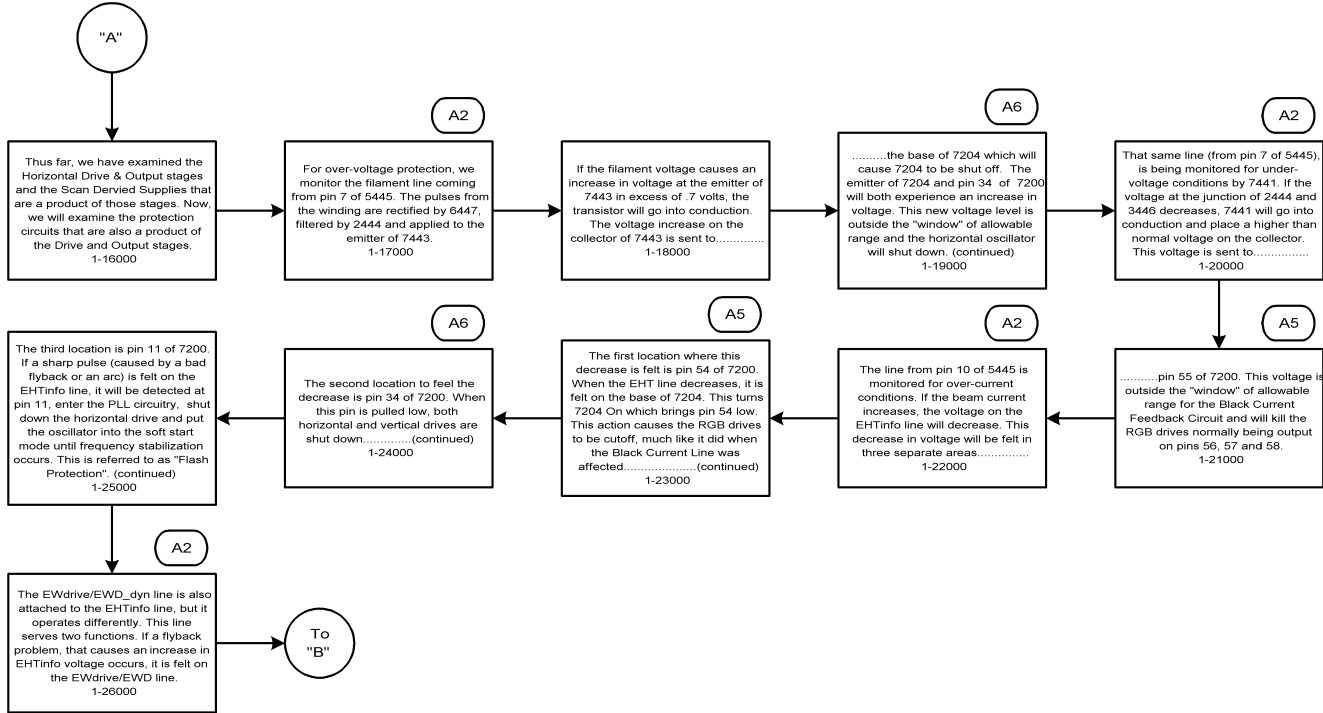
M-8 Generic Training Horizontal 1

In this section we will follow the Horizontal Path from the origination of the drive signal through High Voltage generation and development of scan derived supplies.
1-1000



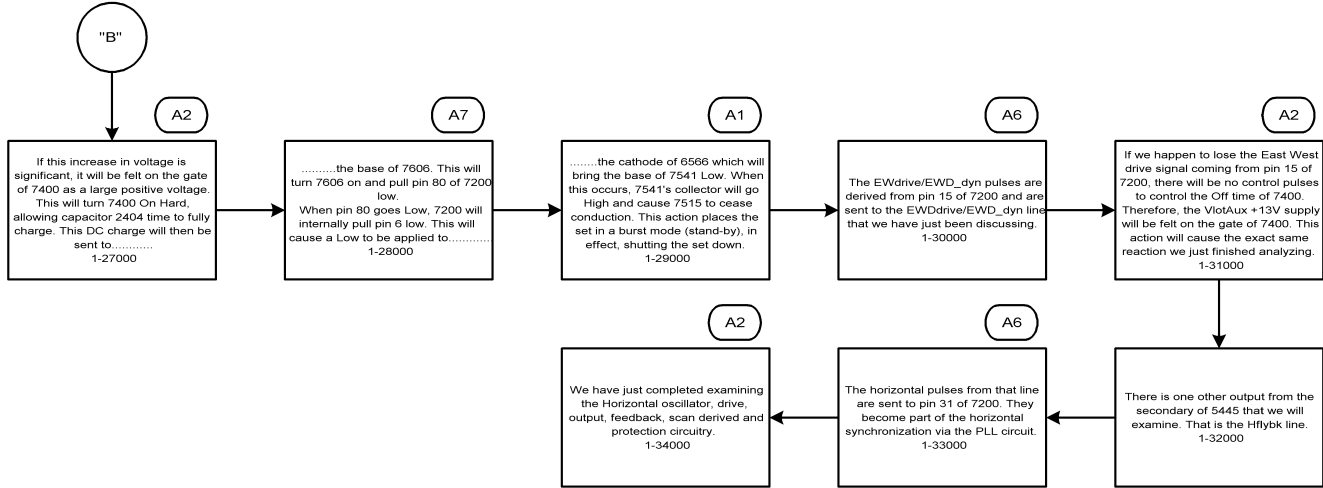
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M-8 Generic Training Horizontal 2



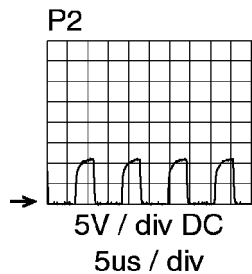
Note: (XX) Indicates the Schematic Page being talked about.

M-8
Generic Training
Horizontal 3



Note: (xx) Indicates the Schematic Page being talked about.

P1 = "\$"

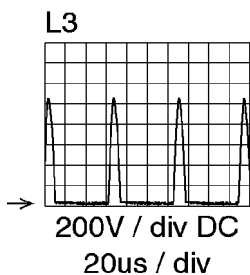
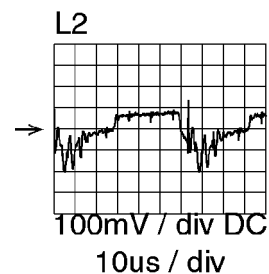
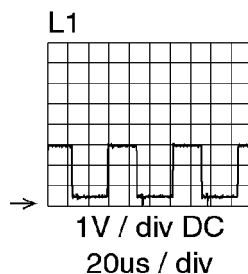


P3 = 16V8 (13V8)

P4 = 3V3

P5 = 12V

P6 = 140V



L5 = 200V

L6 = 50V

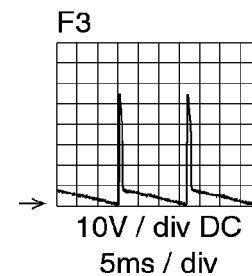
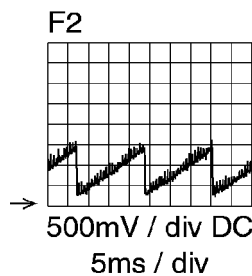
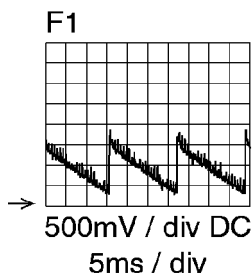
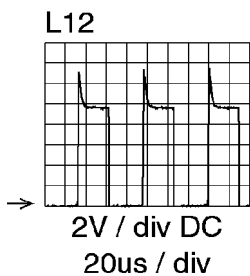
L7 = 50V

L8 = 13V

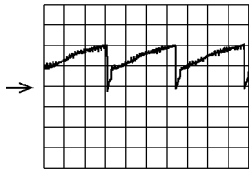
L9 = 5V

L10 = 8V

L11 = 13V

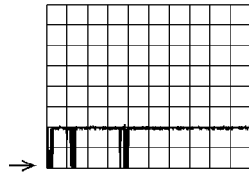


F4



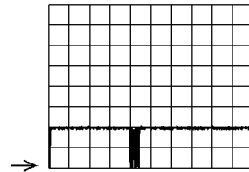
5V / div DC
5ms / div

I1



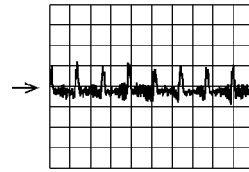
2V / div DC
20ms / div

I2



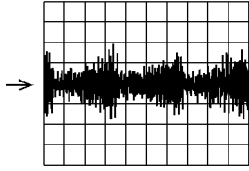
2V / div DC
20ms / div

I3



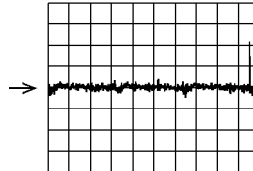
20mV / div DC
50us / div

I4



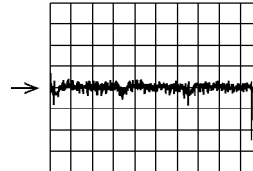
1V / div DC
20us / div

V1



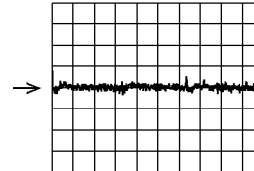
20mV / div DC
20us / div

V2



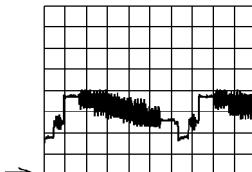
20mV / div DC
20us / div

V3



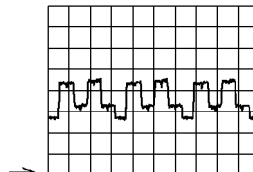
20mV / div DC
20us / div

V4



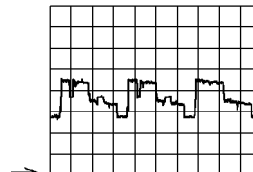
1V / div DC
10us / div

V5



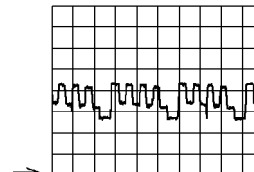
1V / div DC
20us / div

V6



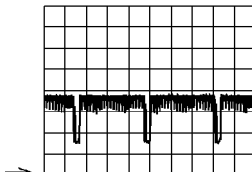
1V / div DC
20us / div

V7



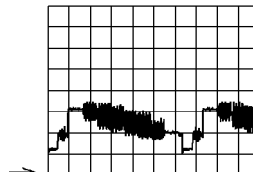
1V / div DC
20us / div

V8



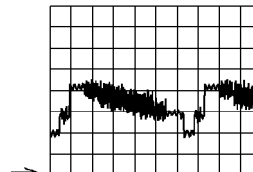
2V / div DC
5ms / div

V9



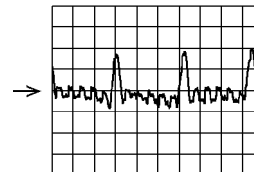
500mV / div DC
10us / div

V10



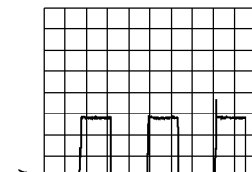
1V / div DC
10us / div

S1



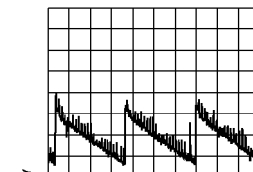
50mV / div DC
20us / div

S2



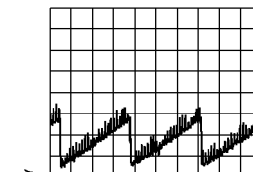
1V / div DC
20us / div

S3



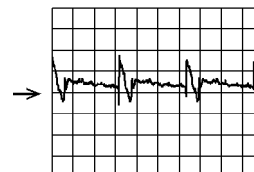
500mV / div DC
5ms / div

S4



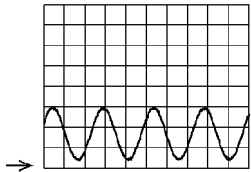
500mV / div DC
5ms / div

S5



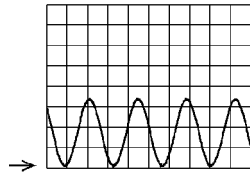
200mV / div DC
20us / div

C1



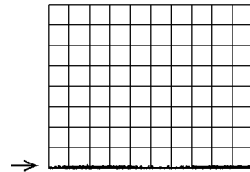
1V / div DC
500us / div

C2



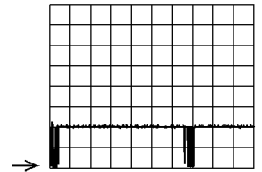
1V / div DC
500us / div

C3



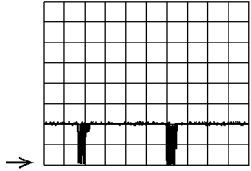
500mV / div DC
500us / div

C4



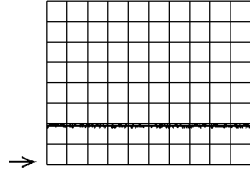
2V / div DC
20ms / div

C5



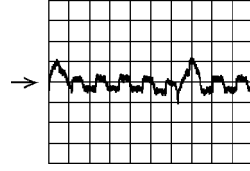
2V / div DC
20ms / div

C6



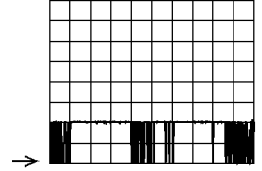
500mV / div DC
50ms / div

A5



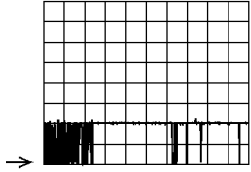
100mV / div AC
10us / div

A6



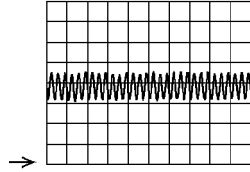
2V / div DC
20ms / div

A7



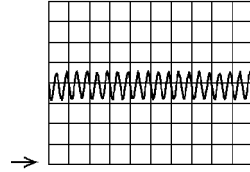
2V / div DC
20ms / div

A8



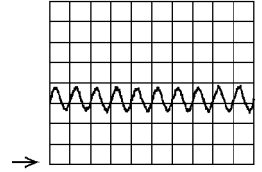
1V / div DC
1ms / div

A8a



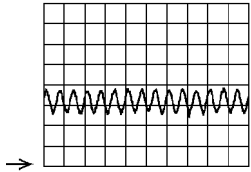
1V / div DC
2ms / div

A9



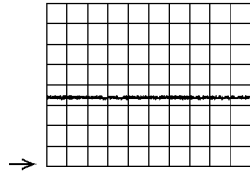
500mV / div DC
1ms / div

A10



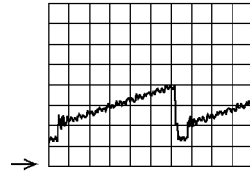
500mV / div DC
500us / div

A11



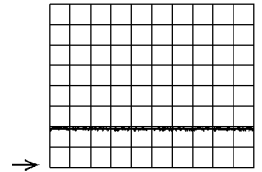
1V / div DC
100us / div

A11a



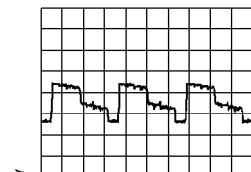
1V / div DC
10us / div

C6



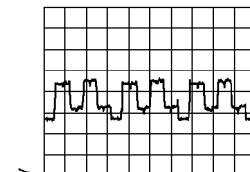
500mV / div DC
50ms / div

V11



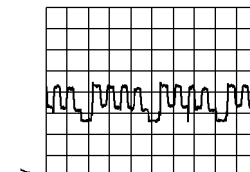
1V / div DC
20us / div

V12



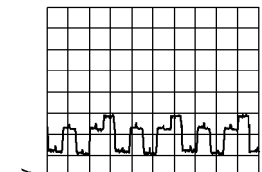
1V / div DC
20us / div

V13



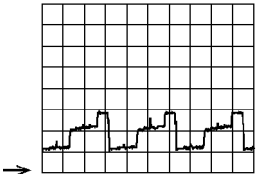
1V / div DC
20us / div

V14



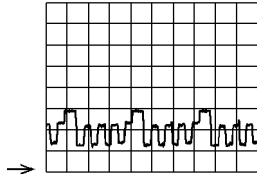
50V / div DC
20us / div

V15

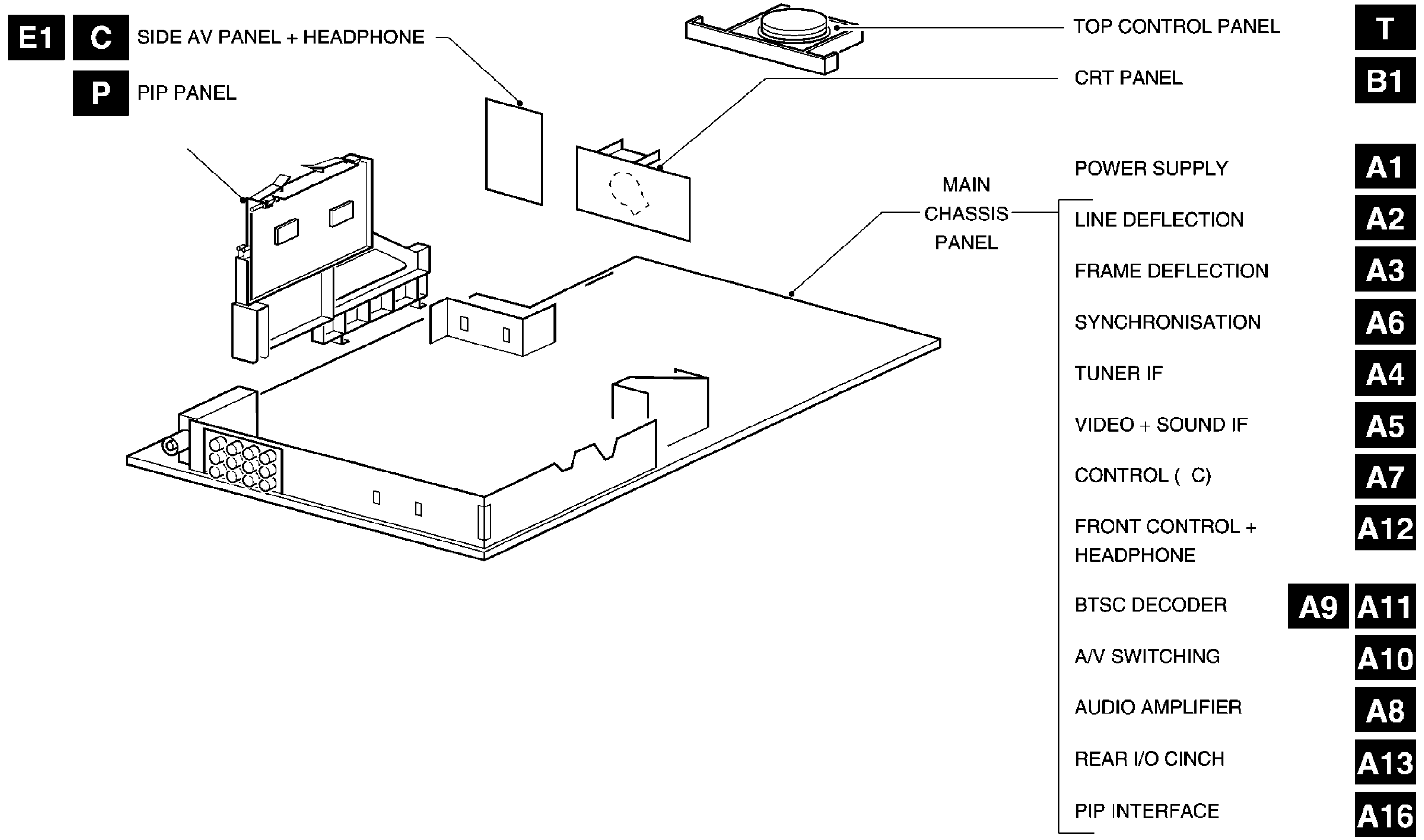


→ 50V / div DC
20us / div

V16

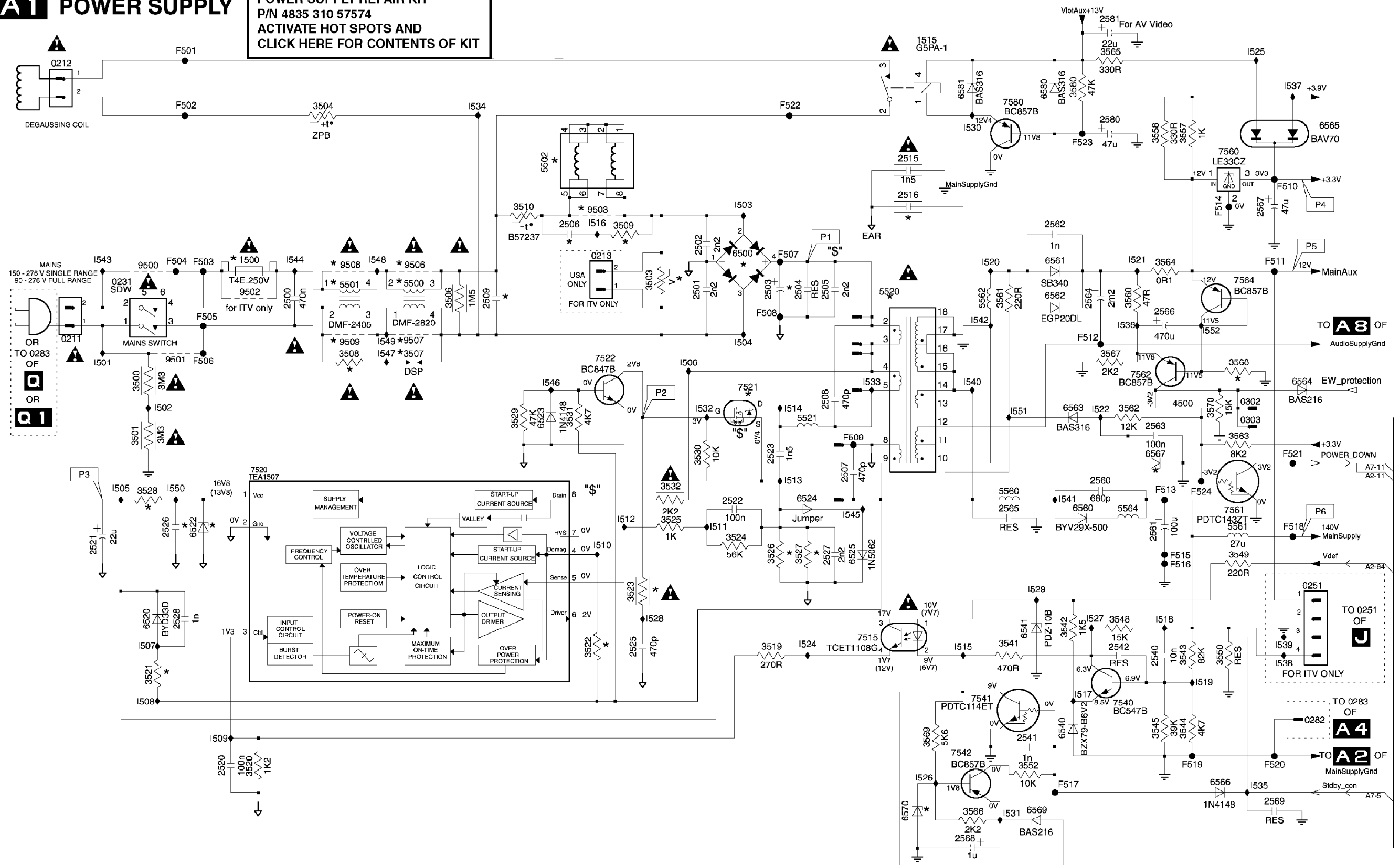


→ 50V / div DC
20us / div



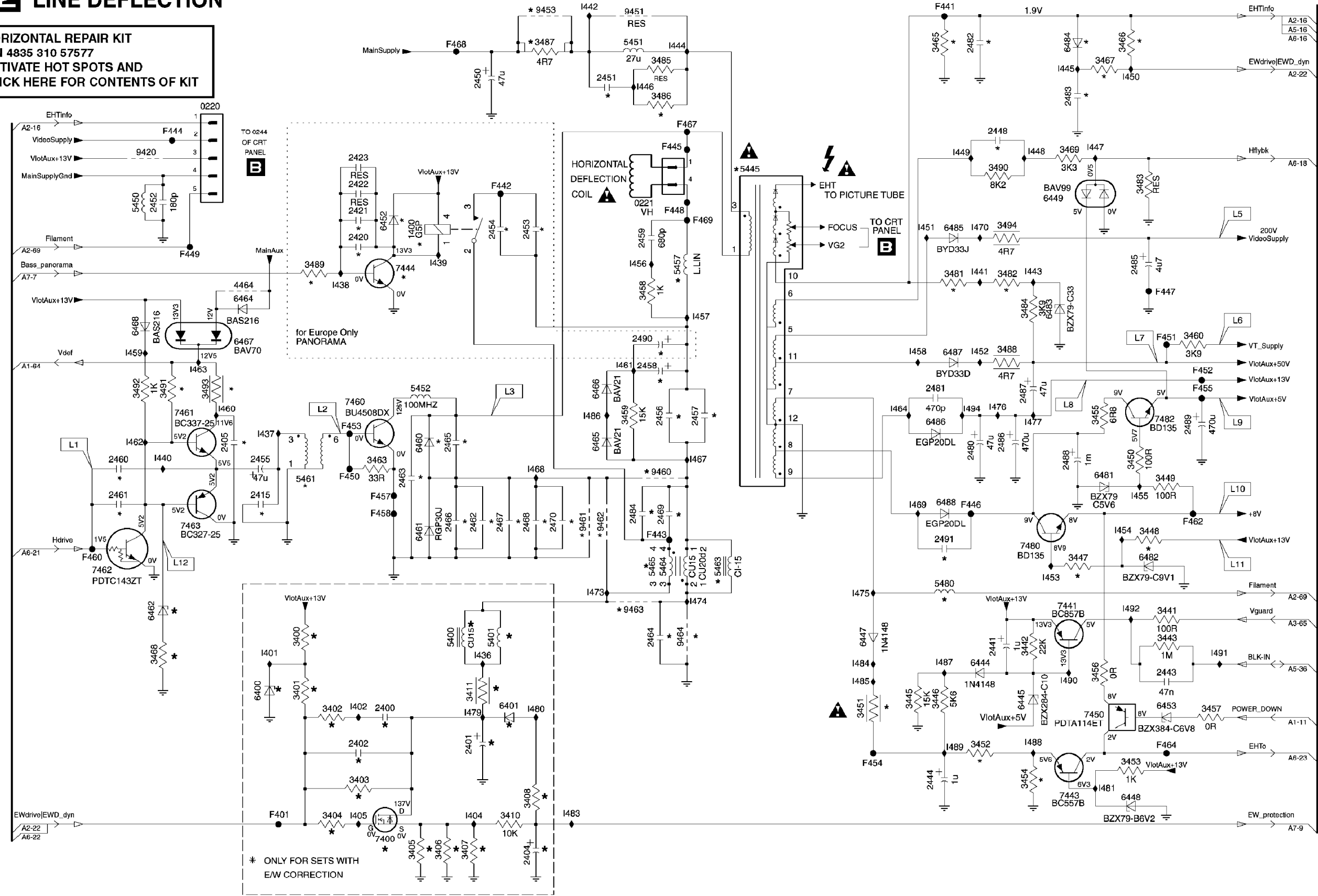
A1 POWER SUPPLY

POWER SUPPLY REPAIR KIT
P/N 4835 310 57574
ACTIVATE HOT SPOTS AND
CLICK HERE FOR CONTENTS OF KIT



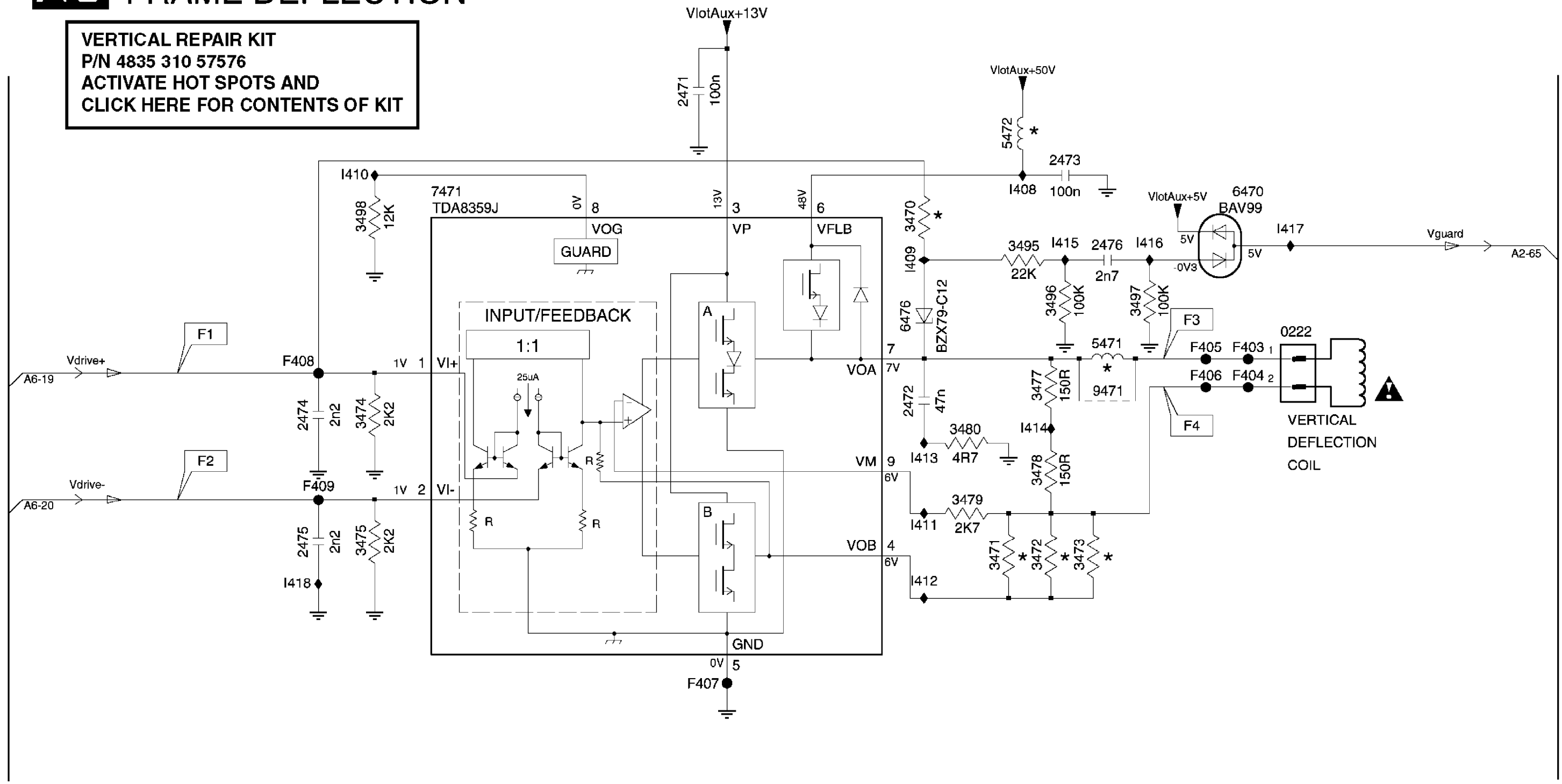
A2 LINE DEFLECTION

HORIZONTAL REPAIR KIT
 P/N 4835 310 5757
 ACTIVATE HOT SPOTS AND
 CLICK HERE FOR CONTENTS OF KIT

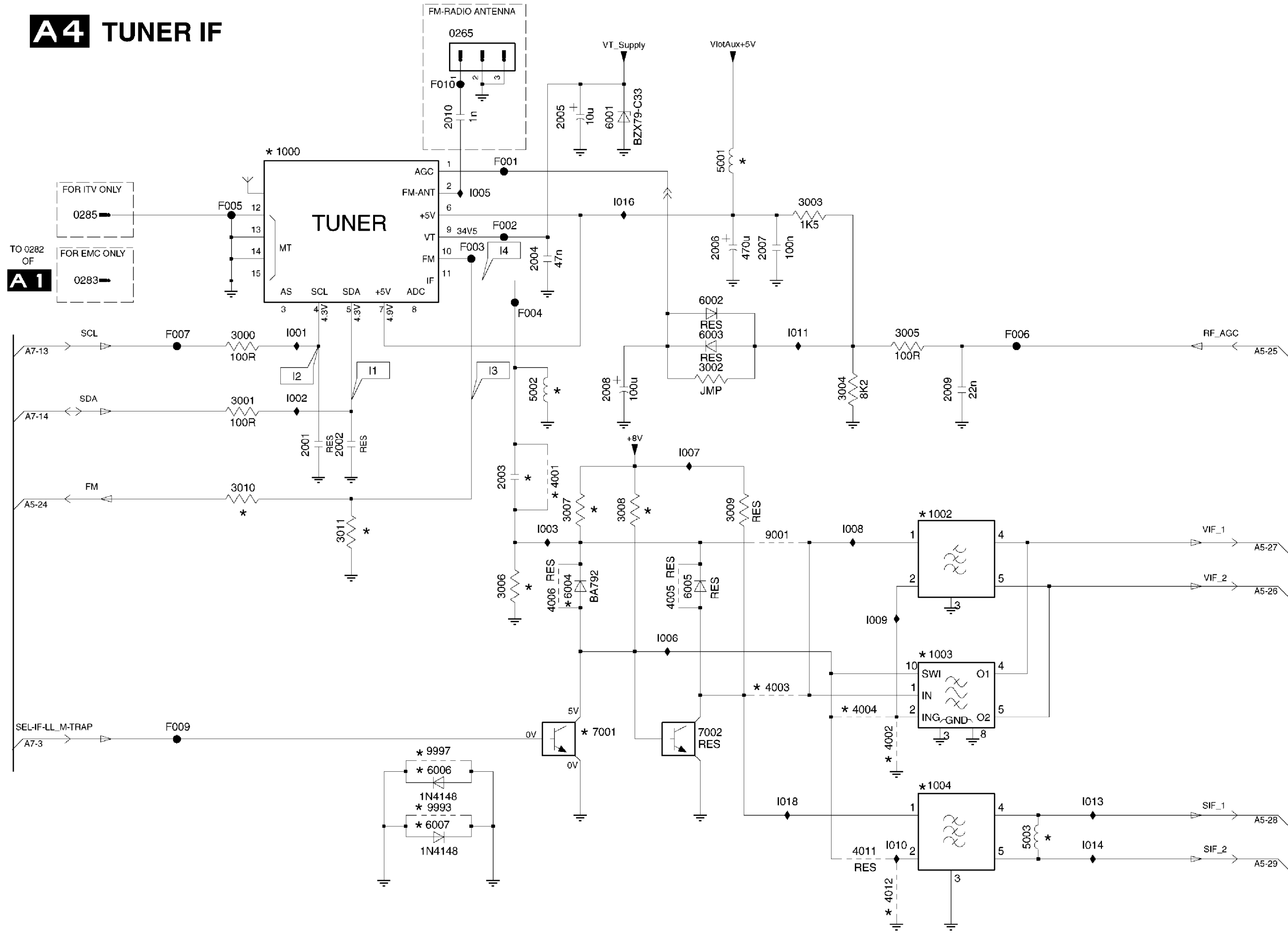


A3 FRAME DEFLECTION

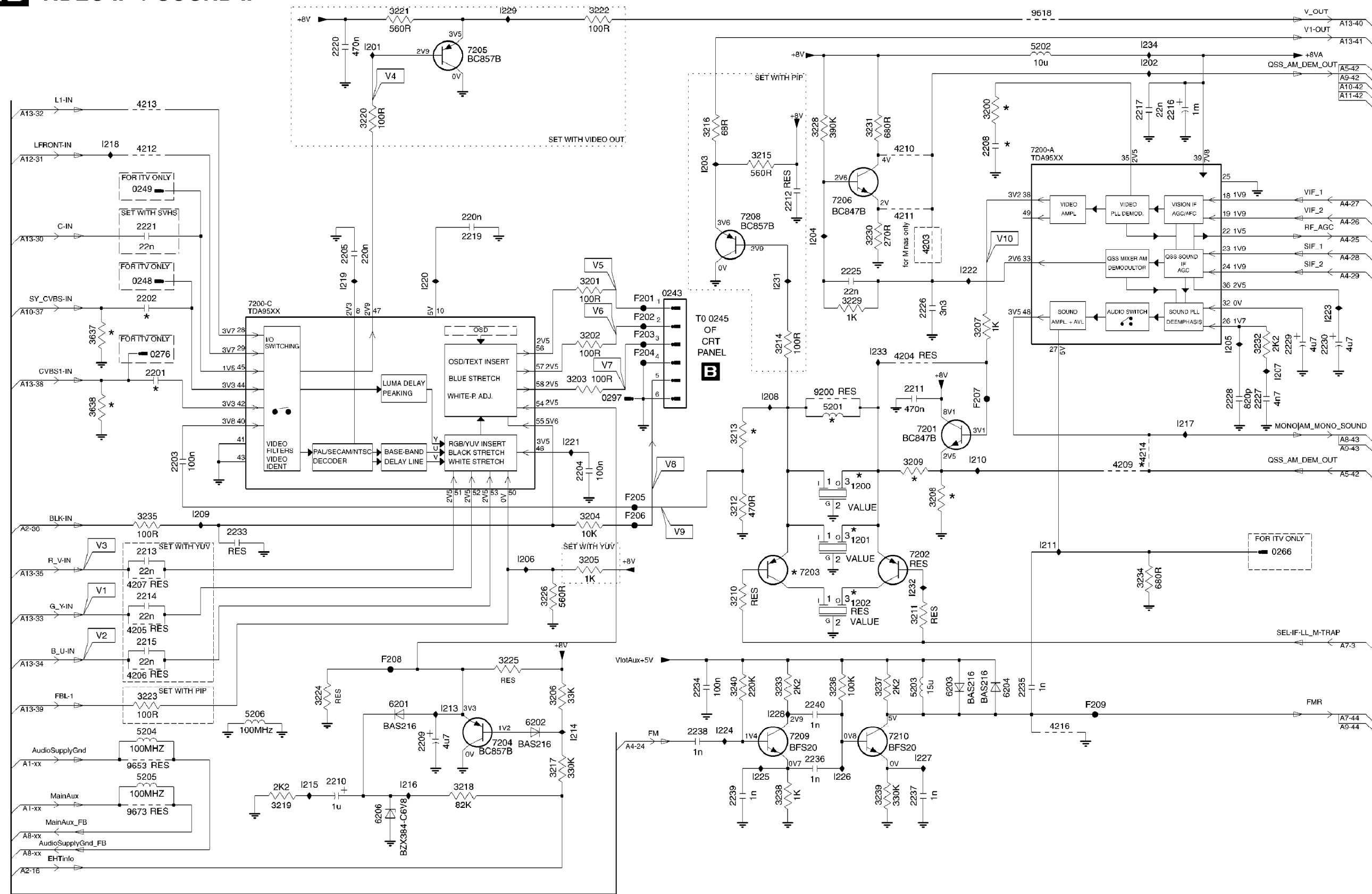
VERTICAL REPAIR KIT
P/N 4835 310 57576
ACTIVATE HOT SPOTS AND
CLICK HERE FOR CONTENTS OF KIT



