

HITACHI

SERVICE MANUAL

NTSC

A3LXU CHASSIS

PA

No. 0039

35TX10B/CZ41
31UX5B/CY45
31CX4B/CY44
27UX5B/C745
27CX4B/C744
27CX3B/C743

R/C: CLU-851GR
CLU-692GR
CLU-691GR

CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precautions" and "Product Safety Notices" in this Service Manual.

This television receiver will display television Closed Captioning (☒ or ☐) in accordance with paragraph 15.119 of the FCC rules.

TABLE OF CONTENTS

SAFETY PRECAUTIONS	2	WIRING DRAWING OF 31CX4B/CY44 FINAL ASS'Y	46
PRODUCT SAFETY NOTICE	3	WIRING DRAWING OF 31UX5B/CY45 FINAL ASS'Y	47
POWER SOURCE	3	WIRING DRAWING OF 35TX10B/CZ41 FINAL ASS'Y	48
TECHNICAL SPECIFICATIONS	4	PRINTED WIRING BOARD FOIL PATTERN	49
TECHNICAL CAUTIONS	5	CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743	50
ADJUSTMENT SPECIFICATIONS	6	CIRCUIT SCHEMATIC DIAGRAM OF 27UX5B/C745 27CX4B/C744, 31UX5B/CY45, 31CX4B/CY44	54, 58
WAVEFORMS AT EACH SECTION	26	CIRCUIT SCHEMATIC DIAGRAM OF 27UX5B/C745, 27CX4B/C744	56
TROUBLESHOOTING FLOWCHARTS	28	CIRCUIT SCHEMATIC DIAGRAM OF 31UX5B/CY45, 31CX4B/CY44	57
REPLACEMENT PARTS LIST	31	CIRCUIT SCHEMATIC DIAGRAM OF 35TX10B/CZ41	59
WIRING DRAWING OF 27CX3B/C743 FINAL ASS'Y	43	NOTES	63
WIRING DRAWING OF 27CX4B/C744 FINAL ASS'Y	44		
WIRING DRAWING OF 27UX5B/C745 FINAL ASS'Y	45		

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

SOLID STATE COLOR TELEVISION

AUGUST 1994

HHEA - MANUFACTURING DIVISION

SAFETY PRECAUTIONS

NOTICE: Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.

WARNING: Since the chassis of this receiver is connected to one side of the AC power supply during operation, whenever the receiver is plugged in, service should not be attempted by anyone unfamiliar with the precautions necessary when working on this type of receiver.

The following precautions should be observed:

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away from the picture tube while handling.
2. When service is required, an isolation transformer should be inserted between power line and the receiver before any service is performed on a "HOT" chassis receiver.
3. When replacing a chassis in the receiver, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment cover-shields, isolation resistors, capacitors, etc.
4. When service is required, observe the original lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components. Critical components as indicated on the circuit diagram should not be replaced by another manufacturer's. Furthermore, where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced receiver to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the receiver by the manufacturer has become defective, or inadvertently defeated during servicing.

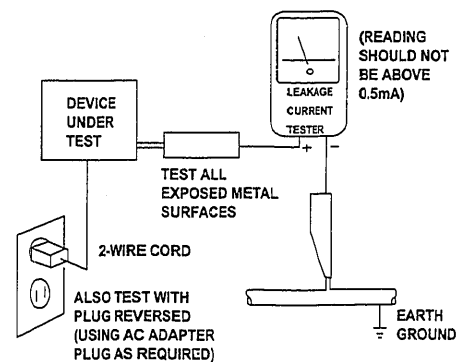
Therefore, the following checks should be performed for the continued protection of the customer and service technician.

Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch ON using an insulation tester (DC500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis should have a minimum resistor reading of $0.24M\Omega$ and a maximum resistor reading of $5.2M\Omega$. Any resistance value below or above this range indicates an abnormality which requires corrective action. Exposed metal part not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into an AC 120V 60Hz outlet (do not use an isolation transformer for this check). Turn the AC power ON. Using a "leakage Current Tester (Simpson's Model 229 or equivalent)", measure for current from all exposed metal parts of the cabinet (antennas, screwheads, overlays, control shafts, etc.) particularly any exposed metal part having a return path to the chassis or to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.



AC LEAKAGE TEST

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE RECEIVER TO THE CUSTOMER.

High Voltage

This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit is operated correctly.

Serviceman Warning

With minimum BRIGHTNESS and CONTRAST, the operating high voltage in this receiver is lower than 37.0kV. In case any component having influence on the high voltage is replaced, confirm that high voltage with minimum BRIGHTNESS and CONTRAST is lower than 37.0kV. To measure high voltage use a high impedance High Voltage Meter. Connect (-) to chassis earth and (+) to the CPT Anode button (See the following connection diagram).

NOTE: Turn the power switch OFF without fail before the connection to the Anode button is made.

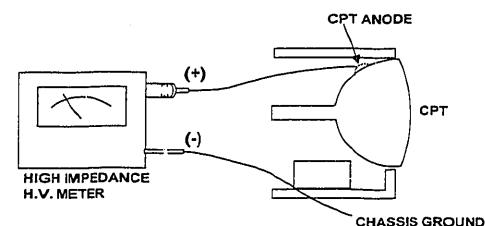
PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in HITACHI television receivers have special safety related characteristics. These 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. Replacements parts which have these special safety characteristics are identified in this Model Service Manual.

Electrical components having such features are identified with an Δ mark in the schematics and parts list in this Model Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Model Service Manual, may create shock, fire, X-Radiation, or other hazards.

Production Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies of HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.



X-Radiation

TUBE: The primary source of X-Radiation in this receiver is the picture tube. The tube utilized in this chassis is specially constructed to limit X-Radiation emission. For continued X-Radiation protection, the replacement tube must be the same type as the original HITACHI approved type.

When troubleshooting and making test measurements in a receiver with an excessive high voltage problem, avoid coming unnecessarily close to the picture tube and the high voltage component.

Do not operate the chassis longer than is necessary to locate the cause of the excessive voltage.

This Service Manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the product and its safety. Consumers should not risk trying to do the necessary repairs and should instead refer to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components with lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

SAFETY NOTICE USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by Δ on the parts list in this Model Service Manual and its supplements and bulletins. Before servicing this, it is important that the service technician read and follow the "Safety Precautions" and the "Product Safety Notices" in this Service Manual.

For continued X-Radiation protection, replace picture tube with original type or Hitachi equivalent type.

POWER SOURCE

This television receiver is designed to operate on 120 Volts/60Hz, AC house current. Insert the power cord into a 120 Volts/60Hz outlet.

NEVER CONNECT THE TV TO OTHER THAN THE SPECIFIED VOLTAGE OR TO DIRECT CURRENT.

Use of this TV set in 50 Hz areas will not harm the TV set. However, it will cause the clock display to run slower. Consult service personnel if you move to an area where the power supply frequency is 50 Hz.

CLOCK	60Hz	50Hz
D022	Install	Delete

TECHNICAL SPECIFICATIONS

POWER RATINGS

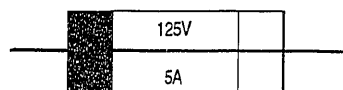
35TX10B/CZ41	180 watts
31UX5B/CY45	180 watts
31CX4B/CY44	180 watts
27UX5B/C745	155 watts
27CX4B/C744	155 watts
27CX3B/C743	155 watts

COLOR PICTURE TUBE

35TX10B/CZ41	A89AEJ15X01
31UX5B/CY45	M78JUA165X
31CX4B/CY44	A78LCU30X
27UX5B/C745	M68JUA168X
27CX4B/C744	A68KSA30X
27CX3B/C743	A68KSA30X

CAUTION

The following symbol near the fuse indicates fast operating fuse (to be replaced). Fuse ratings appear within the symbol.
Example:



F901

The rating of fuse F901 is 5.0A-125V.

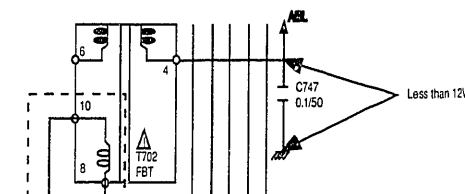
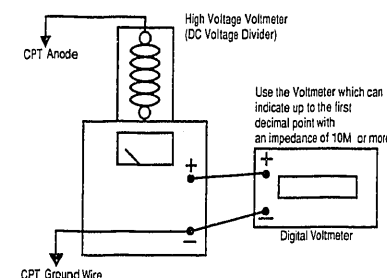
Replace with the same type fuse for continued protection against fire.

TECHNICAL CAUTIONS

High Voltage Limiter Circuit Operation Check and Overvoltage Protection Circuit Operation Check

Adjustment Preparation

1. Connect a High Voltage Voltmeter between CPT Anode terminal (Anode capside) and Ground. (TP701)
2. Set the AC input voltage to 120 $\pm$ 3V.
3. Receive Circle Pattern or Broadcast Signal and set "BRIGHTNESS" and "CONTRAST" to maximum. Adjust the SCREEN VR and SUB-BRIGHTNESS VR (R340) so that Beam Current is $I_b \pm 0.1$ mA. (The voltage at ABL terminal (C747) should be 12V or less.)



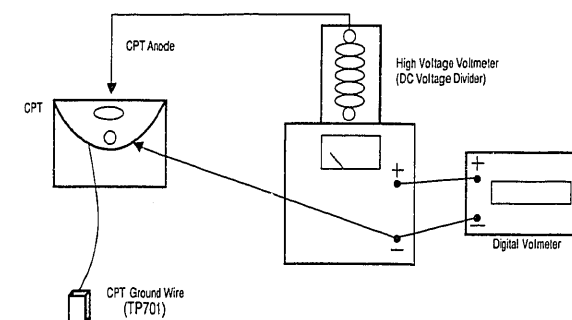
Adjustment Procedure

1. Check that the normal High Voltage is $E_{HT} \pm 1KV$.

CHASSIS	EHT	$I_b \pm 0.1mA$	E1 (KV)
CZ41	30.2KV	1.8mA	35.5KV
CY44, CY45	29.2KV	1.65mA	34.0KV
C743, C744, C745	28.0KV	1.5mA	33.0KV

Adjustment Preparation

4. Set AC input voltage to 100 $\pm$ 5V. Short circuit both ends of R903.



Adjustment Procedure

2. Keep CONTRAST, BRIGHTNESS, and SCREEN VR as in item (3). Increase AC input voltage gradually and check that the picture disappears when high voltage is E1. Immediately after checking that it disappears, turn OFF the set switch. Remove adjustment Jig and High Voltage Voltmeter. When connecting or removing High Voltage Voltmeter to or from Anode cap, be sure to turn OFF the switch of the set. Also, be sure to perform it after the chassis discharge of residual high voltage, because the high voltage of CPT Anode may be left.

ADJUSTMENT SPECIFICATIONS

A3LXU CHASSIS

I. MAIN CHASSIS ADJUSTMENT

	PAGE #
1-1. IF ADJUSTMENT	8
1-1-1. AGC Coarse Adjustment	8
1-1-2. VCO Adjustment (First and Second Method)	8
1-1-3. IF Overall Waveform Adjustment	8
1-1-4. AFS Discrimination Adjustment	8
1-1-5. Sound Discrimination Adjustment	9
1-1-6. VCO for OSD Adjustment	9
1-2. COMB FILTER ADJUSTMENT (1 and 2)	9
1-3. DEFLECTION CIRCUIT PICTURE ADJUSTMENT OPERATION CHECK	10
1-3-1. Vertical Size Adjustment	10
1-3-2. Side Pin Distortion Coarse Adjustment	10
1-3-3. Horizontal Size Adjustment, Horizontal Center Adjustment and Horizontal Size Correction Adjustment	10
1-3-4. High Voltage Limiter Circuit Operation Check and Overvoltage Protection Circuit Operation Check	10
1-3-5. FBT Protection Circuit Operation Check	10
1-3-6. +15V Short Protection Circuit Check	10
1-3-7. Load Reduction Circuit Operation Check	10
1-3-8. MFC Circuit Operation Check (35TX10B/CZ41)	11
1-4. MEMORY INITIALIZE	11
1-4-1. Timer Sound Operation Check	11
1-5. AFC OPERATION CHECK	11
1-6. CHANNEL SELECTION CIRCUIT OPERATION CHECK	12
1-6-1. Channel Up/Down Selection	12
1-6-2. Channel Up/Down	12
1-6-3. Volume Up/Down	12
1-6-4. Power ON/OFF	12
1-6-5. AVX	12
1-6-6. MENU (Not for 35TX10B/CZ41)	12
1-6-7. MENU Mode (Using Remo-Con Jig)	12
1-6-7-1. Set Up Mode	12
1-6-7-2. Program Mode	13
1-6-7-3. Clock Mode (Clock Operation Check)	13
1-6-7-4. Picture Mode	13
1-6-7-5. Sound Mode	13
1-6-7-6. Reset Mode	14
1-6-7-7. Favorite Channels Mode	14
1-7. REMO-CON OPERATION CHECK	15
1-7-1. Direct Channel Selection	15
1-7-2. LST. CH (Last Channel Recall)	15
1-7-3. Mute	15
1-7-4. Recall	15
1-7-5. P in P (CZ41, CY45, CY44, C745, C744)	15
1-7-6. Shift	15
1-7-7. Exchange	15
1-7-8. Freeze	15
1-7-9. Freeze(at P in P OFF)	15
1-8. WEAK ELECTRIC FIELD CHECK	15
1-9. MTS DEMODULATION CIRCUIT ADJUSTMENT	16
1-9-1. Stereo VCO Adjustment	16
1-9-2. Filter Adjustment	16
1-9-3. Input Level Adjustment	16
1-9-4. Separation Adjustment	16
1-9-5. SAP Receiving Check	16
1-10. YNR OPERATION CHECK(35TX10B/CZ41)	17

II. FINAL ADJUSTMENT/COMMON SERVICE ADJUSTMENT

2-1. PURITY CONVERGENCE ADJUSTMENT	18
2-1-1. Purity Adjustment (Using Microscope)	18
2-1-2. Purity Adjustment (Hand Operated)	19
2-1-3. Static Convergence Adjustment	21
2-1-4. Dynamic Convergence Adjustment	21
2-2. FOCUS ADJUSTMENT	22
2-3. DEFLECTION CIRCUIT PICTURE ADJUSTMENT	22
2-3-1. Horizontal Center Adjustment	22
2-3-2. Vertical Size Adjustment	22
2-3-3. Side Pin Distortion Adjustment	22
2-3-4. Horizontal Size Adjustment	22
2-4. WHITE BALANCE ADJUSTMENT	23
2-5. SUB-BLACK LEVEL ADJUSTMENT	23
2-6. AGC ADJUSTMENT	23
2-7. CHANNEL SELECTOR OPERATION CHECK	23
2-7-1. C.C.D. Display Position Adjustment	23
2-8. MATCHING CHECK WITH OTHER EQUIPMENTS	23
2-8-1. VIDEO 1 Input Terminal Matching Check	23
2-8-2. VIDEO 2 Input Terminal Matching Check	23
2-8-3. VIDEO 3 Input Terminal Matching Check	23
2-8-4. S-INPUT Terminal Matching Check	24
2-8-5. AUDIO Output Level Check	24
2-9. SAFETY CHECK	24
2-9-1. Polarity Check	24
2-10. MTS OPERATION CHECK	24
2-10-1. STEREO/SAP Broadcast Receiving Check	24
2-10-2. MTS Mode Check	24
2-10-3. STEREO Separation Check	24
2-11. SETTING FOR DELIVERY	24
2-12. MAGNETIC FIELD CORRECTION CIRCUIT OPERATION CHECK (35TX10B/CZ41)	24

III. ADJUSTMENT POSITION LIST

Refer to CHASSIS SERVICE MANUAL PA NO. 0040 for additional technical information.

Note:

1. MAIN CHASSIS ADJUSTMENT is done with precision equipment. Readjustment is only recommended if the service technician replaced a defective component related to the circuit.
2. COMMON SERVICE ADJUSTMENT is recommended for the service technician after final troubleshooting and repair is done. Quick check and fine tuning is advisable to verify that the problem is eliminated.

1. CHASSIS ADJUSTMENT

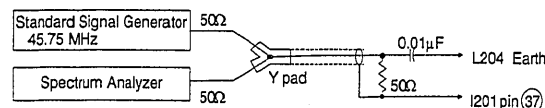
1-1. IF ADJUSTMENT

1-1-1. AGC Coarse Adjustment (R202)

Set AGC adjustment VR (R202) to mechanical center.

1-1-2. VCO Adjustment (L204)(First Method) Adjustment Preparation

- Apply $9.0 \pm 0.1V$ to I201 pin (14).
- Connect I201 pin (2) to GND.
- Connect the following jig and pick up VCO oscillation leakage voltage.

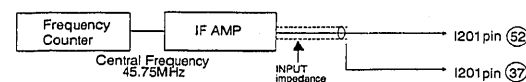


Adjustment Procedure

- Adjust L204 so that VCO frequency detected by Spectrum Analyzer is $45.75MHz \pm 50$ KHz. (Match the output level of Standard Signal Generator to the level of VCO oscillation leakage voltage and adjust L204 to take 0 beat.)
- Note:** Perform this adjustment after VCO frequency is stabilized.

1-1-2. VCO Adjustment (L204) (Second Method) Adjustment Preparation

- Apply $9.0 \pm 0.1V$ to I201 pin (14).
- Connect I201 pin (2) to GND.
- Connect the following jig and pick up VCO oscillation leakage voltage.



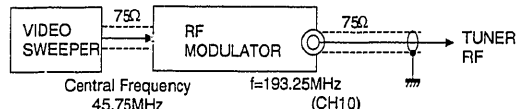
Adjustment Procedure

- Adjust L204 so that the reading of Frequency Counter is $45.75MHz \pm 50$ KHz.

Note: Perform this adjustment after VCO frequency is stabilized.

1-1-3. IF Overall Waveform Adjustment Adjustment Preparation

- Connect signal as follows:

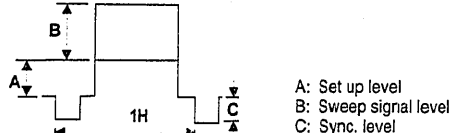


Marks 0.2 MHz (CH10)
1 MHz
2 MHz
3.6 MHz

(Output level 91 ± 3 dBμ (50Ω load Modulation 60-70%))

- Connect Oscilloscope to Q203 (E) Emitter (TP-12).

Check the signal at TP-12 as follows:

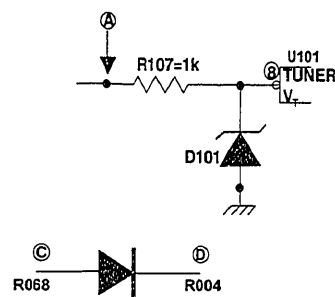


- Add the following voltage:
(1) I201 pin (14): +B (9V)

- I001 pin (12): +B (5V)

- TUNER VTi point (A): 42V

- Connect a diode (1S2076, 1SS270TA) to: C - D

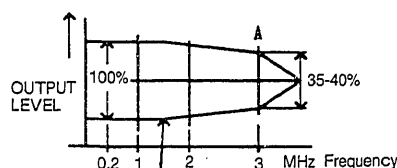


(The other side of I101)

- Initialize memory*
- Receive Color Bar Signal.

Adjustment Procedure

- Adjust TUNER IFT coil so that the output level of 0.2MHz is reference level (100%) and 3.6MHz level is 35% - 40%. (At this time, do not turn TUNER IFT coil more than 1 turn.)



Check that 1MHz~2MHz level is 70%~100%.

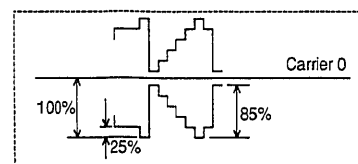
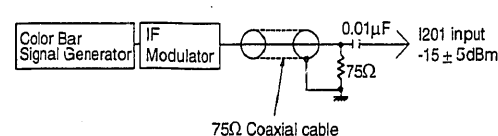
***Note:** Refer to item 1-1-6. Initial Turn ON Procedure.

1-1-4. AFS Discrimination Adjustment (L205)

Adjustment Preparation

- Input Signal: Between X103 SAW FILTER input and Earth. (R108 both ends)

- Apply $9.0 \pm 0.1V$ to I201 pin (14).
- Connect a DC Voltmeter (internal impedance 1M ohm or more) to AFS output terminal. (I201 pin (47))



Adjustment Procedure

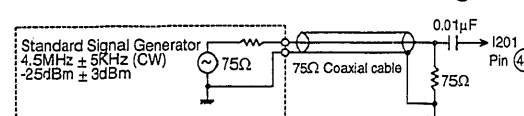
- Turn L205 and check that DC Voltmeter connected as above varies from under 0.5 V to over 8.5V.
- Adjust L205 so that the DC Voltmeter is $6.5 \pm 0.5V$ at the intermediate point of the core which is changing voltage rapidly in (1) above.

Note: After this adjustment is finished, perform item No. 1-1-2. VCO Adjustment Check. If it is deviated, adjust to regular adjusting point and check again the subsequent adjustments.

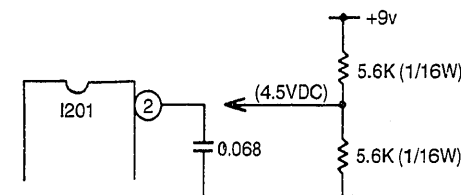
1-1-5. Sound Discrimination Adjustment (L202)

Adjustment Preparation

- Input Signal: Apply the following signal to I201 pin (48).



- Apply DC Voltage $9.0 \pm 0.1V$ to I201 pin (14).
- Connect a Voltmeter between Q201 Emitter and Earth.
- Apply the following Voltage to I201 pin (2).



- Short-Circuit R201 both end (Tuner AGC Terminal to GND).

Adjustment Procedure

- Adjust L202 so that the reading of DC Voltmeter is $3.5 \pm 0.3V$.
- After adjusting, release the jig above (4) and (5).

1-1-6. VCO For OSD Adjustment.

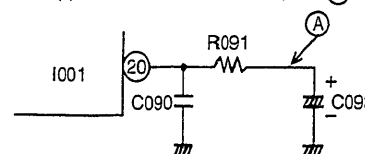
This chassis starts in initial turn ON and AUTO demonstration mode before memory initialize. So memory initialize should be done according to next procedure before adjustment start.

Initial Turn ON Procedure

- Supply AC power. TV Set is turned ON.
- Turn OFF the set using power switch (S001). Remo-Con not used.
- Turn ON the set again.
- Memory initialize (see item 1-4. Memory Initialize) should be done.

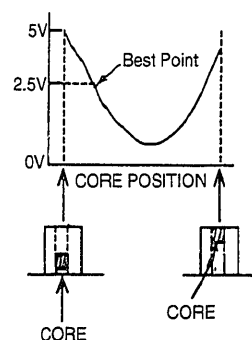
Adjustment Preparation

- Receive Color Bar or Circle Pattern Signal.
- Connect a DC Voltmeter to point (A).



Adjustment Procedure

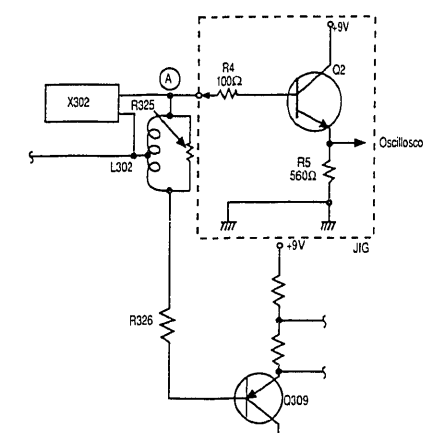
- Adjust L010 so that the Voltmeter is $2.5 \pm 0.2V$.



1-2. COMB FILTER ADJUSTMENT (1)

Adjustment Preparation

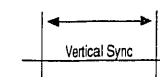
- Adjust the VR (R323, R32E, R333) to center position.
- Receive Color Bar Signal or Green Single Color Using below methods (I) and (II).
(I) From Video Input
(II) Ant. Input: the range of signal strength must be 65dBm to 80dBm (75 dBm is standard).
- Connect the jig (shown below) to point (A).



Adjustment Procedure

- Turn R323 so that the sub-carrier component becomes minimum.
- Then turn L302 so that the sub-carrier component becomes minimum.

Note: Sub-carrier component waveform shows below point.



- When Residual Chroma Level does not become less than 20mVp-p repeat items (1) and (2).

Remarks:

- Use the probe of 10:1.
- Adjust the range of Oscilloscope to 20mV/div.
- Residual Chroma Level should be less than 20mVp-p.
- Connect the jig and PWB by lead wire of minimum length, to prevent a defective oscillation.
- Adjustment should be done after a certain time (more than 10 sec) after power ON.

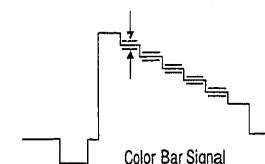
1-2. COMB FILTER ADJUSTMENT (2)

Adjustment Preparation

- Connect an Oscilloscope between Q30C Emitter and Earth.

Adjustment Procedure

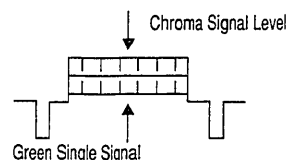
- Turn R32E so that the sub-carrier component becomes minimum.
- Then turn R333 so that sub-carrier component becomes minimum.
- When item (2) is finished, turn R32E again so that the sub-carrier component becomes minimum.
- When Residual Chroma Level does not become less than 15mVp-p, repeat items (1) and (2).



Remarks:

- (1) Adjust the range of Oscilloscope to 50mV/div.
- (2) Residual Chroma Signal Level should be less than 15mVp-p.

Note: Chroma Signal Level shows below point.



1-3. DEFLECTION CIRCUIT PICTURE ADJUSTMENT OPERATION CHECK

1-3-1. Vertical Size Adjustment (R62A)

Adjustment Preparation

- (1) Receive Circle Pattern Signal.
- (2) Set "CONTRAST" to maximum and "BRIGHTNESS" to the center.

Adjustment Procedure

- (1) Adjust Vertical Size Adjustment VR (R62A) so that the inner circle of Circle Pattern becomes in contact with the top and bottom of the screen.

1-3-2. Side Pin Distortion Coarse Adjustment (R752)

Adjustment Preparation

- (1) Receive Circle Pattern Signal.
- (2) Set "CONTRAST" to maximum and "BRIGHTNESS" to the center.

Adjustment Procedure

- (1) Vary R752 so that the right and left vertical lines are straight.

1-3-3. Horizontal Size Adjustment (R755), Horizontal Center Adjustment (R704) and Horizontal Size Correction Adjustment (R775)

Adjustment Preparation

- (1) Receive Circle Pattern Signal.
- (2) Set "CONTRAST" to maximum and "BRIGHTNESS" to the center.

Adjustment Procedure

- (1) Set the R775 at the counterclockwise end.
- (2) Vary R755 so that the horizontal size markers at the right and left end are 1.0 - 1.0 on the average.
- (3) Vary R775 so that the horizontal size markers at right and left are 1.5 - 1.5 on the average.
- (4) Vary R704 so that the difference of the horizontal size markers at the right and left end are within 1.5.

1-3-4. High Voltage Limiter Circuit Operation Check and Overvoltage Protection Circuit Operation Check

Adjustment Preparation

- (1) Connect a High Voltage Voltmeter between CPT Anode terminal (Anode cap side) and the Ground (TP701).
- (2) Set AC input voltage to 120 ± 3V.
- (3) Receive Circle Pattern and set "BRIGHTNESS" and "CONTRAST" to maximum. Adjust SCREEN VR and SUB-BRIGHTNESS VR(R340) so that Beam Current is 1.0 ± 0.1mA. (The voltage of ABL terminal - C747 both ends should be 12V or less)

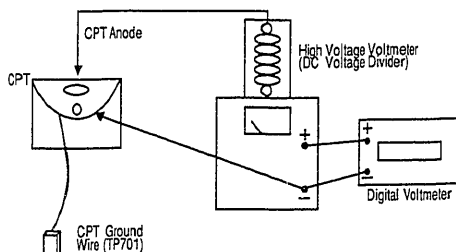
Adjustment Procedure

- (1) Check that the normal High Voltage is $E_{HT} \pm 1kV$.

CHASSIS	EHT	IB ± 0.1 mA	E1 (KV)
CZ41	30.2KV	1.8mA	35.5KV
CY44, CY45	29.2KV	1.65mA	34.0KV
C743, C744, C745	28.0KV	1.5mA	33.0KV

Adjustment Preparation

- (4) Set AC input voltage to 100 ± 5V. Then short-circuit both ends of R903.



Use a Voltmeter with input impedance 10M ohm or more with indication to the 1st decimal place.

Adjustment Procedure

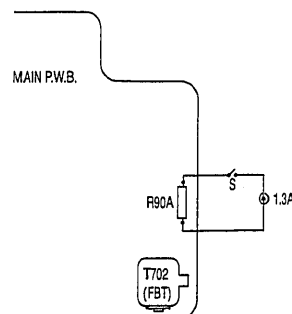
- (2) Keep CONTRAST, BRIGHTNESS, and SCREEN VR as in item (3). Increase AC input voltage gradually, and check that the picture disappears when high voltage is E1. Immediately after checking that it disappears, turn OFF the set switch. Remove adjustment jig and High Voltage Voltmeter.

When connecting or removing High Voltage Voltmeter to or from Anode cap, be sure to turn OFF the switch of the set. Also, be sure to perform it after the chassis discharge residual High Voltage, because the high voltage of CPT Anode may be left.

1-3-5. FBT Protection Circuit Operation Check

Adjustment Procedure

- (1) Set "CONTRAST" to maximum, "BRIGHTNESS" to center.
- (2) After turning ON the switch of the set, turn ON the switch (S) of the jig as shown below. (Operating current limiter circuit). Check that the picture disappears.
- (3) Immediately after checking, turn OFF the switch of the set.



1-3-6. +15V Short Protection Circuit Check.

Adjustment Preparation

- (1) Adjust "CONTRAST" to maximum, "BRIGHTNESS" to center.

Adjustment Procedure

- (1) Connect 10KΩ resistor between Q703 Base and GND and check that the picture disappears.
- (2) Disconnect resistor immediately.

1-3-7. Load Reduction Circuit Operation Check.

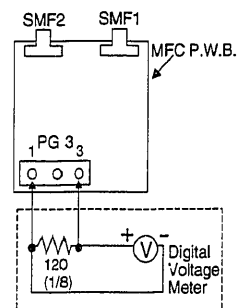
Adjustment Procedure

- (1) Receive Circle Pattern Signal.
- (2) Set "VIDEO" Mode "CONTRAST" to maximum, "BRIGHTNESS" to center.
- (3) Connect a DC Voltmeter to both sides of R912.
- (4) Check to make sure the potential difference is more than 10V.
- (5) Receive Crosshatch Signal.
- (6) Set "VIDEO" mode "CONTRAST" to minimum, "BRIGHTNESS" to center.
- (7) Check the potential difference is less than 3V.

1-3-8. MFC Circuit Operation Check (35TX10B/CZ41 Only)

Adjustment Preparation

- (1) Receive Circle Pattern.
- (2) Connect the Jig (shown below) to the PG3 Pin in MFC. P.W.B.



Adjustment Procedure

- (1) Then turn SMF1 to "STRONG", turn SMF2 to "NORTH", check that the voltage is $V = +2.9 \pm 0.5V$.
- (2) Then turn SMF1 to "WEAK", check that the voltage is $V = +1.5 \pm 0.5V$.
- (3) Then turn SMF2 to "SOUTH", check that the voltage is $V = -2.9 \pm 0.5V$.
- (4) Then turn SMF1 to "WEAK", check that the voltage is $V = -1.5 \pm 0.5V$.
- (5) Then turn SMF2 to "E/W", check that the voltage is $V = 0V$.

1-4. MEMORY INITIALIZE

1-4-1. Timer Sound Operation Check

Adjustment Procedure

- (1) Press the memory initialize key with the Remo-Con jig.
- (2) After 5 sec. operation, check that the set has selected CH 03 and a "beeping" sound comes out from the left side (L-CH).

Note: Do not draw out the outlet within 5 second. Do not perform any key operation, either. After this operation, each setting should become to delivery setting automatically.

1-5. AFC OPERATION CHECK

Adjustment Preparation

- (1) Connect the jig shown below to the ANT Terminal.

Adjustment Procedure

- (1) Receive a Standard Carrier Signal (not offset) with the channel up/down or direct selection buttons. Check that it is pulled into the standard tuning point.
- (2) Receive an Offset Signal of ± 1.5MHZ. Check that it is pulled into the standard tuning point. (Perform the Channel Selection Operation again.)
- (3) Receive an Offset Signal of - 1.5MHZ. Check that it is pulled into the standard tuning point. (Perform the Channel Selection Operation again.)

Note 1: Modulation signal should be used at the Circle Pattern and the Color Bar Signal.

Checking jig (All channel converter can be used)

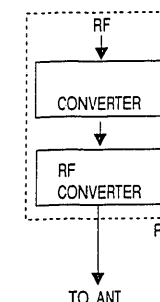


TABLE 1-6

Note: CATV Channels, actual Input Channel Numbers and Indicated Channel Numbers.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	37	31	32	33	34	35	36

MID BAND

SUPER BAND

W+1	W+2	W+3	W+4	W+5	W+6	W+7	W+8	W+9	W+10	W+11	W+12	W+13	W+14	W+15	W+16	W+17	W+18	W+19	W+20	W+21	W+22	W+23
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59

HYPER BAND

W+24	W+25	W+26	W+27	W+28	W+29	W+30	W+31	W+32	W+33	W+34	W+35	W+36	W+37	W+38	W+39	W+40	W+41	W+42	W+43	W+44	W+45	W+46
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82

HYPER BAND

ULTRA BAND

W+47	W+48	W+49	W+50	W+51	W+52	W+53	W+54	W+55	W+56	W+57	W+58	A-5	A-4	A-3	A-2	A-1	W+59	W+60	W+61	W+62	W+63	W+64
83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105

ULTRA BAND

MID BAND

ULTRA BAND

W+65	W+66	W+67	W+68	W+69	W+70	W+71	W+72	W+73	W+74	W+75	W+76	W+77	W+78	W+79	W+80	W+81	W+82	W+83	W+84
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125

ULTRA BAND

1-6. CHANNEL SELECTION CIRCUIT OPERATION CHECK

1-6-1. CHANNEL UP/DOWN Selection

Adjustment Preparation

- Set the TV set so that VHF (CH 11, CH 13), UHF (CH 14, CH 46, CH 63) and CATV (CH A, CH E, CH P, CH W) can be received.
- Set AIR/CABLE Mode to AIR.
(Press the MENU key, and select the SETUP and AIR/CABLE Mode using the ENTER Key.)

Adjustment Procedure

- Check that VHF are received correctly by pressing CH UP (▲) or DOWN (▼) control button.

Adjustment Preparation

- Set AIR/CABLE Mode to CATV 1.

Adjustment Procedure

- Perform the same operation as in item (1), and check that VHF and CATV are received correctly.

Adjustment Preparation

- Set AIR/CABLE Mode to CATV2.

Adjustment Procedure

- Perform the same operation as in item (1), and check that VHF and CATV are received correctly.

1-6-2. CHANNEL UP/DOWN

(Inclusive of AUTOPROGRAM Operation)

Adjustment Preparation

- Set the TV set so that VHF (CH 11, CH 13), UHF (CH 14, CH 46, CH 63) and CATV (CH A, CH E, CH P, CH W, CH A-2, CH GG, CH OO, CH WW) can be received.

Adjustment Procedure

- Set AIR/CABLE Mode to AIR.
- Select AUTOPROGRAM Mode and press (▶) key. After AUTOPROGRAM operation is completed, by pressing the Channel UP (▲) or DOWN (▼) control button, check that the channels having Broadcast Signal(s) can be received.
- Set AIR/CABLE Mode to CATV 1.
- Perform the same operation as in item (2) check that CATV can be received correctly.

Adjustment Preparation

- Set to PROGRAM LIST Mode.

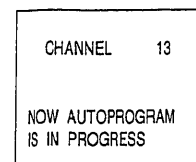
Adjustment Procedure

- Check that the SCAN of channels which can be selected is ON.

Note 1: CATV Channels, actual Input Channel Numbers and Indicated Channel Numbers.

A	14
E	18
P	29
W	36
A-2	98
GG(W+7)	43
OO(W+15)	51
WW(W+23)	59

Note 2: Display while AUTOPROGRAM is operating.

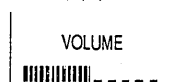


(See Table 1-6 on Bottom of Previous Page)

1-6-3. VOLUME UP/DOWN

Adjustment Procedure

- Check that the Sound Volume Level and Volume Indication is going up or down continuously by pressing Sound Volume UP (▲) or DOWN (▼) control button.



1-6-4. POWER ON/OFF

Adjustment Procedure

- Check that the Power alternates between ON and OFF by alternately pressing the POWER button.

1-6-5. AVX

Adjustment Procedure

- Check that the O.S.D. by the every press of the AVX button, such as below.

(CZ41/CY45/CY44/C745/C744)

Receiving CH → VIDEO: 1

→ VIDEO: 1 (S-IN) → VIDEO: 2 → VIDEO: 3

→ Receiving CH

(C743)

Receiving CH → VIDEO: 1

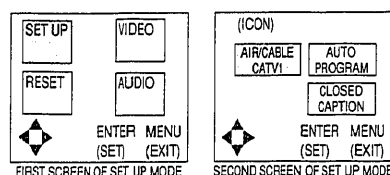
→ VIDEO: 1 (S-IN) → VIDEO: 2

1-6-6. MENU (NOT FOR 35TX10B/CZ41)

Adjustment Procedure

- Check that the MENU O.S.D. displays by pressing MENU button on the Front Panel Control.

Note: MENU O.S.D. is displayed below:



- After MENU O.S.D. is displayed. Check that the keys function change.

MENU	→ MENU
CH UP	→ ▲ Key
CH DOWN	→ ▼ Key
VOLUME UP	→ ► Key
VOLUME DOWN	→ ◄ Key
AVX	→ ENTER

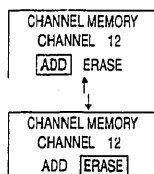
1-6-7. MENU Mode (Using Remo-Con Jig)

Adjustment Preparation

- Set to CHANNEL MEMORY Mode.

Adjustment Procedure

- Check that the ADD/ERASE is selected by pressing the (▶) or (◄) control button.



Adjustment Preparation

- Set the Mode to CLOSED CAPTION.
- Receive a Broadcast Signal having a CLOSED CAPTION signal.

Adjustment Procedure

- Set DISPLAY setting to ON by pressing (▶) or (◄) control button. At this time, set the other settings as follows:

- DISPLAY: ON
- MODE: C.C.
- CHANNEL: 1

- Check that the CAPTION corresponding to the above setting is displayed on the screen.
- Set CHANNEL to 2.
- Check that the CAPTION of CHANNEL 2 is displayed on the screen.
- Set CHANNEL to 1.
- Check that the CAPTION of CHANNEL 1 (FIELD 2) is displayed on the screen.
- Set the mode to TEXT.

Adjustment Procedure

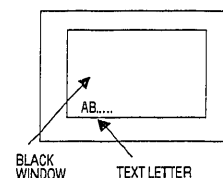
- Check that a black window appears and TEXT letters are displayed at the center of the screen.
- Repeat adjustment procedure from (3) to (6) and check that TEXT letters are displayed corresponding to each Mode.
- Set the Mode to CAPTION.
- The black window should disappear returning to the state of (2).
- Set ON/OFF to OFF.
- Check to be sure that the CAPTION letters disappear.

Remarks:

Note: Reading error should not occur on every mode.

The contents of error:

- Wrong letters are displayed.
- Letter omitting.
- Other abnormal display.



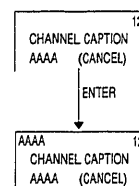
1-6-7-2. PROGRAM Mode.

Adjustment Preparation

- Set to CHANNEL CAPTION Mode.

Adjustment Procedure

- Select the "A" by pressing the (▲) or (▼) control button, and select the input position by pressing the (▶) or (◄) control button.
- After pressing the ENTER button, check that the indication of "AAAA" is the same as CH No. indication.
- Select the CHANNEL CAPTION Mode again, select the "CANCEL" by pressing the (▶) or (◄) control button and the ENTER button.
- Check that the "AAAA" is deleted when the CH No. is indicated, after pressing the "MENU" button.



Adjustment Preparation

- Set to CHILD LOCK Mode.

