

Service Service Service

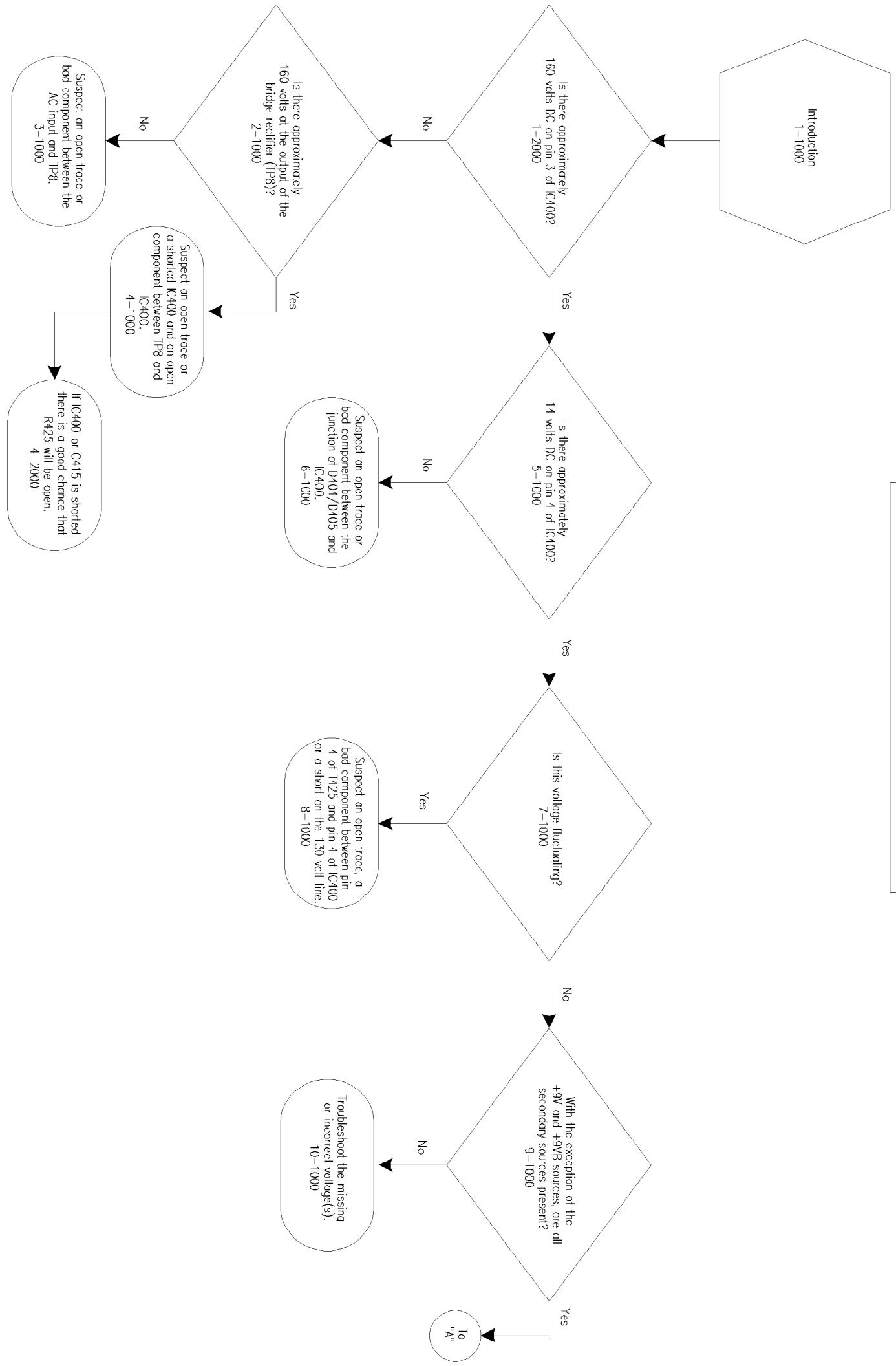
B8 Series Chasssis Manual 7562

Service Manual

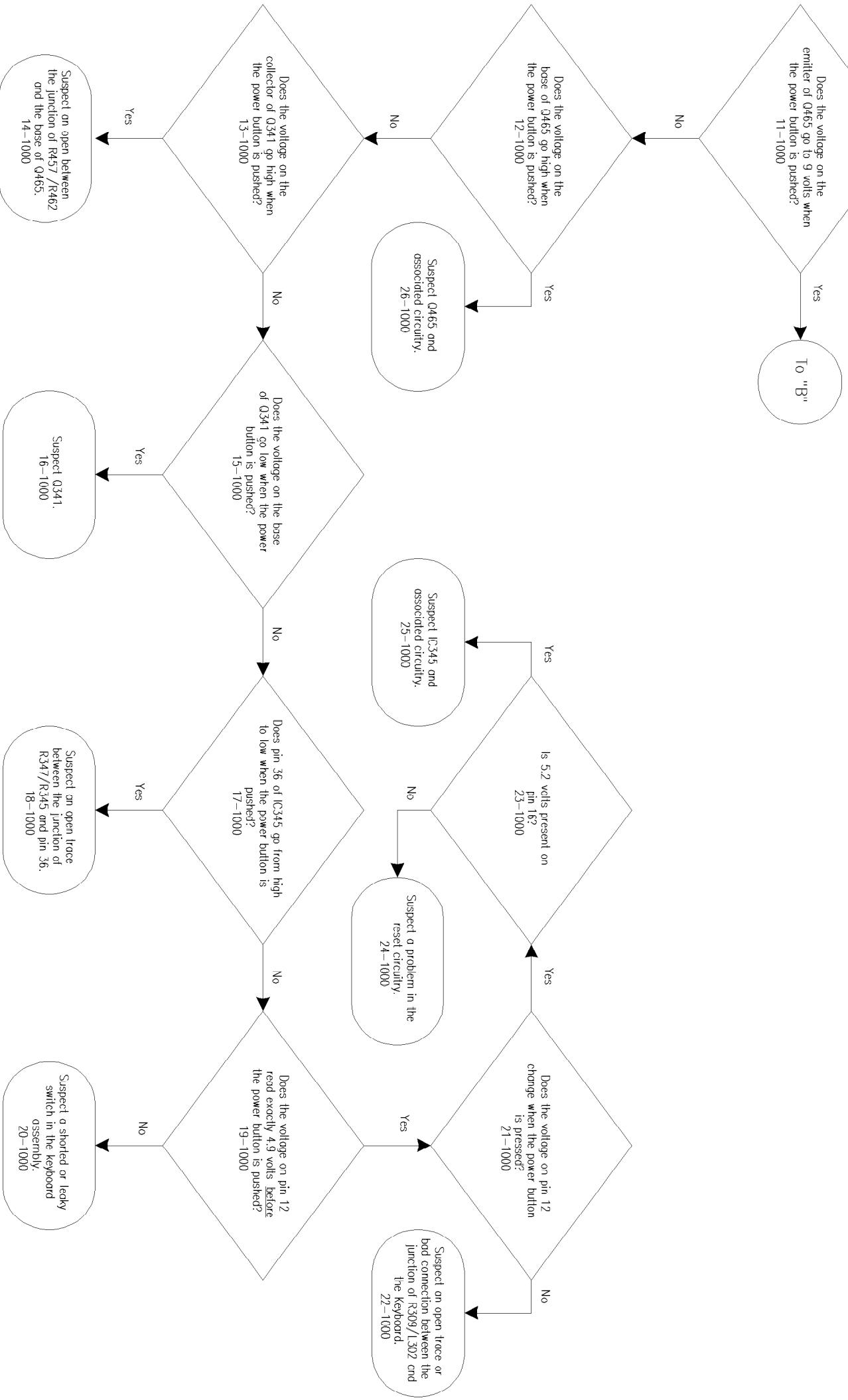
Contents

- 5. Service Modes, Error Codes and Faultfinding
- 6. Block Diagrams and Testpoints
- 7. Electrical Diagrams and PWB's
 - B8 CHASSIS TABLE OF SCHEMATIC DIAGRAMS
 - MAIN CHASSIS (SECTION 1 OF 5)
 - MAIN CHASSIS (SECTION 2 OF 5)
 - MAIN CHASSIS (SECTION 3 OF 5)
 - MAIN CHASSIS (SECTION 4 OF 5)
 - MAIN CHASSIS (SECTION 5 OF 5)
 - CRT PANEL (13", 19", & 20")
 - CRT PANEL (25" & 27")
 - KEYBOARD/SOUND SHAPER PANEL
 - STEREO PANEL SCHEMATIC
 - OCV TV PANEL SCHEMATIC
 - CARD INTERCONNECT PANEL
 - HEALTH CARE JACK PANEL
 - LODGING/SMART PORT PANEL
 - MAIN CHASSIS PCB (TOP)
 - MAIN CHASSIS PCB (BOTTOM)
 - 13", 19", & 20" CRT PANEL PCB
 - 25", & 27" CRT PANEL PCB
 - KEYBOARD/SOUND SHAPER PCB
 - STEREO PANEL PCB
 - OCV TV PANEL PCB (TOP)
 - OCV TV PANEL PCB (BOTTOM)
 - CARD INTERCONNECT PANEL PCB
 - HEALTH CARE JACK PANEL PCB
 - LODGING/SMART PORT PANEL PCB
- 8. Adjustments
- 10. Spare Parts List