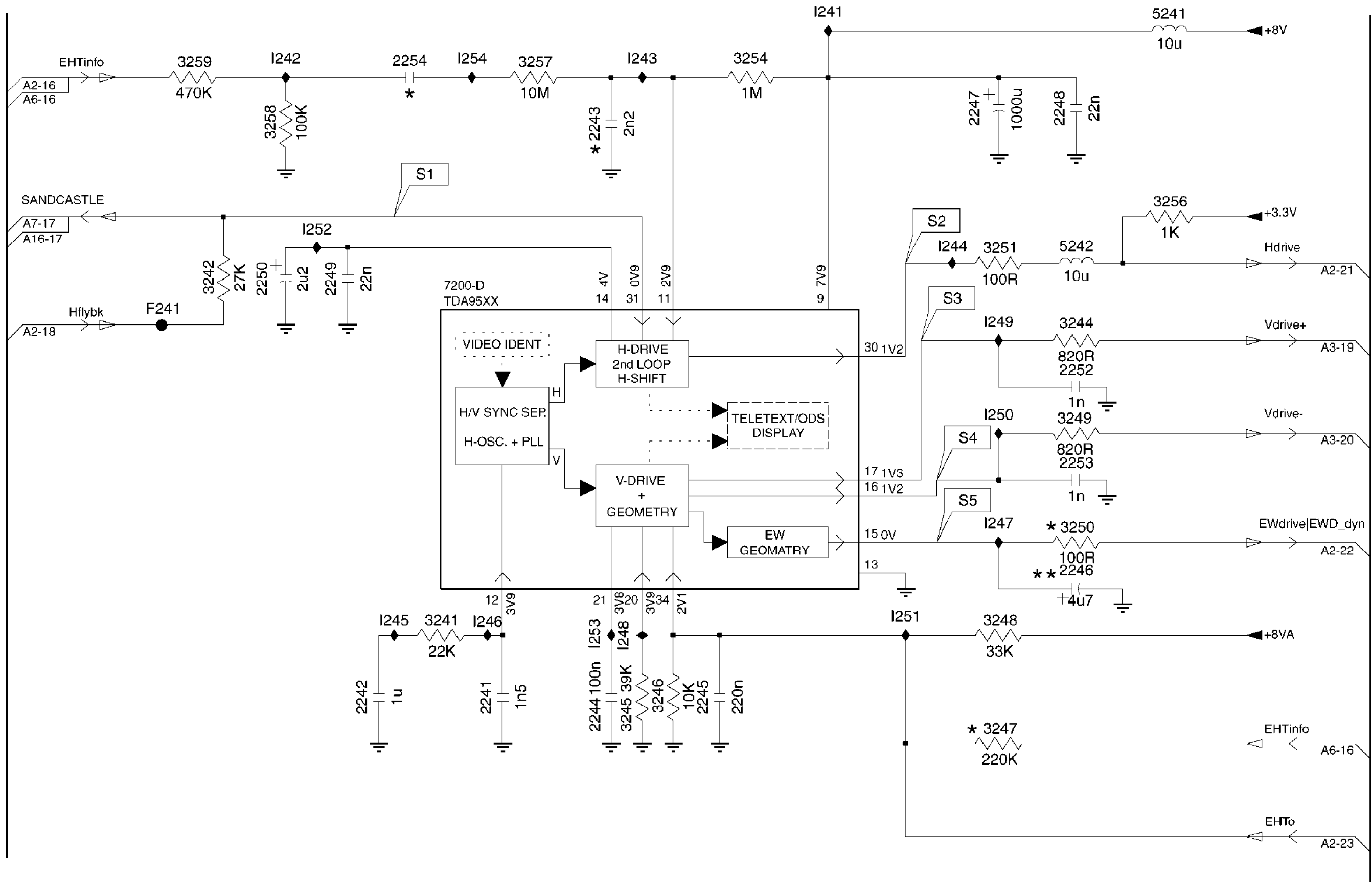
A4 TUNER IF

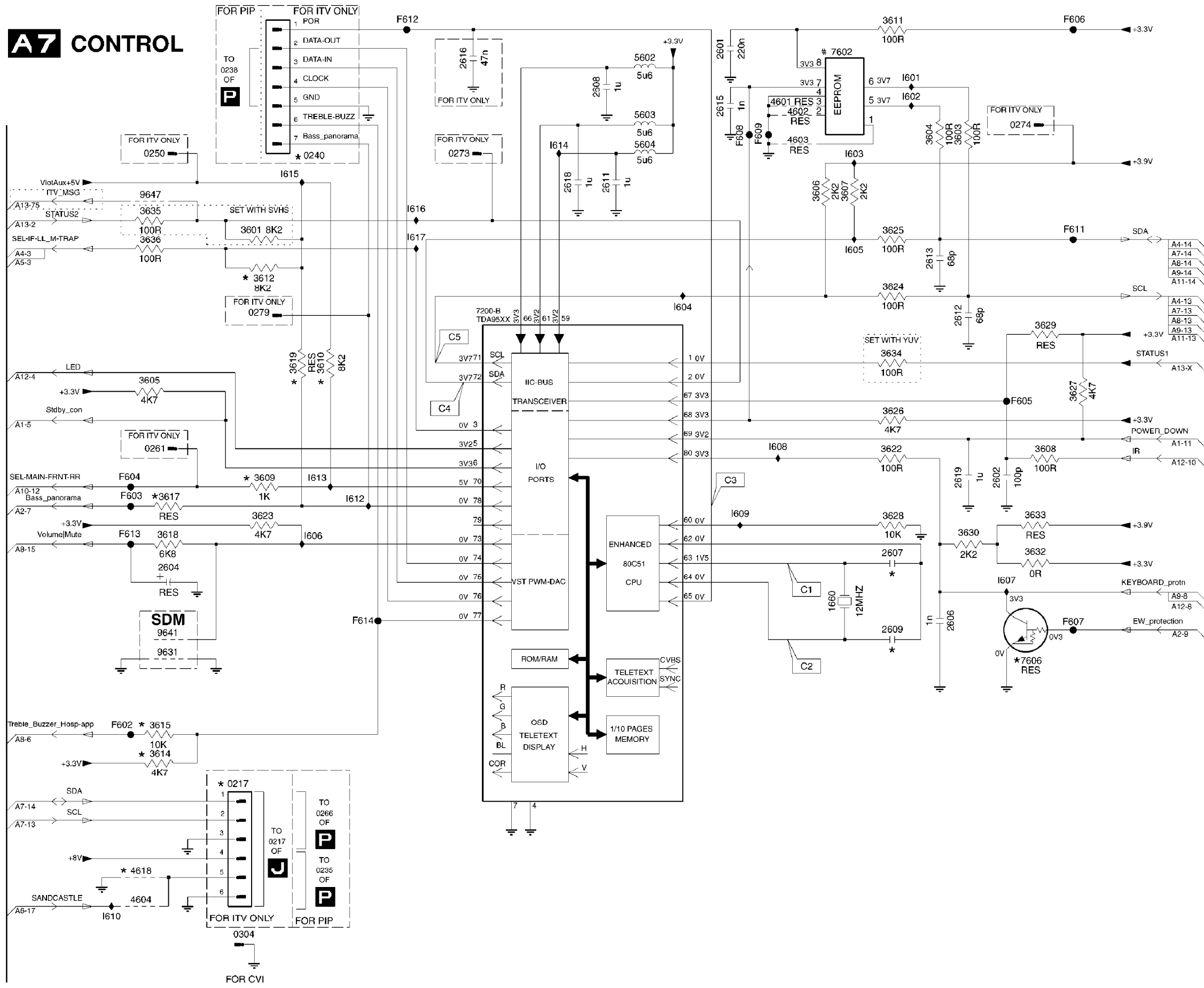


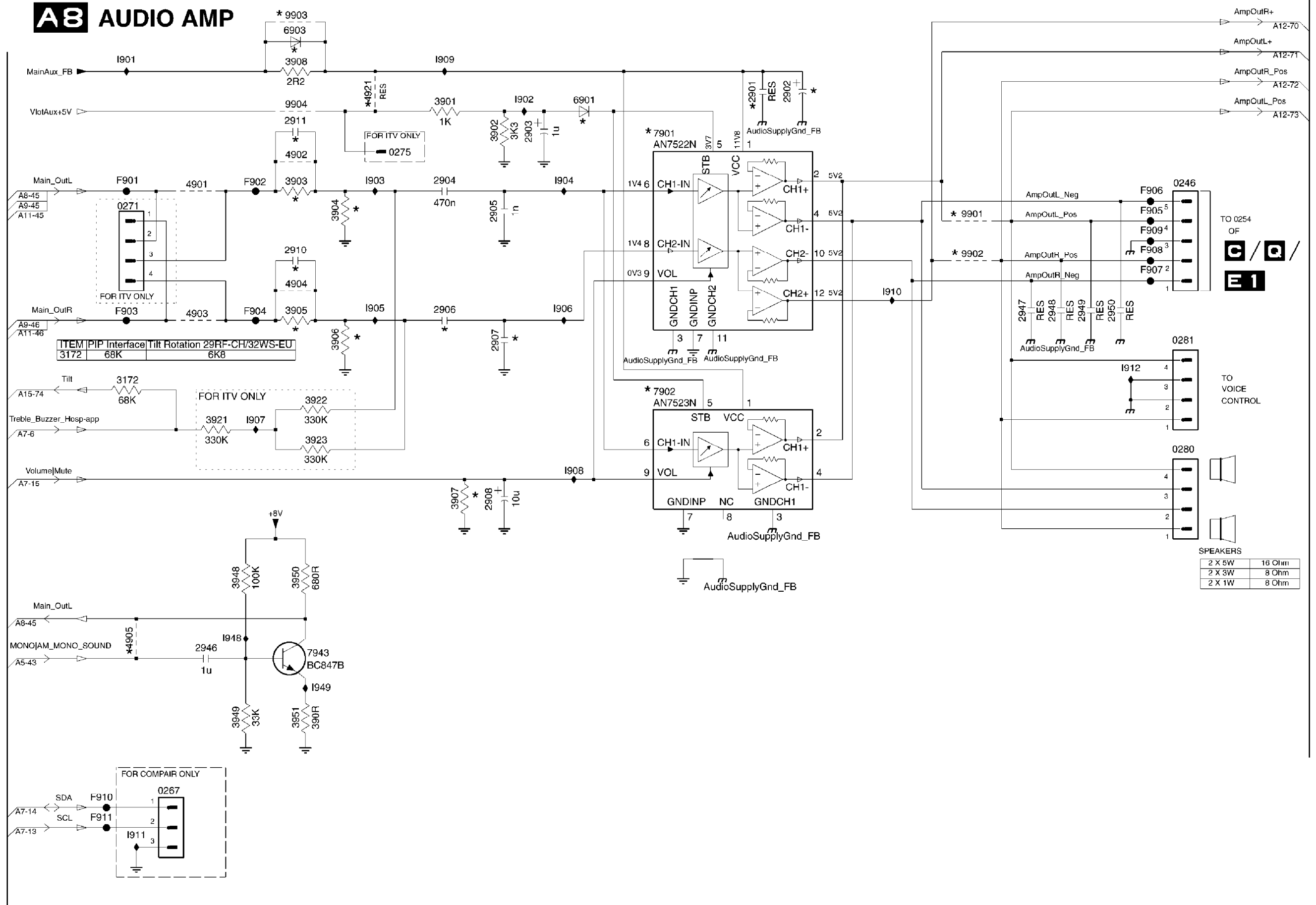
A5 VIDEO IF + SOUND IF



A6 SYNCHRONIZATION

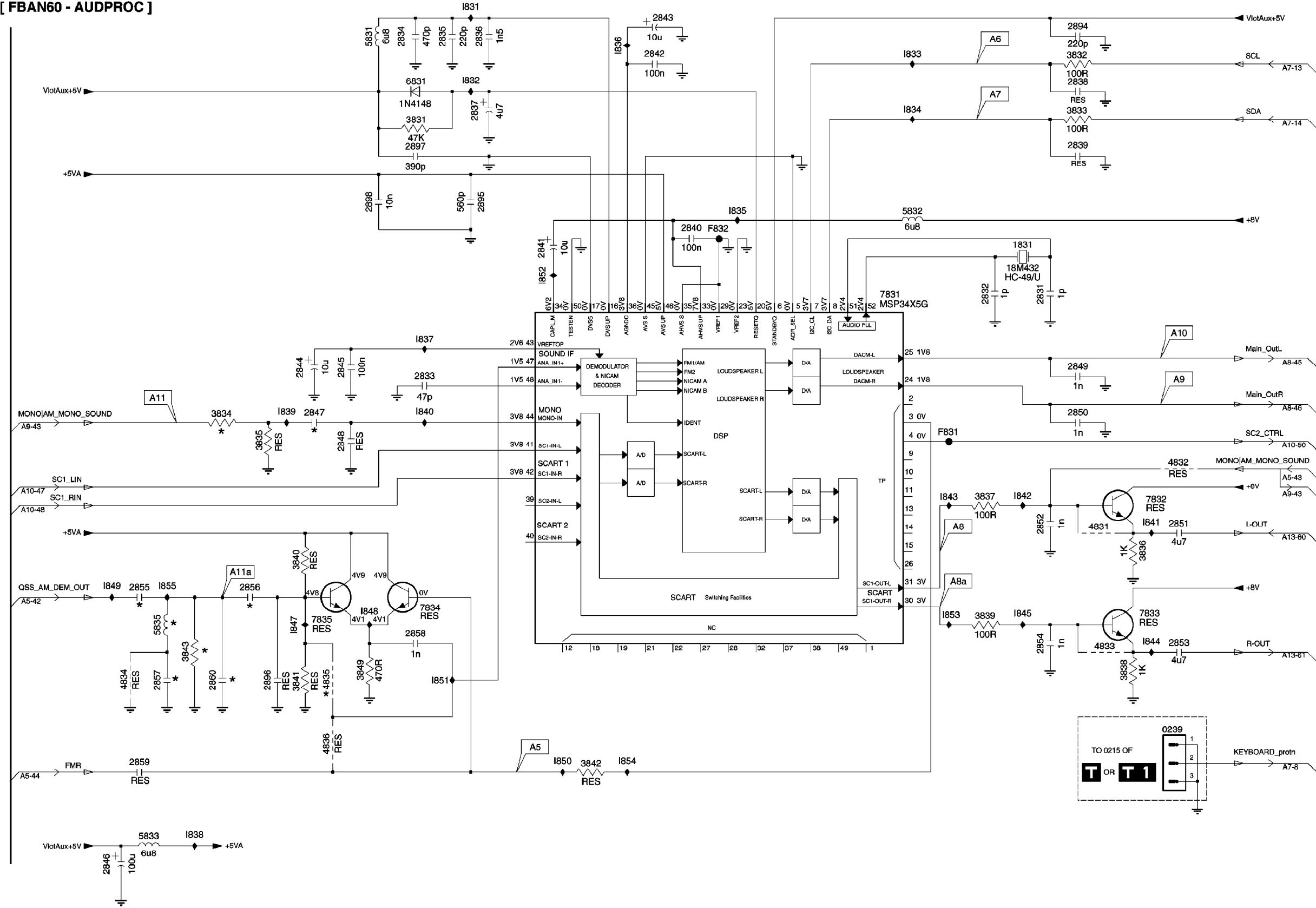




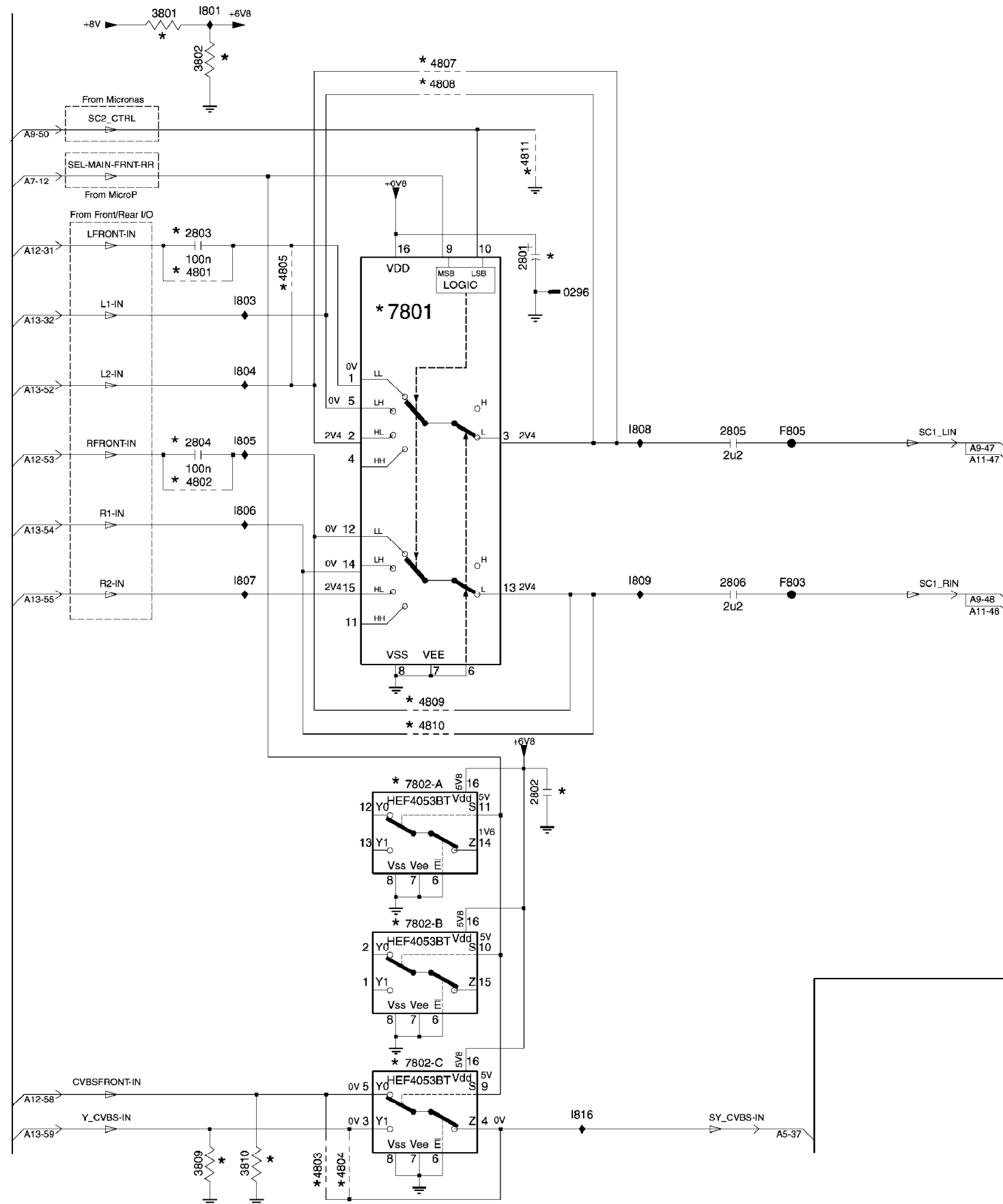


A9 NICAM + 2CS + BTSC (STEREO/SAP) DECODER

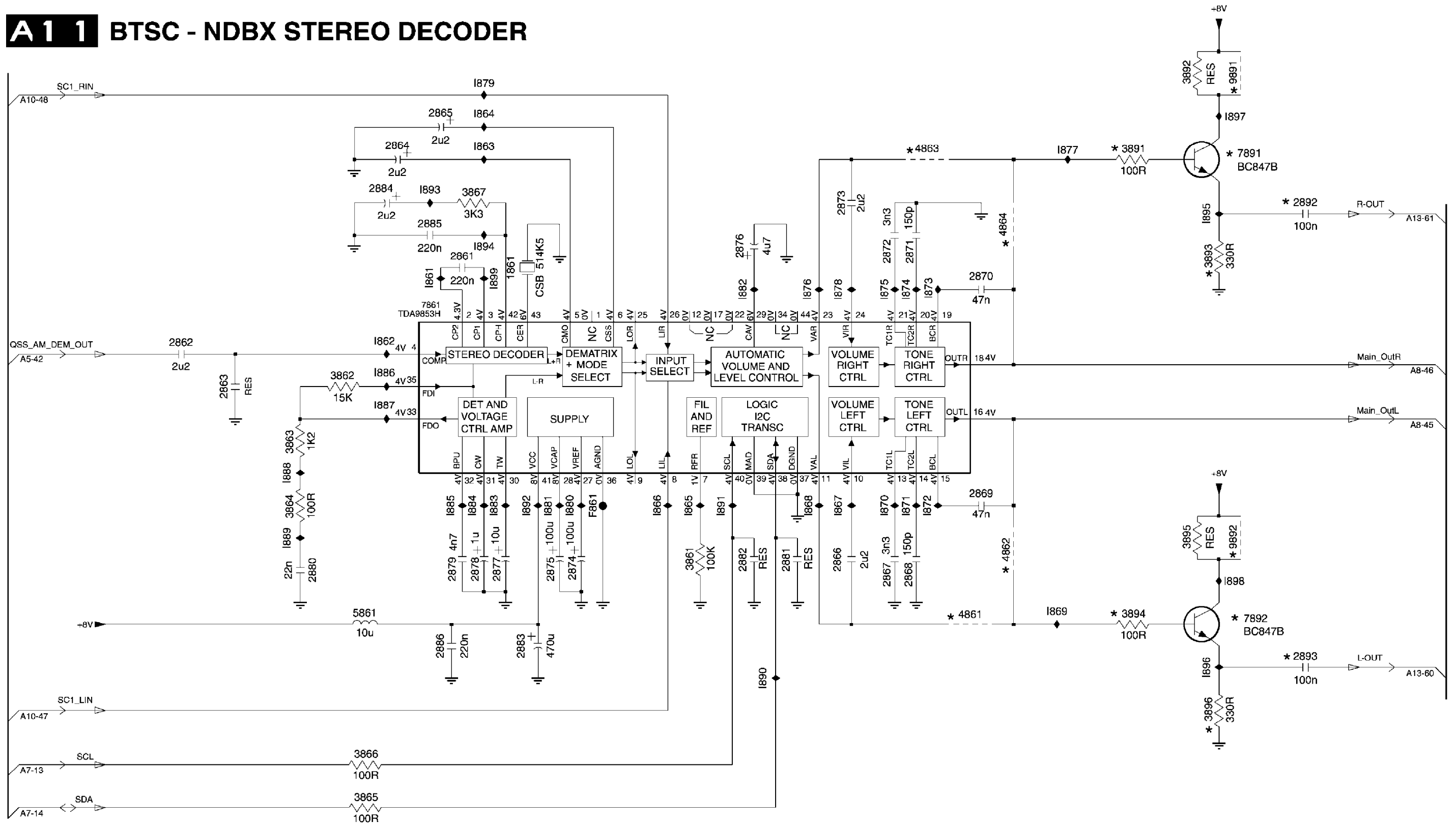
[FBAN60 - AUDPROC]



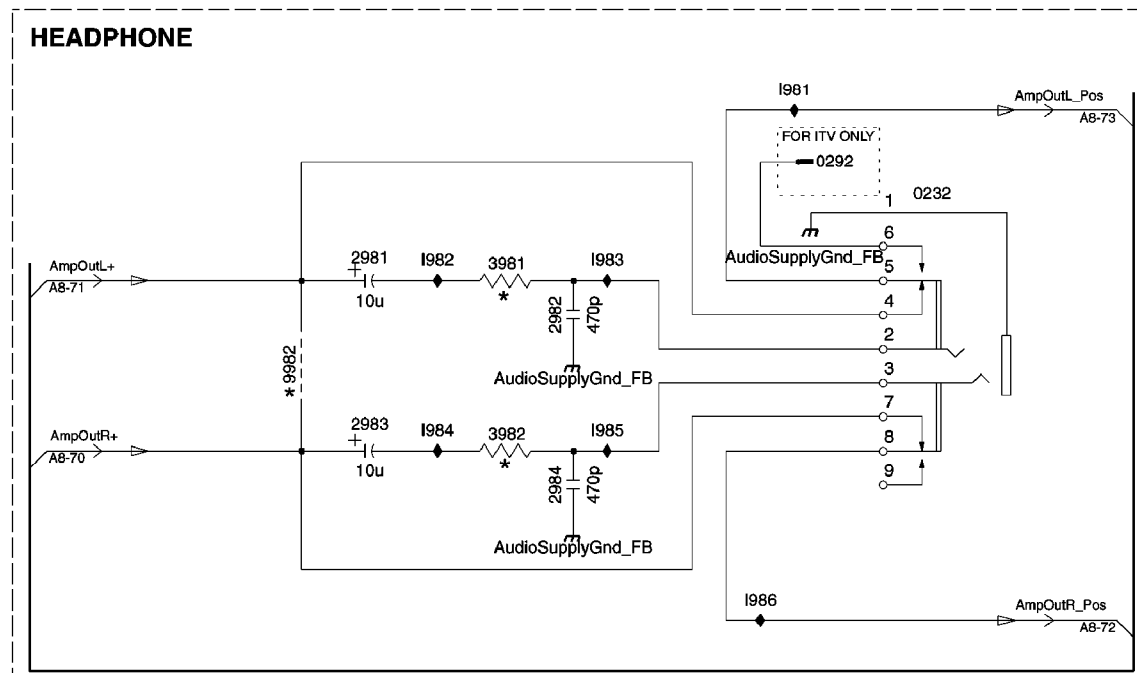
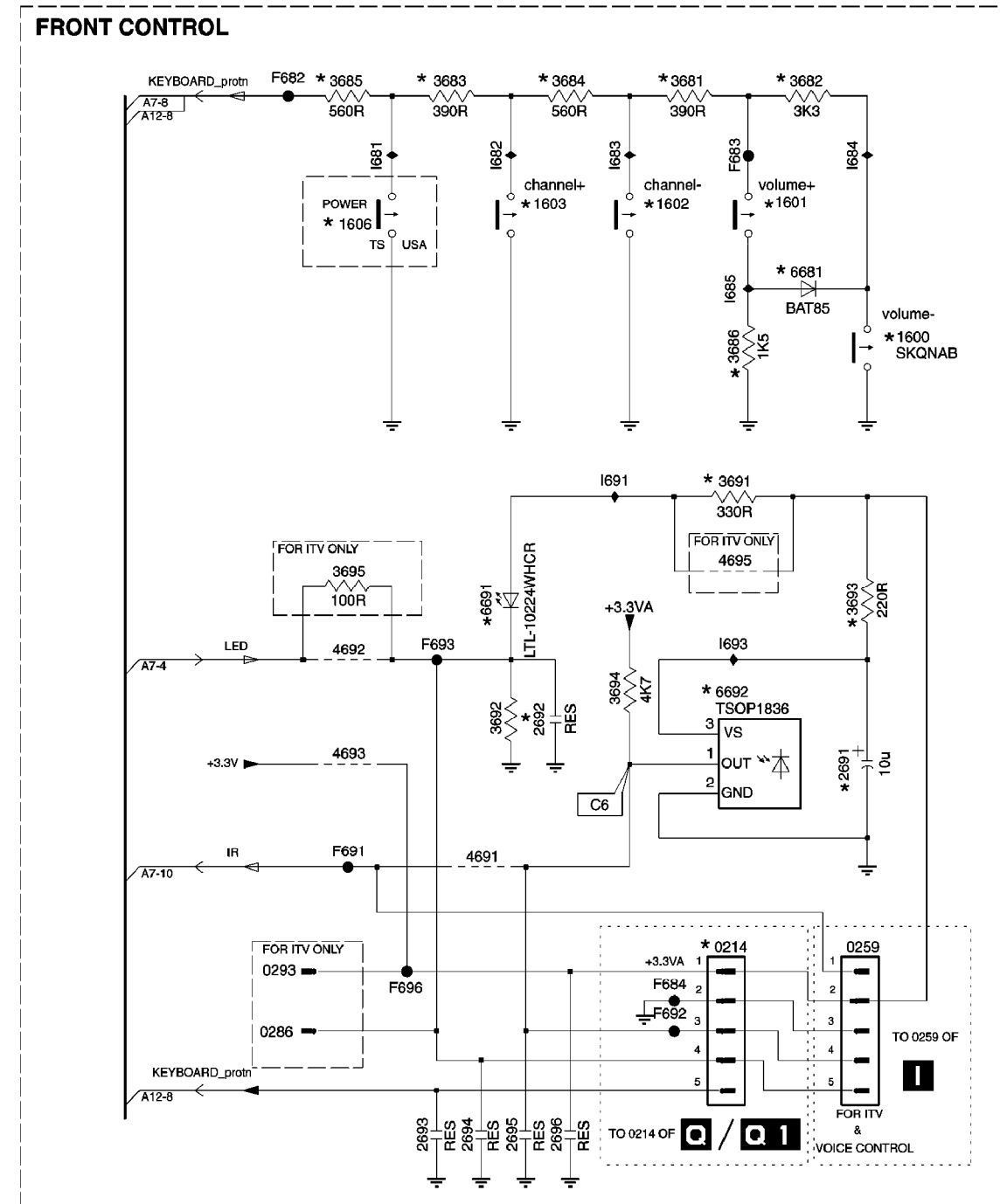
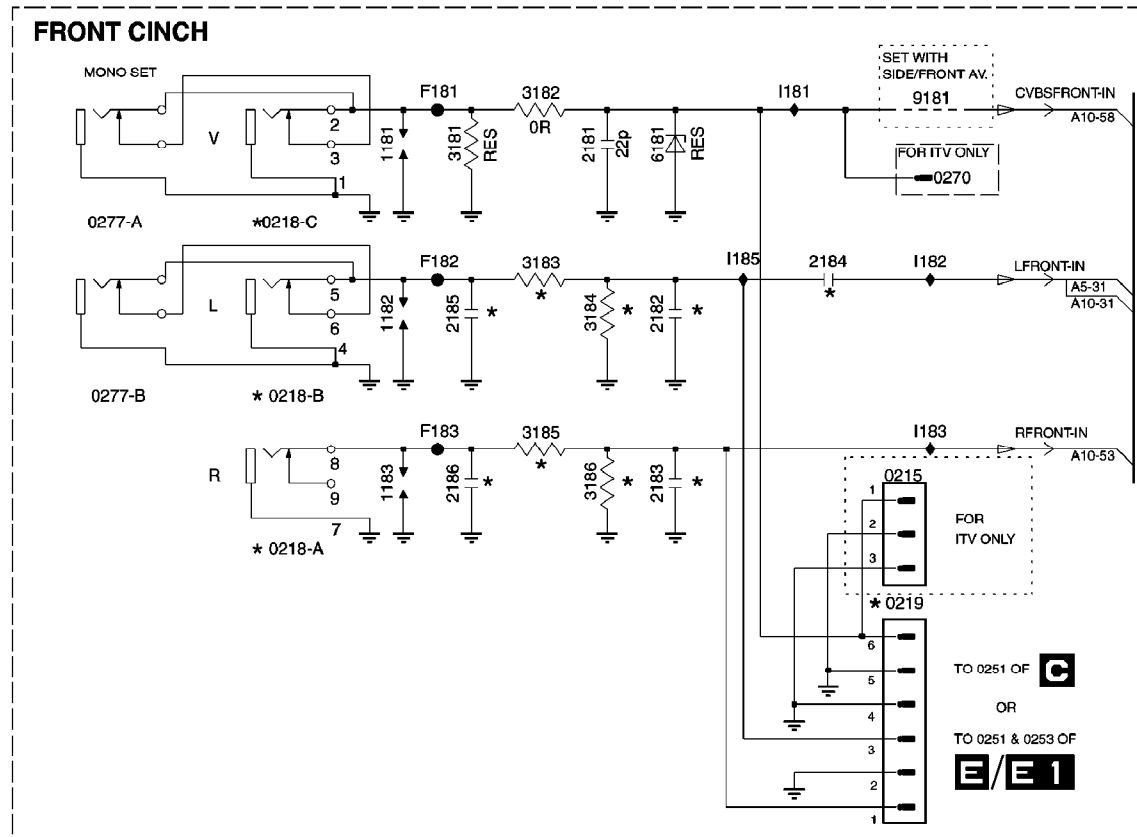
A10 AUDIO/VIDEO SOURCE SWITCHING