Adjustment Procedure

- Select CHILD LOCK SET by pressing the (▶) or (◄) control button.
- Press "0" button 3 times. ("000" is input)
- Check that the picture becomes pitch-dark, and sound does not come out.
- Set to CHILD LOCK Mode again, and select "CHILD LOCK CANCEL" by pressing the (▶) or (◄) control button.
- Press "0" button 3 times. ("000" is input.)
- Check that the picture and sound return to the previous condition.

Adjustment Preparation

- Set VOLUME CORRECTION Mode.

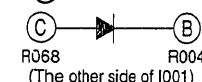
Adjustment Procedure

- Select the registration point using the (▲) or (▼) control button and the received Channel No. is memorized by pressing the ENTER button.
- Check that Volume Level changes and sets 100%-50% (5% step) using (▶) or (◄) control button.

1-6-7-3. CLOCK Mode (Clock Operation Check)

Adjustment Preparation

- Connect a Diode (IS2076, ISS270TA equivalent) between C and B.

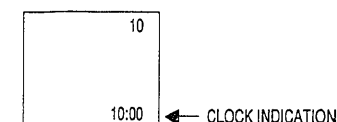


Remarks: The addition of the above diode intends to check the operation with clock counting operation as 60 time mode.

- Set to CLOCK SET Mode.

Adjustment Procedure

- After clock setting is done and the indication disappears, perform CH indication. Check that clock indication is displayed in addition to the CH indication, and that the clock indication is going by 1 second per minute.



1-6-7-4. PICTURE Mode

Adjustment Preparation

- Receive the Color Bar Signal.
- Set to CONTRAST Mode.

Adjustment Procedure

- Check that CONTRAST is changed by pressing (◄) or (▶) control buttons.

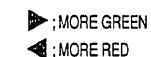


Adjustment Preparation

- Set to COLOR Mode.

Adjustment Procedure

- Check that COLOR is changed by pressing (◄) or (▶) control buttons.



Adjustment Preparation

- (4) Set to TINT Mode.

Adjustment Procedure

- (4) Check that TINT is changed by pressing (◀) or (▶) control buttons.

▶; DEEPER
◀; LIGHTER

Adjustment Preparation

- (5) Set to BRIGHTNESS Mode.

Adjustment Procedure

- (5) Check that BRIGHTNESS is changed by pressing (◀) or (▶) control buttons.

▶; BRIGHTER
◀; DARKER

Adjustment Preparation

- (6) Set to SHARPNESS Mode.

Adjustment Procedure

- (6) Check that SHARPNESS is changed by pressing (◀) or (▶) control buttons.

▶; CLEARER
◀; SOFTER

Adjustment Preparation

- (7) Set to WHITE CONTROL Mode.

Adjustment Procedure

- (7) Check that WHITE CONTROL is changed by pressing (◀) or (▶) control button.

▶; OFF (STD.)
◀; ON (COOL)

Adjustment Preparation

- (8) Set to RESET Mode.

Adjustment Procedure

- (8) Check that all picture setting modes return to delivery settings by pressing the ENTER button.

1-6-7-5. SOUND Mode

Adjustment Preparation

- (1) Set to BALANCE Mode.

Adjustment Procedure

- (1) Check that BALANCE is changed by pressing control (◀) or (▶) control buttons.

▶; RIGHT
◀; LEFT

Adjustment Preparation

- (2) Set to BASS Mode.

Adjustment Procedure

- (2) Check that BASS is changed by pressing control (◀) or (▶) control buttons.

▶; STRONG
◀; WEAK

Adjustment Preparation

- (3) Set to TREBLE Mode.

Adjustment Procedure

- (3) Check that TREBLE is changed by pressing control (◀) or (▶) control buttons.

▶; STRONG
◀; WEAK

Adjustment Procedure

- (4) Set to RESET Mode.

Adjustment Procedure

- (4) Check that all sound setting modes return to delivery settings by pressing ENTER button.

Adjustment Preparation

- (5) (a) Set to "VOLUME" step at "10". Set to "BASS" and "TREBLE" at center when "LOUDNESS" is turned OFF. Set to "LOUDNESS" Mode.
(b) Set "LOUDNESS" to OFF, and "BASS/TREBLE" to center.
(c) Set it to LOUDNESS Mode.

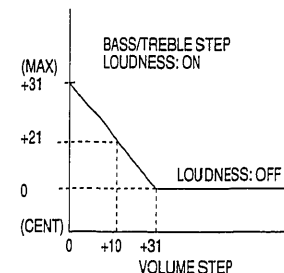
Adjustment Procedure

- (5) Check that "BASS" and "TREBLE" are changed as below table when set to "LOUDNESS" is turned ON by pressing (◀) or (▶) control button "LOUDNESS" turn OFF after checked.

LOUDNESS	BASS	TREBLE
OFF	CENTER	
ON	+21 STEP	

(When VOLUME st 10)

*Note: According to Volume Setting Level, this function works as shown in below figure.



Adjustment Preparation

- (6) (a) Input Stereo Sound Signal to VIDEO:1 terminals, and set "VIDEO:1" by AVX button.
(b) Set to SURROUND Mode.

Adjustment Procedure

- (6) Check that sound is change more loudly when set to MUSIC or MOVIE Mode by pressing (◀), (▶), (▲) or (▼) control button.

Adjustment Preparation

- (7) (a) Input Monaural Sound Signal to VIDEO:1 "L" terminal and set "VIDEO:1" by AVX button.
(b) Set to SURROUND Mode.

Adjustment Procedure

- (7) Check that sound is change more loudly when set to SIMULATE mode by (◀), (▶), (▲) or (▼) control button.

1-6-7-6. RESET Mode.

Adjustment Preparation

- (1) Set PICTURE Setting to minimum "CONTRAST" and SOUND setting to "BALANCE" to left.
(See item 1-6-7-4 and 1-6-7-5.)
(2) Set to RESET Mode.

Adjustment Procedure

- (1) Check that Picture and Sound performance return to delivery setting by pressing the ENTER button.
(CONTRAST to maximum, BALANCE to center)

1-6-7-7. FAVORITE CHANNELS Mode.

Adjustment Preparation

- (1) Set to FAVORITE CHANNELS Mode by pressing one of (◀), (▶), (▲) or (▼) control buttons.

Adjustment Procedure

- (1) Select registration position using (◀), (▶), (▲) or (▼) control buttons, and check that the Channel No. selected is registered by pressing the ENTER button.
Note: 16 stations could be registered.
(2) After Normal Mode is set using the MENU button, check that the Registered Channel can be selected by using (◀), (▶), (▲) or (▼) control buttons.
Note: The selected channel is received after 0.5 seconds.

1-7. REMO-CON OPERATION CHECK

The Remo-Con check jig should be used for Remo-Con operating range and Remo-Con operation check.

1-7-1. Direct Channel Selection

Adjustment Procedure

- (1) Input 2 or 3 digits of Channel Number with the buttons of the Remo-Con check jig "0 - 9" and "100". Check that the input number and the On-Screen Display number are the same.

1-7-2. LST-CH (Last Channel Recall)

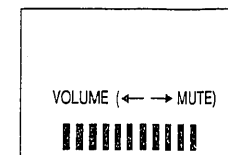
Adjustment Procedure

- (1) Check that the set receives alternately between the channel which is being received and the channel which was received just before now by alternately pressing the "LST-CH" button of the Remo-Con check jig.

1-7-3. MUTE

Adjustment Procedure

- (1) Check that the sound alternates between Mute and Mute Free by alternately pressing the "MUTE" button of the Remo-Con check jig. At this time, check that the indication color alternates between yellow (letters:green) and magenta.



Yellow → Magenta → Yellow
Letters: (green) (green)

1-7-4. RECALL

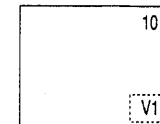
Adjustment Procedure

- (1) Check that On-Screen Display Channel No. indication alternates between ON and OFF by alternately pressing the "RECALL" button of the Remo-Con check jig.

1-7-5. P in P (C241, CY45, CY44, C745, C744)

Adjustment Preparation

- (1) Connect the signal to ANT and receive it.
(2) Connect the signal to VIDEO: 1.



Note: At this CASE, sub-picture should be V1.

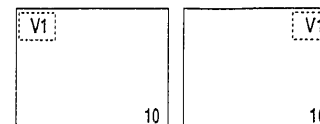
Adjustment Procedure

- (1) Check that, by alternately pressing the "P in P" button of Remo-Con check jig, sub-picture alternates between ON and OFF. When sub-picture is ON, check that the Channel No. and "V1" are displayed.

1-7-6. SHIFT

Adjustment Preparation

- (1) Press "P in P" button to set to P in P Mode.



Adjustment Procedure

- (1) Check that, by alternately pressing the SHIFT button of Remo-Con check jig, sub-picture moves counterclockwise. At this time, check that "V1" of sub-picture also moves as well.
Note: When sub-picture is in the upper of the screen, the Channel No. of main picture comes to the lower right.

1-7-7. EXCHANGE

Adjustment Preparation

- (1) Press "P in P" button to set to P in P Mode.

Adjustment Procedure

- (1) Check that, by alternately pressing the "EXCHANGE" button, the contents of main picture and sub-picture are exchanged.

1-7-8. FREEZE

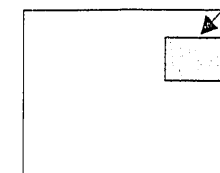
Adjustment Preparation

- (1) Connect the signal to ANT and VIDEO: 1.
(One or both of the pictures should be moving picture.)
(2) Press "P in P" button to set to P in P Mode.
(3) Sub-picture should be moving picture by "EXCHANGE" button.

Adjustment Procedure

- (1) Check that, by alternately pressing "FREEZE" button, sub-picture alternates between moving picture and freezing picture.

MOVING PICTURE ↔ FREEZING PICTURE



- (2) Press "P in P" button to make sub-picture disappear.

1-7-9. FREEZE (P in P OFF)

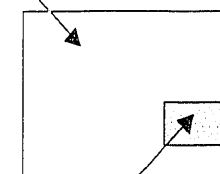
Adjustment Preparation

- (1) Connect signals to ANT and VIDEO: 1. Both signals should be moving picture.
(2) Set P in P to OFF.

Adjustment Procedure

- (1) Check that freezing picture of main screen appears by pressing the FREEZE button of the Remo-Con check jig.
(2) Check it also in the TV and VIDEO: 1 modes.
(3) Check that sub-picture disappears by pressing the FREEZE button at picture freezing.
(4) Check that it turns to normal P in P sub-picture by pressing the P in P button at picture freezing.

MOVING PICTURE



FREEZING PICTURE

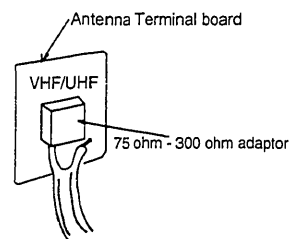
1-8. Weak Electric Field Check

Adjustment Preparation

- (1) Connect one side of the 300 ohm feeder to 75 ohm - 300 ohm antenna adaptor. Connect the antenna adaptor to the VHF antenna terminal board as shown.
(2) Turn to No Signal Condition.

Adjustment Procedure

- (1) Check that oscillation and abnormal beat etc. does not occur in any of the channel.

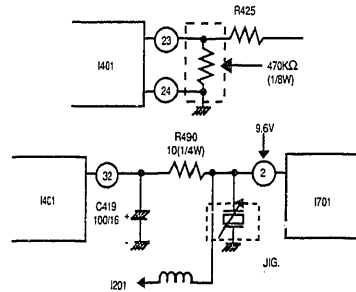


1-9. MTS Demodulating Circuit Adjustment

1-9-1. Stereo VCO Adjustment (R423)

Adjustment Preparation

- (1) Same as items 1-9-2 (1) and (2).
- (2) Connect I401 pin (23) to pin (24) through 470KΩ resistance as shown in the figure.
- (3) Connect a Frequency Counter to I401 pin (41). Use the probe of 1:1. (Probe standard $R_i \geq 1\text{ M}\Omega$, $C_i \leq 15\text{ pF}$)
- (4) Input of I401 pin (39) is no signal.
- (5) Apply +9.6V $\pm 0.1\text{V}$ to the pin (2) of I701 as shown in the figure. (I401 +B)



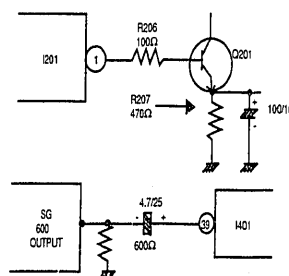
Adjustment Procedure

- (1) Turn VR(R423) to set to 15.73 $\pm 0.01\text{KHz}$.
- (2) After the adjustment, remove the 470KΩ (Between pins (23) - (24) of I401)

1-9-2. Filter Adjustment VR(R418)

Adjustment Preparation

- (1) Set VR(R41K) fully counterclockwise.
- (2) Set Q201 Emitter to GND through capacitor 100uF/16V as shown in the figure.
- (3) Apply the signal to I401 pin (39) with the jig shown as follows.



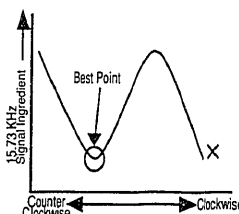
a SG Output Signal Specification

- (1) FREQUENCY
 $f = 15.73\text{ KHz}$ (Sine Wave)
- (2) Signal Level
 $V = 100\text{ mVrms}$

- (4) Connect an Oscilloscope to I401 pin (35) (L-R out).

Adjustment Procedure

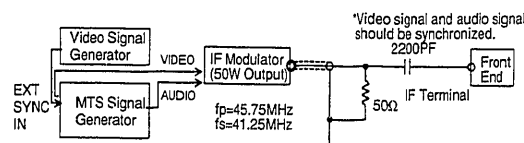
- (1) Input signal (a) and adjust VR(R418) so that the waveform of pin (35) (15.73KHz included) is minimum.



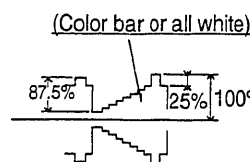
1-9-3. Input Level Adjustment VR(R41K)

Adjustment Preparation

- (1) Apply the signal to TUNER (U101) IF output terminals of MAIN PWB using the jig shown below.



IF Modulator output signal waveforms (Color Bar or All White)



IF Modulator Output Level and P/S
P = 106dBu (50 ohm termination)
S level: -3dB to P level
At this time, S/N ratio of F/E Video Output is 45db or less.

Sound Modulation Condition

- Noise Reduction Encoder: ON
- Stereo Signal: (1) R = 0(L only), 300Hz, 30% modulation (Note 2)*
(2) R = 0(L only), 3KHz, 30% modulation (Note 2)*
- Monaural Signal: (3) Monaural, 400Hz 100% modulation (PRE-EN OFF)
- SAP Signal: (4) SAP, 300Hz 30% modulation (Note 2)*

- (2) Connect AC Voltmeter V_o to I401 pin (39).
- (3) Same as Item 1-9-1 (5) (Apply +B to I401)
* Refer to next page.

Adjustment Procedure

- (1) Select Sound Input Signal (3) and adjust VR(R41K) to $V_o = 150\text{ mVrms} \pm 5\text{ mVrms}$.

1-9-4. Separation Adjustment VR(R429, R42A)

(The adjustment of items 1-9-1. thru 1-9-3. should have been finished.)

Adjustment Preparation

- (1) Use the same jig as Input Level Adjustment. (Be sure to remove the AC Voltmeter connected to I401).
- (2) Connect an Oscilloscope to I401 pin (4).
- (3) Same as in items 1-9-3 (3) and (4).
- (4) Set "MTS MODE" to "STEREO".

Remarks:

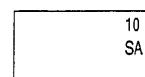
Pay attention that the separation adjusting point may be deviated if the Input Level is not regularly adjusted.



Check that "ST" is indicated in red under CH indication by pressing RECALL key of Remo-Con check jig.

Note 1: Use the Sound Modulator the frequency characteristic of which should be within $\pm 1\%$ during 50Hz - 100KHz.

Note 2: Turn OFF the Noise Reduction Encoder (NR) and set the modulation degree to 30%, and then turn ON the NR. Set the modulation degree at the output of low frequency Signal Generator. Leave the Sound Modulator VR of the IF modulator as it is.



(SAP receiving check)
Check that SA is indicated in red under CH indication by pressing RECALL key of Remo-Con check jig.

Adjustment Procedure

- (1) Select Sound Input Signal (1) and adjust VR(R42A) so that 300 Hz level is minimum.
- (2) Select Sound Input Signal (2) and adjust VR(R429) so that 3KHz level is minimum.
- (3) Repeat (1) and (2).
Adjustment precision: within $\pm 1\text{ dB}$ from minimum point.

1-9-5 SAP Receiving Check

Adjustment Preparation

- (1) Same as in items 1-9-4. (1) - (4).
- (2) Set to "MTS MODE" to "SA".

Adjustment Procedure

- (1) Select Sound Input Signal (1) and designate the Output Level as Vst.
- (2) Then select Sound Input Signal (4) and check that the Output level is almost the same as Vst.

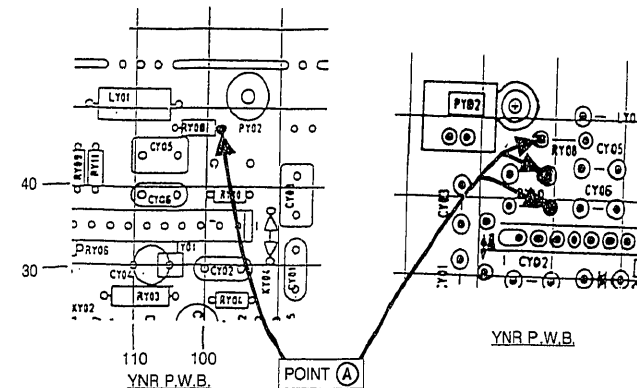
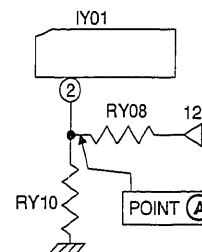
1-10. YNR Operation Check (35TX10B/CZ41)

Adjustment Preparation

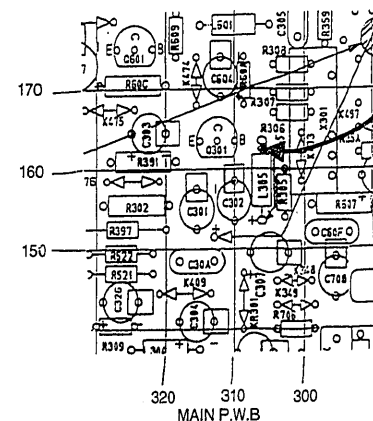
- (1) Receive Circle Pattern

Adjustment Procedure

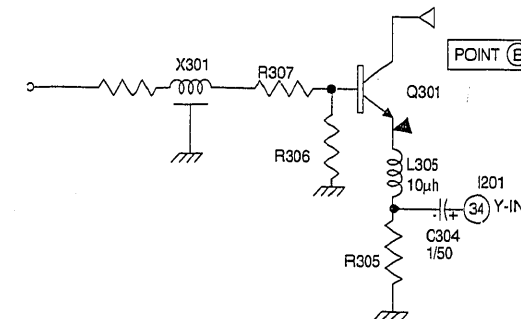
- (1) Connect the DC Voltmeter to point (A) of YNR P.W.B. and check that the DC Voltmeter is 9.3V $\pm 0.3\text{V}$.



- (2) Connect the DC Voltmeter to point (B) of MAIN P.W.B. and check that the DC Voltmeter is 1.15V $\pm 0.3\text{V}$.



POINT (B)



2. FINAL ADJUSTMENT/Common Service Adjustment

2-1. Purity Convergence Adjustment

Note: For A78LCU30X (HITACHI 31V Dark Tint), A68KSA30X (HITACHI 27V Dark Tint), M78JUA165X (31V Dark Tint),

M68JUA168X (27V Dark Tint) applies to item 2-1-1(8). For ITC TYPE A89AEJ15X01 (35V Dark Tint) only applies to item 2-1-1 (8) (PURITY Check).

Preparation of Adjustment

- Keep DY attached to CPT funnel.
- Turn ON the set and receive Crosshatch Signal (or Circle Pattern Signal). Adjust the Static Convergence coarsely according to item 2-1-3.
- Receive Circle Pattern Signal and adjust the White Balance according to item 2-4.
- Set BRIGHTNESS control and CONTRAST control to maximum, and heat-run the set with Circle Pattern Signal received for 40 minutes or more.

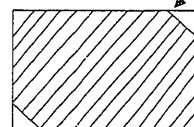
2-1-1. Purity Adjustment

THIS ADJUSTMENT METHOD APPLIES TO THE PURITY ADJUSTMENT BY USING MICROSCOPE

- Adjust coarsely White Balance, Static Convergence (center) and Focus.
- Receive Circle Pattern and heat-run more than T minutes with CONTRAST and BRIGHTNESS maximum. Do not delete the raster nor vary the current before fixing the position of DY. Heat-run should be done with perfect raster. (DY and Tilt should have been coarsely adjusted)

Raster Wave NG

TARI F 1 *



CPT	T
A68KSA30X	40 Min
M68JUA168X	45 Min
A78LCU30X	45 Min
M78JUA165X	45 Min

- The magnetic field in the artificial magnetic field should follow the table below and the set should face as table 2. Degauss it from the outside.

DESTINATION	VERTICAL FIELD	HORIZONTAL FIELD
USA	0.45 G	0.3 G
CANADA	0.54 G	0.15 G
UNIVERSAL	0.35 G	0.3 G
PANAMA, HAWAII	0.2 G	0.3 G
TAIWAN	0.22 G	0.37 G

TABLE 2. Directions for adjustment

CPT	FACE
A68KSA30X	North
M68JUA168X	North
A78LCU30X	North
M78JUA165X	North

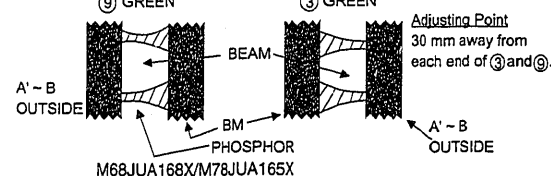
- Adjust the position of Purity Magnet and DY, keep the landing balance of ③ and ⑨, and adjust so that the landing of ③ and ⑨ is as follows while observing with a microscope.

A68KSA30X/A78LCU30X

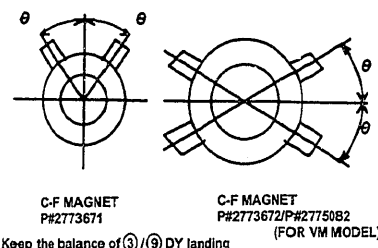
③ GREEN

⑨ GREEN

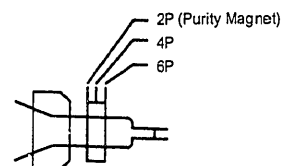
Adjusting Point
30 mm away from
each end of ③ and ⑨.



- Open the Purity Magnet as follows in order to move the raster

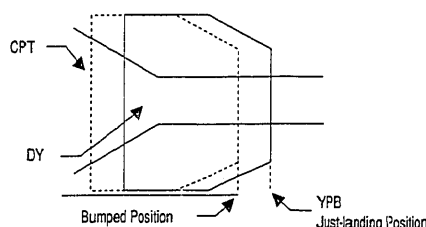


Keep the balance of ③/⑨ DY landing

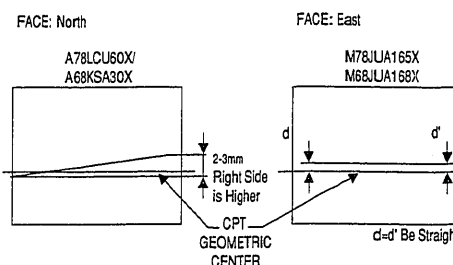


- YPB (Yoke Pull-Back) should be as follows. (Distance between the bumped position of DY toward the funnel and the just-landing position of ③ and ⑨.)

CPT	YPB (DESIGN CENTER)
A68KSA30X	2.44mm
M68JUA168X	2.2mm
A78LCU30X	2.2mm
M78JUA165X	2.2mm



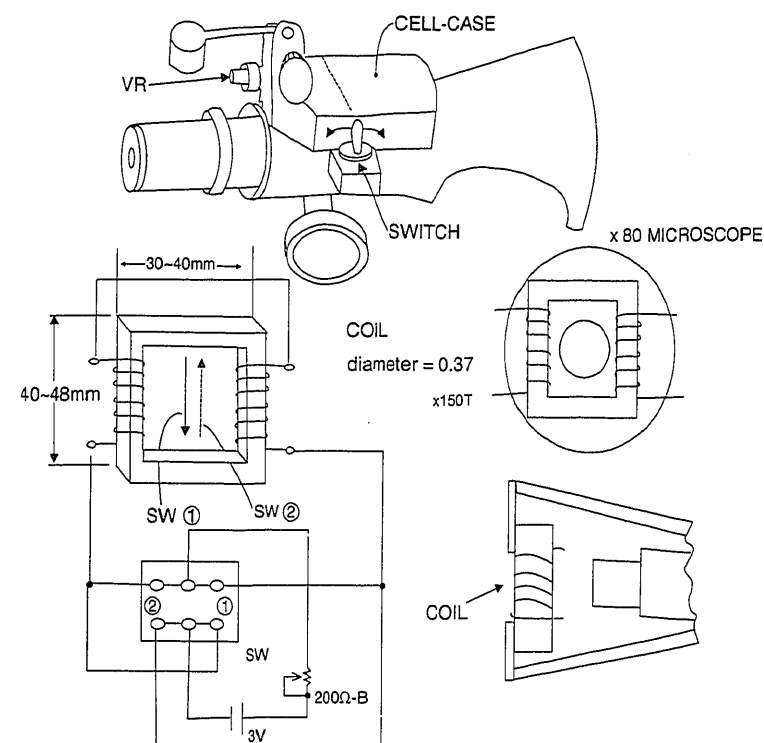
- DY Tilt should be as follows:



- Fix DY with fixing torque of 14kg.cm. Control the torque by an electrical driver.
- If any mislanding occurs, correct with magnets. At this time, if the white unevenness is all right, any magnet is not needed.
- After peripheral convergence is adjusted, check the position of DY and tighten the DY again. (14kg.cm)

Reference

THE JIG



Fix coil to CRT side of microscope. Set it up side down and measure it.. Check that beam moves to the right and left equally in quantity.

- Purity Check
The magnetic field in the artificial magnetic field should follow the magnetic field according to the destination, and the set should face as follows. After degaussing in each direction, check these items visually and with a microscope.
(A) No problem in white unevenness.
(B) Each single color must not hit any other colors.
(C) If white or each single color is defective, apply a magnet (S) on CPT for correction. If any magnet is applied, check it after degaussing.

CPT	CHECK FACE
M68JUA168X	SOUTH, NORTH
M78JUA165X	SOUTH, NORTH
A68KSA30X	SOUTH, NORTH
A78LCU30X	SOUTH, NORTH
A89AEJ15X01	SOUTH, NORTH

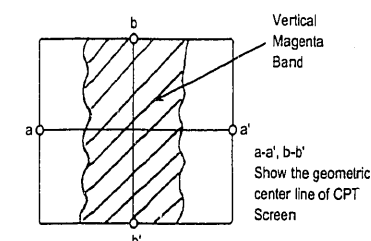
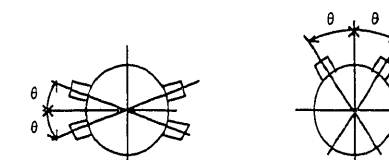


Fig. 2-1-2-1

2-1-2. Purity Adjustment (THIS ADJUSTMENT METHOD APPLIES TO THE HAND-OPERATED PURITY ADJUSTMENT.)

- Use the Earth's magnetic field (Location of the set).
- Adjust Focus coarsely according to item 2-2.
- Adjust Convergence coarsely according to item 2-1-4.
- Receive Circle Pattern Signal and check that CONTRAST and BRIGHTNESS are maximum.
- Receive Magenta Signal. When the Magenta Signal is not available, short-circuit between the Base and Emitter of Q855 to set to Magenta.
- Press DY fully against CPT funnel and turn the Purity Magnet so that the Vertical Magenta Band comes to the center of the picture. (Fig. 2-1-2-1) Check that color unevenness of both sides are approximately equal at this time. The openings of the Purity magnet should be symmetric. (Fig. 2-1-2-2)



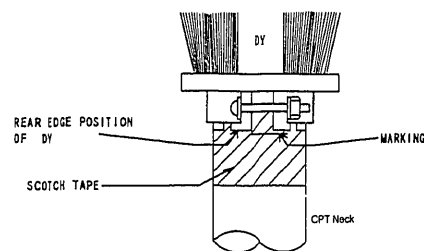
C-F MAG P#2773672
P#2775082 (For VM Models)

Fig. 2-1-2-2

The openings of purity magnet should be symmetric on the right and left sides (P#2773671) and on the upper and lower sides (P#2773672), (P#2775082).

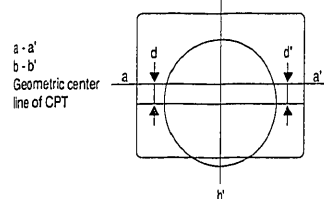
- (7) Receive the Single Red Signal.
When the Single Red Signal is not available, short-circuit between the Base and Emitter of Q854, and between the Base and Emitter of Q857 to set to Single Red Signal.
- (8) Pull back DY gradually and when the color unevenness of both sides of the picture disappear, mark the rear edge position of DY on the tape wound around CPT neck as shown in Fig. 2-1-2-3. Pull back DY further and just before the color unevenness starts to appear on both sides of the picture, mark the rear edge position of DY on the tape by the same way.
At this time, pull back DY so that the center axis of DY and CPT axis match.

Fig. 2-1-2-3



- (9) Move DY so that the rear edge position of DY comes to the center of the two marked lines and fasten DY as $d = d'$. (Fig. 2-1-2-4).
Further insert the rubber wedge between DY and CPT funnel from the top and raise DY backwards.

Fig. 2-1-2-4



- (10) Set CPT axis direction magnetic field according to the Earth's magnetic field setting.
(The direction of the magnetic field should be from the CPT screen side to the neck side.)
- (11) After degaussing it from outside, check the Purity in each color of R, G and B visually. Then, turn the screen to White and check the landing at the screen position shown in Fig. 2-1-2-5 with a microscope.

Criteria with microscope

There should be no mislanding at positions 2-4-8 and 10. (Refer to the mislanding criteria)
Green beam should be at the center of the green phosphor at position C.

- (12) Turn over the direction of CPT axis direction magnetic field of the Earth's magnetic field and check it by the same way as item (11). The positions of mislanding criteria with microscope should be 2, 4, 8 and 10. (Fig. 2-1-2-5)

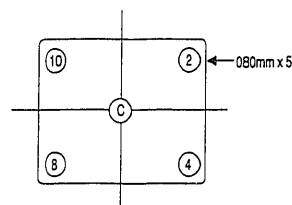


Fig. 2-1-2-5

Mis-Landing Criteria

The following conditions are defined as mislanding. Each color beam shines on the phosphor of the applied color and there are phosphor parts which are not luminous (shaded parts in the Fig. 2-1-2-6) between the luminous part and black matrix or each color beam shines on the phosphor of not applied color.

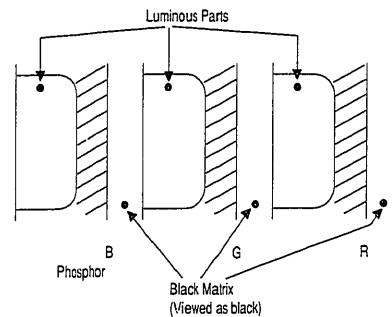


Fig. 2-1-2-6 Enlarged view of screen with microscope

- (13) To improve the mislanding mentioned above, it's acceptable to stick the permanent magnet to CPT funnel.
(Fig. 2-1-2-7 and Fig. 2-1-2-8)

Usage

Apply a silicone rubber KE-40 WRTV to the permanent magnet shown in the Figure 2-1-2-8, adhere it to CPT funnel and then fix it with permaseal tape.

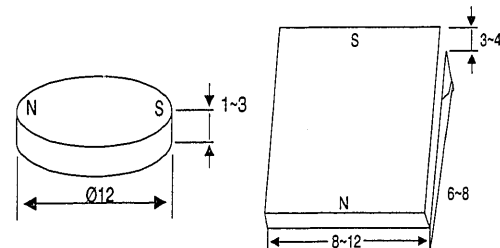


Fig. 2-1-2-7

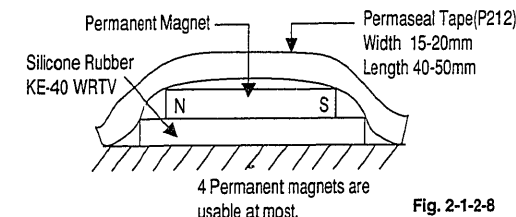
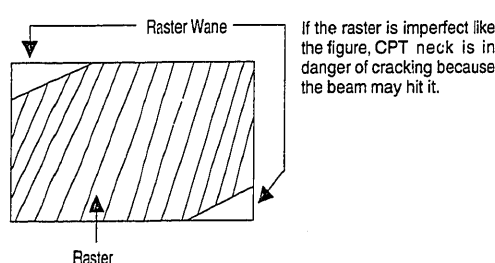


Fig. 2-1-2-8

Notes for pre-heat

Before pre-heating, stick DY to CPT funnel and fix it so that the raster is perfect.



2-1-3. Static Convergence Adjustment (Screen Center Part) (Except ITC CPT)

- (1) Receive the Crosshatch Signal and set BRIGHTNESS to center, CONTRAST to minimum.

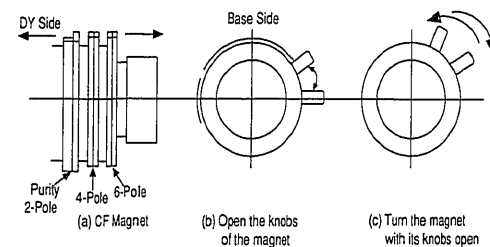


Fig. 2-1-3-1

Open the knobs of 4-pole magnet (2 sheets) (Fig. 2-1-3-1(b)) and match the blue/red vertical lines at the center of the screen as shown in Fig. 2-1-3-2(a).

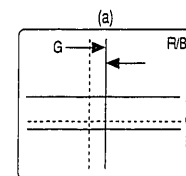


Fig. 2-1-3-2

- (3) Turn the 4-pole magnet with its knobs open (Fig. 2-1-3-1(c)) and match the blue/red horizontal lines as shown in Fig. 2-1-3-2(b).

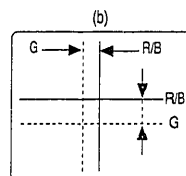


Fig. 2-1-3-2

- (4) Open the knobs of 6-pole magnet (2 sheets) and match the green vertical line at the center of the screen to the blue/red vertical lines shown in Fig. 2-1-3-2(c).

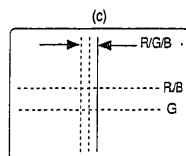


Fig. 2-1-3-2

- (5) Turn the 6-pole magnet with its knobs open and match the green horizontal line at the center of the screen to the blue/red horizontal lines as shown in Fig. 2-1-3-2(d).

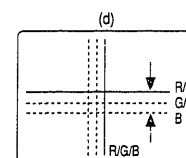


Fig. 2-1-3-2

- (6) After the adjustment of items (1) - (5), if red/blue/green (3 colors) do not match, repeat the adjustment of (1) - (5).
- (7) After checking that Purity and Static Convergence are adjusted to the best condition, fix C-F Magnet with white paint.

2-1-4. Dynamic Convergence Adjustment (Except ITC CPT Type)

- (1) Insert an adjustment wedge (temporary) between the top of DY opening and CPT funnel as shown in Fig. 2-1-4-1. By inserting the wedge gradually, match the red and blue vertical lines at the top and bottom of the screen and also match the red and blue horizontal lines of both sides of the screen as shown in Fig. 2-1-4-2 (a).
- (2) Adjust the swinging in the right/left directions of DY while observing 6 and 12 horizontal lines of the screen and match the red and blue horizontal lines.
As shown in Fig. 2-1-4-2 (b), when the blue is outside from the red on CPT screen, insert the DY fixing wedge between the right-side DY viewed from the rear of CPT and CPT funnel.
- (3) As shown in Fig. 2-1-4-2 (c), when the blue is inside from the red on CPT screen, insert the wedge between the left-side DY and CPT funnel.
- (4) Insert two DY fixing wedges with approx. 120° to the DY fixing wedge inserted in the items (2) or (3) and remove the adjustment wedge (temporary).
Use the DY fixing wedge after peeling off the tape. After the location, press and adhere it to the funnel.

HITACHI CPT A68KSA30X, M78JUA165X, M68JUA168X, A78LCU30X

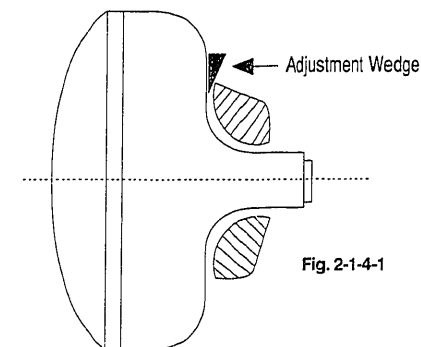


Fig. 2-1-4-1

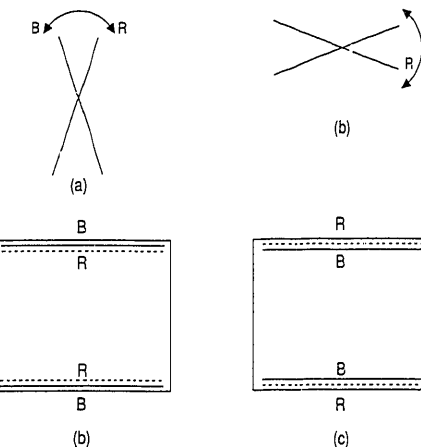


Fig. 2-1-4-2

2-2 Focus Adjustment

NO.	MODEL	CPT	CONDITION	FOCUS VR SETTING POSITION
1	35TX10B CZ41	A89AEJ15X01	• Receive the Crosshatch Signal • Picture Control: Maximum • Sharpness Control: Center • Brightness Control: Where the background is set.	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of the 5th vertical line from the screen center becomes best.
2	31UX5B CY45	M78JUA165X	Same as above	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of center vertical line from the screen center becomes best.
3	31CX4B CY44	A78LCU30X (HED-US)	Same as above	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of center vertical line from the screen center becomes best.
4	27UX5B C745	M68JUA168X	Same as above	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of the 6th vertical line from the screen center becomes best.
5	27CX4B C744 27CX3B C743	A68KSA30X (HED-US)	Same as above	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of center vertical line from the screen center becomes best.

2-3. Deflection Circuit Picture Adjustment

2-3-1. Horizontal Center Adjustment VR(R704)

Adjustment Preparation

- Receive Circle Pattern Signal. Set CONTRAST to maximum and BRIGHTNESS to center.

Adjustment Procedure

- Adjust H. size marker, turn VR(R704) to adjust difference of right and left horizontal size marker is within 0.5.

2-3-2. Vertical Size Adjustment VR(R62A)

Adjustment Preparation

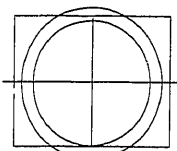
- The set should face the North or South.
- Receive Circle Pattern Signal, and set CONTRAST to maximum and BRIGHTNESS to center.

Adjustment Procedure

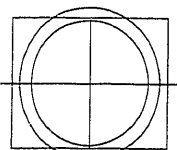
- Adjust V. size VR(R62A) so that the outer circle of the Circle Pattern is like the figure.

Note: Wait 5 minutes or more after turning the power ON to perform this adjustment.

- When the picture center is below CPT center
Adjust so that 1/2 of the width of the outer circle comes to the top of the screen.

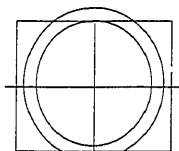


- Standard Condition
Adjust so that the inner circle comes in contact with the top and bottom of the screen.



- When the picture center is above CPT center.

- When the picture center is 0.2 mm above CPT center, adjust so that the bottom of the inner circle comes in contact with the bottom of the screen.



- Except for the above, adjust so that 1/2 of the width of the outer circle comes to the bottom of the screen.

2-3-3. Side Pin Distortion Adjustment VR(R752)

Adjustment Preparation

- Receive Crosshatch Signal and set CONTRAST to maximum and BRIGHTNESS to the point where the background is set.