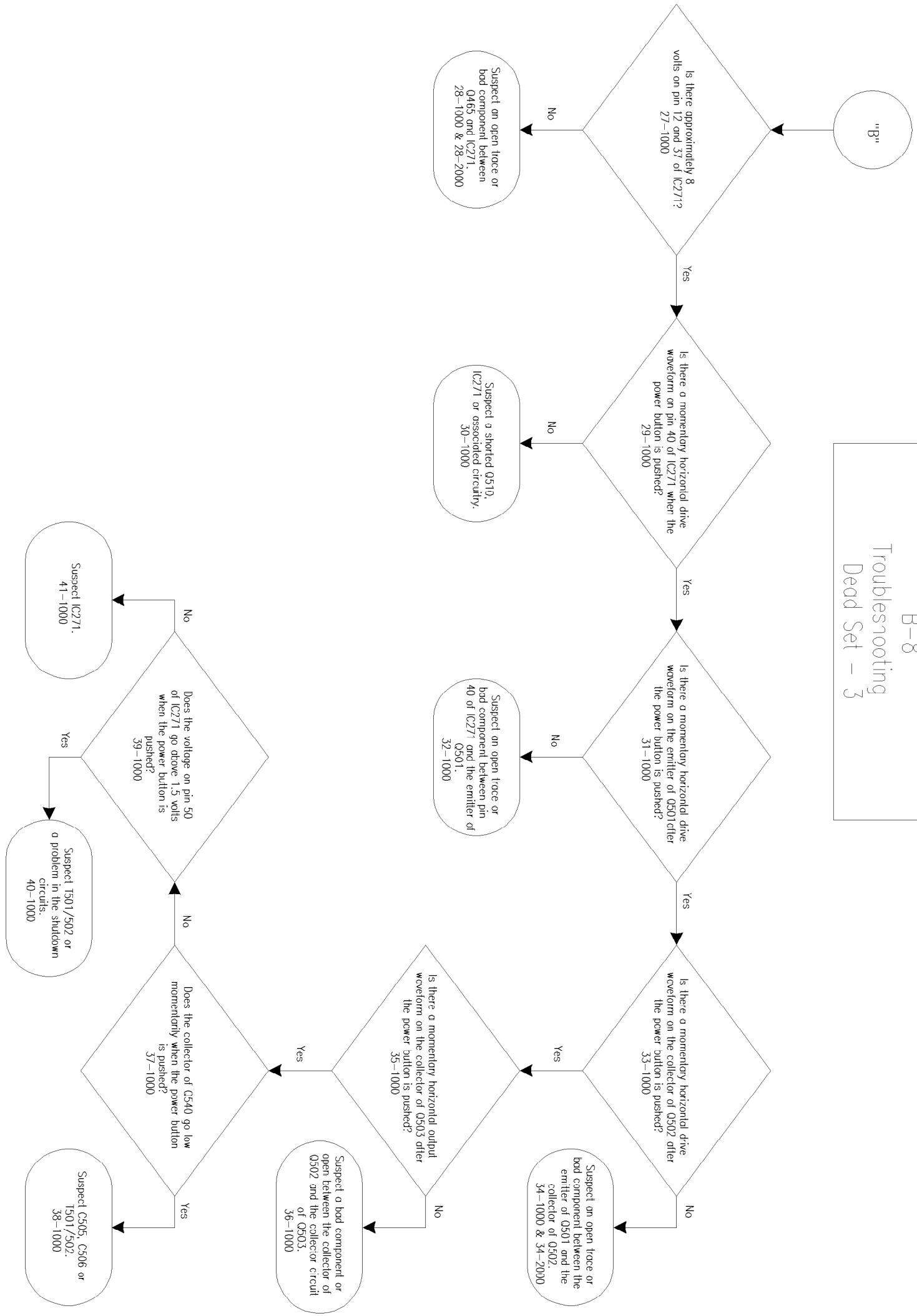
B-8
Troubleshooting
Dead Set



B-8
Troubleshooting
Dead Set - 2

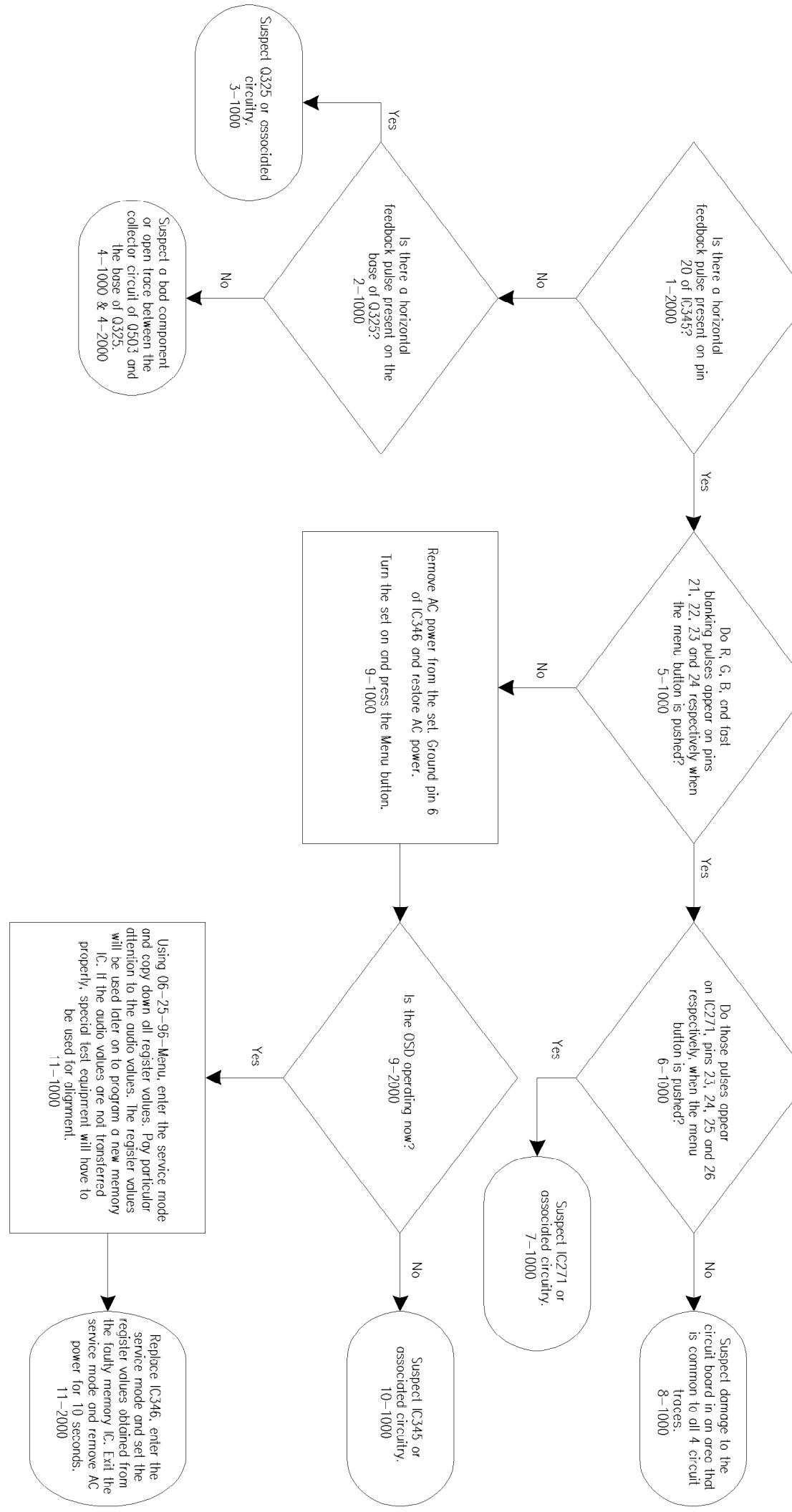


B-8
Troubleshooting
Dead Set - 3

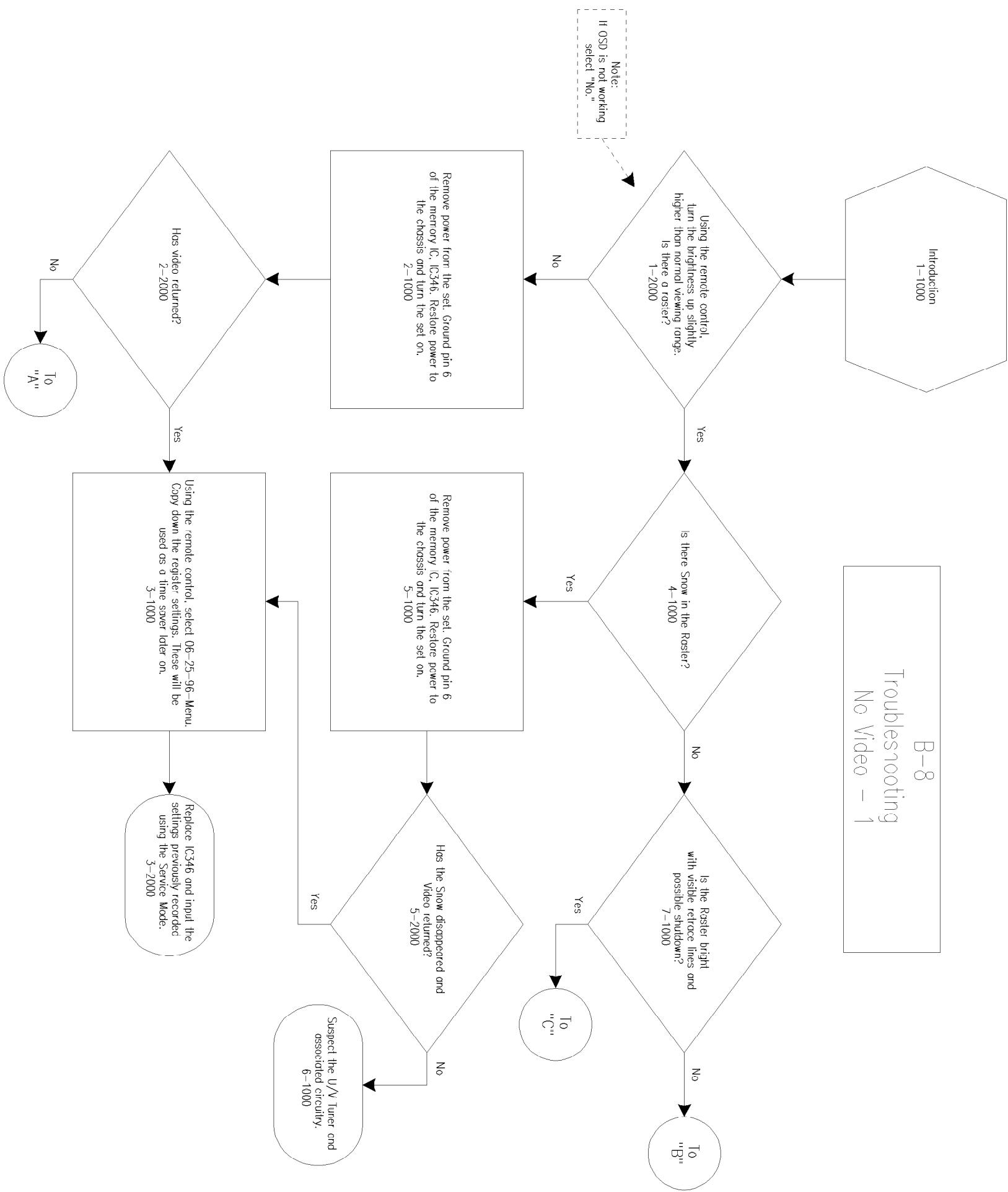


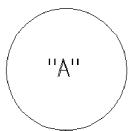
B-8 Troubleshooting No OSD

Introduction
1-1000



B-8
Troubleshooting
No Video - 1





B-8 Troubleshooting No Video - 2

Is the CRT filament lit?
8-1000

No

Yes

Does the voltage on pin 5
of IC50, 51 and 52 read zero?
14-1000

Yes

No

Is the voltage less than 4 volts?
15-1000

Yes

No

To
"B"

Unplug the CRT panel from the CRT. Using an
ohmmeter, measure the resistance from pin 9
on the CRT socket to pin 10 on the CRT socket.
(this is for 25" and 27" sets)
9-1000

Was the reading less than 20 ohms?
9-2000

Yes

With the CRT board unplugged
from the CRT, is the resistance from
pin 9 to pin 10 on the CRT Less
than 8 ohms?
11-1000

Yes

Suspect a bad CRT Socket
13-1000

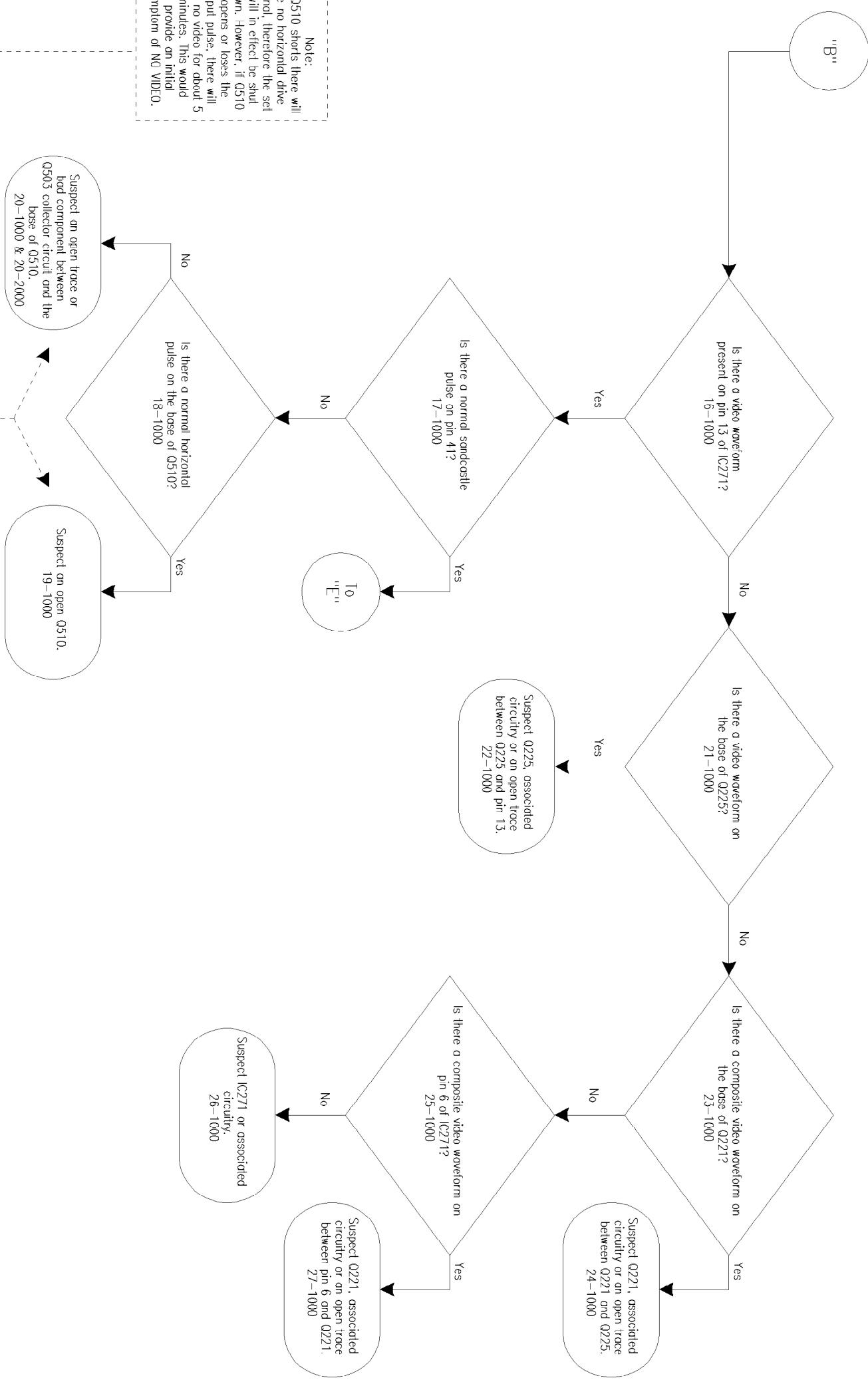
No

Suspect an open trace, bad
connection, open wire or bad
component between pins 9
and 10 of the CRT socket.
10-1000 , 10-2000
10-3000 & 10-4000

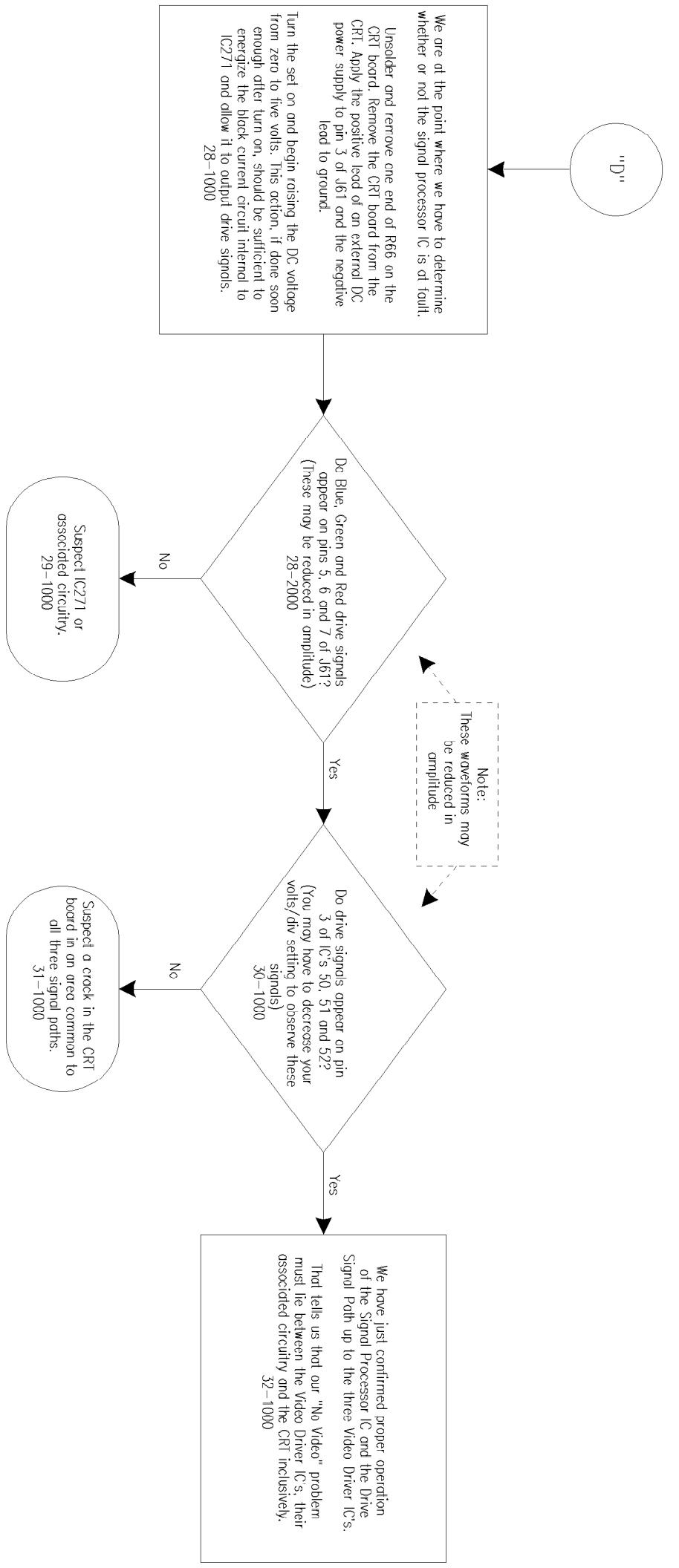
Suspect the CRT.
12-1000

Note:
If the voltage on pin 5
goes below 4 volts, the
R, G and B drives are
cutoff internally by
IC271.

B-8
Troubleshooting
No Video - 3



B-8
Troubleshooting
No Video - 4



B-8
Troubleshooting
No Video - 5

"C"

If the shutdown occurs immediately after warm-up, try turning the G2 (screen control) counter clockwise to help reduce the over current situation. This should provide more time for observation and troubleshooting.
33-2000

33-1000

If the shutdown occurs immediately after warm-up, try turning the G2 (screen control) counter clockwise to help reduce the over current situation. This should provide more time for observation and troubleshooting.
33-2000

Is the raster predominantly one color behind the retrace lines?
33-3000

A background that has no predominant color would indicate that something that is common to all three colors is the source of our problem.
33-1000

Is 200 volts present on Capacitor C65 on the CRT Board?
33-1000

The predominant color will normally indicate which Video Amplifier Circuit the problem is in. For example, if the predominant color on the CRT is Green, the best place to start troubleshooting would be on the CRT board at IC52 and its associated circuitry.

34-1000

Suspect an open trace or bad component between C05 and pin 7 of T501/502.
38-1000 & 38-2000

Is the resistance from pin 6 of any one of the three Video Driver IC's indicating a short to ground?
37-1000

Troubleshoot for a short between R58 and pin 5 of the three driver IC's. R58 will open under a short situation.
39-1000

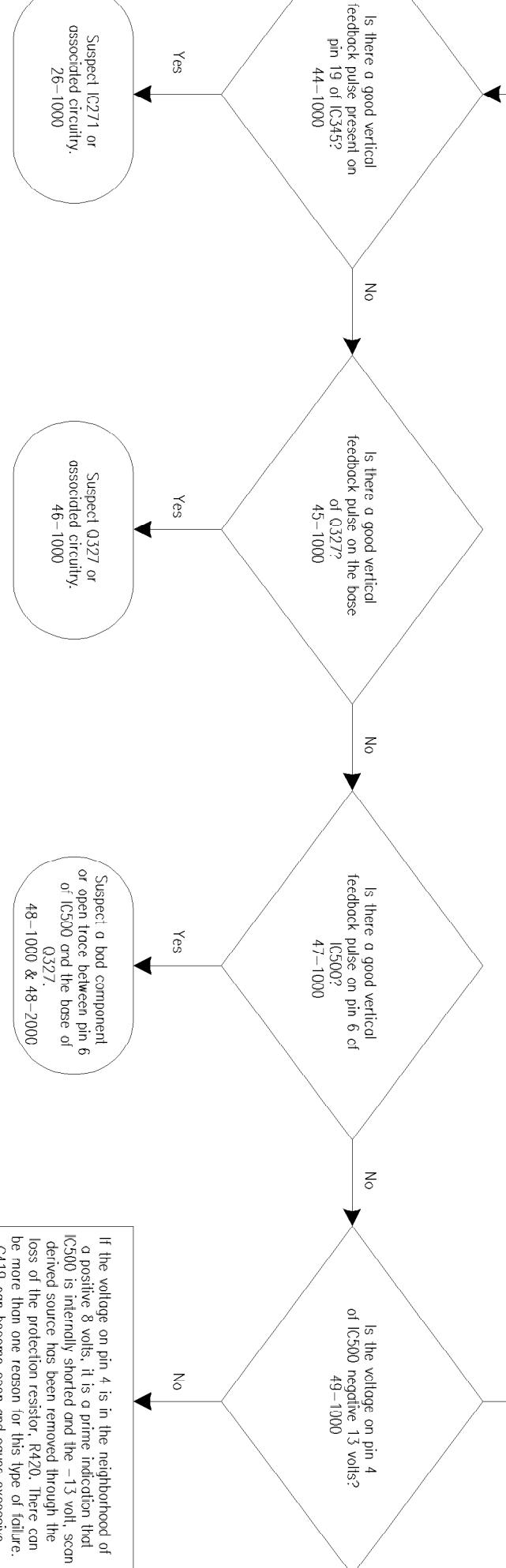
Is the resistance from pin 5 of the CRT socket to ground approximately 1.5K ohms?
40-1000

Suspect the CRT.
42-1000

Suspect R59 or the CRT socket.
41-1000

B-8
Troubleshooting
No Video - 6

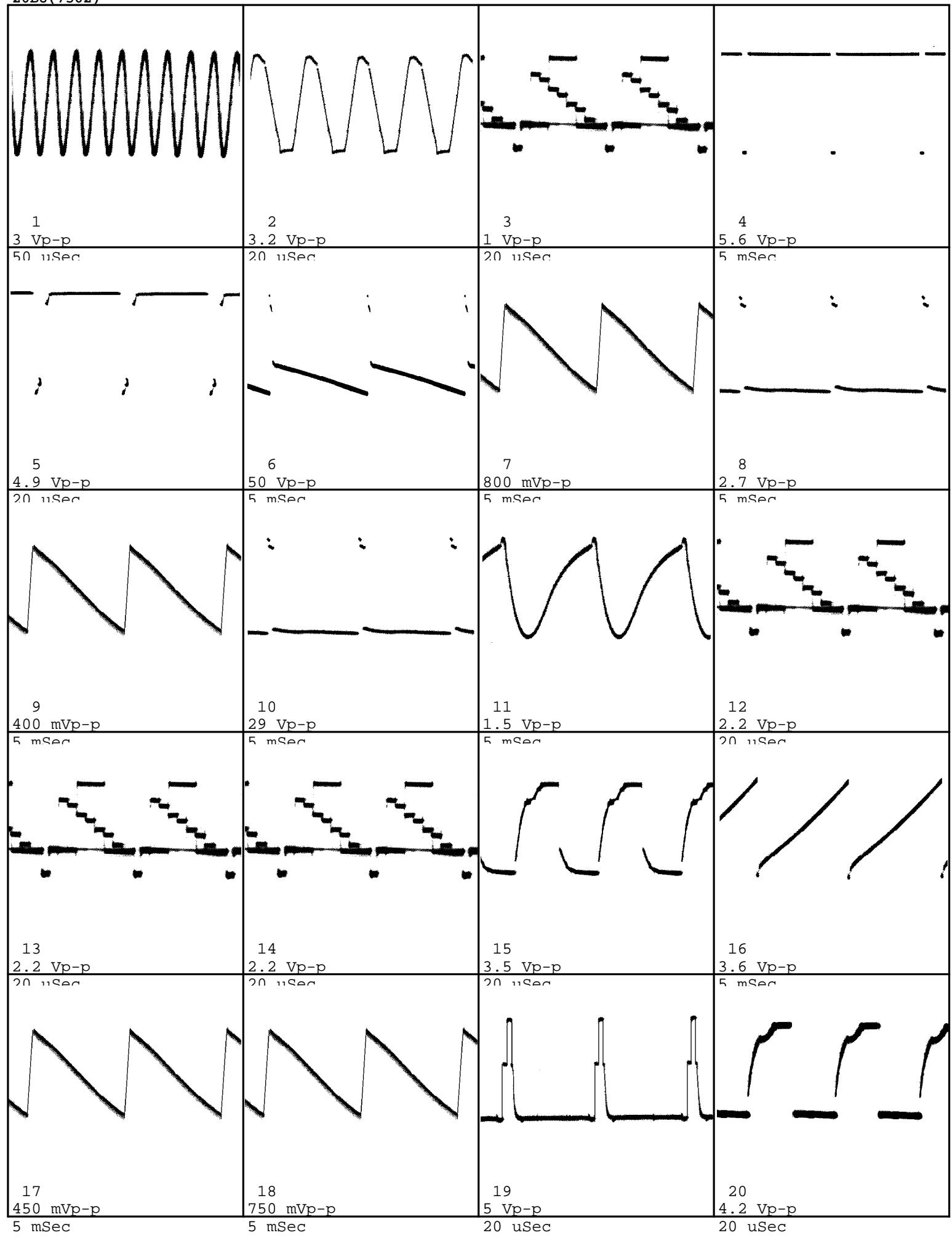
"E"
Suspect a leaky D550
or a bad IC500.
50-1000