A11 BTSC - NDBX STEREO DECODER

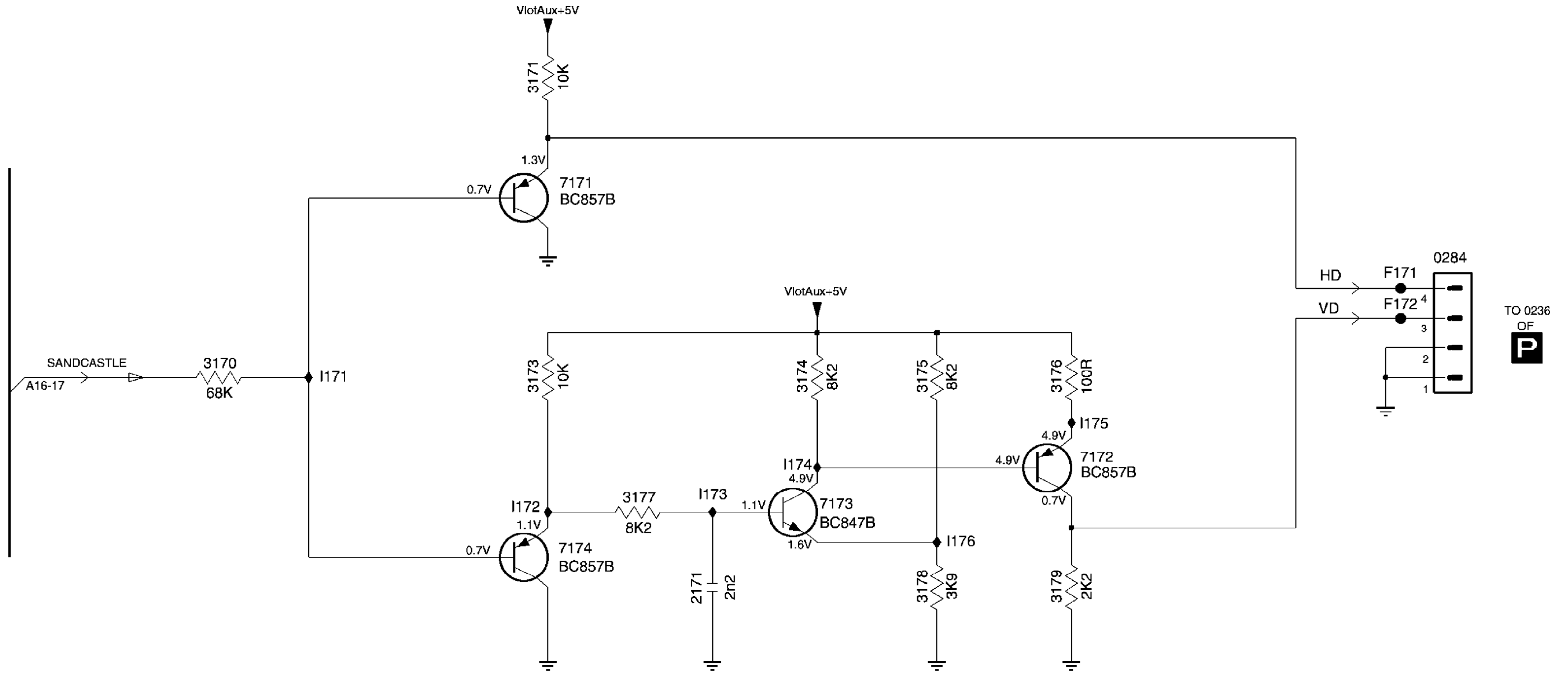


A12 FRONT I/O + FRONT CONTROL + HEADPHONE

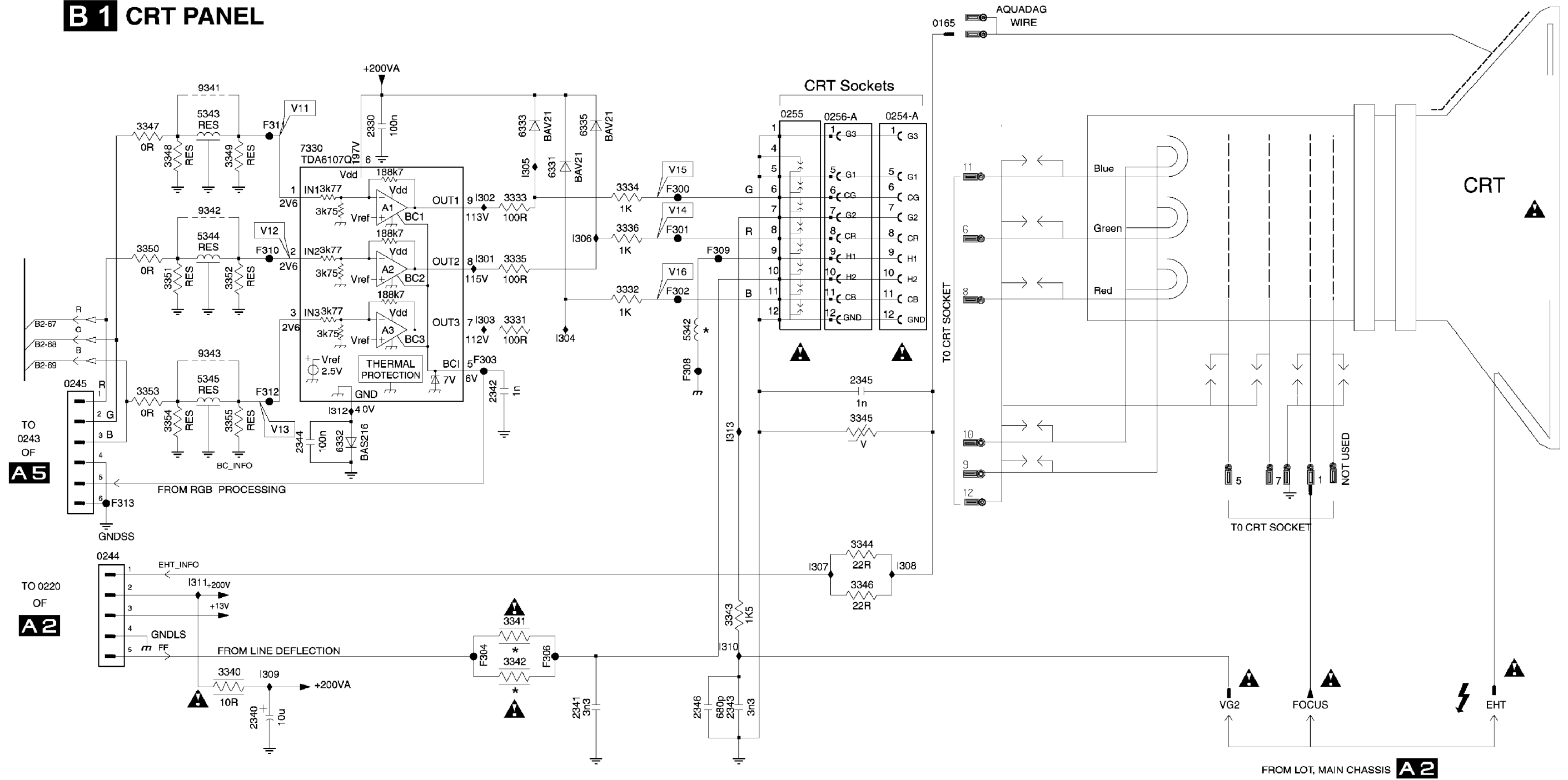


For Engg Purpose Only

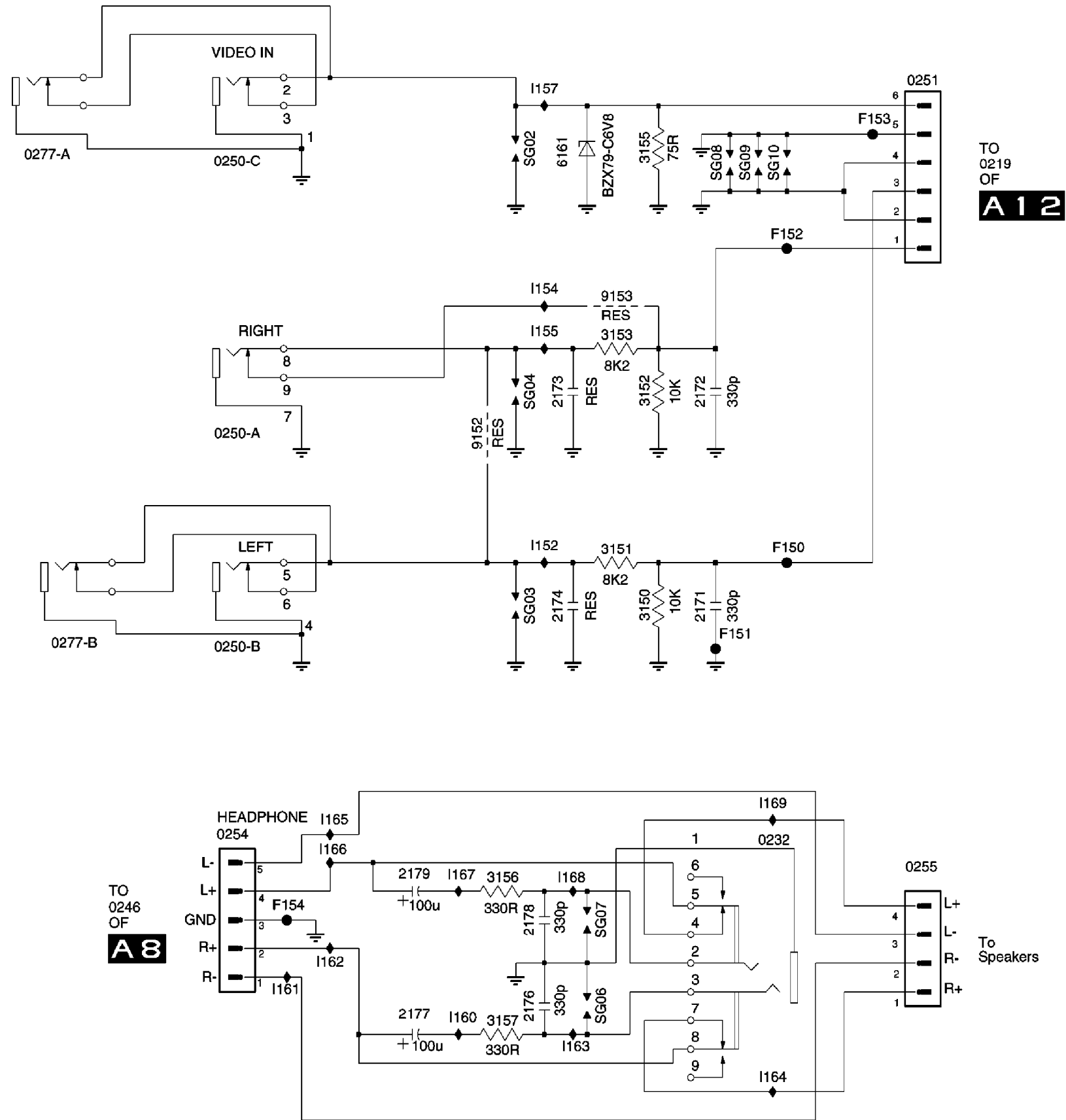
A16 PIP INTERFACE



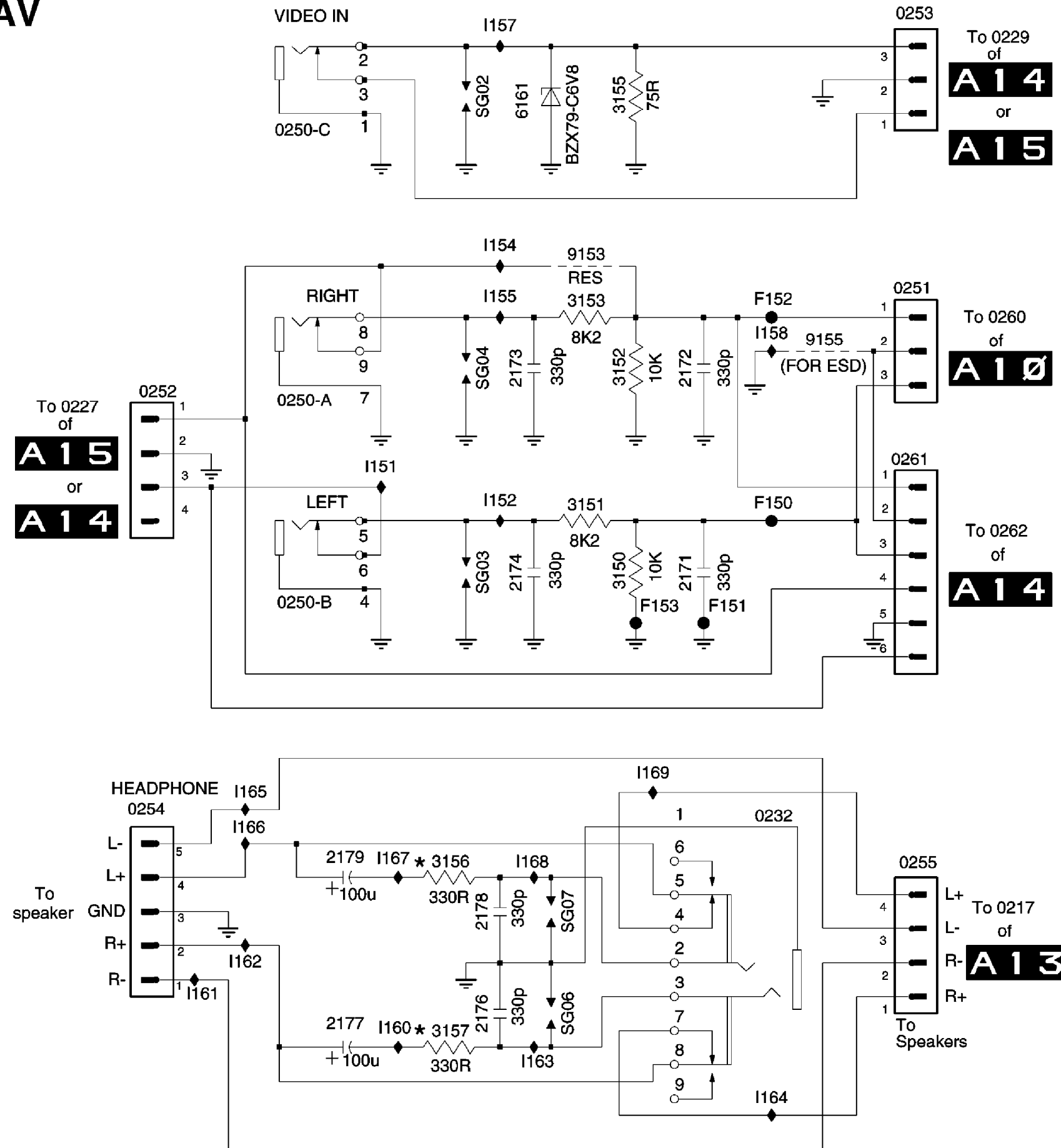
B 1 CRT PANEL



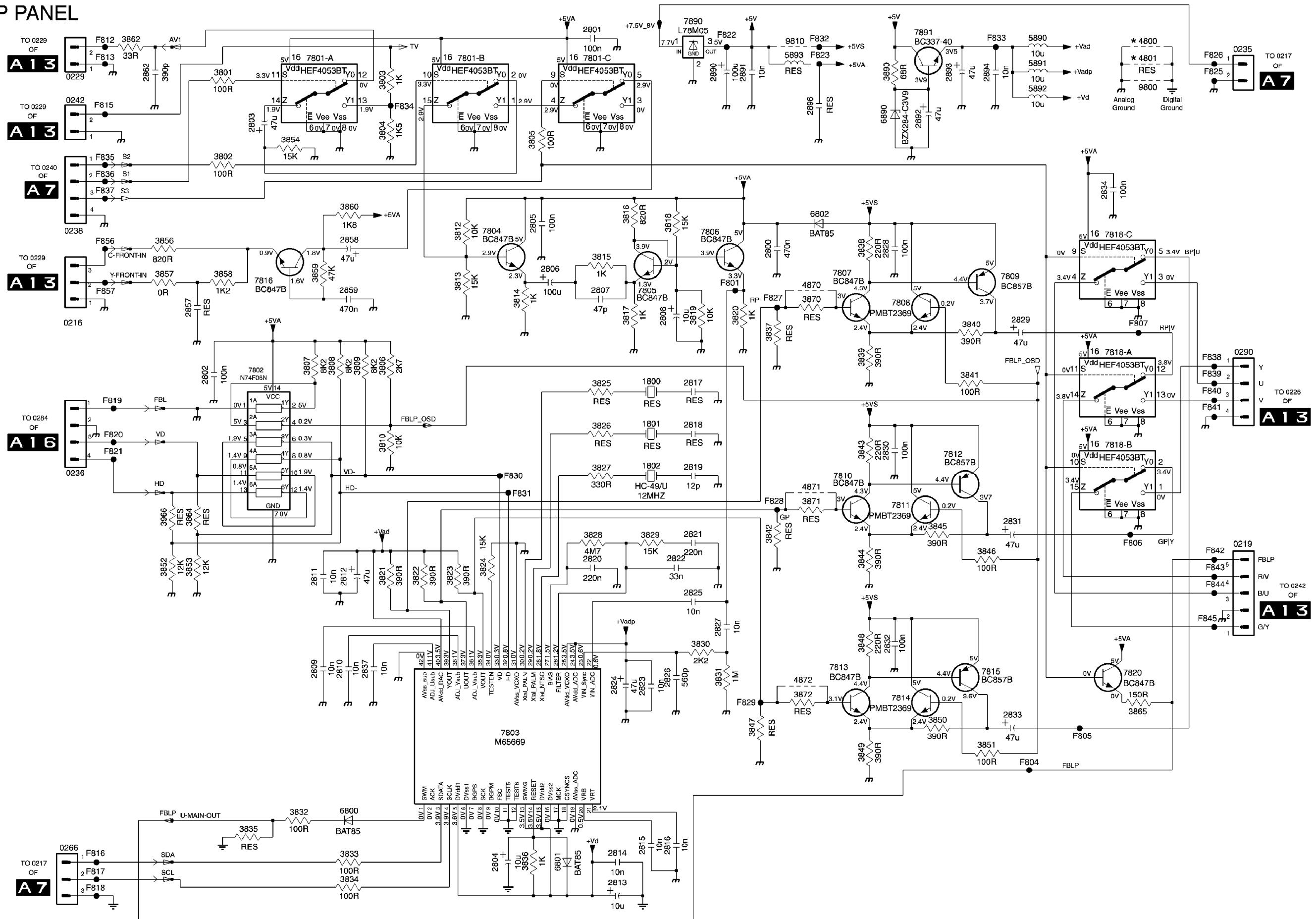
SIDE AV PANEL + HP PANEL



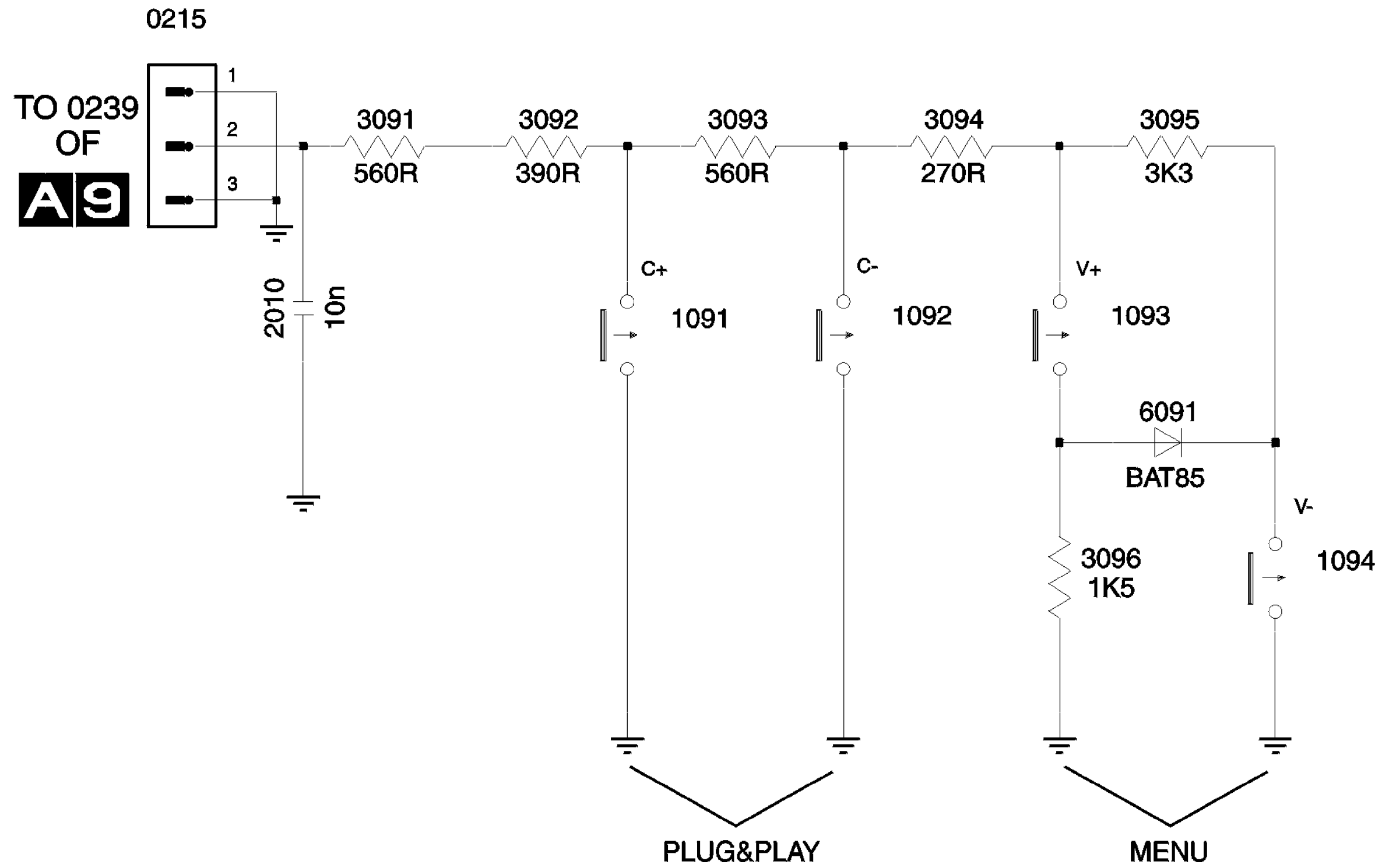
E SIDE AV



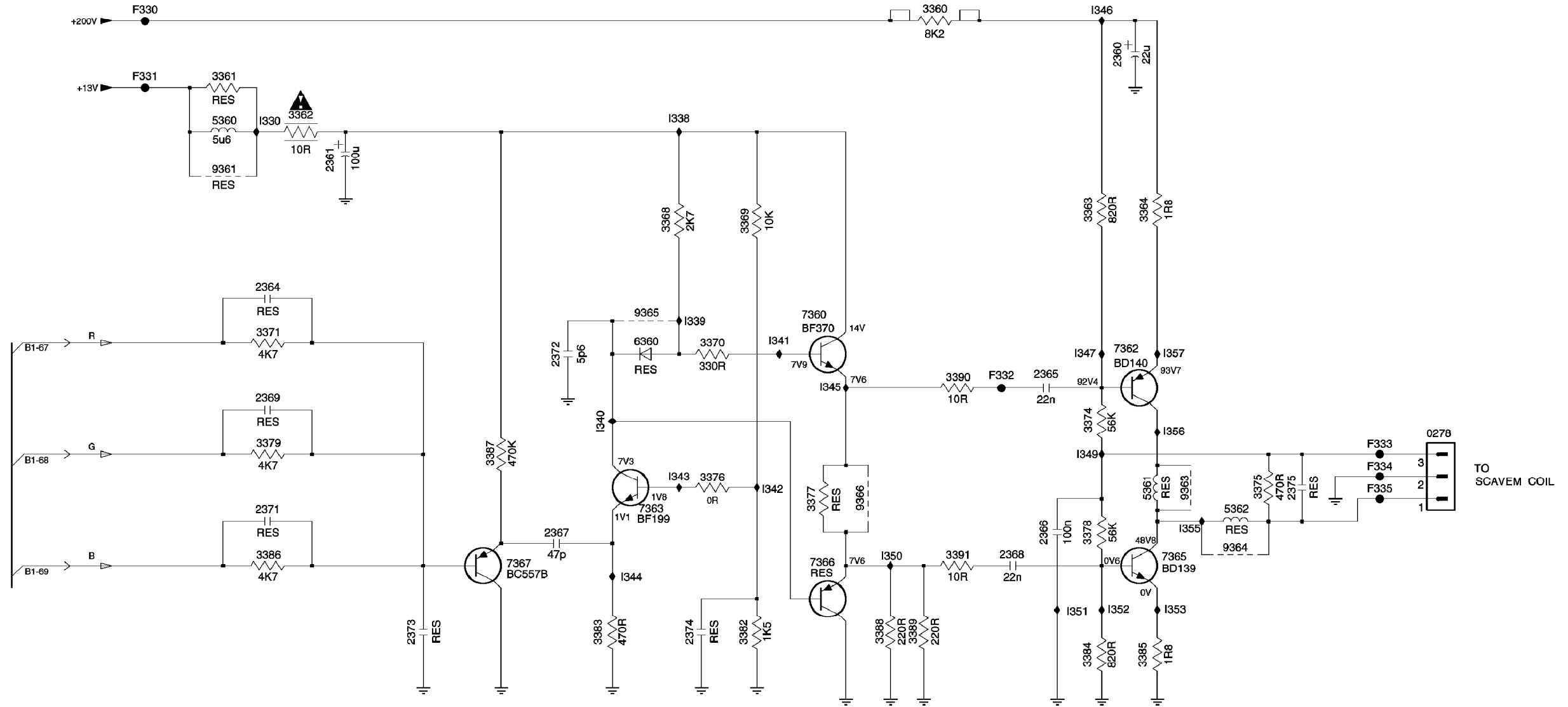
PIP PANEL

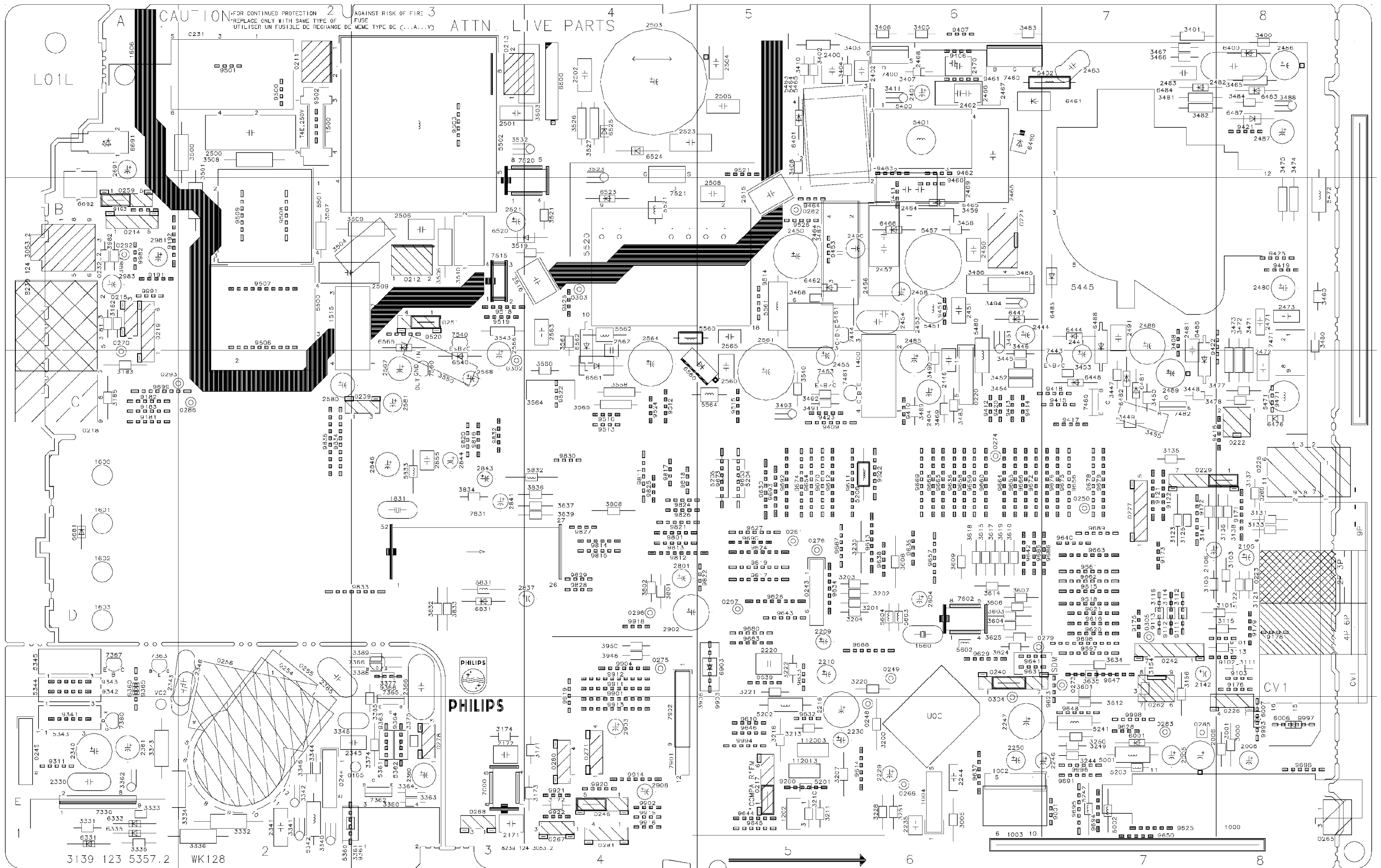


T TOP CONTROL PANEL (RF)



B2 SCAVEM





CAUTION

FOR CONTINUED PROTECTION
REPLACE ONLY WITH SAME TYPE OF FUSE
UTILISER UN FUSIBLE DE REMPLACER DE MEME TYPE DE (...)