Adjustment Procedure

- Adjust VR(R752) so that the line of the right and left is straight.

2-3-4. Horizontal Size Adjustment VR(R755, R775)

Adjustment Preparation

- Receive Circle Pattern Signal.
- Set CONTRAST to maximum and BRIGHTNESS to center.

Adjustment Procedure

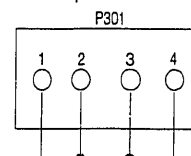
- Set the VR(R775) at the counterclockwise end.
- Vary VR(R755) so that the horizontal size markers at the right and left end are A - A on the average.*
- Vary VR(R775) so that the horizontal size markers at right and left are B - B on the average.*
- Vary VR(R704) so that the difference of the horizontal size markers at the right and left end are within 1.5.

CPT SIZE	A	B
35V	0.5	1.0
31V	1.0	1.5
27V	1.0	1.5

2.4. White Balance Adjustment

Adjustment Preparation

- Apply heat-run 10 minutes or more after the power is turned ON.
- Check that the Purity Adjustment has been completed.
- Set the vertical incident illumination on the CPT surface to 20 lux or less.
- Receive White Raster Signal.
- Set Drive Adjusting VRs (R806, R816) to the mechanical center.
- Turn Low Brightness White Balance adjusting VRs (R807, R814, R818) fully counterclockwise.
- Set the Color Temperature Control (White Control) to OFF (STD).
- Turn the SCREEN Adjusting VR fully counterclockwise.
- Short circuit TP connector pin 1-4.



Adjustment Procedure

- Turn the SCREEN Adjusting VR clockwise and set it to the position where the bright colored line starts appearing on CPT screen. Do not turn thereafter the Low Brightness White Balance VR (This is called VR-A) corresponding to the color first appearing. When a bright colored line does not appear, set the SCREEN VR fully clockwise.
- Turn clockwise the Low Brightness White Balance VRs except VR-A and adjust so that the red, green and blue bright colored lines appear on the screen equally.
- Remove the jig which has shorted TP connector.
- Set CONTRAST and BRIGHTNESS control to minimum and turn SUB-BLACK LEVEL VR (R340) to set at the position where the white raster is just slightly seen.
- Set the White Balance Meter at the center of the screen.
- Adjust CONTRAST control so that the indication of the Brightness Meter is 80% of the full scale. Then, turn the Drive adjusting VRs (R806, R816) and adjust the High-Brightness White Balance.
- Adjust CONTRAST control to minimum and check that the Low-Brightness White Balance is obtained by directly observing the CPT surface, without using a mirror.
- When the Low Brightness White Balance is not obtained, adjust other Low-Brightness White Balance VRs except VR-A and return to item (6). **White Balance Color Temperature Setting 7,200K.**
- Set White Control (Color Temperature Control) to ON (COOL), and check that Color Temperature is approximately 9,300K.

2-5. Sub-Black Level Adjustment VR(R340) Adjustment Preparation

- Apply heat-run for 10 minutes or more after the power is turned ON.
- Receive Color Bar Signal.
- Set CONTRAST and COLOR Controls to minimum.
- Set the vertical incident illumination on the CPT surface to 20 lux or less.
- Set BRIGHTNESS Control to the center position.
- Set White Control to OFF (STD).

Adjustment Procedure

- Turn SUB-BLACK LEVEL adjustment VR (R340) as follows. SUB-BLACK LEVEL adjustment the background of A1, A2, A3 are set to black and A4 is set lighter black.

W	Y	CY	G	MG	R	BL
A7	A6	A5	A4	A3	A2	A1
B						
D						
Q	I	W100%		BLK		

The background is set to black. Perform the adjustment without observing the boundary parts.

The background is set to lighter black.

- Check by directly observing the CPT surface, without using a mirror.

2-6. AGC Adjustment VR(R202)

Adjustment Preparation

- After all the adjustments are finished, heat-run 5 minutes or more in signal receiving condition.
- Receive Color Bar Signal or High-VHF Channel (CH10).
- Set CONTRAST to maximum, and BRIGHTNESS to On-Screen Display center.
- Antenna input power: - 53dBm $\pm$ 1dB (-53dBm ~ -52dBm)
- Connect DC Voltmeter of internal resistance 1M Ω or more to TP15.

Adjustment Procedure

- Adjust AGC Adjustment VR (R202) until the indication of DC Voltmeter does not change any more at the maximum point. The reading of DC Voltmeter is named V1.
- Adjust AGC Adjustment VR (R202) so that the indication of DC Voltmeter is [V1-(0.5 $\pm$ 0.2)]V. Verify that there is no video noise visibly seen.

2-7. Channel Selector Operation Check

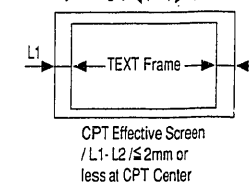
2-7-1. CCD Display Position Adjustment.

Adjustment Preparation

- Receive an Encoded Signal of Closed Caption Signal.
- Press and hold down the AVX key and press POWER key of MAIN P.W.B. front keys, turn ON the set.

Adjustment Procedure

- When the TEXT from the CAPTION appears On Screen. Adjust the size of TEXT and from area satisfies the following specification by using (◀), (▶) control buttons.



- When the adjustment item(1) is finished, turn OFF the set by the POWER key.

2-8. Matching Check With Other Instruments

2-8-1. VIDEO 1 Input Terminal Matching Check

Adjustment Preparation

- Input a Video Signal to the VIDEO 1 terminal. The Video Signal Level should be within 1 $\pm$ 0.2 Vp-p (75 ohm termination) with 100% White Signal.
- Input an Audio Signal to the AUDIO 1 terminal. The Audio Signal Level should be 400m Vrms $\pm$ 2m Vrms at this time. (Connect VCR or TV TUNER)
- Connect an Audio AMP to the AUDIO OUT terminals. (Or connect VIDEO and AUDIO terminals of a standard monitor.

Adjustment Procedure

- Check that the set receives signal when the AVX1 Mode is selected, by pressing the AVX (FUNCTION) button on the front side of the set.
- When an External Input is performed, the Video and Audio should not be abnormal.
The 100% White Signal that RF input receives should be as bright as the Video Signal 1Vp-p (75 ohm termination). As for the sound, when the 100% modulation that RF input receives is 25KHZ, DIV., the Sound Level should be as much as the External Audio Signal (400 Vrms) level.

2-8-2. VIDEO 2 Input Terminal Matching Check.

Adjustment Preparation

- Same as 2-8-1.

Adjustment Procedure

- Check that the set receives signal at AVX2 Mode.

2-8-3. VIDEO 3 Input Terminal Matching Check

Same as 2-8-2.

Adjustment Preparation

Adjustment Preparation

- ### Adjustment Procedure

- (1) Check that the set receives signal at S-IN Mode.

2-8-5. AUDIO Output Level Check

Adjustment Preparation

- ### Adjustment Procedure

- (1) Check that the Audio Output of AUDIO AMP connected to AUDIO HI-FI OUT terminals or monitor changes according to the "VOLUME" of the set.
- (2) Confirm that the Output Level of item(1) should be 1Vrms ($2.8\text{ Vp-p} \pm 20\%$). (Above level is equivalent to maximum VOLUME, 100% Modulated Signal Input.)

2-9. Safety Check

2-9-1. Polarity Check

There should be electricity between AC Power Cord and Chassis Earth.

2-10. MTS Operation Check

2-10-1. STEREO/SAP Broadcast Receiving Check

Adjustment Preparation

- (1) Set the set so that a MTS Broadcast (STEREO/SAP) can be received..
- (2) Set MTS Mode to STEREO or SAP Mode.
Note: To select between "STEREO/SAP", display sound setting of MTS Mode and select SOUND MENU.
- (3) Set BALANCE to the center.

Adjustment Procedure

- (1) When one of the MTS Broadcast Stereo or SAP is received, check that "ST" or "SA" is displayed on the screen.

STEREO	11
or SAP	ST
	or SA

- (2) **STEREO Broadcast Receiving Check**
 - (I) Select MTS Mode and press ENTER button to display "STEREO" on the screen.
 - (II) When only Lch signal is received, Lch sound comes out from the left speaker.
 - (III) When only Rch signal is received, Rch sound comes out from the right speaker.
 - (IV) When Monaural Signal is received, Monaural Sound comes out from both of the right and left speakers.
 - (3) **SAP Broadcast Receiving Check**
 - (I) Select MTS Mode and press ENTER button to display "SAP" on the screen.
 - (II) SAP signal comes out from both of the right and left speakers.
 - (III) When no SAP signal, the sound on "MAIN" side comes out.
- Note:** When the Channel selection is performed or RECALL button is operated "ST" or "SA" is shown below the Channel No. (For approximately 8 seconds)

2-10-2. MTS Mode Check

Adjustment Preparation

- (1) Set the set so that a MTS Broadcast (STEREO/SAP) can be received.

- (2) Set BALANCE to the center.

Adjustment Procedure

- (1) When "MTS MODE" Mode is set to "MONO" side, check that STEREO and MONO indication lamps which have been ON are turned OFF and that Monaural Sound comes out from the right and left speakers.
- (2) When "MTS MODE" Mode is set to "STEREO" side, check that STEREO and MONO indication lamps which have been OFF are turned ON and that STEREO and SAP sound can be received.

2-10-3. STEREO Separation Check

Adjustment Preparation

- (1) Set the set so that a MTS Broadcast (STEREO/SAP) can be received.
- (2) Make Surround "OFF".
- (3) Set MTS MODE to "STEREO".
- (4) Connect AUDIO OUT terminals L and R to an Oscilloscope.

Adjustment Procedure

- (1) When STEREO L only signal (or R only signal) is received, check that the Output Level Ratio of L CH and R CH is 15 dB or more. (Example)

CH	Output Level
L	1.2 Vpp
R	0.21 Vpp or less

When L only is received (100% modulation)

2-11. Setting For Delivery

Setting is possible by Remo-Con jig.

SPECIFICATION BY MODELS

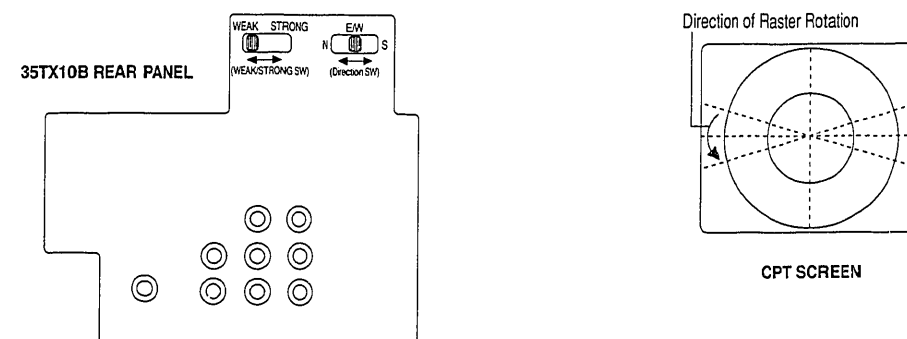
NAME	SPECIFICATIONS BY MODELS	
	P in P	No P in P
AIR/CABLE	AIR	AIR
RECEPTION CHANNEL	CH 03	CH 03
SOUND (VOLUME)	*10" On-Screen Display	*10" On-Screen Display
INPUT SELECT (AVX)	TV Mode	TV Mode
CONTRAST	Maximum	Maximum
COLOR	Center	Center
TINT	Center	Center
BRIGHTNESS	Center	Center
SHARPNESS	Center	Center
WHITE CONTROL	ON: (COOL)	ON: (COOL)
BALANCE	Center	Center
BASS	Center	Center
TREBLE	Center	Center
MTS MODE	STEREO	STEREO
SURROUND	OFF	OFF
LOUDNESS	ON	OFF
INTERNAL SPEAKERS	ON	ON
P IN P	OFF	OFF
CLOSED CAPTION	OFF	OFF
CLOSED CAPTION MODE	C.C.	C.C.
CLOSED CAPTION CHANNEL	1	1

2-12. Magnetic Field Correction Circuit Operation Check.

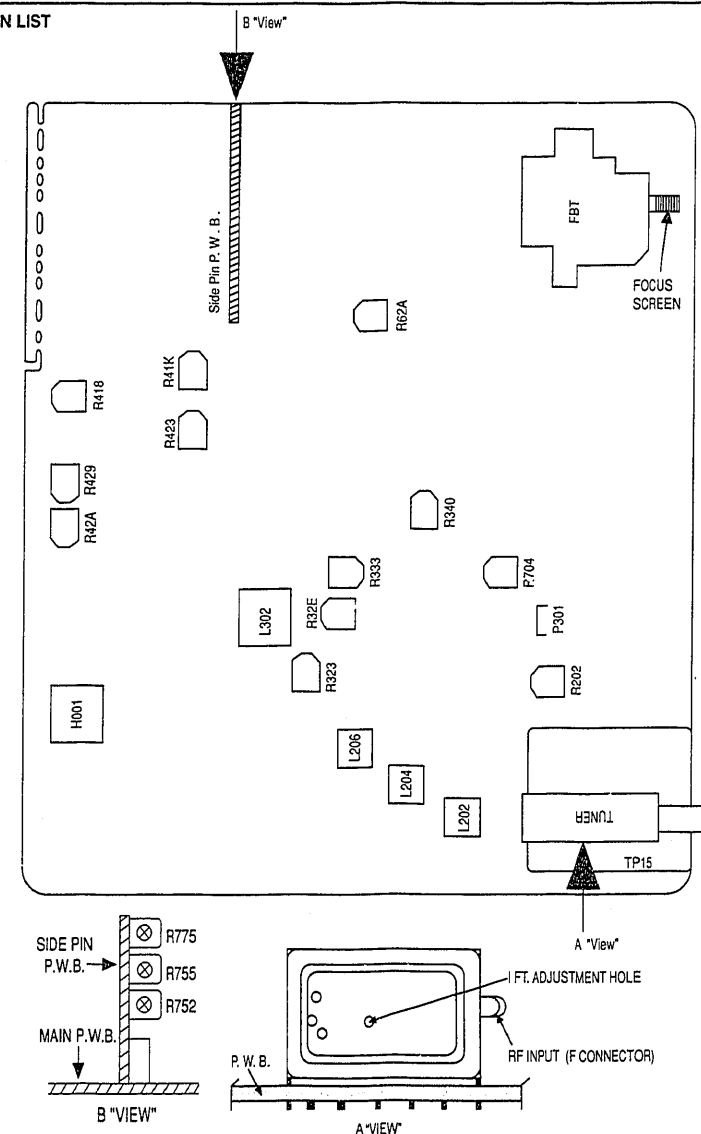
(35TX10B/CZ41 Only)

Adjustment Preparation

- (1) Receive Circle Pattern Signal.
- (2) Set "Weak/Strong SW" to "Strong".
- (3) Set "Direction SW" to "N".
- (4) Check that the raster rotates to counterclockwise when "Direction SW" set from "N" to "S".
- (5) Set "Weak/Strong SW" set to "Weak".
- (6) Set "Direction SW" to "N".
- (7) Check that the raster rotates to counterclockwise when "Direction SW" set from "N" to "S".
(Check the rotation angle is less than "Strong" position.
- (8) Set "Weak/Strong SW" to "Strong" and "Direction SW" to "EW".



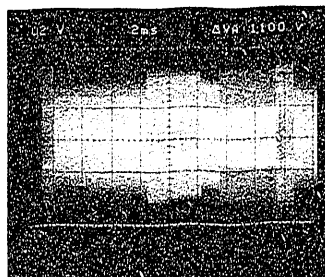
3. ADJUSTMENT POSITION LIST



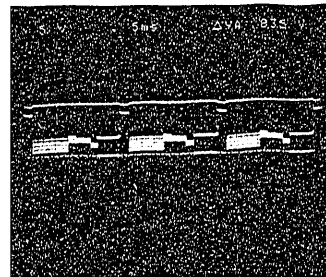
WAVEFORMS AT EACH SECTION

Numbers inside circle correspond to locations shown in the circuit diagram.

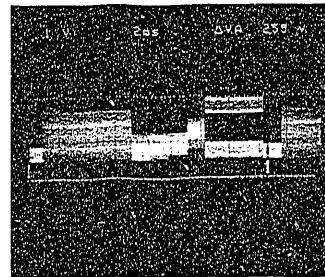
① U101 Pin 7 (IF Out)



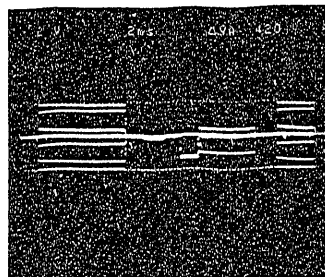
⑤ I201 Pin 21 (-Y)



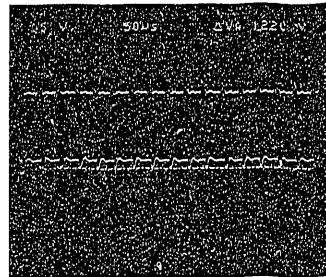
⑨ I201 Pin 44 (Video Det. Out)



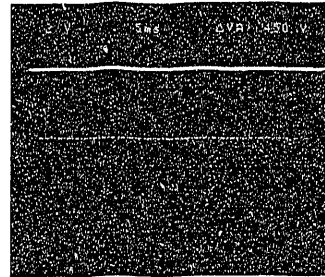
② I201 Pin 18 (R-Y)



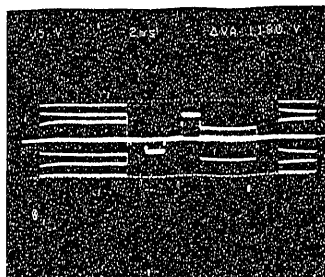
⑥ I201 Pin 23 (H. Out Pulse)



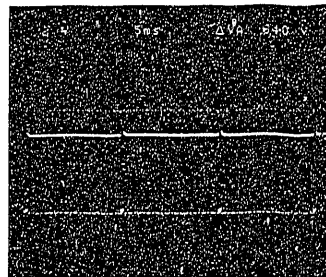
⑩ I201 Pin 47 (AFT Out)



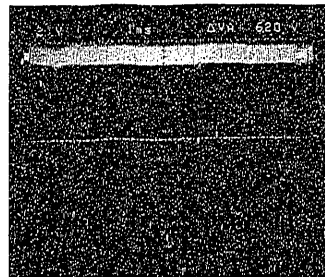
③ I201 Pin 19 (G-Y)



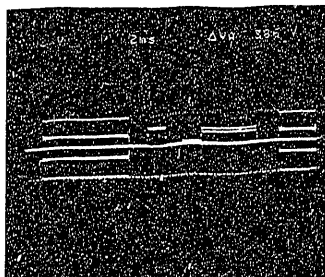
⑦ I201 Pin 28 (V. Out Pulse)



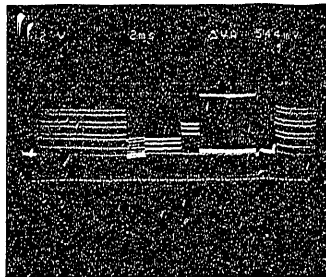
⑪ I201 Pin 49 (RF-AGC Out)



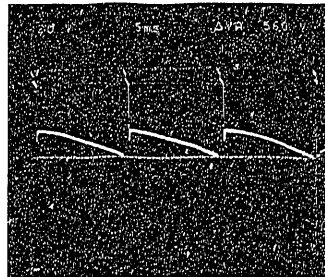
④ I201 Pin 20 (B-Y)



⑧ I201 Pin 34 (Video In)



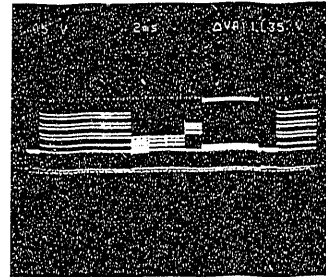
⑫ I620 Pin 12 (V.Out)



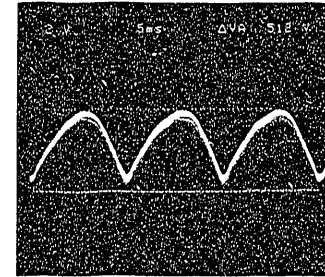
WAVEFORMS AT EACH SECTION

Numbers inside circle correspond to locations shown in the circuit diagram.

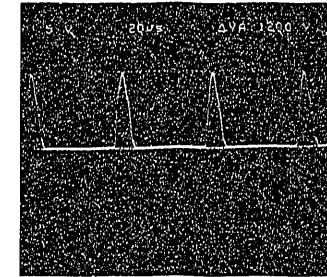
⑬ Q30C Emitter (Y)



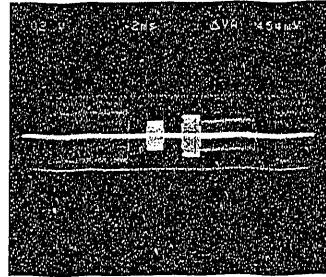
⑰ Q650 Emitter (Side Pin Drive)



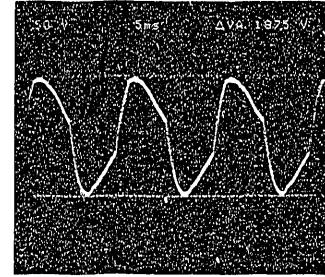
⑲ Q702 Collector (H. Out)



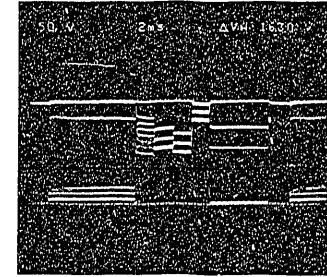
⑭ Q309 Emitter (C)



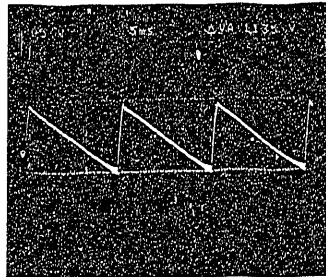
⑱ Q750 Base (Side Pin Adj.)



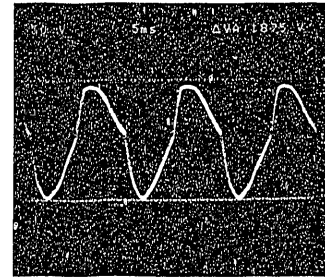
⑳ Q854 Collector (Video Amp. Red)



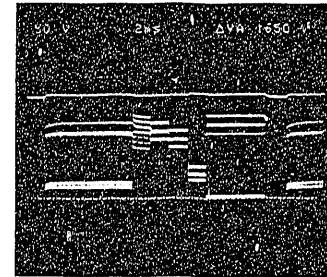
⑮ P65B Pin 1 (Side Pin Amp +)



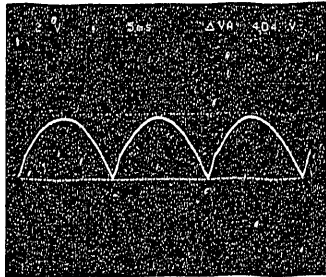
⑲ Q752 Collector (Side Pin Out)



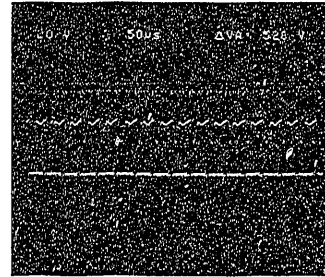
㉓ Q855 Collector (Video Amp. Green)



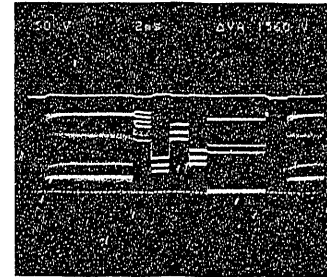
⑯ P65B Pin 2 (Side Pin Amp -)



㉔ Q701 Collector (Hor. Drive)



㉕ Q856 Collector (Video Amp. Blue)



TROUBLESHOOTING

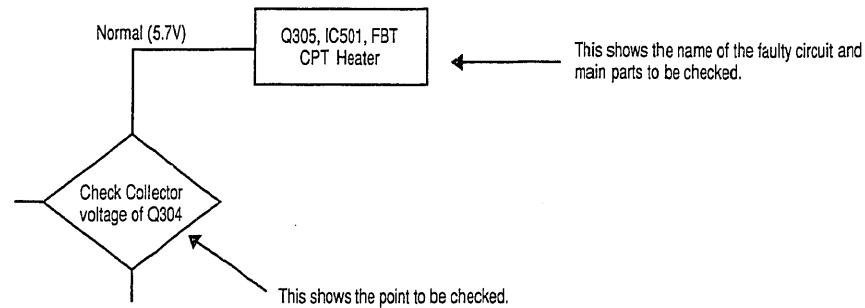
PRODUCT SAFETY NOTE

The shaded and Δ marked components have special characteristics important to safety. Read carefully the Product Safety Notice of each service manual. Don't degrade the safety of the receiver through improper servicing when replacing any of this components.

HOW TO USE THE FLOW CHART

- (1) The flow chart shows the following:

This shows the name of the faulty circuit and main parts to be checked.
This shows the point to be checked.

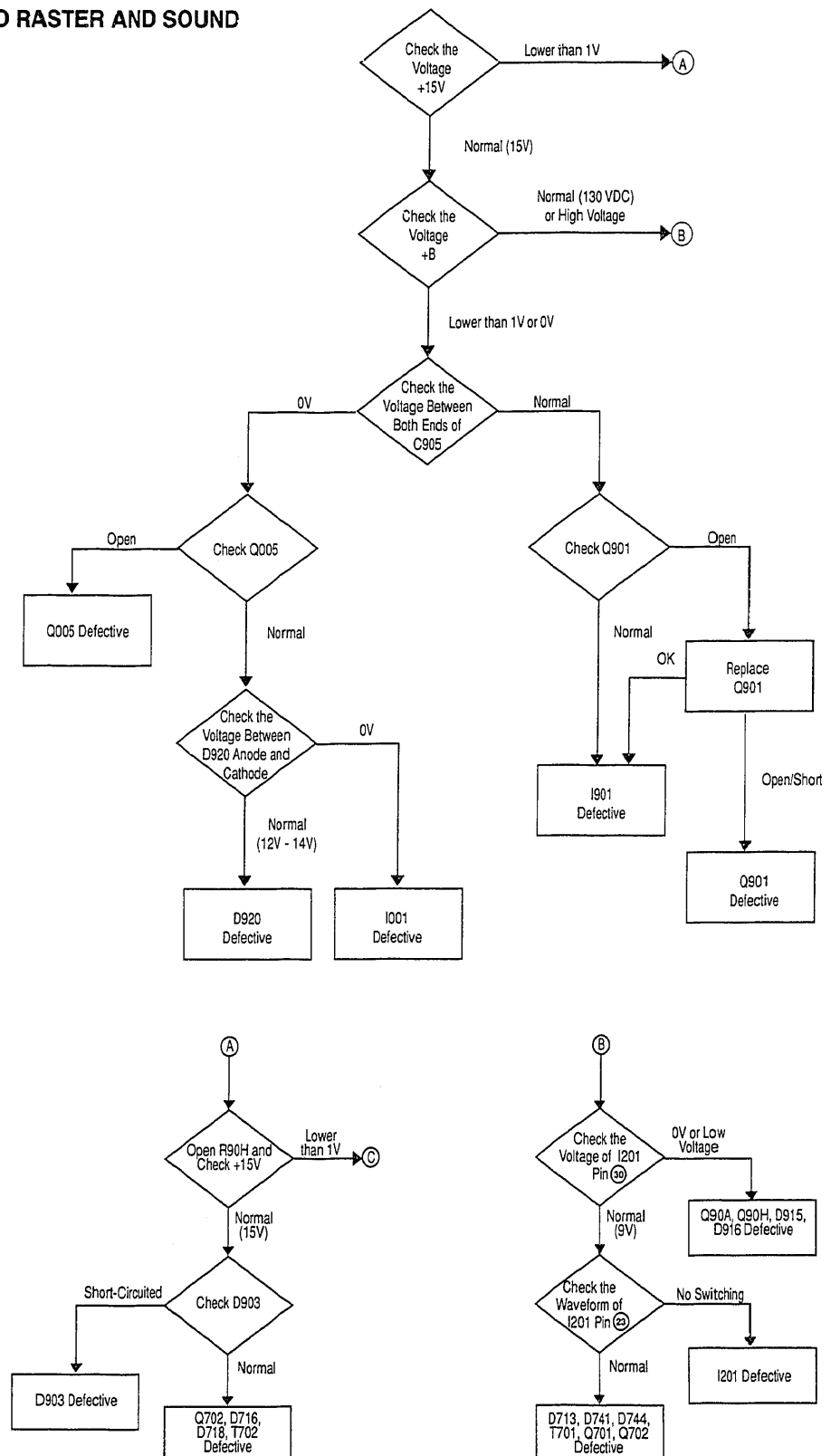


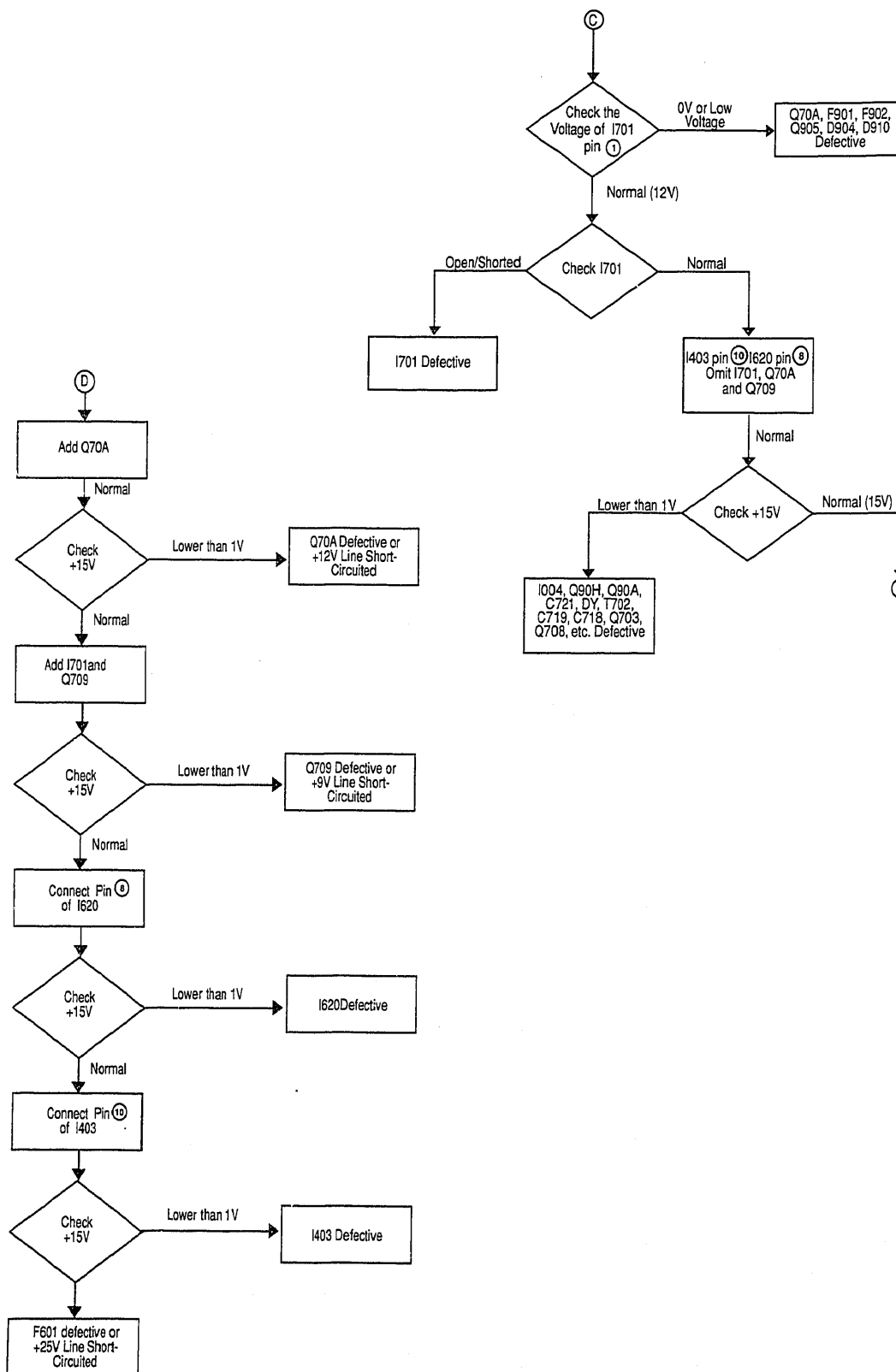
- (2) The voltage shown in the chart may differ to some extent depending on the condition of the set and tester.

PRECAUTION ON MAKING MEASUREMENTS AND ON HANDLING

1. When any parts become abnormally hot or there is a smell of burning, cut OFF the power immediately.
2. Do not make shorts between circuits or across terminals except for those specified.
3. When applying a signal for checking purposes, make connection in the alternate current system for any not specified.
4. When measuring the voltages of ICs and TRs, be careful to see that the lead bar of the tester does not touch any other terminal.
5. Measure the voltage correctly.
6. Measure the resistance over a small range.
7. Be sure to switch OFF the power when replacing parts.
8. Do not apply a soldering iron for a long time when replacing parts. (Use a solder-wick.)
9. Use an isolation transformer when troubleshooting.

1. NO RASTER AND SOUND





REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

ABBREVIATIONS

Capacitors: CD: Ceramic Disc
PF: Polyester Film
EL: Electrolytic
PP: Polypropylene
PR: Paper
TA: Tantalum
TM: Trimmer

Resistors: CF: Carbon Film
CC: Carbon Composition
MF: Metal Oxide Film
VR: Variable Resistor
WW: Wire Wound
FR: Fuse Resistor
MG: Metal Glaze

Semiconductors: TR: Transistor
DI: Diode
ZD: Zener Diode
VA: Varistor
TH: Thermistor
IC: Integrated Circuit

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
CAPACITORS					
C001	890087	CD 1000PF +10% 50V	C205	880053	PF 0.047MF +10% 50V
C002	800047	EL 100MF 6.3V	C206	890087	CD 1000PF +10% 50V
C003	800072	EL 470MF 6.3V	C208	880055	PF 0.068MF +10% 50V
C004	244141	CD 0.01MF +10% 50V	C20A	246464	CD 100PF +5% 50V
C005	890121	CD 33PF +5% 50V	C20C	246448	CD 22PF +5% 50V
C006	890121	CD 33PF +5% 50V	C20E	246463	CD 91PF +5% 50V
C007	800003	EL 1MF 50V	C20F	880044	PF 0.01MF +10% 50V
C008	276717	PF 0.1MF 50V +5%	C20H	800001	EL 0.47MF 50V
C00E	800009	EL 4.7MF 25V	C20K	890063	CD 15PF +5% 50V
C010	800009	EL 4.7MF 25V	C210	890121	CD 33PF +5% 50V
C011	800049	EL 100MF 16V	C211	890121	CD 33PF +5% 50V
C012	800009	EL 4.7MF 25V	C212	244105	CD 2200PF +10% 50V
C013	800015	EL 10MF 16V	C213	890089	CD 1500PF +10% 50V
C014	800015	EL 10MF 16V	C214	880053	PF 0.047MF +10% 50V
C015	800009	EL 4.7MF 25V	C215	800041	EL 47MF 16V
C016	800009	EL 4.7MF 25V	C217	246448	CD 22PF +5% 50V
C017	800009	EL 4.7MF 25V	C301	800003	EL 1MF 50V
C018	880051	PF 0.033MF +10% 50V	C302	800009	EL 4.7MF 25V
C019	890086	CD 820PF +10% 50V	C303	800015	EL 10MF 16V
C01A	880048	PF 0.022MF +10% 50V	C304	800003	EL 1MF 50V
C01E	800074	EL 470MF 16V(EXCEPT 27CX3B)	C305	244141	CD 0.01MF +10% 50V
C01H	800015	EL 10MF 16V	C306	800015	EL 10MF 16V(EXCEPT 27CX3B)
C020	800079	EL 1000MF 6.3V(EXCEPT 27CX3B)	C307	800005	EL 2.2MF 50V
C021	276717	PF 0.1MF 50V +5%(EXCEPT 27CX3B)	C309	800009	EL 4.7MF 25V
C022	880055	PF 0.068MF +10% 50V	C30A	890074	CD 100PF +5% 50V
C023	880044	PF 0.01MF +10% 50V	C30C	0090051R	CD 10PF +0.5% 50V
C024	890087	CD 1000PF +10% 50V	C30E	244141	CD 0.01MF +10% 50V
C025	800009	EL 4.7MF 25V	C30K	800015	EL 10MF 16V
C030	244105	CD 2200PF +10% 50V	C310	880044	PF 0.01MF +10% 50V
C031	276717	PF 0.1MF 50V +5%	C311	890073	CD 82PF +5% 50V
C032	0890078R	CD 220PF +10% 50V	C312	800051	EL 100MF 25V(31V/27V)
C0516	276717	PF 0.1MF 50V +5%(35V)	C313	880044	PF 0.01MF +10% 50V
C090	890087	CD 1000PF +10% 50V	C314	880044	PF 0.01MF +10% 50V
C091	800003	EL 1MF 50V	C315	800049	EL 130MF 16V
C092	880048	PF 0.022MF +10% 50V	C316	800009	EL 4.7MF 25V
C093	800005	EL 2.2MF 50V	C317	800049	EL 100MF 16V
C094	800047	EL 100MF 6.3V	C318	800015	EL 10MF 16V
C095	890119	CD 27PF +5% 50V	C319	880044	PF 0.01MF +10% 50V
C096	890119	CD 27PF +5% 50V	C31A	800015	EL 10MF 16V
C101	800047	EL 100MF 6.3V	C31C	880044	PF 0.01MF +10% 50V
C102	244105	CD 2200PF +10% 50V	C31E	244141	CD 0.01MF +10% 50V
C103	244141	CD 0.01MF +10% 50V	C31H	800015	EL 10MF 16V(EXCEPT 27CX3B)
C104	800082	EL 1000MF 16V	C31K	880044	PF 0.01MF +10% 50V
C105	244141	CD 0.01MF +10% 50V	C320	800015	EL 10MF 16V
C106	244105	CD 2200PF +10% 50V	C321	244141	CD 0.01MF +10% 50V
C107	890063	CD 15PF +5% 50V	C322	800049	EL 100MF 16V
C108	244105	CD 2200PF +10% 50V	C323	800003	EL 1MF 50V
C109	244105	CD 2200PF +10% 50V	C325	800015	EL 10MF 16V
C110	890072	CD 68PF +5% 50V	C326	800009	EL 4.7MF 25V
C111	890072	CD 68PF +5% 50V	C327	800049	EL 100MF 16V
C112	890072	CD 68PF +5% 50V	C330	800042	EL 47MF 25V(35V)
C201	800015	EL 10MF 16V	C332	244141	CD 0.01MF +10% 50V
C202	800082	EL 1000MF 16V	C3801	800015	EL 10MF 16V(35V)
C203	244105	CD 2200PF +10% 50V	C3802	800015	EL 10MF 16V(35V)
C204	880044	PF 0.01MF +10% 50V	C3803	800041	EL 47MF 16V(35V)
			C3804	800015	EL 10MF 16V(35V)
			C3805	244171	CD 0.01MF +80-20% 50V(35V)
			C3806	800015	EL 10MF 16V(35V)