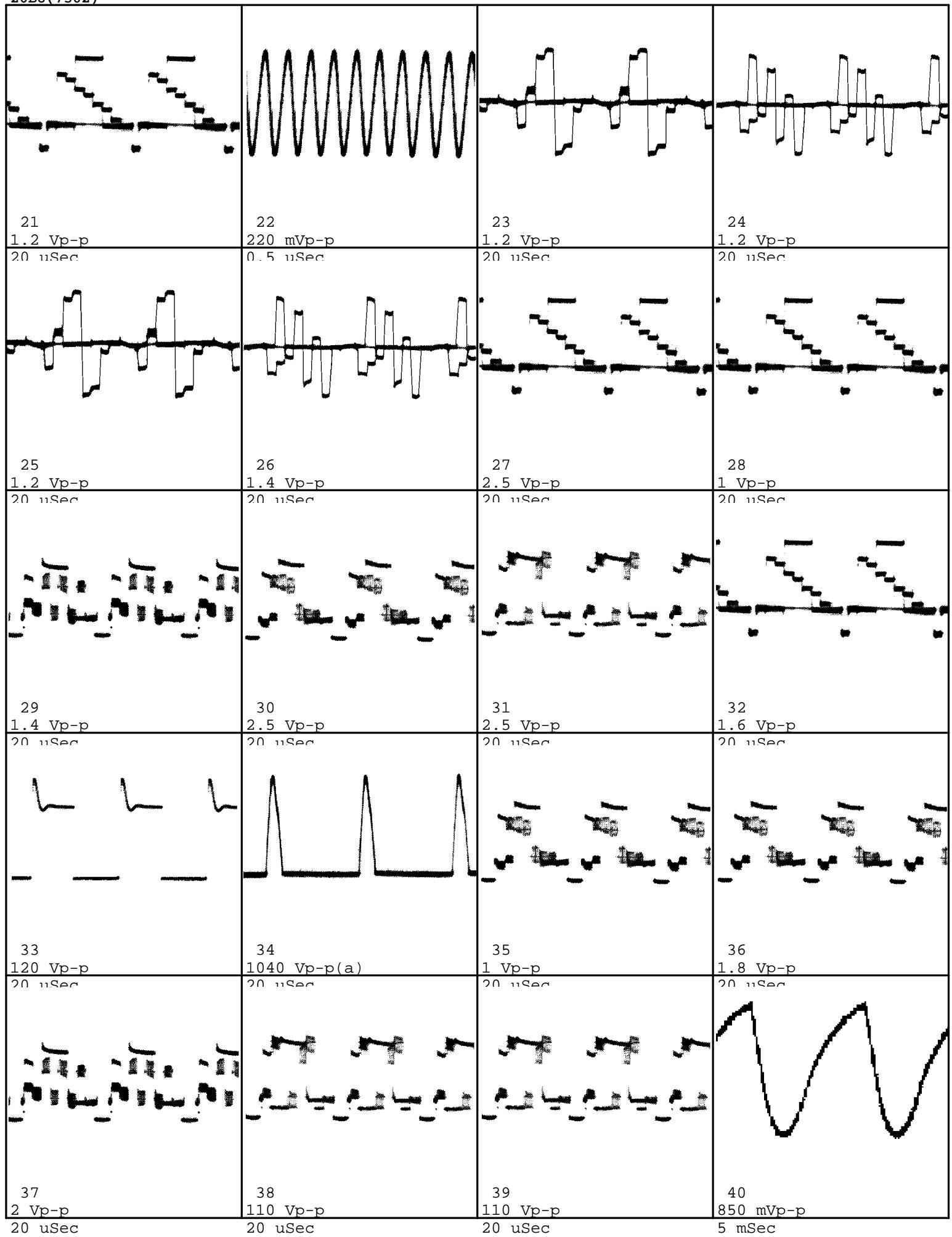


If the voltage on pin 4 is in the neighborhood of a positive 8 volts, it is a prime indication that IC500 is internally shorted and the 13 volt scan derived source has been removed through the loss of the protection resistor, R420. There can be more than one reason for this type of failure. C419 can become open and cause excessive ripple. D409 can become leaky or IC500 can become fatigued and just fail.

51-1000 & 51-2000

Check the following components and replace if bad or questionable:
C419 and D409. Replace
IC500 and R420.
51-3000





20B8(7562)



41
110 Vp-p
20 uSec

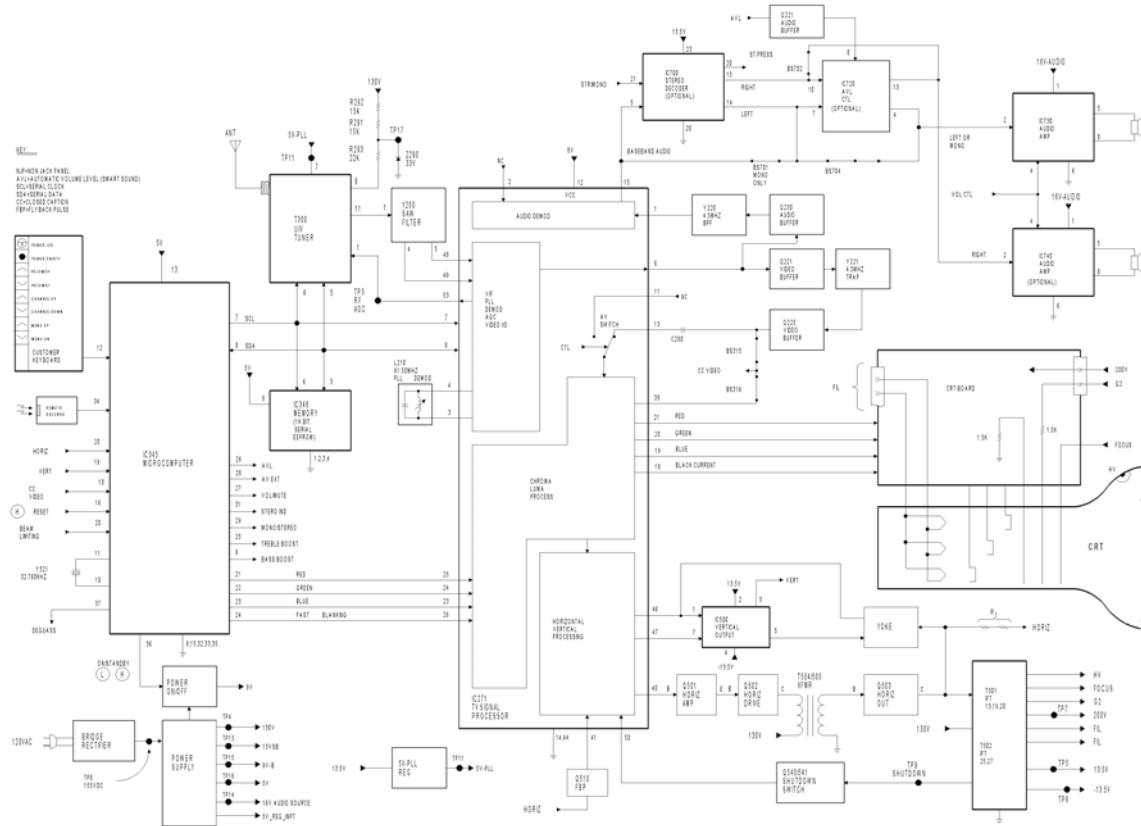
B8 COLOR TV CHASSIS OVERVIEW

The B8 Series Chassis is the Statement (standard line) TV Set produced by Philips Consumer Electronics Company for the 1997 model year. The B8 Chassis is used in TV Sets with 25, and 27 inch CRT's. The B8 Chassis is also used in Commercial TV Sets with 13, 19, 20, 25, and 27 inch CRT's. The chassis orientation is front to rear in the B8 design (sometimes called "North-South"), because the chassis is longer in this direction than across. The B8 Tuning System features 181 Channels with On-Screen Display. The main Tuning System includes the tuner along with the Microcomputer IC and the Memory IC. The Microcomputer communicates with the Memory IC, the Customer Keyboard, the Remote Receiver, the U/V Tuner, the TV Signal Processor, the Stereo Decoder (optional), and the Power On/Off circuitry. The Memory IC retains the settings for Favorite Stations, Customer Control Settings, Mode Switches, and Service/Factory Setup Data.

The chassis features a Very Large Scale Integration (VLSI) IC for TV signal processing. This IC performs Video IF, Sound IF, AGC control, Horizontal Signal processing, Vertical Signal processing, Horizontal/Vertical synchronization, and Chrominance/Luminance processing. The On-Screen Graphics information is placed on the main signal within the TV Signal Processor. On-Screen Graphics generation and Closed Caption decoding are processed within the Microcomputer and the signals are sent to the TV Signal Processor. Automatic Volume Level (AVL - called "SMART SOUND" by marketing) control from the Microcomputer is sent to the AVL IC. The "Smart Sound" function is performed within IC720.

The B8 Chassis features a Switching Mode Power Supply for the main voltage source. A "HOT" ground reference is used in the primary side of the power supply. A "COLD" (signal) ground from the secondary of the power supply is used throughout the rest of the chassis. AN ISOLATION TRANSFORMER IS REQUIRED WHEN DOING SERVICE ON ANY VERSION OF THE NEW CHASSIS.

SIGNAL FLOW



The incoming TV RF signal is applied to the U/V Tuner via the Antenna RF Input. The IF signal is developed within the U/V Tuner, then amplified by an IF Preamplifier located inside the Tuner. The amplified IF signal is sent from Pin 11 of the U/V Tuner to the SAW Filter, Y200. The SAW Filter produces bandpass shaping for the IF signal before it is applied to the TV Signal Processor Integrated Circuit, IC271, for processing. AGC (to the Tuner) and AFT (to the Microcomputer) signals are developed within IC271 and then sent to the Tuning System for RF Amp gain control.

Sound IF signal processing for the B8 Chassis is performed by coupling the 4.5MHz Sound IF signal from IC271, Pin 6, via a Buffer Amplifier, Q221, and 4.5MHz Band Pass Filter, Y220, into IC271, Pin 1. Audio is output from Pin 15 in mono versions and applied to the Audio Amp Output IC, IC730, to drive the speakers. For the stereo equipped sets, the detected baseband audio signal exits IC271, Pin 15, and then enters the Stereo Decoder IC200. The Stereo Decoder has Internal/External switching, via the control input on Pin 21, to allow either the detected baseband audio or External Audio from another source to be routed through and exit to IC730 and IC740.

Composite video from IC271, Pin 6, is buffered by Q221 and then passed through a 4.5MHz Trap, Y221, to remove any sound products present. This signal is buffered again by Q225 before it goes back to IC271, Pin 13. Depending on the part number of IC271, either BS315 or BS316 will be installed. With BS315 installed, The CC Video comes from Q225. If BS316 is installed, the CC Video comes from Pin 38 of IC271. Internal/External switching of the video is done within IC271. The chroma and luminance signals are then processed by the Chroma/Luminance Process block within IC271. Sync input from the Chroma/Luminance block to the

Horizontal/Vertical Processing block is applied internally within IC271.

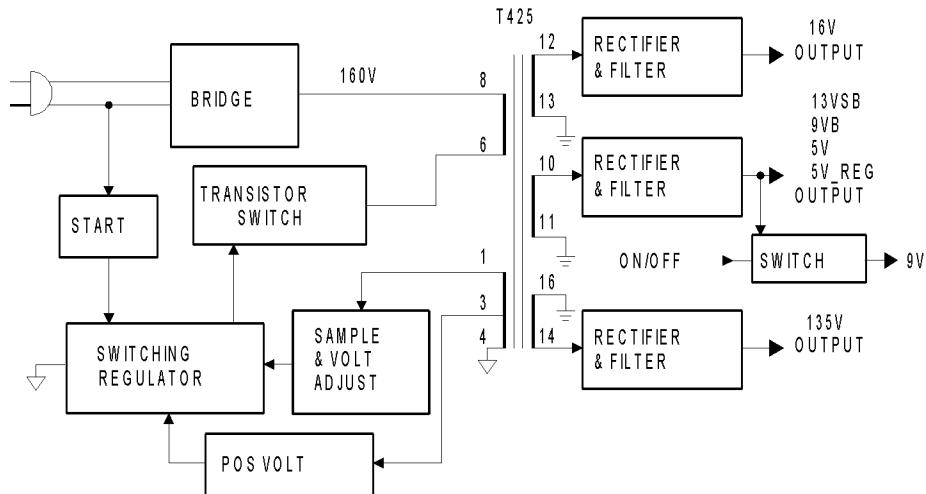
Brightness, Picture, Sharpness, Color, and Tint control voltages are applied to IC271 from Microcomputer, IC300 via the IIC Bus. The Red, Green, and Blue signals are developed within IC271 and output via Pins 21, 20, and 19. The Black Current Level Set is Output from Pin 18. The Red, Green, and Blue video signals from IC271 are applied to the CRT Board. On the CRT Board, these signals are amplified before being applied to the CRT. The Drive and Cutoff controls for CRT Set-Up are controlled by the microprocessor via the IIC Bus using the Service Test Mode.

Horizontal and Vertical signals are also developed within IC271. Adjustments for Horizontal Centering, Vertical Centering, and Vertical Height are accomplished with the Remote Transmitter via the Service Test Mode. There is no adjustment for the Horizontal Oscillator. The horizontal circuit is a count down type of system that gets its base frequency from the 3.58MHz circuit.

The horizontal signal is applied to a Horizontal Driver, Q502, where the signal is amplified and transformer coupled to the Horizontal Output transistor, Q503. The output from Q503 drives the Integrated Flyback Transformer. The IFT develops the High Voltage, Screen Voltage, Focus Voltage, and Filament Voltage for the Picture Tube. If the voltage in T501 (T502 for 25 and 27 inch sets) goes high, a sample is sent to Q540 and Q541, the shutdown switch. This will enable lowering the High Voltage when it starts to elevate. Scan derived voltages provided by the IFT for use by the chassis are the 200V, +1 3.5V, and -13.5V Sources. A horizontal pulse is also made available for the chassis from the output circuit of the Horizontal Output transistor.

The Vertical signal exits TC271 at Pin 7 and is applied to the Vertical Output Integrated Circuit, IC550. The vertical signal is output from IC550 and applied to the Vertical Yoke. Vertical Centering and Vertical Height adjustments are performed via the Service Test Mode and Remote Transmitter. Vertical feedback is returned to IC550, Pin 1.

B8 CHASSIS POWER SUPPLY BLOCK



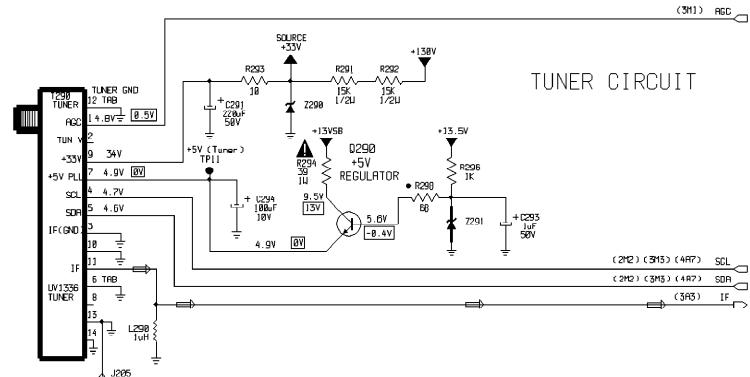
When a 120Vac Source is connected to the B8 Chassis, approximately 160Vdc is developed by

the Bridge Rectifier circuit. The 160 volts dc goes through T425 to the transistor switch. The start up signal is taken from the neutral leg of the input ac line.