ATTN. LIVE PARTS

PHILIPS



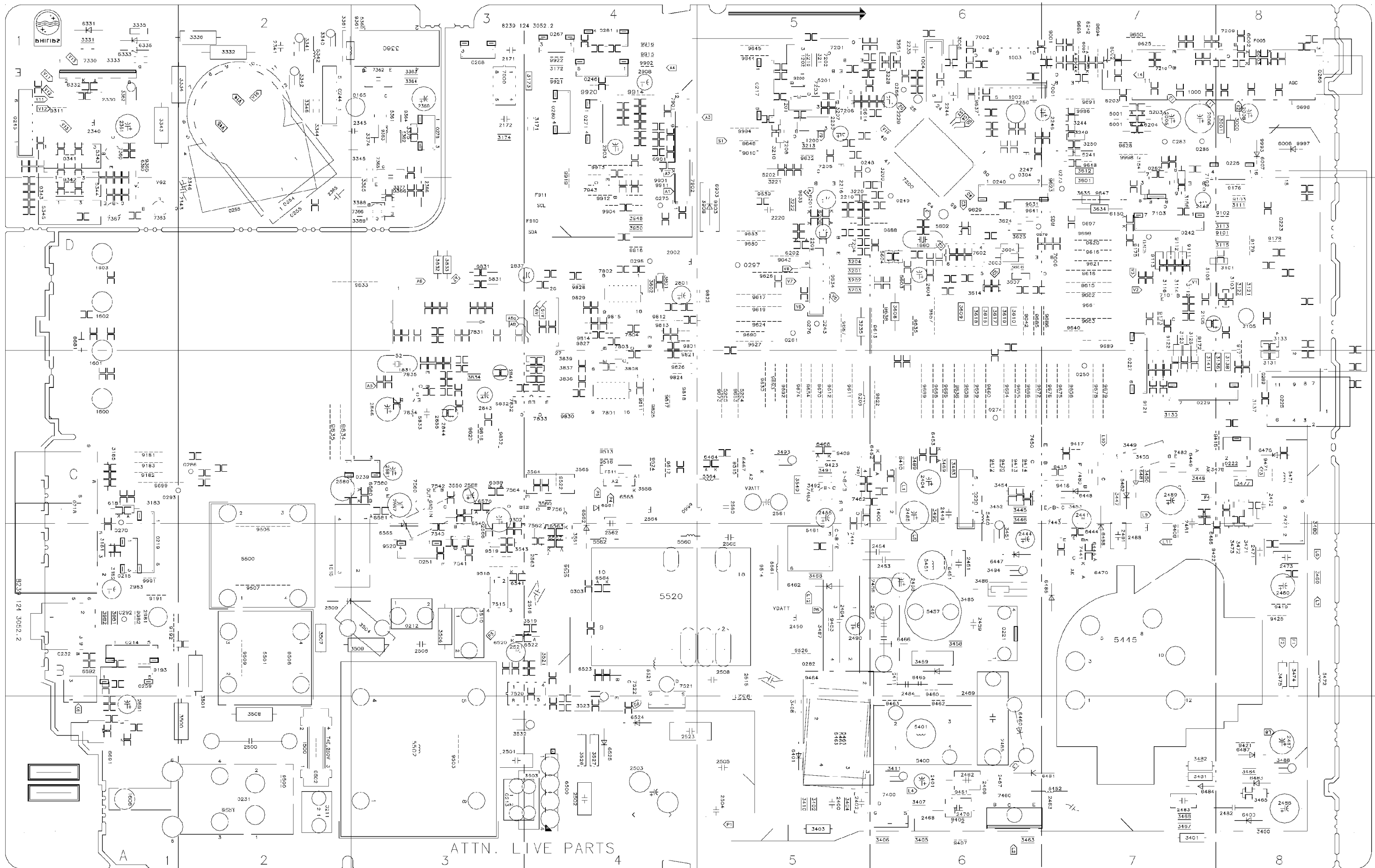
L01L

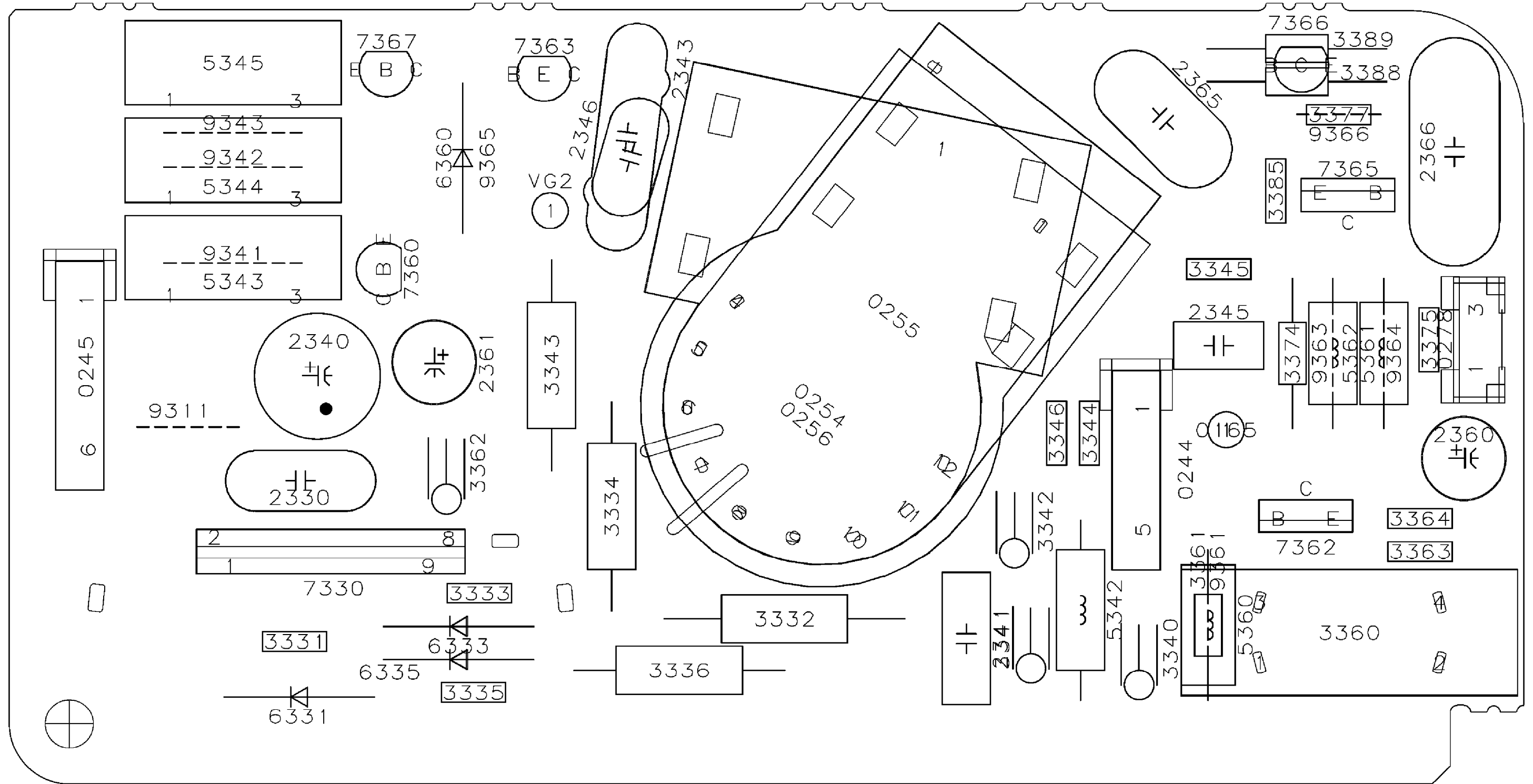
3139 123 5357.2 WK128

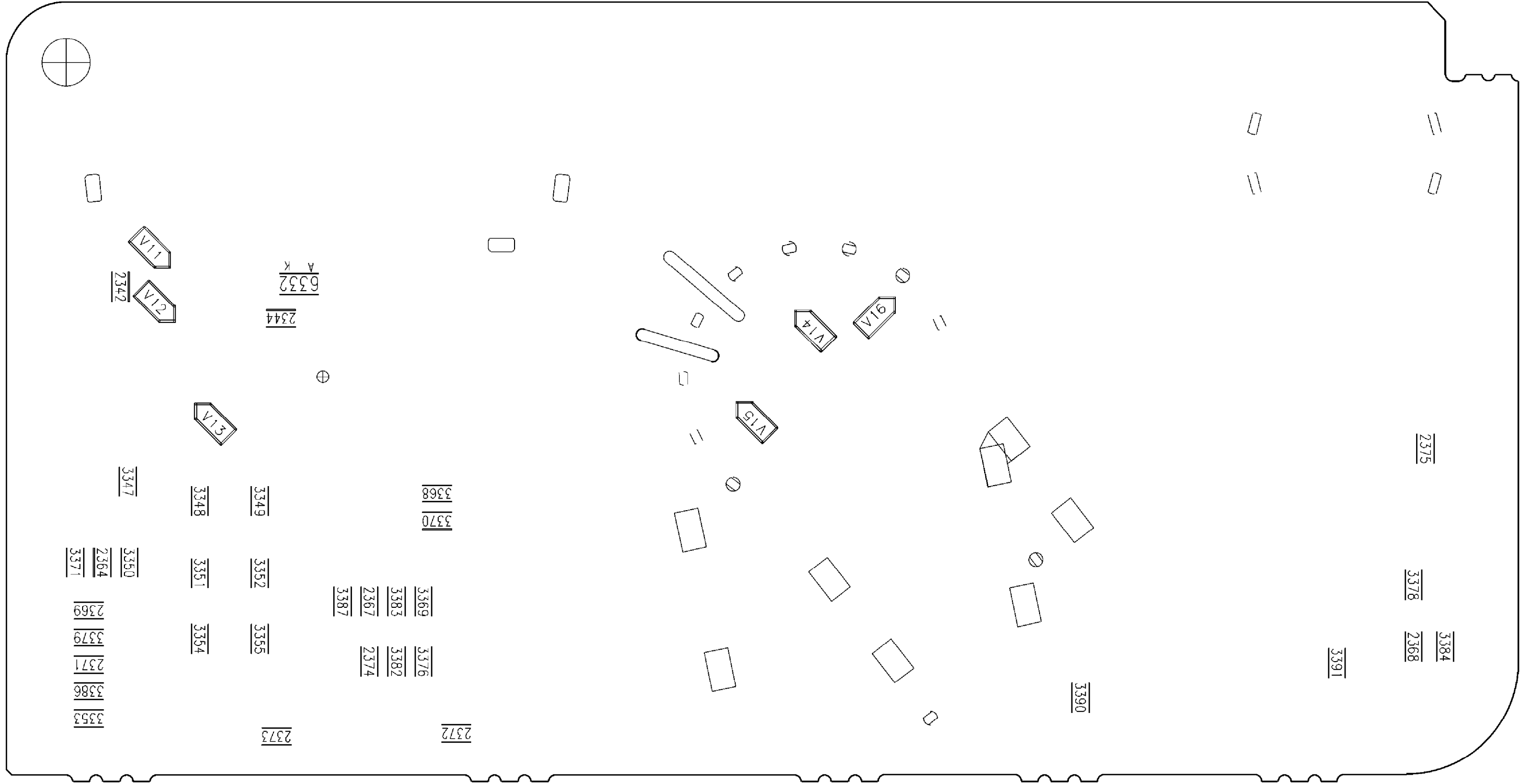
UOC

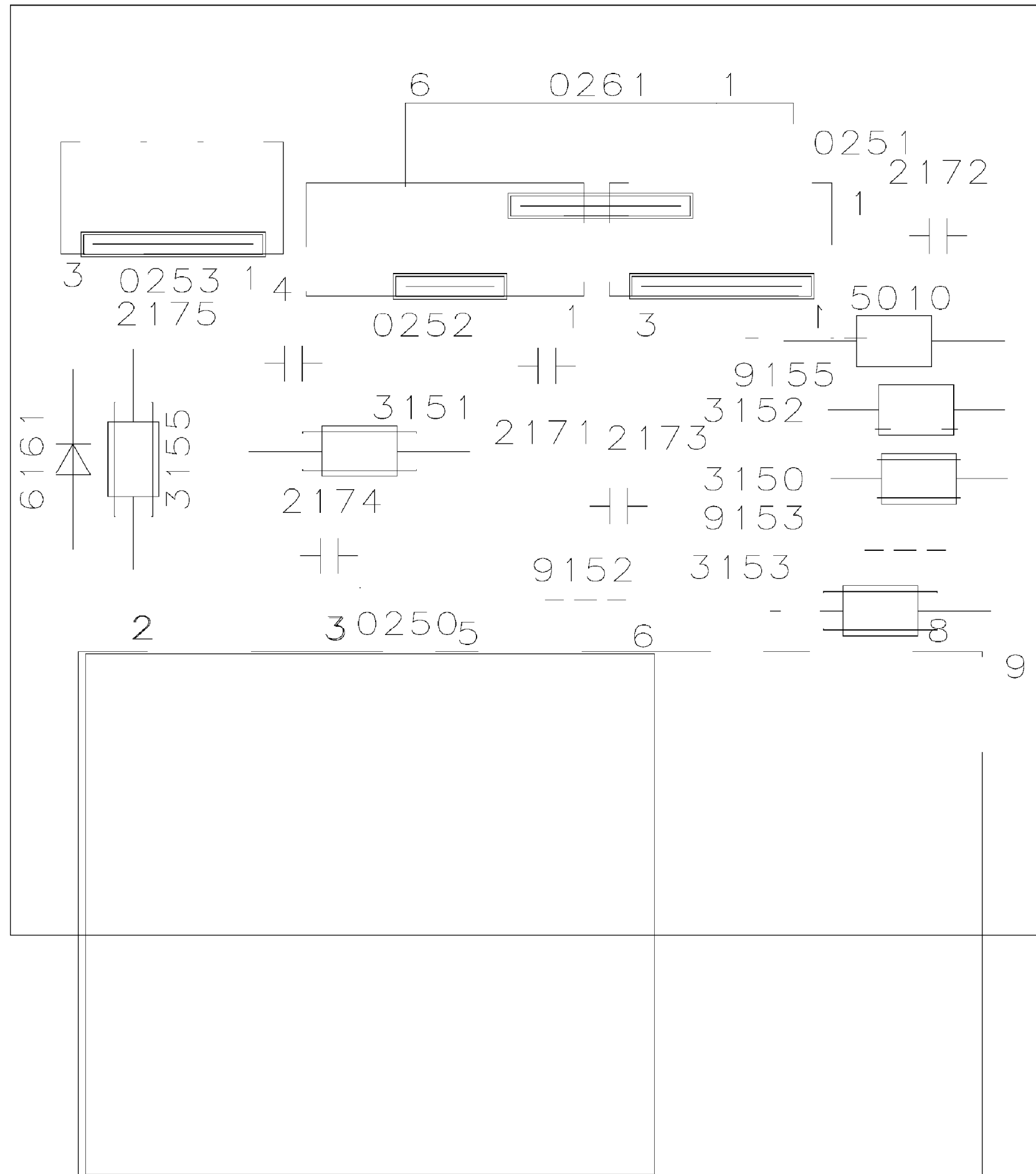
CV1

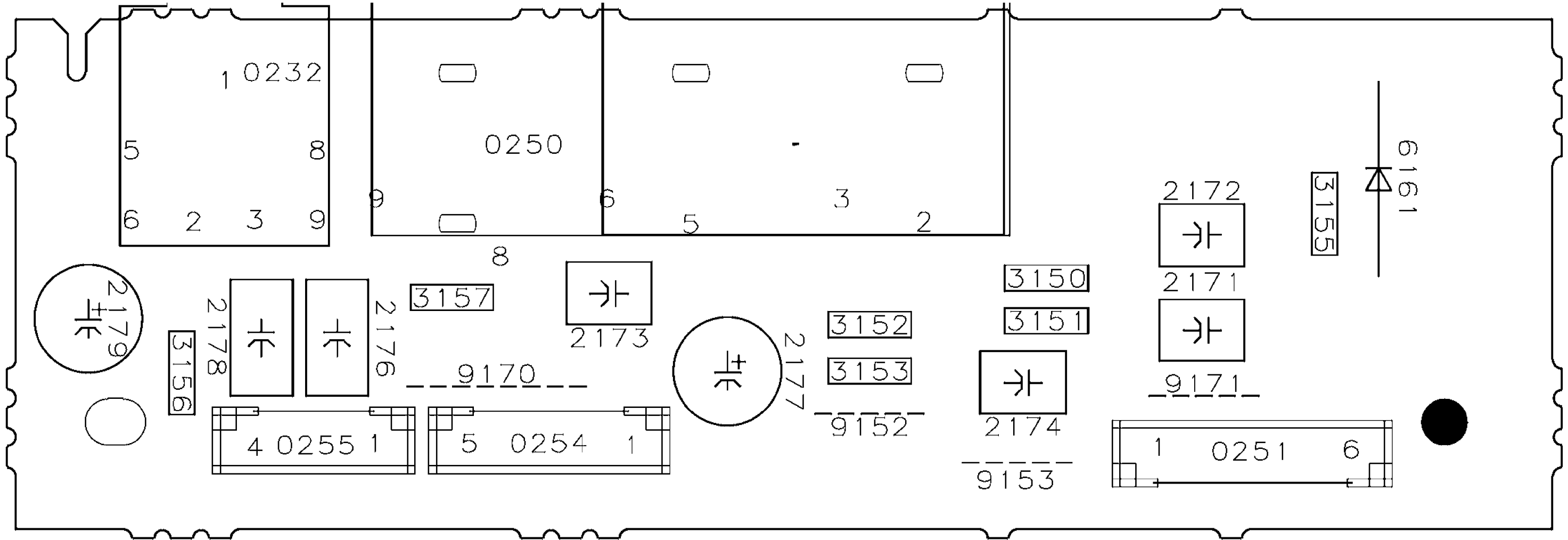
CV1

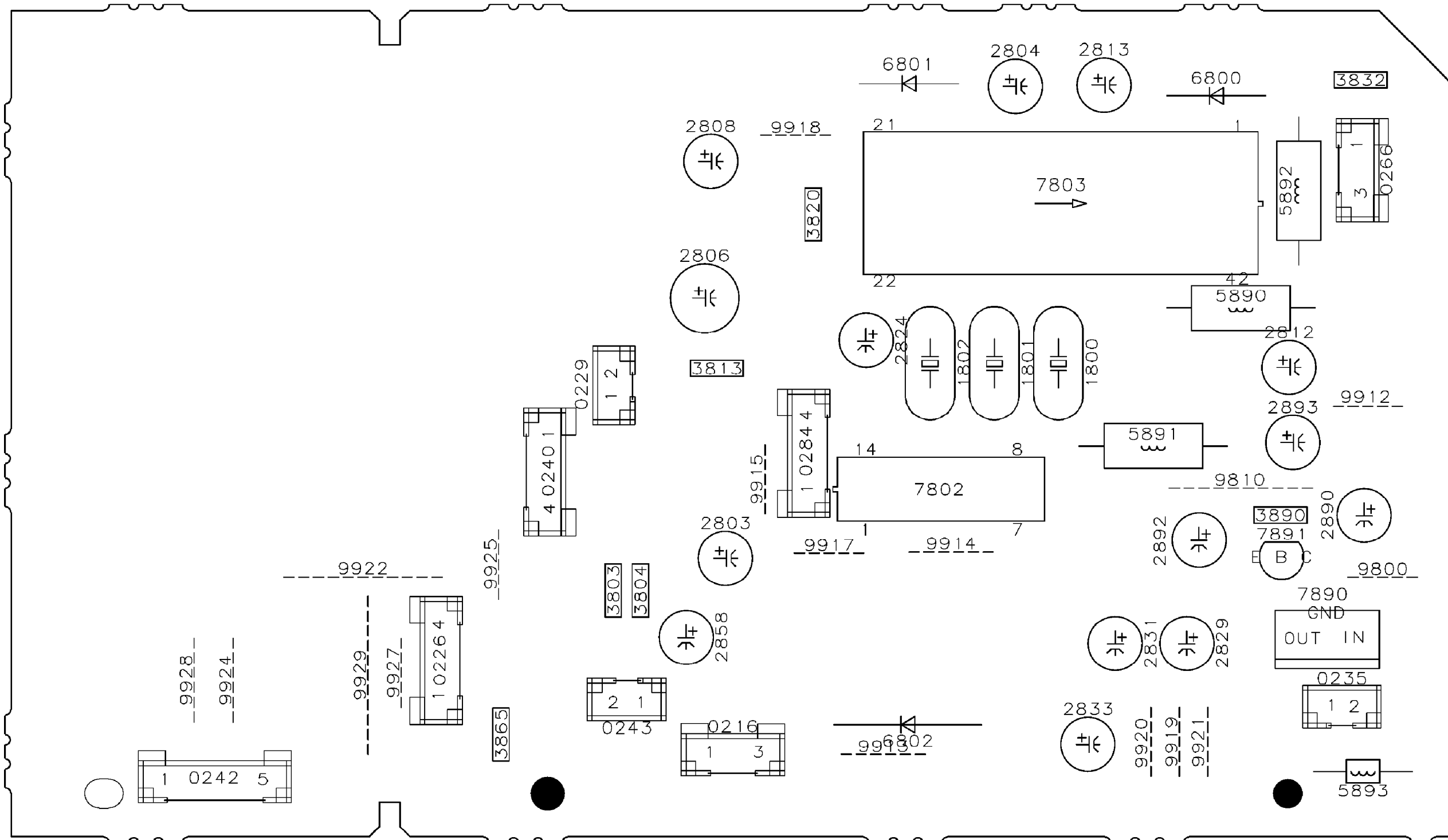


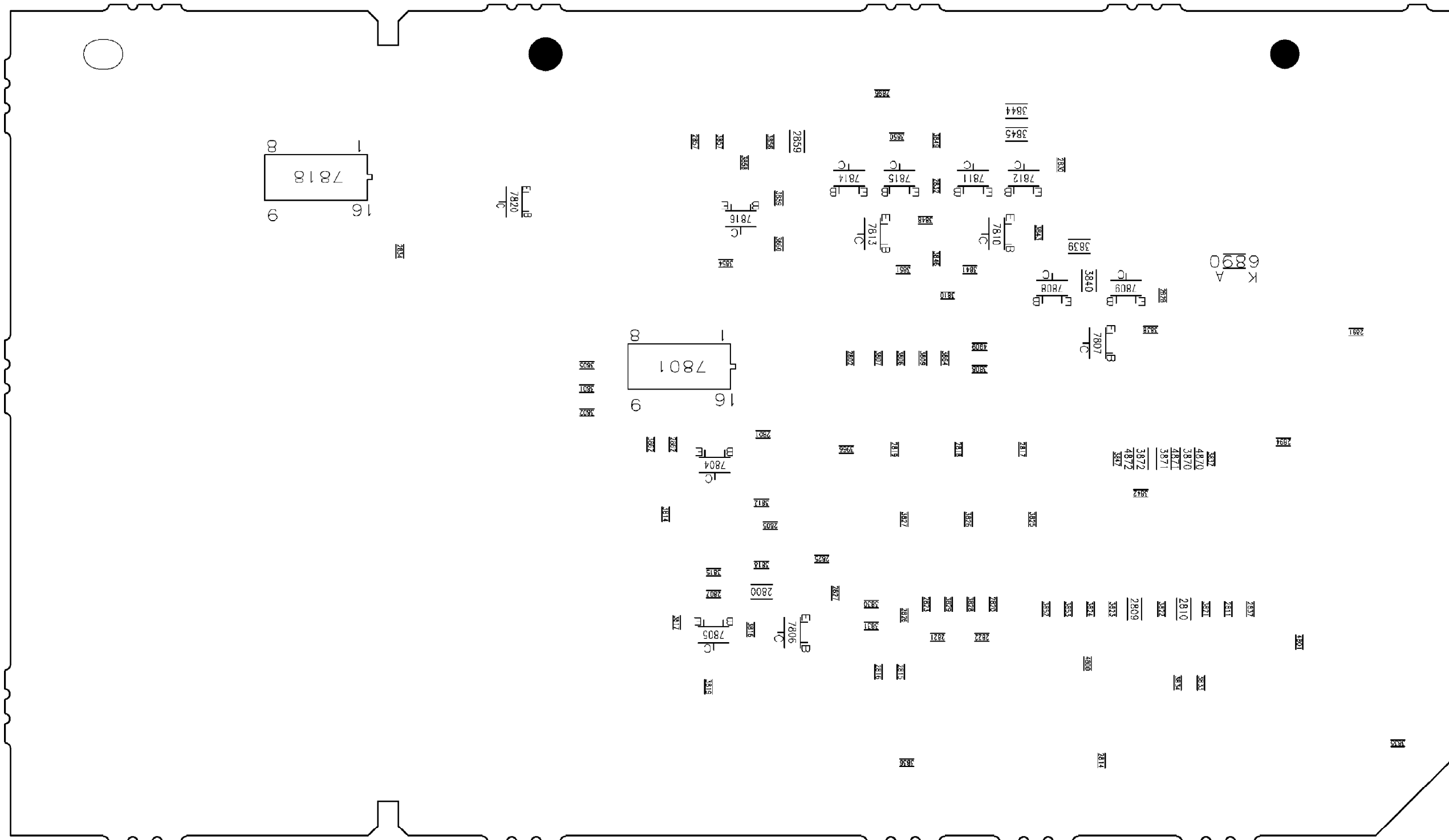


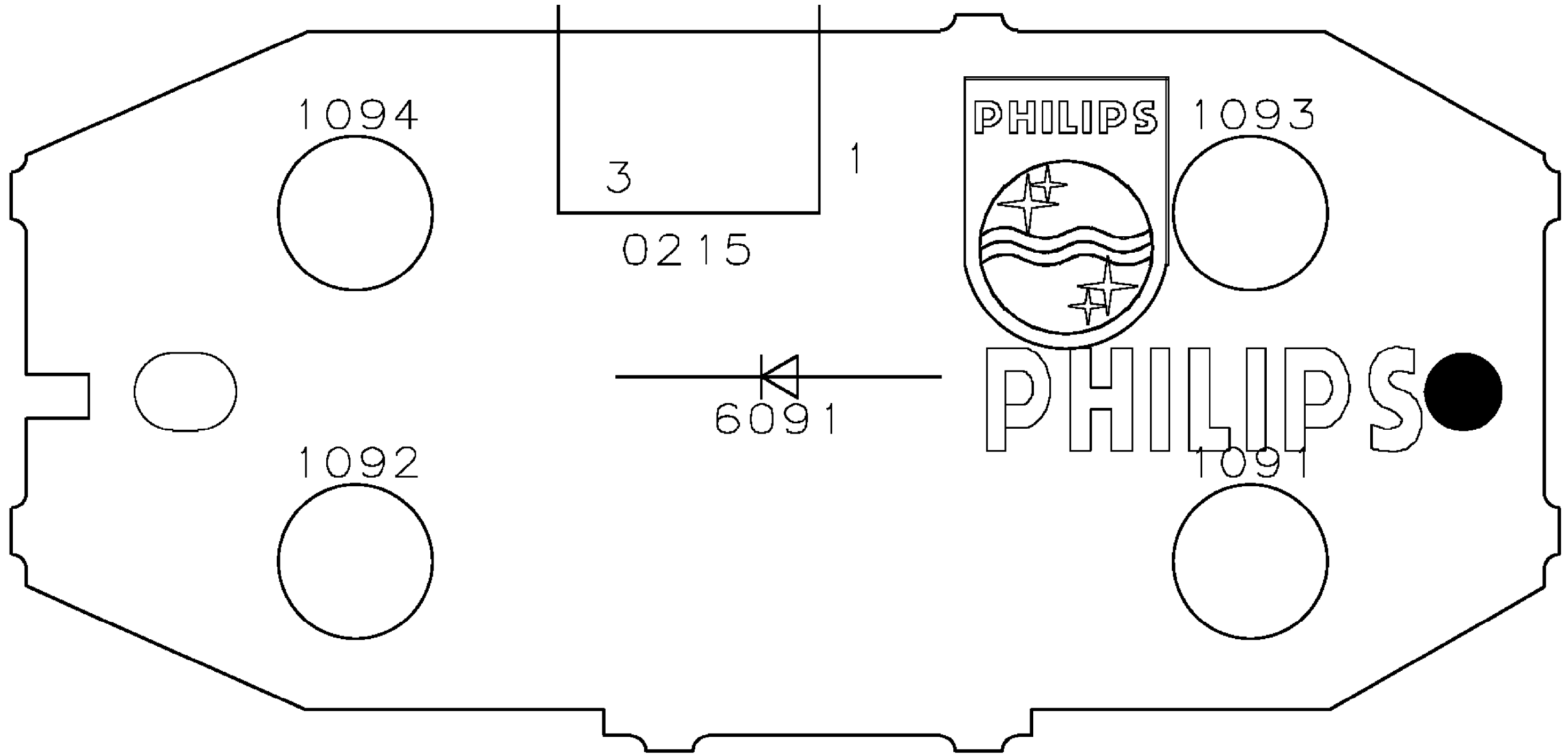


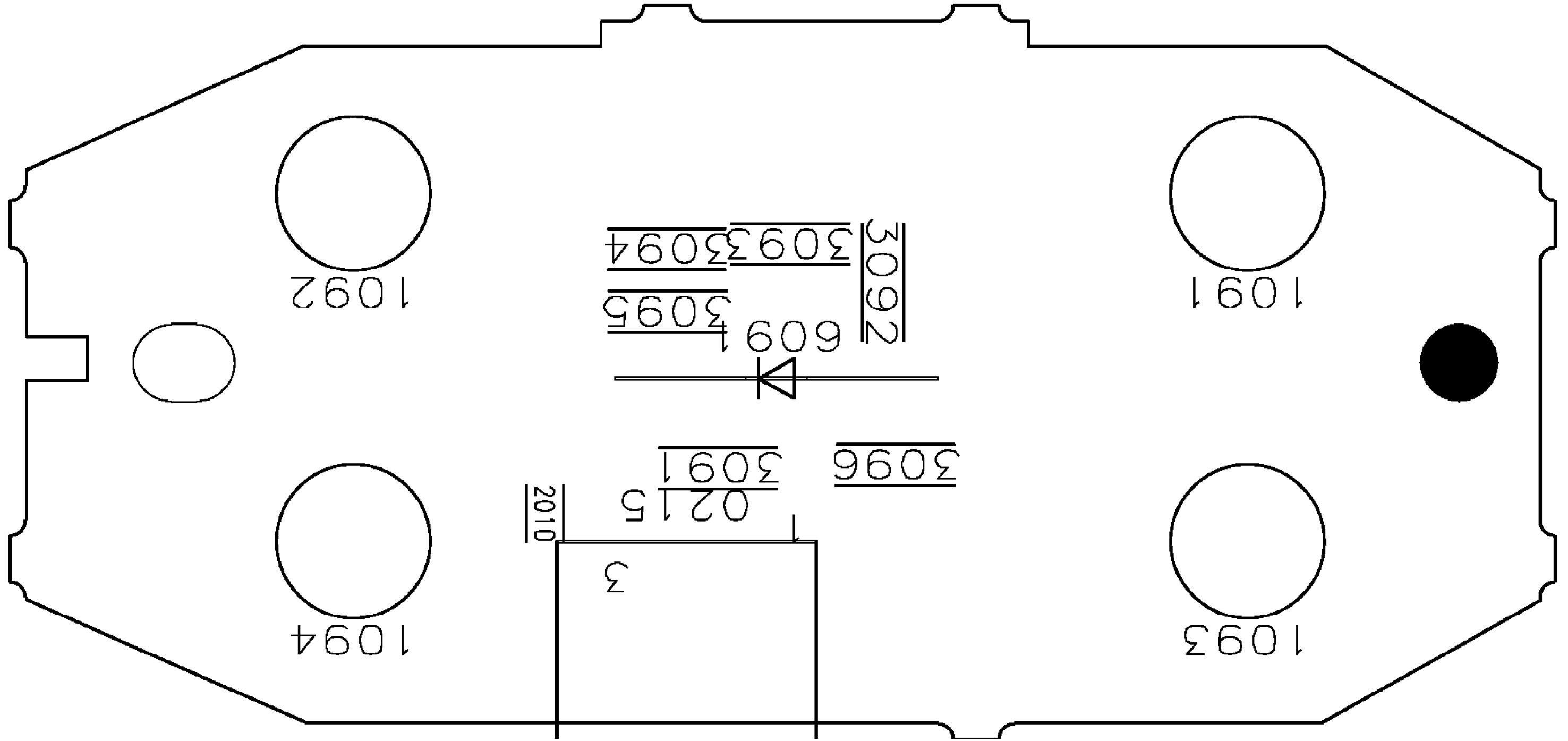


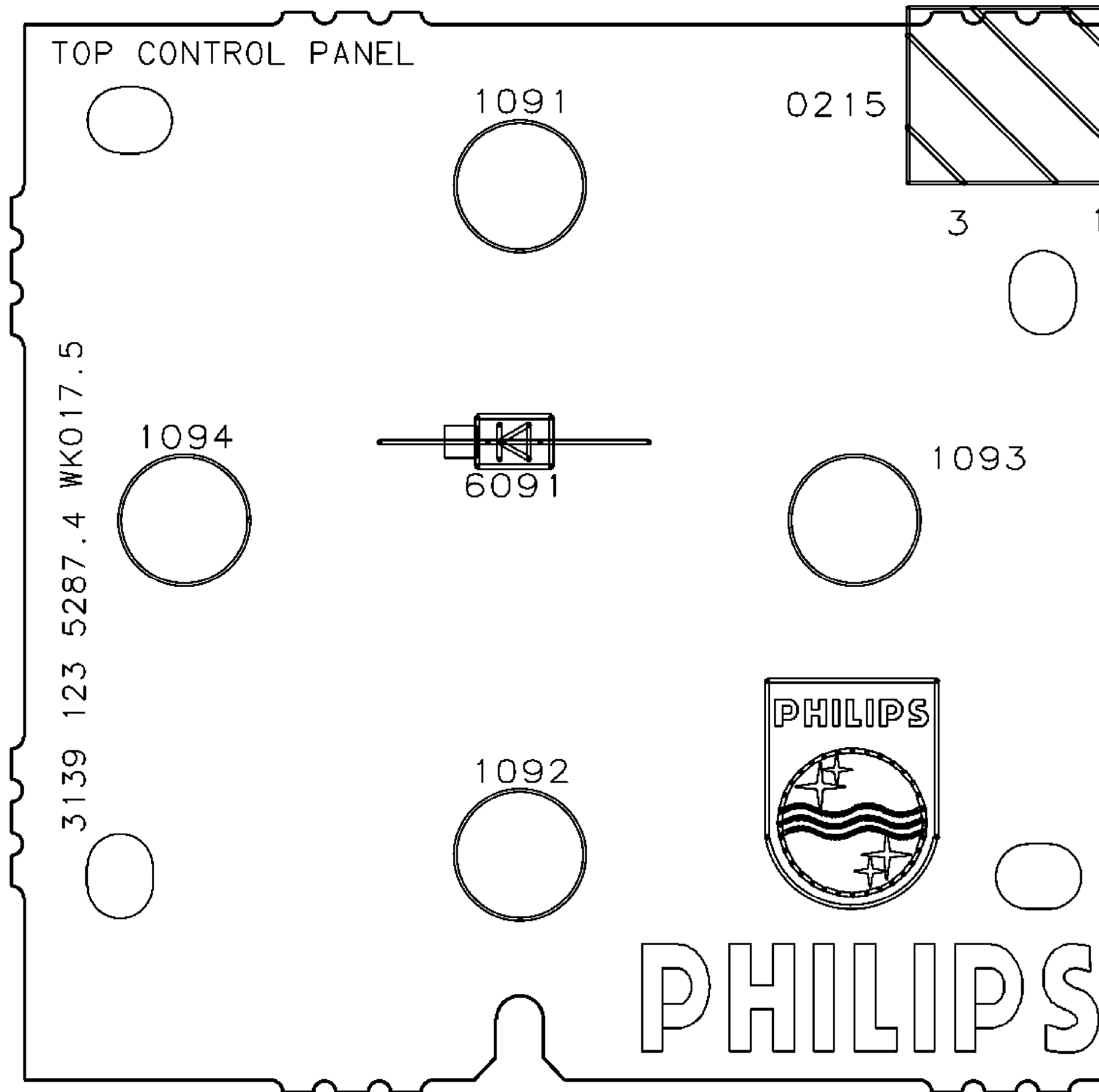


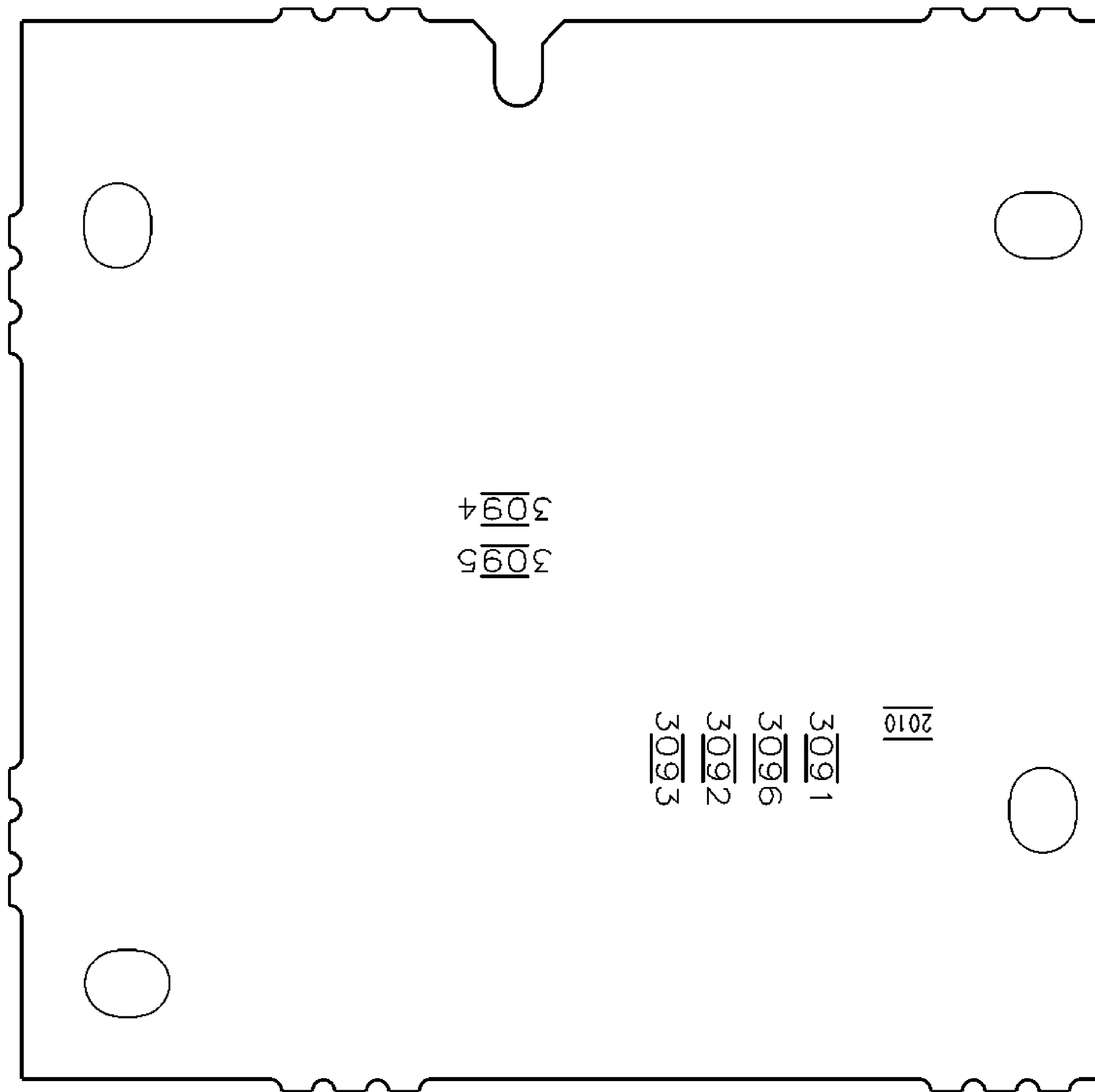






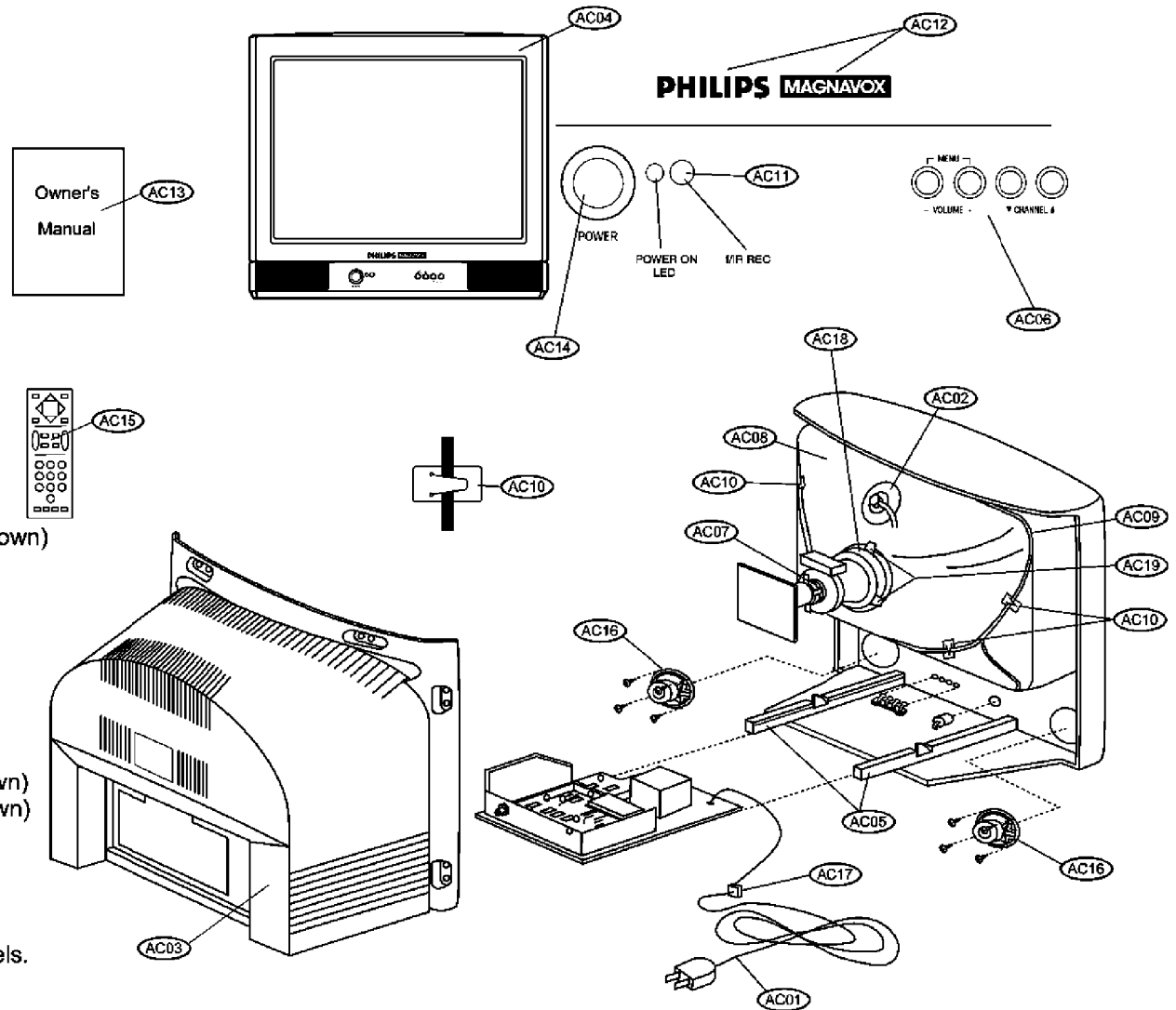






TYPICAL TABLE MODEL EXPLODED VIEW

REF.	DESCRIPTION
AC01	▲ AC Power Cord
AC02	▲ Anode Clip
AC03	Cabinet Back
AC04	Cabinet Front
AC05	Chassis Guide
AC06	Control Buttons
AC07	▲ Convergence and Purity Assembly
AC08	▲ CRT
AC09	▲ Degaussing Coil
AC10	Degaussing Coil Holder (4 Used)
AC11	Light Guide
AC12	Nameplate
AC13	Owner's Manual
AC14	Power Button
AC15	Remote Transmitter
AC16	Speaker
AC17	Strain Relief for AC Cord
AC18	▲ Yoke
AC19	Yoke Wedge
AC20	AC Adaptor (Not Shown)
AC21	Batteries for Remote Transmitter (Not Shown)
AC22	Card Door Cover (Not Shown)
AC23	Card Housing (Not Shown)
AC24	Degaussing Coil Spring (Not Shown)
AC25	Instruction Sheet (Not Shown)
AC26	Jack Panel, Plastic (Not Shown)
AC27	OCV Card Door Cover (Not Shown)
AC28	RF Cable (Not Shown)
AC29	Vent Cover (Not Shown)
AC30	Extra Power Supply Bracket (Not Shown)
AC31	Extra Power Supply Module (Not Shown)
AC32	Assembly Braid (Not Shown)
AC33	Cabinet Door (Not Shown)



Note: Some parts listed are not available in all models.

24RF50S1 (continued)

7480	Transistor, BD135-16	4822	130	41109
7482	Transistor, BD135-16	4822	130	41109
S 7515	Opto-Coupler, TCET1103G	8238	274	02070
7520	IC, TEA1507P/N1 (PHSE) L	9352	673	56112
7521	Transistor, FET Power STP5NC50FP (M1P3)	9322	160	72687
7522	Transistor, BC847B	4822	130	60511
7540	Transistor, BC547B	4822	130	40959
7541	Transistor, PDTC134ET	4822	130	11155
7542	Transistor, BC856B	4822	130	60373
7560	IC, Voltage/Current Regulator LE33CZ	4822	209	15576
7561	Transistor, PDTC143ZT (PHSE) R	9340	547	00215
7562	Transistor, BC847B	4822	130	60373
7564	Transistor, BC847B	4822	130	60373
7580	Transistor, BC847B	4822	130	60373
7602	IC, EPROM, M24C16-WBN6 (ST00)	9322	147	25682
7606	Transistor, PDTC143ZT (PHSE) R	9340	547	00215
7801	IC, Logic, HEF4052BT	5322	209	11102
7802	IC, Logic, HEF4053BT	5322	209	14481
7901	IC, Amplifier AN7522N (MATJ)	9322	158	65667
CBA	Main Chassis	3139	178	87901

AC03	Cabinet Back	3139	137	80621
AC04	Cabinet Front	3139	137	73661
AC05	Chassis Guide, Plastic	4822	463	11226
AC06	Control Buttons	3139	137	84471
S AC08	CRT A59QDF891X001(L)	9322	163	87682
AC09	Degaussing Coil	3139	128	76341
AC11	Light Guide, Plastic	3139	124	32221
AC13	Owner's Manual DFU	3139	125	50423
AC13	Quick Use Guide QUG	3139	125	29481
AC14	Power Button	3139	137	94231
REMOTE	Remote Transmitter, RC19036002/01	3139	228	88001
AC16	Speaker, 16 ohm, Full Range	2422	264	00411
AC40	Side Jack Panel Bracket, Plastic (Not Shown)	3139	124	39111
CBA	Main Chassis	3139	178	87901

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts				
S AC18	ITC = Integrated Tube Component, CRT & Yoke Pre-Set	0000	000	00ITC

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel
PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel				
0232	Headphone Jack	4822	267	31014
0250	3 Pin Connector	4822	265	11606
0251	3 Pin Connector	4822	267	10735
0253	3 Pin Connector	2422	025	16382
0254	5 Pin Connector	4822	267	10734
0255	4 Pin Connector	4822	267	10565
2171	470pF., 10%, 100V, Ceramic	5322	122	32311
2172	470pF., 10%, 100V, Ceramic	5322	122	32311
2173	470pF., 10%, 100V, Ceramic	5322	122	32311
2174	470pF., 10%, 100V, Ceramic	5322	122	32311
2176	470pF., 10%, 100V, Ceramic	5322	122	32311
2177	10uF., 20%, 63V, Electrolytic	4822	124	40248
2178	470pF., 10%, 100V, Ceramic	5322	122	32311
2179	10uF., 20%, 63V, Electrolytic	4822	124	40248
3150	47k, 5%, 1/2W	4822	116	83884
3151	150 ohm, 5%, 1/2W, Carbon	4822	116	83868
3152	47k, 5%, 1/2W	4822	116	83884
3153	150 ohm, 5%, 1/2W, Carbon	4822	116	83868
3155	75 ohm, 5%, 1/2W, Carbon	4822	116	52201
3156	120 ohm, 5%, 1/2W, Carbon	4822	116	52206
3157	120 ohm, 5%, 1/2W, Carbon	4822	116	52206
6161	Diode, Zener, BZX79-B6V8 (6.8 Volts)	4822	130	34278
CBA	Side A/V Panel / Headphone Socket	3139	137	24951

CRT Panel

CRT Panel				
0244	5 Pin Connector	4822	265	30735
0245	6 Pin Connector	2422	025	04854
S 0254	9 Pin CRT Socket (N-Neck)	2422	500	80067
2330	0.47uF., 20%, 63V, Metal Film	4822	121	51473
2340	10uF., 20%, 250V, Electrolytic	4822	124	11565
2341	3300pF., 10%, 500V, Ceramic	4822	126	13599
2342	1000pF., 10%, 63V, Ceramic	5322	122	31647
2343	3300pF., 10%, 2kV, Ceramic	4822	126	12278
2344	0.1uF., 10%, 50V, Ceramic	4822	126	14585
2345	1000pF., 10%, 500V, Ceramic	4822	122	31175
3331	100 ohm, 5%, 1/2W, Carbon	4822	116	52175
3332	1k, 20%, 1/2W, Carbon Composition	3198	013	01020
3333	100 ohm, 5%, 1/2W, Carbon	4822	116	52175
3334	1k, 20%, 1/2W, Carbon Composition	3198	013	01020
3335	100 ohm, 5%, 1/2W, Carbon	4822	116	52175
3336	1k, 20%, 1/2W, Carbon Composition	3198	013	01020
S 3340	10 ohm, 5%, 1/2W	4822	052	11109
S 3341	Fusible Resistor, 1 ohm, 5%, 1/3W	4822	052	10108
S 3342	Fusible Resistor, 1 ohm, 5%, 1/3W	4822	052	10108
3343	1.5k, 20%, 1/2W, Carbon	3198	013	01520
3344	22 ohm, 5%, 1/2W, Carbon	4822	116	52186
3345	Voltage Dependent Resistor, 1mA, 50V	4822	117	13016
3346	22 ohm, 5%, 1/2W, Carbon	4822	116	52186
3347	Zero ohm Chip Jumper	4822	051	20008
3350	Zero ohm Chip Jumper	4822	051	20008
3353	Zero ohm Chip Jumper	4822	051	20008
5342	Coil, 3.9uH., 10%	4822	156	21125
6331	Diode, BAV21	4822	130	30842
6332	Diode, BAS316	4822	130	11397
6333	Diode, BAV21	4822	130	30842
6335	Diode, BAV21	4822	130	30842
7330	IC, TDA6107Q/N2 (PHSE) L	9352	576	50112
CBA	CRT Panel	3139	127	22841

Top Control Panel
Top Control Panel

Model 24RF50S1 Cabinet Parts
S = Safety Part. Be sure to use exact replacement part.
Model 24RF50S1 Cabinet Parts

25PS40S121 (continued)

S	AC01	AC Power Cord.	3135	010	03831
	AC02	Anode Clip	3135	014	04471
	AC03	Cabinet Back	3121	237	52491
	AC04	Cabinet Front.	3121	237	51761
	AC05	Chassis Guide.	3139	124	37561
	AC06	Control Buttons.	3139	137	86221
S	AC07	Convergence and Purity Assembly.	2422	549	43385
S	AC08	CRT A63AFW36X.	9301	763	20443
S	AC09	Degaussing Coil.	2422	549	44489
	AC10	Degaussing Coil Holder (4 used).	3135	013	01651
	AC11	Light Guide.	3139	124	36551
	AC13	Owner's Manual	3121	235	20061
	AC14	Power Button	3139	137	86231
REMOTE		Remote Transmitter	3139	228	86462
	AC16	Speaker, 5W, 16 ohm (2 used)	2422	264	00411
S	AC18	Yoke	3321	203	00121
	AC19	Yoke Wedge (3 used).	3135	013	00311
	AC21	Batteries f Remote Transmitter	9299	000	65263
	AC24	Degaussing Coil Spring	3139	121	26231
	AC32	Assembly Braid	3135	010	07301

MODEL 25PS40S/121 CBA'S

MODEL 25PS40S/121 CBA'S

CBA	Side A/V-Head Phone Panel.	3139	127	23881
CBA	Main Chassis	3139	127	23061
CBA	Front Sub-Assembly	3121	237	51761

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

25PS50S121 (continued)

6901	Diode, BAS316.	3198	010	10630
7101	Transistor BC847B.	3198	010	42030
7102	Transistor BC857B.	3198	010	42150
7103	Transistor BC847B.	3198	010	42030
7200	IC, TDA9587H/N1/3, 1US1 Software Clust er	9352	699	87557
7201	Transistor BC847B.	3198	010	42030
7204	Transistor BC857B.	3198	010	42150
7205	Transistor BC857B.	3198	010	42150
7330	IC, TDA6107Q/N2.	9352	576	50112
7441	Transistor BC857B.	3198	010	42150
7443	Transistor BC557B.	3198	020	40110
7450	Transistor PDTA114ET	3198	010	44010
7460	Power Transistor BU4508DX-clip 0140.	9340	550	92127
7461	Transistor BC337-25.	3198	020	43530
7462	Transistor PDTC143ZT	9340	547	00215
7463	Transistor BC327-25.	3198	020	43430
7471	IC, TDA8359J	9352	635	76112
7480	Power Transistor BD135-16.	3198	020	41190
7482	Power Transistor BD135-16.	3198	020	41190
7515	Opto-Coupler, TCET1103(G).	9322	140	14667
7520	IC, TEA1507P/N1.	9352	673	56112
7521	Power FET, STP8NC50FP.	9322	160	72687
7522	Transistor BC847B.	3198	010	42030
7540	Transistor BC547B.	3198	020	40030
7541	Transistor PDTC114ET	9340	310	10215
7542	Transistor BC857B.	3198	010	42150
7560	IC, L78L33ACZ.	9322	134	92676
7561	Transistor PDTC143ZT	9340	547	00215
7562	Transistor BC857B.	3198	010	42150
7564	Transistor BC857B.	3198	010	42150
7580	Transistor BC857B.	3198	010	42150
7602	IC, M24C16-WBN6.	9322	147	25682
7801	IC, HEF4052BT.	9333	729	50653
7802	IC, HEF4053BT.	9333	729	60653
7831	IC, MSP3445G-PO-B8	9322	160	81682
7901	IC, AN7522N.	9322	158	65667
9101	Jumper Wire.	0322	179	00003
9102	Jumper Wire.	0322	179	00003
9103	Jumper Wire.	0322	179	00003
9181	Jumper Wire.	0322	179	00003
9424	Jumper Wire.	0322	179	00003
9696	Jumper Wire.	0322	179	00003
9833	Jumper Wire.	0322	179	00003
9849	Jumper Wire.	0322	179	00003
9903	Jumper Wire.	0322	179	00003
CBA	Main Chassis	3139	127	23081

AC03	Cabinet Back	3139	124	36471
AC04	Cabinet, Front Assembly.	3121	237	51761
AC04A	Cabinet Front (Included in Front Assy)	3139	137	86241
AC05	Chassis Guide.	3139	124	37561
AC06	Control Buttons (Included in Front Ass y)	3139	137	86221
S AC07	Convergence and Purity Assembly.	2422	549	43385
S AC08	CRT A63AFW36X.	9301	763	20443
S AC09	Degaussing Coil.	2422	549	44489
AC10	Degaussing Coil Holder (4 used).	3135	013	01651
AC11	Light Guide (Included in Front Assy)	3139	124	36551
AC13	Owner's Manual	3121	235	20101
AC14	Power Button	3139	137	86231
REMOTE	Remote Transmitter	3139	228	86491
AC16	Speaker, 5W, 16 ohm (2 used) (Included in Front Assy)	2422	264	00411
S AC18	Yoke	3321	203	00121
AC19	Yoke Wedge (3 used).	3135	013	00311
AC21	Batteries f Remote Transmitter	9299	000	65263
AC24	Degaussing Coil Spring	3139	121	26231
AC32	Assembly Braid	3135	010	07301

MODEL 25PS50S/121 CBA'S

MODEL 25PS50S/121 CBA'S				
CBA	Side A/V-Head Phone Panel.	3139	127	23881
CBA	Main Chassis	3139	127	23081
CBA	Front Sub-Assembly	3121	237	51761

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

0232	Headphone Socket	2422	026	04747
0250	3 Pin Socket	2422	026	04815
0251	3 Pin Connector.	2422	025	12482
0254	5 Pin Connector.	2422	025	12481
0255	4 Pin Connector.	2422	025	12479
2171	470pF., 50V, Ceramic	3198	019	14710
2172	470pF., 50V, Ceramic	3198	019	14710
2173	470pF., 50V, Ceramic	3198	019	14710
2174	470pF., 50V, Ceramic	3198	019	14710
2176	470pF., 50V, Ceramic	3198	019	14710
2177	100uF., 20%, 25V, Electrolytic	3198	025	31010
2178	470pF., 50V, Ceramic	3198	019	14710
2179	100uF., 20%, 25V, Electrolytic	3198	025	31010
3150	47k, 5%, 1/6W, Carbon.	3198	011	04730
3151	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3152	47k, 5%, 1/6W, Carbon.	3198	011	04730
3153	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3155	75 ohm, 5%, 1/6W, Carbon	3198	011	07590
3156	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
3157	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
6161	Diode Regulator, BZX79-C6V8 (6.8 Volt)	3198	010	26880
9152	Jumper Wire.	0322	179	00003
9153	Jumper Wire.	0322	179	00003
9170	Jumper Wire.	0322	179	00003
9171	Jumper Wire.	0322	179	00003

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 25PS50S/121 Cabinet Parts

Model 25PS50S/121 Cabinet Parts

S AC01	AC Power Cord.	3135	010	03831
AC02	Anode Clip	3135	014	04471

S = Safety Part Be sure to use exact replacement part.

25PV5022 (continued)

7471	IC, TDA6107Q/N2 (PHSE) L	9352	635	76112
7480	Transistor, BD135-16	4822	130	41109
7482	Transistor, BD135-16	4822	130	41109
S 7515	Opto-Coupler, TCET1103G	8238	274	02070
7520	IC, TEA1507P/N1 (PHSE) L	9352	673	56112
7521	Transistor, FET Power STP5NC50FP (M1P3	9322	160	72687
7522	Transistor, BC847B	4822	130	60511
7540	Transistor, BC847B	4822	130	40959
7541	Transistor, PDTC114ET (COL)	4822	130	11155
7542	Transistor, BC856B	4822	130	60373
7560	IC, Voltage/Current Regulator LE33CZ .	4822	209	15576
7561	Transistor, PDTC143ZT (PHSE) R	9340	547	00215
7562	Transistor, BC847B	4822	130	60373
7564	Transistor, BC847B	4822	130	60373
7580	Transistor, BC847B	4822	130	60373
7602	IC, EEPROM, M24C16-WBN6 (ST00)	9322	147	25682
7606	Transistor, PDTC143ZT (PHSE) R	9340	547	00215
7801	IC, Logic, HEF4052BT	5322	209	11102
7802	IC, Logic, HEF4053BT	5322	209	14481
7901	IC, Amplifier AN7522N (MATJ)	9322	158	65667
CBA	Main Chassis	3139	127	23101

Model 25PV5022 Cabinet Parts

Model 25PV5022 Cabinet Parts				
AC03	Cabinet Back	3139	137	80621
AC04	Cabinet Front	3139	137	73661
AC05	Chassis Guide, Plastic	4822	463	11226
AC06	Control Buttons	3139	137	94241
S AC08	CRT A59QDF891X001(L)	9322	163	87682
AC09	Degaussing Coil	3139	128	76341
AC11	Light Guide, Plastic	3139	124	32221
AC13	Owner's Manual	3139	125	50423
AC14	Power Button	3139	137	94231
REMOTE	Remote Transmitter, RC19036002/01 . .	3139	228	88001
AC16	Speaker, 16 ohm, Full Range	2422	264	00411
AC45	Side Jack Panel Bracket, Plastic (Not Shown)	3139	124	39111

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts				
S AC18	ITC = Integrated Tube Component, CRT & Yoke Pre-Set	0000	000	00ITC

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

0232	Headphone Jack	4822	267	31014
0250	3 Pin Connector	4822	265	11606
0251	3 Pin Connector	4822	267	10735
0253	3 Pin Connector	2422	025	16382
0254	5 Pin Connector	4822	267	10734
0255	4 Pin Connector	4822	267	10565
2171	470pF., 10%, 100V, Ceramic	5322	122	32311
2172	470pF., 10%, 100V, Ceramic	5322	122	32311
2173	470pF., 10%, 100V, Ceramic	5322	122	32311
2174	470pF., 10%, 100V, Ceramic	5322	122	32311
2176	470pF., 10%, 100V, Ceramic	5322	122	32311
2177	10uF., 20%, 63V, Electrolytic	4822	124	40248
2178	470pF., 10%, 100V, Ceramic	5322	122	32311
2179	10uF., 20%, 63V, Electrolytic	4822	124	40248
3150	47k, 5%, 1/2W.	4822	116	83884
3151	150 ohm, 5%, 1/2W, Carbon	4822	116	83868
3152	47k, 5%, 1/2W.	4822	116	83884
3153	150 ohm, 5%, 1/2W, Carbon	4822	116	83868
3155	75 ohm, 5%, 1/2W, Carbon	4822	116	52201
3156	120 ohm, 5%, 1/2W, Carbon	4822	116	52206
3157	120 ohm, 5%, 1/2W, Carbon	4822	116	52206
6161	Diode, Zener, BZX79-B6V8 (6.8 Volts) .	4822	130	34278
CBA	Side A/V Panel / Headphone Socket . . .	3139	137	24951

CRT Panel

CRT Panel

0244	5 Pin Connector	4822	265	30735
0245	6 Pin Connector	2422	025	04854
S 0254	9 Pin CRT Socket (N-Neck)	2422	500	80067
2330	0.47uF., 20%, 63V, Metal Film	4822	121	51473
2340	10uF., 20%, 250V, Electrolytic	4822	124	11565
2341	3300pF., 10%, 500V, Ceramic	4822	126	13599
2342	1000pF., 10%, 63V, Ceramic	5322	122	31647
2343	3300pF., 10%, 2kV, Ceramic	4822	126	12278
2344	0.1uF., 10%, 50V, Ceramic	4822	126	14585
2345	1000pF., 10%, 500V, Ceramic	4822	122	31175
3331	100 ohm, 5%, 1/2W, Carbon	4822	116	52175
3332	1k, 20%, 1/2W, Carbon Composition . . .	3198	013	01020
3333	100 ohm, 5%, 1/2W, Carbon	4822	116	52175
3334	1k, 20%, 1/2W, Carbon Composition . . .	3198	013	01020
3335	100 ohm, 5%, 1/2W, Carbon	4822	116	52175
3336	1k, 20%, 1/2W, Carbon Composition . . .	3198	013	01020
S 3340	10 ohm, 5% 1/2W	4822	052	11109
S 3341	Fusible Resistor, 1 ohm, 5%, 1/3W. . . .	4822	052	10108
S 3342	Fusible Resistor, 1 ohm, 5%, 1/3W. . . .	4822	052	10108
3343	1.5k, 20%, 1/2W, Carbon	3198	013	01520
3344	22 ohm, 5%, 1/2W, Carbon	4822	116	52186
3345	Voltage Dependent Resistor, 1mA, 50V .	4822	117	13016
3346	22 ohm, 5%, 1/2W, Carbon	4822	116	52186
3347	Zero ohm Chip Jumper	4822	051	20008
3350	Zero ohm Chip Jumper	4822	051	20008
3353	Zero ohm Chip Jumper	4822	051	20008
5342	Coil, 3.9uH., 10%.	4822	156	21125
6331	Diode, BAV21	4822	130	30842
6332	Diode, BAS316.	4822	130	11397
6333	Diode, BAV21	4822	130	30842
6335	Diode, BAV21	4822	130	30842
7330	IC, TDA6107Q/N2 (PHSE) L	9352	576	50112
CBA	CRT Panel	3139	127	22841

Top Control Panel

Top Control Panel

S = Safety Part Be sure to use exact replacement part.