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C390	890063	CD 15PF +5% 50V	C454	800009	EL 4.7MF 25V
C391	880044	PF 0.01MF +10% 50V	C455	800009	EL 4.7MF 25V (EXCEPT 27CX3B)
C392	0890078R	CD 220PF +10% 50V	C456	800009	EL 4.7MF 25V (EXCEPT 27CX3B)
C393	800023	EL 22MF 16V (27CX3B)	C457	800009	EL 4.7MF 25V
C394	880044	PF 0.01MF +10% 50V (27CX3B)	C458	800009	EL 4.7MF 25V
C399	244141	CD 0.01MF +10% 50V	C470	800015	EL 10MF 16V
C401	800049	EL 100MF 16V	C471	800049	EL 100MF 16V
C402	800015	EL 10MF 16V	C501	246445	CD 16PF +5% 50V
C403	800015	EL 10MF 16V	C502	244141	CD 0.01MF +10% 50V
C404	800049	EL 100MF 16V	C503	800001	EL 0.47MF 50V
C405	880044	PF 0.01MF +10% 50V	C504	800082	EL 1000MF 16V
C406	800009	EL 4.7MF 25V	C507	800074	EL 470MF 16V
C407	800009	EL 4.7MF 25V	C510	880044	PF 0.01MF +10% 50V
C408	800039	EL 47MF 10V	C601	800003	EL 1MF 50V
C409	276717	PF 0.1MF 50V +5%	C602	890089	CD 1500PF +10% 50V
C40A	0292712F	TA 3.3MF 16V	C603	880046	PF 0.01MF +10% 50V
C40C	0292714F	TA 10MF +10% 16V	C604	800048	EL 100MF 10V
C40E	800001	EL 0.47MF 50V	C605	800003	EL 1MF 50V
C40H	800015	EL 10MF 16V	C606	890087	CD 1000PF +10% 50V
C40K	800001	EL 0.47MF 50V	C607	244107	CD 3300PF +10% 50V
C410	800009	EL 4.7MF 25V	C608	800003	EL 1MF 50V
C411	800001	EL 0.47MF 50V	C609	800015	EL 10MF 16V
C412	244141	CD 0.01MF +10% 50V	C60F	0890082R	CD 390PF +10% 50V
C413	800009	EL 4.7MF 25V	C620	800057	EL 220MF 10V
C414	800001	EL 0.47MF 50V	C621	880042	PF 6800PF +10% 50V
C415	300001	EL 0.47MF 50V	C622	292716	TA 1MF +10% 20V
C416	800001	EL 0.47MF 50V	C623	248696	CD 330PF +5% 50V
C417	800001	EL 0.47MF 50V	C624	800061	EL 220MF 35V
C418	800007	EL 3.3MF 50V	C625	800007	EL 3.3MF 50V
C419	800049	EL 100MF 16V	C626	276717	PF 0.1MF 50V +5%
C41C	244105	CD 2200PF +10% 50V	C627	800007	EL 3.3MF 50V
C41E	880048	PF 0.022MF +10% 50V	C628	800003	EL 1MF 50V
C41H	276717	PF 0.1MF 50V +5%	C629	800083	EL 1000MF 25V
C41K	880048	PF 0.022MF +10% 50V	C62A	800056	EL 220MF 6.3V
C420	800003	EL 1MF 50V	C62H	276717	PF 0.1MF 50V +5%
C421	244111	CD 6800PF +10% 50V	C630	880053	PF 0.047MF +10% 50V
C422	276719	PF 0.15MF +5% 50V	C630	890087	CD 1000PF +10% 50V
C423	800015	EL 10MF 16V	C631	800041	EL 47MF 16V
C424	800015	EL 10MF 16V	C632	880039	PF 4700PF +10% 50V
C425	890087	CD 1000PF +10% 50V	C633	800005	EL 2.2MF 50V
C426	880056	PF 0.082MF 50V +10%	C634	800003	EL 1MF 50V
C427	248700	CD 680PF +5% 50V	C636	800005	EL 2.2MF 50V
C428	800023	EL 22MF 16V	C637	800018	EL 10MF 50V
C429	244111	CD 6800PF +10% 50V	C701	890087	CD 1000PF +10% 50V
C42A	276719	PF 0.15MF +5% 50V	Δ C702	800003	EL 1MF 50V
C42C	276717	PF 0.1MF 50V +5%	C703	800003	EL 1MF 50V
C42E	276717	PF 0.1MF 50V +5%	C704	880051	PF 0.033MF +10% 50V
C42H	276717	PF 0.1MF 50V +5%	C705	890087	CD 1000PF +10% 50V
C42K	276717	PF 0.1MF 50V +5%	C706	244141	CD 0.01MF +10% 50V
C430	800001	EL 0.47MF 50V	C707	800049	EL 100MF 16V
C431	800001	EL 0.47MF 50V	C708	800001	EL 0.47MF 50V
C432	800009	EL 4.7MF 25V	C714	880044	PF 0.01MF +10% 50V
C433	800047	EL 100MF 6.3V	C715	247842	CD 23PF +5% 500V
C434	244105	CD 2200PF +10% 50V	C716	880019	PF 0.33MF +10% 50V
C435	800059	EL 220MF 25V	Δ C718	244729	CD 2200PF +10% 2KV
C436	244105	CD 2200PF +10% 50V	Δ C719	244728	CD 1800PF +10% 2KV
C437	800059	EL 220MF 25V	Δ C71A	244211	CD 1000PF +10% 2KV (31V)
C438	800047	EL 100MF 6.3V	Δ C71A	244212	CD 1200PF +10% 2KV (35V)
C439	276717	PF 0.1MF 50V +5%	C71C	244105	CD 2200PF +10% 50V
C43A	800075	EL 470MF 25V	C71E	0255524F	EL 4.7MF 250V (31UX5B)
C43C	800082	EL 1000MF 16V	C71E	0255524F	EL 4.7MF 250V (27UX5B)
C43E	800041	EL 47MF 16V	C71F	243506	CD 270PF +10% 500V
C43H	276717	PF 0.1MF 50V +5%	Δ C71H	244725	CD 1000PF +10% 2KV (35V)
C43K	800082	EL 1000MF 16V	C71K	0255524F	EL 4.7MF 250V (31UX5B/27UX5B)
C440	800059	EL 220MF 25V	C720	244501	CD 1000PF +10% 500V
C441	800015	EL 10MF 16V	Δ C721	0262429F	PP 0.012MF +5% 1800V
C442	800023	EL 22MF 16V	Δ C722	299707	PP 0.015MF +10% 630V
C443	800023	EL 22MF 16V	Δ C723	263001	EL 3.3MF 100V
C444	800042	EL 47MF 25V	Δ C724	299931	PP 0.27MF +10% 200V
C445	800042	EL 47MF 25V	Δ C725	800003	EL 1MF 50V
C450	800009	EL 4.7MF 25V	Δ C726	299931	PP 0.27MF +10% 200V
C451	800009	EL 4.7MF 25V	C72A	244501	CD 1000PF +10% 500V
C453	800009	EL 4.7MF 25V	C72C	800073	EL 470MF 10V

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C72H	800048	EL 100MF 10V	CW04	0890081R	CD 330PF +10% 50V (31UX5B/27UX5B)
C730	800084	EL 1000MF 35V	CW05	800049	EL 100MF 16V (31UX5B/27UX5B)
C732	800083	EL 1000MF 25V	CW06	880044	PF 0.01MF +10% 50V (31UX5B/27UX5B)
C733	800056	EL 220MF 6.3V	CW09	890074	CD 100PF +5% 50V (31UX5B/27UX5B)
C735	800005	EL 2.2MF 50V	CW10	244541	CD 0.01MF +10% 500V (31UX5B/27UX5B)
C736	244501	CD 1000PF +10% 500V	CW11	890074	CD 100PF +5% 50V (31UX5B/27UX5B)
Δ C737	800019	EL 10MF 63V	CW12	244509	CD 4700PF +10% 500V (31UX5B/27UX5B)
C738	0255524F	EL 4.7MF 250V	CW13	0253959F	EL 47MF 160V (31UX5B/27UX5B)
C73A	800041	EL 47MF 16V	CW14	0253959F	EL 47MF 160V (31UX5B/27UX5B)
C73C	890086	CD 820PF +10% 50V	CW15	253957	EL 22MF 160V (31UX5B/27UX5B)
C73H	890087	CD 1000PF +10% 50V	CW16	247848	CD 56PF +5% 500V (31UX5B/27UX5B)
C742	254823	EL 100MF 160V	CW17	800074	EL 470MF 16V (31UX5B/27UX5B)
C747	276717	PF 0.1MF 50V +5%	CW18	880044	PF 0.01MF +10% 50V (31UX5B/27UX5B)
C74A	0258130F	EL 330MF 100V (35V)	CW19	0253959F	EL 47MF 160V (31UX5B/27UX5B)
C74H	243508	CD 390PF +10% 500V (35V)	CW20	244541	CD 0.01MF +10% 500V (31UX5B/27UX5B)
C750	800005	EL 2.2MF 50V	CW22	276717	PF 0.1MF 50V +5% (31UX5B/27UX5B)
C751	800044	EL 47MF 50V	CW23	800049	EL 100MF 16V (31UX5B/27UX5B)
C752	0284623R	EL 1MF 50V	CW24	800041	EL 47MF 16V (31UX5B/27UX5B)
C755	880035	PF 2200PF +10% 50V	CW27	880044	PF 0.01MF +10% 50V (31UX5B/27UX5B)
C756	800015	EL 10MF 16V	CW28	890077	CD 180PF +10% 50V (31UX5B/27UX5B)
C757	800015	EL 10MF 16V	CY01	890083	CD 470PF +10% 50V (35V)
C851	800049	EL 100MF 16V	CY02	890083	CD 470PF +10% 50V (35V)
C852	890087	CD 1000PF +10% 50V	CY03	880044	PF 0.01MF +10% 50V (35V)
C853	0255524F	EL 4.7MF 250V	CY04	800015	EL 10MF 16V (35V)
C856	0244729F	CD 2200PF +10% 2KV	CY05	276717	PF 0.1MF 50V +5% (35V)
C860	890087	CD 1000PF +10% 50V	CY06	890076	CD 150PF +10% 50V (35V)
C861	890087	CD 1000PF +10% 50V	CY07	800049	EL 100MF 16V (35V)
C862	890087	CD 1000PF +10% 50V	CY08	880044	PF 0.01MF +10% 50V (35V)
C864	0890079R	CD 270PF +10% 50V			DIODES
C865	890083	CD 470PF +10% 50V	D001	2398611	DI 1SS254
C866	890077	CD 180PF +10% 50V	D002	2398611	DI 1SS254 (27CX3B)
C870	890076	CD 150PF +10% 50V	D003	2398611	DI 1SS254
C872	890074	CD 100PF +5% 50V	D004	2398611	DI 1SS254
C873	890074	CD 100PF +5% 50V	D005	2398611	DI 1SS254
C874	890074	CD 100PF +5% 50V	D006	2398611	DI 1SS254
C875	890076	CD 150PF +10% 50V	D007	2398611	DI 1SS254
C887	890076	CD 150PF +10% 50V	D008	2398611	DI 1SS254
C888	890087	CD 1000PF +10% 50V	D009	2398611	DI 1SS254
C889	244171	CD 0.01MF +80-20% 50V	D00A	2398611	DI 1SS254
Δ C901	279697	PF 0.1MF +20% 250V	D00C	2398611	DI 1SS254
Δ C902	0248593F	CD 4700PF +80-20% 250V	D00E	2398611	DI 1SS254
Δ C903	0248593F	CD 4700PF +80-20% 250V	D00H	2398611	DI 1SS254
Δ C904	244505	CD 2200PF +10% 500V	D00K	2398611	DI 1SS254
Δ C905	253891	EL 470MF 200V	D010	2398611	DI 1SS254
C906	253957	EL 22MF 160V	D011	2398611	DI 1SS254
C907	800064	EL 330MF 6.3V	D012	2398611	ZD HZS12C3 (EXCEPT 27CX3B)
C908	800003	EL 1MF 50V	D013	2398611	ZD HZS12C3 (EXCEPT 27CX3B)
C909	800001	EL 0.47MF 50V	D014	2398611	ZD HZS12C3 (EXCEPT 27CX3B)
Δ C90A	0248593F	CD 4700PF +80-20% 250V	D016	2398611	DI 1SS254
C90C	880044	PF 0.01MF +10% 50V	D017	2398611	DI 1SS254 (EXCEPT 27CX3B)
C90E	880031	PF 1000PF +10% 50V	D020	2398611	DI 1SS254
C90F	880044	PF 0.01MF +10% 50V	D022	2398611	DI 1SS254
C90H	0284891F	EL 150MF 200V	D023	2398611	ZD HZS9C2
C90K	880066	PF 0.47MF +10% 50V	D024	2398611	DI 1SS254
C910	880044	PF 0.01MF +10% 50V	D101	2398611	ZD HZS33-1
C911	0890081R	CD 330PF +10% 50V	D301	2398611	DI 1SS254
C912	0258192F	EL 220MF 25V	D302	2398611	DI 1SS254
C913	890087	CD 1000PF +10% 50V	D303	2398611	DI 1SS254
C914	800024	EL 22MF 25V	D304	2398611	DI HZS15-3 (T)
C915	800015	EL 10MF 16V	D305	2398611	ZD HZS9C2
C917	0245612F	CD 4700PF +10% 1KV	D306	2398611	ZD HZS9C2
C919	245608	CD 1000PF +10% 1000V	D307	2398611	DI 1SS254
C91C	0890082R	CD 390PF +10% 50V	D308	2398611	DI 1SS254
C91H	800061	EL 220MF 35V	D310	2398611	DI 1SS254 (31V/27V)
C91K	276717	PF 0.1MF 50V +5%	D390	2398611	DI 1SS254
Δ C920	279697	PF 0.1MF +20% 250V	D391	2398611	DI 1SS254
Δ C969	248593	CD 4700PF +80-20% 250V	D393	2398611	ZD HZS9C2 (31UX5B/27UX5B)
CA01	800047	EL 100MF 6.3V (35V)	D401	2398611	ZD HZS3A2
CMF1	800015	EL 10MF 16V (35V)	D402	2398611	ZD HZS3A2
CMF2	800049	EL 100MF 16V (35V)	D403	2398611	DI 1SS254
CMF3	0284623R	EL 1MF 50V (35V)	D404	2398611	DI 1SS254
CP0501	2381126	R/C RECEIVER SPS-409-1F(35V)	D405	2398611	DI 1SS254
CW01	0284621R	EL 0.47MF 50V (31UX5B/27UX5B)			

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
D406	2398611	DI 1SS254	D90K	2339833M	ZD HZS5A3
D407	2398611	DI 1SS254	D910	2338944	DI FML-G12S (F)
D410	2339889	ZD HZS12C3 (35V)	D912	23394811	DI AS01Z
D501	2339868M	ZD HZS9C2	D913	2339835M	ZD HZS5B2TA
D502	2339868M	ZD HZS9C2	D914	23394911	DI AM01Z
D503	2339868M	ZD HZS9C2	D915	2339848	ZD HZS-6-C2
D601	2398611	DI 1SS254	D916	2339848	ZD HZS-6-C2
D602	2398611	DI 1SS254	D917	23394911	DI AM01Z
D605	2398611	DI 1SS254	D920	2398611	DI 1SS254
D620	2339862M	ZD HZS9A2	D921	2339191M	ZD HZS20-1L TA
D621	23394911	DI AM01Z	DW01	23394911	DI AM01Z (31UX5B/27UX5B)
D622	23394911	DI AM01Z	DW02	23394911	DI AM01Z (31UX5B/27UX5B)
D623	2398611	DI 1SS254	DW03	23394911	DI AM01Z (31UX5B/27UX5B)
D626	2398611	DI 1SS254 (EXCEPT 27CX4B/27CX3B)	DW04	23394911	DI AM01Z (31UX5B/27UX5B)
D627	2398611	DI 1SS254	DW05	2398611	DI 1SS254 (31UX5B/27UX5B)
D628	2398611	DI 1SS254	DW06	2398611	DI 1SS254 (31UX5B/27UX5B)
D701	2398611	DI 1SS254	ZD0501	2339885	ZD HZS12B2 (35V)
D703	2398611	DI 1SS254	ZD0502	2339885	ZD HZS12B2 (35V)
D704	2398611	DI 1SS254	ZD3801	2331154	ZD HZ12 (A1-3/B1-3/C1-3)(35V)
D705	CH00031M	DI AU02V1	ZD3802	2331154	ZD HZ12 (A1-3/B1-3/C1-3)(35V)
Δ D707	2339242	ZD HZS33-2L	REMOTE CONTROLS		
Δ D708	2339223	ZD HZS27-3L	E301	2573972	R/C CLU-851GR (31UX5B/27UX5B)
D712	2339251	ZD HZS36-1L	E301	2573922	R/C CLU-692GR (35TX10B/31CX4B/27CX4B)
D713	23394911	DI AM01Z	E301	2573921	R/C CLU-691GR (27CX3B)
D714	2398611	DI 1SS254	FUSES		
D715	2339494	DI FML-G12S(F) (35V)	Δ F601	2722382	FUSE DC 0.75A
Δ D716	2348511	DI RS3FS	Δ F901	2721053	UL FUSE 5A
Δ D717	2348511	DI RS3FS (35V)	Δ F902	2722353	FUSE 1.6A
Δ D718	2336612	DI RU3AM	INTEGRATED CIRCUITS		
D719	2398611	DI 1SS254	I001	CP00201	IC LC864148A-5505
D71A	23394811	DI AS01Z	I002	2381111	IC M6M80021L
D720	2398611	DI 1SS254	I003	2917391	IC MSC11371RS
D721	2335991	ZD HZT-33	I004	2020461	IC AN78L05
D722	2398611	DI 1SS254	Δ I201	2004133	IC LA7674
D72A	2331809	ZD HZ-6 (C3)	I301	2003981	IC BA7604N (LINEAR)
D72H	2331812	ZD HZ7 (A2)	I302	CZ00081	IC LA7952
D73A	2339851	ZD HZS7A1	I401	2004592	IC AN5817K
Δ D73C	23394811	DI AS01Z	I402	CK00121	IC UPC1892
D73E	CH00031M	DI AU02V1 (31UX5B/27UX5B)	Δ I403	2004341	IC AN7178 (LINEAR)
D73F	2398611	DI 1SS254	I404	2366301	IC UPD4052BC
D73H	CH00031M	DI AU02V1	Δ I620	2003541	IC LA7838 (LINEAR)
D73K	CH00031M	DI AU02V1 (31UX5B/27UX5B)	I621	CP00401	IC UPC4558C
D740	2398611	DI 1SS254	I701	2366365	IC AN7809
D741	23394911	DI AM01Z	Δ I720	2000521	IC PC713F6 (LINEAR)
D742	2339851	ZD HZS7A1	Δ I901	2912177	IC STR30130
D743	2339834	ZD HZS5B1	Δ I902	2000521	IC PC713F6 (LINEAR)
D744	2339882M	ZD HZS12F-2	Δ I903	2000465	IC PS2501-1 (KD/LD) (PHOTO COUPLER)
D745	23394911	DI AM01Z (35V/27V)	Δ I904	2000465	IC PS2501-1 (KD/LD) (PHOTO COUPLER)
D750	2398611	DI 1SS254	IY01	2381211	IC M51494L (35V)
D781	2339822	ZD HZS4A2	COILS		
D801	2398611	DI 1SS254	L001	2122253	LA AXIAL COIL 100 MICRO H
D802	2398611	DI 1SS254	L003	2122942	LA AXIAL COIL 8.2 MICRO H $\pm$ 10%
D803	2331781	ZD HZ4 (A1)	L004	2122942	LA AXIAL COIL 8.2 MICRO H $\pm$ 10%
D810	2339601M	ZD HZS2ALL	L005	2122942	LA AXIAL COIL 8.2 MICRO H $\pm$ 10%
D811	2339601M	ZD HZS2ALL	L006	2122942	LA AXIAL COIL 8.2 MICRO H $\pm$ 10%
D812	2339601M	ZD HZS2ALL	L007	2120482	FILTER COIL 100 MICRO H $\pm$ 10% (EXCEPT 27CX3B)
D821	2398611	DI 1SS254	L008	2120482	FILTER COIL 100 MICRO H $\pm$ 10% (EXCEPT 27CX3B)
D822	2398611	DI 1SS254	L010	BH00101	RADIAL COIL
D823	2398611	DI 1SS254	L101	2122253	LA AXIAL COIL 100 MICRO H
Δ D901	2342062	DI D3SBA60-4103	L102	2122253	LA AXIAL COIL 100 MICRO H
D902	23394911	DI AM01Z	L103	2122927	LA AXIAL COIL 0.68 MICRO H
D903	23394911	DI AM01Z	L201	2122253	LA AXIAL COIL 100 MICRO H
D904	2331991	DI R02A	L202	2145982	LA AXIAL COIL
D905	23394811	DI AS01Z	L203	2143672	IF COIL
D906	2339876	ZD HZS11B3	L204	2143678	IF COIL
D907	23394811	DI AS01Z	TRANSISTORS		
D908	23394811	DI AS01Z	Q001	2320596	TR 2SC458C/D SI 230MHZ 200MW
D909	2339812M	ZD HZS3A2	Q002	2320596	TR 2SC458C/D SI 230MHZ 200MW
Δ D90A	2398611	DI 1SS254	Q003	2320596	TR 2SC458C/D SI 230MHZ 200MW
D90C	2398611	DI 1SS254	Q004	2320637	TR 2SA673C/D SI 80MHZ 400MW
D90E	2339835M	ZD HZS5B2TA	Q005	2320663	TR 2SC1213AC SI 80MHZ 400MW
D90F	2398611	DI 1SS254	Q006	2320596	TR 2SC458C/D SI 230MHZ 200MW
D90H	2339835M	ZD HZS5B2TA	Q008	2320596	TR 2SC458C/D SI 230MHZ 200MW

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
L205	2142445	CARRIER FILTER AFS COIL	TRANSISTORS		
L206	2122949	LA AXIAL COIL 33 MICRO H $\pm$ 10%	Q001	2320596	TR 2SC458C/D SI 230MHZ 200MW
L207	2122944	LA AXIAL COIL 12 MICRO H	Q002	2320596	TR 2SC458C/D SI 230MHZ 200MW
L208	2122952	LA AXIAL COIL	Q003	2320596	TR 2SC458C/D SI 230MHZ 200MW
L301	2122253	LA AXIAL COIL 100 MICRO H	Q004	2320637	TR 2SA673C/D SI 80MHZ 400MW
L302	2141148	1H DL COIL	Q005	2320663	TR 2SC1213AC SI 80MHZ 400MW
L303	2122939	LA AXIAL COIL 5.6 MICRO H	Q006	2320596	TR 2SC458C/D SI 230MHZ 200MW
L304	2122943	LA AXIAL COIL 10 MICRO H $\pm$ 10%	Q008	2320596	TR 2SC458C/D SI 230MHZ 200MW
L305	2122947	LA AXIAL COIL 22 MICRO H $\pm$ 10% (31CX4B)	Q009	2320596	TR 2SC458C/D SI 230MHZ 200MW
L305	2122943	LA AXIAL COIL 10 MICRO H $\pm$ 10% (27CX4B/27CX3B)	Q101	2320144	TR 2SC1905
L305	2122943	LA AXIAL COIL 10 MICRO H $\pm$ 10% (35V)	Q201	2320596	TR 2SC458C/D SI 230MHZ 200MW
L308	2122951	LA AXIAL COIL 39 MICRO H $\pm$ 10%	Q202	2320637	TR 2SA673C/D SI 80MHZ 400MW
L309	2122956	LA AXIAL COIL 100 MICRO H $\pm$ 10%	Q203	2320596	TR 2SC458C/D SI 230MHZ 200MW
L311	2122253	LA AXIAL COIL 100 MICRO H	Q301	2320596	TR 2SC458C/D SI 230MHZ 200MW
L601	2122956	LA AXIAL COIL 100 MICRO H $\pm$ 10%	Q302	2320596	TR 2SC458C/D SI 230MHZ 200MW
L602	2122099	FILTER COIL 18 MICRO H (35V)	Q303	2320596	TR 2SC458C/D SI 230MHZ 200MW (31V/27V)
L700	2122938	LA AXIAL COIL 4.7 MICRO H	Q305	2320596	TR 2SC458C/D SI 230MHZ 200MW
L701	2122652	FERRITE CORE	Q306	2320637	TR 2SA673C/D SI 80MHZ 400MW
L702	2124513	LINEARITY COIL	Q308	2320596	TR 2SC458C/D SI 230MHZ 200MW
L703	2771893	FERRITE BEADS CORE	Q309	2320637	TR 2SA673C/D SI 80MHZ 400MW
Δ L704	2275381	CHOKING COIL	Q30A	2320596	TR 2SC458C/D SI 230MHZ 200MW
L705	2122248	LA AXIAL COIL 47 MICRO H	Q30C	2320596	TR 2SC458C/D SI 230MHZ 200MW
L709	2122094	FIXED COIL	Q30E	2320596	TR 2SC458C/D SI 230MHZ 200MW
Δ L710	2122244	LA AXIAL COIL 22 MICROH	Q30H	2320596	TR 2SC458C/D SI 230MHZ 200MW
L711	2122652	FERRITE CORE	Q30K	2320637	TR 2SA673C/D SI 80MHZ 400MW
L712	BH00144	CHOKE COIL (31UX5B/27UX5B)	Q310	2320596	TR 2SC458C/D SI 230MHZ 200MW
L713	2771893	FERRITE BEADS CORE	Q312	2320596	TR 2SC458C/D SI 230MHZ 200MW
L714	2771893	FERRITE BEADS CORE	Q314	2320637	TR 2SA673C/D SI 80MHZ 400MW
L71A	2122652	FERRITE CORE	Q315	2320596	TR 2SC458C/D SI 230MHZ 200MW
L850	2120482	FILTER COIL 100 MICRO H $\pm$ 10%	Q3801	2320598	TR 2SC458C/D (35V)
L851	2122945	LA AXIAL COIL 15 MICRO H $\pm$ 10%	Q3802	2320598	TR 2SC458C/D (35V)
L852	2122945	LA AXIAL COIL 15 MICRO H $\pm$ 10%	Q401	2320637	TR 2SA673C/D SI 80MHZ 400MW
L853	2122945	LA AXIAL COIL 15 MICRO H $\pm$ 10%	Q402	2320596	TR 2SC458C/D SI 230MHZ 200MW
L854	2122956	LA AXIAL COIL 100 MICRO H $\pm$ 10%	Q403	2320637	TR 2SA673C/D SI 80MHZ 400MW
L855	2122956	LA AXIAL COIL 100 MICRO H $\pm$ 10%	Q404	2320596	TR 2SC458C/D SI 230MHZ 200MW
L856	2122956	LA AXIAL COIL 100 MICRO H $\pm$ 10%	Q405	2320596	TR 2SC458C/D SI 230MHZ 200MW
L861	2120468	FERRITE BEADS CORE LEAD 0.8	Q406	2320596	TR 2SC458C/D SI 230MHZ 200MW
L862	2123468	FERRITE BEADS CORE LEAD 0.8	Q407	2320643	TR 2SC1213C SI 80MHZ 400MW
L863	2123468	FERRITE BEADS CORE LEAD 0.8	Q50C	2320596	TR 2SC458C/D SI 230MHZ 200MW
L864	2123468	FERRITE BEADS CORE LEAD 0.8	Q601	2320596	TR 2SC458C/D SI 230MHZ 200MW
L865	2123468	FERRITE BEADS CORE LEAD 0.8	Q602	2320596	TR 2SC458C/D SI 230MHZ 200MW
L866	2123468	FERRITE BEADS CORE LEAD 0.8	Q603	2320637	TR 2SA673C/D SI 80MHZ 400MW
L867	2123468	FERRITE BEADS CORE LEAD 0.8	Q650	2320598	TR 2SC458C/D SI 230MHZ 200MW
L868	2123468	FERRITE BEADS CORE LEAD 0.8	Q701	2323523	TR 2SD789 (D)
L869	2123468	FERRITE BEADS CORE LEAD 0.8	Δ Q702	2315272	TR 2SC4589-03
L871	2123468	FERRITE BEADS CORE LEAD 0.8	Δ Q703	2320637	TR 2SA673C/D SI 80MHZ 400MW
Δ L901	2272293	LINE FILTER LL (T)	Δ Q708	2320596	TR 2SC459C/D SI 230MHZ 200MW
Δ L902	2121676	FIXED COIL	Q709	2320637	TR 2SA673C/D SI 80MHZ 400MW
L905	2122652	FERRITE CORE	Q70A	2323431	TR 2SC1983 SI
Δ L905	2229022	DEGAUSSING COIL (31V/27V)	Q70H	2315411	TR 2SD2012
L906	2122652	FERRITE CORE	Q710	2320637	TR 2SA673C/D SI 80MHZ 400MW
L907	2122652	FERRITE CORE	Q750	2320596	TR 2SC458C/D SI 230MHZ 200MW
L908	2122652	FERRITE CORE	Q751	2320637	TR 2SA673C/D SI 80MHZ 400MW
L909	2122099	FILTER COIL 18 MICRO H	Q752	2320663	TR 2SC1213AC SI 80MHZ 400MW
L90A	2122263M	LA AXIAL COIL	Q752	2323434	TR 2SC1983 O/Y SI
L920	2122653	FERRITE BEADS CORE	Q753	2321321	TR 2SA844 (D/E)
L922	2220586	CHOKE COIL TSL0707470K	Q761	2320596	TR 2SC458C/D SI 230MHZ 200MW
Δ L970	2229023	DEGAUSSING COIL (35V)	Q801	2320637	TR 2SA673C/D SI 80MHZ 400MW
LA01	2122253	LA AXIAL COIL 100 MICRO H(35V)	Q802	2320637	TR 2SA673C/D SI 80MHZ 400MW
LMFC	BZ00411	M.F. COIL (35V)	Q803	2320637	TR 2SA673C/D SI 80MHZ 400MW
LW01	2122943	LA AXIAL COIL 10 MICRO H $\pm$ 10% (31UX5B/27UX5B)	Q804	2320637	TR 2SA673C/D SI 80MHZ 400MW
LW02	2123468	FERRITE BEADS CORE LEAD 0.8 (31UX5B/27UX5B)	Q805	2320637	TR 2SA673C/D SI 80MHZ 400MW
LW03	2123468	FERRITE BEADS CORE LEAD 0.8 (31UX5B/27UX5B)	Q806	2320596	TR 2SC458C/D SI 230MHZ 200MW
LW04	2123468	FERRITE BEADS CORE LEAD 0.8 (31UX5B/27UX5B)	Q807	2320596	TR 2SC458C/D SI 230MHZ 200MW
LY01	2122253	LA AXIAL COIL 100 MICRO H (35V)	Q808	2320596	TR 2SC458C/D SI 230MHZ 200MW
INSTRUCTION BOOKS					
N201	QR00621	INSTRUCTION MANUAL (31V)	Q809	2320637	TR 2SA673C/D SI 80MHZ 400MW
N201	QR00921	INSTRUCTION MANUAL (27V)	Q810	2320637	TR 2SA673C/D SI 80MHZ 400MW
N201	QR00611	INSTRUCTION MANUAL (35V)	Q811	2320637	TR 2SA673C/D SI 80MHZ 400MW
			Q812	2320596	TR 2SC458C/D SI 230MHZ 200MW
			Q813	2320596	TR 2SC458C/D SI 2

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
Q815	2320637	TR 2SA673C/D SI 80MHZ 400MW	R028	700043	CF 1.5K OHM +5% 1/16W
Q851	2320591	TR 2SC458B/C SI 230MHZ 200MW	R029	700052	CF 6.8K OHM +5% 1/16W
Q852	2320591	TR 2SC458B/C SI 230MHZ 200MW	R02A	700056	CF 15K OHM +5% 1/16W
Q853	2320591	TR 2SC458B/C SI 230MHZ 200MW	R02C	700059	CF 27K OHM +5% 1/16W
Q854	2315491	TR 2SC4544	R02E	700056	CF 15K OHM +5% 1/16W
Q855	2315491	TR 2SC4544	R02H	700058	CF 22K OHM +5% 1/16W
Q856	2315491	TR 2SC4544	R02K	700059	CF 27K OHM +5% 1/16W
Q857	2320596	TR 2SC458C/D SI 230MHZ 200MW	R030	700056	CF 15K OHM +5% 1/16W
Q864	2320596	TR 2SC458C/D SI 230MHZ 200MW	R031	700056	CF 15K OHM +5% 1/16W
Q901	2327883	TR 2SA1207	R032	700047	CF 3.3K OHM +5% 1/16W
Q904	2326216	TR 2SC3116 S/T	R033	700052	CF 6.8K OHM +5% 1/16W
Δ Q905	2328451	TR FN651	R034	700053	CF 8.2K OHM +5% 1/16W
Q906	2320631	TR 2SA673B/C SI 80MHZ 400MW	R035	700056	CF 15K OHM +5% 1/16W
Q907	2323526	TR 2SD789 D/E	R036	700055	CF 12K OHM +5% 1/16W
Q908	2320591	TR 2SC458B/C SI 230MHZ 200MW	R037	700041	CF 1K OHM +5% 1/16W
Q909	2320596	TR 2SC458C/D SI 230MHZ 200MW	R038	700041	CF 1K OHM +5% 1/16W
Q90A	2320681	TR 2SA673A B/C SI 80MHZ 400MW	R039	700041	CF 1K OHM +5% 1/16W
Q90C	2326631	THYRISTOR CR5AS-8	R03A	700041	CF 1K OHM +5% 1/16W
Q90H	2320663	TR 2SC1213AC SI 80MHZ 400MW	R03C	700041	CF 1K OHM +5% 1/16W
QMF1	2320643	TR 2SC1213C (35V)	R03E	700041	CF 1K OHM +5% 1/16W
QW02	2320598	TR 2SC458B/C/D SI 230MHZ 200MW (31/27UX5B)	R03H	700041	CF 1K OHM +5% 1/16W
QW03	2320598	TR 2SC458B/C SI 230MHZ 200MW (31/27UX5B)	R03K	700041	CF 1K OHM +5% 1/16W
QW04	2320598	TR 2SC458B/C SI 230MHZ 200MW (31/27UX5B)	R040	700041	CF 1K OHM +5% 1/16W (EXCEPT 27CX3B)
QW05	2320598	TR 2SC458B/C SI 230MHZ 200MW (31/27UX5B)	R041	700041	CF 1K OHM +5% 1/16W
QW06	2320598	TR 2SC458B/C SI 230MHZ 200MW (31/27UX5B)	R042	700041	CF 1K OHM +5% 1/16W
QW07	2320643	TR 2SC1213C SI 80MHZ 400MW (31/27UX5B)	R043	700041	CF 1K OHM +5% 1/16W
QW08	2321351	TR 2SA836/844 SI 200MHZ 300MW (31/27UX5B)	R044	700054	CF 10K OHM +5% 1/16W
QW09	2315381	TR 2SA1837 (31UX5B/27UX5B)	R045	700063	CF 47K OHM +5% 1/16W
QW10	2315391	TR 2SC4793 (31UX5B/27UX5B)	R046	700067	CF 100K OHM +5% 1/16W
QW11	2320598	TR 2SC458B/C SI 230MHZ 200MW (31/27UX5B)	R047	700045	CF 2.2K OHM +5% 1/16W
QW12	2320598	TR 2SC458B/C SI 230MHZ 200MW (31/27UX5B)	R048	700047	CF 3.3K OHM +5% 1/16W
QW13	2320596	TR 2SC458C/D SI 230MHZ 200MW (31/27UX5B)	R049	187086	CF 7.5K OHM +5% 1/16W
QY01	2320596	TR 2SC458C/D (35V)	R04A	700045	CF 2.2K OHM +5% 1/16W
QY02	2320596	TR 2SC458C/D (35V)	R04C	700041	CF 1K OHM +5% 1/16W
		RESISTORS	R04E	700041	CF 1K OHM +5% 1/16W
R001	700041	CF 1K OHM +5% 1/16W	R04H	700045	CF 2.2K OHM +5% 1/16W
R002	700041	CF 1K OHM +5% 1/16W	R04K	700041	CF 1K OHM +5% 1/16W
R003	700041	CF 1K OHM +5% 1/16W	R050	700041	CF 1K OHM +5% 1/16W
R004	700041	CF 1K OHM +5% 1/16W (31V/27V)	R0504	100065	CF 1K OHM +5% 1/8W (35V)
R005	700041	CF 1K OHM +5% 1/16W	R051	700041	CF 1K OHM +5% 1/16W
R006	700041	CF 1K OHM +5% 1/16W	R0516	100065	CF 1K OHM +5% 1/8W (35V)
R007	700041	CF 1K OHM +5% 1/16W	R0517	700043	CF 1.5K OHM +5% 1/16W (35V)
R008	700049	CF 4.7K OHM +5% 1/16W	R0518	700046	CF 2.7K OHM +5% 1/16W (35V)
R009	700041	CF 1K OHM +5% 1/16W	R0519	700049	CF 4.7K OHM +5% 1/16W (35V)
R00A	700041	CF 1K OHM +5% 1/16W	R0520	100065	CF 1K OHM +5% 1/8W (35V)
R00C	700067	CF 100K OHM +5% 1/16W	R053	700053	CF 8.2K OHM +5% 1/16W
R00E	700051	CF 5.6K OHM +5% 1/16W	R054	700054	CF 10K OHM +5% 1/16W
R00H	700067	CF 100K OHM +5% 1/16W	R055	700054	CF 10K OHM +5% 1/16W
R00K	700064	CF 56K OHM +5% 1/16W	R056	700054	CF 10K OHM +5% 1/16W
R010	700045	CF 2.2K OHM +5% 1/16W	R057	700041	CF 1K OHM +5% 1/16W
R011	700049	CF 4.7K OHM +5% 1/16W	R058	700041	CF 1K OHM +5% 1/16W
R012	187066	CF 1.1K OHM +5% 1/16W (31V/27V)	R059	700052	CF 6.8K OHM +5% 1/16W
R013	700041	CF 1K OHM +5% 1/16W (31V/27V)	R05A	700054	CF 10K OHM +5% 1/16W
R014	700043	CF 1.5K OHM +5% 1/16W (31V/27V)	R05C	700041	CF 1K OHM +5% 1/16W
R015	700046	CF 2.7K OHM +5% 1/16W (31V/27V)	R05E	700054	CF 10K OHM +5% 1/16W
R016	700049	CF 4.7K OHM +5% 1/16W (31V/27V)	R05H	700054	CF 10K OHM +5% 1/16W
R017	700032	CF 220 OHM +5% 1/16W	R05K	700058	CF 22K OHM +5% 1/16W
R019	700047	CF 3.3K OHM +5% 1/16W	R060	700058	CF 22K OHM +5% 1/16W
R01A	700041	CF 1K OHM +5% 1/16W	R061	700061	CF 33K OHM +5% 1/16W
R01C	700054	CF 10K OHM +5% 1/16W	R062	100065	CF 1K OHM +5% 1/8W (EXCEPT 27CX3B)
R01E	700041	CF 1K OHM +5% 1/16W	R063	100065	CF 1K OHM +5% 1/8W (EXCEPT 27CX3B)
R01H	700041	CF 1K OHM +5% 1/16W	R064	100065	CF 1K OHM +5% 1/8W (EXCEPT 27CX3B)
R01K	700041	CF 1K OHM +5% 1/16W	R065	700045	CF 2.2K OHM +5% 1/16W
R020	700041	CF 1K OHM +5% 1/16W	Δ R066	119514	FR 10 OHM +5% 1/4W (EXCEPT 27CX3B)
R021	700036	CF 470 OHM +5% 1/16W	R067	700036	CF 470 OHM +5% 1/16W
R022	700058	CF 22K OHM +5% 1/16W	R068	700041	CF 1K OHM +5% 1/16W
R023	700048	CF 3.9K OHM +5% 1/16W	R069	700041	CF 1K OHM +5% 1/16W
R024	700038	CF 680 OHM +5% 1/16W	R06A	700041	CF 1K OHM +5% 1/16W (31UX5B/27UX5B)
R025	700041	CF 1K OHM +5% 1/16W	R06C	700051	CF 5.6K OHM +5% 1/16W
R026	700052	CF 6.8K OHM +5% 1/16W	R06E	700049	CF 4.7K OHM +5% 1/16W
R027	700045	CF 2.2K OHM +5% 1/16W	R06F	700054	CF 10K OHM +5% 1/16W
			R06H	700041	CF 1K OHM +5% 1/16W
			R06K	700067	CF 100K OHM +5% 1/16W