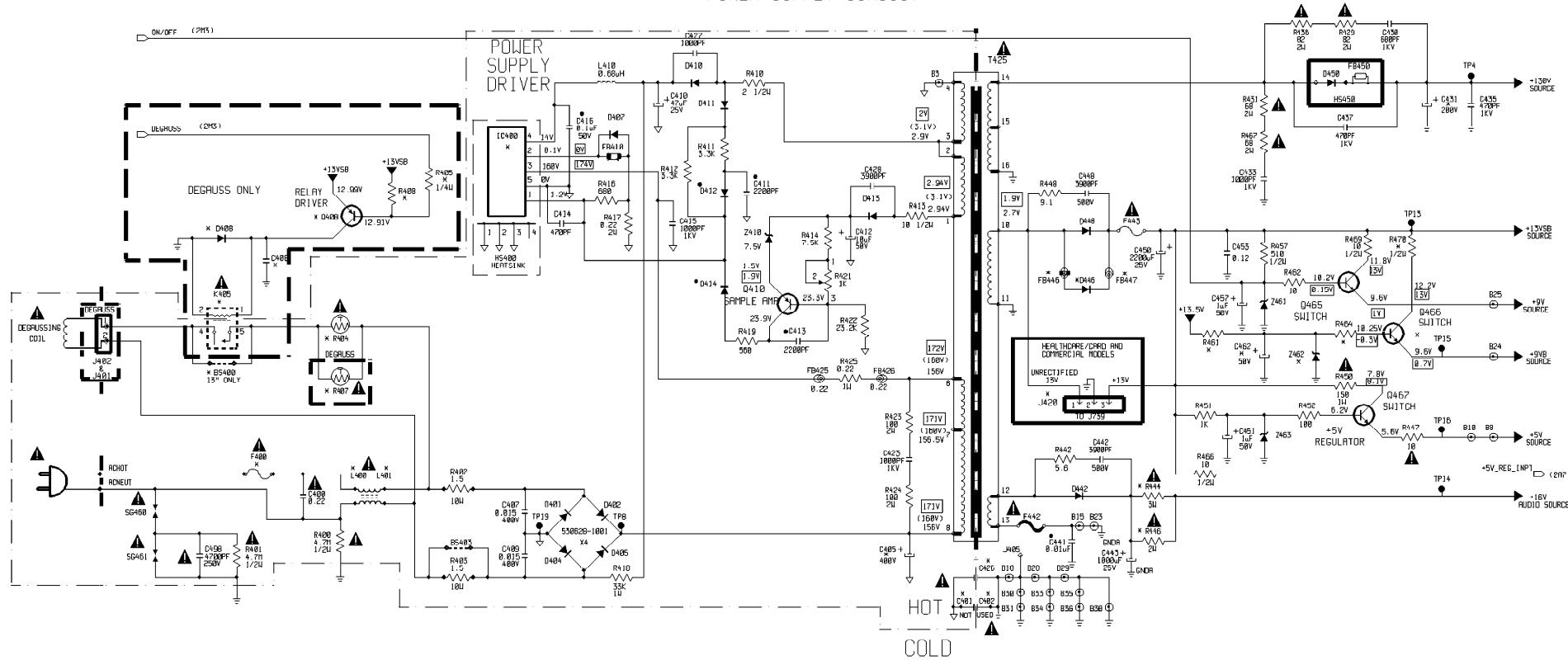
The Power Supply consists of a single integrated circuit operating as a Free-Running Switching Mode Power Supply. The frequency of operation varies with the circuit load. There is no separate power supply for standby. The Power Supply turns On when AC is applied. The Switching Regulator IC starts switching when the initial voltage is applied through the Start circuit. The Switching Regulator and the Drive circuits turns the Switch On and Off to allow current flow through the primary of transformer T425. Energy stored in the primary during the On-time is delivered to the secondaries during the Off-time. Feedback from the Hot secondary is used to control the Switching Regulator. Positive Voltage from the hot secondary is used as B+ for the Switching Regulator.

From the secondaries of T425, the voltages needed to operate the television are developed. The Plus 9 volt output is switched for On/Off control.

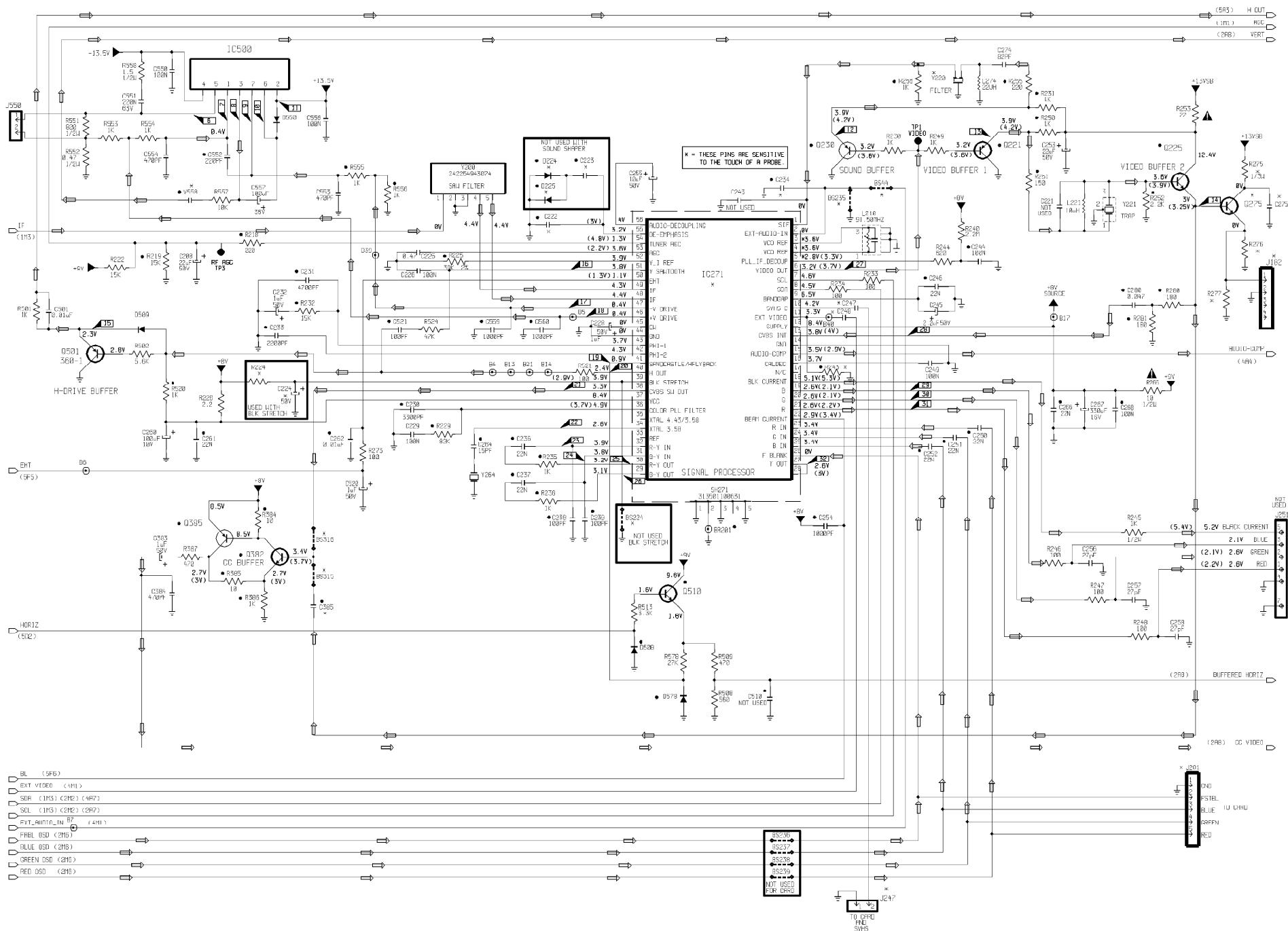
MAIN CHASSIS SCHEMATIC (SECTION 1 OF 5)



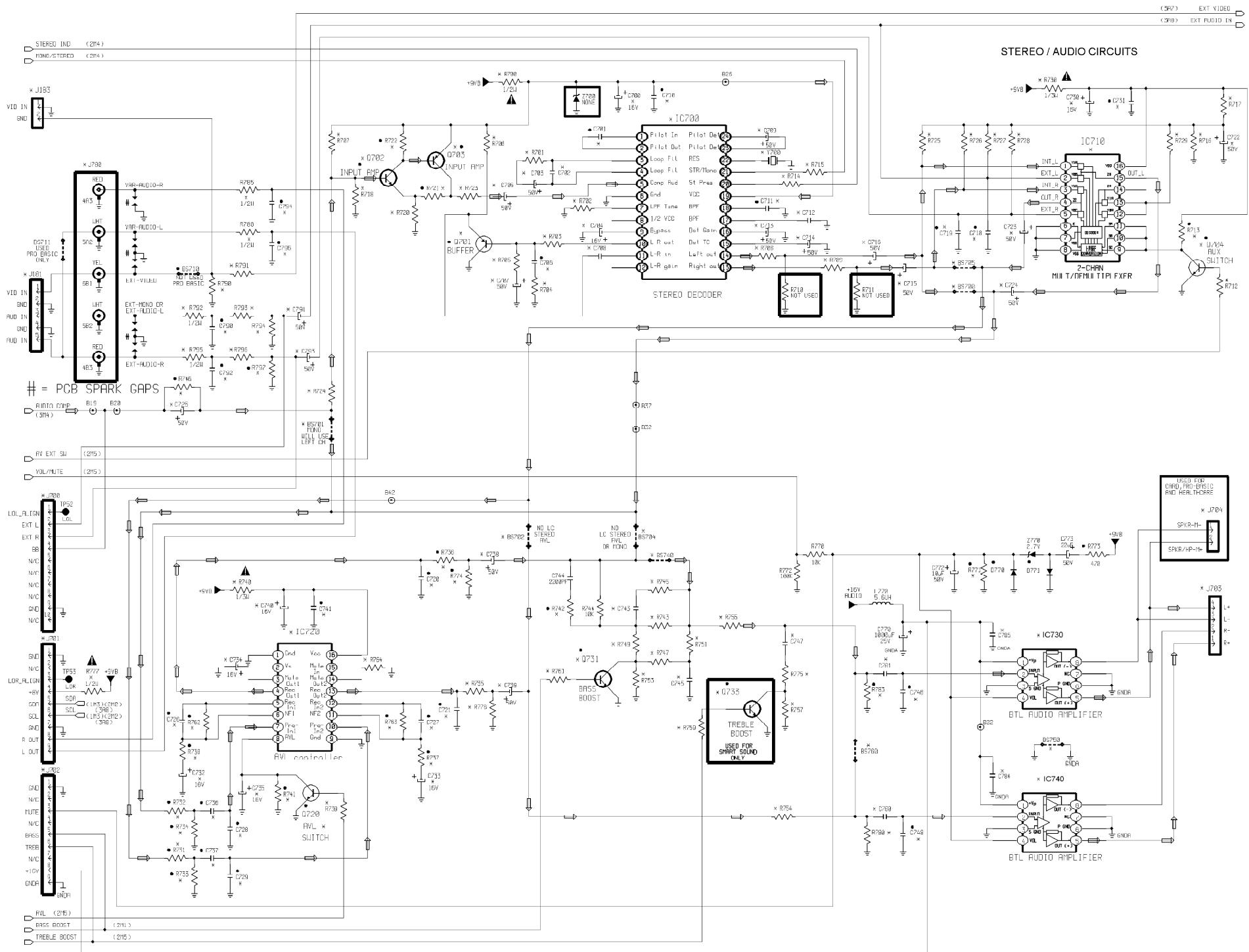
POWER SUPPLY CIRCUIT



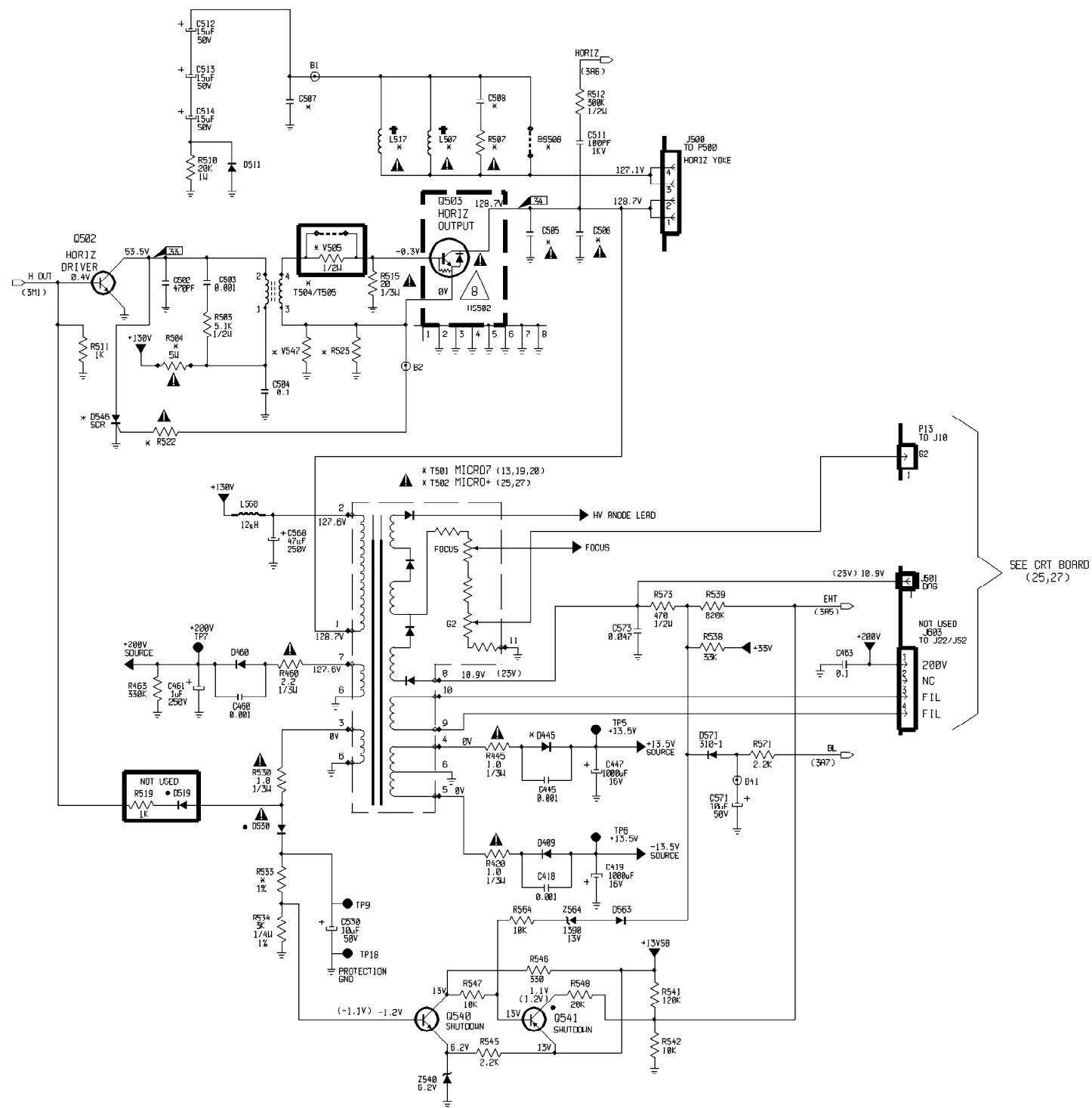
All Models (7562) - MAIN CHASSIS (SECTION 3 OF 5)



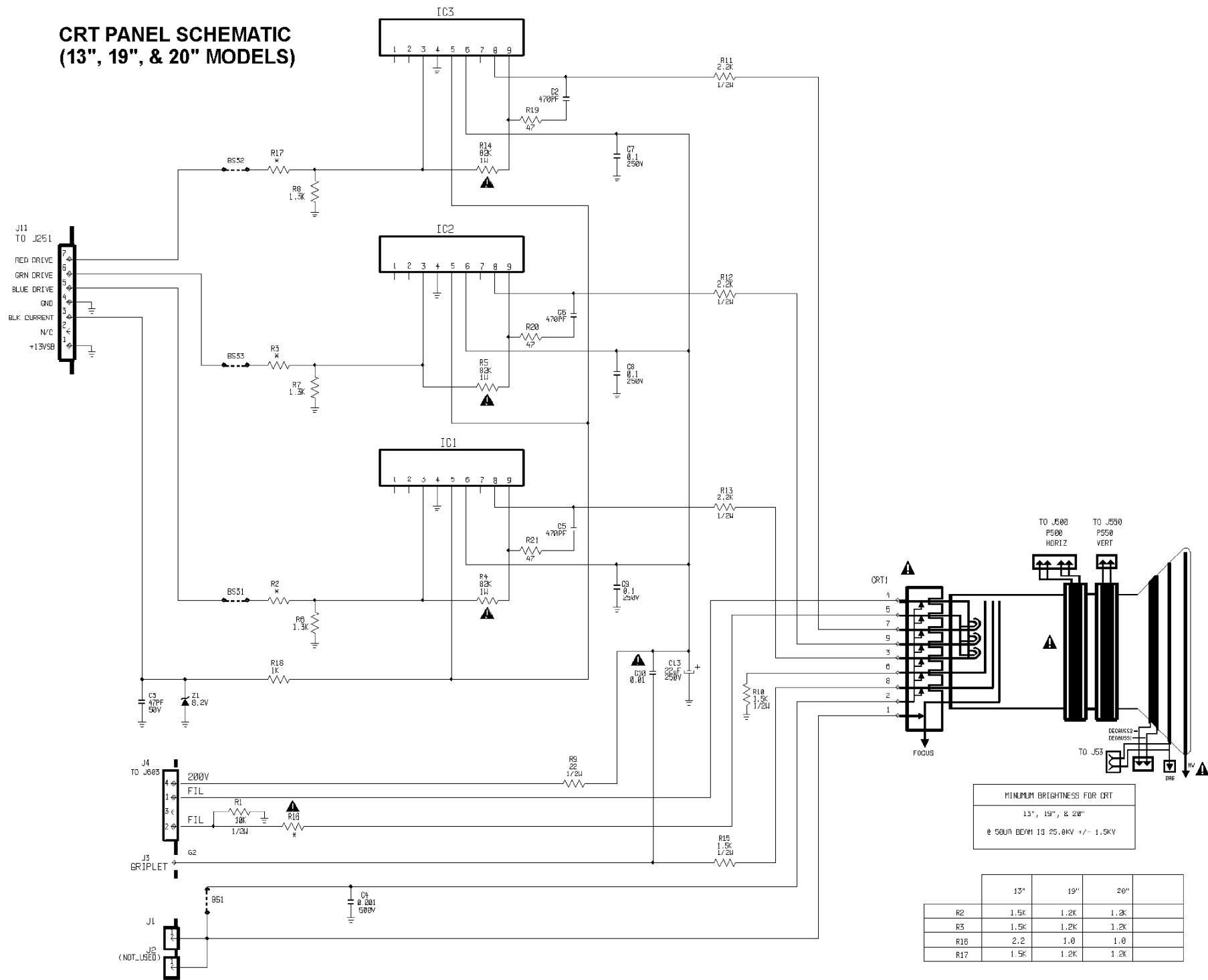
All Models (7562) - MAIN CHASSIS (SECTION 4 OF 5)