26LW502221 (continued)

6901	Diode, BAS316.	3198	010	10630
7101	Transistor BC847B.	3198	010	42030
7102	Transistor BC857B.	3198	010	42150
7103	Transistor BC847B.	3198	010	42030
7200	IC, TDA9587H/N1/3, 1U51 Software Clust er	9352	699	87557
7201	Transistor BC847B.	3198	010	42030
7204	Transistor BC857B.	3198	010	42150
7205	Transistor BC857B.	3198	010	42150
7330	IC, TDA6107Q/N2.	9352	576	50112
7441	Transistor BC857B.	3198	010	42150
7443	Transistor BC557B.	3198	020	40110
7450	Transistor PDTA114ET	3198	010	44010
7460	Power Transistor BU4508DX-clip 0140.	9340	550	92127
7461	Transistor BC337-25.	3198	020	43530
7462	Transistor PDTCL143ZT	9340	547	00215
7463	Transistor BC327-25.	3198	020	43430
7471	IC, TDA8359J	9352	635	76112
7480	Power Transistor BD135-16.	3198	020	41190
7482	Power Transistor BD135-16.	3198	020	41190
7515	Opto-Coupler, TCET1103(G).	9322	140	14667
7520	IC, TEA1507P/N1.	9352	673	56112
7521	Power FET, STP8NC50FP.	9322	160	72687
7522	Transistor BC847B.	3198	010	42030
7540	Transistor BC547B.	3198	020	40030
7541	Transistor PDTCL144ET	9340	310	10215
7542	Transistor BC857B.	3198	010	42150
7560	IC, L78L33ACZ.	9322	134	92676
7561	Transistor PDTCL143ZT	9340	547	00215
7562	Transistor BC857B.	3198	010	42150
7564	Transistor BC857B.	3198	010	42150
7580	Transistor BC857B.	3198	010	42150
7602	IC, M24C16-WBN6.	9322	147	25682
7801	IC, HEF4052BT.	9333	729	50653
7802	IC, HEF4053BT.	9333	729	60653
7831	IC, MSP3445G-PO-B8	9322	160	81682
7901	IC, AN7522N.	9322	158	65667
9101	Jumper Wire.	0322	179	00003
9102	Jumper Wire.	0322	179	00003
9103	Jumper Wire.	0322	179	00003
9181	Jumper Wire.	0322	179	00003
9424	Jumper Wire.	0322	179	00003
9696	Jumper Wire.	0322	179	00003
9833	Jumper Wire.	0322	179	00003
9849	Jumper Wire.	0322	179	00003
9903	Jumper Wire.	0322	179	00003
CBA	Main Chassis	3139	127	23091

AC03	Cabinet Back	3139	124	36471
AC04	Cabinet, Front Assembly.	3121	237	51761
AC04A	Cabinet Front (Included in Front Assy)	3139	137	86241
AC05	Chassis Guide.	3139	124	37561
AC06	Control Buttons.	3139	137	86221
S AC07	Convergence and Purity Assembly.	2422	549	43385
S AC08	CRT A63AFW36X.	9301	763	20443
S AC09	Degaussing Coil.	2422	549	44489
AC10	Degaussing Coil Holder (4 used).	3135	013	01651
AC11	Light Guide (Included in Front Assy)	3139	124	36551
AC13	Owner's Manual	3121	235	20211
AC14	Power Button	3139	137	86231
REMOTE	Remote Transmitter	3139	228	86491
AC16	Speaker, 5W, 16 ohm (2used) (Included in Front Assy)	2422	264	00411
S AC18	Yoke	3321	203	00121
AC19	Yoke Wedge (3 used).	3135	013	00311
AC21	Batteries f Remote Transmitter	9299	000	65263
AC24	Degaussing Coil Spring	3139	121	26231
AC32	Assembly Braid	3135	010	07301

MODEL 26LW502/221 CBA'S

	MODEL 26LW502/221 CBA'S			
CBA	Side A/V-Head Phone Panel.	3139	127	23881
CBA	Main Chassis	3139	127	23091

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

0232	Headphone Socket	2422	026	04747
0250	3 Pin Socket	2422	026	04815
0251	3 Pin Connector.	2422	025	12482
0254	5 Pin Connector.	2422	025	12481
0255	4 Pin Connector.	2422	025	12479
2171	470pF., 50V, Ceramic	3198	019	14710
2172	470pF., 50V, Ceramic	3198	019	14710
2173	470pF., 50V, Ceramic	3198	019	14710
2174	470pF., 50V, Ceramic	3198	019	14710
2176	470pF., 50V, Ceramic	3198	019	14710
2177	100uF., 20%, 25V, Electrolytic	3198	025	31010
2178	470pF., 50V, Ceramic	3198	019	14710
2179	100uF., 20%, 25V, Electrolytic	3198	025	31010
3150	47k, 5%, 1/6W, Carbon.	3198	011	04730
3151	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3152	47k, 5%, 1/6W, Carbon.	3198	011	04730
3153	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3155	75 ohm, 5%, 1/6W, Carbon	3198	011	07590
3156	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
3157	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
6161	Diode Regulator, BZX79-C6V8 (6.8 Volt)	3198	010	26880
9152	Jumper Wire.	0322	179	00003
9153	Jumper Wire.	0322	179	00003
9170	Jumper Wire.	0322	179	00003
9171	Jumper Wire.	0322	179	00003

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 26LW502/221 Cabinet Parts

Model 26LW502/221 Cabinet Parts

S AC01	AC Power Cord.	3135	010	04731
AC02	Anode Clip	3135	014	04471

S = Safety Part Be sure to use exact replacement part.

27PS50B121 (continued)

6901	Diode, BAS316.	3198	010	10630	AC05	Chassis Guide.	3139	124	31323
7101	Transistor BC847B.	3198	010	42030	AC06	Control Buttons.	3139	124	32701
7102	Transistor BC857B.	3198	010	42150	S AC07	Convergence and Purity Assembly.	2422	549	43385
7103	Transistor BC847B.	3198	010	42030	S AC08	CRT A68AJB82X.	9301	787	60472
7200	IC, TDA9587H/N1/3, 1US1 Software Clust er	9352	699	87557	S AC09	Degaussing Coil.	2422	549	43967
7201	Transistor BC847B.	3198	010	42030	AC10	Degaussing Coil Holder (4 used).	3135	013	01651
7204	Transistor BC857B.	3198	010	42150	AC11	Light Guide (Included in Front Assy)	3139	124	32671
7205	Transistor BC857B.	3198	010	42150	AC12	Nameplate (Not shown).	3111	250	00571
7330	IC, TDA6107Q/N2.	9352	576	50112	AC13	Owner's Manual	3135	015	17521
7441	Transistor BC857B.	3198	010	42150	REMOTE	Remote Transmitter	3139	228	86491
7443	Transistor BC557B.	3198	020	40110	AC16	Speaker, 5W, 16 ohm (2 used) (Included in Front Assy)	2422	264	00371
7450	Transistor PDTA114ET	3198	010	44010	S AC18	Yoke	3313	203	01242
7460	Power Transistor BU4508DX-clip 0140.	9340	550	92127	AC19	Yoke Wedge (3 used).	3135	013	00311
7461	Transistor BC337-25.	3198	020	43530	AC21	Batteries f Remote Transmitter	9299	000	65263
7462	Transistor PDTA114ET	9340	547	00215	AC24	Degaussing Coil Spring	3139	121	26231
7463	Transistor BC327-25.	3198	020	43430	AC32	Assembly Braid	3135	010	07311
7471	IC, TDA8359J	9352	635	76112					
7480	Power Transistor BD135-16.	3198	020	41190					
7482	Power Transistor BD135-16.	3198	020	41190					
7515	Opto-Coupler, TCET1103(G).	9322	140	14667					
7520	IC, TEA1507P/N1.	9352	673	56112					
7521	Power FET, STP8NC50FP.	9322	160	72687					
7522	Transistor BC847B.	3198	010	42030					
7540	Transistor BC547B.	3198	020	40030					
7541	Transistor PDTA114ET	9340	310	10215					
7542	Transistor BC857B.	3198	010	42150					
7560	IC, L78L33ACZ.	9322	134	92676					
7561	Transistor PDTA114ET	9340	547	00215					
7562	Transistor BC857B.	3198	010	42150					
7564	Transistor BC857B.	3198	010	42150					
7580	Transistor BC857B.	3198	010	42150					
7602	IC, M24C16-WB6.	9322	147	25682					
7801	IC, HEF4052BT.	9333	729	50653					
7802	IC, HEF4053BT.	9333	729	60653					
7831	IC, MSP3445G-PO-B8	9322	160	81682					
7901	IC, AN7522N.	9322	158	65667					
9101	Jumper Wire.	0322	179	00003					
9102	Jumper Wire.	0322	179	00003					
9103	Jumper Wire.	0322	179	00003					
9181	Jumper Wire.	0322	179	00003					
9424	Jumper Wire.	0322	179	00003					
9696	Jumper Wire.	0322	179	00003					
9849	Jumper Wire.	0322	179	00003					
9903	Jumper Wire.	0322	179	00003					
CBA	Main Chassis	3139	127	23131					

MODEL 27PS50B/121 CBA'S

	MODEL 27PS50B/121 CBA'S			
CBA	Side A/V-Head Phone Panel.	3139	127	27471
CBA	Main Chassis	3139	127	23131

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

0232	Headphone Socket	2422	026	04747
0250	3 Pin Socket	2422	026	04815
0251	3 Pin Connector.	2412	020	00725
0253	3 Pin Connector.	2422	025	16382
0254	5 Pin Connector.	2422	025	12481
0255	4 Pin Connector.	2422	025	12479
2171	470pF., 50V, Ceramic	3198	019	14710
2172	470pF., 50V, Ceramic	3198	019	14710
2173	470pF., 50V, Ceramic	3198	019	14710
2174	470pF., 50V, Ceramic	3198	019	14710
2176	470pF., 50V, Ceramic	3198	019	14710
2177	100uF., 20%, 25V, Electrolytic	3198	025	31010
2178	470pF., 50V, Ceramic	3198	019	14710
2179	100uF., 20%, 25V, Electrolytic	3198	025	31010
3150	47k, 5%, 1/6W, Carbon.	3198	011	04730
3151	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3152	47k, 5%, 1/6W, Carbon.	3198	011	04730
3153	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3155	75 ohm, 5%, 1/6W, Carbon	3198	011	07590
3156	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
3157	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
6161	Diode Regulator, BZX79-C6V8 (6.8 Volt)	3198	010	26880
9155	Jumper Wire.	0322	179	00003

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 27PS50B/121 Cabinet Patrs

Model 27PS50B/121 Cabinet Patrs

S AC01	AC Power Cord.	3135	010	03831
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3139	124	35861
AC04	Cabinet, Front Assembly.	3121	237	51811
AC04A	Cabinet Front (Included in Front Assy)	3139	137	70561

S = Safety Part Be sure to use exact replacement part.

27PS55S121 (continued)

6901	Diode, BAS316.	3198	010	10630	AC04	Cabinet, Front Assembly.	3121	237	51791
7101	Transistor BC847B.	3198	010	42030	AC04A	Cabinet Front (Included in Front Assy)	3139	137	83171
7102	Transistor BC857B.	3198	010	42150	AC05	Chassis Guide.	3139	124	31381
7103	Transistor BC847B.	3198	010	42030	AC06	Control Buttons.	3139	137	83131
7200	IC, TDA9587H/N1/3, 1U51 Software Clust er	9352	699	87557	S AC07	Convergence and Purity Assembly. . . .	2422	549	43385
7201	Transistor BC847B.	3198	010	42030	S AC08	CRT A68AJB82X.	9301	787	60472
7204	Transistor BC857B.	3198	010	42150	S AC09	Degaussing Coil.	2422	549	43967
7205	Transistor BC857B.	3198	010	42150	AC10	Degaussing Coil Holder (4 used). . . .	3135	013	01651
7330	IC, TDA6107Q/N2.	9352	576	50112	AC11	Light Guide (Included in Front Assy) .	3139	124	35111
7441	Transistor BC857B.	3198	010	42150	AC12	Nameplate (Not Shown).	3111	250	00571
7443	Transistor BC557B.	3198	020	40110	AC13	Owner's Manual	3135	015	17521
7450	Transistor PDTA114ET	3198	010	44010	AC14	Power Button	3139	137	83141
7460	Power Transistor BU4508DX-clip 0140. .	9340	550	92127	REMOTE	Remote Transmitter	3139	228	86491
7461	Transistor BC337-25.	3198	020	43530	AC16	Speaker, 5W, 16 ohm (2 used) (Included in Front Assy)	2422	264	00411
7462	Transistor PDTCL143ZT	9340	547	00215	S AC18	Yoke	3313	203	01242
7463	Transistor BC327-25.	3198	020	43430	AC19	Yoke Wedge (3 used).	3135	013	00311
7471	IC, TDA8359J	9352	635	76112	AC21	Batteries f Remote Transmitter	9299	000	65263
7480	Power Transistor BD135-16.	3198	020	41190	AC24	Degaussing Coil Spring	3139	121	26231
7482	Power Transistor BD135-16.	3198	020	41190	AC32	Assembly Braid	3135	010	07311
7515	Opto-Coupler, TCET1103(G).	9322	140	14667					
7520	IC, TEA1507P/N1.	9352	673	56112					
7521	Power FET, STP8NC50FP.	9322	160	72687	MODEL 27PS55S/121 CBA'S				
7522	Transistor BC847B.	3198	010	42030		MODEL 27PS55S/121 CBA'S			
7540	Transistor BC547B.	3198	020	40030	CBA	Side A/V-Head Phone Panel.	3139	127	23881
7541	Transistor PDTCL14ET	9340	310	10215	CBA	Main Chassis	3139	127	23131
7542	Transistor BC857B.	3198	010	42150					
7560	IC, L78L33ACZ.	9322	134	92676					
7561	Transistor PDTCL143ZT	9340	547	00215					
7562	Transistor BC857B.	3198	010	42150					
7564	Transistor BC857B.	3198	010	42150					
7580	Transistor BC857B.	3198	010	42150					
7602	IC, M24C16-WBN6.	9322	147	25682					
7801	IC, HEF4052BT.	9333	729	50653					
7802	IC, HEF4053BT.	9333	729	60653					
7831	IC, MSP3445G-PO-B8	9322	160	81682					
7901	IC, AN7522N.	9322	158	65667					
9101	Jumper Wire.	0322	179	00003					
9102	Jumper Wire.	0322	179	00003					
9103	Jumper Wire.	0322	179	00003					
9181	Jumper Wire.	0322	179	00003					
9424	Jumper Wire.	0322	179	00003					
9696	Jumper Wire.	0322	179	00003					
9849	Jumper Wire.	0322	179	00003					
9903	Jumper Wire.	0322	179	00003					
CBA	Main Chassis	3139	127	23131					

MODEL 27PS55S/121 CBA'S

						MODEL 27PS55S/121 CBA'S			
	CBA					Side A/V-Head Phone Panel.	3139	127	23881
	CBA					Main Chassis	3139	127	23131

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

0232	Headphone Socket	2422	026	04747
0250	3 Pin Socket	2422	026	04815
0251	3 Pin Connector.	2422	025	12482
0254	5 Pin Connector.	2422	025	12481
0255	4 Pin Connector.	2422	025	12479
2171	470pF., 50V, Ceramic	3198	019	14710
2172	470pF., 50V, Ceramic	3198	019	14710
2173	470pF., 50V, Ceramic	3198	019	14710
2174	470pF., 50V, Ceramic	3198	019	14710
2176	470pF., 50V, Ceramic	3198	019	14710
2177	100uF., 20%, 25V, Electrolytic	3198	025	31010
2178	470pF., 50V, Ceramic	3198	019	14710
2179	100uF., 20%, 25V, Electrolytic	3198	025	31010
3150	47k, 5%, 1/6W, Carbon.	3198	011	04730
3151	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3152	47k, 5%, 1/6W, Carbon.	3198	011	04730
3153	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3155	75 ohm, 5%, 1/6W, Carbon	3198	011	07590
3156	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
3157	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
6161	Diode Regulator, BZX79-C6V8 (6.8 Volt)	3198	010	26880
9152	Jumper Wire.	0322	179	00003
9153	Jumper Wire.	0322	179	00003
9170	Jumper Wire.	0322	179	00003
9171	Jumper Wire.	0322	179	00003

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 27PS55S/121 Cabinet Parts

Model 27PS55S/121 Cabinet Parts

S AC01	AC Power Cord.	3135	010	03831
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3121	237	52451

S = Safety Part Be sure to use exact replacement part.

27PS60S121 (continued)

3865	150 ohm, 5%, 1/6W, Carbon	3198	011	01510
3890	68 ohm, 5%, 1/6W, Carbon	3198	011	06890
4800	Zero ohm "Chip" Jumper	3198	021	90020
4870	Zero ohm "Chip" Jumper	3198	021	90020
4871	Zero ohm "Chip" Jumper	3198	021	90020
4872	Zero ohm "Chip" Jumper	3198	021	90020
4909	Zero ohm "Chip" Jumper	3198	021	90020
5890	Fixed Inductor, 10uH, 10%, (UAW)A.	3198	018	21090
5891	Fixed Inductor, 10uH, 10%, (UAW)A.	3198	018	21090
5892	Fixed Inductor, 10uH, 10%, (UAW)A.	3198	018	21090
6800	Diode, BAT85	9336	247	60133
6801	Diode, BAT85	9336	247	60133
6890	Diode Regulator, BZX384-C3V9 (9.1 Vol t)	3198	020	53980
7801	IC, HEF4053BT.	9333	729	60653
7802	IC, N74F06N.	9339	990	90602
7803	IC, M65669SP	9322	146	60682
7804	Transistor, BC847B	3198	010	42030
7805	Transistor, BC847B	3198	010	42030
7806	Transistor, BC847B	3198	010	42030
7807	Transistor, BC847B	3198	010	42030
7808	Transistor, PMBT2369	9338	288	90215
7809	Transistor, BC857B	3198	010	42150
7810	Transistor, BC847B	3198	010	42030
7811	Transistor, PMBT2369	9338	288	90215
7812	Transistor, BC857B	3198	010	42150
7813	Transistor, BC847B	3198	010	42030
7814	Transistor, PMBT2369	3198	010	43360
7815	Transistor, BC857B	3198	010	42150
7816	Transistor, BC847B	3198	010	42030
7818	IC, HEF4053BT.	9333	729	60653
7820	Transistor, BC847B	3198	010	42030
7890	IC, MC78M05CT.	9334	703	90687
7891	Transistor, BC337-40	9331	796	00126
9800	Jumper Wire.	0322	179	00003
9801	Jumper Wire.	0322	179	00003
9810	Jumper Wire.	0322	179	00003
9911	Jumper Wire.	0322	179	00003
9912	Jumper Wire.	0322	179	00003
9913	Jumper Wire.	0322	179	00003
9914	Jumper Wire.	0322	179	00003
9915	Jumper Wire.	0322	179	00003
9917	Jumper Wire.	0322	179	00003
9919	Jumper Wire.	0322	179	00003
9920	Jumper Wire.	0322	179	00003
9921	Jumper Wire.	0322	179	00003
9922	Jumper Wire.	0322	179	00003
9924	Jumper Wire.	0322	179	00003
9925	Jumper Wire.	0322	179	00003
9927	Jumper Wire.	0322	179	00003
9928	Jumper Wire.	0322	179	00003

AC04A	Cabinet Front (Included in Front Assy)	3139	137	83171
AC05	Chassis Guide (Included in Front Assy)	3139	124	31381
AC06	Control Buttons.	3139	137	83131
S AC07	Convergence and Purity Assembly.	2422	549	43385
S AC08	CRT A68AJB82X.	9301	787	60472
S AC09	Degaussing Coil.	2422	549	43967
AC10	Degaussing Coil Holder (4 used).	3135	013	01651
AC11	Light Guide (Included in Front Assy)	3139	124	35111
AC12	Name Plate (Not Shown)	3111	250	00571
AC13	Owner's Manual	3121	235	20111
AC14	Power Button	3139	137	83141
REMOTEB	Remote Transmitter	3139	228	86501
AC16	Speaker, 5W, 16 ohm (2 used) (Included in Front Assy)	2422	264	00411
S AC18	Yoke	3313	203	01242
AC19	Yoke Wedge (3 used).	3135	013	00311
AC21	Batteries f Remote Transmitter	9299	000	65263
AC24	Degaussing Coil Spring	3139	121	26231
AC32	Assembly Braid	3135	010	07311

MODEL 27PS60S/121 CBA'S

	MODEL 27PS60S/121 CBA'S			
CBA	Side A/V-Head Phone Panel.	3139	127	23881
CBA	PIP.PNL-NA L01L	3139	127	23841
CBA	Main Chassis	3139	127	23151

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

Side A/V, Headphone Panel

	Side A/V, Headphone Panel			
0232	Headphone Socket	2422	026	04747
0250	3 Pin Socket	2422	026	04815
0251	3 Pin Connector.	2422	025	12482
0254	5 Pin Connector.	2422	025	12481
0255	4 Pin Connector.	2422	025	12479
2171	470pF., 50V, Ceramic	3198	019	14710
2172	470pF., 50V, Ceramic	3198	019	14710
2173	470pF., 50V, Ceramic	3198	019	14710
2174	470pF., 50V, Ceramic	3198	019	14710
2176	470pF., 50V, Ceramic	3198	019	14710
2177	100uF., 20%, 25V, Electrolytic	3198	025	31010
2178	470pF., 50V, Ceramic	3198	019	14710
2179	100uF., 20%, 25V, Electrolytic	3198	025	31010
3150	47k, 5%, 1/6W, Carbon.	3198	011	04730
3151	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3152	47k, 5%, 1/6W, Carbon.	3198	011	04730
3153	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3155	75 ohm, 5%, 1/6W, Carbon	3198	011	07590
3156	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
3157	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
6161	Diode Regulator, BZX79-C6V8 (6.8 Volt)	3198	010	26880
9152	Jumper Wire.	0322	179	00003
9153	Jumper Wire.	0322	179	00003
9170	Jumper Wire.	0322	179	00003
9171	Jumper Wire.	0322	179	00003

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 27PS60S/121 Cabinet Parts

Model 27PS60S/121 Cabinet Parts

S AC01	AC Power Cord.	3135	010	03831
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3121	237	52451
AC04	Cabinet, Front Assembly.	3121	237	51791

S = Safety Part Be sure to use exact replacement part.

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Main Chassis

Table with 4 columns: Part Number, Description, and Price/Stock. Includes items like Pin Fuse Socket, IC-Spring, Spring For Item, Pin Connector, Tuner V+U PLL F MN ENV56D98G3, Saw Filter, Ceramic Filter, Amp, Relay, Tact Switch, Crystal Resonator, and various capacitors.

S = Safety Part Be sure to use exact replacement part.

29LL600121 (continued)

6901	Diode, BAS316.	3198	010	10630	AC05	Chassis Guide.	3139	124	31323
7101	Transistor BC847B.	3198	010	42030	AC06	Control Buttons.	3139	124	32701
7102	Transistor BC857B.	3198	010	42150	S AC07	Convergence and Purity Assembly.	2422	549	43385
7103	Transistor BC847B.	3198	010	42030	S AC08	CRT A68AJB82X.	9301	787	60472
7200	IC, TDA9587H/N1/3, 1US1 Software Clust er	9352	699	87557	S AC09	Degaussing Coil.	2422	549	43967
7201	Transistor BC847B.	3198	010	42030	AC10	Degaussing Coil Holder (4 used).	3135	013	01651
7204	Transistor BC857B.	3198	010	42150	AC11	Light Guide.	3139	124	32671
7205	Transistor BC857B.	3198	010	42150	AC12	Nameplate (Not Shown).	3111	250	00571
7330	IC, TDA6107Q/N2.	9352	576	50112	AC13	Owner's Manual, Spanish.	3135	015	17941
7441	Transistor BC857B.	3198	010	42150	REMOTE	Remote Transmitter	3139	228	86491
7443	Transistor BC557B.	3198	020	40110	AC16	Speaker, 5W, 16 ohm (2 used) (Included in Front Assy)	2422	264	00371
7450	Transistor PDTA114ET	3198	010	44010	S AC18	Yoke	3313	203	01242
7460	Power Transistor BU4508DX-clip 0140.	9340	550	92127	AC19	Yoke Wedge (3 used).	3135	013	00311
7461	Transistor BC337-25.	3198	020	43530	AC21	Batteries f Remote Transmitter	9299	000	65263
7462	Transistor PDTCL143ZT	9340	547	00215	AC24	Degaussing Coil Spring	3139	121	26231
7463	Transistor BC327-25.	3198	020	43430	AC32	Assembly Braid	3135	010	07311
7471	IC, TDA8359J	9352	635	76112	AC04	Cabinet Front Assembly	3121	237	51841
7480	Power Transistor BD135-16.	3198	020	41190	AC12	Nameplate (Not Shown) (Included in Fro nt Assy)	3139	120	01301
7482	Power Transistor BD135-16.	3198	020	41190					
7515	Opto-Coupler, TCET1103(G).	9322	140	14667					
7520	IC, TEA1507P/N1.	9352	673	56112					
7521	Power FET, STP8NC50FP.	9322	160	72687	MODEL 29LL600/121 CBA'S				
7522	Transistor BC847B.	3198	010	42030	MODEL 29LL600/121 CBA'S				
7540	Transistor BC547B.	3198	020	40030	CBA	Side A/V-Head Phone Panel.	3139	127	27471
7541	Transistor PDTCL144ET	9340	310	10215	CBA	Main Chassis	3139	127	23141
7542	Transistor BC857B.	3198	010	42150					
7560	IC, L78L33ACZ.	9322	134	92676	Model 32PS60B/129 Cabinet Parts				
7561	Transistor PDTCL143ZT	9340	547	00215	Model 32PS60B/129 Cabinet Parts				
7562	Transistor BC857B.	3198	010	42150					
7564	Transistor BC857B.	3198	010	42150					
7580	Transistor BC857B.	3198	010	42150					
7602	IC, M24C16-WBN6.	9322	147	25682					
7801	IC, HEF4052BT.	9333	729	50653					
7802	IC, HEF4053BT.	9333	729	60653					
7831	IC, MSP3445G-PO-B8	9322	160	81682					
7901	IC, AN7522N.	9322	158	65667					
9101	Jumper Wire.	0322	179	00003					
9102	Jumper Wire.	0322	179	00003					
9103	Jumper Wire.	0322	179	00003					
9181	Jumper Wire.	0322	179	00003					
9424	Jumper Wire.	0322	179	00003					
9696	Jumper Wire.	0322	179	00003					
9849	Jumper Wire.	0322	179	00003					
9903	Jumper Wire.	0322	179	00003					
CBA	Main Chassis	3139	127	23141					

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel
PIP Panel

Side A/V, Headphone Panel
Side A/V, Headphone Panel

0232	Headphone Socket	2422	026	04747
0250	3 Pin Socket	2422	026	04815
0251	3 Pin Connector.	2412	020	00725
0253	3 Pin Connector.	2422	025	16382
0254	5 Pin Connector.	2422	025	12481
0255	4 Pin Connector.	2422	025	12479
2171	470pF., 50V, Ceramic	3198	019	14710
2172	470pF., 50V, Ceramic	3198	019	14710
2173	470pF., 50V, Ceramic	3198	019	14710
2174	470pF., 50V, Ceramic	3198	019	14710
2176	470pF., 50V, Ceramic	3198	019	14710
2177	100uF., 20%, 25V, Electrolytic	3198	025	31010
2178	470pF., 50V, Ceramic	3198	019	14710
2179	100uF., 20%, 25V, Electrolytic	3198	025	31010
3150	47k, 5%, 1/6W, Carbon.	3198	011	04730
3151	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3152	47k, 5%, 1/6W, Carbon.	3198	011	04730
3153	150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3155	75 ohm, 5%, 1/6W, Carbon	3198	011	07590
3156	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
3157	120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
6161	Diode Regulator, BZX79-C6V8 (6.8 Volt)	3198	010	26880
9155	Jumper Wire.	0322	179	00003

CRT Panel
CRT Panel

Top Control Panel
Top Control Panel

Model 29LL600/121 Cabinet Parts
Model 29LL600/121 Cabinet Parts

S AC01	AC Power Cord.	3135	010	04731
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3139	124	40512
AC04	Cabinet, Front Assembly.	3121	237	52521
AC04A	Cabinet Front (Included in Front Assy)	3139	138	12621

S = Safety Part Be sure to use exact replacement part.

29LW602221 (continued)

6569	Diode, Signal, BAS316.	3198	010	10630	9514	Jumper	3198	036	90010
6570	Diode, Regulator, BZX384-C, 6.8 Vol.	3198	020	56880	9515	Jumper	3198	036	90010
6580	Diode, Signal, BAS316.	3198	010	10630	9516	Jumper	3198	036	90010
6581	Diode, Signal, BAS316.	3198	010	10630	9518	Jumper	3198	036	90010
6681	Diode, Signal, BAT85	9336	247	60133	9519	Jumper	3198	036	90010
6691	LED, VS LTL-10224WHCR	9322	050	99682	9520	Jumper	3198	036	90010
6692	IR Receiver, TSOP1836UHV3VL	9322	127	54667	9521	Jumper	3198	036	90010
6831	Diode, Signal, 1N4148.	3198	010	10010	9522	Jumper	3198	036	90010
6901	Jumper, 0.05 ohm	3198	021	90020	9524	Jumper	3198	036	90010
7101	Transistor, Signal, BC847B	3198	010	42030	9525	Jumper	3198	036	90010
7102	Transistor, Signal, BC857B	3198	010	42150	9610	Jumper	3198	036	90010
7103	Transistor, Signal, BC847B	3198	010	42030	9611	Jumper	3198	036	90010
7200	IC, TDA9587H/N1, 1US1 Software	9352	699	87557	9612	Jumper	3198	036	90010
7201	Transistor, Signal, BC847B	3198	010	42030	9613	Jumper	3198	036	90010
7204	Transistor, Signal, BC857B	3198	010	42150	9614	Jumper	3198	036	90010
7205	Transistor, Signal, BC857B	3198	010	42150	9615	Jumper	3198	036	90010
7330	IC TDA6107Q/N2 27"-32" ONLY.	9352	576	50112	9616	Jumper	3198	036	90010
7441	Transistor, Signal, BC857B	3198	010	42150	9617	Jumper	3198	036	90010
7443	Transistor, Signal, BC557B	3198	020	40110	9618	Jumper	3198	036	90010
7450	Transistor, Signal, PDTA114ET.	3198	010	44010	9619	Jumper	3198	036	90010
7460	Transistor, Power, BU4508DX.	9340	550	92127	9620	Jumper	3198	036	90010
7461	Transistor, Signal, BC337-25.	3198	020	43530	9621	Jumper	3198	036	90010
7462	Transistor, Signal, PDTCL143ZT.	9340	547	00215	9622	Jumper	3198	036	90010
7463	Signal Transistor, BC327-25.	3198	020	43430	9623	Jumper	3198	036	90010
7471	IC, TDA8359J	9352	635	76112	9624	Jumper	3198	036	90010
S 7480	Transistor, Power, BD135-16.	3198	020	41190	9625	Jumper	3198	036	90010
S 7482	Transistor, Power, BD135-16.	3198	020	41190	9626	Jumper	3198	036	90010
S 7515	Opto Coupler TCET1103.	9322	140	14667	9627	Jumper	3198	036	90010
7520	IC, TEA1507P/N1.	9352	673	56112	9628	Jumper	3198	036	90010
S 7521	FET, Power, STP8NC50FP	9322	160	72687	9629	Jumper	3198	036	90010
7522	Transistor, Signal, BC847B	3198	010	42030	9630	Jumper	3198	036	90010
7540	Transistor, Signal, BC547B	3198	020	40030	9631	Jumper	3198	036	90010
7541	Transistor, Signal, PDTCL114ET.	9340	310	10215	9632	Jumper	3198	036	90010
7542	Transistor, Signal, BC857B	3198	010	42150	9633	Jumper	3198	036	90010
7560	IC, LE33CZ	9322	106	11676	9634	Jumper	3198	036	90010
7561	Transistor, Signal, PDTCL143ZT.	9340	547	00215	9635	Jumper	3198	036	90010
7562	Transistor, Signal, BC857B	3198	010	42150	9636	Jumper	3198	036	90010
7564	Transistor, Signal, BC857B	3198	010	42150	9637	Jumper	3198	036	90010
7580	Transistor, Signal, BC857B	3198	010	42150	9638	Jumper	3198	036	90010
7602	IC, M24C16-WBN6.	9322	147	25682	9639	Jumper	3198	036	90010
7801	IC, HEF4052BT.	9333	729	50653	9640	Jumper	3198	036	90010
7802	IC, HEF4053BT.	9333	729	60653	9641	Jumper	3198	036	90010
7831	IC, MSP3445G-PO-B8	9322	160	81682	9642	Jumper	3198	036	90010
7901	IC, AN7522N.	9322	158	65667	9643	Jumper	3198	036	90010
9001	Jumper	3198	036	90010	9644	Jumper	3198	036	90010
9101	Jumper	3198	036	90010	9645	Jumper	3198	036	90010
9102	Jumper	3198	036	90010	9646	Jumper	3198	036	90010
9103	Jumper	3198	036	90010	9648	Jumper	3198	036	90010
9171	Jumper	3198	036	90010	9650	Jumper	3198	036	90010
9172	Jumper	3198	036	90010	9654	Jumper	3198	036	90010
9173	Jumper	3198	036	90010	9655	Jumper	3198	036	90010
9175	Jumper	3198	036	90010	9656	Jumper	3198	036	90010
9176	Jumper	3198	036	90010	9657	Jumper	3198	036	90010
9178	Jumper	3198	036	90010	9658	Jumper	3198	036	90010
9179	Jumper	3198	036	90010	9659	Jumper	3198	036	90010
9181	Jumper	3198	036	90010	9660	Jumper	3198	036	90010
9182	Jumper	3198	036	90010	9661	Jumper	3198	036	90010
9183	Jumper	3198	036	90010	9662	Jumper	3198	036	90010
9191	Jumper	3198	036	90010	9663	Jumper	3198	036	90010
9192	Jumper	3198	036	90010	9664	Jumper	3198	036	90010
9193	Jumper	3198	036	90010	9665	Jumper	3198	036	90010
9311	Jumper	3198	036	90010	9666	Jumper	3198	036	90010
9341	Jumper	3198	036	90010	9668	Jumper	3198	036	90010
9342	Jumper	3198	036	90010	9669	Jumper	3198	036	90010
9343	Jumper	3198	036	90010	9670	Jumper	3198	036	90010
9406	Jumper	3198	036	90010	9672	Jumper	3198	036	90010
9407	Jumper	3198	036	90010	9674	Jumper	3198	036	90010
9408	Jumper	3198	036	90010	9675	Jumper	3198	036	90010
9409	Jumper	3198	036	90010	9676	Jumper	3198	036	90010
9410	Jumper	3198	036	90010	9678	Jumper	3198	036	90010
9411	Jumper	3198	036	90010	9679	Jumper	3198	036	90010
9412	Jumper	3198	036	90010	9680	Jumper	3198	036	90010
9413	Jumper	3198	036	90010	9683	Jumper	3198	036	90010
9414	Jumper	3198	036	90010	9685	Jumper	3198	036	90010
9415	Jumper	3198	036	90010	9686	Jumper	3198	036	90010
9416	Jumper	3198	036	90010	9687	Jumper	3198	036	90010
9417	Jumper	3198	036	90010	9688	Jumper	3198	036	90010
9418	Jumper	3198	036	90010	9689	Jumper	3198	036	90010
9419	Jumper	3198	036	90010	9690	Jumper	3198	036	90010
9421	Jumper	3198	036	90010	9691	Jumper	3198	036	90010
9422	Jumper	3198	036	90010	9694	Jumper	3198	036	90010
9423	Jumper	3198	036	90010	9695	Jumper	3198	036	90010
9425	Jumper	3198	036	90010	9697	Jumper	3198	036	90010
9453	Jumper	3198	036	90010	9698	Jumper	3198	036	90010
9460	Jumper	3198	036	90010	9699	Jumper	3198	036	90010
9500	Jumper	3198	036	90010	9821	Jumper	3198	036	90010
9501	Jumper	3198	036	90010	9822	Jumper	3198	036	90010
9503	Jumper	3198	036	90010	9824	Jumper	3198	036	90010
9506	Jumper	3198	036	90010	9825	Jumper	3198	036	90010
9507	Jumper	3198	036	90010	9826	Jumper	3198	036	90010
9512	Jumper	3198	036	90010	9827	Jumper	3198	036	90010
9513	Jumper	3198	036	90010	9828	Jumper	3198	036	90010

S = Safety Part Be sure to use exact replacement part.

29LW602221 (continued)

9829	Jumper	3198	036	90010
9830	Jumper	3198	036	90010
9831	Jumper	3198	036	90010
9832	Jumper	3198	036	90010
9834	Jumper	3198	036	90010
9835	Jumper	3198	036	90010
9836	Jumper	3198	036	90010
9837	Jumper	3198	036	90010
9838	Jumper	3198	036	90010
9839	Jumper	3198	036	90010
9840	Jumper	3198	036	90010
9841	Jumper	3198	036	90010
9842	Jumper	3198	036	90010
9843	Jumper	3198	036	90010
9844	Jumper	3198	036	90010
9845	Jumper	3198	036	90010
9846	Jumper	3198	036	90010
9847	Jumper	3198	036	90010
9849	Jumper	3198	036	90010
9851	Jumper	3198	036	90010
9901	Jumper	3198	036	90010
9902	Jumper	3198	036	90010
9903	Jumper	3198	036	90010
9904	Jumper	3198	036	90010
9911	Jumper	3198	036	90010
9912	Jumper	3198	036	90010
9913	Jumper	3198	036	90010
9914	Jumper	3198	036	90010
9915	Jumper	3198	036	90010
9916	Jumper	3198	036	90010
9918	Jumper	3198	036	90010
9919	Jumper	3198	036	90010
9920	Jumper	3198	036	90010
9921	Jumper	3198	036	90010
9922	Jumper	3198	036	90010
9991	Jumper	3198	036	90010
9993	Jumper	3198	036	90010
9994	Jumper	3198	036	90010
9996	Jumper	3198	036	90010
9997	Jumper	3198	036	90010
9998	Jumper	3198	036	90010
CBA	Main Chassis	3139	127	23141

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel
PIP Panel

Side A/V, Headphone Panel
Side A/V, Headphone Panel

CRT Panel
CRT Panel

Top Control Panel
Top Control Panel

Model 29LW602/221 Cabinet Parts

Model 29LW602/221 Cabinet Parts				
S AC01	AC Power Cord, Non-Polarized	3135	010	04731
AC02	Anode Clip	3135	014	04471
AC03	Cover, Back, Assembly.	3121	237	52451
AC04 A	Cabinet, Front (Included in Front Assy)	3139	137	83171
AC05	Chassis Guide (Included in Front Assy)	3139	124	31381
AC06	Control Knob Assembly.	3139	137	83131
S AC08	CRT A68AJB82X11.	9301	891	90631
S AC09	Degaussing Coil.	2422	549	43967
AC10	Degaussing Coil Holder	3135	013	01641
AC11	Light Guide.	3139	124	35111
AC12	Nameplate (Included in Front Assy) . .	3111	250	00571
AC13	Owner's Manual	3121	235	20221
AC14	Knob, Mains.	3139	137	83141
AC16	Speaker, 16 ohm, 5 Watt (Included in Front Assy)	2422	264	00411
AC21	Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263
AC24	Spring, Braid Tension.	3139	121	26231
CBA	Side A/V, Headphone Panel.	3139	127	23881
REMOTE	Remote Transmitter	3139	228	86491

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts				
S AC18	Deflection Yoke.	3313	203	01242

S = Safety Part Be sure to use exact replacement part.

29PV702225 (continued)

9660	Jumper	3198	036	90010
9661	Jumper	3198	036	90010
9662	Jumper	3198	036	90010
9663	Jumper	3198	036	90010
9664	Jumper	3198	036	90010
9665	Jumper	3198	036	90010
9666	Jumper	3198	036	90010
9668	Jumper	3198	036	90010
9669	Jumper	3198	036	90010
9670	Jumper	3198	036	90010
9672	Jumper	3198	036	90010
9674	Jumper	3198	036	90010
9675	Jumper	3198	036	90010
9676	Jumper	3198	036	90010
9678	Jumper	3198	036	90010
9679	Jumper	3198	036	90010
9680	Jumper	3198	036	90010
9683	Jumper	3198	036	90010
9685	Jumper	3198	036	90010
9686	Jumper	3198	036	90010
9687	Jumper	3198	036	90010
9688	Jumper	3198	036	90010
9689	Jumper	3198	036	90010
9690	Jumper	3198	036	90010
9691	Jumper	3198	036	90010
9694	Jumper	3198	036	90010
9695	Jumper	3198	036	90010
9697	Jumper	3198	036	90010
9698	Jumper	3198	036	90010
9699	Jumper	3198	036	90010
9821	Jumper	3198	036	90010
9822	Jumper	3198	036	90010
9824	Jumper	3198	036	90010
9825	Jumper	3198	036	90010
9826	Jumper	3198	036	90010
9827	Jumper	3198	036	90010
9828	Jumper	3198	036	90010
9829	Jumper	3198	036	90010
9830	Jumper	3198	036	90010
9831	Jumper	3198	036	90010
9832	Jumper	3198	036	90010
9833	Jumper	3198	036	90010
9834	Jumper	3198	036	90010
9835	Jumper	3198	036	90010
9836	Jumper	3198	036	90010
9837	Jumper	3198	036	90010
9838	Jumper	3198	036	90010
9839	Jumper	3198	036	90010
9840	Jumper	3198	036	90010
9841	Jumper	3198	036	90010
9842	Jumper	3198	036	90010
9843	Jumper	3198	036	90010
9844	Jumper	3198	036	90010
9845	Jumper	3198	036	90010
9846	Jumper	3198	036	90010
9847	Jumper	3198	036	90010
9849	Jumper	3198	036	90010
9851	Jumper	3198	036	90010
9901	Jumper	3198	036	90010
9902	Jumper	3198	036	90010
9904	Jumper	3198	036	90010
9911	Jumper	3198	036	90010
9912	Jumper	3198	036	90010
9913	Jumper	3198	036	90010
9914	Jumper	3198	036	90010
9915	Jumper	3198	036	90010
9916	Jumper	3198	036	90010
9918	Jumper	3198	036	90010
9919	Jumper	3198	036	90010
9920	Jumper	3198	036	90010
9921	Jumper	3198	036	90010
9922	Jumper	3198	036	90010
9991	Jumper	3198	036	90010
9994	Jumper	3198	036	90010
9996	Jumper	3198	036	90010
9998	Jumper	3198	036	90010
CBA	Main Chassis	3139	127	23181

Model 29PV702/225 Cabinet Parts

	Model 29PV702/225 Cabinet Parts			
AC04	Cabinet, Front Assembly	3121	237	51822
AC04A	Cabinet Front (Included in Front Assy)	3139	137	88401
AC14	Power Button Cover (Included in Front Assy)	3139	124	32921
AC14A	Power Button Shaft (Included in Front Assy)	3139	124	32791
AC11	Light Guide (Included in Front Assy)	3139	124	33811
AC05	Chassis Guide	3139	124	31323
AC12	Nameplate (Included in Front Assy)	3111	250	00571
S AC02	Anode Clip	3135	014	04471
AC10	Degaussing Coil Holder	3139	124	31122
AC13	Owner's Manual	3121	235	20401
S AC01	AC Power Cord	3135	010	03831
AC32	Assembly Braid, 27"	3135	010	05221
AC03	Cabinet Back	3139	124	36762
REMOTE	Remote Transmitter	3139	228	88001
AC21	Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263
S AC08	CRT 68QCP891X001	9322	142	09682
S AC09	Degaussing Coil (Used w/CRT A80QCF340X 34(N))	2422	549	43334
S AC09	Degaussing Coil	2422	549	43967
AC16	Speaker, 16 ohm, 5 Watt (Included in Front Assy)	3139	128	76071
CBA	Main Chassis	3139	127	23181
CBA	Front Interface Panel	3139	127	22301
CBA	Top Control Panel	3139	127	23901
CBA	Side A/V-Headphone Panel	3139	127	25911

Model 32PS60B/129 Cabinet Parts

	Model 32PS60B/129 Cabinet Parts			
S AC18	ITC = Integrated Tube Component, CRT & Yoke Pre-Set	0000	000	00ITC

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel
PIP Panel

Side A/V, Headphone Panel
Side A/V, Headphone Panel

CRT Panel
CRT Panel

Top Control Panel
Top Control Panel

S = Safety Part Be sure to use exact replacement part.