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R070	700049	CF 4.7K OHM +5% 1/16W	R317	700029	CF 150 OHM +5% 1/16W
R071	700054	CF 10K OHM +5% 1/16W (31V/27V)	R318	187060	CF 620 OHM +5% 1/16W
R072	700047	CF 3.3K OHM +5% 1/16W	R31C	700041	CF 1K OHM +5% 1/16W
R073	700047	CF 3.3K OHM +5% 1/16W	R31E	700063	CF 47K OHM +5% 1/16W
R074	700047	CF 3.3K OHM +5% 1/16W	R31H	700041	CF 1K OHM +5% 1/16W
R080	700054	CF 10K OHM +5% 1/16W	R31K	700041	CF 1K OHM +5% 1/16W
R081	700054	CF 10K OHM +5% 1/16W	R320	700063	CF 47K OHM +5% 1/16W
R083	700049	CF 4.7K OHM +5% 1/16W	R321	700037	CF 560 OHM +5% 1/16W
R084	700058	CF 22K OHM +5% 1/16W	R322	700041	CF 1K OHM +5% 1/16W
R085	700067	CF 100K OHM +5% 1/16W	R323	150282	VR 500 OHM(B)
R086	700031	CF 180 OHM +5% 1/16W	R324	700038	CF 680 OHM +5% 1/16W
R087	700041	CF 1K OHM +5% 1/16W	R325	700045	CF 2.2K OHM +5% 1/16W
R08C	700056	CF 15K OHM +5% 1/16W	R326	700032	CF 220 OHM +5% 1/16W
R091	700058	CF 22K OHM +5% 1/16W	R327	700033	CF 270 OHM +5% 1/16W
R094	700049	CF 4.7K OHM +5% 1/16W	R328	700033	CF 270 OHM +5% 1/16W
R095	700041	CF 1K OHM +5% 1/16W	R329	700039	CF 820 OHM +5% 1/16W
R096	700054	CF 10K OHM +5% 1/16W	R32C	700037	CF 560 OHM +5% 1/16W
R097	700054	CF 10K OHM +5% 1/16W	R32E	150283	VR 1K OHM-B
R098	700049	CF 4.7K OHM +5% 1/16W	R32H	700039	CF 820 OHM +5% 1/16W
R099	700054	CF 10K OHM +5% 1/16W	R32K	700037	CF 560 OHM +5% 1/16W
R09A	700054	CF 10K OHM +5% 1/16W	R330	700041	CF 1K OHM +5% 1/16W
R09C	700041	CF 1K OHM +5% 1/16W	R331	700027	CF 100 OHM +5% 1/16W
R09H	700054	CF 10K OHM +5% 1/16W	R332	700038	CF 680 OHM +5% 1/16W
R09K	700041	CF 1K OHM +5% 1/16W	R333	150282	VR 500 OHM (B)
R101	700031	CF 180 OHM +5% 1/16W	R334	100059	CF 560 OHM +5% 1/8W
R102	700046	CF 2.7K OHM +5% 1/16W	R335	700032	CF 220 OHM +5% 1/16W
R103	700014	CF 10 OHM +5% 1/16W	R336	700054	CF 10K OHM +5% 1/16W
R104	700042	CF 1.2K OHM +5% 1/16W	R337	700058	CF 22K OHM +5% 1/16W
R105	700023	CF 47 OHM +5% 1/16W	R338	187056	CF 430 OHM +5% 1/16W
R106	700033	CF 270 OHM +5% 1/16W	R339	700037	CF 560 OHM +5% 1/16W
R107	100065	CF 1K OHM +5% 1/8W	R33A	700034	CF 330 OHM +5% 1/16W
R108	187040	CF 91 OHM +5% 1/16W	R33C	700037	CF 560 OHM +5% 1/16W
R109	700048	CF 3.9K OHM +5% 1/16W	R33E	700057	CF 18K OHM +5% 1/16W
R110	700048	CF 3.9K OHM +5% 1/16W	R33H	700032	CF 220 OHM +5% 1/16W
R201	700058	CF 22K OHM +5% 1/16W	R340	150287	VR 10K OHM-B
R202	150287	VR 10K OHM-B	R341	700052	CF 6.8K OHM +5% 1/16W
R203	700067	CF 100K OHM +5% 1/16W	R342	700049	CF 4.7K OHM +5% 1/16W
R204	700043	CF 1.5K OHM +5% 1/16W	R343	700049	CF 4.7K OHM +5% 1/16W
R205	700049	CF 4.7K OHM +5% 1/16W	R344	700051	CF 5.6K OHM +5% 1/16W
R206	700027	CF 100 OHM +5% 1/16W	R345	700031	CF 180 OHM +5% 1/16W
R207	700041	CF 1K OHM +5% 1/16W	R346	700061	CF 33K OHM +5% 1/16W
R208	700033	CF 270 OHM +5% 1/16W	R348	100041	CF 100 OHM +5% 1/8W
R209	700051	CF 5.6K OHM +5% 1/16W	R349	100041	CF 100 OHM +5% 1/8W (EXCEPT 27CX3B)
R20A	100121	CF 220K OHM +5% 1/8W	R34A	100038	CF 75 OHM +5% 1/8W
R20C	100127	CF 390K OHM +5% 1/8W	R34C	100041	CF 100 OHM +5% 1/8W
R20E	700041	CF 1K OHM +5% 1/16W	R34H	100038	CF 75 OHM +5% 1/8W
R20H	100117	CF 150K OHM +5% 1/8W	R34K	100038	CF 75 OHM +5% 1/8W (EXCEPT 33V/27CX3B)
R20K	700041	CF 1K OHM +5% 1/16W	R350	100041	CF 100 OHM +5% 1/8W
R210	700036	CF 470 OHM +5% 1/16W	R351	100041	CF 100 OHM +5% 1/8W
R211	100057	CF 470 OHM +5% 1/8W	R352	700041	CF 1K OHM +5% 1/16W
R212	700027	CF 100 OHM +5% 1/16W	R354	700027	CF 100 OHM +5% 1/16W
R213	700041	CF 1K OHM +5% 1/16W	R355	700049	CF 4.7K OHM +5% 1/16W
R214	700036	CF 470 OHM +5% 1/16W	R356	700054	CF 10K OHM +5% 1/16W
R215	700037	CF 560 OHM +5% 1/16W	R358	700056	CF 15K OHM +5% 1/16W
R216	700027	CF 100 OHM +5% 1/16W	R359	700054	CF 10K OHM +5% 1/16W
R217	700027	CF 100 OHM +5% 1/16W	R35A	700057	CF 18K OHM +5% 1/16W
R218	700036	CF 470 OHM +5% 1/16W	R35E	700041	CF 1K OHM +5% 1/16W
R302	100127	CF 390K OHM +5% 1/8W	R360	700041	CF 1K OHM +5% 1/16W
R303	700056	CF 15K OHM +5% 1/16W	R361	100038	CF 75 OHM +5% 1/8W
R304	100127	CF 390K OHM +5% 1/8W (31V/27V)	R362	100038	CF 75 OHM +5% 1/8W
R305	700036	CF 470 OHM +5% 1/16W	R364	700054	CF 10K OHM +5% 1/16W
R306	700033	CF 270 OHM +5% 1/16W	R365	700034	CF 330 OHM +5% 1/16W
R307	700035	CF 390 OHM +5% 1/16W	R366	700054	CF 10K OHM +5% 1/16W
R308	700038	CF 680 OHM +5% 1/16W	R367	700054	CF 10K OHM +5% 1/16W
R309	700037	CF 560 OHM +5% 1/16W	R368	100041	CF 10 OHM +5% 1/8W (31V/27V)
R30E	700054	CF 10K OHM +5% 1/16W	R3801	187038	CF 75 OHM +5% 1/16W (35V)
R30H	700038	CF 680 OHM +5% 1/16W	R3802	100041	CF 100 OHM +5% 1/8W (35V)
R30K	700063	CF 47K OHM +5% 1/16W	R3803	700041	CF 1K OHM +5% 1/16W (35V)
R310	700054	CF 10K OHM +5% 1/16W	R3804	700041	CF 1K OHM +5% 1/16W (35V)
R311	700025	CF 68 OHM +5% 1/16W (31V/27V)	R3805	100123	CF 270K OHM +5% 1/8W (35V)
R312	100033	CF 47 OHM +5% 1/8W	R3806	700064	CF 56K OHM +5% 1/16W (35V)
R313	700055	CF 12K OHM +5% 1/16W (31V/27V)	R3807	700047	CF 3.3K OHM +5% 1/16W (35V)
R316	700037	CF 560 OHM +5% 1/16W	R3808	700045	CF 2.2K OHM +5% 1/16W (35V)

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R3809	700064	CF 56K OHM $\pm$ 5% 1/16W (35V)	R442	700041	CF 1K OHM $\pm$ 5% 1/16W
R3810	100123	CF 270K OHM $\pm$ 5% 1/8W (35V)	R443	700041	CF 1K OHM $\pm$ 5% 1/16W
R3811	700041	CF 1K OHM $\pm$ 5% 1/16W (35V)	R444	700048	CF 3.9K OHM $\pm$ 5% 1/16W
R3812	700041	CF 1K OHM $\pm$ 5% 1/16W (35V)	R445	700048	CF 3.9K OHM $\pm$ 5% 1/16W
R3813	100041	CF 100 OHM $\pm$ 5% 1/8W (35V)	R446	700034	CF 330 OHM $\pm$ 5% 1/16W
R390	700035	CF 390 OHM $\pm$ 5% 1/16W	R447	100113	CF 100K OHM $\pm$ 5% 1/8W
R391	100133	CF 680K OHM $\pm$ 5% 1/8W (31V/27V)	R448	700034	CF 330 OHM $\pm$ 5% 1/16W
R392	700032	CF 220 OHM $\pm$ 5% 1/16W	Δ R449	1195051	FR 2.2 OHM $\pm$ 5% 1/4W
R393	100049	CF 220 OHM $\pm$ 5% 1/8W	R44A	700063	CF 47K OHM $\pm$ 5% 1/16W
R394	700056	CF 15K OHM $\pm$ 5% 1/16W (31V/27V)	R44C	700063	CF 47K OHM $\pm$ 5% 1/16W
R395	700027	CF 100 OHM $\pm$ 5% 1/16W	R44E	100077	CF 3.3K OHM $\pm$ 5% 1/8W
R396	700042	CF 1.2K OHM $\pm$ 5% 1/16W	Δ R44H	1195051	FR 2.2 OHM $\pm$ 5% 1/4W
R397	700051	CF 5.6K OHM $\pm$ 5% 1/16W	Δ R44K	119687	FR 4.7 OHM $\pm$ 5% 1/4W
R398	700057	CF 18K OHM $\pm$ 5% 1/16W (31V/27V)	R450	100077	CF 3.3K OHM $\pm$ 5% 1/8W
R39A	700054	CF 10K OHM $\pm$ 5% 1/16W (35V)	R451	100133	CF 680K OHM $\pm$ 5% 1/8W (35V)
R401	700041	CF 1K OHM $\pm$ 5% 1/16W	R452	700063	CF 47K OHM $\pm$ 5% 1/16W
R402	700034	CF 330 OHM $\pm$ 5% 1/16W	R453	700045	CF 2.2K OHM $\pm$ 5% 1/16W
R403	700041	CF 1K OHM $\pm$ 5% 1/16W	R454	700063	CF 47K OHM $\pm$ 5% 1/16W
R404	700062	CF 39K OHM $\pm$ 5% 1/16W	R458	700063	CF 47K OHM $\pm$ 5% 1/16W
R405	700041	CF 1K OHM $\pm$ 5% 1/16W	R45A	700049	CF 4.7K OHM $\pm$ 5% 1/16W
R406	700054	CF 10K OHM $\pm$ 5% 1/16W	R45H	700049	CF 4.7K OHM $\pm$ 5% 1/16W
R407	700041	CF 1K OHM $\pm$ 5% 1/16W	R470	100065	CF 1K OHM $\pm$ 5% 1/8W
R408	700041	CF 1K OHM $\pm$ 5% 1/16W	R471	100113	CF 100K OHM $\pm$ 5% 1/8W
R409	700034	CF 330 OHM $\pm$ 5% 1/16W	R472	700063	CF 47K OHM $\pm$ 5% 1/16W
R40A	700041	CF 1K OHM $\pm$ 5% 1/16W	R473	100113	CF 100K OHM $\pm$ 5% 1/8W
R40C	700054	CF 10K OHM $\pm$ 5% 1/16W	R474	100065	CF 1K OHM $\pm$ 5% 1/8W
R40E	700063	CF 47K OHM $\pm$ 5% 1/16W	R475	700063	CF 47K OHM $\pm$ 5% 1/16W
R40H	700062	CF 39K OHM $\pm$ 5% 1/16W	R476	100113	CF 100K OHM $\pm$ 5% 1/8W
R40K	700063	CF 47K OHM $\pm$ 5% 1/16W	R477	100065	CF 1K OHM $\pm$ 5% 1/8W
R410	700063	CF 47K OHM $\pm$ 5% 1/16W	R478	700063	CF 47K OHM $\pm$ 5% 1/16W
R411	700063	CF 47K OHM $\pm$ 5% 1/16W	R479	100113	CF 100K OHM $\pm$ 5% 1/8W
R412	700063	CF 47K OHM $\pm$ 5% 1/16W	R47A	100065	CF 1K OHM $\pm$ 5% 1/8W
R413	700063	CF 47K OHM $\pm$ 5% 1/16W	R47C	100065	CF 1K OHM $\pm$ 5% 1/8W
R415	187082	CF 5.1K OHM $\pm$ 5% 1/16W	R47E	100113	CF 100K OHM $\pm$ 5% 1/8W
R416	100116	CF 130K OHM $\pm$ 5% 1/8W	R47F	100065	CF 1K OHM $\pm$ 5% 1/8W
R417	100117	CF 150K OHM $\pm$ 5% 1/8W	R47H	700063	CF 47K OHM $\pm$ 5% 1/16W
R418	150160	VR 10K OHM-B $\pm$ 30%	R47K	100113	CF 100K OHM $\pm$ 5% 1/8W
R419	700036	CF 470 OHM $\pm$ 5% 1/16W	R480	100065	CF 1K OHM $\pm$ 5% 1/8W (EXCEPT 27CX3B)
R41A	700036	CF 470 OHM $\pm$ 5% 1/16W	R481	100113	CF 100K OHM $\pm$ 5% 1/8W (EXCEPT 35V/27CX3B)
R41C	700041	CF 1K OHM $\pm$ 5% 1/16W	R482	700063	CF 47K OHM $\pm$ 5% 1/16W (EXCEPT 27CX3B)
R41E	700046	CF 2.7K OHM $\pm$ 5% 1/16W	R483	100065	CF 1K OHM $\pm$ 5% 1/8W (EXCEPT 27CX3B)
R41K	150287	VR 10K OHM-B	R484	100113	CF 100K OHM $\pm$ 5% 1/8W (EXCEPT 35V/27CX3B)
R420	100125	CF 330K OHM $\pm$ 5% 1/8W	R485	700063	CF 47K OHM $\pm$ 5% 1/16W (EXCEPT 27CX3B)
R421	700054	CF 10K OHM $\pm$ 5% 1/16W	Δ R490	119514	FR 10 OHM $\pm$ 5% 1/4W
R422	700045	CF 2.2K OHM $\pm$ 5% 1/16W	R501	700057	CF 18K OHM $\pm$ 5% 1/16W
R423	150157	VR 200K OHM-B RV-6	R502	700058	CF 22K OHM $\pm$ 5% 1/16W
R424	700061	CF 33K OHM $\pm$ 5% 1/16W	R519	700054	CF 10K OHM $\pm$ 5% 1/16W
R425	100133	CF 680K OHM $\pm$ 5% 1/8W	R51A	700041	CF 1K OHM $\pm$ 5% 1/16W
R427	700067	CF 100K OHM $\pm$ 5% 1/16W	R51C	700054	CF 10K OHM $\pm$ 5% 1/16W
R428	100116	CF 130K OHM $\pm$ 5% 1/8W	R51E	100049	CF 220 OHM $\pm$ 5% 1/8W
R429	150290	VR 50K OHM (B)	R51H	700054	CF 10K OHM $\pm$ 5% 1/16W
R42A	150290	VR 50K OHM (B)	R51K	100049	CF 220 OHM $\pm$ 5% 1/8W
R42E	700047	CF 3.3K OHM $\pm$ 5% 1/16W	R520	100049	CF 220 OHM $\pm$ 5% 1/8W
R42F	700036	CF 470 OHM $\pm$ 5% 1/16W	R521	700061	CF 33K OHM $\pm$ 5% 1/16W
R42G	100131	CF 560K OHM $\pm$ 5% 1/8W	R522	700031	CF 180 OHM $\pm$ 5% 1/16W
R42K	100123	CF 270K OHM $\pm$ 5% 1/8W	R601	700058	CF 22K OHM $\pm$ 5% 1/16W
R430	700041	CF 1K OHM $\pm$ 5% 1/16W	R602	700027	CF 100 OHM $\pm$ 5% 1/16W
R431	700041	CF 1K OHM $\pm$ 5% 1/16W	R603	700059	CF 27K OHM $\pm$ 5% 1/16W
R432	700046	CF 2.7K OHM $\pm$ 5% 1/16W	R604	700054	CF 10K OHM $\pm$ 5% 1/16W
R433	700041	CF 1K OHM $\pm$ 5% 1/16W	R607	100119	CF 180K OHM $\pm$ 5% 1/8W
R434	700041	CF 1K OHM $\pm$ 5% 1/16W	R608	700038	CF 680 OHM $\pm$ 5% 1/8W
R435	700037	CF 560 OHM $\pm$ 5% 1/16W	R609	700042	CF 1.2K OHM $\pm$ 5% 1/16W
R436	700037	CF 560 OHM $\pm$ 5% 1/16W	R60A	700041	CF 1K OHM $\pm$ 5% 1/16W
R437	700037	CF 560 OHM $\pm$ 5% 1/16W	R60C	100055	CF 390 OHM $\pm$ 5% 1/8W
R438	700037	CF 560 OHM $\pm$ 5% 1/16W	R60E	700041	CF 1K OHM $\pm$ 5% 1/16W
R439	700041	CF 1K OHM $\pm$ 5% 1/16W	R60H	700032	CF 220 OHM $\pm$ 5% 1/16W
R43A	700041	CF 1K OHM $\pm$ 5% 1/16W	R610	700048	CF 3.9K OHM $\pm$ 5% 1/16W
R43C	700041	CF 1K OHM $\pm$ 5% 1/16W	R613	700055	CF 12K OHM $\pm$ 5% 1/16W
R43E	700054	CF 10K OHM $\pm$ 5% 1/16W	R614	700048	CF 3.9K OHM $\pm$ 5% 1/16W
R43H	700041	CF 1K OHM $\pm$ 5% 1/16W	R621	700035	CF 390 OHM $\pm$ 5% 1/16W
R43K	700054	CF 10K OHM $\pm$ 5% 1/16W	R622	700065	CF 68K OHM $\pm$ 5% 1/16W
R440	700045	CF 2.2K OHM $\pm$ 5% 1/16W	R623	700058	CF 22K OHM $\pm$ 5% 1/16W
R441	700045	CF 2.2K OHM $\pm$ 5% 1/16W	R624	100131	CF 560K OHM $\pm$ 5% 1/8W

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R625	114135	CF 150 OHM +5% 1/4W	△ R738	700045	CF 2.2K OHM +5% 1/16W
R626	700059	CF 27K OHM +5% 1/16W	R739	700041	CF 1K OHM +5% 1/16W
R627	100129	CF 470K OHM +5% 1/8W	R73A	114049	CF 22 OHM +5% 1/4W
R628	187106	CF 51K OHM +5% 1/16W	R73C	700018	CF 22 OHM +5% 1/16W
R629	700064	CF 56K OHM +5% 1/16W	△ R73E	119838	FR 0.5 OHM +5% 1/4W
R62A	150160	VR 10K OHM-B +30%	R73H	114161	CF 1K OHM +5% 1/4W
R62C	119841	MF 0.82 OHM +5% 1W	R73K	700036	CF 470 OHM +5% 1/16W
R62H	700044	CF 1.8K OHM +5% 1/16W	R740	110125	MF 150 OHM +5% 1W (31V/27V)
R62K	700037	CF 560 OHM +5% 1/16W	△ R745	700054	CF 10K OHM +5% 1/16W
R630	700032	CF 220 OHM +5% 1/16W	△ R746	700053	CF 8.2K OHM +5% 1/16W
R631	700065	CF 68K OHM +5% 1/16W	R74A	100061	CF 680 OHM +5% 1/8W
R632	114163	CF 1.2K OHM +5% 1/4W(31V)	R74C	100107	CF 56K OHM +5% 1/8W
R632	114161	CF 1K OHM +5% 1/4W (35V)	R74H	100105	CF 47K OHM +5% 1/8W
R634	114161	CF 1K OHM +5% 1/4W (35V)	R750	100073	CF 2.2K OHM +5% 1/8W
R636	113742	CF 470 OHM +5% 1/2W	R751	700065	CF 68K OHM +5% 1/16W
R637	110115	MF 56 OHM +5% 1W	R752	150309	VR 100K OHM-B
R647	700044	CF 1.8K OHM +5% 1/16W	R753	700056	CF 15K OHM +5% 1/16W
R648	114143	CF 330 OHM +5% 1/4W	R754	700038	CF 680 OHM +5% 1/16W
R649	100056	CF 430 OHM +5% 1/8W	R755	150306	VR 20K OHM-B
R64C	700049	CF 4.7K OHM +5% 1/16W	R756	700057	CF 18K OHM +5% 1/16W
R650	700067	CF 100K OHM +5% 1/16W	R757	700064	CF 56K OHM +5% 1/16W
R651	100125	CF 330K OHM +5% 1/8W	R758	700051	CF 5.6K OHM +5% 1/16W
R651	700066	CF 82K OHM +5% 1/16W	R759	700064	CF 56K OHM +5% 1/16W
R652	700057	CF 18K OHM +5% 1/16W	R760	700066	CF 82K OHM +5% 1/16W
R652	700066	CF 82K OHM +5% 1/16W	R762	700058	CF 22K OHM +5% 1/16W
R653	700064	CF 56K OHM +5% 1/16W	R763	110259	MF 3.9K OHM +5% 2W
R654	700057	CF 18K OHM +5% 1/16W	R764	100075	CF 2.7K OHM +5% 1/8W
R655	700063	CF 47K OHM +5% 1/16W(31V/27V)	R765	100071	CF 1.8K OHM +5% 1/8W
R655	700059	CF 27K OHM +5% 1/16W (35V)	R766	700027	CF 100 OHM +5% 1/16W
R656	700049	CF 4.7K OHM +5% 1/16W	R767	700044	CF 1.8K OHM +5% 1/16W
R657	100119	CF 180K OHM +5% 1/8W(31V/27V)	R768	700056	CF 15K OHM +5% 1/16W
R657	100117	CF 150K OHM +5% 1/8W (35V)	R769	700054	CF 10K OHM +5% 1/16W
R658	700058	CF 22K OHM +5% 1/16W (31V)	R770	100115	CF 120K OHM +5% 1/8W
R658	700038	CF 680 OHM +5% 1/16W (27UX5B)	R771	700055	CF 12K OHM +5% 1/16W
R658	700055	CF 12K OHM +5% 1/16W (35V/27CX4B/27CX3B)	R772	700046	CF 2.7K OHM +5% 1/16W
R659	100117	CF 150K OHM +5% 1/8W	R773	700049	CF 4.7K OHM +5% 1/16W
R663	700059	CF 27K OHM +5% 1/16W	R774	700055	CF 12K OHM +5% 1/16W
R664	700063	CF 47K OHM +5% 1/16W(31V/27V)	R775	150305	VR 10K OHM B
R664	700066	CF 82K OHM +5% 1/16W (35V)	R776	700051	CF 5.6K OHM +5% 1/16W
R665	700064	CF 56K OHM +5% 1/16W	△ R781	100073	CF 2.2K OHM +5% 1/8W
R666	700061	CF 33K OHM +5% 1/16W	R782	700054	CF 10K OHM +5% 1/16W
R667	100133	CF 680K OHM +5% 1/8W	R783	700046	CF 2.7K OHM +5% 1/16W
R668	2340371	TH 112301-9	R785	700054	CF 10K OHM +5% 1/16W
R669	700067	CF 100K OHM +5% 1/16W	R786	110241	MF 680 OHM +5% 2W
R670	700045	CF 2.2K OHM +5% 1/16W	R787	110215	MF 56 OHM +5% 2W (31V/27V)
R671	700065	CF 68K OHM +5% 1/16W	R787	110219	MF 82 OHM +5% 2W (35V)
R701	700036	CF 470 OHM +5% 1/16W	R788	700063	CF 47K OHM +5% 1/16W
R702	700045	CF 2.2K OHM +5% 1/16W	R789	700061	CF 33K OHM +5% 1/16W
R703	700041	CF 1K OHM +5% 1/16W	R790	700046	CF 2.7K OHM +5% 1/16W
R704	150287	VR 10K OHM-B	R791	700049	CF 4.7K OHM +5% 1/16W
△ R705	700054	CF 10K OHM +5% 1/16W	R792	114203	CF 12K OHM +5% 1/4W (31UX5B/27UX5B)
R706	700045	CF 2.2K OHM +5% 1/16W	R793	110177	MF 22K OHM +5% 1W
R707	100045	CF 150 OHM +5% 1/8W	R794	110257	MF 3.3K OHM +5% 2W
R708	100125	CF 330K OHM +5% 1/8W	R798	113760	CF 2.7K OHM +5% 1/2W
R709	114141	CF 270 OHM +5% 1/4W	R801	700043	CF 1.5K OHM +5% 1/16W
R70A	114137	CF 180 OHM +5% 1/4W	R802	700054	CF 10K OHM +5% 1/16W
R710	700033	CF 270 OHM +5% 1/16W	R805	700026	CF 82 OHM +5% 1/16W (31V/27V)
R712	114049	CF 22 OHM +5% 1/4W (31V/27V)	R805	700023	CF 47 OHM +5% 1/16W (35V)
R716	113729	CF 150 OHM +5% 1/2W	R806	150109	VR 200 OHM-B RS-6
R717	700067	CF 100K OHM +5% 1/16W	R807	150302	VR 2K OHM B
△ R718	100037	CF 68 OHM +5% 1/8W	R808	700038	CF 680 OHM +5% 1/16W
R720	114143	CF 330 OHM +5% 1/4W	R809	700038	CF 680 OHM +5% 1/16W
△ R721	119838	FR 0.5 OHM +5% 1/4W	R811	700024	CF 56 OHM +5% 1/16W (31V/27V)
△ R725	1195051	FR 2.2 OHM +5% 1/4W	R811	700026	CF 82 OHM +5% 1/16W (35V)
△ R726	1195051	FR 2.2 OHM +5% 1/4W	R813	700038	CF 680 OHM +5% 1/16W
R727	119688	MF 0.22 OHM +5% 1W	R814	150302	VR 2K OHM B
R728	700044	CF 1.8K OHM +5% 1/16W	R815	700027	CF 100 OHM +5% 1/16W
△ R729	700048	CF 3.9K OHM +5% 1/16W	R816	150109	VR 200 OHM-B RS-6
R732	100077	CF 3.3K OHM +5% 1/8W	R817	700038	CF 680 OHM +5% 1/16W
R733	700051	CF 5.6K OHM +5% 1/16W	R818	150302	VR 2K OHM B
R734	113748	CF 820 OHM +5% 1/2W	R819	700064	CF 56K OHM +5% 1/16W
R735	113754	CF 1.5K OHM +5% 1/2W	R820	100049	CF 220 OHM +5% 1/8W
△ R736	700032	CF 220 OHM +5% 1/16W	R821	100049	CF 220 OHM +5% 1/8W

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R822	100049	CF 220 OHM $\pm$ 5% 1/8W	R90H	114059	CF 56 OHM $\pm$ 5% 1/4W
R824	100063	CF 820 OHM $\pm$ 5% 1/8W	R90K	110125	MF 150 OHM $\pm$ 5% 1W
R825	100063	CF 820 OHM $\pm$ 5% 1/8W	R910	100133	CF 680K OHM $\pm$ 5% 1/8W
R826	100057	CF 470 OHM $\pm$ 5% 1/8W	R912	141159	WW 180 OHM $\pm$ 5% 15W
R827	100057	CF 470 OHM $\pm$ 5% 1/8W	R914	110155	MF 2.7K OHM $\pm$ 5% 1W
R828	100057	CF 470 OHM $\pm$ 5% 1/8W	R915	110261	MF 4.7K OHM $\pm$ 5% 2W
R829	700043	CF 1.5K OHM $\pm$ 5% 1/16W	R916	114221	CF 68K OHM $\pm$ 5% 1/4W
R830	700043	CF 1.5K OHM $\pm$ 5% 1/16W	R917	114209	CF 22K OHM $\pm$ 5% 1/4W
R831	700043	CF 1.5K OHM $\pm$ 5% 1/16W	R918	0100010M	MF 5.1 OHM $\pm$ 5% 1/8W
R832	700032	CF 220 OHM $\pm$ 5% 1/16W	R919	700027	CF 100 OHM $\pm$ 5% 1/16W
R833	700032	CF 220 OHM $\pm$ 5% 1/16W	R91A	700032	CF 220 OHM $\pm$ 5% 1/16W
R834	700032	CF 220 OHM $\pm$ 5% 1/16W	R91C	100101	CF 33K OHM $\pm$ 5% 1/8W
R835	187074	CF 2.4K OHM $\pm$ 5% 1/16W	R91E	110129	MF 220 OHM $\pm$ 5% 1W
R836	700044	CF 1.8K OHM $\pm$ 5% 1/16W	R91F	114171	CF 2.7K OHM $\pm$ 5% 1/4W
R837	700038	CF 680 OHM $\pm$ 5% 1/16W (EXCEPT 27UX5B)	R91H	114053	CF 33 OHM $\pm$ 5% 1/4W
R837	700036	CF 470 OHM $\pm$ 5% 1/16W (27UX5B)	R91K	110141	MF 680 OHM $\pm$ 5% 1W
R838	700035	CF 390 OHM $\pm$ 5% 1/16W	R920	700027	CF 100 OHM $\pm$ 5% 1/16W
R839	700041	CF 1K OHM $\pm$ 5% 1/16W	R921	700067	CF 100K OHM $\pm$ 5% 1/16W
R840	700046	CF 2.7K OHM $\pm$ 5% 1/16W	R922	114179	CF 5.6K OHM $\pm$ 5% 1/4W
R841	700041	CF 1K OHM $\pm$ 5% 1/16W	R923	114149	CF 560 OHM $\pm$ 5% 1/4W
R842	700051	CF 5.6K OHM $\pm$ 5% 1/16W	R924	147620	WW 2.7OHM $\pm$ 10% 7W
R843	700043	CF 1.5K OHM $\pm$ 5% 1/16W	R925	100073	CF 2.2K OHM $\pm$ 5% 1/8W
R844	700052	CF 6.8K OHM $\pm$ 5% 1/16W	R926	700049	CF 4.7K OHM $\pm$ 5% 1/16W
R845	700035	CF 390 OHM $\pm$ 5% 1/16W	R927	700064	CF 56K OHM $\pm$ 5% 1/16W
R846	700041	CF 1K OHM $\pm$ 5% 1/16W	R928	700051	CF 5.6K OHM $\pm$ 5% 1/16W
R847	700041	CF 1K OHM $\pm$ 5% 1/16W	R929	700061	CF 33K OHM $\pm$ 5% 1/16W
R848	700051	CF 5.6K OHM $\pm$ 5% 1/16W	R92A	113750	CF 1K OHM $\pm$ 5% 1/2W
R849	700055	CF 12K OHM $\pm$ 5% 1/16W	R92C	700046	CF 2.7K OHM $\pm$ 5% 1/16W
R850	100041	CF 100 OHM $\pm$ 5% 1/8W	R92E	113725	CF 100 OHM $\pm$ 5% 1/2W
Δ R851	110271	MF 12K OHM $\pm$ 5% 2W (31V/27V)	R92F	113746	CF 680 OHM $\pm$ 5% 1/2W
Δ R851	110367	MF 8.2K OHM $\pm$ 5% 3W (35V)	R92H	700032	CF 220 OHM $\pm$ 5% 1/16W
Δ R852	110271	MF 12K OHM $\pm$ 5% 2W (31V/27V)	R92K	700064	CF 56K OHM $\pm$ 5% 1/16W
Δ R852	110367	MF 8.2K OHM $\pm$ 5% 3W (35V)	R930	700051	CF 5.6K OHM $\pm$ 5% 1/16W
Δ R853	110271	MF 12K OHM $\pm$ 5% 2W (31V/27V)	R931	700051	CF 5.6K OHM $\pm$ 5% 1/16W
Δ R853	110367	MF 8.2K OHM $\pm$ 5% 3W (35V)	R932	700051	CF 5.6K OHM $\pm$ 5% 1/16W
R861	100063	CF 820 OHM $\pm$ 5% 1/8W	Δ R933	119508	FR 56 OHM $\pm$ 5% 1/4W
R862	100063	CF 820 OHM $\pm$ 5% 1/8W	R934	100029	CF 33 OHM $\pm$ 5% 1/8W
R863	100049	CF 220 OHM $\pm$ 5% 1/8W	R935	700051	CF 5.6K OHM $\pm$ 5% 1/16W
R864	700054	CF 10K OHM $\pm$ 5% 1/16W	R936	110197	MF 10 OHM $\pm$ 5% 2W
R865	700048	CF 3.9K OHM $\pm$ 5% 1/16W	R937	700051	CF 5.6K OHM $\pm$ 5% 1/16W
R875	113750	CF 1K OHM $\pm$ 5% 1/2W	R938	110281	MF 33K OHM $\pm$ 5% 2W
R876	113750	CF 1K OHM $\pm$ 5% 1/2W	Δ R939	1195051	FR 2.2 OHM $\pm$ 5% 1/4W
R877	113750	CF 1K OHM $\pm$ 5% 1/2W	R93A	100111	CF 82K OHM $\pm$ 5% 1/8W
R878	100049	CF 220 OHM $\pm$ 5% 1/8W	R93H	113746	CF 680 OHM $\pm$ 5% 1/2W
R879	100049	CF 220 OHM $\pm$ 5% 1/8W	R941	100103	CF 39K OHM $\pm$ 5% 1/8W
R880	100049	CF 220 OHM $\pm$ 5% 1/8W	R942	110217	MF 68 OHM $\pm$ 5% 2W
R881	114131	CF 100 OHM $\pm$ 5% 1/4W	R944	110223	MF 120 OHM $\pm$ 5% 2W
R882	114131	CF 100 OHM $\pm$ 5% 1/4W	R969	147060	WW 33 OHM $\pm$ 5% 2W
R883	114131	CF 100 OHM $\pm$ 5% 1/4W	R970	141195	WW 330 OHM $\pm$ 5% 10W
R884	100037	CF 68 OHM $\pm$ 5% 1/8W (35V/31UX5B)	RA01	100066	CF 1.1K OHM $\pm$ 5% 1/8W (35V)
R884	100039	CF 82 OHM $\pm$ 5% 1/8W (31CX4B)	RA02	100065	CF 1K OHM $\pm$ 5% 1/8W (35V)
R884	0100040M	CF 91 OHM $\pm$ 5% 1/8W (27V)	RA03	100065	CF 1K OHM $\pm$ 5% 1/8W (35V)
R885	100037	CF 68 OHM $\pm$ 5% 1/8W (35V/31UX5B)	RA04	100065	CF 1K OHM $\pm$ 5% 1/8W (35V)
R885	100039	CF 82 OHM $\pm$ 5% 1/8W (31CX4B)	RMF1	700051	CF 5.6K OHM $\pm$ 5% 1/16W (35V)
R886	0100040M	CF 91 OHM $\pm$ 5% 1/8W (27V)	RMF2	100053	CF 330 OHM $\pm$ 5% 1/8W (35V)
R886	100037	CF 68 OHM $\pm$ 5% 1/8W (35V/31UX5B)	RMF3	100056	CF 430 OHM $\pm$ 5% 1/8W (35V)
R886	100039	CF 82 OHM $\pm$ 5% 1/8W (31CX4B)	RTP15	110125	MF 150 OHM $\pm$ 5% 1W
R886	0100040M	CF 91 OHM $\pm$ 5% 1/8W (27V)	RW01	700067	CF 100K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R898	700027	CF 100 OHM $\pm$ 5% 1/16W (31V/27V)	RW02	700059	CF 27K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R888	700023	CF 47 OHM $\pm$ 5% 1/16W (35V)	RW06	700034	CF 330 OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
Δ R901	2341281	TH PTH451C460BG3R0Q (35V/31V)	RW07	700057	CF 18K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
Δ R901	2341261	TH PTH451C260BG5R0M (27V)	RW08	700067	CF 100K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
Δ R902	147811	WW 1.5 OHM $\pm$ 10% 15W	RW09	700033	CF 270 OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
Δ R903	141161	WW 220 OHM $\pm$ 5% 15W	RW10	700033	CF 270 OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R904	110221	MF 100 OHM $\pm$ 5% 2W	RW11	700042	CF 1.2K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R905	110197	MF 10 OHM $\pm$ 5% 2W	RW12	700045	CF 2.2K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R906	110197	MF 10 OHM $\pm$ 5% 2W	RW13	700058	CF 22K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R907	110173	MF 15K OHM $\pm$ 5% 1W	RW16	113742	CF 470 OHM $\pm$ 5% 1/2W (31UX5B/27UX5B)
R908	100113	CF 100K OHM $\pm$ 5% 1/8W	RW17	700046	CF 2.7K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R909	100129	CF 470K OHM $\pm$ 5% 1/8W	RW19	700043	CF 1.5K OHM $\pm$ 5% 1/16W (31UX5B/27UX5B)
R90A	119722	MF 1 OHM $\pm$ 5% 1W	RW21	113701	CF 10 OHM $\pm$ 5% 1/2W (31UX5B/27UX5B)
R90C	700053	CF 8.2K OHM $\pm$ 5% 1/16W	RW22	100039	CF 82 OHM $\pm$ 5% 1/8W (31UX5B/27UX5B)
R90F	110125	MF 150 OHM $\pm$ 5% 1W	RW23	100039	CF 82 OHM $\pm$ 5% 1/8W (31UX5B/27UX5B)