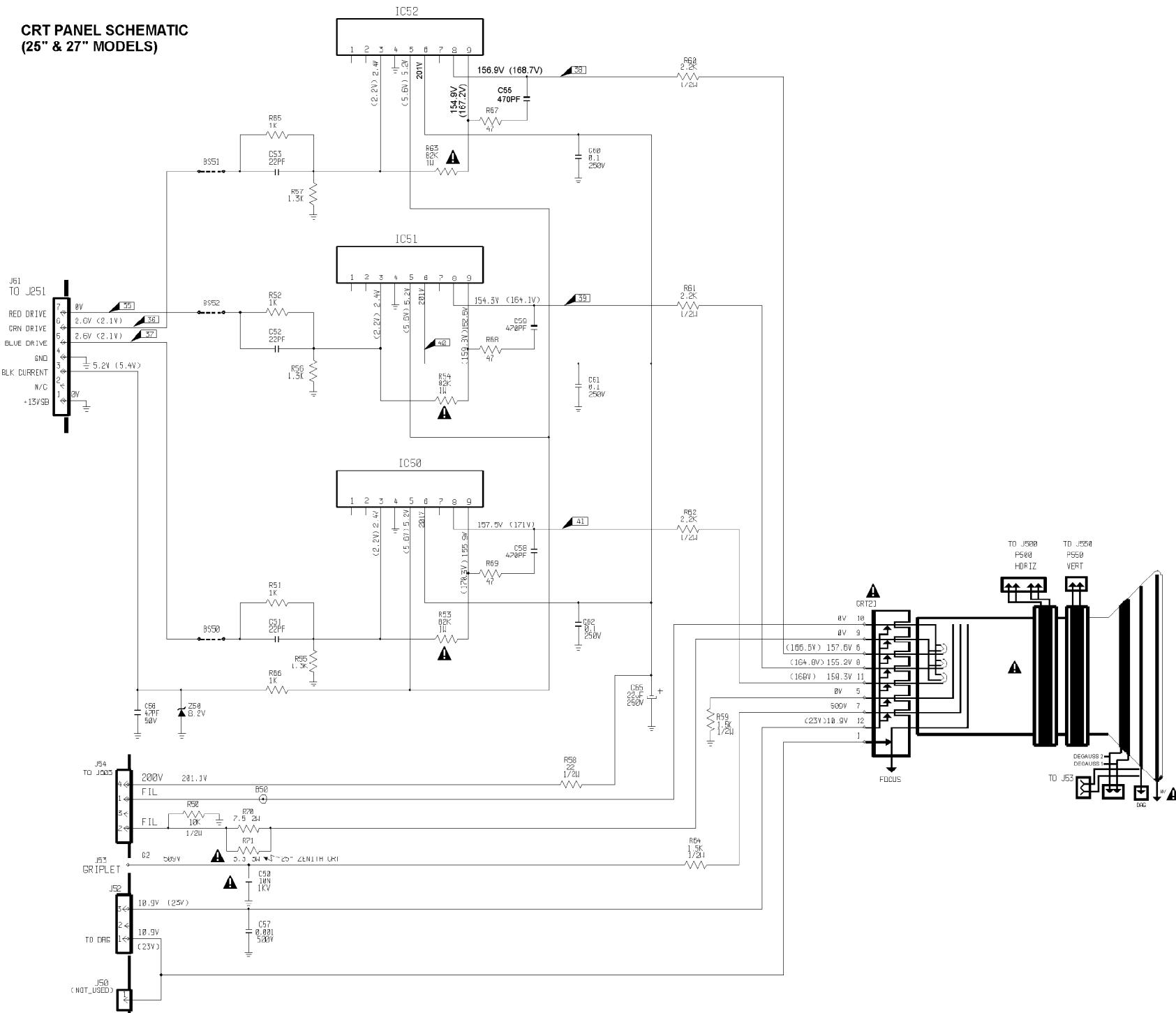


All Models (7562) - MAIN CHASSIS (SECTION 5 OF 5)

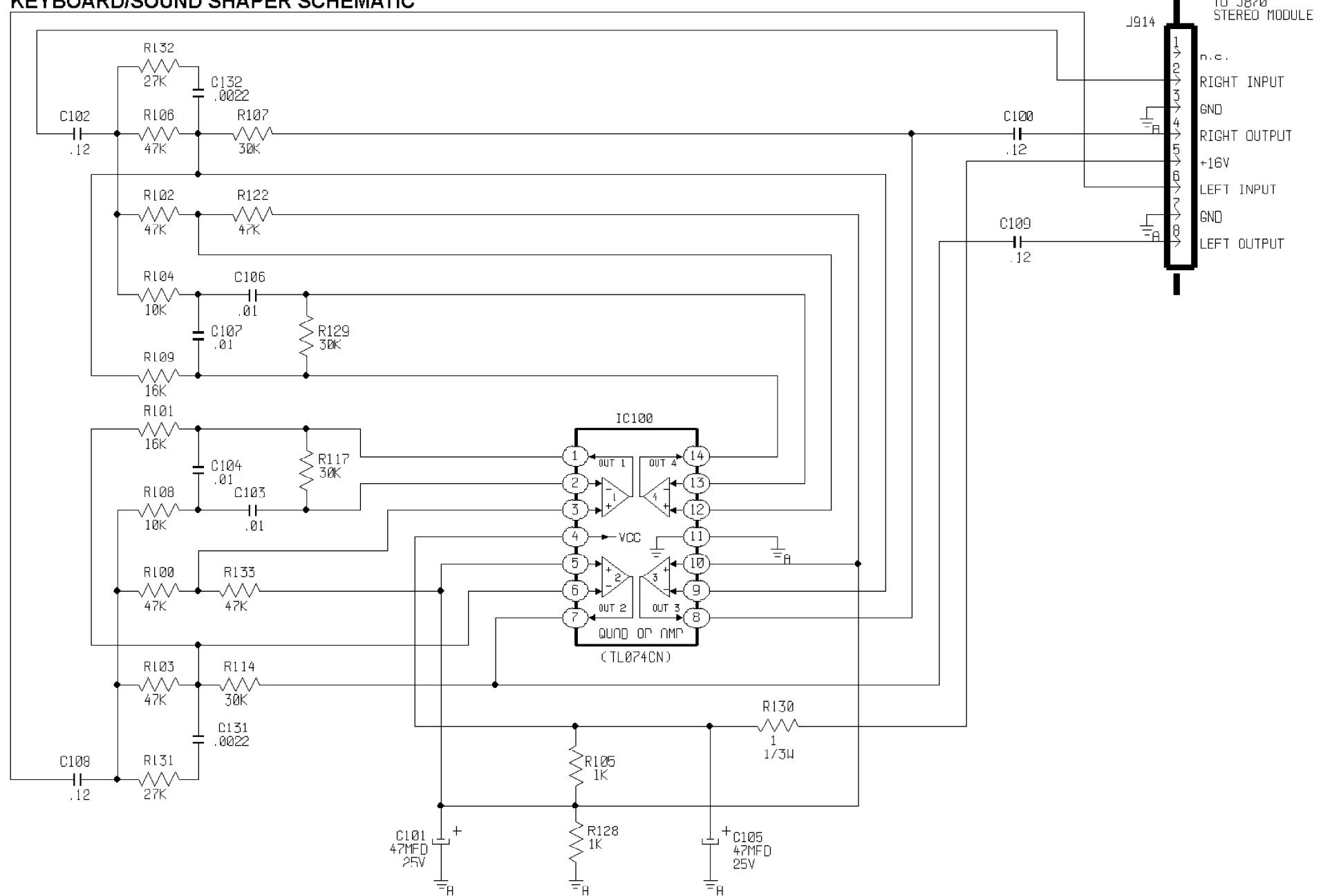


CRT PANEL SCHEMATIC (13", 19", & 20" MODELS)



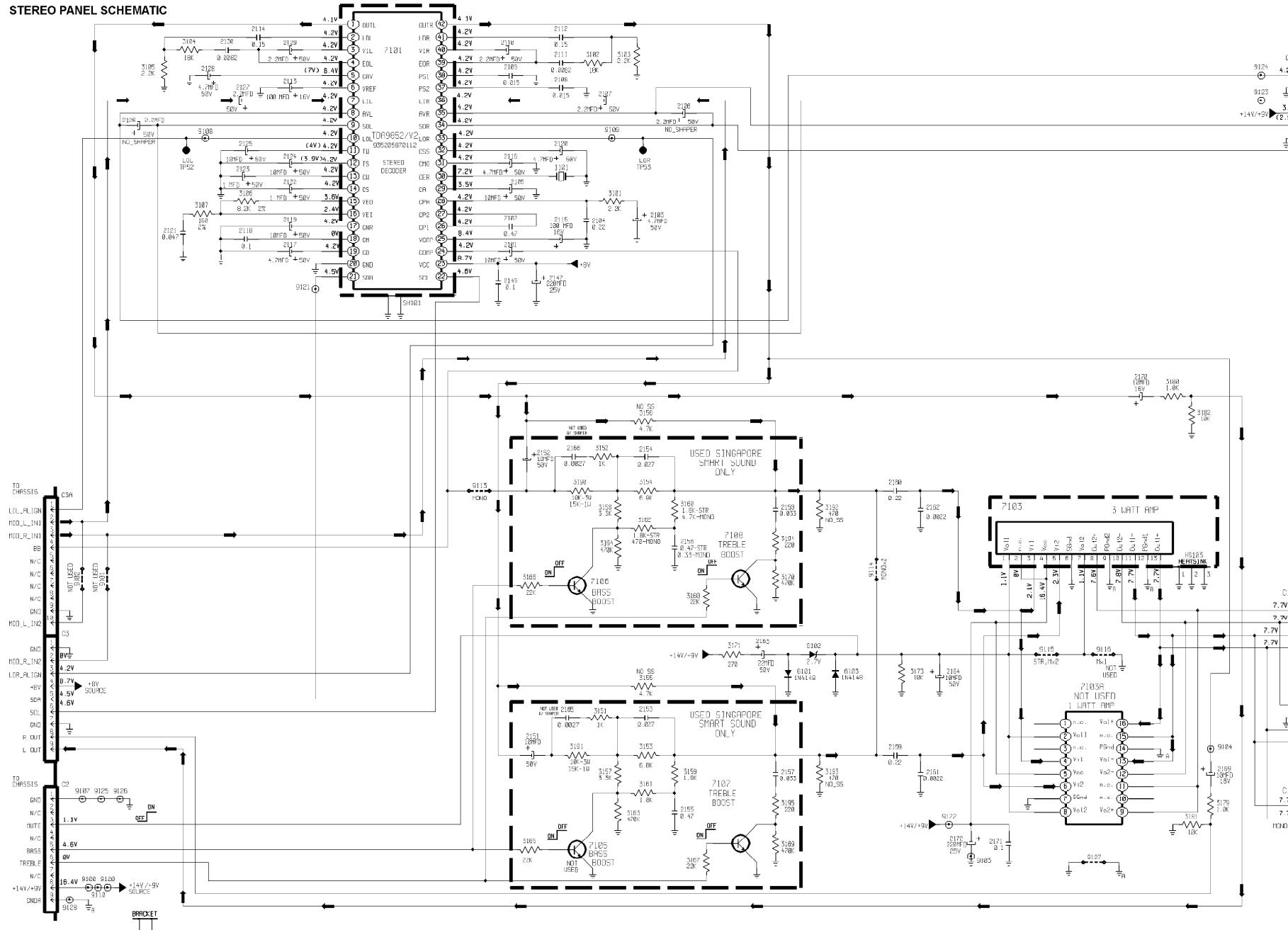
**CRT PANEL SCHEMATIC
(25" & 27" MODELS)**


KEYBOARD/SOUND SHAPER SCHEMATIC

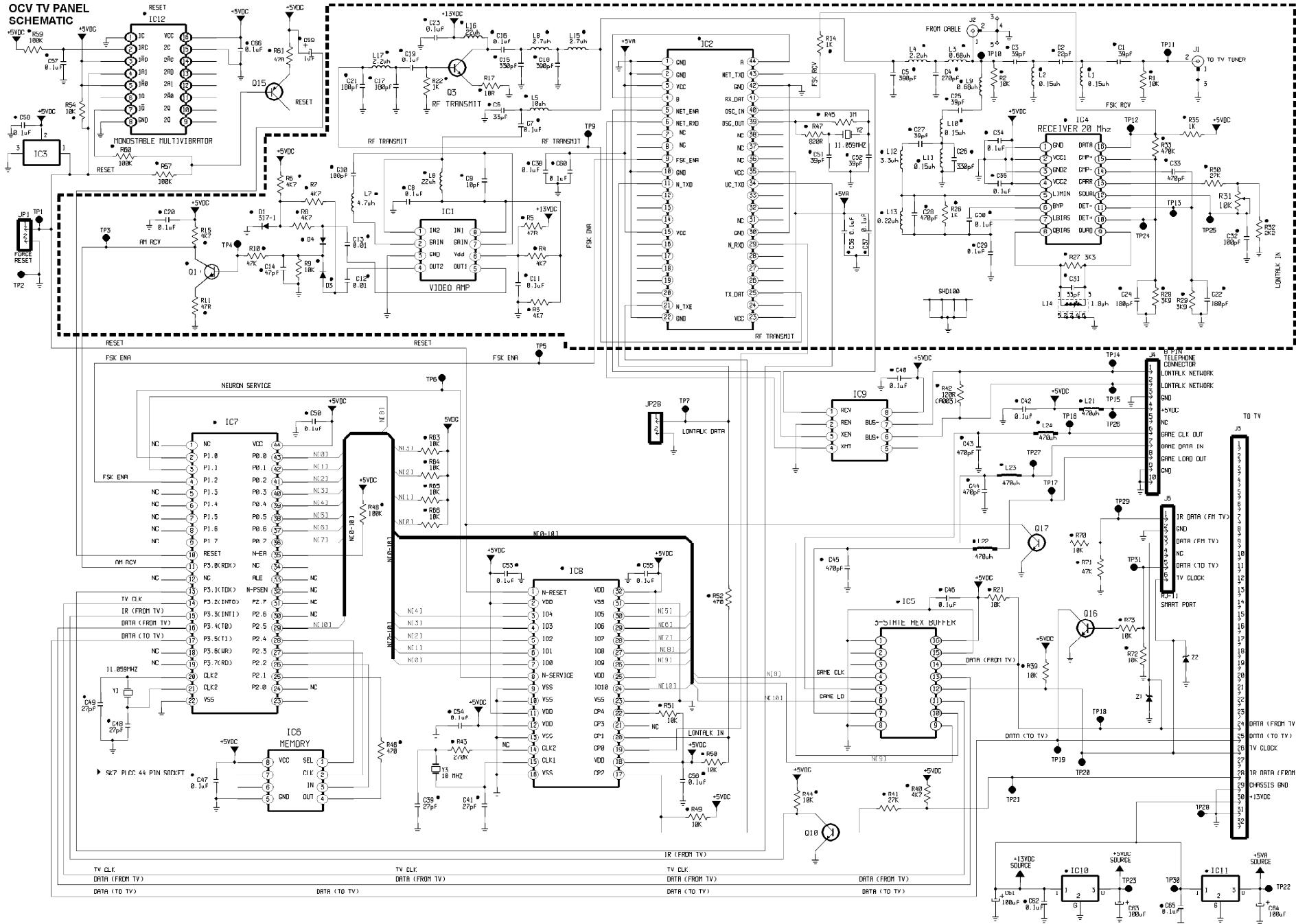


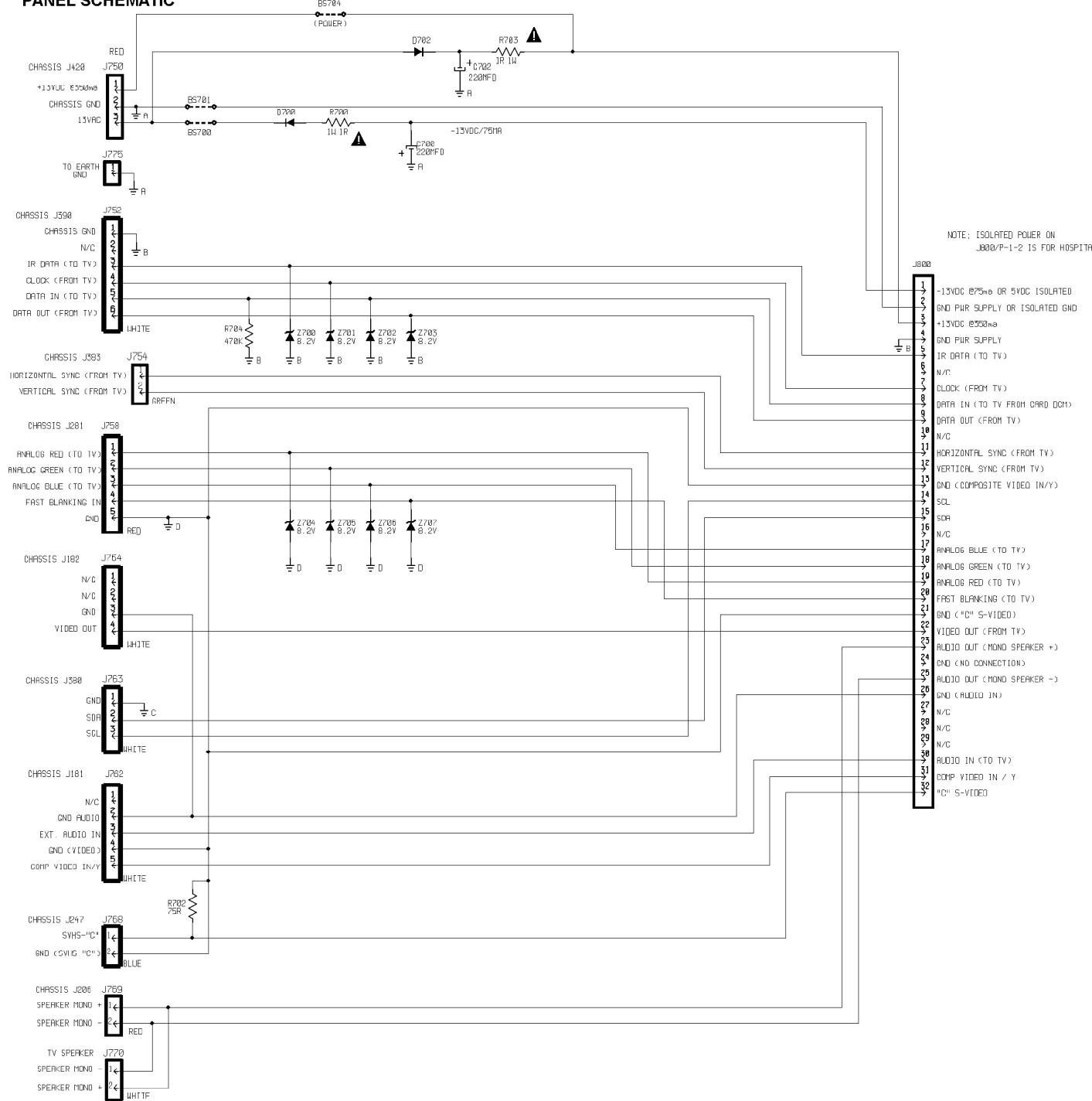
All Models (7562) - STEREO PANEL SCHEMATIC