32PS60B121 - Manual no. 7603

Main Chassis

		2208	0.1uF., 25V, Ceramic	3198 023 21040
0137	Main Chassis	2209	4.7uF., 20%, 50V, Electrolytic (Used w /CRT A80ECK272X56)	3198 025 54780
0140	Spring For Item 7400		10uF., 20%, 50V, Electrolytic (Used w/C RT A80QCF340X34(N)).	3198 025 51090
7200	IC, TDA9588H/N1/3, 1US1 Software Clust er		1.0uF., 20%, 50V, Electrolytic	3198 025 51080
7400	Power FET, STP3NC60FP-clip 0137.	2210	0.47uF., 16 Volt, Ceramic	3198 017 24740
0118	Heatsink, (Use Heatsink Compound).	2213	0.022uF., 50 Volt, Ceramic	3198 017 02230
0122	Heatsink, (Use Heatsink Compound).	2214	0.022uF., 50 Volt, Ceramic	3198 017 02230
0123	Heatsink, Audio, 2X3W, L01	2215	0.022uF., 50 Volt, Ceramic	3198 017 02230
0124	Heatsink, L01, SOPs.	2216	1000uF., 20%, 16V, Electrolytic	3198 026 21020
0127	Socket, Fuse Holder.	2217	0.022uF., 50 Volt, Ceramic	3198 017 02230
0129	NTC Holder	2219	0.22uF., 25V, Ceramic	3198 023 22240
0136	Spring, IC	2220	0.47uF., 10%, 50 Volt, Polyester	3198 014 04740
0137	Spring	2221	0.022uF., 50 Volt, Ceramic	3198 017 02230
0138	Spring, IC	2241	1500pF., 50 Volt, Ceramic	3198 017 01520
0139	Spring	2242	1uF., 16V, Ceramic	3198 017 21050
0140	Spring	2243	2200pF., 50 Volt, Ceramic	3198 017 02220
0141	Spring, IC	2244	0.1uF., 10%, 63V, Polyester	2222 370 75104
0152	Cable, 6 Pin, 560 MM Long.	2245	0.22uF., 25V, Ceramic (Used w/CRT A80E CK272X56)	3198 023 22240
0153	Cable, 5 Pin		0.47uF., 16V, Ceramic (Used w/CRT A80QC F340X34(N)).	3198 017 24740
0165	1Pin Ground Clip	2245	1000uF., 20%, 16V, Electrolytic	3198 026 21020
0211	2 Pin Connector.	2247	0.022uF., 50 Volt, Ceramic	3198 017 02230
0212	2 Pin Connector.	2248	0.022uF., 50 Volt, Ceramic	3198 017 02230
0217	5 Pin Connector.	2249	2.2uF., 20%, 50V, Electrolytic	3198 025 52280
0219	6 Pin Connector.	2250	1000pF., 50 Volt, NP0, Ceramic	3198 016 01020
0220	5 Pin Board Connector.	2252	1000pF., 50 Volt, NP0, Ceramic	3198 016 01020
0221	4 Pin Connector.	2253	1000pF., 50 Volt, NP0, Ceramic	3198 021 90020
0222	2 Pin Connector.	2254	Jumper, 0.05 ohm	3198 021 90020
0223	Socket, Cinch, 9 Pin	2330	0.1uF., 10%, 250V, Polyester	2222 368 90177
0225	10 Pin Socket.	2340	10uF., 20%, 250 Volt, Electrolytic	2020 012 93495
0226	4 Pin Board Connector.	2341	3300pF., 500V, Ceramic	3198 019 43320
0229	7 Pin Connector.	2342	1000pF., 50 Volt, Ceramic	3198 017 01020
0240	4 Pin Board Connector.	2343	3300pF., 10%, 2kV, Ceramic	2020 558 90529
0242	5 Pin Connector.	2344	0.1uF., 25V, Ceramic	3198 023 21040
0243	6 Pin Connector.	2345	1000pF., 500V, Ceramic	3198 019 41020
0244	5 Pin Board Connector.	2401	2.2uF., 20%, 50V, Electrolytic	2020 021 90552
0245	6 Pin Connector.	2402	470pF., 500V, Ceramic	3198 019 44710
0246	5 Pin Connector.	2404	47uF., 20%, 50V, Electrolytic	3198 025 54790
0254	CRT Socket, 9 Pin, N-Neck.	2405	1000pF., 50 Volt, NP0, Ceramic	3198 016 01020
0267	3 Pin Connector.	2441	1.0uF., 20%, 50V, Electrolytic	3198 025 51080
0269	3 Pin Cinch Socket	2443	0.047uF., 50 Volt, Ceramic	3198 017 24730
0284	4 Pin Board Connector.	2444	1.0uF., 20%, 50V, Electrolytic	3198 025 51080
1000	Tuner, PLL, ENV56D98G3	2450	47uF., 20%, 160 Volt, Electrolytic	2020 021 91139
1002	SAW Filter, 45.75MHz	2451	0.015uF., 10%, 50V, Polyester	3198 014 01530
1200	Ceramic Filter, 4.5MHz	2455	47uF., 20%, 25V, Electrolytic	3198 025 34790
S 1500	Fuse, 4 A, 250V.	2457	0.43uF., 5%, 250V, Polypropylene (Used w/CRT A80ECK272X56)	2222 479 90022
S 1500	Fuse, 4 Amp, 250 Volt		0.47uF., 5%, 250V, Polypropylene (Used w/CRT A80QCF340X34(N)).	2222 479 90023
S 1515	Relay, 1 Pin, 12 Volt, 5 Amp	2457	2.2uF., 20%, 100V, Electrolytic	2020 021 91331
1600	Tactile Switch	2458	680pF., 500V, Ceramic	3198 019 46810
1601	Tactile Switch	2460	100pF., 50 Volt, NP0, Ceramic	3198 016 01010
1602	Tactile Switch	2463	680pF., 10%, 2kV, Ceramic (Used w/CRT A 80ECK272X56)	2020 558 90485
1603	Tactile Switch		1.2nF., 10%, 2kV, Ceramic (Used w/ CRT A80QCF340X34(N)).	2020 558 90488
1606	Tactile Switch	2464	2.2uF., 5%, 160V, Polypropylene	2222 479 90042
1660	Crystal Resonator, 12.000 MHz.	2465	0.013uF., 5%, 1.6KV, Polypropylene.	2222 375 90157
1831	Crystal Resonator, 18.432 MHz.	2466	0.01uF., 10%, 400V, Polyester (Used w /CRT A80ECK272X56)	2222 347 90218
2004	0.047uF., 25 Volt, Ceramic	2466	0.15uF., 10%, 400V, Polyester (Used w/ CRT A80QCF340X34(N)).	2222 347 90219
2005	10uF., 20%, 50V, Electrolytic	2468	.018uF., 10%, 400V, Polyester (Used w/ CRT A80ECK272X56)	2222 347 90222
2006	470uF., 20%, 16V, Electrolytic	2471	10nF., 10%, 400V, Polyester (Used w/ CR T A80QCF340X34(N)).	2222 347 90218
2007	0.1uF., 25V, Ceramic	2472	0.1uF., 10%, 63V, Polyester	2222 365 75104
2008	100uF., 20%, 25V, Electrolytic	2473	0.15uF., 10%, 63V, Polyester	2222 365 75104
2009	0.022uF., 50 Volt, Ceramic	2474	2200pF., 50 Volt, Ceramic	3198 017 02220
2101	0.47uF., 16 Volt, Ceramic	2475	2200pF., 50 Volt, Ceramic	3198 017 02220
2102	22pF., 50 Volt, NP0, Ceramic	2476	4700pF., 50 Volt, Ceramic	3198 017 04720
2103	330pF., 50 Volt, NP0, Ceramic	2480	47uF., 20%, 25V, Electrolytic	2020 021 90586
2104	330pF., 50 Volt, NP0, Ceramic	2481	470pF., 500V, Ceramic	3198 019 44710
2105	10uF., 20%, 50V, Electrolytic	2482	0.068uF 10%, 250V, Polypropylene	2222 347 90234
2106	10uF., 20%, 50V, Electrolytic	2485	4.7uF., 20%, 250V, Electrolytic	2020 021 90856
2111	22pF., 50 Volt, NP0, Ceramic	2486	470uF., 20%, 16 Volt, Electrolytic	2020 021 91577
2112	22pF., 50 Volt, NP0, Ceramic	2487	47uF., 20%, 50V, Electrolytic	2020 021 90854
2113	22pF., 50 Volt, NP0, Ceramic	2488	1000uF., 20%, 16 Volt, Electrolytic	2020 021 91049
2121	22pF., 50 Volt, NP0, Ceramic	2489	470uF., 20%, 16 Volt, Electrolytic	2020 021 91577
2122	330pF., 50 Volt, NP0, Ceramic	2491	1000pF., 500V, Ceramic	3198 019 41020
2123	2.2uF., 10 Volt, Ceramic	S 2500	0.47uF., 20%, 275 V, Polypropylene	2222 336 29148
2124	330pF., 50 Volt, NP0, Ceramic	2501	2200pF., 1kV, Ceramic	3198 019 52220
2125	2.2uF., 10 Volt, Ceramic	2502	2200pF., 1kV, Ceramic	3198 019 52220
2131	330pF., 50 Volt, NP0, Ceramic	2503	470uF., 20%, 200V, Electrolytic	2020 024 90626
2132	2.2uF., 10 Volt, Ceramic	2505	2200pF., 1kV, Ceramic	3198 019 52220
2133	330pF., 50 Volt, NP0, Ceramic	2507	470pF., 50 Volt, Ceramic	3198 017 04710
2134	2.2uF., 10 Volt, Ceramic	2508	470pF., 10%, 1kV, Ceramic	2020 558 90471
2135	22pF., 50 Volt, NP0, Ceramic	S 2515	1500pF., 20%, 250 Volt, Ceramic	2020 554 90128
2136	22pF., 50 Volt, NP0, Ceramic	2520	0.1uF., 16 Volt, Ceramic	3198 017 01040
2141	330pF., 50 Volt, NP0, Ceramic			
2143	0.1uF., 25V, Ceramic			
2171	2200pF., 10%, 50V, Ceramic			
2181	22pF., 50 Volt, NP0, Ceramic			
2184	2.2uF., 10 Volt, Ceramic			
2201	0.1uF., 25V, Ceramic			
2202	0.1uF., 25V, Ceramic			
2203	0.1uF., 25V, Ceramic			
2204	0.1uF., 25V, Ceramic			
2205	0.22uF., 25V, Ceramic			

S = Safety Part Be sure to use exact replacement part.

32PS60B121 (continued)

9521	Jumper	3198	036	90010	9836	Jumper	3198	036	90010
9522	Jumper	3198	036	90010	9837	Jumper	3198	036	90010
9524	Jumper	3198	036	90010	9838	Jumper	3198	036	90010
9525	Jumper	3198	036	90010	9839	Jumper	3198	036	90010
9610	Jumper	3198	036	90010	9840	Jumper	3198	036	90010
9611	Jumper	3198	036	90010	9841	Jumper	3198	036	90010
9612	Jumper	3198	036	90010	9842	Jumper	3198	036	90010
9613	Jumper	3198	036	90010	9843	Jumper	3198	036	90010
9614	Jumper	3198	036	90010	9844	Jumper	3198	036	90010
9615	Jumper	3198	036	90010	9845	Jumper	3198	036	90010
9616	Jumper	3198	036	90010	9846	Jumper	3198	036	90010
9617	Jumper	3198	036	90010	9847	Jumper	3198	036	90010
9618	Jumper	3198	036	90010	9848	Jumper	3198	036	90010
9619	Jumper	3198	036	90010	9849	Jumper	3198	036	90010
9620	Jumper	3198	036	90010	9851	Jumper	3198	036	90010
9621	Jumper	3198	036	90010	9901	Jumper	3198	036	90010
9622	Jumper	3198	036	90010	9902	Jumper	3198	036	90010
9623	Jumper	3198	036	90010	9903	Jumper	3198	036	90010
9624	Jumper	3198	036	90010	9904	Jumper	3198	036	90010
9625	Jumper	3198	036	90010	9911	Jumper	3198	036	90010
9626	Jumper	3198	036	90010	9912	Jumper	3198	036	90010
9627	Jumper	3198	036	90010	9913	Jumper	3198	036	90010
9628	Jumper	3198	036	90010	9914	Jumper	3198	036	90010
9629	Jumper	3198	036	90010	9915	Jumper	3198	036	90010
9630	Jumper	3198	036	90010	9916	Jumper	3198	036	90010
9631	Jumper	3198	036	90010	9918	Jumper	3198	036	90010
9632	Jumper	3198	036	90010	9919	Jumper	3198	036	90010
9633	Jumper	3198	036	90010	9920	Jumper	3198	036	90010
9634	Jumper	3198	036	90010	9921	Jumper	3198	036	90010
9635	Jumper	3198	036	90010	9922	Jumper	3198	036	90010
9636	Jumper	3198	036	90010	9991	Jumper	3198	036	90010
9637	Jumper	3198	036	90010	9993	Jumper	3198	036	90010
9638	Jumper	3198	036	90010	9994	Jumper	3198	036	90010
9639	Jumper	3198	036	90010	9996	Jumper	3198	036	90010
9640	Jumper	3198	036	90010	9997	Jumper	3198	036	90010
9641	Jumper	3198	036	90010	9998	Jumper	3198	036	90010
9642	Jumper	3198	036	90010	CBA	Main Chassis	3139	178	87841
9643	Jumper	3198	036	90010					
9644	Jumper	3198	036	90010	Front I/O, Control, Headphone Panel				
9645	Jumper	3198	036	90010	Front I/O, Control, Headphone Panel				
9646	Jumper	3198	036	90010					
9648	Jumper	3198	036	90010	PIP Panel				
9650	Jumper	3198	036	90010	PIP Panel				
9654	Jumper	3198	036	90010					
9655	Jumper	3198	036	90010	Side A/V, Headphone Panel				
9656	Jumper	3198	036	90010	Side A/V, Headphone Panel				
9657	Jumper	3198	036	90010					
9658	Jumper	3198	036	90010	CRT Panel				
9659	Jumper	3198	036	90010	CRT Panel				
9660	Jumper	3198	036	90010					
9661	Jumper	3198	036	90010	Top Control Panel				
9662	Jumper	3198	036	90010	Top Control Panel				
9663	Jumper	3198	036	90010					
9664	Jumper	3198	036	90010	Model 32PS60B/121 Cabinet Parts				
9665	Jumper	3198	036	90010	Model 32PS60B/121 Cabinet Parts				
9666	Jumper	3198	036	90010	S AC01 AC Power Cord	3135	010	03831	
9668	Jumper	3198	036	90010	AC02 Anode Clip	3135	014	04471	
9669	Jumper	3198	036	90010	AC03 Cabinet, Back	3139	124	35191	
9670	Jumper	3198	036	90010	AC04 Cabinet, Front Assembly	3121	237	51841	
9672	Jumper	3198	036	90010	AC04A Cabinet Front (Included in Front Assy)	3139	137	71501	
9674	Jumper	3198	036	90010	AC05 Chassis Tray	3139	124	31323	
9675	Jumper	3198	036	90010	AC06 Control Buttons	3139	124	32711	
9676	Jumper	3198	036	90010	S AC08 CRT A80ECK272X56 (Value of Comp 2209 = 4.7uF)	4835	131	27165	
9678	Jumper	3198	036	90010	S AC08 CRT A80QCF340X34(N) (Value of Comp 2209 = 10uF)	9301	904	59463	
9679	Jumper	3198	036	90010	S AC09 Degaussing Coil (Used w/CRT A80ECK272S 56)	2422	549	43977	
9680	Jumper	3198	036	90010	S AC09 Degaussing Coil (Used w/CRT A80QCF340X 34(N))	2422	549	45334	
9683	Jumper	3198	036	90010	AC10 Degaussing Coil Holder	3135	013	01661	
9685	Jumper	3198	036	90010	AC11 Light Guide	3139	124	32681	
9689	Jumper	3198	036	90010	AC12 Nameplate (Included in Front Assy)	3139	120	01301	
9690	Jumper	3198	036	90010	AC13 Owner's Manual	3121	235	20111	
9691	Jumper	3198	036	90010	AC16 Speaker, 16 ohm, 5 Watt (Included in Front Assy)	2422	264	00371	
9694	Jumper	3198	036	90010	AC21 Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263	
9695	Jumper	3198	036	90010	AC24 Spring, Braid Tension	3139	121	26231	
9697	Jumper	3198	036	90010	CBA Side-HP Jack Panel	3139	127	27471	
9698	Jumper	3198	036	90010	CBA PIP Panel	3139	127	23841	
9699	Jumper	3198	036	90010	REMOTE Remote Transmitter	3139	228	86501	
9821	Jumper	3198	036	90010					
9822	Jumper	3198	036	90010	Model 32PS60B/129 Cabinet Parts				
9824	Jumper	3198	036	90010	Model 32PS60B/129 Cabinet Parts				
9825	Jumper	3198	036	90010	S AC18 Deflection Yoke	3313	203	01351	
9826	Jumper	3198	036	90010					
9827	Jumper	3198	036	90010					
9828	Jumper	3198	036	90010					
9829	Jumper	3198	036	90010					
9830	Jumper	3198	036	90010					
9831	Jumper	3198	036	90010					
9832	Jumper	3198	036	90010					
9833	Jumper	3198	036	90010					
9834	Jumper	3198	036	90010					
9835	Jumper	3198	036	90010					

S = Safety Part Be sure to use exact replacement part.

32PS60B129 (continued)

3844	390 ohm, 5%	3198	021	53910
3845	390 ohm, 5%	3198	021	53910
3846	100 ohm, 5%	3198	021	51010
3848	220 ohm, 5%	3198	021	52210
3849	390 ohm, 5%	3198	021	53910
3850	390 ohm, 5%	3198	021	53910
3851	100 ohm, 5%	3198	021	51010
3852	12k, 5%	3198	021	51230
3853	12k, 5%	3198	021	51230
3854	15k, 5%	3198	021	51530
3856	820 ohm, 5%	3198	021	58210
3857	Zero ohm "Chip" Jumper	3198	021	90020
3858	1.2k, 5%	3198	021	51220
3859	4.7k, 5%	3198	021	54730
3860	1.8k, 5%	3198	021	51820
3862	33 ohm, 5%	3198	021	53390
3865	150 ohm, 5%, 1/6W, Carbon	3198	011	01510
3890	68 ohm, 5%, 1/6W, Carbon	3198	011	06890
4800	Zero ohm "Chip" Jumper	3198	021	90020
4870	Zero ohm "Chip" Jumper	3198	021	90020
4871	Zero ohm "Chip" Jumper	3198	021	90020
4872	Zero ohm "Chip" Jumper	3198	021	90020
4909	Zero ohm "Chip" Jumper	3198	021	90020
5890	Fixed Inductor, 10uH, 10%, (UAW)A.	3198	018	21090
5891	Fixed Inductor, 10uH, 10%, (UAW)A.	3198	018	21090
5892	Fixed Inductor, 10uH, 10%, (UAW)A.	3198	018	21090
6800	Diode, BAT85	9336	247	60133
6801	Diode, BAT85	9336	247	60133
6890	Diode Regulator, BZX384-C3V9 (9.1 Vol t)	3198	020	53980
7801	IC, HEF4053BT.	9333	729	60653
7802	IC, N74F06N.	9339	990	90602
7803	IC, M65669SP	9322	146	60682
7804	Transistor, BC847B	3198	010	42030
7805	Transistor, BC847B	3198	010	42030
7806	Transistor, BC847B	3198	010	42030
7807	Transistor, BC847B	3198	010	42030
7808	Transistor, PMBT2369	9338	288	90215
7809	Transistor, BC857B	3198	010	42150
7810	Transistor, BC847B	3198	010	42030
7811	Transistor, PMBT2369	9338	288	90215
7812	Transistor, BC857B	3198	010	42150
7813	Transistor, BC847B	3198	010	42030
7814	Transistor, PMBT2369	3198	010	43360
7815	Transistor, BC857B	3198	010	42150
7816	Transistor, BC847B	3198	010	42030
7818	IC, HEF4053BT.	9333	729	60653
7820	Transistor, BC847B	3198	010	42030
7890	IC, MC78M05CT.	9334	703	90687
7891	Transistor, BC337-40	9331	796	00126
9800	Jumper Wire.	0322	179	00003
9801	Jumper Wire.	0322	179	00003
9810	Jumper Wire.	0322	179	00003
9911	Jumper Wire.	0322	179	00003
9912	Jumper Wire.	0322	179	00003
9913	Jumper Wire.	0322	179	00003
9914	Jumper Wire.	0322	179	00003
9915	Jumper Wire.	0322	179	00003
9917	Jumper Wire.	0322	179	00003
9919	Jumper Wire.	0322	179	00003
9920	Jumper Wire.	0322	179	00003
9921	Jumper Wire.	0322	179	00003
9922	Jumper Wire.	0322	179	00003
9924	Jumper Wire.	0322	179	00003
9925	Jumper Wire.	0322	179	00003
9927	Jumper Wire.	0322	179	00003
9928	Jumper Wire.	0322	179	00003

9155 Jumper Wire. 0322 179 00003

CRT Panel
CRT Panel

Top Control Panel
Top Control Panel

MODEL 32PS60B/129 CBA'S

MODEL 32PS60B/129 CBA'S			
CBA Main Chassis	3139	137	21411
CBA Side A/V-Head Phone Panel.	3139	127	27471
CBA PIP.Panel L01L	3139	127	23841

Model 32PS60B/129 Cabinet Parts
Model 32PS60B/129 Cabinet Parts

S AC01 AC Power Cord.	3135	010	03831
AC02 Anode Clip	3135	014	04471
AC03 Cabinet, Back.	3139	124	35191
AC04 Cabinet Front.	3139	137	71501
AC05 Chassis Tray	3139	124	31323
AC06 Control Buttons.	3139	124	32711
S AC08 CRT A80LJF30X18.	9322	144	50682
S AC09 Degaussing Coil.	2422	549	43977
AC10 Degaussing Coil Holder	3135	013	01661
AC11 Light Guide.	3139	124	32681
AC12 Nameplate.	3139	120	01301
AC13 DFU.	3121	235	20111
AC16 Speaker, 16 ohm, 5 Watt.	2422	264	00371
AC18 Deflection yoke.	4835	150	17131
AC21 Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263
AC24 Spring, Braid Tension.	3139	121	26231
AC25 Family Sheet 32PS60 B129	3121	233	41011
REMOTE Remote Transmitter	3139	228	86501

Side A/V, Headphone Panel

0232 Side A/V, Headphone Panel			
Headphone Socket	2422	026	04747
0250 3 Pin Socket	2422	026	04815
0251 3 Pin Connector.	2412	020	00725
0253 3 Pin Connector.	2422	025	16382
0254 5 Pin Connector.	2422	025	12481
0255 4 Pin Connector.	2422	025	12479
2171 470pF., 50V, Ceramic	3198	019	14710
2172 470pF., 50V, Ceramic	3198	019	14710
2173 470pF., 50V, Ceramic	3198	019	14710
2174 470pF., 50V, Ceramic	3198	019	14710
2176 470pF., 50V, Ceramic	3198	019	14710
2177 100uF., 20%, 25V, Electrolytic	3198	025	31010
2178 470pF., 50V, Ceramic	3198	019	14710
2179 100uF., 20%, 25V, Electrolytic	3198	025	31010
3150 47k, 5%, 1/6W, Carbon.	3198	011	04730
3151 150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3152 47k, 5%, 1/6W, Carbon.	3198	011	04730
3153 150 ohm, 5%, 1/6W, Carbon.	3198	011	01510
3155 75 ohm, 5%, 1/6W, Carbon	3198	011	07590
3156 120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
3157 120 ohm, 5%, 1/6W, Carbon.	3198	011	01210
6161 Diode Regulator, BZX79-C6V8 (6.8 Volt)	3198	010	26880

S = Safety Part Be sure to use exact replacement part.

32PS61S121 (continued)

9522	Jumper	3198	036	90010	9837	Jumper	3198	036	90010
9524	Jumper	3198	036	90010	9838	Jumper	3198	036	90010
9525	Jumper	3198	036	90010	9839	Jumper	3198	036	90010
9610	Jumper	3198	036	90010	9840	Jumper	3198	036	90010
9611	Jumper	3198	036	90010	9841	Jumper	3198	036	90010
9612	Jumper	3198	036	90010	9842	Jumper	3198	036	90010
9613	Jumper	3198	036	90010	9843	Jumper	3198	036	90010
9614	Jumper	3198	036	90010	9844	Jumper	3198	036	90010
9615	Jumper	3198	036	90010	9845	Jumper	3198	036	90010
9616	Jumper	3198	036	90010	9846	Jumper	3198	036	90010
9617	Jumper	3198	036	90010	9847	Jumper	3198	036	90010
9618	Jumper	3198	036	90010	9848	Jumper	3198	036	90010
9619	Jumper	3198	036	90010	9849	Jumper	3198	036	90010
9620	Jumper	3198	036	90010	9851	Jumper	3198	036	90010
9621	Jumper	3198	036	90010	9901	Jumper	3198	036	90010
9622	Jumper	3198	036	90010	9902	Jumper	3198	036	90010
9623	Jumper	3198	036	90010	9903	Jumper	3198	036	90010
9624	Jumper	3198	036	90010	9904	Jumper	3198	036	90010
9625	Jumper	3198	036	90010	9911	Jumper	3198	036	90010
9626	Jumper	3198	036	90010	9912	Jumper	3198	036	90010
9627	Jumper	3198	036	90010	9913	Jumper	3198	036	90010
9628	Jumper	3198	036	90010	9914	Jumper	3198	036	90010
9629	Jumper	3198	036	90010	9915	Jumper	3198	036	90010
9630	Jumper	3198	036	90010	9916	Jumper	3198	036	90010
9631	Jumper	3198	036	90010	9918	Jumper	3198	036	90010
9632	Jumper	3198	036	90010	9919	Jumper	3198	036	90010
9633	Jumper	3198	036	90010	9920	Jumper	3198	036	90010
9634	Jumper	3198	036	90010	9921	Jumper	3198	036	90010
9635	Jumper	3198	036	90010	9922	Jumper	3198	036	90010
9636	Jumper	3198	036	90010	9991	Jumper	3198	036	90010
9637	Jumper	3198	036	90010	9993	Jumper	3198	036	90010
9638	Jumper	3198	036	90010	9994	Jumper	3198	036	90010
9639	Jumper	3198	036	90010	9996	Jumper	3198	036	90010
9640	Jumper	3198	036	90010	9997	Jumper	3198	036	90010
9641	Jumper	3198	036	90010	9998	Jumper	3198	036	90010
9642	Jumper	3198	036	90010	CBA	Main Chassis	3139	178	87841
9643	Jumper	3198	036	90010					
9644	Jumper	3198	036	90010					
9645	Jumper	3198	036	90010					
9646	Jumper	3198	036	90010					
9648	Jumper	3198	036	90010					
9650	Jumper	3198	036	90010					
9654	Jumper	3198	036	90010					
9655	Jumper	3198	036	90010					
9656	Jumper	3198	036	90010					
9657	Jumper	3198	036	90010					
9658	Jumper	3198	036	90010					
9659	Jumper	3198	036	90010					
9660	Jumper	3198	036	90010					
9661	Jumper	3198	036	90010					
9662	Jumper	3198	036	90010					
9663	Jumper	3198	036	90010					
9664	Jumper	3198	036	90010					
9665	Jumper	3198	036	90010					
9666	Jumper	3198	036	90010					
9668	Jumper	3198	036	90010					
9669	Jumper	3198	036	90010					
9670	Jumper	3198	036	90010					
9672	Jumper	3198	036	90010					
9674	Jumper	3198	036	90010					
9675	Jumper	3198	036	90010					
9676	Jumper	3198	036	90010					
9678	Jumper	3198	036	90010					
9679	Jumper	3198	036	90010					
9680	Jumper	3198	036	90010					
9683	Jumper	3198	036	90010					
9685	Jumper	3198	036	90010					
9686	Jumper	3198	036	90010					
9687	Jumper	3198	036	90010					
9688	Jumper	3198	036	90010					
9689	Jumper	3198	036	90010					
9690	Jumper	3198	036	90010					
9691	Jumper	3198	036	90010					
9694	Jumper	3198	036	90010					
9695	Jumper	3198	036	90010					
9697	Jumper	3198	036	90010					
9698	Jumper	3198	036	90010					
9699	Jumper	3198	036	90010					
9821	Jumper	3198	036	90010					
9822	Jumper	3198	036	90010					
9824	Jumper	3198	036	90010					
9825	Jumper	3198	036	90010					
9826	Jumper	3198	036	90010					
9828	Jumper	3198	036	90010					
9829	Jumper	3198	036	90010					
9830	Jumper	3198	036	90010					
9831	Jumper	3198	036	90010					
9832	Jumper	3198	036	90010					
9834	Jumper	3198	036	90010					
9835	Jumper	3198	036	90010					
9836	Jumper	3198	036	90010					

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel									
PIP Panel									
0216	3 Pin Connector	2412	020	00725					
0219	5 Pin Connector	2422	025	12481					
0229	2 Pin Connector	2412	020	00724					
0235	2 Pin Connector	2412	020	00724					
0236	4 Pin Connector	2422	025	12479					
0238	4 Pin Connector	2422	025	12479					
0242	2 Pin Connector	2412	020	00724					
0266	3 Pin Connector	2412	020	00725					
0290	4 Pin Connector	2422	025	12479					
1802	14.31818MHz Crystal Resonator, HC49/U	2422	543	00904					
2800	0.47uF., 16V, Ceramic	3198	017	24740					
2801	0.1uF., 25V, Ceramic	3198	023	21040					
2802	0.1uF., 25V, Ceramic	3198	023	21040					
2803	47uF., 20%, 25V, Electrolytic	3198	025	34790					
2804	10uF., 20%, 50V, Electrolytic	3198	025	51090					
2805	0.1uF., 25V, Ceramic	3198	023	21040					
2806	100uF., 20%, 25V, Electrolytic	3198	025	31010					
2807	47pF., 50V, Ceramic	3198	016	04790					
2808	10uF., 20%, 50V, Electrolytic	3198	025	51090					
2809	0.01uF., 50V, Ceramic	3198	017	01030					
2810	0.01uF., 50V, Ceramic	3198	017	01030					
2811	0.01uF., 50V, Ceramic	3198	017	01030					
2812	47uF., 20%, 25V, Electrolytic	3198	025	34790					
2813	10uF., 20%, 50V, Electrolytic	3198	025	51090					
2814	0.01uF., 50V, Ceramic	3198	017	01030					
2815	0.01uF., 50V, Ceramic	3198	017	01030					
2816	0.01uF., 50V, Ceramic	3198	017	01030					
2819	12pF., 50V, Ceramic	3198	016	01290					
2820	0.22uF., 25V, Ceramic	3198	023	22240					
2821	0.22uF., 25V, Ceramic	3198	023	22240					
2822	0.033uF., 50V, Ceramic	3198	017	03330					
2823	0.01uF., 50V, Ceramic	3198	017	01030					
2824	47uF., 20%, 25V, Electrolytic	3198	025	34790					
2825	0.01uF., 50V, Ceramic	3198	017	01030					
2826	560pF., 50V, Ceramic	3198	016	05610					
2827	0.01uF., 50V, Ceramic	3198	017	01030					
2828	0.1uF., 25V, Ceramic	3198	023	21040					
2829	47uF., 20%, 25V, Electrolytic	3198	025	34790					
2830	0.1uF., 25V, Ceramic	3198	023	21040					
2831	47uF., 20%, 25V, Electrolytic	3198	025	34790					
2832	0.1uF., 25V, Ceramic	3198	023	21040					
2833	47uF., 20%, 25V, Electrolytic	3198	025	34790					
2834	0.1uF., 16V, Ceramic	3198	017	01040					
2837	0.01uF., 50V, Ceramic	3198	017	01030					
2858	47uF., 20%, 25V, Electrolytic	3198	025	34790					
2859	0.47uF., 16V, Ceramic	3198	017	24740					
2862	390pF., 50V, Ceramic	3198	016	03910					
2890	100uF., 20%, 25V, Electrolytic	3198	025	31010					
2891	0.01uF., 50V, Ceramic	3198	017	01030					
2892	47uF., 20%, 25V, Electrolytic	3198	025	34790					

32PS61S121 (continued)

2893	47uF., 20%, 25V, Electrolytic.	3198 025 34790
2894	0.01uF., 50V, Ceramic.	3198 017 01030
3801	100 ohm, 5%.	3198 021 51010
3802	100 ohm, 5%.	3198 021 51010
3803	1k, 5%, 1/6W, Carbon	3198 011 01020
3804	1.5k, 5%, 1/6W, Carbon	3198 011 01520
3805	100 ohm, 5%.	3198 021 51010
3806	2.7k, 5%.	3198 021 52720
3807	8.2k, 5%.	3198 021 58220
3808	8.2k, 5%.	3198 021 58220
3809	8.2k, 5%.	3198 021 58220
3810	10k, 5%.	3198 021 51030
3812	10k, 5%.	3198 021 51030
3813	15k, 5%, 1/6W, Carbon.	3198 011 01530
3814	1k, 5%.	3198 021 51020
3815	1k, 5%.	3198 021 51020
3816	820 ohm, 5%.	3198 021 58210
3817	1k, 5%.	3198 021 51020
3818	15k, 5%.	3198 021 51530
3819	10k, 5%.	3198 021 51030
3820	1k, 5%, 1/6W, Carbon	3198 011 01020
3821	390 ohm, 5%.	3198 021 53910
3822	390 ohm, 5%.	3198 021 53910
3823	390 ohm, 5%.	3198 021 53910
3824	15k, 5%.	3198 021 51530
3827	330 ohm, 5%.	3198 021 53310
3828	4.7Meg, 5%.	3198 021 54750
3829	15k, 5%.	3198 021 51530
3830	2.2k, 5%.	3198 021 52220
3831	1Meg, 5%.	3198 021 51050
3832	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
3833	100 ohm, 5%.	3198 021 51010
3834	100 ohm, 5%.	3198 021 51010
3836	1k, 5%.	3198 021 51020
3838	220 ohm, 5%.	3198 021 52210
3839	390 ohm, 5%.	3198 021 53910
3840	390 ohm, 5%.	3198 021 53910
3841	100 ohm, 5%.	3198 021 51010
3843	220 ohm, 5%.	3198 021 52210
3844	390 ohm, 5%.	3198 021 53910
3845	390 ohm, 5%.	3198 021 53910
3846	100 ohm, 5%.	3198 021 51010
3848	220 ohm, 5%.	3198 021 52210
3849	390 ohm, 5%.	3198 021 53910
3850	390 ohm, 5%.	3198 021 53910
3851	100 ohm, 5%.	3198 021 51010
3852	12k, 5%.	3198 021 51230
3853	12k, 5%.	3198 021 51230
3854	15k, 5%.	3198 021 51530
3856	820 ohm, 5%.	3198 021 58210
3857	Zero ohm "Chip" Jumper	3198 021 90020
3858	1.2k, 5%.	3198 021 51220
3859	4.7k, 5%.	3198 021 54730
3860	1.8k, 5%.	3198 021 51820
3862	33 ohm, 5%.	3198 021 53390
3865	150 ohm, 5%, 1/6W, Carbon.	3198 011 01510
3890	68 ohm, 5%, 1/6W, Carbon	3198 011 06890
4800	Zero ohm "Chip" Jumper	3198 021 90020
4870	Zero ohm "Chip" Jumper	3198 021 90020
4871	Zero ohm "Chip" Jumper	3198 021 90020
4872	Zero ohm "Chip" Jumper	3198 021 90020
4909	Zero ohm "Chip" Jumper	3198 021 90020
5890	Fixed Inductor, 10uH, 10%, (UAW)A.	3198 018 21090
5891	Fixed Inductor, 10uH, 10%, (UAW)A.	3198 018 21090
5892	Fixed Inductor, 10uH, 10%, (UAW)A.	3198 018 21090
6800	Diode, BAT85	9336 247 60133
6801	Diode, BAT85	9336 247 60133
6890	Diode Regulator, BZX384-C3V9 (9.1 Vol t)	3198 020 53980
7801	IC, HEF4053BT.	9333 729 60653
7802	IC, N74F06N.	9339 990 90602
7803	IC, M65669SP	9322 146 60682
7804	Transistor, BC847B	3198 010 42030
7805	Transistor, BC847B	3198 010 42030
7806	Transistor, BC847B	3198 010 42030
7807	Transistor, BC847B	3198 010 42030
7808	Transistor, PMBT2369	9338 288 90215
7809	Transistor, BC857B	3198 010 42150
7810	Transistor, BC847B	3198 010 42030
7811	Transistor, PMBT2369	9338 288 90215
7812	Transistor, BC857B	3198 010 42150
7813	Transistor, BC847B	3198 010 42030
7814	Transistor, PMBT2369	3198 010 43360
7815	Transistor, BC857B	3198 010 42150
7816	Transistor, BC847B	3198 010 42030
7818	IC, HEF4053BT.	9333 729 60653
7820	Transistor, BC847B	3198 010 42030
7890	IC, MC78M05CT.	9334 703 90687
7891	Transistor, BC337-40	9331 796 00126
9800	Jumper Wire	0322 179 00003
9801	Jumper Wire	0322 179 00003
9810	Jumper Wire	0322 179 00003

9911	Jumper Wire.	0322 179 00003
9912	Jumper Wire.	0322 179 00003
9913	Jumper Wire.	0322 179 00003
9914	Jumper Wire.	0322 179 00003
9915	Jumper Wire.	0322 179 00003
9917	Jumper Wire.	0322 179 00003
9919	Jumper Wire.	0322 179 00003
9920	Jumper Wire.	0322 179 00003
9921	Jumper Wire.	0322 179 00003
9922	Jumper Wire.	0322 179 00003
9924	Jumper Wire.	0322 179 00003
9925	Jumper Wire.	0322 179 00003
9927	Jumper Wire.	0322 179 00003
9928	Jumper Wire.	0322 179 00003

Side A/V, Headphone Panel

	Side A/V, Headphone Panel		
0021	Bracket, Side A/V.	3139 124 40481	
0163	Cable, 6 Pin, 560 MM	3139 131 01551	
0186	Cable, 5 Pin	3139 110 38861	
0232	Headphone Jack	2422 026 04747	
0250	3 Pin Board Connector.	2422 026 04815	
0251	3 Pin Connector.	2412 020 00725	
0253	3 Pin Connector.	2422 025 16382	
0254	5 Pin Connector.	2422 025 12481	
0255	4 Pin Board Connector.	2422 025 12479	
2171	470pF., 10%, 50V, Ceramic.	3198 019 14710	
2172	470pF., 10%, 50V, Ceramic.	3198 019 14710	
2173	470pF., 10%, 50V, Ceramic.	3198 019 14710	
2174	470pF., 10%, 50V, Ceramic.	3198 019 14710	
2176	470pF., 10%, 50V, Ceramic.	3198 019 14710	
2177	10uF., 20%, 50V, Electrolytic.	3198 025 51090	
2178	470pF., 10%, 50V, Ceramic.	3198 019 14710	
2179	10uF., 20%, 50V, Electrolytic.	3198 025 51090	
3150	47k, 5%, 1/6 W, Carbon	3198 011 04730	
3151	150 ohm, 5%, 1/6 W, Carbon	3198 011 01510	
3152	47k, 5%, 1/6 W, Carbon	3198 011 04730	
3153	150 ohm, 5%, 1/6 W, Carbon	3198 011 01510	
3156	120 ohm, 5%, 1/6W, Carbon Film	3198 011 01210	
3157	120 ohm, 5%, 1/6W, Carbon Film	3198 011 01210	
6161	Diode, Regulator, BZX79-C6V8	3198 010 26880	
9155	Wire, Jumper	0322 179 00003	
CBA	Side A/V-Headphone Panel	3139 137 29181	

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS61S/121 Cabinet Parts

	Model 32PS61S/121 Cabinet Parts		
S AC01	AC Power Cord.	3135 010 03831	
AC02	Anode Clip	3135 014 04471	
AC03	Cabinet, Back.	3139 124 40522	
AC04	Cabinet, Front Assembly.	3121 237 52461	
AC04A	Cabinet, Front (Included in Front Assy	3139 138 12691	
AC05	Chassis Tray	3139 124 31323	
AC06	Control Buttons.	3139 124 32711	
S AC08	CRT A80ECK272X56 (Value of Comp 2209 = 4.7uF)	4835 131 27165	
S AC08	CRT A80QCF340X34(N) (Value of Comp 220 9 = 10uF).	9301 904 59463	
S AC09	Degaussing Coil (Used w/CRT A80ECK272S 56)	2422 549 43977	
S AC09	Degaussing Coil (Used w/CRT A80QCF340X 34(N).)	2422 549 45334	
AC10	Degaussing Coil Holder	3135 013 01661	
AC11	Light Guide.	3139 124 32681	
AC12	Nameplate (Included in Front Assy)	3139 120 01471	
AC13	DFU.	3121 235 20111	
AC16	Speaker, 16 ohm, 5 Watt (Included in F ront Assy)	2422 264 00371	
AC21	Battery, Zinc, 1.5V, 2-Pk.	9299 000 65263	
AC24	Spring, Braid Tension.	3139 121 26231	
REMOTE	Remote Transmitter	3139 228 86501	
AC04	Cabinet, Front Assembly.	3121 237 51791	