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RW24	114165	CF 1.5K OHM +5% 1/4W (31UX5B/27UX5B)			
RW25	100069	CF 1.5K OHM +5% 1/8W (31UX5B/27UX5B)			COLOR PICTURE TUBE
RW26	114143	CF 330 OHM +5% 1/4W (31UX5B/27UX5B)			
RW27	114221	CF 68K OHM +5% 1/4W (31UX5B/27UX5B)	△ V1	DE00161	C P T M78JUA165X (31UX5B)
RW28	114221	CF 68K OHM +5% 1/4W (31UX5B/27UX5B)	△ V1	DE00061	C P T A78LCU30X(31V D.T-AK) (31CX4B)
RW29	100053	CF 330 OHM +5% 1/8W (31UX5B/27UX5B)	△ V1	2471552	C P T M68JUA168X (27UX5B)
RW30	113776	CF 12K OHM +5% 1/2W (31UX5B/27UX5B)	△ V1	2471561	C P T A68KSA30X (27CX4B)
RW31	113716	CF 43 OHM +5% 1/2W (31UX5B/27UX5B)	△ V1	2471561	C P T A68KSA30X (27CX3B)
RW32	113716	CF 43 OHM +5% 1/2W (31UX5B/27UX5B)	△ V1	2471593	C P T A89AEJ15X01 (35TX10B)
RW33	113686	CF 2.7 OHM +5% 1/2W (31UX5B/27UX5B)			
RW34	113686	CF 2.7 OHM +5% 1/2W (31UX5B/27UX5B)			DEFLECTION YOKE
RW35	110229	MF 220 OHM +5% 2W (31UX5B/27UX5B)			
RW36	110139	MF 560 OHM +5% 1W (31UX5B/27UX5B)	△ E601	2444432	DEFLECTION YOKE (31UX5B)
△ RW37	119508	FR 56 OHM +5% 1/4W (31UX5B/27UX5B)	△ E601	BY00131	DEFLECTION YOKE HED-US31V 31CX4B)
RW38	700049	CF 4.7K OHM +5% 1/16W (31UX5B/27UX5B)	△ E601	2444251	DEFLECTION YOKE (27UX5B)
RW39	700051	CF 5.6K OHM +5% 1/16W (31UX5B/27UX5B)	△ E601	2444253	DEFLECTION YOKE (27CX4B/27CX3B)
RW40	700061	CF 33K OHM +5% 1/16W (31UX5B/27UX5B)			CRYSTAL/FILTERS
RW41	700036	CF 470 OHM +5% 1/16W (31UX5B/27UX5B)			
RW42	700067	CF 100K OHM +5% 1/16W (31UX5B/27UX5B)			
RW43	700056	CF 15K OHM +5% 1/16W (31UX5B/27UX5B)	H301	2151041	DELAY LINE AND B.P.F
RW44	700043	CF 1.5K OHM +5% 1/16W (31UX5B/27UX5B)	△ H901	2793313	COMPOUND COMPONENT
RW45	700067	CF 100K OHM +5% 1/16W (31UX5B/27UX5B)	X001	2168831	CRYSTAL
RW47	700041	CF 1K OHM +5% 1/16W (31UX5B/27UX5B)	X103	2300477	SAW FILTER HW2267
RW48	700041	CF 1K OHM +5% 1/16W (31UX5B/27UX5B)	X201	2167311	CERAMIC FILTER 4.5MHZ
RW49	700046	CF 2.7K OHM +5% 1/16W (31UX5B/27UX5B)	X202	2167201	CERAMIC TRAP 4.5MHZ
RW51	700033	CF 270 OHM +5% 1/16W (31UX5B/27UX5B)	X301	2793281	DELAY LINE
RW52	700035	CF 390 OHM +5% 1/16W (31UX5B/27UX5B)	X302	2794401	DELAY LINE
RW53	700035	CF 390 OHM +5% 1/16W (31UX5B/27UX5B)	X501	2791505	CRYSTAL
RW54	700041	CF 1K OHM +5% 1/16W (31UX5B/27UX5B)	X701	2167241	CERAMIC OSC 0.5MHZ
RW55	700028	CF 120 OHM +5% 1/16W (31UX5B/27UX5B)	XW01	2150361	LC FILTER SDL4620 (31UX5B/27UX5B)
RW55A	700037	CF 560 OHM +5% 1/16W (31UX5B/27UX5B)			MISCELLANEOUS PARTS
RY01	700041	CF 1K OHM +5% 1/16W (35V)			
RY02	700041	CF 1K OHM +5% 1/16W (35V)			
RY03	100057	CF 470 OHM +5% 1/8W (35V)	#	PC00341	BUTTON (31UX5B/31CX4B))
RY04	700036	CF 470 OHM +5% 1/16W (35V)	#	PC00342	BUTTON (27UX5B/27CX4B)
RY05	700036	CF 470 OHM +5% 1/16W (35V)	#	PC00343	BUTTON (27CX3B)
RY06	700027	CF 100 OHM +5% 1/16W (35V)	#011	QG00091	CABINET ASS'Y (35V)
RY07	100073	CF 2.2K OHM +5% 1/8W (35V)	#050	QD00683	FRAME ASS'Y (31UX5B)
RY08	700047	CF 3.3K OHM +5% 1/16W (35V)	#060	QD00684	FRAME ASS'Y (31CX4B)
RY09	700058	CF 22K OHM +5% 1/16W (35V)	#100	4521713	HEXAGON HEAD TAPPING SCREW (35V)
RY10	700057	CF 18K OHM +5% 1/16W (35V)	#105	NT00121	TERMINAL BOARD
RY11	700055	CF 12K OHM +5% 1/16W (35V)	#105	4516581	SCREW 4X16 SPECIAL WASHER SWRM (35V)
			#105	4516582	4X26 TAPPING SCREW WITH BOLT (35V)
			#111	8781646	4X16 TAPPING SCREW (27V)
			#112	8781646	4X16 TAPPING SCREW (27UX5B/27CX4B)
			#112	8781642	4X12 TAPPING SCREW (35V)
			#115	4159427	3X10 TAPPING SCREW WITH WASHER (27CX3B)
			#115	4137976	4X20 TAPPING SCREW WITH WASHER (35V)
			#152	4528351	SCREW 6X30 (27V)
			#152	4517801	6 FLANGE NUT (35V)
			#160	3739671	CORD HOLDER
			#201	8781646	4X16 TAPPING SCREW (27V)
			#202	4519503	3X12 TAPPING SCREW
			#202	8781646	4X16 TAPPING SCREW (27V)
			#203	4519503	3X12 TAPPING SCREW
			#210	4159427	3X10 TAPPING SCREW WITH WASHER.
			#210	QD00681	FRAME ASS'Y (27UX5B)
			#210	QD00911	FRAME ASS'Y (27CX3B)
			#211	QD00682	FRAME ASS'Y (27CX4B)
			#220	4520771	4X18 TAPPING SCREW WITH WASHER (35V)
			#221	4520771	4X18 TAPPING SCREW WITH WASHER (35V)
			#225	3875771	LATCH (27V/31V)
			#250	4520232	4X16 DT SCREW (27V/31V)
			#250	3727972	HOLDER-AC LINE CORD (35V)
			#250	4520232	4X16 DT SCREW (35V)
			#253	8781642	4X12 TAPPING SCREW (27V)
			#254	8781642	4X12 TAPPING SCREW (27V)
			#289	8781642	4X12 TAPPING SCREW (35V)
			#292	8815126	LOCKING WASHER 4 (35V)
			#298	3875771	LATCH (35V)
			#310	8781642	4X12 TAPPING SCREW (31V)
			#415	8781642	4X12 TAPPING SCREW (31V)
			#521	3164043	BACK COVER (31V)
△ T701	2274353	H DRIVE TRANSFORMER			
△ T702	2437092	FLY BACK TRANSFORMER C87LUI			
△ T901	2216002	SWITCHING TRANSFORMER			

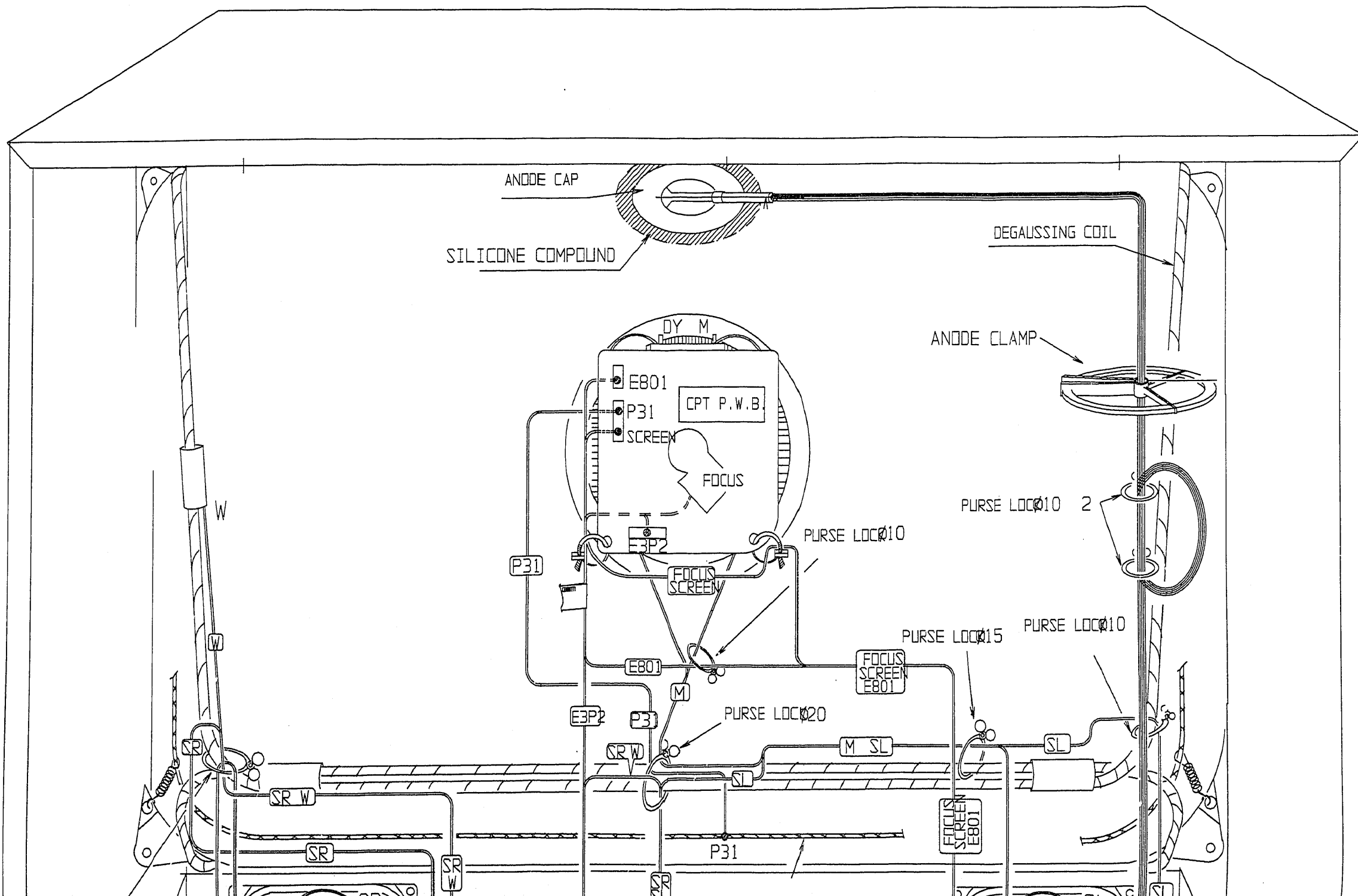
PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
#601	3727972	HOLDER-AC LINE CORD (27V/31V)			
#701	3163507	BACK COVER (27V)			
#860	4520771	4X18 TAPPING SCREW WITH WASHER (31V)			
#895	8781646	4X16 TAPPING SCREW (31V)			
#906	PH00971	TERMINAL LABEL (27V/31V)			
E0P	2954982	5P MICRO CONNECTOR (EXCEPT 27CX3B)			
E3P1	2976661	12P SUB MINI CONNECTOR (EXCEPT 27CX3B)			
E602	2994511	CPT EARTH READ (31V)			
E603	2771461	MAGNET PEACE			
E604	2773672	CF-MAGNET (31CX4B/27CX4B/27CX3B)			
E851	2953344	CPT SOCKET			
Δ E901	2972521	POWER CORD			
EF901	2720221	FUSE HOLDER			
EF902	2720221	FUSE HOLDER			
G851	2340037	SPARK GAP			
G854	2340039	SPARK GAP (35V)			
G855	2340039	SPARK GAP (35V)			
G856	2340039	SPARK GAP (35V)			
Δ G901	2340741	SPARK GAP			
Δ J01	2983116	3P PIN JACK (35V)			
Δ J301	2983095	8P PIN JACK WITH SW			
Δ J30F	2673602	3P PIN JACK (31V/27V)			
Δ JSIN	2983122	S-SOCKET			
N104	2788841	ANODE CLAMP (27V)			
N105	2788841	ANODE CLAMP (31V)			
N108	2788841	ANODE CLAMP (35V)			
N109	3700342	WIRE CLAMP (31V)			
N130	3700342	WIRE CLAMP (27V)			
N201	3763751	SK BINDER			
N403A	4520881	M3X8 SCREW WITH WASHER			
N403B	8821234	3 NUT			
N601	4615641	WEDGE (31CX4B/27CX4B/27CX3B)			
N606	3330941	EARTH SPRING			
N607	3763751	SK BINDER (35V)			
N607A	3763751	SK BINDER (31V)			
N607B	3763751	SK BINDER (27V)			
N608	3763752	SK BINDER (31V)			
N608	3763752	SK BINDER (35V)			
N610	2772981	FERRITE SHEET			
N611	2772211	MAGNET PIECE (31CX4B/27CX4B/27CX3B)			
N620A	4520881	M3X8 SCREW WITH WASHER			
N620B	8821234	3 NUT			
N701	8821114	3 NUT (35V/31V)			
N701A	4243445	G51 INSULATOR			
N701B	8711412	3X12 PAN HEAD SCREW (35V/31V)			
N701B	4518742	M2.3X12 SCREW WITH WASHER (27V)			
N702B	8821234	3 NUT			
N702C	8813124	WASHER			
N702E	4159411	3X8 KNURL TAPPING SCREW (35V/31V)			
N706A	4520881	M3X8 SCREW WITH WASHER			
N70AA	4520881	M3X8 SCREW WITH WASHER			
N752A	4520881	M3X8 SCREW WITH WASHER			
N901A	4520883	M3X12 SCREW WITH WACHER			
N901B	8781642	4X12 TAPPING SCREW			
N901C	4137974	4X12 TAPPING SCREW WITH WASHER			
N901D	2787531	MICA PLATE			
N901E	8815126	LOCKING WASHER 4			
NC901	2784342	CONDENSER COVER			
NE901	3772201	AC CORD HOLDER			
NMFC	3763751	SK BINDER(35V)			
NWQ2	4520883	M3X12 SCREW WITH WASHER (31UX5B/27UX5B)			
P802	2902263	4P SUB MINI PLUG PIN			
PFJ	2902266	7P SUB MINI PLUG PIN (35V)			
PG3	2661942	CONNECTOR (35V)			
PM	2665272	4P PLUG PIN WITH BASE			
PSR	2902263	4P SUB MINI PLUG PIN			
PVM2	2661756	1P PLUG PIN WITH BASE (31UX5B/27UX5B)			
PW	2661753	PIN PLUG WITH BASE			
PY02	2661756	1P PLUG PIN WITH BASE (35V)			
Δ U001	2381126	R/C RECEIVER SPS-409-1F (31V/27V)			
U0501	2575453	P IN P UNIT (EXCEPT 27CX3B)			
Δ U101	2428681	TUNER ET-352A			

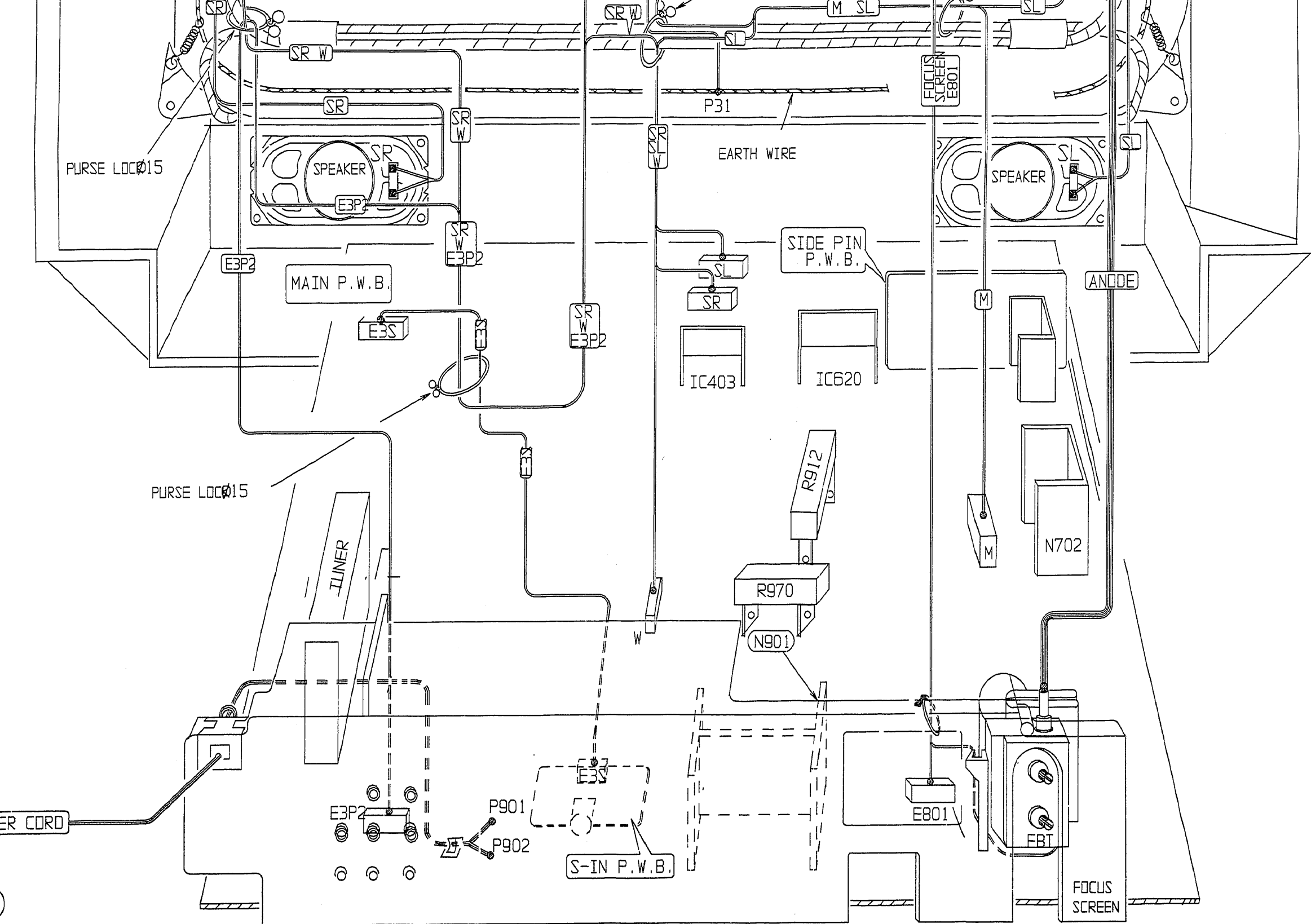


C

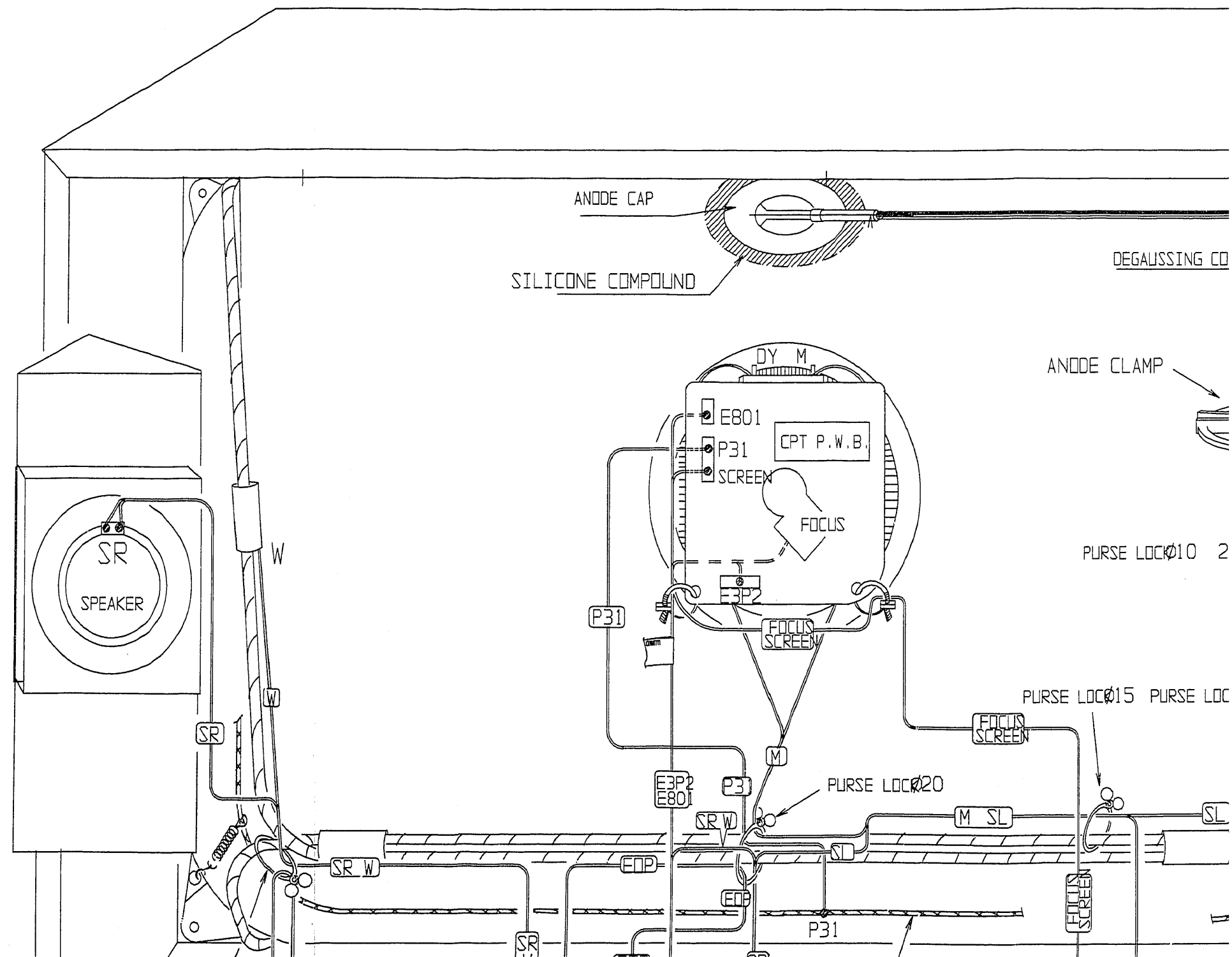
WIRING DRAWING OF 27CX3B/C743 FINAL ASSEMBLY



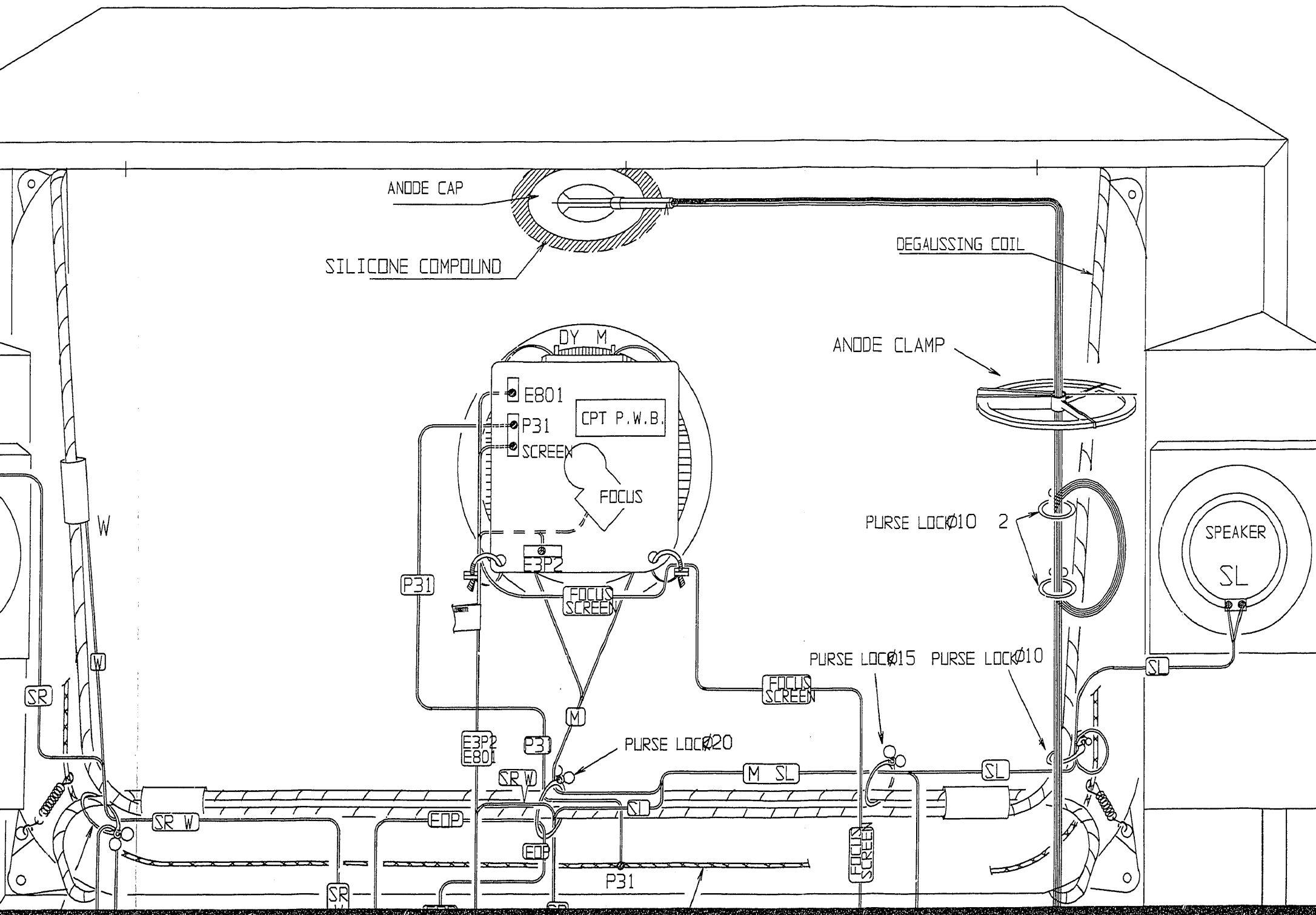




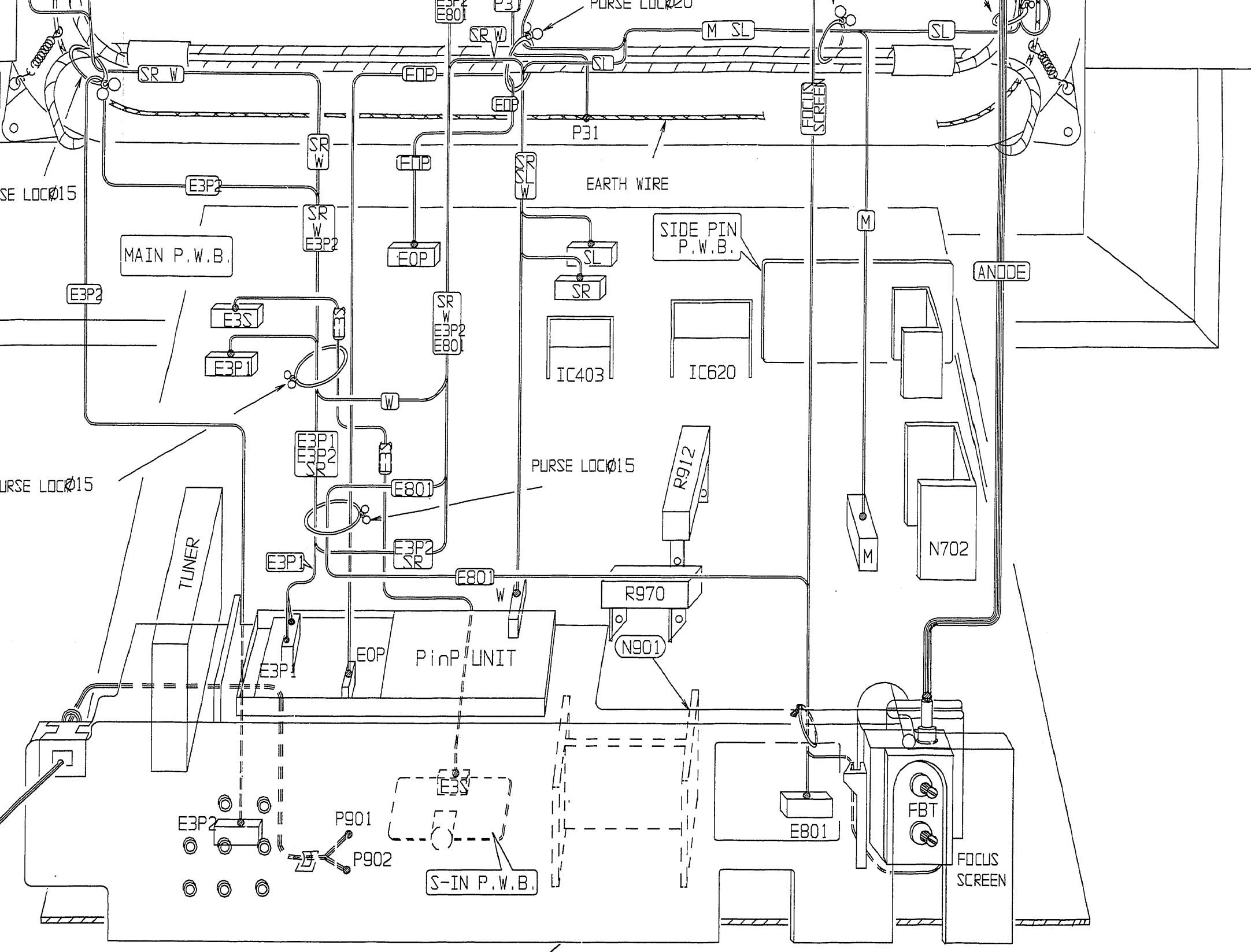
WIRING DRAWING OF 27CX4B/C744 FINAL ASSEMBLY



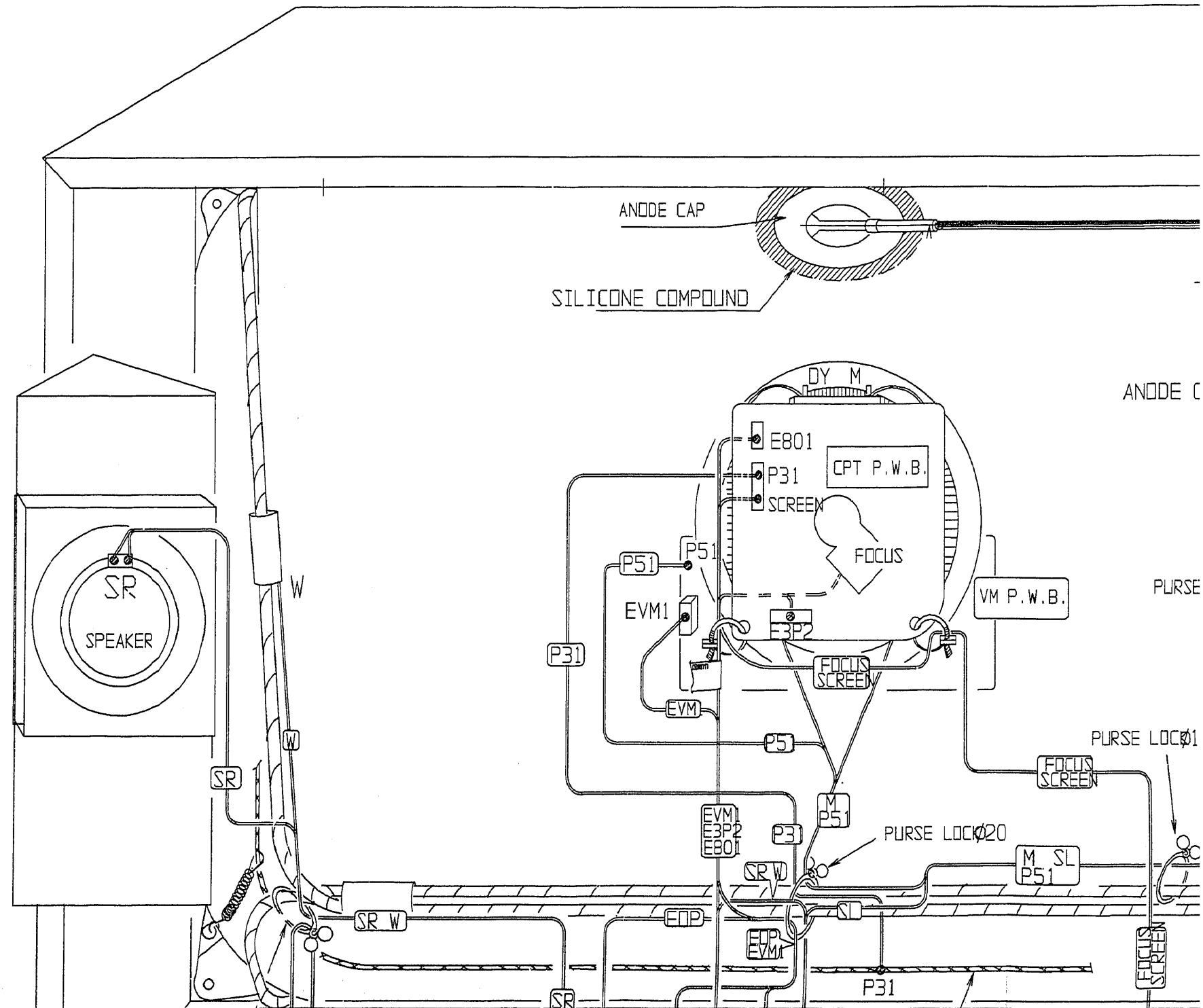
WIRING DRAWING OF 27CX4B/C744 FINAL ASSEMBLY



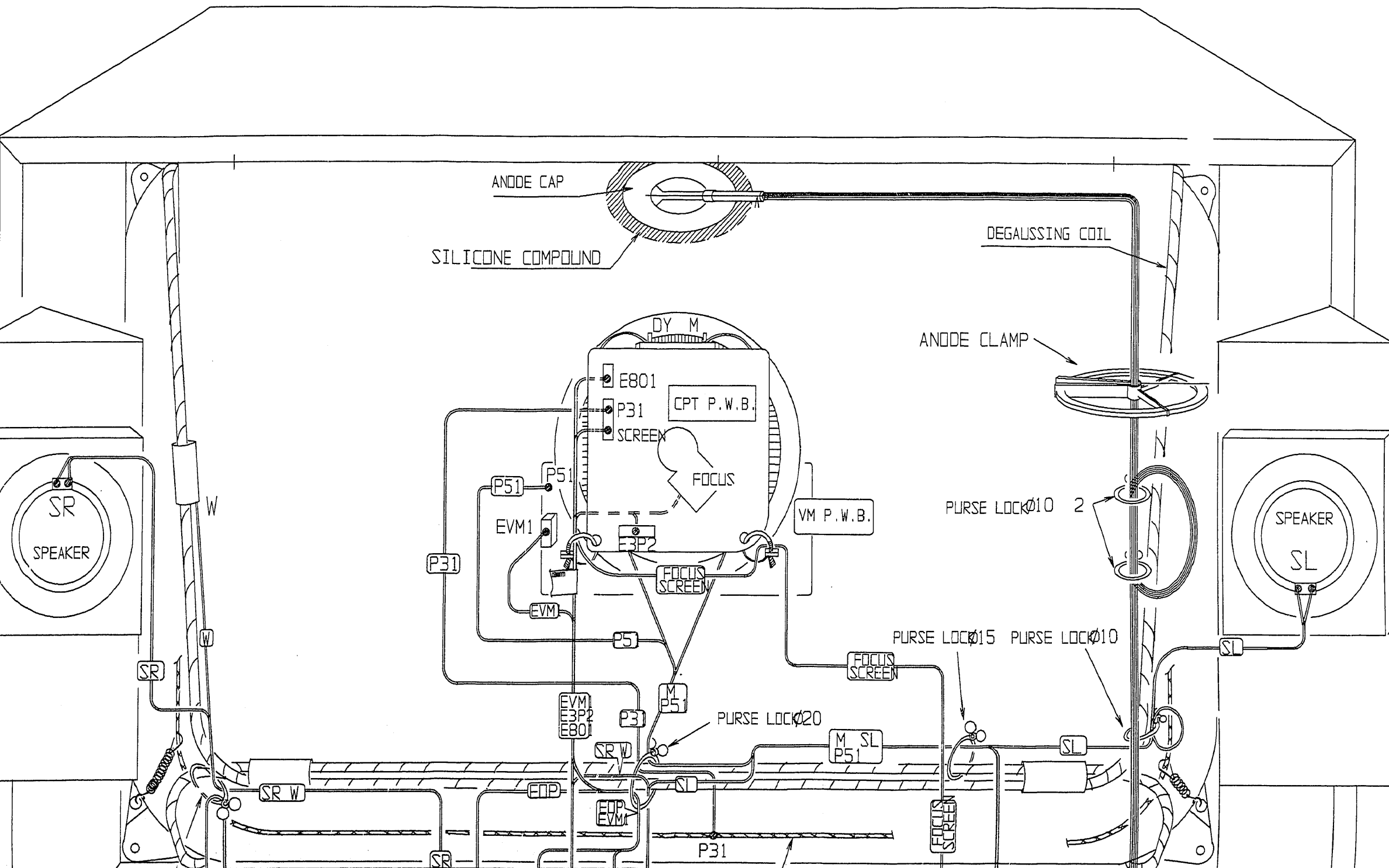




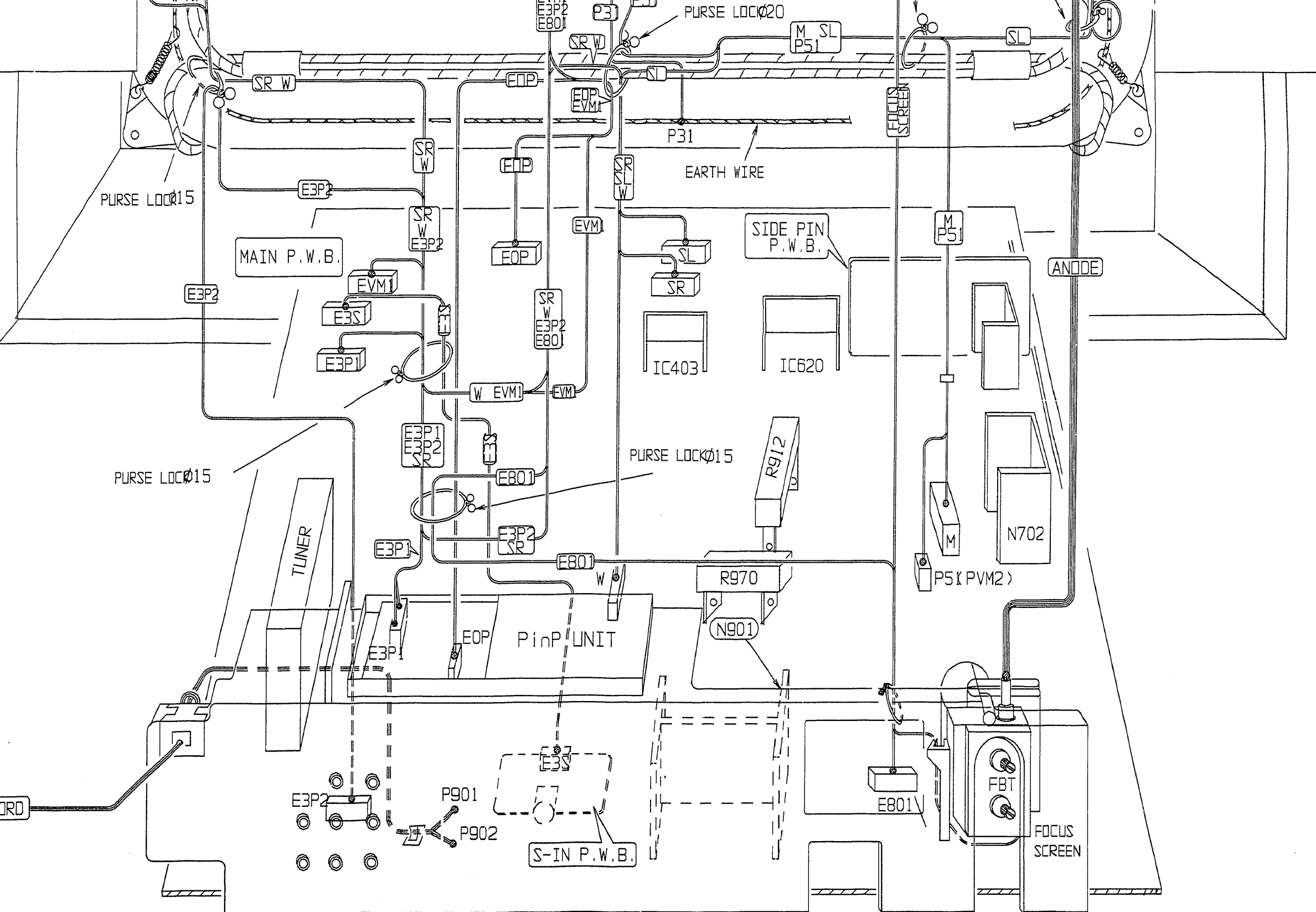
WIRING DRAWING OF 27UX5B/C745 FINAL ASSEMBLY