STEREO PANEL SCHEMATIC

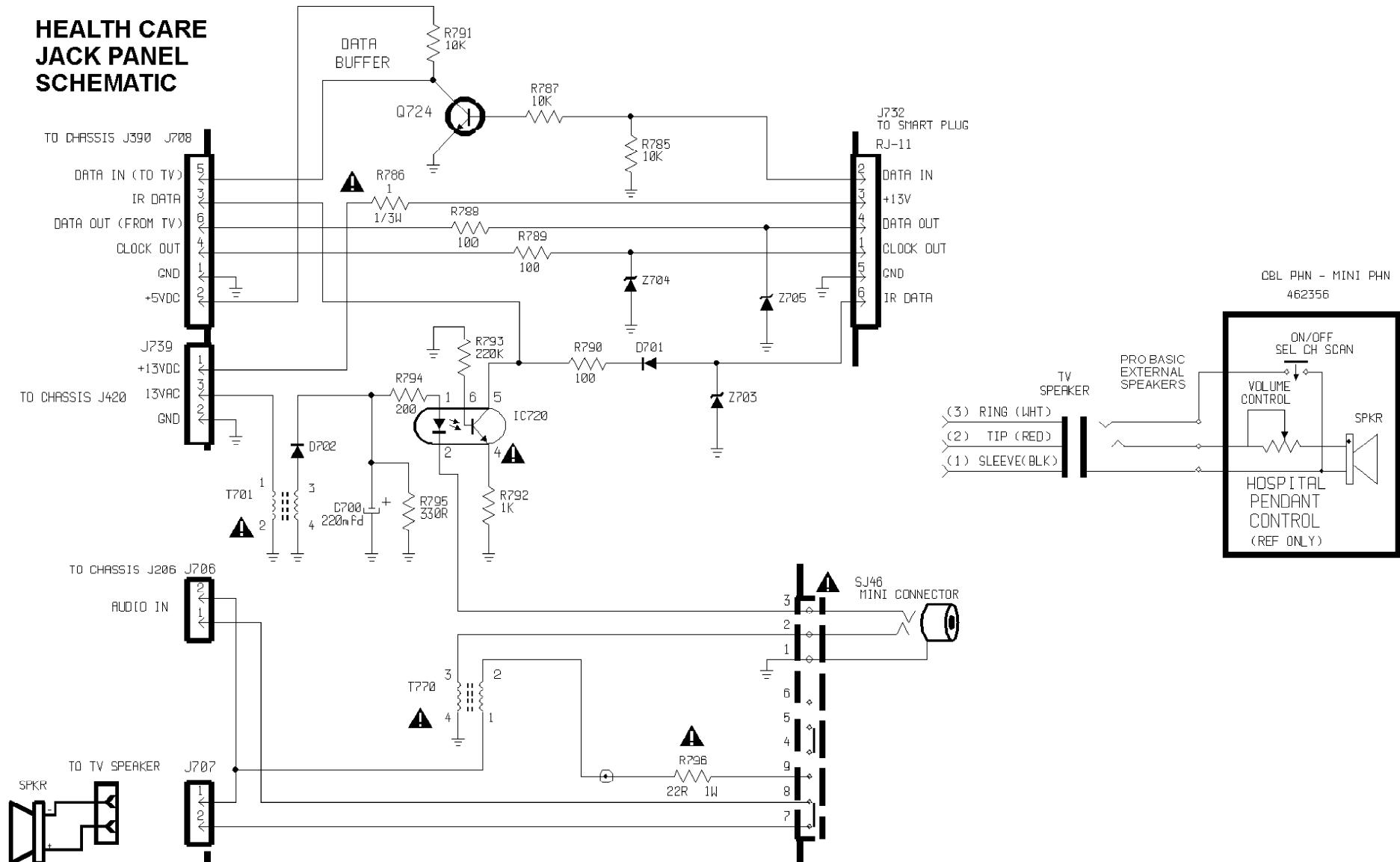


All Models (7562) - OCV TV PANEL SCHEMATIC

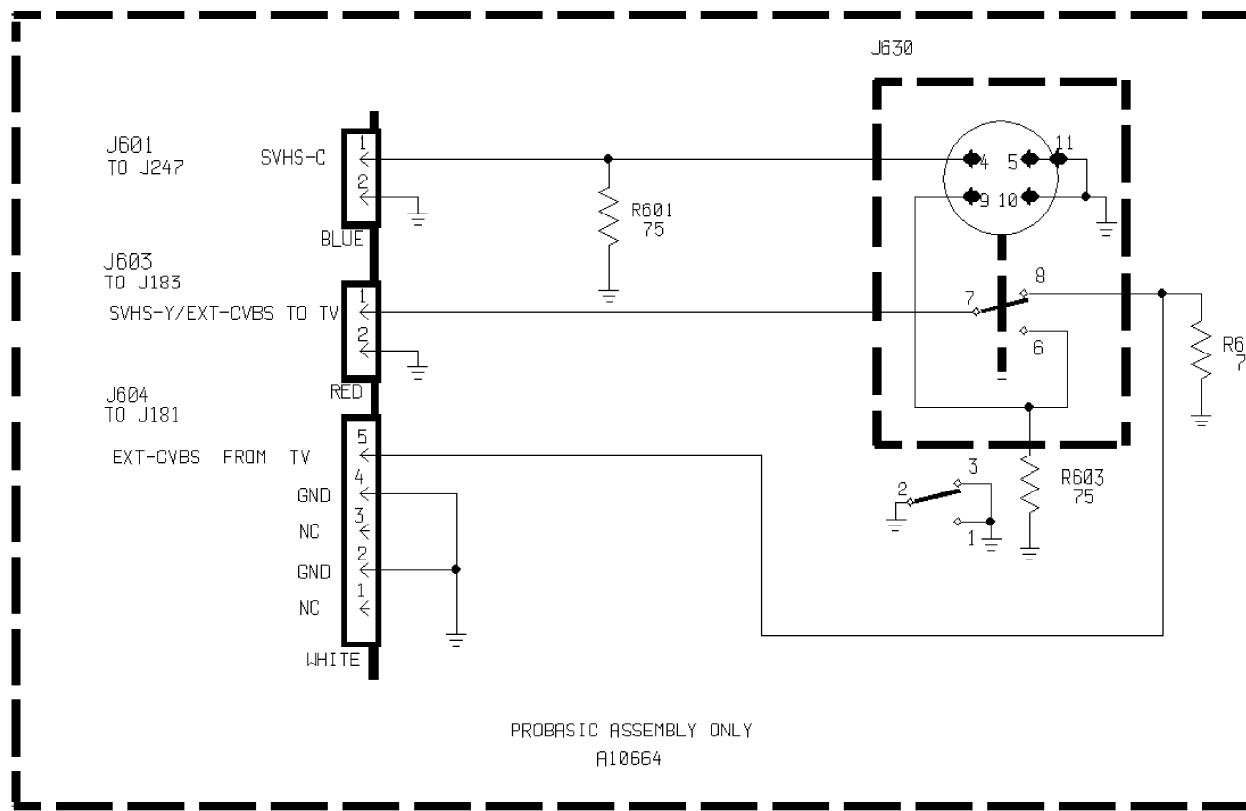
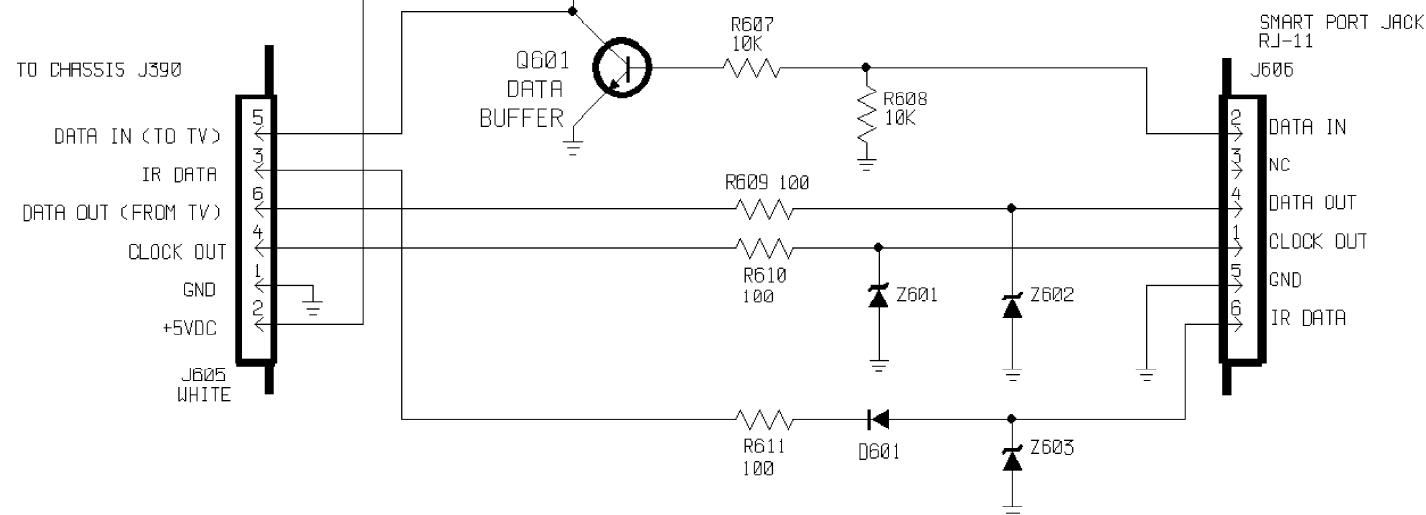