Model 32PS60B/129 Cabinet Parts

	Model 32PS60B/129 Cabinet Parts		
S AC18	Deflection Yoke.	3313 203 01351	

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Main Chassis

	Main Chassis		2243	2200pF., 50V, Ceramic	3198 017 02220
0127	2 Pin Fuse Socket	3122 358 71251	2244	0.1uF., 10%, 50V, Metalized Polyester	3198 014 01040
0136	IC-Spring, For Item 7901 (IC AN7522N)	3104 301 22081	2245	0.22uF., 25V, Ceramic	3198 023 22240
0137	Spring For Item 7400	3139 121 24581	2247	1000uF., 20%, 16V, Electrolytic	3198 026 21020
0138	IC-Spring, For Item 7401	3104 301 22081	2248	0.022uF., 50V, Ceramic	3198 017 02230
0140	Spring For Item 7460	3139 121 24581	2249	0.022uF., 50V, Ceramic	3198 017 02230
0141	IC-Spring For Item 7330	3104 301 22081	2250	2.2uF., 20%, 50V, Electrolytic	3198 025 52280
0211	2 Pin Connector (AC Input Plug)	2422 025 16269	2252	1000pF., 50V, Ceramic	3198 016 01020
0212	2 Pin Connector (Degaussing Plug (RED))	2422 025 16375	2253	1000pF., 50V, Ceramic	3198 016 01020
0217	5 Pin Connector	2422 025 12481	2254	Zero ohm "Chip" Jumper	3198 021 90020
0219	6 Pin Connector	2422 025 12482	2330	0.1uF., 10%, 250V, Metalized Polyester	2222 368 90177
0220	5 Pin Connector	2422 025 04853	2340	10uF., 20%, 250V, Electrolytic	2020 012 93495
0221	4 Pin Connector	2422 025 15503	2341	3300pF., 500V, Ceramic	3198 019 43320
0222	2 Pin Connector (Vertical Deflection)	2422 025 10646	2342	0.001uF., 50V, Ceramic	3198 017 01020
0223	9 Pin Connector	2422 026 05186	2343	3300pF., 2kV, 10%, Ceramic	2020 558 90529
0225	10 Pin Connector	2422 026 04926	2344	0.1uF., 25V, Ceramic	3198 023 21040
0226	4 Pin Connector	2422 025 12479	2345	1000pF., 500V, Ceramic	3198 019 41020
0229	7 Pin Connector	2422 025 11244	2401	2.2uF., 20%, 50V, Electrolytic	2020 021 90552
0240	4 Pin Connector	2422 025 12479	2402	470pF., 500V, Ceramic	3198 019 44710
0242	5 Pin Connector	2422 025 12481	2404	47uF., 20%, 50V, Electrolytic	3198 025 54790
0243	6 Pin Connector	2422 025 04854	2405	1000pF., 50V, Ceramic	3198 016 01020
0244	5 Pin Connector	2422 025 04853	2441	1uF., 20%, 50V, Electrolytic	3198 025 51080
0245	6 Pin Connector	2422 025 04854	2443	0.047uF., 50V, Ceramic	3198 017 24730
0246	5 pin Connector	2422 025 12481	2444	1uF., 20%, 50V, Electrolytic	3198 025 51080
0254	9 Pin CRT Socket (N-Neck)	2422 500 80067	2450	47uF., 20%, 160V, Electrolytic	2020 021 91139
0267	3 Pin Connector	2412 020 00725	2451	0.015uF., 10%, 50V, Metalized Polyeste	3198 014 01530
0269	3 Pin Connector	2422 026 05182	2455	47uF., 20%, 25V, Electrolytic	3198 025 34790
0284	4 Pin Connector	2422 025 12479	2457	0.43uF., 5%, 250V, Metalized Polypropy	2222 479 90042
1000	Tuner V+U PLL F MN ENV56D98G3	2422 542 90108	2458	lene	2022 333 00164
1002	45.75MHz Saw Filter	2422 549 44327	2459	2.2uF, 20%, 100V, Electrolytic	2020 021 91331
1200	4.5MHz Ceramic Filter	2422 549 40807	2460	680pF., 500V, Ceramic	3198 019 46810
1500	4 Amp, 250V, Fuse (5X20)	2422 086 10905	2463	100pF., 50V, Ceramic	3198 016 01010
1515	5 Amp, 12V, 1 Pin Relay	2422 132 07444	2464	680pF., 2kV, 10%, Ceramic	2020 558 90485
1600	Tact Switch	2422 128 02742	2465	2.2uF., 5%, 160V, Metalized Polypropyl	ene
1601	Tact Switch	2422 128 02742	2466	0.013uF., 5%, 1.6kV, Metalized Polypro	ylene
1602	Tact Switch	2422 128 02742	2468	0.01uF., 10%, 400V, Metalized Polyeste	2222 375 90157
1603	Tact Switch	2422 128 02742	2468	0.018uF., 10%, 400V, Metalized Polyst	er
1606	Tact Switch	2422 128 02742	2471	0.1uF., 10%, 50V, Metalized Polyester	3198 014 01040
1660	12MHz Crystal Resonator, HC49/U A	2422 543 01203	2472	0.15uF., 10%, 50V, Metalized Polyester	3198 014 01540
1831	18.432MHz Crystal Resonator, HC49/U A	2422 543 00842	2473	0.1uF., 10%, 50V, Metalized Polyester	3198 014 01040
2004	0.047uF., 25V, Ceramic	3198 023 04730	2474	2200pF., 50V, Ceramic	3198 017 02220
2005	10uF., 20%, 50V, Electrolytic	3198 025 51090	2475	2200pF., 50V, Ceramic	3198 017 02220
2006	470uF., 20%, 16V, Electrolytic	3198 025 24710	2476	4700pF., 50V, Ceramic	3198 017 04720
2007	0.1uF., 25V, Ceramic	3198 023 21040	2480	47uF., 20%, 25V, Electrolytic	2020 021 90586
2008	100uF., 20%, 25V, Electrolytic	3198 025 31010	2481	470pF., 500V, Ceramic	3198 019 44710
2009	0.022uF., 50V, Ceramic	3198 017 02230	2482	0.068uF., 10%, 250V, Polypropylene	2222 347 90234
2101	0.47uF., 16V, Ceramic	3198 017 24740	2485	4.7uF., 20%, 250V, Electrolytic	2020 021 90856
2102	22pF., 50V, Ceramic	3198 016 02290	2486	470uF., 20%, 16V, Electrolytic	2020 021 91577
2103	330pF., 50V, Ceramic	3198 016 03310	2487	47uF., 20%, 50V, Electrolytic	2020 021 90854
2104	330pF., 50V, Ceramic	3198 016 03310	2488	1000uF., 20%, 16V, Electrolytic	2020 021 91049
2105	10uF., 20%, 50V, Electrolytic	3198 025 51090	2489	470uF., 20%, 16V, Electrolytic	2020 021 91577
2106	10uF., 20%, 50V, Electrolytic	3198 025 51090	2491	1000pF., 500V, Ceramic	3198 019 41020
2111	22pF., 50V, Ceramic	3198 016 02290	2500	0.47uF, 20%, 275V, Metalized Polypropy	lene
2112	22pF., 50V, Ceramic	3198 016 02290	2501	2200pF., 1kV, Ceramic	2022 330 00018
2113	22pF., 50V, Ceramic	3198 016 02290	2502	2200pF., 1kV, Ceramic	3198 019 52220
2121	22pF., 50V, Ceramic	3198 016 02290	2503	470uF., 20%, 200V, Electrolytic	3198 019 52220
2122	330pF., 50V, Ceramic	3198 016 03310	2504	2200pF., 1kV, Ceramic	2020 024 90647
2123	2.2uF., 10V, Ceramic	3198 017 22250	2505	2200pF., 1kV, Ceramic	3198 019 52220
2124	330pF., 50V, Ceramic	3198 016 03310	2507	470pF., 50V, Ceramic	3198 019 52220
2125	2.2uF., 10V, Ceramic	3198 017 22250	2508	470pF., 1kV, 10%, Ceramic	3198 017 04710
2131	330pF., 50V, Ceramic	3198 016 03310	2515	1500pF., 250V, 20%, Ceramic	3198 019 64710
2132	2.2uF., 10V, Ceramic	3198 017 22250	2520	0.1uF., 16V, Ceramic	2020 554 90172
2133	330pF., 50V, Ceramic	3198 016 03310	2520	0.1uF., 16V, Ceramic	3198 017 01040
2134	2.2uF., 10V, Ceramic	3198 017 22250	2521	22uF., 20%, 50V, Electrolytic	3198 025 52290
2135	22pF., 50V, Ceramic	3198 016 02290	2522	0.1uF., 16V, Ceramic	3198 017 01040
2136	22pF., 50V, Ceramic	3198 016 02290	2523	1500pF., 2kV, 10%, Ceramic	2020 558 90489
2141	330pF., 50V, Ceramic	3198 016 03310	2525	470pF., 50V, Ceramic	3198 017 04710
2142	2.2uF., 20%, 50V, Electrolytic	3198 025 52280	2527	2200pF., 50V, Ceramic	3198 017 02220
2143	0.1uF., 50V, Ceramic	3198 017 21040	2528	0.001uF., 50V, Ceramic	3198 017 01020
2171	2200pF., 50V, Ceramic	3198 019 12220	2540	0.01uF., 50V, Ceramic	3198 017 01030
2181	22pF., 50V, Ceramic	3198 016 02290	2560	680pF., 1kV, 10%, Ceramic	2020 558 90472
2184	2.2uF., 10V, Ceramic	3198 017 22250	2561	100uF., 20%, 160V, Electrolytic	2020 021 91654
2201	0.1uF., 25V, Ceramic	3198 023 21040	2562	1000pF., 50V, Ceramic	3198 019 11020
2202	0.1uF., 25V, Ceramic	3198 023 21040	2563	0.1uF., 10%, 50V, Metalized Polyester	3198 014 01040
2203	0.1uF., 25V, Ceramic	3198 023 21040	2564	2200uF., 20%, 16V, Electrolytic	2020 012 93057
2204	0.1uF., 25V, Ceramic	3198 023 21040	2566	470uF., 20%, 6.3V, Electrolytic	2020 012 93185
2205	0.22uF., 25V, Ceramic	3198 023 22240	2567	47uF., 20%, 25V, Electrolytic	3198 025 34790
2208	0.1uF., 25V, Ceramic	3198 023 21040	2568	1uF., 20%, 50V, Electrolytic	3198 025 51080
2209	4.7uF., 20%, 50V, Electrolytic	3198 025 54780	2580	47uF., 20%, 25V, Electrolytic	3198 025 34790
2210	1uF., 20%, 50V, Electrolytic	3198 025 51080	2581	22uF., 20%, 50V, Electrolytic	3198 025 52290
2211	0.47uF., 16V, Ceramic	3198 017 24740	2601	0.22uF., 25V, Ceramic	3198 023 22240
2213	0.022uF., 50V, Ceramic	3198 017 02230	2602	100pF., 50V, Ceramic	3198 016 01010
2214	0.022uF., 50V, Ceramic	3198 017 02230	2606	1000pF., 50V, Ceramic	3198 016 01020
2215	0.022uF., 50V, Ceramic	3198 017 02230	2607	33pF., 50V, Ceramic	3198 016 03390
2216	1000uF., 20%, 16V, Electrolytic	3198 026 21020	2608	0.1uF., 25V, Ceramic	3198 023 21040
2217	0.022uF., 50V, Ceramic	3198 017 02230	2609	33pF., 50V, Ceramic	3198 016 03390
2219	0.22uF., 25V, Ceramic	3198 023 22240	2611	0.1uF., 25V, Ceramic	3198 023 21040
2220	0.47uF., 10%, 50V, Metalized Polyester	3198 014 04740	2612	22pF., 50V, Ceramic	3198 016 02290
2221	0.022uF., 50V, Ceramic	3198 017 02230	2613	22pF., 50V, Ceramic	3198 016 02290
2241	4700pF., 50V, Ceramic	3198 017 04720			
2242	1uF., 16V, Ceramic	3198 017 21050			

S = Safety Part Be sure to use exact replacement part.

33LL881121 (continued)

2615	1000pF., 50V, Ceramic.	3198 016 01020	3177	8.2k, 5%, 1/6W, Carbon	3198 011 08220
2618	0.01uF., 50V, Ceramic.	3198 017 01030	3178	3.9k, 5%, 1/6W, Carbon	3198 011 03920
2619	1uF., 16V, Ceramic.	3198 017 21050	3179	2.2k, 5%, 1/6W, Carbon	3198 011 02220
2691	10uF., 20%, 50V, Electrolytic.	3198 025 51090	3200	390 ohm, 5%, 1/6W, Carbon.	3198 011 03910
2801	22uF., 20%, 50V, Electrolytic.	3198 025 52290	3201	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2802	0.22uF., 25V, Ceramic.	3198 023 22240	3202	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2804	2.2uF., 10V, Ceramic.	3198 017 22250	3203	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2805	2.2uF., 10V, Ceramic.	3198 017 22250	3204	10k, 5%, 1/6W, Carbon.	3198 011 01030
2806	2.2uF., 10V, Ceramic.	3198 017 22250	3205	1k, 5%	3198 021 51020
2831	1pF., 50V, Ceramic.	3198 016 01080	3206	33k, 5%.	3198 021 53330
2832	1pF., 50V, Ceramic.	3198 016 01080	3207	1k, 5%, 1/6W, Carbon	3198 011 01020
2833	47pF., 50V, Ceramic.	3198 016 04790	3208	220 ohm, 5%.	3198 021 52210
2834	470pF., 50V, Ceramic.	3198 016 04710	3209	68 ohm, 5%.	3198 021 56890
2835	220pF., 50V, Ceramic.	3198 016 02210	3212	470 ohm, 5%.	3198 021 54710
2836	1500pF., 50V, Ceramic.	3198 017 01520	3213	560 ohm, 5%, 1/6W, Carbon.	3198 011 05610
2837	4.7uF., 20%, 50V, Electrolytic	3198 025 54780	3214	100 ohm, 5%.	3198 021 51010
2840	0.1uF., 25V, Ceramic.	3198 023 21040	3215	560 ohm, 5%.	3198 021 55610
2841	10uF., 20%, 50V, Electrolytic.	3198 025 51090	3216	68 ohm, 5%, 1/6W, Carbon	3198 011 06890
2842	0.1uF., 25V, Ceramic.	3198 023 21040	3217	330k, 5%.	3198 021 53340
2843	10uF., 20%, 50V, Electrolytic.	3198 025 51090	3218	82k, 5%.	3198 021 58230
2844	10uF., 20%, 50V, Electrolytic.	3198 025 51090	3219	2.2k, 5%.	3198 021 52220
2845	0.1uF., 25V, Ceramic.	3198 023 21040	3220	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2846	100uF., 20%, 25V, Electrolytic.	3198 025 31010	3221	560 ohm, 5%, 1/6W, Carbon.	3198 011 05610
2849	1000pF., 50V, Ceramic.	3198 016 01020	3222	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2850	1000pF., 50V, Ceramic.	3198 016 01020	3226	560 ohm, 5%.	3198 021 55610
2851	4.7uF., 10V, Ceramic.	2020 552 96305	3235	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2852	1000pF., 50V, Ceramic.	3198 016 01020	3241	22k, 5%.	3198 021 52230
2853	4.7uF., 10V, Ceramic.	2020 552 96305	3242	27k, 5%.	3198 021 52730
2854	1000pF., 50V, Ceramic.	3198 016 01020	3244	820 ohm, 5%, 1/6W, Carbon.	3198 011 08210
2855	33pF., 50V, Ceramic.	3198 016 03390	3245	39k, 5%.	3198 021 53930
2856	47pF., 50V, Ceramic.	3198 016 04790	3246	10k, 5%.	3198 021 51030
2857	150pF., 50V, Ceramic.	3198 016 01510	3247	680k, 5%.	3198 021 56840
2860	180pF., 50V, Ceramic.	3198 016 01810	3248	33k, 5%.	3198 021 53330
2894	220pF., 50V, Ceramic.	3198 016 02210	3249	820 ohm, 5%, 1/6W, Carbon.	3198 011 08210
2895	560pF., 50V, Ceramic.	3198 016 05610	3250	8.2k, 5%, 1/6W, Carbon	3198 011 08220
2897	390pF., 50V, Ceramic.	3198 016 03910	3251	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2898	0.01uF., 50V, Ceramic.	3198 017 01030	3256	1k, 5%	3198 021 51020
2902	470uF., 20%, 25V, Electrolytic	3198 026 34710	3257	10Meg, 5%.	3198 021 51060
2903	1uF., 20%, 50V, Electrolytic	3198 025 51080	3258	100k, 5%.	3198 021 51040
2904	0.47uF., 16V, Ceramic.	3198 017 24740	3259	470k, 5%.	3198 021 54740
2905	0.001uF., 50V, Ceramic.	3198 017 01020	3331	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2906	0.47uF., 16V, Ceramic.	3198 017 24740	3332	1k, 20%, 1/2W, Carbon.	3198 013 01020
2907	0.001uF., 50V, Ceramic.	3198 017 01020	3333	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2908	10uF., 20%, 50V, Electrolytic.	3198 025 51090	3334	1k, 20%, 1/2W, Carbon.	3198 013 01020
2910	3300pF., 50V, Ceramic.	3198 017 03320	3335	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
2911	3300pF., 50V, Ceramic.	3198 017 03320	3336	1k, 20%, 1/2W, Carbon.	3198 013 01020
3000	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3340	10 ohm, 5%, Fusible Resistor, NFR25.	2306 204 03109
3001	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3341	1 ohm, 5%, Fusible Resistor, NFR25	2306 204 03108
3002	Zero ohm "Chip" Jumper	3198 021 90020	3342	1 ohm, 5%, Fusible Resistor, NFR25	2306 204 03108
3003	1.5k, 5%.	3198 021 51520	3343	1.5k, 20%, 1/2W, Carbon.	3198 013 01520
3004	8.2k, 5%.	3198 021 58220	3344	22 ohm, 5%, 1/6W, Carbon	3198 011 02290
3005	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3345	Voltage Dependent Resistor, 1mA/50V.	2122 550 00152
3101	68 ohm, 5%, 1/6W, Carbon	3198 011 06890	3346	22 ohm, 5%, 1/6W, Carbon	3198 011 02290
3102	1k, 5%.	3198 021 51020	3347	Zero ohm "Chip" Jumper	3198 021 90020
3103	150 ohm, 5%, 1/6W, Carbon.	3198 011 01510	3350	Zero ohm "Chip" Jumper	3198 021 90020
3104	220k, 5%.	3198 021 52240	3353	Zero ohm "Chip" Jumper	3198 021 90020
3105	150 ohm, 5%, 1/6W, Carbon.	3198 011 01510	3400	330 ohm, 5%, 1/6W, Carbon.	3198 011 03310
3106	220k, 5%.	3198 021 52240	3401	33k, 5%, 1/6W, Carbon.	3198 011 03330
3111	75 ohm, 5%, 1/6W, Carbon	3198 011 07590	3403	100k, 5%, 1/6W, Carbon	3198 011 01040
3112	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3404	1k, 5%, 1/6W, Carbon	3198 011 01020
3113	75 ohm, 5%, 1/6W, Carbon.	3198 011 07590	3405	4.7 ohm, 5%, 1/6W, Carbon.	3198 011 04780
3114	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3406	4.7 ohm, 5%, 1/6W, Carbon.	3198 011 04780
3115	75 ohm, 5%, 1/6W, Carbon	3198 011 07590	3408	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
3116	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3410	10k, 5%, 1/6W, Carbon.	3198 011 01030
3121	75 ohm, 5%, 1/6W, Carbon.	3198 011 07590	3411	4.7 ohm, 5%, Fusible Resistor, NFR25	2306 204 03478
3122	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3441	100 ohm, 5%.	3198 021 51010
3123	150 ohm, 5%, 1/6W, Carbon.	3198 011 01510	3442	6.8k, 5%.	3198 021 56820
3124	47k, 5%.	3198 021 54730	3443	1Meg, 5%.	3198 021 51050
3125	150 ohm, 5%, 1/6W, Carbon.	3198 011 01510	3445	15k, 5%, 1/6W, Carbon.	3198 011 01530
3126	47k, 5%.	3198 021 54730	3446	5.6k, 5%, 1/6W, Carbon	3198 011 05620
3131	150 ohm, 5%, 1/6W, Carbon.	3198 011 01510	3447	56 ohm, 5%, Carbon	2120 101 74569
3132	47k, 5%.	3198 021 54730	3448	470 ohm, 5%, 1/6W, Carbon.	3198 011 04710
3133	150 ohm, 5%, 1/6W, Carbon.	3198 011 01510	3449	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
3134	47k, 5%.	3198 021 54730	3450	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
3135	75 ohm, 5%, 1/6W, Carbon	3198 011 07590	3451	10 ohm, 5%, Fusible Resistor, NFR25.	2306 204 03109
3136	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3452	35.7k, 1%, Metal Film.	2322 156 23573
3137	75 ohm, 5%, 1/6W, Carbon	3198 011 07590	3453	1k, 5%, 1/6W, Carbon	3198 011 01020
3138	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3454	24k, 1%, Metal Film.	2322 156 22403
3141	1k, 5%, 1/6W, Carbon	3198 011 01020	3455	6.8 ohm, 5%, 2W, Power Resistor.	3198 012 26880
3154	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3456	1k, 5%.	3198 021 51020
3155	75 ohm, 5%, 1/6W, Carbon	3198 011 07590	3457	10k, 5%.	3198 021 51030
3156	10k, 5%, 1/6W, Carbon.	3198 011 01030	3458	1k, 5%, 1/6W, Carbon	3198 011 01020
3157	100 ohm, 5%.	3198 021 51010	3459	15k, 5%, 2W, Power Resistor.	3198 012 21530
3158	10k, 5%.	3198 021 51030	3460	3.9k, 5%, 1/6W, Carbon	3198 011 03920
3159	820 ohm, 5%.	3198 021 58210	3463	34 ohm, 5%, 1/6W, Carbon	3198 011 03390
3170	68k, 5%, 1/6W, Carbon.	3198 011 06830	3465	27k, 1%, Metal Film.	2322 156 22703
3171	10k, 5%, 1/6W, Carbon.	3198 011 01030	3468	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010
3172	68k, 5%, 1/6W, Carbon.	3198 011 06830	3469	3.3k, 5%, 1/6W, Carbon	3198 011 03320
3173	10k, 5%, 1/6W, Carbon.	3198 011 01030	3470	150k, 5%.	3198 021 51540
3174	8.2k, 5%, 1/6W, Carbon	3198 011 08220	3471	4.7 ohm, 1%, Metal Film.	2322 156 24708
3175	8.2k, 5%, 1/6W, Carbon	3198 011 08220	3472	2.2 ohm, 1%, Metal Film.	2322 156 22208
3176	100 ohm, 5%, 1/6W, Carbon.	3198 011 01010	3473	3.3 ohm, 1%, Metal Film.	2322 156 23308

S = Safety Part Be sure to use exact replacement part.

MS2530C121 (continued)

Table with 4 columns: Part Number, Description, Quantity, and Part Number. Rows include components like Inductors, Diodes, Transistors, Transformers, and various panels (Front I/O, PIP Panel, Side A/V, CRT Panel, Top Control Panel, Model MS2530C/121 Cabinet Parts).

S = Safety Part. Be sure to use exact replacement part.

MS2530C121 (continued)

AC24 Deguassing Coil Spring 3139 121 26231
AC32 Assembly Braid 3135 010 07301

MODEL MS2530C/121 CBA'S

MODEL MS2530C/121 CBA'S
CBA Main Chassis 3139 127 23041

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

MS2730C121 - Manual no. 7603

Main Chassis

Table listing components for the Main Chassis, including items like Pin Fuse Socket, Spring For Item 7400, IC-Sprting, etc., with associated part numbers and quantities.

S = Safety Part Be sure to use exact replacement part.

MS2730C121 (continued)

AC24 Degaussing Coil Spring 3139 121 26231
AC32 Assembly Braid 3135 010 07311

MODEL MS2730C/121 CBA'S

MODEL MS2730C/121 CBA'S
CBA Main Chassis 3139 127 23111

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

MS3250C121 (continued)

6467	Diode, Signal, BAV70	9331 849 10215	9413	Jumper	3198 036 90010
6468	Diode, Signal, BAS316.	3198 010 10630	9414	Jumper	3198 036 90010
6470	Diode, Signal, BAV99	3198 010 10620	9415	Jumper	3198 036 90010
6476	Diode, Regulator BZX79-C15, 15V.	3198 010 21590	9416	Jumper	3198 036 90010
6481	Diode, Regulator BZX79-C, 5.6 Volt	3198 010 25680	9417	Jumper	3198 036 90010
6482	Diode, Regulator, BZX79-C9V1, 9.1 V.	9331 177 80133	9418	Jumper	3198 036 90010
6483	Diode, Regulator, BZX79-C33, 33 Vol.	3198 010 23390	9419	Jumper	3198 036 90010
6485	Diode, Rectifier, BYD 33J	9337 234 20133	9421	Jumper	3198 036 90010
6486	Diode, Rectifier, EGP20DL-5100	9322 164 42682	9422	Jumper	3198 036 90010
6487	Diode, Rectifier, BYD 33D.	9337 234 00133	9423	Jumper	3198 036 90010
6488	Diode, Rectifier, EGP20DL-5100	9322 164 42682	9425	Jumper	3198 036 90010
6500	Diode, Bridge, GBU6JL-7002	9322 138 08667	9453	Jumper	3198 036 90010
6520	Diode, Rectifier, BYD 33D.	9337 234 00133	9460	Jumper	3198 036 90010
6523	Diode, Signal, 1N4148.	3198 010 10010	9463	Jumper	3198 036 90010
6524	Jumper	3198 036 90010	9500	Jumper	3198 036 90010
6525	Diode, Rectifier, 1N5062	3198 010 10120	9501	Jumper	3198 036 90010
6540	Diode, Regulator, BZX79-B6V2, 6.2 V.	9331 668 30133	9503	Jumper	3198 036 90010
6541	Diode, Regulator, PDL210B	9340 548 59115	9506	Jumper	3198 036 90010
6560	Diode, Rectifier, BYV29X-500	9340 555 59127	9507	Jumper	3198 036 90010
6562	Diode, Rectifier, EGP20DL-5100	9322 164 42682	9512	Jumper	3198 036 90010
6563	Diode, Signal, BAS316.	3198 010 10630	9513	Jumper	3198 036 90010
6565	Diode, Signal, BAV70	9331 849 10215	9514	Jumper	3198 036 90010
6566	Diode, Signal, 1N4148.	3198 010 10010	9515	Jumper	3198 036 90010
6569	Diode, Signal, BAS316.	3198 010 10630	9516	Jumper	3198 036 90010
6570	Diode, Regulator, BZK384-C, 6.8 Vol.	3198 020 56880	9518	Jumper	3198 036 90010
6580	Diode, Signal, BAS316.	3198 010 10630	9519	Jumper	3198 036 90010
6581	Diode, Signal, BAS316.	3198 010 10630	9520	Jumper	3198 036 90010
6681	Diode, Signal, BAT85	9336 247 60133	9521	Jumper	3198 036 90010
6691	LED, VS LTL-10224WHCR	9322 050 99682	9522	Jumper	3198 036 90010
6692	IR Receiver, TSOP1836UH3VL	9322 127 54667	9524	Jumper	3198 036 90010
6831	Diode, Signal, 1N4148.	3198 010 10010	9525	Jumper	3198 036 90010
6901	Jumper, 0.05 ohm	3198 021 90020	9610	Jumper	3198 036 90010
7101	Transistor, Signal, BC847B	3198 010 42030	9611	Jumper	3198 036 90010
7200	IC, TDA9588H/N1, 3US0 Software	9352 699 91557	9612	Jumper	3198 036 90010
7201	Transistor, Signal, BC847B	3198 010 42030	9613	Jumper	3198 036 90010
7204	Transistor, Signal, BC857B	3198 010 42150	9614	Jumper	3198 036 90010
7205	Transistor, Signal, BC857B	3198 010 42150	9615	Jumper	3198 036 90010
7330	IC TDA6107Q/N2 27"-32" ONLY.	9352 576 50112	9616	Jumper	3198 036 90010
S 7400	FET, Power, STP3NC60FP	9322 157 37687	9617	Jumper	3198 036 90010
7441	Transistor, Signal, BC857B	3198 010 42150	9618	Jumper	3198 036 90010
7443	Transistor, Signal, BC557B	3198 020 40110	9619	Jumper	3198 036 90010
7450	Transistor, Signal, PDTA114ET.	3198 010 44010	9620	Jumper	3198 036 90010
7460	Transistor, Power, BU4508DX.	9340 550 92127	9621	Jumper	3198 036 90010
7461	Transistor, Signal, BC337-25.	3198 020 43530	9622	Jumper	3198 036 90010
7462	Transistor, Signal, PDTC143ZT.	9340 547 00215	9623	Jumper	3198 036 90010
7463	Signal Transistor, BC327-25.	3198 020 43430	9624	Jumper	3198 036 90010
7471	IC, TDA8359J	9352 635 76112	9625	Jumper	3198 036 90010
S 7480	Transistor, Power, BD135-16.	3198 020 41190	9626	Jumper	3198 036 90010
S 7482	Transistor, Power, BD135-16.	3198 020 41190	9627	Jumper	3198 036 90010
S 7515	Opto Coupler TCET1103.	9322 140 14667	9628	Jumper	3198 036 90010
7520	IC, TEA1507P/NL.	9352 673 56112	9629	Jumper	3198 036 90010
S 7521	FET, Power, STP8NC50FP	9322 160 72687	9630	Jumper	3198 036 90010
7522	Transistor, Signal, BC847B	3198 010 42030	9631	Jumper	3198 036 90010
7540	Transistor, Signal, BC547B	3198 020 40030	9632	Jumper	3198 036 90010
7541	Transistor, Signal, PDTC114ET.	9340 310 10215	9633	Jumper	3198 036 90010
7542	Transistor, Signal, BC857B	3198 010 42150	9634	Jumper	3198 036 90010
7560	IC, LE33CZ	9322 106 11676	9635	Jumper	3198 036 90010
7561	Transistor, Signal, PDTC143ZT.	9340 547 00215	9636	Jumper	3198 036 90010
7562	Transistor, Signal, BC857B	3198 010 42150	9637	Jumper	3198 036 90010
7564	Transistor, Signal, BC857B	3198 010 42150	9638	Jumper	3198 036 90010
7580	Transistor, Signal, BC857B	3198 010 42150	9639	Jumper	3198 036 90010
7602	IC, M24C16-WBN6.	9322 147 25682	9640	Jumper	3198 036 90010
7606	Transistor, Signal, PDTC143ZT.	9340 547 00215	9641	Jumper	3198 036 90010
7801	IC, HEF4052BT.	9333 729 50653	9642	Jumper	3198 036 90010
7831	IC, MSP3445G-PO-B8	9322 160 81682	9643	Jumper	3198 036 90010
7901	IC, AN7522N.	9322 158 65667	9644	Jumper	3198 036 90010
9001	Jumper	3198 036 90010	9645	Jumper	3198 036 90010
9121	Jumper	3198 036 90010	9646	Jumper	3198 036 90010
9122	Jumper	3198 036 90010	9648	Jumper	3198 036 90010
9171	Jumper	3198 036 90010	9650	Jumper	3198 036 90010
9172	Jumper	3198 036 90010	9654	Jumper	3198 036 90010
9173	Jumper	3198 036 90010	9655	Jumper	3198 036 90010
9175	Jumper	3198 036 90010	9656	Jumper	3198 036 90010
9176	Jumper	3198 036 90010	9657	Jumper	3198 036 90010
9178	Jumper	3198 036 90010	9658	Jumper	3198 036 90010
9179	Jumper	3198 036 90010	9659	Jumper	3198 036 90010
9182	Jumper	3198 036 90010	9660	Jumper	3198 036 90010
9183	Jumper	3198 036 90010	9661	Jumper	3198 036 90010
9191	Jumper	3198 036 90010	9662	Jumper	3198 036 90010
9192	Jumper	3198 036 90010	9663	Jumper	3198 036 90010
9193	Jumper	3198 036 90010	9664	Jumper	3198 036 90010
9311	Jumper	3198 036 90010	9665	Jumper	3198 036 90010
9341	Jumper	3198 036 90010	9666	Jumper	3198 036 90010
9342	Jumper	3198 036 90010	9668	Jumper	3198 036 90010
9343	Jumper	3198 036 90010	9669	Jumper	3198 036 90010
9406	Jumper	3198 036 90010	9670	Jumper	3198 036 90010
9407	Jumper	3198 036 90010	9672	Jumper	3198 036 90010
9408	Jumper	3198 036 90010	9674	Jumper	3198 036 90010
9409	Jumper	3198 036 90010	9675	Jumper	3198 036 90010
9410	Jumper	3198 036 90010	9676	Jumper	3198 036 90010
9411	Jumper	3198 036 90010	9678	Jumper	3198 036 90010
9412	Jumper	3198 036 90010	9679	Jumper	3198 036 90010

S = Safety Part Be sure to use exact replacement part.

MS3250C121 (continued)

9680	Jumper	3198	036	90010	S AC09	Degaussing Coil (Used w/CRT A80ECK272S			
9683	Jumper	3198	036	90010		56	2422	549	43977
9685	Jumper	3198	036	90010	S AC09	Degaussing Coil (Used w/CRT A80QCF340X			
9686	Jumper	3198	036	90010		34(N).	2422	549	45334
9687	Jumper	3198	036	90010	AC10	Degaussing Coil Holder	3135	013	01661
9688	Jumper	3198	036	90010	AC11	Light Guide (Included in Front Assy) .	3139	124	26461
9689	Jumper	3198	036	90010	AC13	Owner's Manual	3121	235	20121
9690	Jumper	3198	036	90010	AC14	Power Button (Included in Front Assy).	3139	124	29981
9691	Jumper	3198	036	90010	AC16	Speaker, Full Range, 16 ohm, 5W (Inclu			
9694	Jumper	3198	036	90010		ded in Front Assy)	2422	264	00401
9695	Jumper	3198	036	90010	AC21	Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263
9697	Jumper	3198	036	90010	AC24	Spring, Braid Tension.	3139	121	26231
9698	Jumper	3198	036	90010	AC26	Bracket, Rear Jack	3139	124	37511
9699	Jumper	3198	036	90010	REMOTE	Remote Transmitter	3139	228	87491
9821	Jumper	3198	036	90010					
9822	Jumper	3198	036	90010					
9824	Jumper	3198	036	90010					
9825	Jumper	3198	036	90010					
9826	Jumper	3198	036	90010					
9827	Jumper	3198	036	90010					
9828	Jumper	3198	036	90010					
9829	Jumper	3198	036	90010					
9830	Jumper	3198	036	90010					
9831	Jumper	3198	036	90010					
9832	Jumper	3198	036	90010					
9834	Jumper	3198	036	90010					
9835	Jumper	3198	036	90010					
9836	Jumper	3198	036	90010					
9837	Jumper	3198	036	90010					
9838	Jumper	3198	036	90010					
9839	Jumper	3198	036	90010					
9840	Jumper	3198	036	90010					
9841	Jumper	3198	036	90010					
9842	Jumper	3198	036	90010					
9843	Jumper	3198	036	90010					
9844	Jumper	3198	036	90010					
9845	Jumper	3198	036	90010					
9846	Jumper	3198	036	90010					
9847	Jumper	3198	036	90010					
9849	Jumper	3198	036	90010					
9851	Jumper	3198	036	90010					
9901	Jumper	3198	036	90010					
9902	Jumper	3198	036	90010					
9903	Jumper	3198	036	90010					
9904	Jumper	3198	036	90010					
9911	Jumper	3198	036	90010					
9912	Jumper	3198	036	90010					
9913	Jumper	3198	036	90010					
9914	Jumper	3198	036	90010					
9915	Jumper	3198	036	90010					
9916	Jumper	3198	036	90010					
9918	Jumper	3198	036	90010					
9919	Jumper	3198	036	90010					
9920	Jumper	3198	036	90010					
9921	Jumper	3198	036	90010					
9922	Jumper	3198	036	90010					
9991	Jumper	3198	036	90010					
9993	Jumper	3198	036	90010					
9994	Jumper	3198	036	90010					
9996	Jumper	3198	036	90010					
9997	Jumper	3198	036	90010					
9998	Jumper	3198	036	90010					
CBA	Main Chassis	3139	127	23191					

Model 32PS60B/129 Cabinet Parts

						Model 32PS60B/129 Cabinet Parts			
S AC18						Deflection Yoke.	3313	203	01351

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel
PIP Panel

Side A/V, Headphone Panel
Side A/V, Headphone Panel

CRT Panel
CRT Panel

Top Control Panel
Top Control Panel

Model MS3250C/121 Cabinet Parts

						Model MS3250C/121 Cabinet Parts			
S AC01	AC Power Cord,	3135	010	05051					
AC02	Anode Clip	3135	014	04471					
AC03	Cabinet Back	3139	124	25312					
AC04	Cabinet, Front Assembly.	3121	237	51831					
AC04A	Cabinet Front (Included in Front Assy)	3139	137	67061					
AC05	Chassis Tray	3139	124	31323					
AC06	Control Buttons.	3139	124	29991					
S AC08	CRT A80ECK272X56 (Value of Comp 2209 =								
	4.7uF)	4835	131	27165					
S AC08	CRT A80QCF340X34(N) (Value of Comp 220								
	9 = 10uF).	9301	904	59463					

S = Safety Part Be sure to use exact replacement part.

MS3250C129 (continued)

7471	IC, TDA8359J	9352	635	76112
7480	Power Transistor BD135-16.	3198	020	41190
7482	Power Transistor BD135-16.	3198	020	41190
7515	Opto-Coupler, TCET1103(G).	9322	140	14667
7520	IC, TEA1507P/N1.	9352	673	56112
7521	Power FET, STP8NC50FP.	9322	160	72687
7522	Transistor BC847B.	3198	010	42030
7540	Transistor BC547B.	3198	020	40030
7541	Transistor PDTCl14ET	9340	310	10215
7542	Transistor BC857B.	3198	010	42150
7560	IC, L78L33ACZ.	9322	134	92676
7561	Transistor PDTCl43ZT	9340	547	00215
7562	Transistor BC857B.	3198	010	42150
7564	Transistor BC857B.	3198	010	42150
7580	Transistor BC857B.	3198	010	42150
7602	IC, M24C16-WB6.	9322	147	25682
7606	Transistor PDTCl43ZT	9340	547	00215
7801	IC, HEF4052BT.	9333	729	50653
7831	IC, MSP3445G-PO-B8	9322	160	81682
7901	IC, AN7522N.	9322	158	65667
9121	Jumper Wire.	0322	179	00003
9122	Jumper Wire.	0322	179	00003
9463	Jumper Wire.	0322	179	00003
9849	Jumper Wire.	0322	179	00003
9903	Jumper Wire.	0322	179	00003
CBA	Main Chassis	3139	137	21401

Front I/O, Control, Headphone Panel
 Front I/O, Control, Headphone Panel

PIP Panel
 PIP Panel

Side A/V, Headphone Panel
 Side A/V, Headphone Panel

CRT Panel
 CRT Panel

Top Control Panel
 Top Control Panel

Model MS3250C/129 Cabinet Parts

Model MS3250C/129 Cabinet Parts				
S AC01	AC Power Cord.	3135	010	03831
AC03	Cabinet Back	3139	124	25312
AC04	Cabinet, Front Assembly.	3121	237	51831
AC04A	Cabinet Front (Included in Front Assy)	3139	137	67061
AC05	Chassis Guide.	3139	124	31323
AC06	Control Buttons.	3139	124	29991
S AC08	CRT A80LJF30X18(G)	9322	144	50682
S AC09	Degaussing Coil.	2422	549	43977
AC11	Light Guide (Included in Front Assy)	3139	124	26461
AC13	Owner's Manual	3121	235	20121
AC14	Power Button (Included in Front Assy).	3139	124	29981
REMOTE	Remote Transmitter	3139	228	87491
AC16	Speaker, 5W, 16 ohm (2 used) (Included in Front Assy)	2422	264	00401
AC21	Batteries f Remote Transmitter	9299	000	65263
AC24	Degaussing Coil Spring	3139	121	26231
AC32	Assembly Braid	3135	010	07891

MODEL MS3250C/129 CBA'S
 MODEL MS3250C/129 CBA'S
 CBA Main Chassis 3139 137 21401

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts				
S AC18	ITC = Integrated Tube Component, CRT & Yoke Pre-Set	0000	000	00ITC

S = Safety Part Be sure to use exact replacement part.