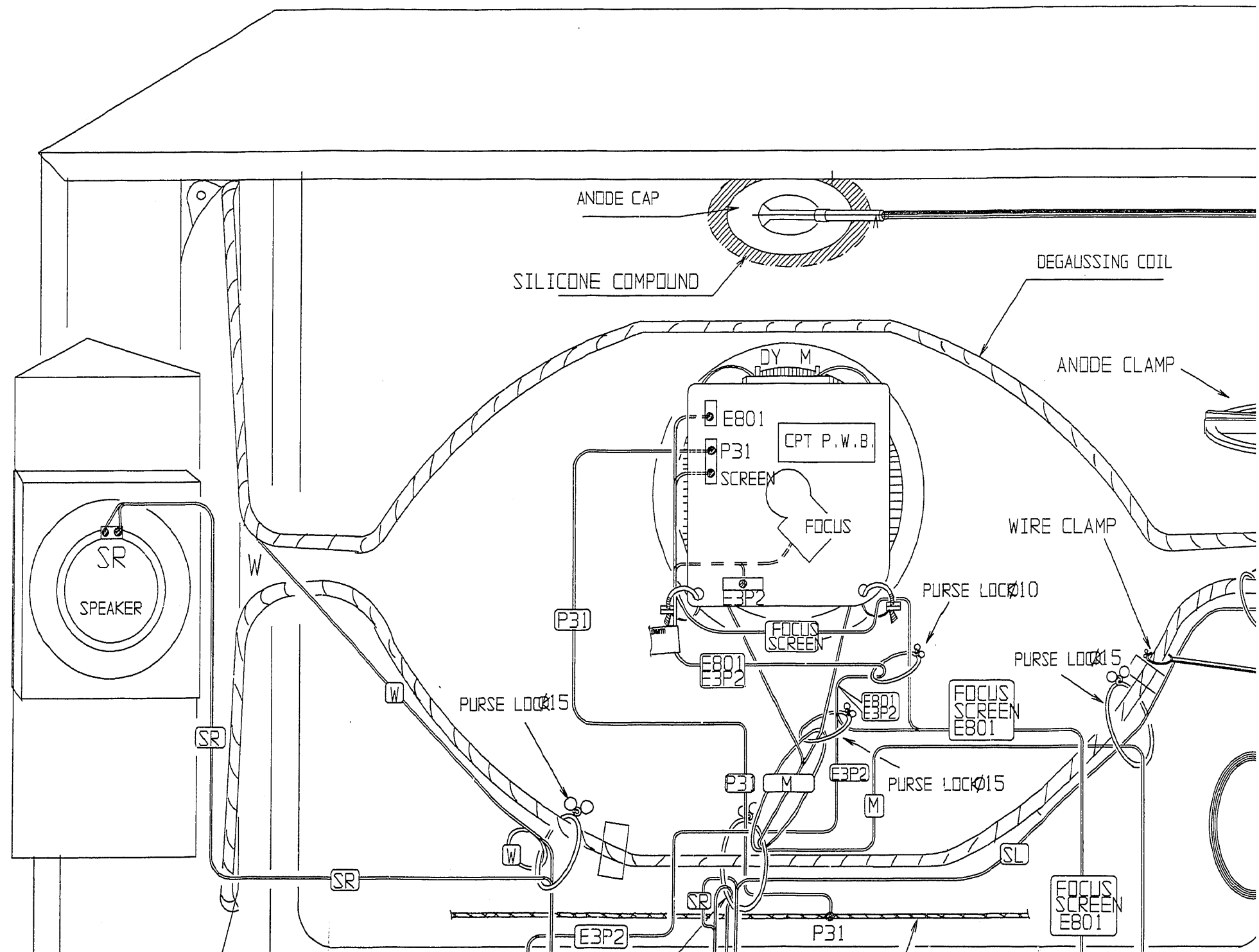
WIRING DRAWING OF 27UX5B/C745 FINAL ASSEMBLY



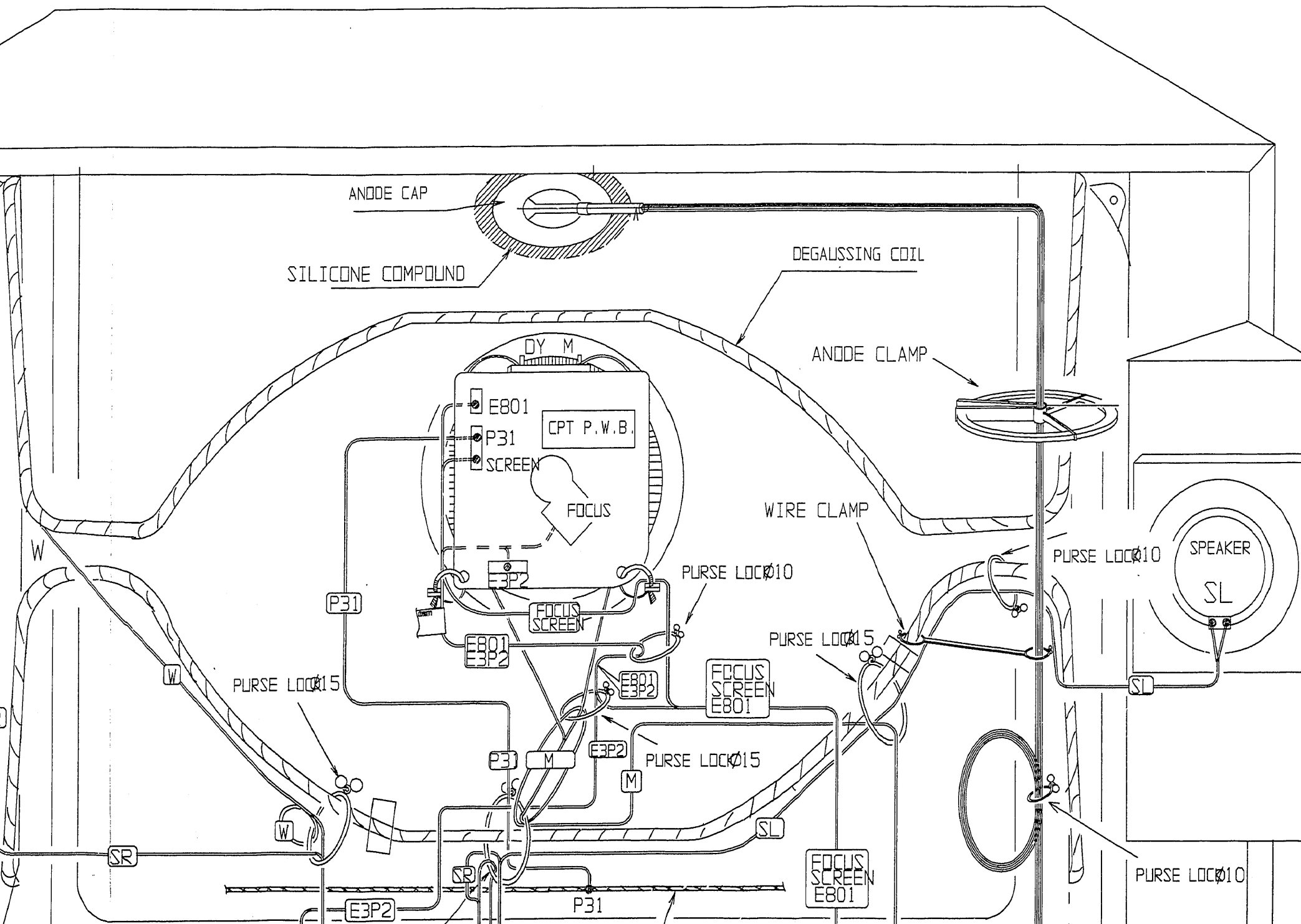


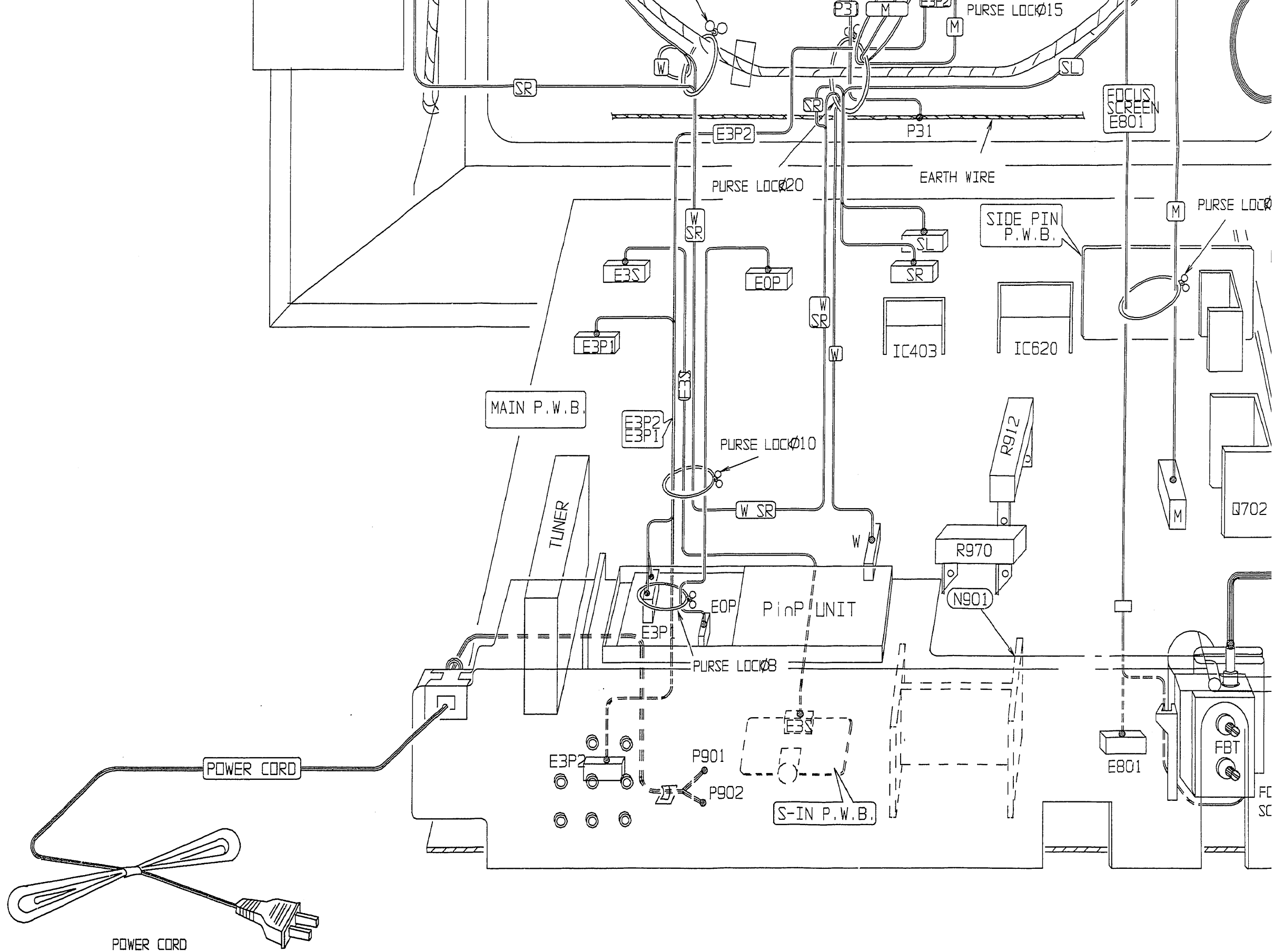


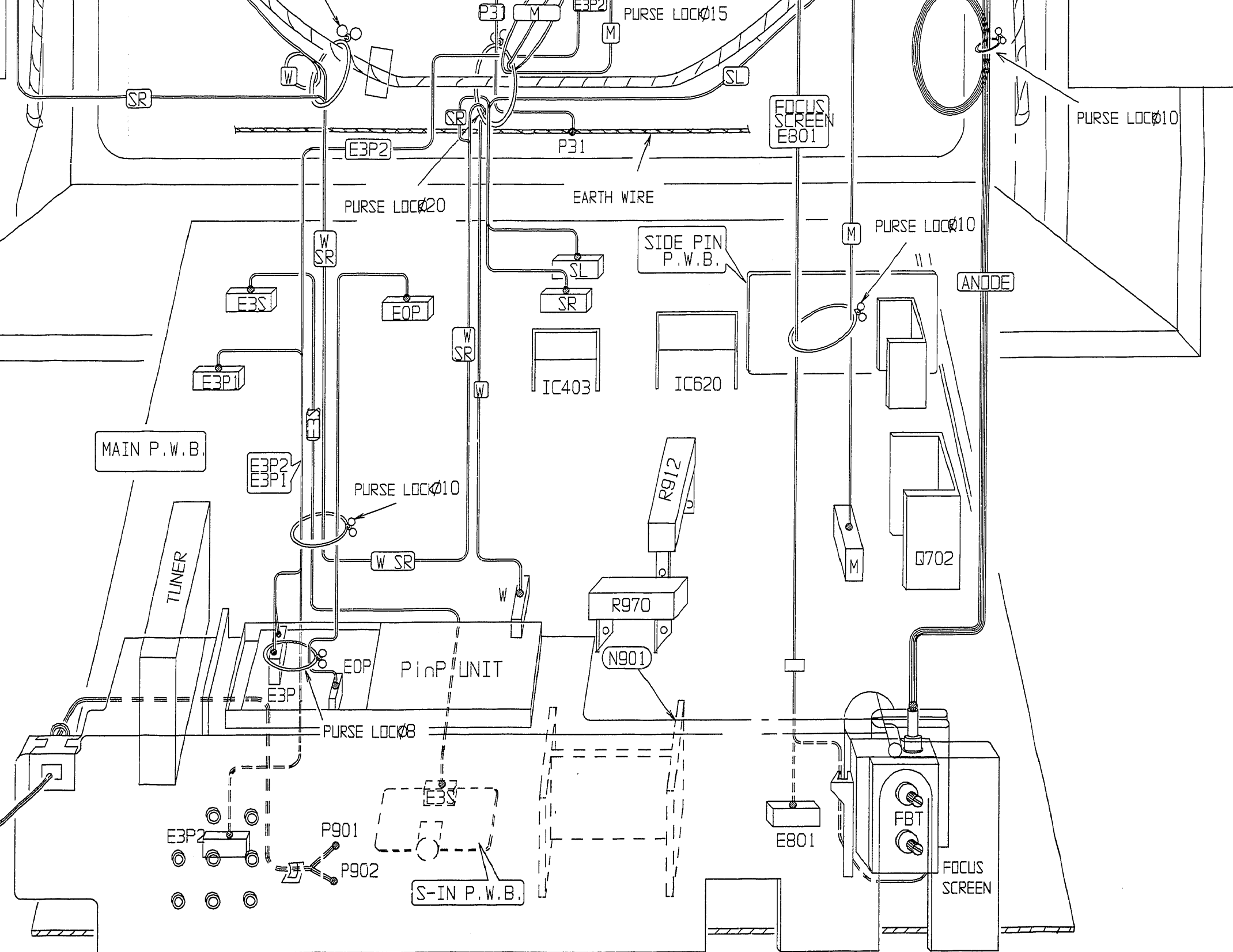
WIRING DRAWING OF 31CX4B/CY44 FINAL ASSEMBLY



WIRING DRAWING OF 31CX4B/CY44 FINAL ASSEMBLY

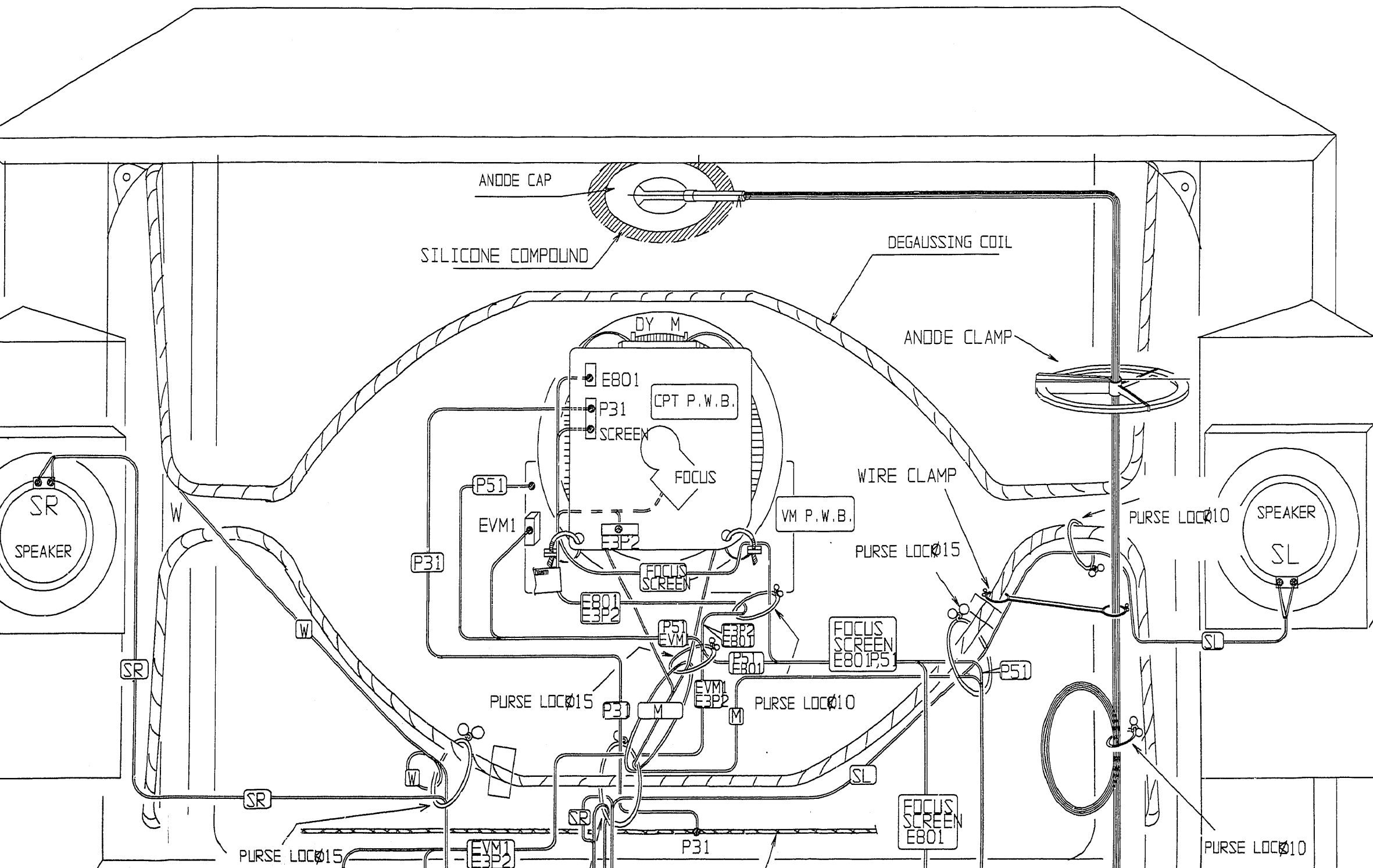


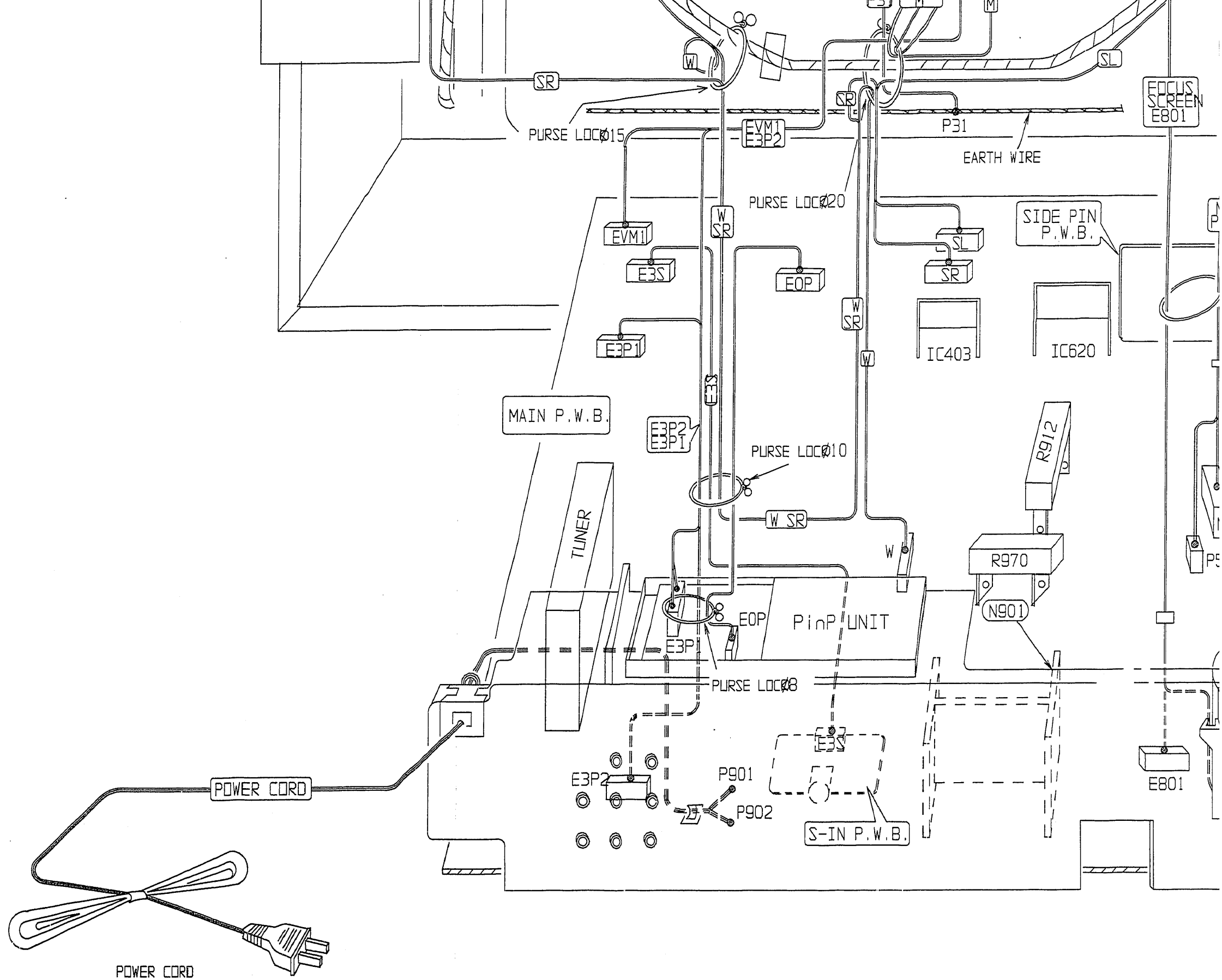






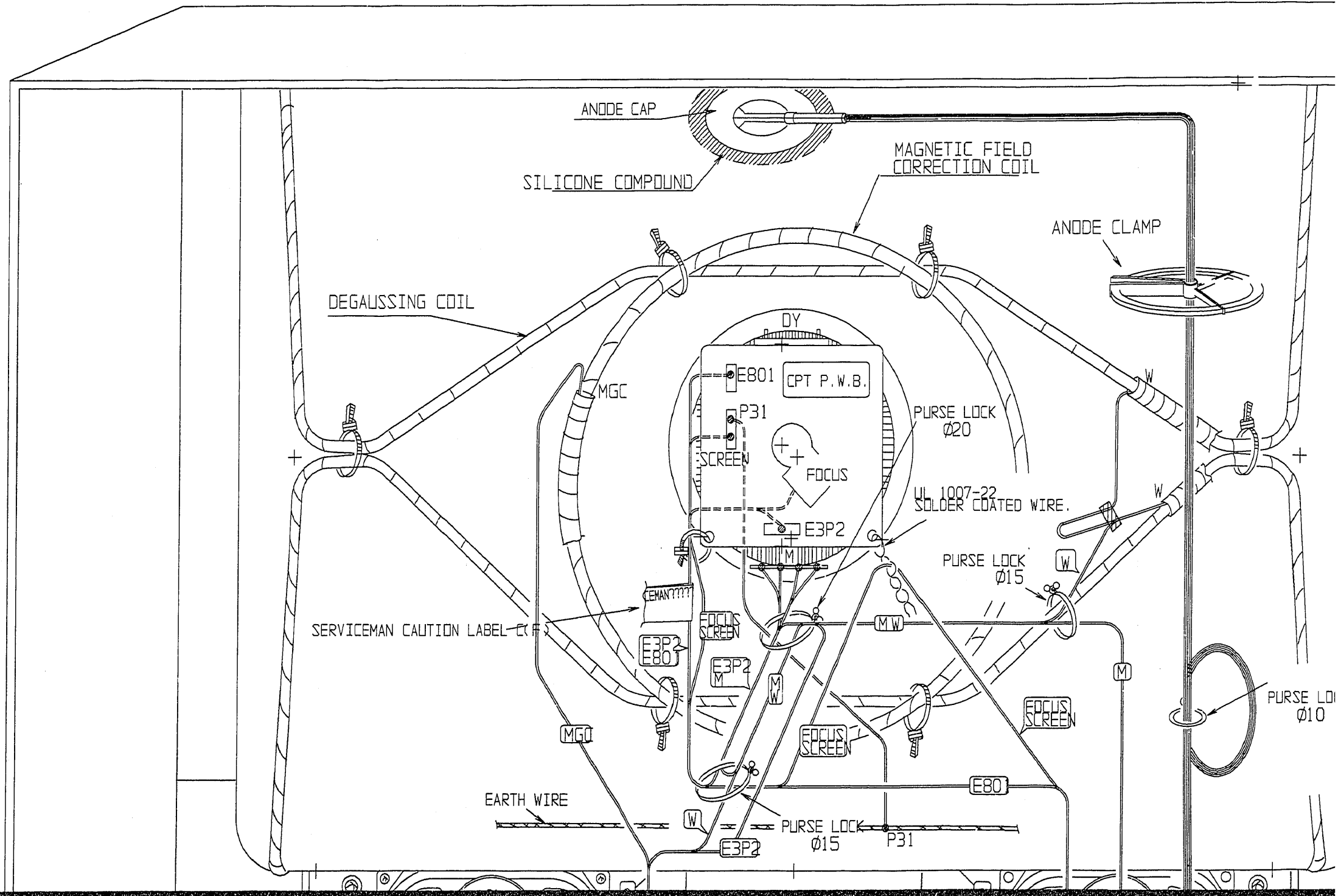
WIRING DRAWING OF 31UX5B/CY45 FINAL ASSEMBLY



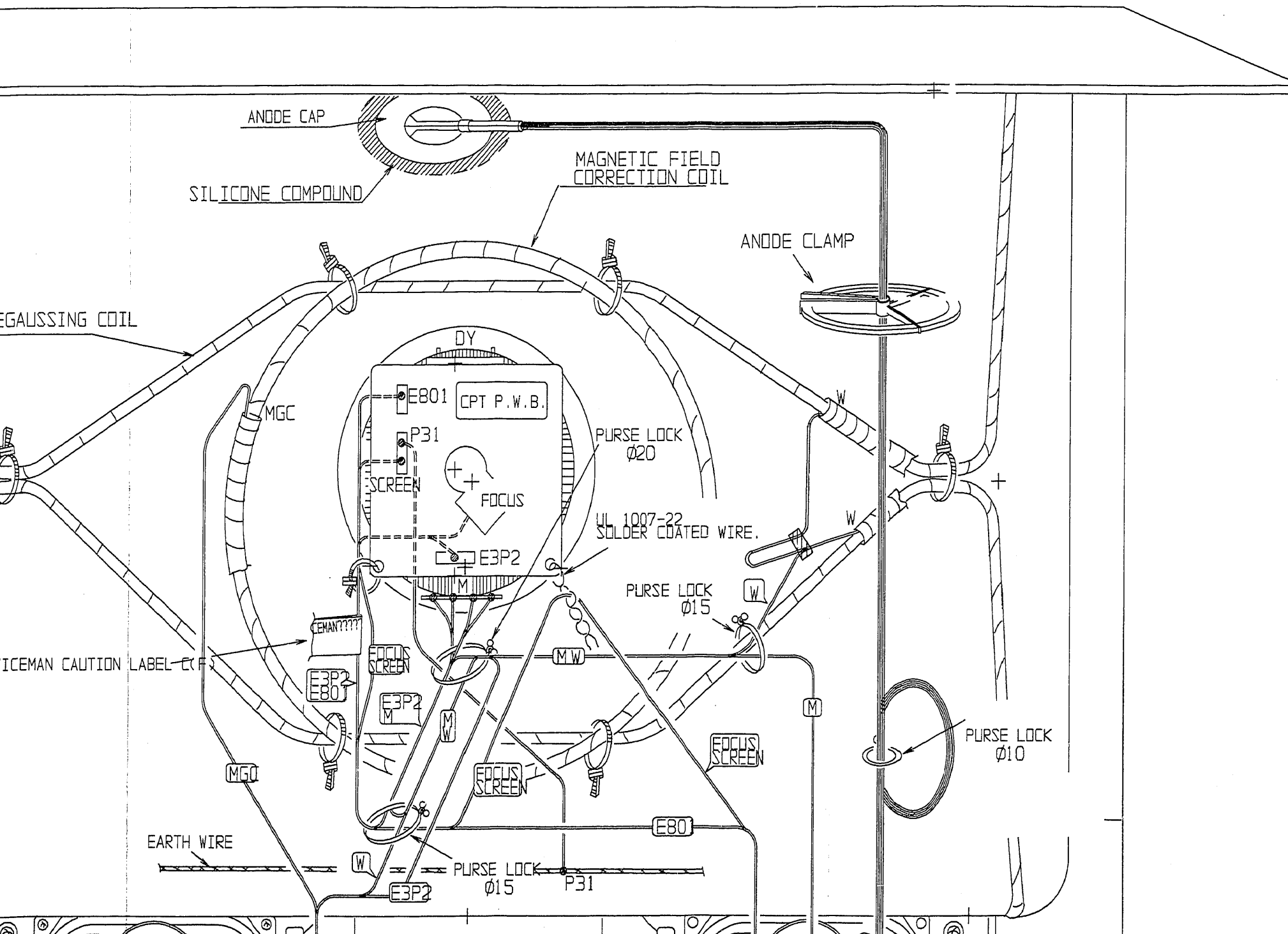




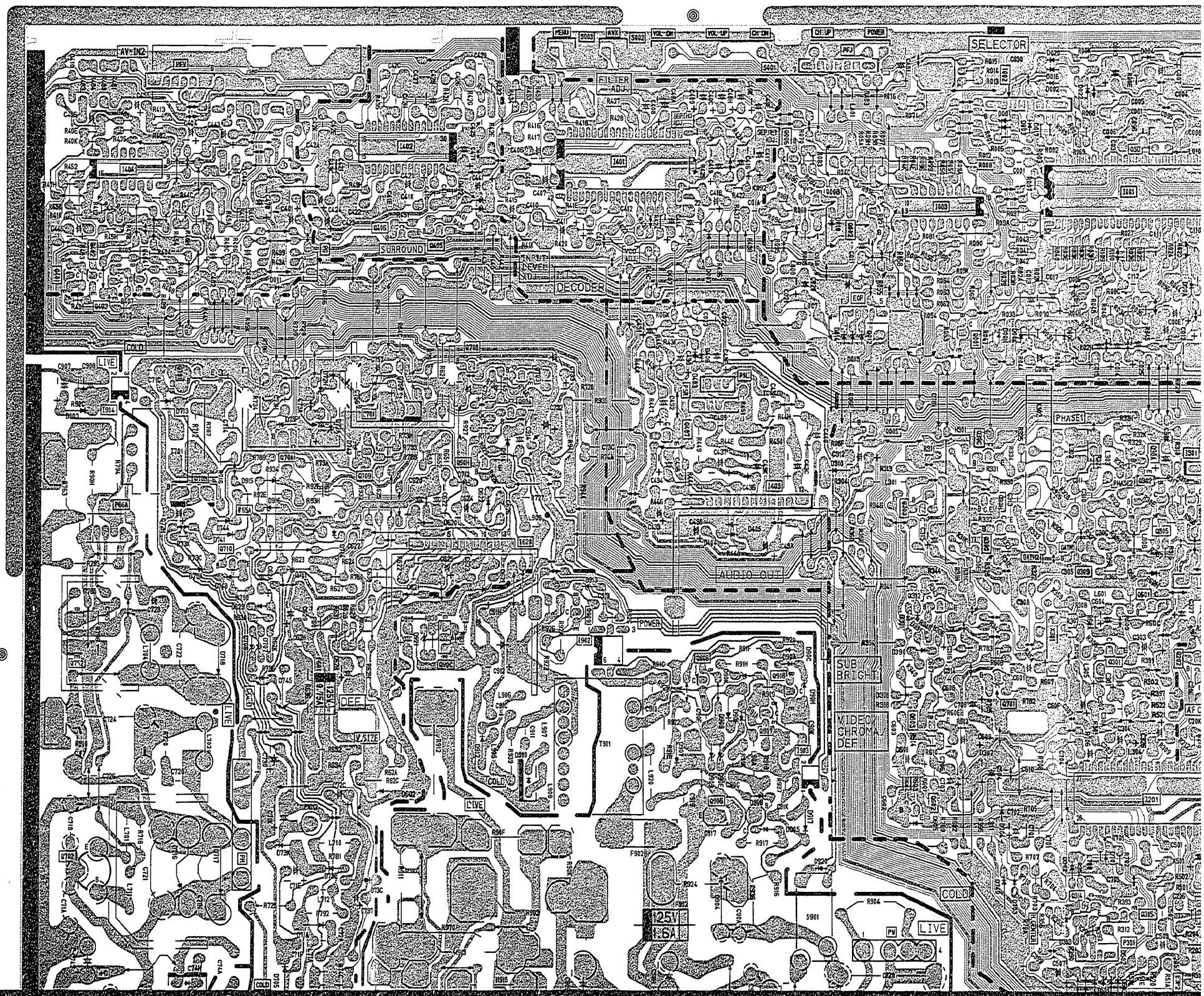
WIRING DRAWING OF 35TX10B/CZ41 FINAL ASSEMBLY



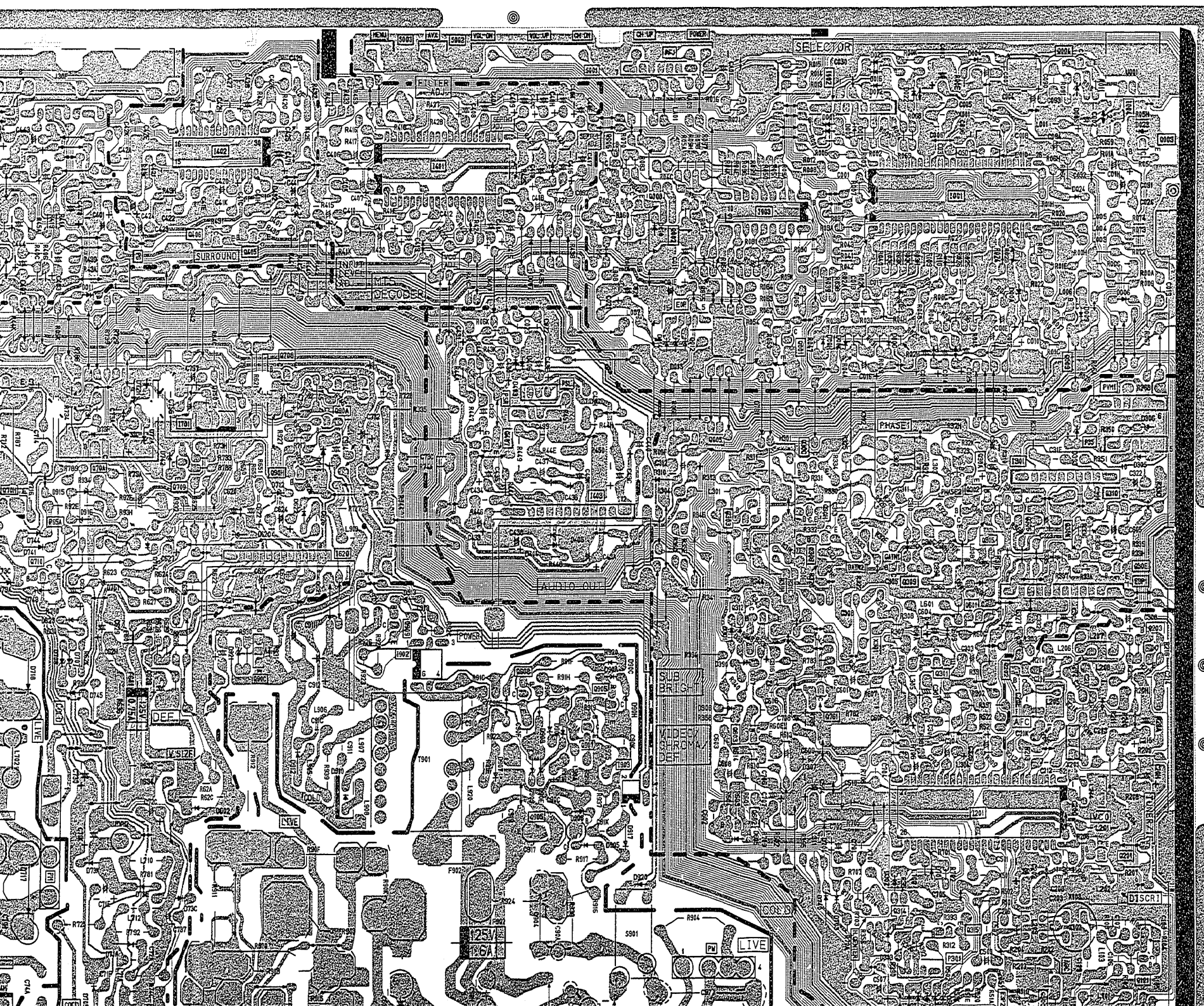
WIRING DRAWING OF 35TX10B/CZ41 FINAL ASSEMBLY

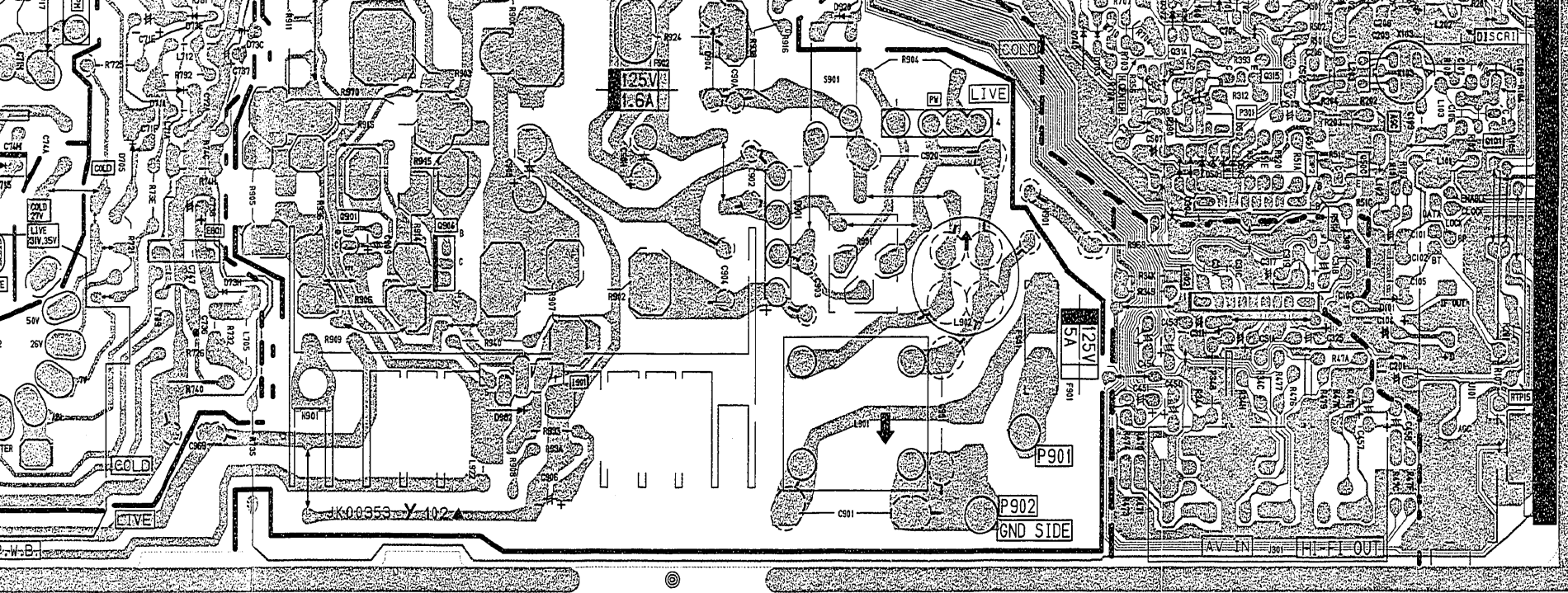




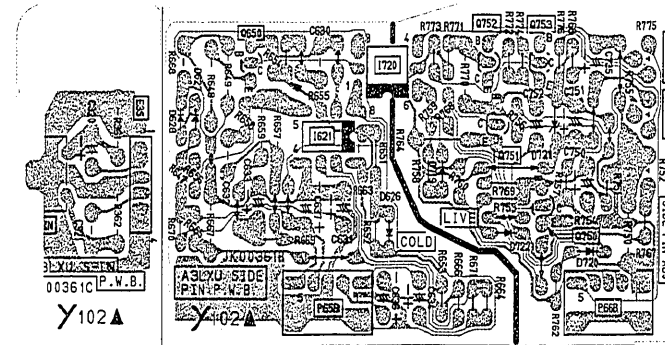


P.W.B. FOIL PATTERN

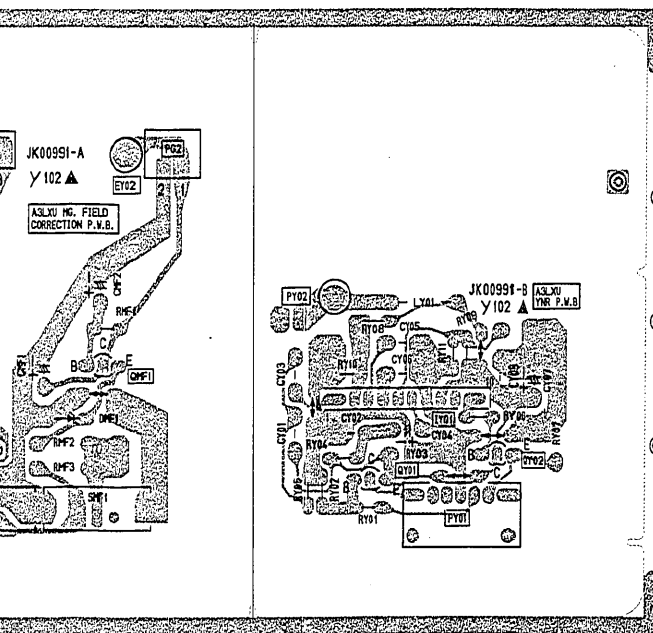




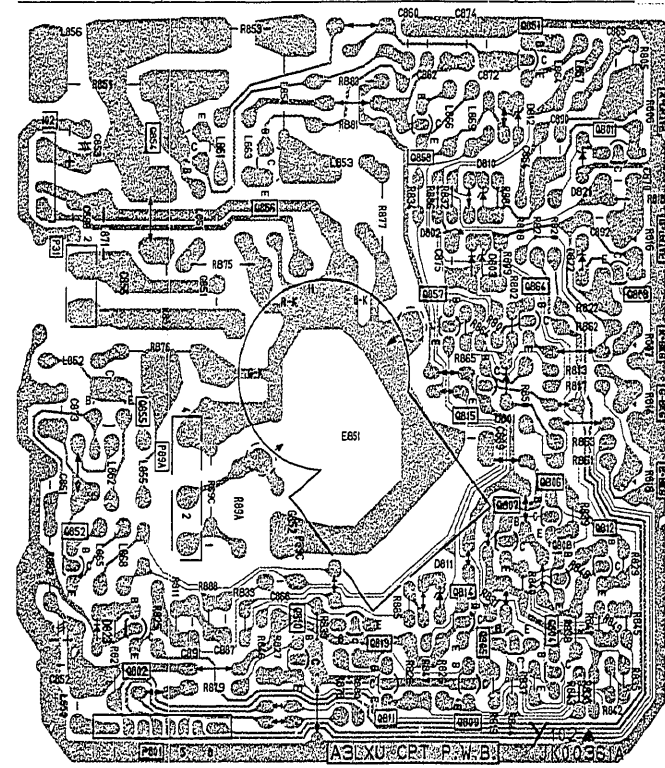
A3LXU S P.W.B.