**CARD INTERCONNECT
PANEL SCHEMATIC**


HEALTH CARE JACK PANEL SCHEMATIC



LODGING/SMART PORT PANEL SCHEMATIC

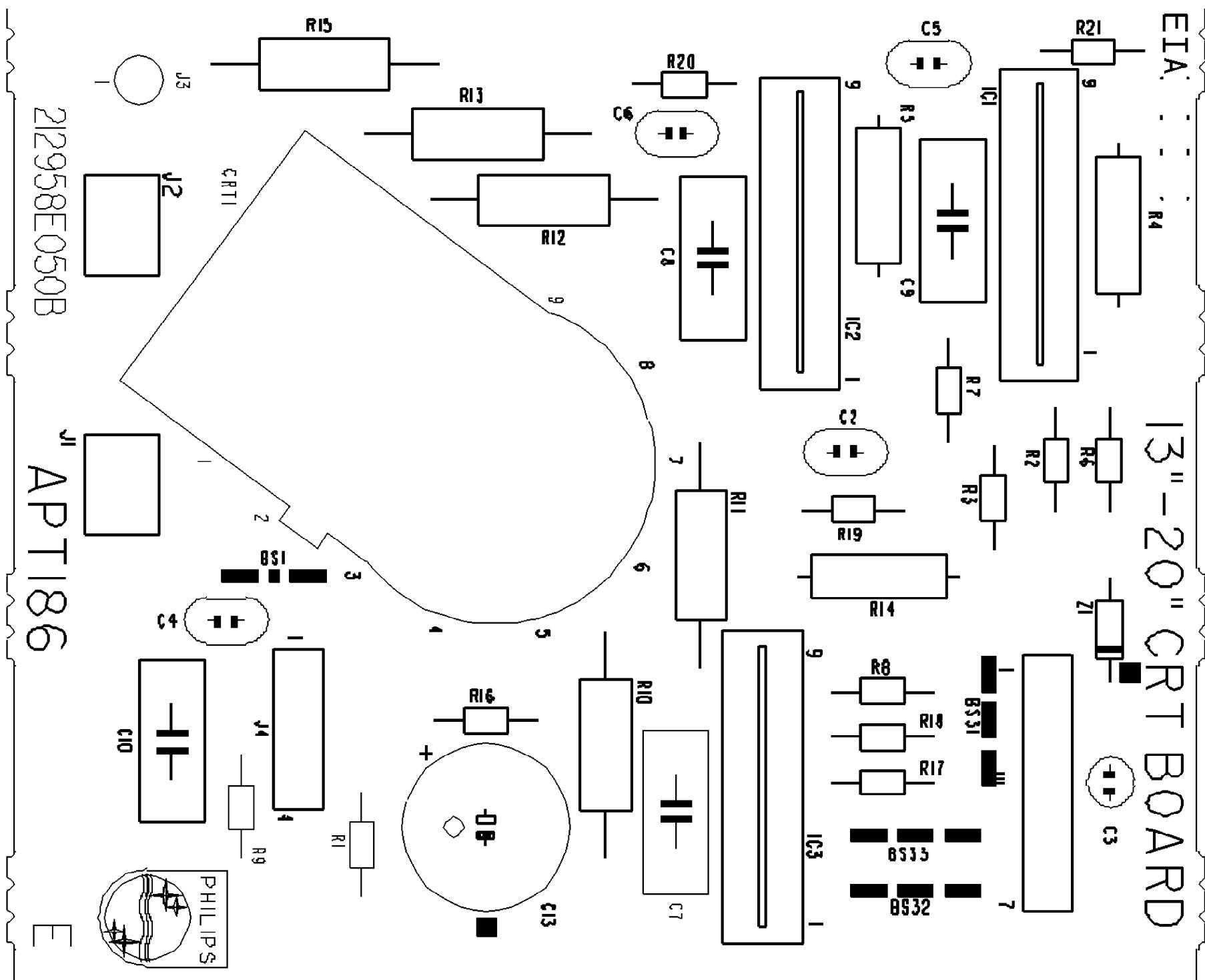


PROBASIC ASSEMBLY ONLY

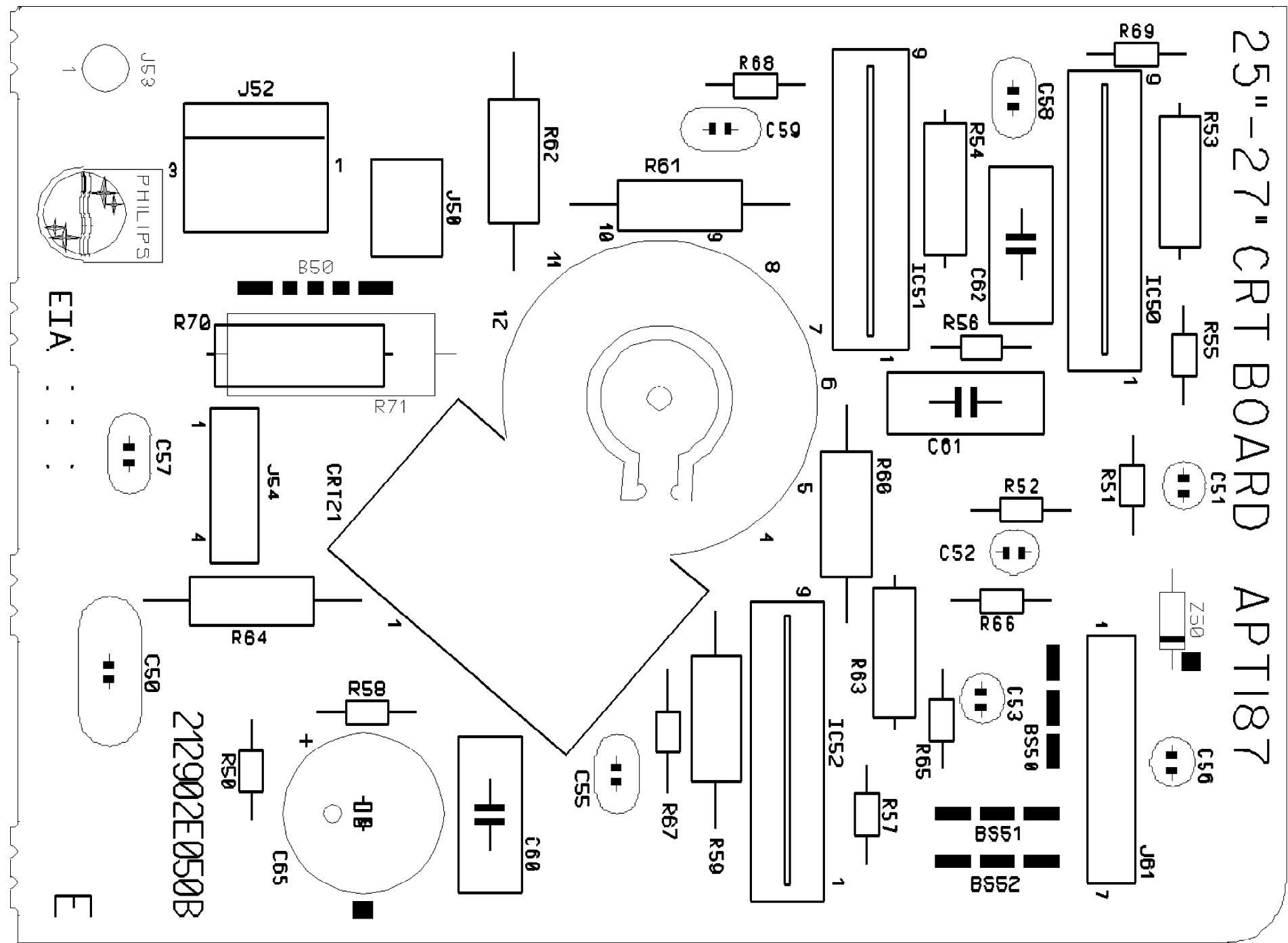
A10664

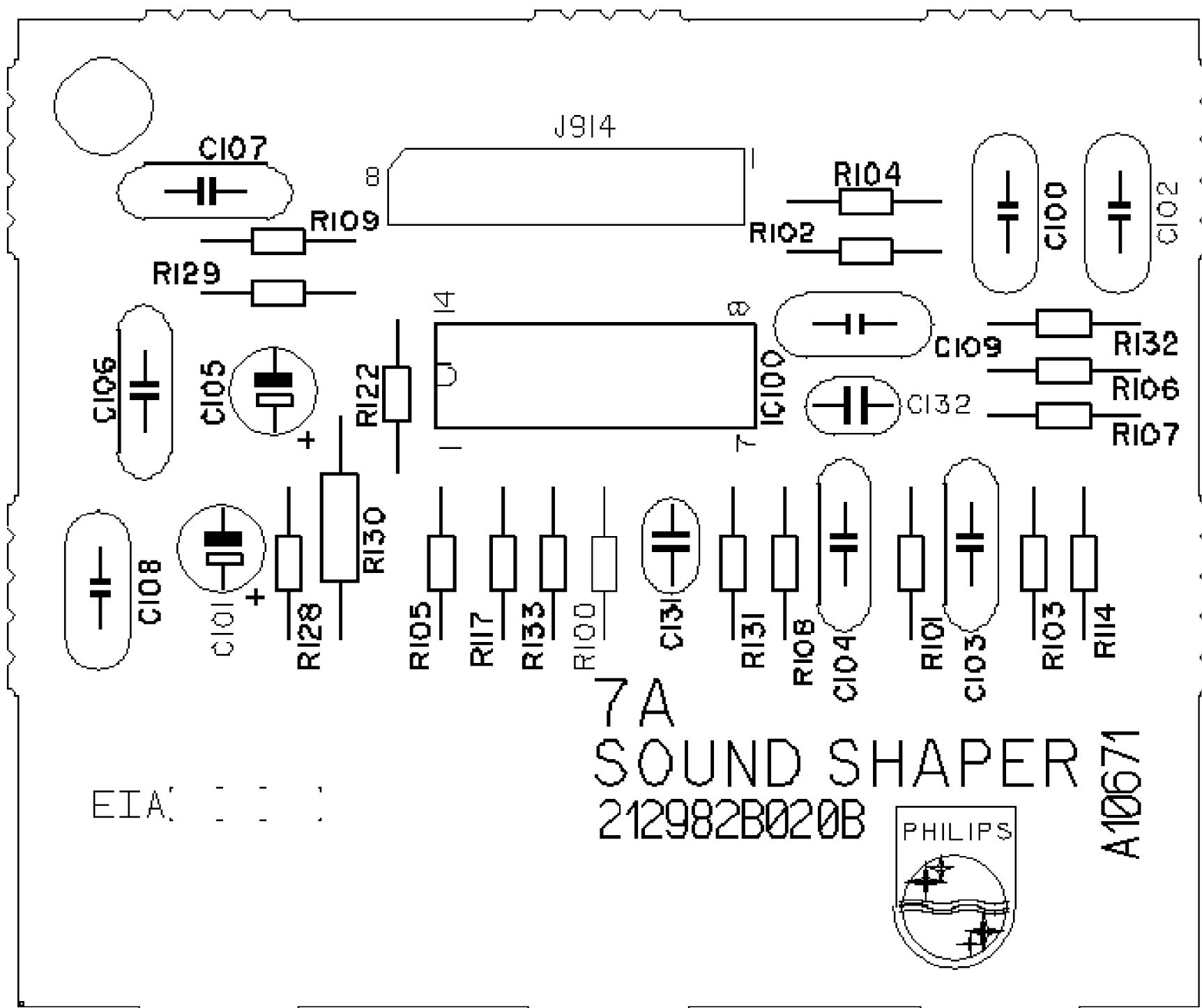
All Models (7562) - MAIN CHASSIS PCB (BOTTOM)