MS3650C127 (continued)

9685	Jumper	3198	036	90010
9686	Jumper	3198	036	90010
9687	Jumper	3198	036	90010
9688	Jumper	3198	036	90010
9689	Jumper	3198	036	90010
9690	Jumper	3198	036	90010
9691	Jumper	3198	036	90010
9694	Jumper	3198	036	90010
9695	Jumper	3198	036	90010
9697	Jumper	3198	036	90010
9698	Jumper	3198	036	90010
9699	Jumper	3198	036	90010
9821	Jumper	3198	036	90010
9822	Jumper	3198	036	90010
9824	Jumper	3198	036	90010
9825	Jumper	3198	036	90010
9826	Jumper	3198	036	90010
9827	Jumper	3198	036	90010
9828	Jumper	3198	036	90010
9829	Jumper	3198	036	90010
9830	Jumper	3198	036	90010
9831	Jumper	3198	036	90010
9832	Jumper	3198	036	90010
9834	Jumper	3198	036	90010
9835	Jumper	3198	036	90010
9836	Jumper	3198	036	90010
9837	Jumper	3198	036	90010
9838	Jumper	3198	036	90010
9839	Jumper	3198	036	90010
9840	Jumper	3198	036	90010
9841	Jumper	3198	036	90010
9842	Jumper	3198	036	90010
9843	Jumper	3198	036	90010
9844	Jumper	3198	036	90010
9845	Jumper	3198	036	90010
9846	Jumper	3198	036	90010
9847	Jumper	3198	036	90010
9849	Jumper	3198	036	90010
9851	Jumper	3198	036	90010
9901	Jumper	3198	036	90010
9902	Jumper	3198	036	90010
9903	Jumper	3198	036	90010
9904	Jumper	3198	036	90010
9911	Jumper	3198	036	90010
9912	Jumper	3198	036	90010
9913	Jumper	3198	036	90010
9914	Jumper	3198	036	90010
9915	Jumper	3198	036	90010
9916	Jumper	3198	036	90010
9918	Jumper	3198	036	90010
9919	Jumper	3198	036	90010
9920	Jumper	3198	036	90010
9921	Jumper	3198	036	90010
9922	Jumper	3198	036	90010
9991	Jumper	3198	036	90010
9993	Jumper	3198	036	90010
9994	Jumper	3198	036	90010
9996	Jumper	3198	036	90010
9997	Jumper	3198	036	90010
9998	Jumper	3198	036	90010

Model MS3650C/127 Cabinet Parts

Model MS3650C/127 Cabinet Parts

AC01	AC Power Cord,	3135	010	05051
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3139	124	25332
AC04	Cabinet Front Assembly	3121	237	51851
AC04A	Front Cabinet (Included in Front Assy)	3139	138	11581
AC05	Chassis Guide.	3139	124	31324
AC06	Control Buttons.	3139	124	29991
AC08	CRT A90AKB50X07(V) (TOSJ) B	9322	186	37682
AC09	Coil, Degaussing	2422	549	43972
AC10	Holder, Degaussing Coil (4 Used)	3135	013	01651
AC11	Light Guide (Included in Front Assy)	3139	124	26461
AC13	Owner's Manual	3121	235	20121
AC14	Power Button	3139	124	30891
AC16	Speaker, Full Range, 16 ohm, 5W (2 Use d) (Included in Front Assy).	2422	264	00401
AC21	Batteries for Remote, Zinc, 1.5V, 2-Pk	9299	000	65263
AC26	Rear Jack Panel, Plastic (Not Shown)	3139	124	37511
AC35	Ground Lead Assembly (Not Shown)	3135	010	05241
AC36	Spring, Braid Tension (Not Shown).	3139	121	26231
AC37	Quick Use Guide (Not Shown).	3121	233	40921

Model MS3650C/127 CBA's

Model MS3650C/127 CBA's

CBA	External Power Supply PS-35S600.	3135	016	05221
CBA	Main Chassis	3139	187	17531
REMOTE	Remote Transmitter	3139	228	87491

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

S = Safety Part Be sure to use exact replacement part.

MS3650C129 (continued)

7463	Transistor BC327-25.	3198	020	43430
7471	IC, TDA8359J	9352	635	76112
7480	Power Transistor BD135-16.	3198	020	41190
7482	Power Transistor BD135-16.	3198	020	41190
7515	Opto-Coupler, TCET1103(G).	9322	140	14667
7520	IC, TEA1507P/NL.	9352	673	56112
7521	Power FET, STP8NC50FP.	9322	160	72687
7522	Transistor BC847B.	3198	010	42030
7540	Transistor BC547B.	3198	020	40030
7541	Transistor PDTCl14ET	9340	310	10215
7542	Transistor BC857B.	3198	010	42150
7560	IC, L78L33ACZ.	9322	134	92676
7561	Transistor PDTCl43ZT	9340	547	00215
7562	Transistor BC857B.	3198	010	42150
7564	Transistor BC857B.	3198	010	42150
7580	Transistor BC857B.	3198	010	42150
7602	IC, M24C16-WBN6.	9322	147	25682
7606	Transistor PDTCl43ZT	9340	547	00215
7801	IC, HEF4052BT.	9333	729	50653
7831	IC, MSP3445G-PO-B8	9322	160	81682
7901	IC, AN7522N.	9322	158	65667
9121	Jumper Wire.	0322	179	00003
9122	Jumper Wire.	0322	179	00003
9424	Jumper Wire.	0322	179	00003
9463	Jumper Wire.	0322	179	00003
9696	Jumper Wire.	0322	179	00003
9833	Jumper Wire.	0322	179	00003
9849	Jumper Wire.	0322	179	00003
9903	Jumper Wire.	0322	179	00003
CBA	Main Chassis	3139	178	87921

Front I/O, Control, Headphone Panel
 Front I/O, Control, Headphone Panel

PIP Panel
 PIP Panel

Side A/V, Headphone Panel
 Side A/V, Headphone Panel

CRT Panel
 CRT Panel

Top Control Panel
 Top Control Panel

Model MS3650C/129 Cabinet Parts

Model MS3650C/129 Cabinet Parts				
S AC01	AC Power Cord.	3135	010	03831
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3139	124	25332
AC04	Cabinet, Front Assembly.	3121	237	51851
AC04A	Cabinet Front (Included in Front Assy)	3139	138	11581
AC05	Chassis Guide.	3139	124	31323
AC06	Control Button Assembly.	3139	124	29991
S AC08	CRT A90LPY30X02.	9322	139	25682
S AC09	Degaussing Coil.	2422	549	43972
AC10	Degaussing Coil Holder (4 used).	3135	013	01651
AC11	Light Guide (Included in Front Assy)	3139	124	26461
AC13	Owner's Manual	3121	235	20121
AC14	Power Button	3139	124	30891
REMOTE	Remote Transmitter	3139	228	87491
AC16	Speaker, 5W, 16 ohm (2 used) (Included in Front Assy)	2422	264	00401
AC19	Yoke Wedge (3 used).	3135	013	00311
AC21	Batteries f Remote Transmitter	9299	000	65263
AC24	Degaussing Coil Spring	3139	121	26231
AC32	Assembly Braid	3135	010	07311

MODEL MS3650C/129 CBA'S
 MODEL MS3650C/129 CBA'S
 CBA Main Chassis 3139 178 87921

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts				
S AC18	ITC = Integrated Tube Component, CRT & Yoke Pre-Set	0000	000	00ITC

MT2501C121 (continued)

5562	Fixed Inductor Bead, 100MHz	3198	018	90020
5564	Fixed Inductor Bead, 100MHz	3198	018	90010
5602	Fixed Inductor, 5.6uH, 5%.	3198	018	15680
5603	Fixed Inductor, 5.6uH, 5%.	3198	018	15680
5604	Fixed Inductor, 5.6uH, 5%.	3198	018	15680
6001	Diode Regulator, BZX79-C33 (33 Volt) .	3198	010	23390
6201	Diode, BAS316.	3198	010	10630
6202	Diode, BAS316.	3198	010	10630
6206	Diode Regulator, BZX384-C6V8 (6.8 Volt)	3198	020	56880
6331	Diode, BAV21	3198	010	10070
6332	Diode, BAS316.	3198	010	10630
6333	Diode, BAV21	3198	010	10070
6335	Diode, BAV21	3198	010	10070
6444	Diode, 1N4148.	3198	010	10010
6447	Diode, 1N4148.	3198	010	10010
6448	Diode Regulator, BZX79-B6V2 (6.2 Volt)	9331	668	30133
6449	Diode, BAV99	3198	010	10620
6453	Diode Regulator, BZX384-C6V8 (6.8 Volt)	3198	020	56880
6460	Diode Rectifier, BY228/24.	9340	559	50112
6461	Diode Rectifier, RGP30J-L7004.	9338	617	60682
6462	Diode Regulator, BZX79-C8V2 (8.2 Volt)	3198	010	28280
6465	Diode, BAV21	3198	010	10070
6466	Diode, BAV21	3198	010	10070
6467	Diode, BAV70	9331	849	10215
6468	Diode, BAS316.	3198	010	10630
6470	Diode, BAV99	3198	010	10620
6476	Diode Regulator, BZX79-C15 (15 Volt) .	3198	010	21590
6481	Diode Regulator, BZX79-C5V6 (5.6 Volt)	3198	010	25680
6482	Diode Regulator, BZX79-C9V1 (9.1 Volt)	9331	177	80133
6483	Diode Regulator, BZX79-C33 (33 Volt) .	3198	010	23390
6485	Diode Rectifier, BYD33J.	9337	234	20133
6486	Diode Rectifier, EGP20DL-5100.	9322	164	42682
6487	Diode Rectifier, BYD33D.	9337	234	00133
6488	Diode Rectifier, EGP20DL-5100.	9322	164	42682
6500	Bridge Rectifier, GBU6JL-7002	9322	138	08667
6520	Diode Rectifier, BYD33D.	9337	234	00133
6523	Diode, 1N4148.	3198	010	10010
6525	Diode Rectifier, 1N5062.	3198	010	10120
6540	Diode Regulator, BZX79-B6V2 (6.2 Volt)	9331	668	30133
6541	Diode Regulator, BZX384-C10 (10 Volt).	3198	020	51090
6560	Diode Rectifier, BYV29X-500.	9340	555	59127
6562	Diode Rectifier, EGP20DL-5100.	9322	164	42682
6563	Diode, BAS316.	3198	010	10630
6565	Diode, BAV70	9331	849	10215
6566	Diode, 1N4148.	3198	010	10010
6569	Diode, BAS316.	3198	010	10630
6570	Diode Regulator, BZX384-C6V8 (6.8 Volt	3198	020	56880
6580	Diode, BAS316.	3198	010	10630
6581	Diode, BAS316.	3198	010	10630
6681	Diode, BAT85	9336	247	60133
6691	LED, LTL-10224WHCR (LITO)	9322	050	99682
6692	IR Receiver, TSOP1836UH3V(TEG)L.	9322	127	54667
6901	Diode, BAS316.	3198	010	10630
7200	IC, TDA9587H/N1/3, 2US0 Software Clust	9352	699	86557
7201	Transistor BC847B.	3198	010	42030
7204	Transistor BC857B.	3198	010	42150
7330	IC, TDA6107Q/N2.	9352	576	50112
7441	Transistor BC857B.	3198	010	42150
7443	Transistor BC557B.	3198	020	40110
7450	Transistor PDTA114ET	3198	010	44010
7460	Power Transistor BU4508DX-clip 0140. .	9340	550	92127
7461	Transistor BC337-25.	3198	020	43530
7462	Transistor PDTC143ZT	9340	547	00215
7463	Transistor BC327-25.	3198	020	43430
7471	IC, TDA8359J	9352	635	76112
7480	Power Transistor BD135-16.	3198	020	41190
7482	Power Transistor BD135-16.	3198	020	41190
7515	Opto-Coupler, TCET1103(G).	9322	140	14667
7520	IC, TEA1507P/N1.	9352	673	56112
7521	Power FET, STP8NC50FP.	9322	160	72687
7522	Transistor BC847B.	3198	010	42030
7540	Transistor BC547B.	3198	020	40030
7541	Transistor PDTC114ET	9340	310	10215
7542	Transistor BC857B.	3198	010	42150
7560	IC, L78L33ACZ.	9322	134	92676
7561	Transistor PDTC143ZT	9340	547	00215
7562	Transistor BC857B.	3198	010	42150
7564	Transistor BC857B.	3198	010	42150
7580	Transistor BC857B.	3198	010	42150
7602	IC, M24C16-WBN6.	9322	147	25682
7902	IC, AN7523N.	9322	158	66667
7943	Transistor BC847B.	3198	010	42030
9424	Jumper Wire.	0322	179	00003
9696	Jumper Wire.	0322	179	00003
9833	Jumper Wire.	0322	179	00003
9849	Jumper Wire.	0322	179	00003
CBA	Main Chassis	3139	127	23021

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model MT2501C/121 Cabinet Parts

Model MT2501C/121 Cabinet Parts

S AC01	AC Power Cord.	3135	010	03831
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3139	124	37151
AC04	Cabinet, Front Assembly.	3121	237	51771
AC04A	Cabinet Front (Included in Front Assy)	3139	137	88361
AC05	Chassis Guide (2 used) (Included in Fr	3139	124	31381
AC06	Control Buttons.	3139	124	27351
S AC07	Convergence and Purity Assembly.	2422	549	43385
S AC08	CRT A63AFW36X.	9301	763	20443
S AC09	Deguassing Coil.	2422	549	44489
AC10	Deguassing Coil Holder (4 used).	3135	013	01651
AC11	Light Guide (Included in Front Assy) .	3139	124	26461
AC13	Owner's Manual	3121	235	20081
AC14	Power Button	3139	124	27351
AC14A	Power Button (Included in Front Assy).	3139	124	26444
REMOTEB	Remote Transmitter	3139	228	87011
AC16	Speaker, 5W, 16 ohm (Included in Front	2422	264	00401
S AC18	Yoke	3321	203	00121
AC19	Yoke Wedge (3 used).	3135	013	00311
AC21	Batteries f Remote Transmitter	9299	000	65263
AC24	Deguassing Coil Spring	3139	121	26231
AC32	Assembly Braid	3135	010	07301

MODEL MT2501C/121 CBA'S

MODEL MT2501C/121 CBA'S

CBA	Main Chassis	3139	127	23021
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Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

S = Safety Part Be sure to use exact replacement part.

MT2501C125 (continued)

9699	Jumper	3198	036	90010
9821	Jumper	3198	036	90010
9822	Jumper	3198	036	90010
9824	Jumper	3198	036	90010
9825	Jumper	3198	036	90010
9826	Jumper	3198	036	90010
9827	Jumper	3198	036	90010
9828	Jumper	3198	036	90010
9829	Jumper	3198	036	90010
9830	Jumper	3198	036	90010
9831	Jumper	3198	036	90010
9832	Jumper	3198	036	90010
9834	Jumper	3198	036	90010
9835	Jumper	3198	036	90010
9836	Jumper	3198	036	90010
9837	Jumper	3198	036	90010
9838	Jumper	3198	036	90010
9839	Jumper	3198	036	90010
9840	Jumper	3198	036	90010
9841	Jumper	3198	036	90010
9842	Jumper	3198	036	90010
9843	Jumper	3198	036	90010
9844	Jumper	3198	036	90010
9845	Jumper	3198	036	90010
9846	Jumper	3198	036	90010
9847	Jumper	3198	036	90010
9849	Jumper	3198	036	90010
9851	Jumper	3198	036	90010
9901	Jumper	3198	036	90010
9902	Jumper	3198	036	90010
9903	Jumper	3198	036	90010
9904	Jumper	3198	036	90010
9911	Jumper	3198	036	90010
9912	Jumper	3198	036	90010
9913	Jumper	3198	036	90010
9914	Jumper	3198	036	90010
9915	Jumper	3198	036	90010
9916	Jumper	3198	036	90010
9918	Jumper	3198	036	90010
9919	Jumper	3198	036	90010
9920	Jumper	3198	036	90010
9921	Jumper	3198	036	90010
9922	Jumper	3198	036	90010
9991	Jumper	3198	036	90010
9994	Jumper	3198	036	90010
9996	Jumper	3198	036	90010
9998	Jumper	3198	036	90010
CBA	Main Chassis	3139	123	53586

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel
PIP Panel

Side A/V, Headphone Panel
Side A/V, Headphone Panel

CRT Panel
CRT Panel

Top Control Panel
Top Control Panel

Model MT2501C/125 Cabinet Parts
Model MT2501C/125 Cabinet Parts

AC04	Cabinet, Front Assembly.	3121	237	51771
AC04A	Cabinet, Front (Included in Front Assy)	3139	137	88361
AC14	Power Button (Included in Front Assy).	3139	124	26444
AC06	Control Buttons.	3139	124	27351
AC11	Light Guide (Included in Front Assy) .	3139	124	26461
S AC02	Anode Clip	3135	014	04471
AC09	Degaussing Coil Holder	3135	013	01641
AC13	Owner's Manual	3121	235	20081
S AC01	AC Power Cord.	3135	010	03831
AC05	Chassis Guide (Included in Front Assy)	3139	124	31381
AC03	Cabinet, Back.	3139	124	37151
REMOTE	Remote Transmitter	3139	228	87011
AC21	Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263
S AC08	CRT A63QDB891X01	9322	151	39682
S AC09	Degaussing Coil.	2422	549	44489
AC16	Speaker, Full Range, 16 ohm, 5W (Inclu ded in Front Assy)	2422	264	00401

Model 32PS60B/129 Cabinet Parts
Model 32PS60B/129 Cabinet Parts

S AC18	ITC = Integrated Tube Component, CRT & Yoke Pre-Set	0000	000	00ITC
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S = Safety Part Be sure to use exact replacement part.

CH0127C121 - Manual no. 7603

Main Chassis

Main Chassis

0137	Spring For Item 7400	3139 121 24581
0140	Spring For Item 7460	3139 121 24581

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

PA0127C121 (continued)

Table with 4 columns: Part Number, Description, Quantity, and Part Number. It lists various electronic components such as resistors, capacitors, inductors, diodes, and jumpers, organized into two columns.

S = Safety Part Be sure to use exact replacement part.

PA0127C121 (continued)

6569	Diode, Signal, BAS316.	3198 010 10630	9514	Jumper	3198 036 90010
6570	Diode, Regulator, BZX384-C, 6.8 Vol.	3198 020 56880	9515	Jumper	3198 036 90010
6580	Diode, Signal, BAS316.	3198 010 10630	9516	Jumper	3198 036 90010
6581	Diode, Signal, BAS316.	3198 010 10630	9518	Jumper	3198 036 90010
6681	Diode, Signal, BAT85	9336 247 60133	9519	Jumper	3198 036 90010
6691	LED, VS LTL-10224WHCR	9322 050 99682	9520	Jumper	3198 036 90010
6692	IR Receiver, TSOP1836UHV3VL	9322 127 54667	9521	Jumper	3198 036 90010
6831	Diode, Signal, 1N4148.	3198 010 10010	9522	Jumper	3198 036 90010
6901	Jumper, 0.05 ohm	3198 021 90020	9524	Jumper	3198 036 90010
7101	Transistor, Signal, BC847B	3198 010 42030	9525	Jumper	3198 036 90010
7102	Transistor, Signal, BC857B	3198 010 42150	9610	Jumper	3198 036 90010
7103	Transistor, Signal, BC847B	3198 010 42030	9611	Jumper	3198 036 90010
7200	IC, TDA9587H/N1, 1US1 Software	9352 699 87557	9612	Jumper	3198 036 90010
7201	Transistor, Signal, BC847B	3198 010 42030	9613	Jumper	3198 036 90010
7204	Transistor, Signal, BC857B	3198 010 42150	9614	Jumper	3198 036 90010
7205	Transistor, Signal, BC857B	3198 010 42150	9615	Jumper	3198 036 90010
7330	IC TDA6107Q/N2 27"-32" ONLY.	9352 576 50112	9616	Jumper	3198 036 90010
7441	Transistor, Signal, BC857B	3198 010 42150	9617	Jumper	3198 036 90010
7443	Transistor, Signal, BC557B	3198 020 40110	9618	Jumper	3198 036 90010
7450	Transistor, Signal, PDTA114ET.	3198 010 44010	9619	Jumper	3198 036 90010
7460	Transistor, Power, BU4508DX.	9340 550 92127	9620	Jumper	3198 036 90010
7461	Transistor, Signal, BC337-25.	3198 020 43530	9621	Jumper	3198 036 90010
7462	Transistor, Signal, PDTCL143ZT.	9340 547 00215	9622	Jumper	3198 036 90010
7463	Signal Transistor, BC327-25.	3198 020 43430	9623	Jumper	3198 036 90010
7471	IC, TDA8359J	9352 635 76112	9624	Jumper	3198 036 90010
S 7480	Transistor, Power, BD135-16.	3198 020 41190	9625	Jumper	3198 036 90010
S 7482	Transistor, Power, BD135-16.	3198 020 41190	9626	Jumper	3198 036 90010
S 7515	Opto Coupler TCET1103.	9322 140 14667	9627	Jumper	3198 036 90010
7520	IC, TEA1507P/N1.	9352 673 56112	9628	Jumper	3198 036 90010
S 7521	FET, Power, STP8NC50FP	9322 160 72687	9629	Jumper	3198 036 90010
7522	Transistor, Signal, BC847B	3198 010 42030	9630	Jumper	3198 036 90010
7540	Transistor, Signal, BC547B	3198 020 40030	9631	Jumper	3198 036 90010
7541	Transistor, Signal, PDTCL14ET.	9340 310 10215	9632	Jumper	3198 036 90010
7542	Transistor, Signal, BC857B	3198 010 42150	9633	Jumper	3198 036 90010
7560	IC, LE33CZ	9322 106 11676	9634	Jumper	3198 036 90010
7561	Transistor, Signal, PDTCL143ZT.	9340 547 00215	9635	Jumper	3198 036 90010
7562	Transistor, Signal, BC857B	3198 010 42150	9636	Jumper	3198 036 90010
7564	Transistor, Signal, BC857B	3198 010 42150	9637	Jumper	3198 036 90010
7580	Transistor, Signal, BC857B	3198 010 42150	9638	Jumper	3198 036 90010
7602	IC, M24C16-WBN6.	9322 147 25682	9639	Jumper	3198 036 90010
7801	IC, HEF4052BT.	9333 729 50653	9640	Jumper	3198 036 90010
7802	IC, HEF4053BT	9333 729 60653	9641	Jumper	3198 036 90010
7831	IC, MSP3445G-PO-B8	9322 160 81682	9642	Jumper	3198 036 90010
7901	IC, AN7522N.	9322 158 65667	9643	Jumper	3198 036 90010
9001	Jumper	3198 036 90010	9644	Jumper	3198 036 90010
9101	Jumper	3198 036 90010	9645	Jumper	3198 036 90010
9102	Jumper	3198 036 90010	9646	Jumper	3198 036 90010
9103	Jumper	3198 036 90010	9648	Jumper	3198 036 90010
9171	Jumper	3198 036 90010	9650	Jumper	3198 036 90010
9172	Jumper	3198 036 90010	9654	Jumper	3198 036 90010
9173	Jumper	3198 036 90010	9655	Jumper	3198 036 90010
9175	Jumper	3198 036 90010	9656	Jumper	3198 036 90010
9176	Jumper	3198 036 90010	9657	Jumper	3198 036 90010
9178	Jumper	3198 036 90010	9658	Jumper	3198 036 90010
9179	Jumper	3198 036 90010	9659	Jumper	3198 036 90010
9181	Jumper	3198 036 90010	9660	Jumper	3198 036 90010
9182	Jumper	3198 036 90010	9661	Jumper	3198 036 90010
9183	Jumper	3198 036 90010	9662	Jumper	3198 036 90010
9191	Jumper	3198 036 90010	9663	Jumper	3198 036 90010
9192	Jumper	3198 036 90010	9664	Jumper	3198 036 90010
9193	Jumper	3198 036 90010	9665	Jumper	3198 036 90010
9311	Jumper	3198 036 90010	9666	Jumper	3198 036 90010
9341	Jumper	3198 036 90010	9668	Jumper	3198 036 90010
9342	Jumper	3198 036 90010	9669	Jumper	3198 036 90010
9343	Jumper	3198 036 90010	9670	Jumper	3198 036 90010
9406	Jumper	3198 036 90010	9672	Jumper	3198 036 90010
9407	Jumper	3198 036 90010	9674	Jumper	3198 036 90010
9408	Jumper	3198 036 90010	9675	Jumper	3198 036 90010
9409	Jumper	3198 036 90010	9676	Jumper	3198 036 90010
9410	Jumper	3198 036 90010	9678	Jumper	3198 036 90010
9411	Jumper	3198 036 90010	9679	Jumper	3198 036 90010
9412	Jumper	3198 036 90010	9680	Jumper	3198 036 90010
9413	Jumper	3198 036 90010	9683	Jumper	3198 036 90010
9414	Jumper	3198 036 90010	9685	Jumper	3198 036 90010
9415	Jumper	3198 036 90010	9686	Jumper	3198 036 90010
9416	Jumper	3198 036 90010	9687	Jumper	3198 036 90010
9417	Jumper	3198 036 90010	9688	Jumper	3198 036 90010
9418	Jumper	3198 036 90010	9689	Jumper	3198 036 90010
9419	Jumper	3198 036 90010	9690	Jumper	3198 036 90010
9421	Jumper	3198 036 90010	9691	Jumper	3198 036 90010
9422	Jumper	3198 036 90010	9694	Jumper	3198 036 90010
9423	Jumper	3198 036 90010	9695	Jumper	3198 036 90010
9425	Jumper	3198 036 90010	9697	Jumper	3198 036 90010
9453	Jumper	3198 036 90010	9698	Jumper	3198 036 90010
9460	Jumper	3198 036 90010	9699	Jumper	3198 036 90010
9500	Jumper	3198 036 90010	9821	Jumper	3198 036 90010
9501	Jumper	3198 036 90010	9822	Jumper	3198 036 90010
9503	Jumper	3198 036 90010	9824	Jumper	3198 036 90010
9506	Jumper	3198 036 90010	9825	Jumper	3198 036 90010
9507	Jumper	3198 036 90010	9826	Jumper	3198 036 90010
9512	Jumper	3198 036 90010	9827	Jumper	3198 036 90010
9513	Jumper	3198 036 90010	9828	Jumper	3198 036 90010

S = Safety Part Be sure to use exact replacement part.

PA0127C121 (continued)

9829	Jumper	3198	036	90010
9830	Jumper	3198	036	90010
9831	Jumper	3198	036	90010
9832	Jumper	3198	036	90010
9834	Jumper	3198	036	90010
9835	Jumper	3198	036	90010
9836	Jumper	3198	036	90010
9837	Jumper	3198	036	90010
9838	Jumper	3198	036	90010
9839	Jumper	3198	036	90010
9840	Jumper	3198	036	90010
9841	Jumper	3198	036	90010
9842	Jumper	3198	036	90010
9843	Jumper	3198	036	90010
9844	Jumper	3198	036	90010
9845	Jumper	3198	036	90010
9846	Jumper	3198	036	90010
9847	Jumper	3198	036	90010
9849	Jumper	3198	036	90010
9851	Jumper	3198	036	90010
9901	Jumper	3198	036	90010
9902	Jumper	3198	036	90010
9903	Jumper	3198	036	90010
9904	Jumper	3198	036	90010
9911	Jumper	3198	036	90010
9912	Jumper	3198	036	90010
9913	Jumper	3198	036	90010
9914	Jumper	3198	036	90010
9915	Jumper	3198	036	90010
9916	Jumper	3198	036	90010
9918	Jumper	3198	036	90010
9919	Jumper	3198	036	90010
9920	Jumper	3198	036	90010
9921	Jumper	3198	036	90010
9922	Jumper	3198	036	90010
9991	Jumper	3198	036	90010
9993	Jumper	3198	036	90010
9994	Jumper	3198	036	90010
9996	Jumper	3198	036	90010
9997	Jumper	3198	036	90010
9998	Jumper	3198	036	90010
CBA	Main Chassis	3139	127	23141

Front I/O, Control, Headphone Panel
Front I/O, Control, Headphone Panel

PIP Panel
PIP Panel

Side A/V, Headphone Panel
Side A/V, Headphone Panel

CRT Panel
CRT Panel

Top Control Panel
Top Control Panel

Model 29LW602/221 Cabinet Parts
Model 29LW602/221 Cabinet Parts

S AC01	AC Power Cord, Non-Polarized	3135	010	04731
AC02	Anode Clip	3135	014	04471
AC03	Cover, Back, Assembly.	3121	237	52451
AC04 A	Cabinet, Front (Included in Front Assy)	3139	137	83171
AC05	Chassis Guide (Included in Front Assy)	3139	124	31381
AC06	Control Knob Assembly.	3139	137	83131
S AC08	CRT A68AJB82X11.	9301	891	90631
S AC09	Degaussing Coil.	2422	549	43967
AC10	Degaussing Coil Holder	3135	013	01641
AC11	Light Guide.	3139	124	35111
AC12	Nameplate (Included in Front Assy) . .	3111	250	00571
AC13	Owner's Manual	3121	235	20221
AC14	Knob, Mains.	3139	137	83141
AC16	Speaker, 16 ohm, 5 Watt (Included in Front Assy)	2422	264	00411
AC21	Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263
AC24	Spring, Braid Tension.	3139	121	26231
CBA	Side A/V, Headphone Panel.	3139	127	23881
REMOTE	Remote Transmitter	3139	228	86491

Model 32PS60B/129 Cabinet Parts
Model 32PS60B/129 Cabinet Parts

S AC18	Deflection Yoke.	3313	203	01242
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S = Safety Part Be sure to use exact replacement part.

PA0132C121 (continued)

9521	Jumper	3198	036	90010	9836	Jumper	3198	036	90010
9522	Jumper	3198	036	90010	9837	Jumper	3198	036	90010
9524	Jumper	3198	036	90010	9838	Jumper	3198	036	90010
9525	Jumper	3198	036	90010	9839	Jumper	3198	036	90010
9610	Jumper	3198	036	90010	9840	Jumper	3198	036	90010
9611	Jumper	3198	036	90010	9841	Jumper	3198	036	90010
9612	Jumper	3198	036	90010	9842	Jumper	3198	036	90010
9613	Jumper	3198	036	90010	9843	Jumper	3198	036	90010
9614	Jumper	3198	036	90010	9844	Jumper	3198	036	90010
9615	Jumper	3198	036	90010	9845	Jumper	3198	036	90010
9616	Jumper	3198	036	90010	9846	Jumper	3198	036	90010
9617	Jumper	3198	036	90010	9847	Jumper	3198	036	90010
9618	Jumper	3198	036	90010	9848	Jumper	3198	036	90010
9619	Jumper	3198	036	90010	9849	Jumper	3198	036	90010
9620	Jumper	3198	036	90010	9851	Jumper	3198	036	90010
9621	Jumper	3198	036	90010	9901	Jumper	3198	036	90010
9622	Jumper	3198	036	90010	9902	Jumper	3198	036	90010
9623	Jumper	3198	036	90010	9903	Jumper	3198	036	90010
9624	Jumper	3198	036	90010	9904	Jumper	3198	036	90010
9625	Jumper	3198	036	90010	9911	Jumper	3198	036	90010
9626	Jumper	3198	036	90010	9912	Jumper	3198	036	90010
9627	Jumper	3198	036	90010	9913	Jumper	3198	036	90010
9628	Jumper	3198	036	90010	9914	Jumper	3198	036	90010
9629	Jumper	3198	036	90010	9915	Jumper	3198	036	90010
9630	Jumper	3198	036	90010	9916	Jumper	3198	036	90010
9631	Jumper	3198	036	90010	9918	Jumper	3198	036	90010
9632	Jumper	3198	036	90010	9919	Jumper	3198	036	90010
9633	Jumper	3198	036	90010	9920	Jumper	3198	036	90010
9634	Jumper	3198	036	90010	9921	Jumper	3198	036	90010
9635	Jumper	3198	036	90010	9922	Jumper	3198	036	90010
9636	Jumper	3198	036	90010	9991	Jumper	3198	036	90010
9637	Jumper	3198	036	90010	9993	Jumper	3198	036	90010
9638	Jumper	3198	036	90010	9994	Jumper	3198	036	90010
9639	Jumper	3198	036	90010	9996	Jumper	3198	036	90010
9640	Jumper	3198	036	90010	9997	Jumper	3198	036	90010
9641	Jumper	3198	036	90010	9998	Jumper	3198	036	90010
9642	Jumper	3198	036	90010	CBA	Main Chassis	3139	178	87841
9643	Jumper	3198	036	90010					
9644	Jumper	3198	036	90010	Front I/O, Control, Headphone Panel				
9645	Jumper	3198	036	90010	Front I/O, Control, Headphone Panel				
9646	Jumper	3198	036	90010					
9648	Jumper	3198	036	90010	PIP Panel				
9650	Jumper	3198	036	90010	PIP Panel				
9654	Jumper	3198	036	90010					
9655	Jumper	3198	036	90010	Side A/V, Headphone Panel				
9656	Jumper	3198	036	90010	Side A/V, Headphone Panel				
9657	Jumper	3198	036	90010					
9658	Jumper	3198	036	90010	CRT Panel				
9659	Jumper	3198	036	90010	CRT Panel				
9660	Jumper	3198	036	90010					
9661	Jumper	3198	036	90010	Top Control Panel				
9662	Jumper	3198	036	90010	Top Control Panel				
9663	Jumper	3198	036	90010					
9664	Jumper	3198	036	90010	Model 32PS60B/121 Cabinet Parts				
9665	Jumper	3198	036	90010	Model 32PS60B/121 Cabinet Parts				
9666	Jumper	3198	036	90010	S AC01 AC Power Cord	3135	010	03831	
9668	Jumper	3198	036	90010	AC02 Anode Clip	3135	014	04471	
9669	Jumper	3198	036	90010	AC03 Cabinet, Back	3139	124	35191	
9670	Jumper	3198	036	90010	AC04 Cabinet, Front Assembly	3121	237	51841	
9672	Jumper	3198	036	90010	AC04A Cabinet Front (Included in Front Assy)	3139	137	71501	
9674	Jumper	3198	036	90010	AC05 Chassis Tray	3139	124	31323	
9675	Jumper	3198	036	90010	AC06 Control Buttons	3139	124	32711	
9676	Jumper	3198	036	90010	S AC08 CRT A80ECK272X56 (Value of Comp 2209 = 4.7uF)	4835	131	27165	
9678	Jumper	3198	036	90010	S AC08 CRT A80QCF340X34(N) (Value of Comp 2209 = 10uF)	9301	904	59463	
9679	Jumper	3198	036	90010	S AC09 Degaussing Coil (Used w/CRT A80ECK272S 56)	2422	549	43977	
9680	Jumper	3198	036	90010	S AC09 Degaussing Coil (Used w/CRT A80QCF340X 34(N))	2422	549	45334	
9683	Jumper	3198	036	90010	AC10 Degaussing Coil Holder	3135	013	01661	
9685	Jumper	3198	036	90010	AC11 Light Guide	3139	124	32681	
9689	Jumper	3198	036	90010	AC12 Nameplate (Included in Front Assy)	3139	120	01301	
9690	Jumper	3198	036	90010	AC13 Owner's Manual	3121	235	20111	
9691	Jumper	3198	036	90010	AC16 Speaker, 16 ohm, 5 Watt (Included in Front Assy)	2422	264	00371	
9694	Jumper	3198	036	90010	AC21 Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263	
9695	Jumper	3198	036	90010	AC24 Spring, Braid Tension	3139	121	26231	
9697	Jumper	3198	036	90010	CBA Side-HP Jack Panel	3139	127	27471	
9698	Jumper	3198	036	90010	CBA PIP Panel	3139	127	23841	
9699	Jumper	3198	036	90010	REMOTE Remote Transmitter	3139	228	86501	
9821	Jumper	3198	036	90010					
9822	Jumper	3198	036	90010					
9824	Jumper	3198	036	90010					
9825	Jumper	3198	036	90010					
9826	Jumper	3198	036	90010	Model 32PS60B/129 Cabinet Parts				
9827	Jumper	3198	036	90010	Model 32PS60B/129 Cabinet Parts				
9828	Jumper	3198	036	90010	S AC18 Deflection Yoke	3313	203	01351	
9829	Jumper	3198	036	90010					
9830	Jumper	3198	036	90010					
9831	Jumper	3198	036	90010					
9832	Jumper	3198	036	90010					
9834	Jumper	3198	036	90010					
9835	Jumper	3198	036	90010					

S = Safety Part Be sure to use exact replacement part.

PC0125C121 (continued)

9680	Jumper	3198	036	90010	S AC09	Degaussing Coil (Used w/CRT A80ECK272S			
9683	Jumper	3198	036	90010		56	2422	549	43977
9685	Jumper	3198	036	90010	S AC09	Degaussing Coil (Used w/CRT A80QCF340X			
9686	Jumper	3198	036	90010		34(N)	2422	549	45334
9687	Jumper	3198	036	90010	AC10	Degaussing Coil Holder	3135	013	01661
9688	Jumper	3198	036	90010	AC11	Light Guide (Included in Front Assy)	3139	124	26461
9689	Jumper	3198	036	90010	AC13	Owner's Manual	3121	235	20121
9690	Jumper	3198	036	90010	AC14	Power Button (Included in Front Assy)	3139	124	29981
9691	Jumper	3198	036	90010	AC16	Speaker, Full Range, 16 ohm, 5W (Inclu			
9694	Jumper	3198	036	90010		ded in Front Assy)	2422	264	00401
9695	Jumper	3198	036	90010	AC21	Battery, Zinc, 1.5V, 2-Pk.	9299	000	65263
9697	Jumper	3198	036	90010	AC24	Spring, Braid Tension	3139	121	26231
9698	Jumper	3198	036	90010	AC26	Bracket, Rear Jack	3139	124	37511
9699	Jumper	3198	036	90010	REMOTE	Remote Transmitter	3139	228	87491
9821	Jumper	3198	036	90010					
9822	Jumper	3198	036	90010					
9824	Jumper	3198	036	90010					
9825	Jumper	3198	036	90010					
9826	Jumper	3198	036	90010					
9827	Jumper	3198	036	90010					
9828	Jumper	3198	036	90010					
9829	Jumper	3198	036	90010					
9830	Jumper	3198	036	90010					
9831	Jumper	3198	036	90010					
9832	Jumper	3198	036	90010					
9834	Jumper	3198	036	90010					
9835	Jumper	3198	036	90010					
9836	Jumper	3198	036	90010					
9837	Jumper	3198	036	90010					
9838	Jumper	3198	036	90010					
9839	Jumper	3198	036	90010					
9840	Jumper	3198	036	90010					
9841	Jumper	3198	036	90010					
9842	Jumper	3198	036	90010					
9843	Jumper	3198	036	90010					
9844	Jumper	3198	036	90010					
9845	Jumper	3198	036	90010					
9846	Jumper	3198	036	90010					
9847	Jumper	3198	036	90010					
9849	Jumper	3198	036	90010					
9851	Jumper	3198	036	90010					
9901	Jumper	3198	036	90010					
9902	Jumper	3198	036	90010					
9903	Jumper	3198	036	90010					
9904	Jumper	3198	036	90010					
9911	Jumper	3198	036	90010					
9912	Jumper	3198	036	90010					
9913	Jumper	3198	036	90010					
9914	Jumper	3198	036	90010					
9915	Jumper	3198	036	90010					
9916	Jumper	3198	036	90010					
9918	Jumper	3198	036	90010					
9919	Jumper	3198	036	90010					
9920	Jumper	3198	036	90010					
9921	Jumper	3198	036	90010					
9922	Jumper	3198	036	90010					
9991	Jumper	3198	036	90010					
9993	Jumper	3198	036	90010					
9994	Jumper	3198	036	90010					
9996	Jumper	3198	036	90010					
9997	Jumper	3198	036	90010					
9998	Jumper	3198	036	90010					
CBA	Main Chassis	3139	127	23191					

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

S AC18	Deflection Yoke	3313	203	01351
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Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model MS3250C/121 Cabinet Parts

Model MS3250C/121 Cabinet Parts

S AC01	AC Power Cord	3135	010	05051
AC02	Anode Clip	3135	014	04471
AC03	Cabinet Back	3139	124	25312
AC04	Cabinet, Front Assembly	3121	237	51831
AC04A	Cabinet Front (Included in Front Assy)	3139	137	67061
AC05	Chassis Tray	3139	124	31323
AC06	Control Buttons	3139	124	29991
S AC08	CRT A80ECK272X56 (Value of Comp 2209 =			
	4.7uF)	4835	131	27165
S AC08	CRT A80QCF340X34(N) (Value of Comp 220			
	9 = 10uF)	9301	904	59463

S = Safety Part Be sure to use exact replacement part.

PC0127C121 - Manual no. 7603

Main Chassis

	Main Chassis			
0137	Spring For Item 7400	3139	121	24581
0140	Spring For Item 7460	3139	121	24581

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

PCW127C121 - Manual no. 7603

Main Chassis

	Main Chassis			
0137	Spring For Item 7400	3139	121	24581
0140	Spring For Item 7460	3139	121	24581

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

PL0125C125 - Manual no. 7603

Main Chassis

Main Chassis

0137	Spring For Item 7400	3139 121 24581
0140	Spring For Item 7460	3139 121 24581

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

PL0127C121 - Manual no. 7603

Main Chassis

	Main Chassis			
0137	Spring For Item 7400	3139	121	24581
0140	Spring For Item 7460	3139	121	24581

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

PPC132C121 - Manual no. 7603

Main Chassis

Main Chassis
0137 Spring For Item 7400 3139 121 24581
0140 Spring For Item 7460 3139 121 24581
7400 Power FET, STP3NC60FP-clip 0137. 9322 157 37687

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

PPC136C1 - Manual no. 7603

Main Chassis

	Main Chassis			
0137	Spring For Item 7400	3139	121	24581
0140	Spring For Item 7460	3139	121	24581
7400	Power FET, STP3NC60FP-clip 0137.	9322	157	37687

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

SC3127N121 - Manual no. 7603

Main Chassis

Main Chassis

0137	Spring For Item 7400	3139	121	24581
0140	Spring For Item 7460	3139	121	24581

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts

SC3132N121 - Manual no. 7603

Main Chassis

Main Chassis
0137 Spring For Item 7400 3139 121 24581
0140 Spring For Item 7460 3139 121 24581
7400 Power FET, STP3NC60FP-clip 0137. 9322 157 37687

Front I/O, Control, Headphone Panel

Front I/O, Control, Headphone Panel

PIP Panel

PIP Panel

Side A/V, Headphone Panel

Side A/V, Headphone Panel

CRT Panel

CRT Panel

Top Control Panel

Top Control Panel

Model 32PS60B/129 Cabinet Parts

Model 32PS60B/129 Cabinet Parts