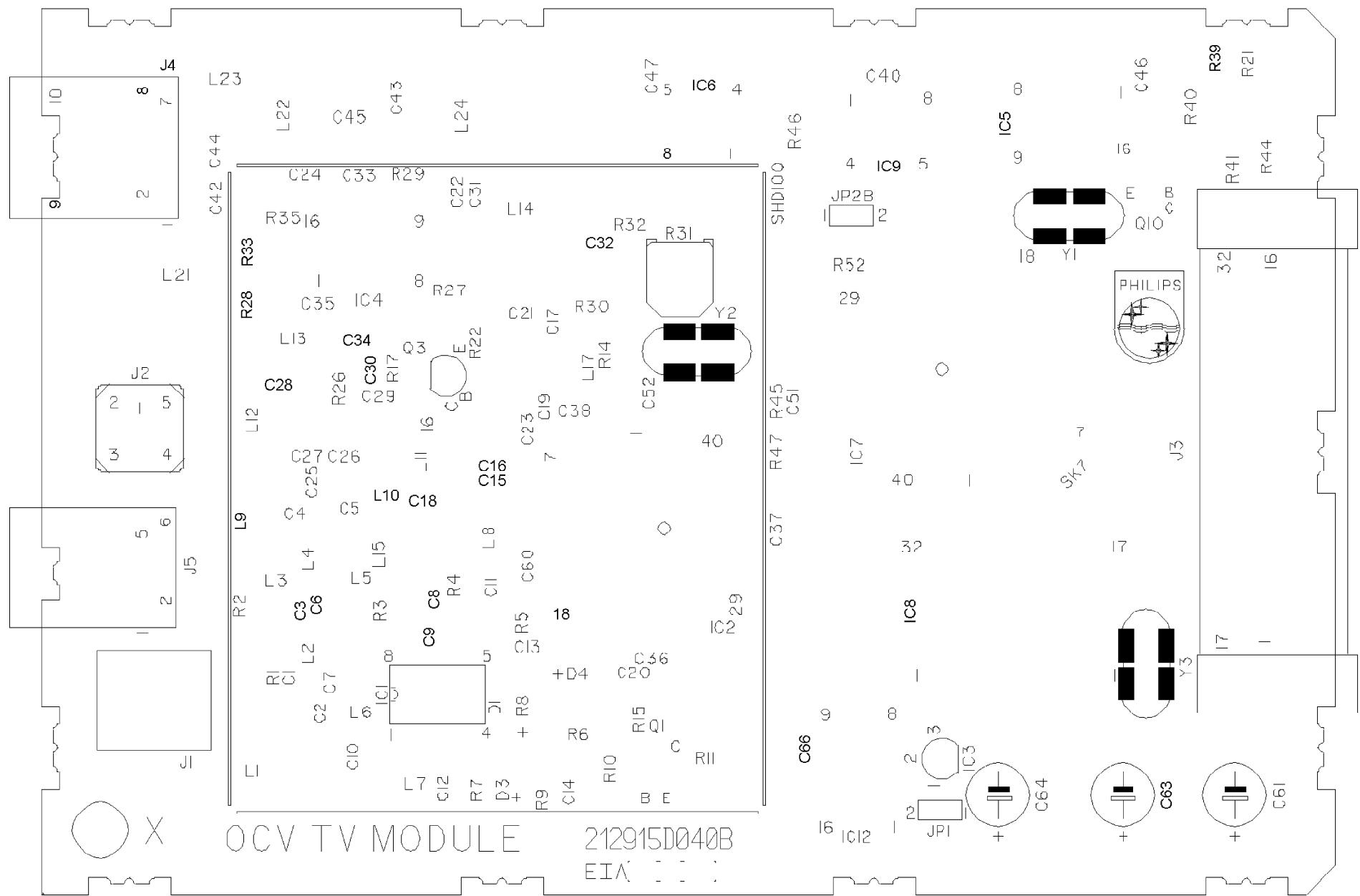


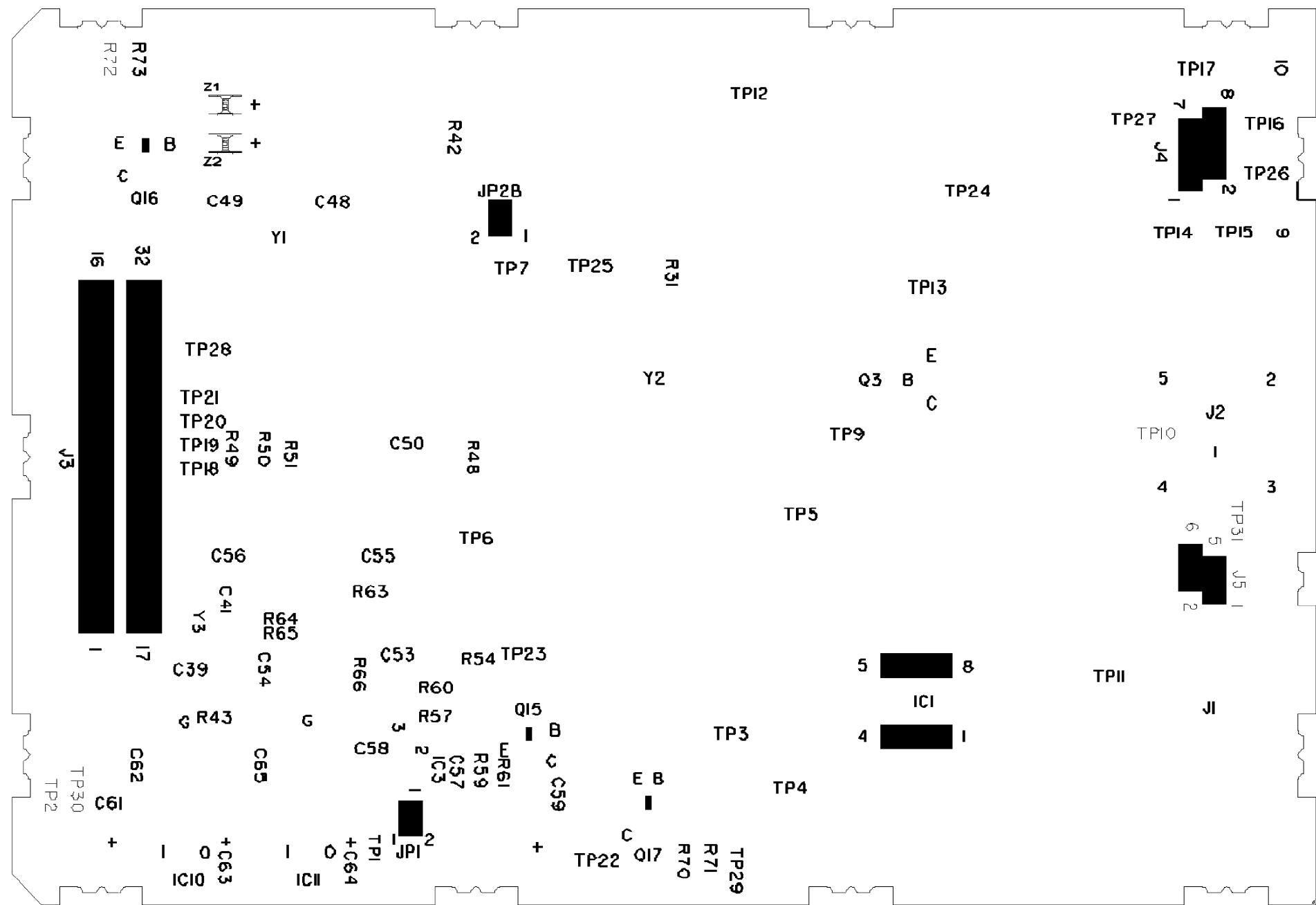


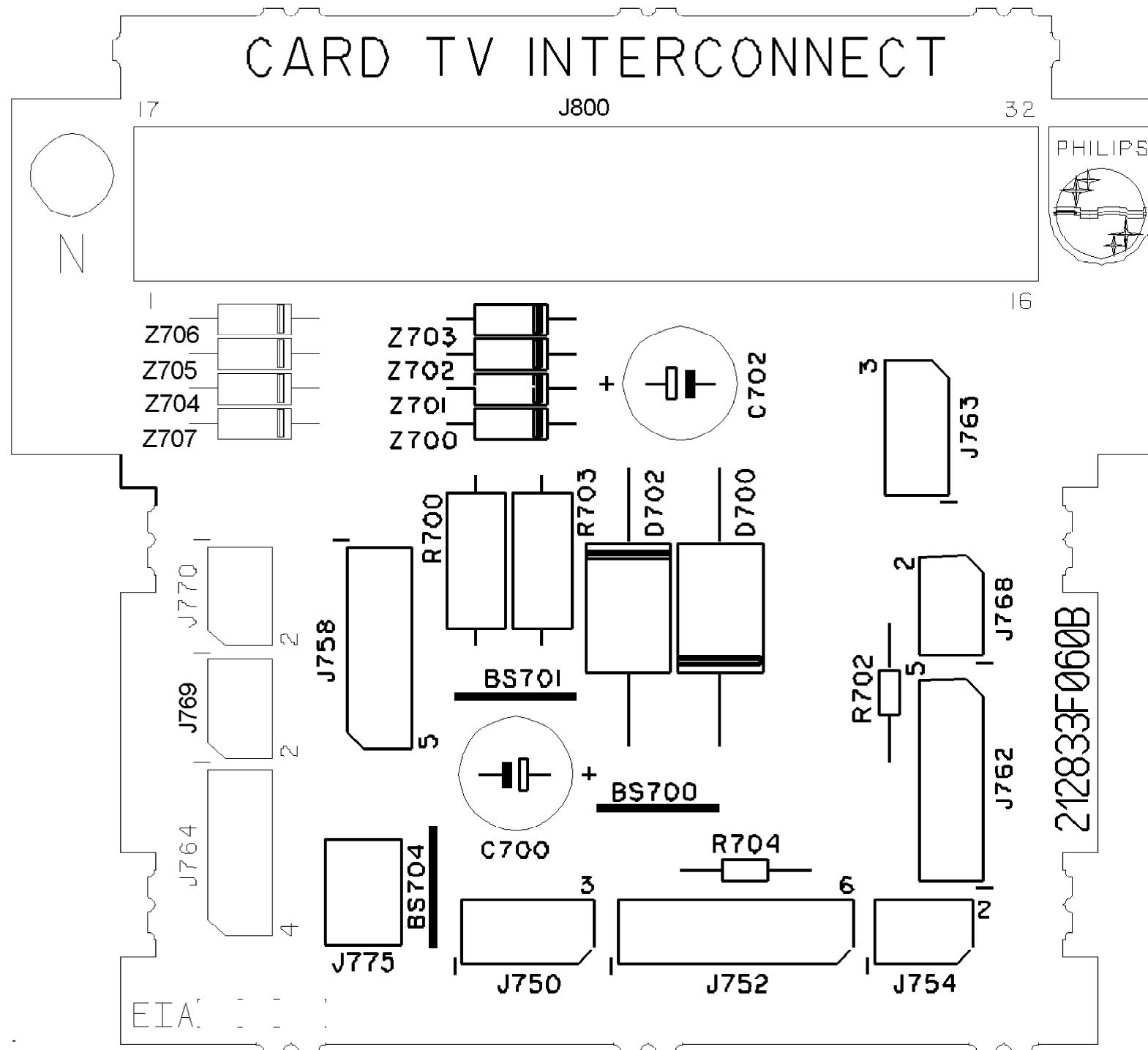
25"-27" CRT BOARD APT187

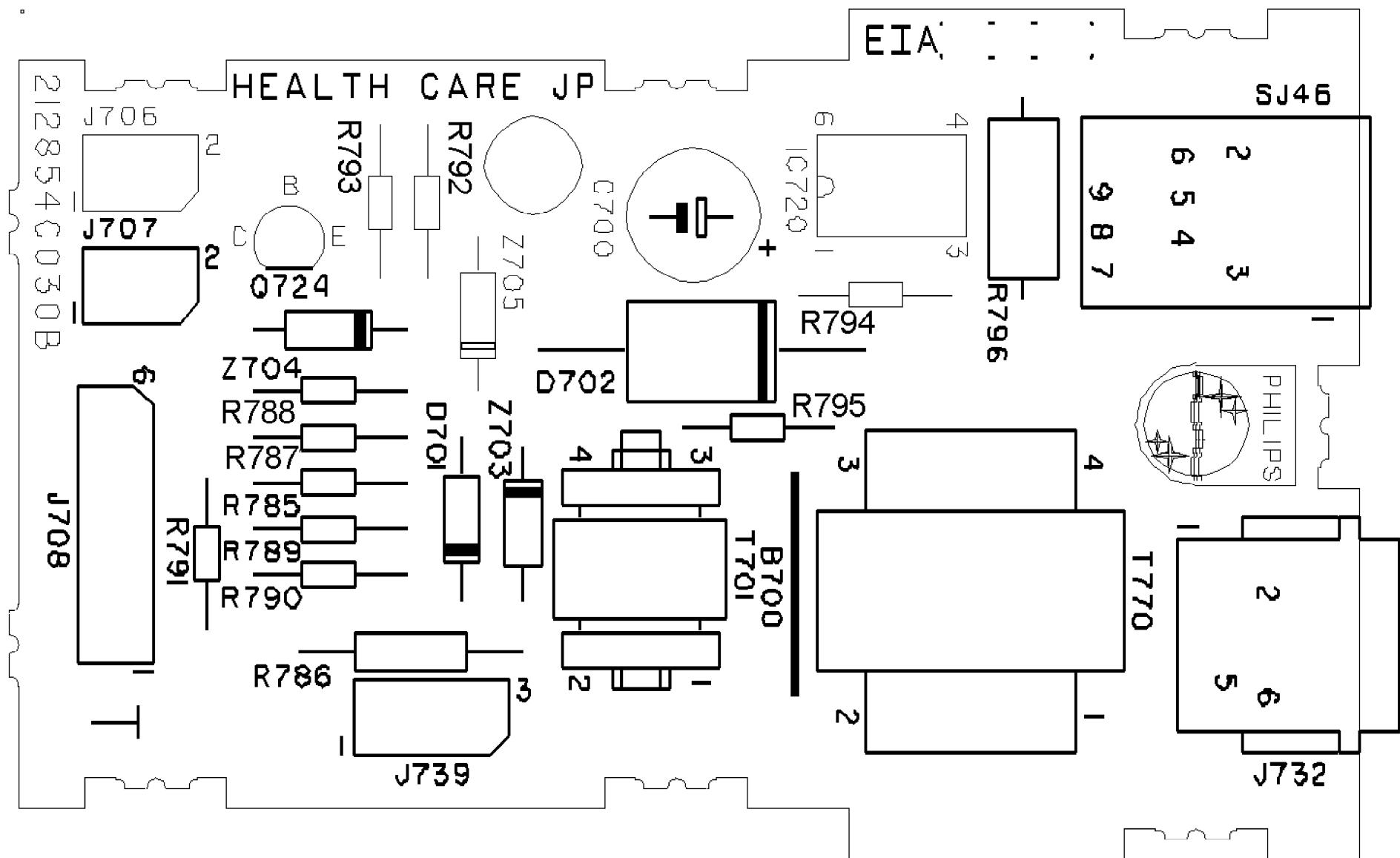


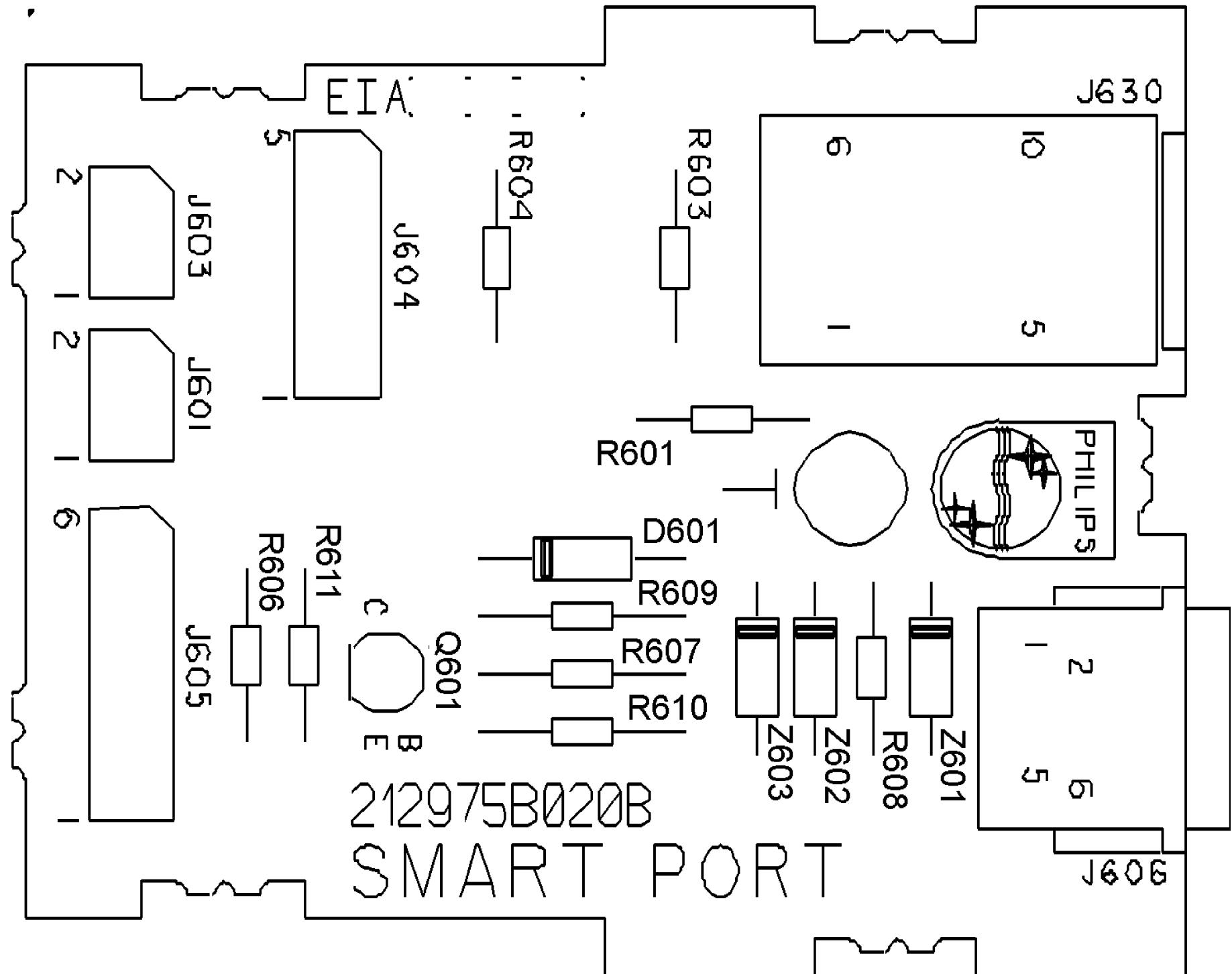




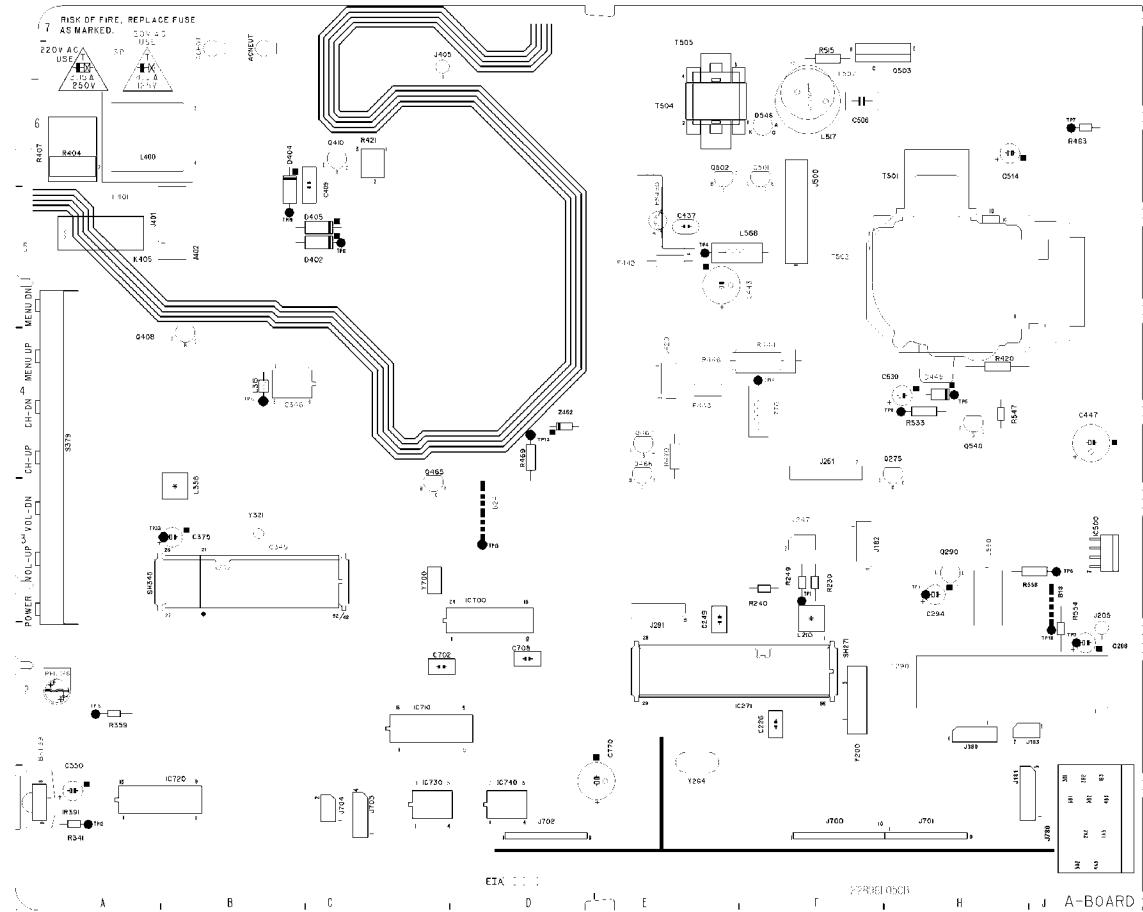








Adjustment and Test Point Layout



Service Adjustment Notes:

Caution: The B8 Chassis incorporates a "Hot" ground system. Always use a separate isolation transformer when applying power to the exposed chassis.

Unless Otherwise Specified:

1. All service adjustments are "Hot" voltagewise. For maximum safety, ensure the use of properly insulated tools.
2. Many of the following adjustments are made through software intervention. The remote transmitter supplied with the set may be used in order to modify register values stored within the EEPROM IC on the Main Chassis Board Assembly. The G96SVC Service Remote is an ideal tool for this purpose. Order 4835 219 17656. Refer to the SERVICE MODE covered later.
3. Refer to the Component Location Diagram (Figure 1) for a quick location of test points or service adjustable controls.
4. Grid locations (Ex.: D-2) next to control reference numbers refer to the Main Chassis Printed Circuit Board Illustrations.

Focus

1. Tune to a local station and adjust the Focus Control (located on the Flyback Transformer) for best picture details at high light conditions.

Screen Control (G2) Setup (13", 19", & 20")

1. Apply an NTSC Color Bar test pattern, with the color "off", to the antenna input of the TV Receiver.
2. Select the active channel.
3. Set all the customer picture controls to mid-range.
4. Using an oscilloscope measure and note the peak to peak voltage of the CRT Cathodes. Use the legs of R11, R12, and R13 which tie to the CRT socket.
5. Using the cathode with the highest peak to peak voltage, noted in step 4, adjust the Screen Voltage (G2) control (located on the Flyback Transformer) to obtain 120Vp-p.

Screen Control (G2) Setup (25" & 27")

1. Apply an NTSC Color Bar test pattern, with the color "off", to the antenna input of the TV Receiver.
2. Select the active channel.
3. Set all the customer picture controls to mid-range.
4. Using an oscilloscope measure and note the peak to peak voltage of the CRT Cathodes. Use the legs of R60, R61, and R62 which tie to the CRT socket.
5. Using the cathode with the highest peak to peak voltage, noted in step 4, adjust the Screen Voltage (G2) control (located on the Flyback Transformer) to obtain 120Vp-p.

Adjusting The Picture

Note: The Color Purity and Convergence Adjustments described below should be performed only after installation of a new CRT or Deflection Yoke Assembly otherwise, it will not be necessary to remove the rubber wedges. Minor corrections for purity and convergence

can be accomplished through the use of the Purity and Convergence Assembly located on the neck of the CRT.

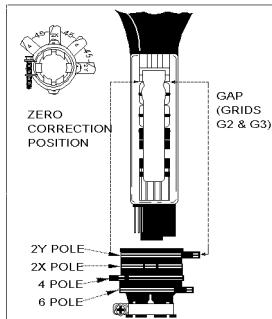
Degaussing the Receiver

1. Position the TV receiver so that the screen faces the same direction (North, South, East, or West) that it will be facing while in use.
2. Before the set is turned on, thoroughly Degauss the entire receiver.
 - a) Move a Degaussing Coil in a circular motion slowly around the sides and the front face plate of the receiver.
 - b) Withdraw the Degaussing Coil from the receiver at least six feet before disconnecting it from its power source.

Pre-Convergence Adjustments

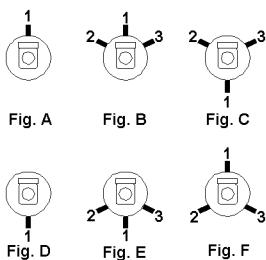
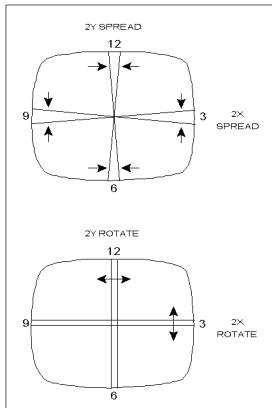
(Perform Degauss Procedure first)

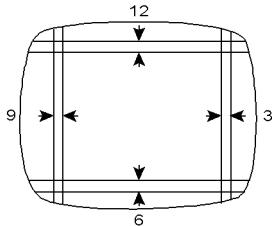
1. Place the multi-pole Purity and Convergence Assembly with the 2-Y pole Purity Rings directly in the gap between the G2 and G3 (Focus Grids). (As shown in Figure 2)
2. Connect a Center Cross or Crosshatch pattern to the Antenna terminals.
3. Enter Service Page "G" (White Balance). Set the Green control to minimum.
4. Loosen the Yoke Clamp screws, pull the Yoke back and remove the three Yoke wedges.
5. Slide the yoke all the way forward so that it rests against the bell of the CRT.
6. Tighten the Yoke Clamp screw so that the Yoke does not drop away from the bell of the CRT.
7. Slowly spread and, if necessary, rotate the 2-Y pole purity rings so that the red and blue lines are at least parallel and preferably coincide at the 6:00 and 12:00 position.
8. Do not exit Service Page "G".



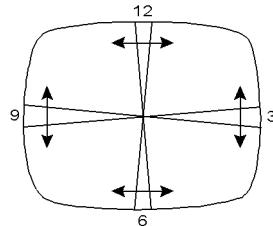
Color Purity Adjustment

1. Connect a White Screen signal to the Antenna terminals.
2. Use Service Page G to set the Green control to maximum. Set the Blue control to minimum.
3. Enter Service Page A.
4. Note that the set is in bank ("00").
5. Press the Channel Up (Cursor Up) button on the Remote transmitter to change the Register to 68.
6. Note the Value stored in Register 68 Value
7. Press the Volume down button on the Remote Transmitter to set the value to its minimum (00).
8. Slowly spread the 2-X Pole Purity Rings to center the Green portion of the screen leaving the same amount of Red on the right side as there is Blue on the left.
9. Loosen the Yoke Clamp screws and slide the Yoke back to the point of best Green Purity.
10. Tighten the Yoke Clamp screw slightly so that the Yoke can still be moved with some friction.
11. Proceed to Static Center Convergence.
12. Re-enter Service Page A, Bank 00 and Register 68.
13. Reset this register to the value noted in step 6.
14. Re-enter Service Page G and reset the Green and Blue Registers to their mid-range positions.





Tilt the Yoke left and right to converge the Red and Blue horizontal lines at the 6 and 12 o'clock positions, and the Red and Blue vertical lines at the 3 and 9 o'clock positions.



Tilt the Yoke up and down to converge the Red and Blue vertical lines at the 6 and 12 o'clock positions, and the Red and Blue horizontal lines at the 3 and 9 o'clock positions.

Static Center Convergence

Review Pre-Convergence Information

1. Connect a Center Cross pattern or a Crosshatch pattern to the Antenna input to ensure that the yoke is not tilted. Rotate the yoke, if necessary, to obtain a level raster.
2. Use Service Page G to set the Green control to minimum.
3. Set the Blue control to its mid-range position.
4. Slowly spread and, if necessary, rotate the 4-Pole Magnetic Rings to converge Red and Blue lines at the center of the screen.
5. Reset the Green Control to mid-range.
6. Slowly spread and, if necessary, rotate the 6-Pole Magnetic Rings to converge Red/Blue on Green lines at the center of the screen.
7. Repeat the procedure for optimum performance.

Dynamic Edge Convergence

Review Pre-Convergence Information

Note: Three rubber wedges are used to secure the correct position of the Deflection Yoke. They are to ultimately be placed as shown in figure C or F of this display.

1. Apply a crosshatch pattern signal to the antenna input.
2. Use Service Page "G" to set the green control to minimum.
3. Tilt the Yoke Up and Down to converge the Red and Blue vertical lines at the 6 and 12 o'clock positions and the Red and Blue Horizontal lines at the 3 and 9 o'clock positions
4. When the correct position has been found, place a rubber wedge between the Yoke and the CRT. If the yoke is tilted UP, place wedge 1 as shown in Figure A. If the Yoke is tilted DOWN, place wedge 1 as shown in Figure D.
5. Tilt the Yoke to the left and right to find the point of best possible convergence of the Red and Blue lines at the edges, top and bottom of the screen.

When the correct position is located, place wedges 2 and 3 as seen in Figure B or E of the

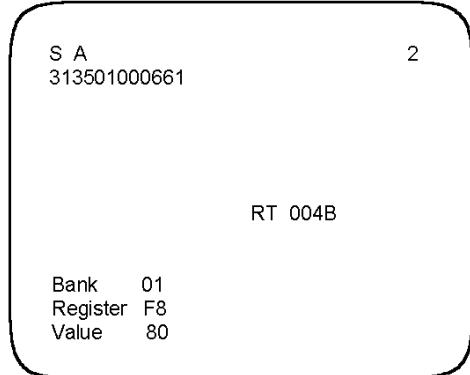
6. Now remove wedge 1 and place it as shown in Figure C or F.
7. Set the green control back to its mid-range position.
8. Proceed to the White Balance procedure.

SERVICE MODE

Note: Many of the following adjustments are made through software intervention. A Remote Transmitter is required in order to modify register values stored within the EEPROM IC on the Main Chassis Board.

The G96SVC Service Remote is an ideal tool for this purpose. Order 4835 219 17656.

The service mode makes it possible to change the values of special memory registers in the EEPROM IC (IC302). These registers affect the customer adjustments and other functions. These registers also make many other service adjustments possible that previously would have been handled by conventional controls mounted on the P.C. Board.



Service Mode Entry and Exit:

Using the remote transmitter, enter the following seven-button sequence to activate the Service Mode:

06-25-96-Menu

Note: This sequence must be entered consecutively without allowing the on screen display to time out between entries.

Exit Service Mode

To exit the Service Test Mode procedure enter Service Page I and press the Volume Up button on the remote transmitter.

To save the current modification of the register data, disconnect the set from its AC source.

When the receiver is operating in the Service Mode, all normal on-screen displays are suppressed and replaced by a special display.

Service Mode Display

- The first letter on the top line is an S. This letter indicates that the set is in the Service Mode.
- The second letter indicates which Service Page the set is currently in.
- The number showing at the top right corner of the display is the currently tuned channel.
- The number shown in the upper middle of the display (31350100661) is the current level of software in use.