A3LXU SIDE PIN P.W.B.



A3LXU YNR P.W.B.
(35TX10B ONLY)

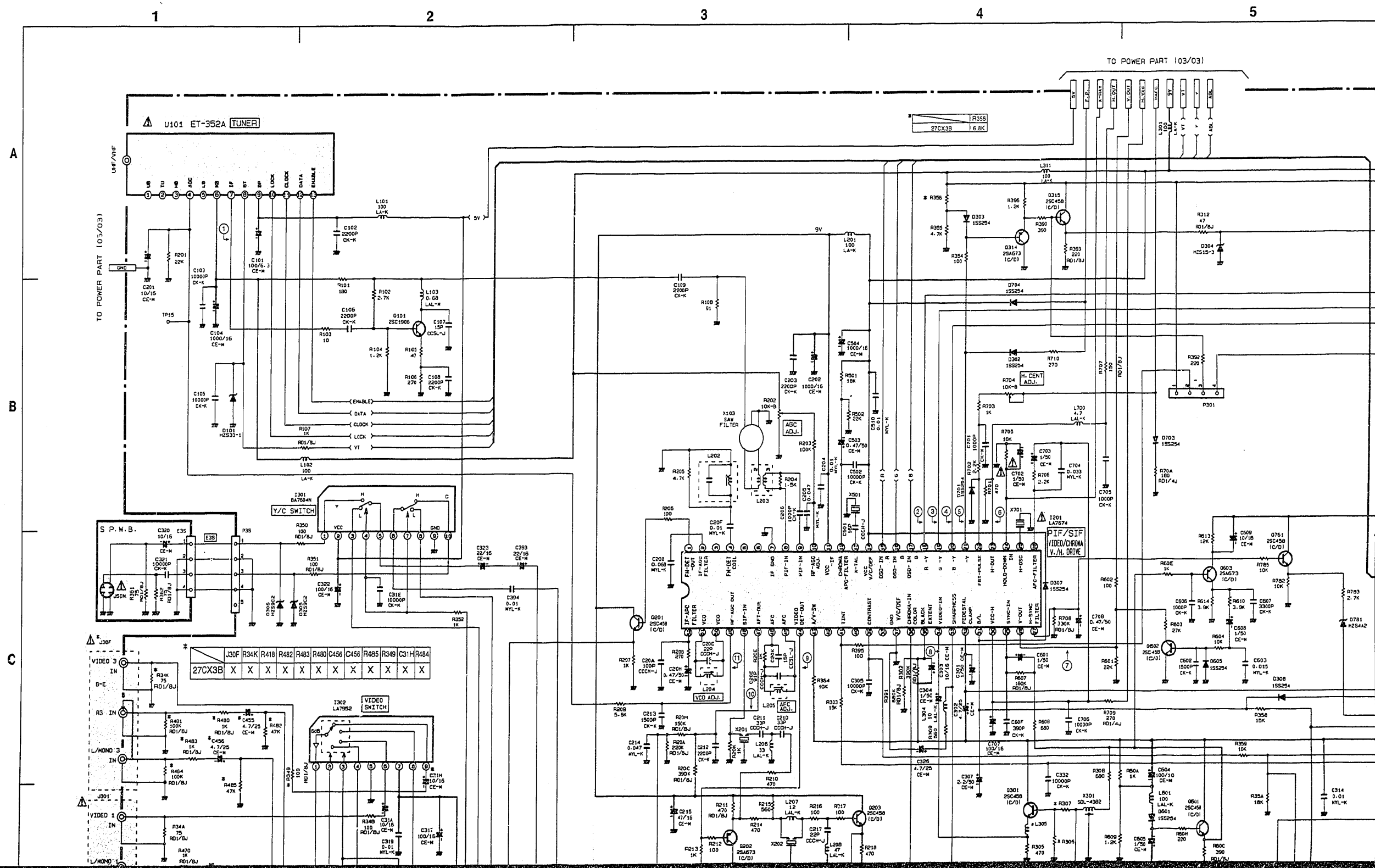


A3LXU C.P.T. P.W.B.

27CX3B/C743

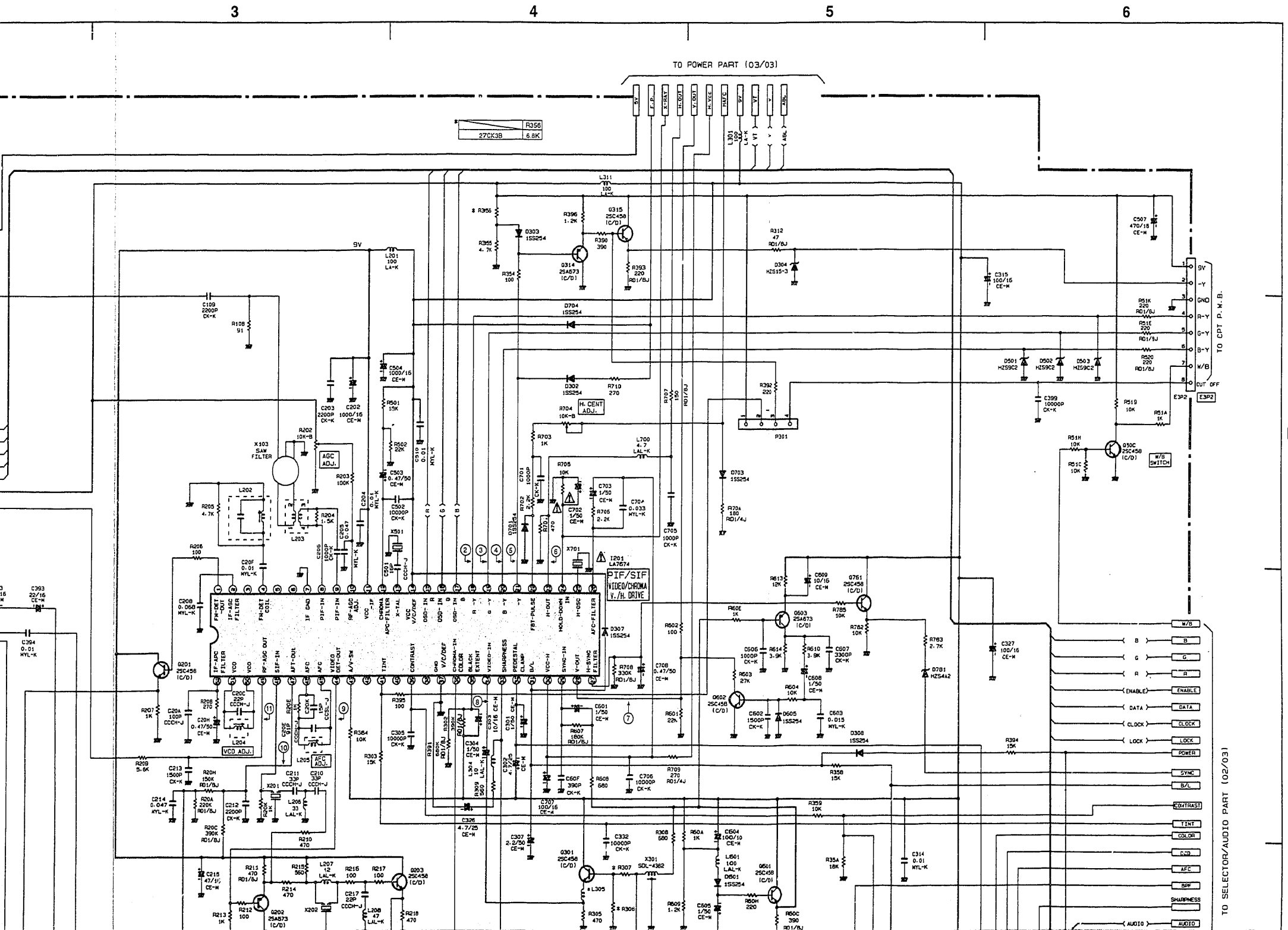
CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743

PRODUCT SAFETY NOTE: Components marked with a  and shaded any of these components, read carefully the **PRODUCT SAFETY NOTICE** through improper servicing.

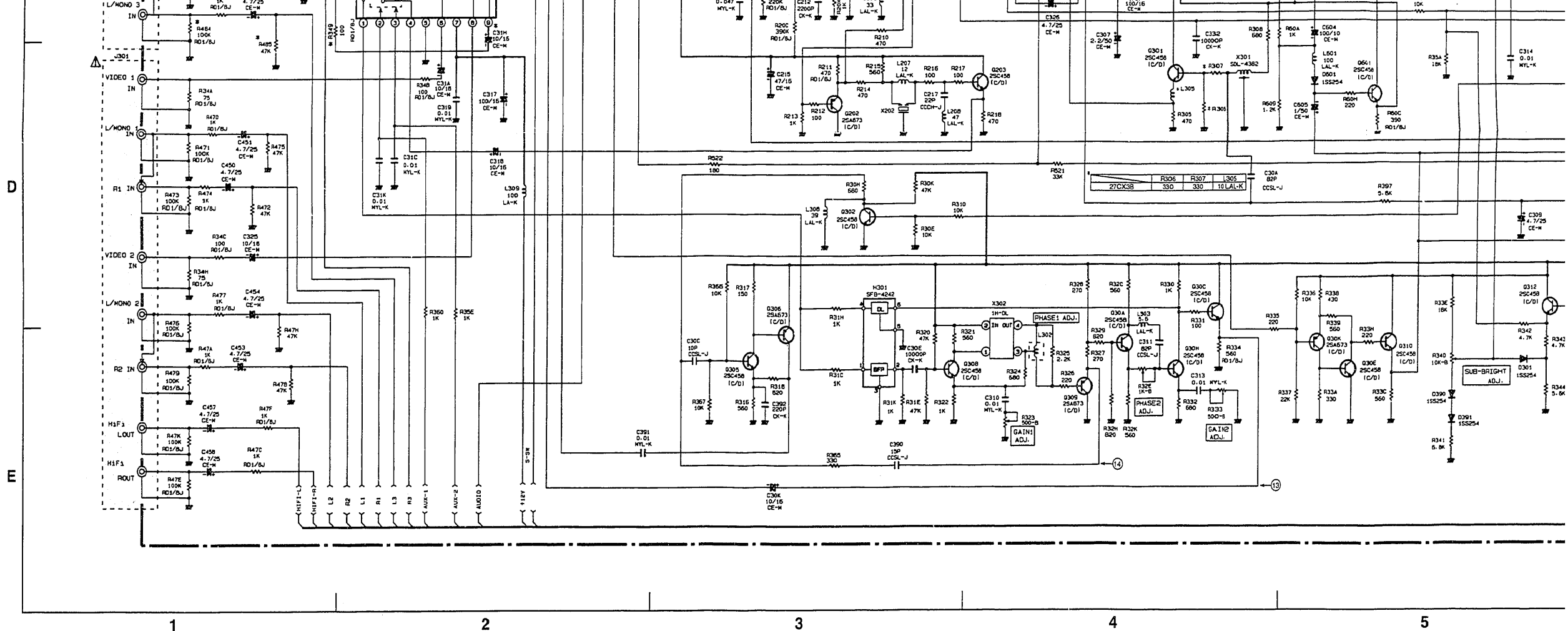


CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



TO SELECTOR/AUDIO PART (02/03)



• Since this is a basic circuit diagram, the value of the parts is subject to change.
• All DC voltage to be measured with a tester (100kΩ/M). Voltage take

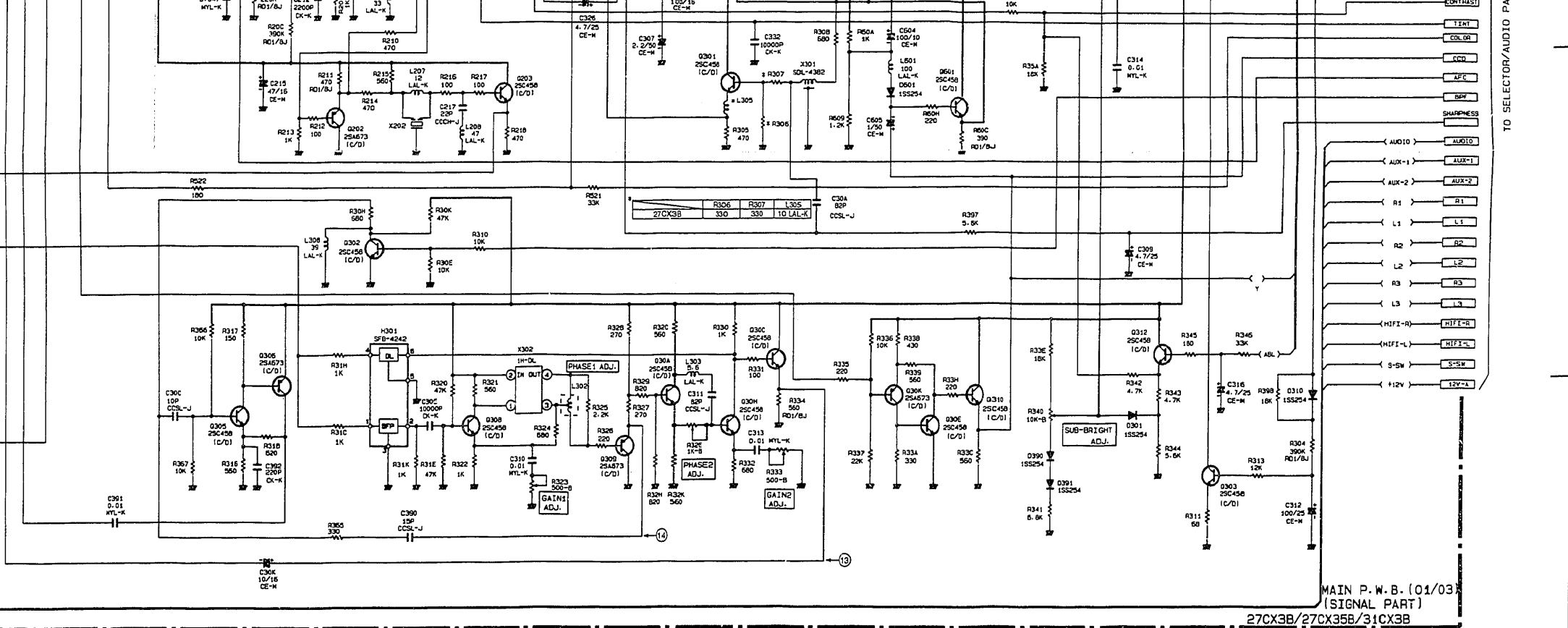
Circuit No.	Pin No.	Voltage VDC
I201	1	4.4
	2	6.8
	3	5.6
	4	5.6
	5	4.3
	6	4.0
	7	0.0
	8	4.5
	9	4.5
	10	5.8
	11	8.8
	12	5.6
	13	5.4
	14	8.9
	15	0.0
	16	0.0
	17	0.0
	18	5.0
	19	5.0
	20	5.0
	21	4.0
	22	0.4
	23	0.4
	24	0.0
	25	5.0
	26	5.7
	27	7.6
	28	4.5
	29	7.0
	30	7.6

Circuit No.	Pin No.	Voltage VDC
I201	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5
Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
	E	0.0
Q002	B	0.0
	C	5.0
	E	0.0
Q003	B	0.0
	C	4.2
	E	0.0
Q004	B	5.0
	C	5.0
	E	5.0
Q005	B	0.7
	C	0.0
	E	0.0
Q006	B	0.5
	C	2.0
	E	0.0
Q008	B	0.5
	C	2.8
	E	0.0
Q009	B	0.0
	C	5.0
	E	0.0
Q101	B	2.3
	C	7.5
	E	1.6
Q201	B	4.4
	C	9.0
	E	3.7

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
	E	3.9
Q203	B	6.0
	C	9.0
	E	5.5
Q30A	B	3.0
	C	7.0
	E	2.0
Q30C	B	6.6
	C	9.0
	E	6.0
Q30E	B	0.7
	C	5.0
	E	0.0
Q30H	B	2.3
	C	6.6
	E	1.6
Q30K	B	6.0
	C	0.7
	E	7.0
Q301	B	1.5
	C	9.0
	E	0.5
Q302	B	0.5
	C	0.0
	E	0.0
Q303	B	0.0
	C	2.7
	E	0.0



3

4

5

6

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I201	1	4.4
	2	6.8
	3	5.6
	4	5.6
	5	4.3
	6	4.0
	7	0.0
	8	4.5
	9	4.5
	10	5.8
	11	8.8
	12	5.6
	13	5.4
	14	8.9
	15	0.0
	16	0.0
	17	0.0
	18	5.0
	19	5.0
	20	5.0
	21	4.0
	22	0.4
	23	0.4
	24	0.0
	25	5.0
	26	5.7
	27	7.6
	28	4.5
	29	7.0
	30	7.6

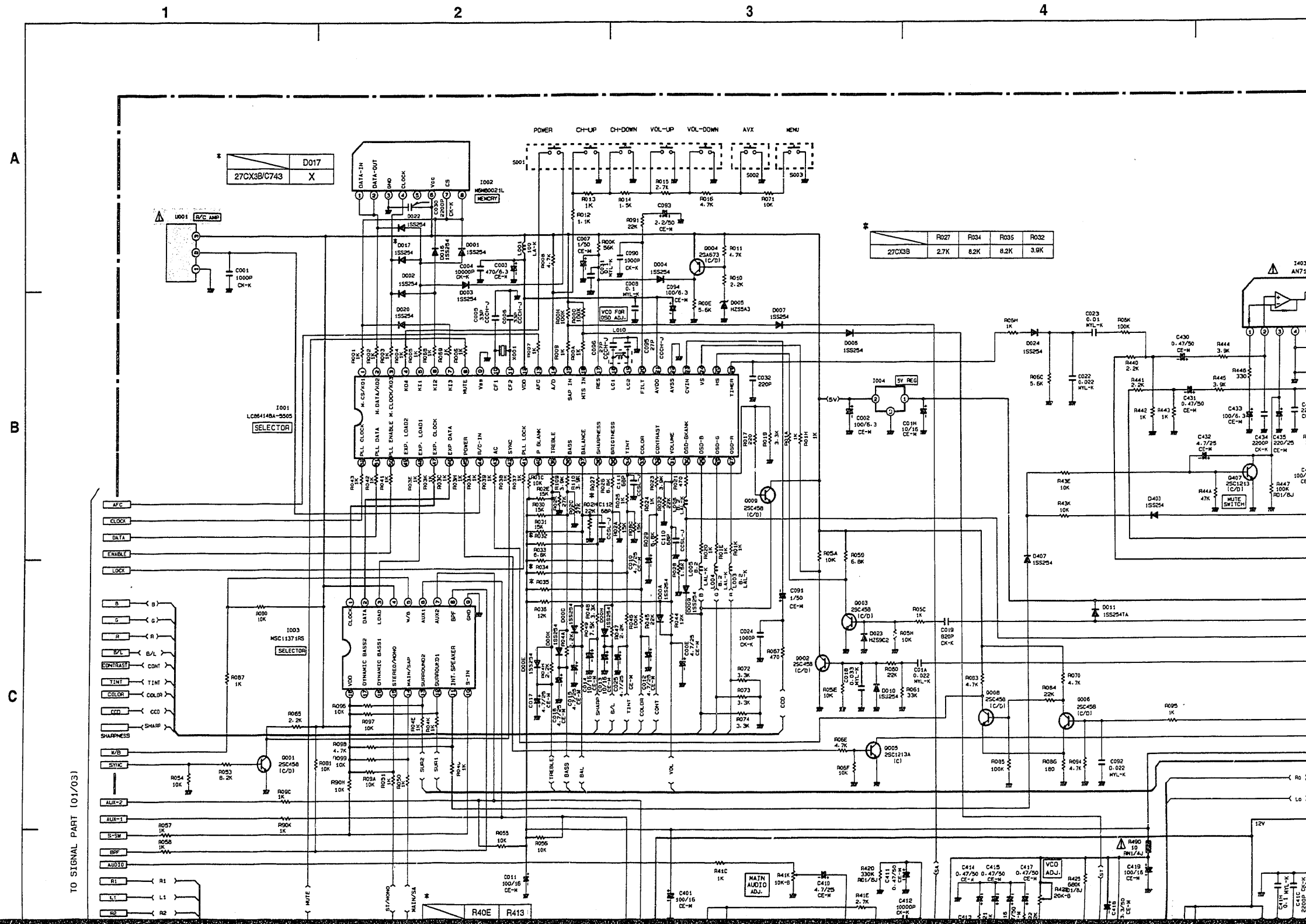
Circuit No.	Pin No.	Voltage VDC
I201	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5
Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
	E	0.0
Q002	B	0.0
	C	5.0
	E	0.0
Q003	B	0.0
	C	4.2
	E	0.0
Q004	B	5.0
	C	5.0
	E	5.0
Q005	B	0.7
	C	0.0
	E	0.0
Q006	B	0.5
	C	2.0
	E	0.0
Q008	B	0.5
	C	2.8
	E	0.0
Q009	B	0.0
	C	5.0
	E	0.0
Q101	B	2.3
	C	7.5
	E	1.6
Q201	B	4.4
	C	9.0
	E	3.7

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
	E	3.9
Q203	B	6.0
	C	9.0
	E	5.5
Q30A	B	3.0
	C	7.0
	E	2.0
Q30C	B	6.6
	C	9.0
	E	6.0
Q30E	B	0.7
	C	5.0
	E	0.0
Q30H	B	2.3
	C	6.6
	E	1.6
Q30K	B	6.0
	C	0.7
	E	7.0
Q301	B	1.5
	C	9.0
	E	0.5
Q302	B	0.5
	C	0.0
	E	0.0
Q303	B	0.0
	C	2.7
	E	0.0

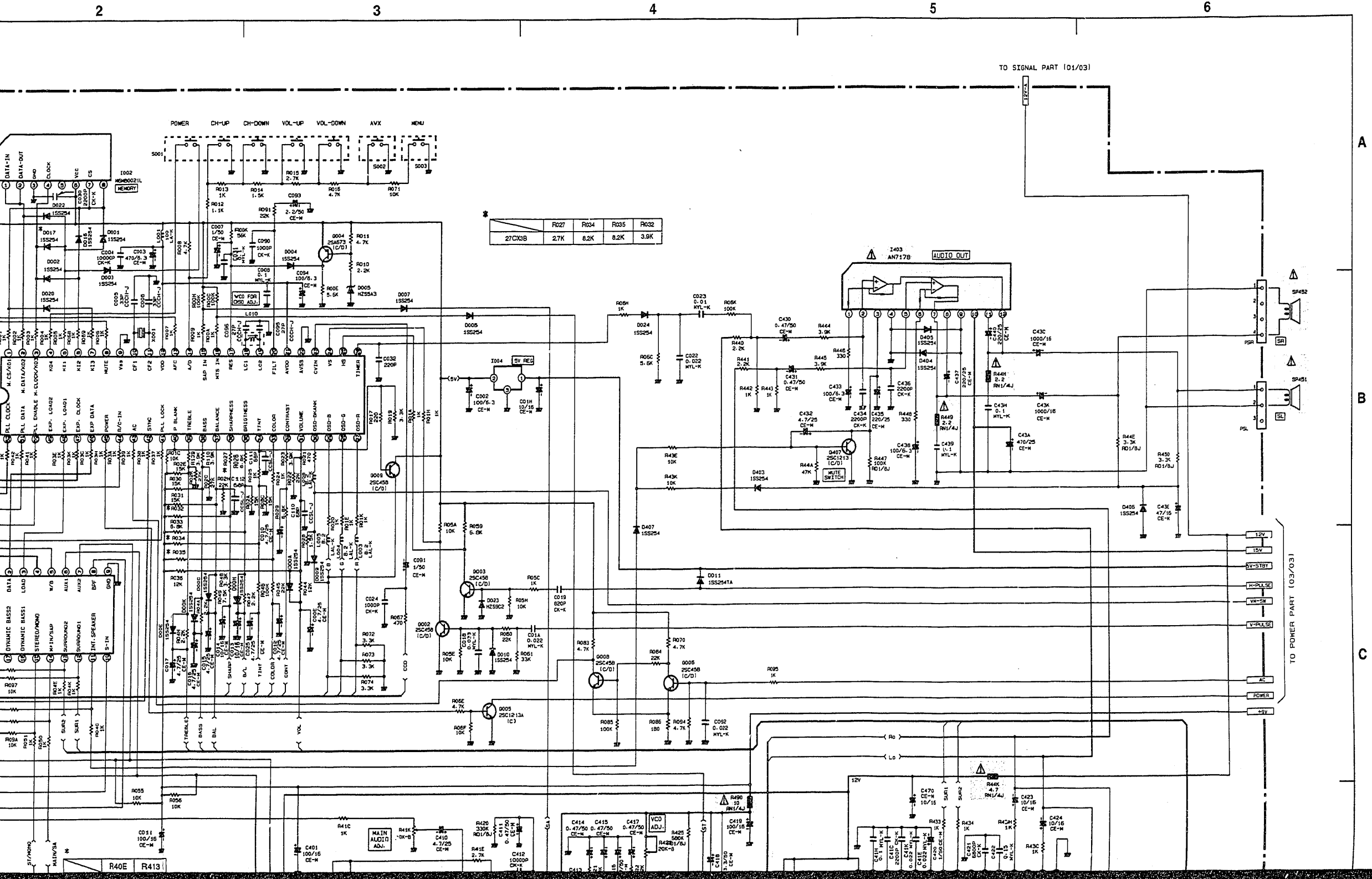
PRODUCT SAFETY NOTE:
any of these components, re
through improper servicing.

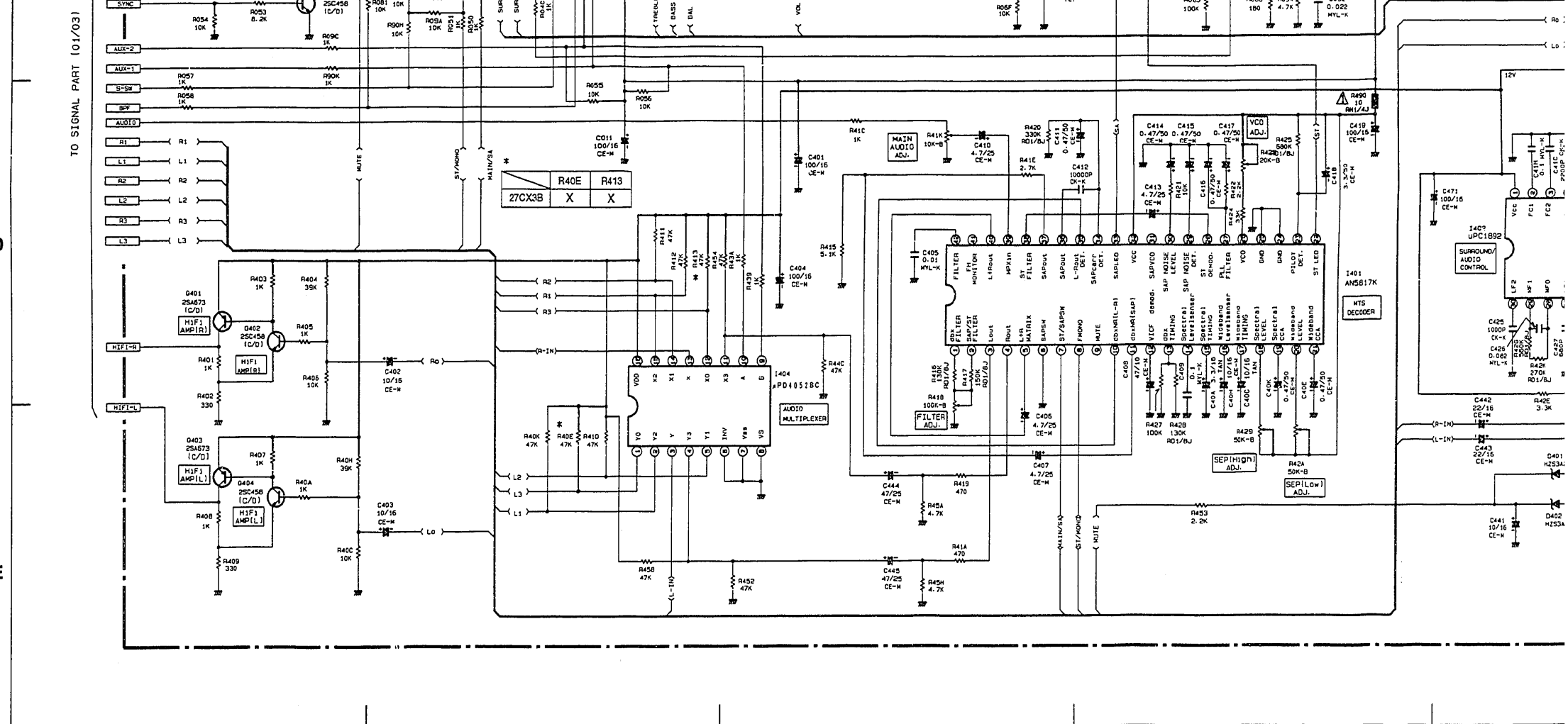


CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

27CX3B/C743





1

2

3

4

• Since this is a basic ci
• All DC voltage to be m

Circuit No.	Pin No.	Voltage VDC
I001	1	5.0
	2	5.0
	3	5.0
	4	5.0
	5	12mv
	6	12mv
	7	12mv
	8	-3mv
	9	0.0
	10	2.5
	11	2.5
	12	5.0
	13	2.2
	14	5.0
	15	0.5
	16	0.5
	17	5.0
	18	2.3
	19	2.3
	20	2.5
	21	5.0
	22	0.0
	23	3.0
	24	5.0
	25	4.2
	26	0.0
	27	0.0

Circuit No.	Pin No.	Voltage VDC
I001	28	0.0
	29	0.0
	30	0.0
	31	42mv
	32	7.0
	33	4.4
	34	3.0
	35	2.3
	36	4.1
	37	1.5
	38	1.8
	39	1.8
	40	47mv
	41	120mv
	42	85mv
	43	2.3
	44	5.0
	45	5.0
	46	5.0
	47	0.3
	48	2.5mv
	49	5mv
	50	180mv
	51	5.0
	52	5.0

Circuit No.	Pin No.	Voltage VDC
I002	1	5.0
	2	5.0
	3	0.0
	4	5.0
	5	5.0
	6	5.0
	7	5.0
	8	5.0

Circuit No.	Pin No.	Voltage VDC
I003	1	0.3
	2	5.0
	3	2.4mv
	4	5.0
	5	1.5mv
	6	9.5
	7	9.5
	8	0.0
	9	0.0
	10	1.2mv
	11	3.5mv
	12	0.0
	13	0.0
	14	5.0
	15	3.5
	16	—
	17	—
	18	5.0

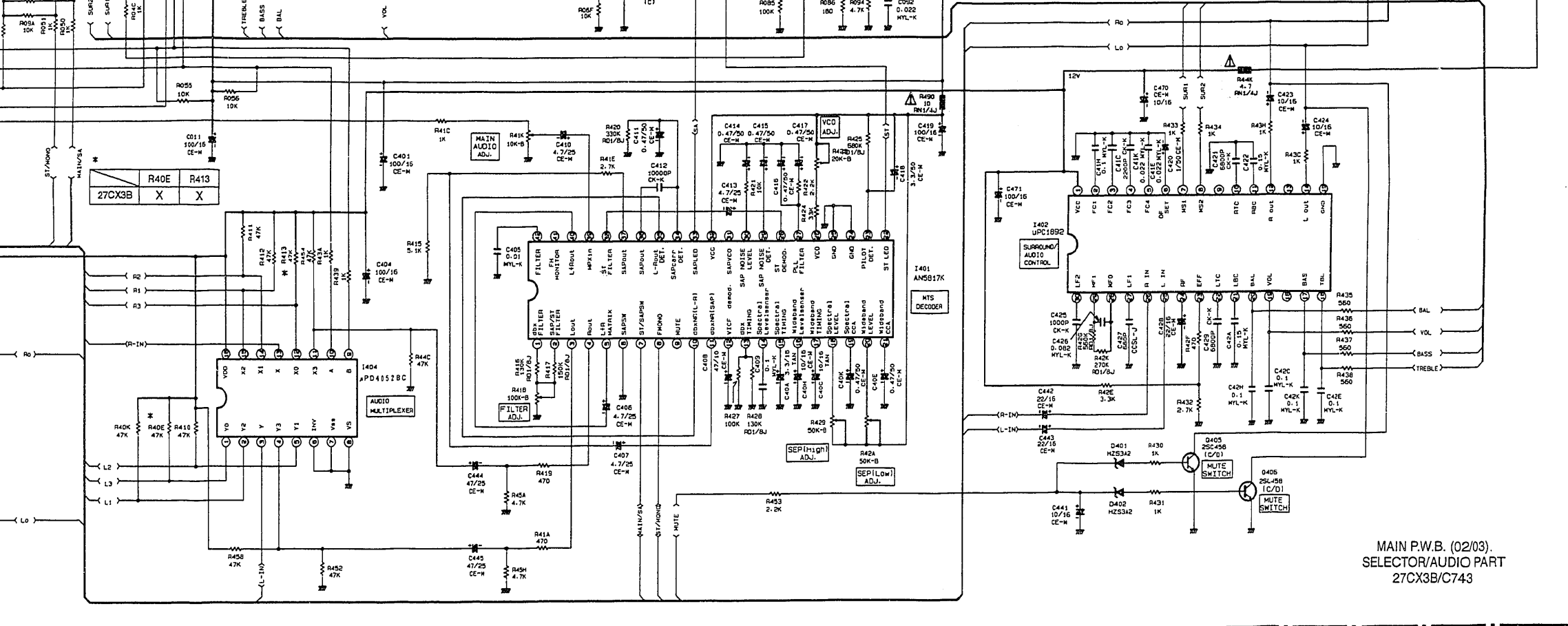
Circuit No.	Pin No.	Voltage VDC
I004	1	15.0
	2	5.0
	3	0.0

Circuit No.	Pin No.	Voltage VDC
I403	1	5.3
	2	9.9
	3	15.0
	4	0.0
	5	10.5
	6	5.8
	7	1.3
	8	0.0
	9	0.0
	10	12.0
	11	0.0
	12	1.3

Circuit No.	Pin No.	Voltage VDC
I401	1	1.2
	2	1.2
	3	5.0
	4	5.0
	5	5.0
	6	0.0
	7	5.0
	8	3.5
	9	—
	10	4.5
	11	5.0
	12	5.0
	13	1.2
	14	5.0
	15	0.3
	16	5.0
	17	0.6
	18	8.0
	19	5.0
	20	8.0
	21	5.0
	22	0.0
	23	7.0
	24	0.0
	25	0.0
	26	8.3
	27	5.0
	28	5.0

Circuit No.	Pin No.	Voltage VDC
I401	29	3.0
	30	3.0
	31	—
	32	9.5
	33	0.0
	34	3.8
	35	4.5
	36	0.5
	37	3.8
	38	4.2
	39	5.0
	40	4.0
	41	—
	42	5.0

Circuit No.	Pin No.	Voltage VDC
I402	1	12.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	6.0
	7	0.0
	8	0.0
	9	6.0
	10	6.0
	11	6.0
	12	6.0
	13	—
	14	6.0
	15	0.0
	16	3.0
	17	3.0
	18	—
	19	0.0
	20	2.2
	21	6.0
	22	6.0
	23	5.2
	24	6.0
	25	6.0
	26	6.0
	27	6.0
	28	6.0



MAIN P.W.B. (02/03).
SELECTOR/AUDIO PART
27CX3B/C743

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I001	28	0.0
	29	0.0
	30	0.0
	31	42mv
	32	7.0
	33	4.4
	34	3.0
	35	2.3
	36	4.1
	37	1.5
	38	1.8
	39	1.8
	40	47mv
	41	120mv
	42	85mv
	43	2.3
	44	5.0
	45	5.0
	46	5.0
	47	0.3
	48	2.5mv
	49	5mv
	50	180mv
	51	5.0
	52	5.0

Circuit No.	Pin No.	Voltage VDC
I002	1	5.0
	2	5.0
	3	0.0
	4	5.0
	5	5.0
	6	5.0
	7	5.0
	8	5.0

Circuit No.	Pin No.	Voltage VDC
I003	1	0.3
	2	5.0
	3	2.4mv
	4	5.0
	5	1.5mv
	6	9.5
	7	9.5
	8	0.0
	9	0.0
	10	1.2mv
	11	3.5mv
	12	0.0
	13	0.0
	14	5.0
	15	3.5
	16	—
	17	—
	18	5.0

Circuit No.	Pin No.	Voltage VDC
I004	1	15.0
	2	5.0
	3	0.0

Circuit No.	Pin No.	Voltage VDC
I403	1	5.3
	2	9.9
	3	15.0
	4	0.0
	5	10.5
	6	5.8
	7	1.3
	8	0.0
	9	0.0
	10	12.0
	11	0.0
	12	1.3

Circuit No.	Pin No.	Voltage VDC
I401	1	1.2
	2	1.2
	3	5.0
	4	5.0
	5	5.0
	6	0.0
	7	5.0
	8	3.5
	9	—
	10	4.5
	11	5.0
	12	5.0
	13	1.2
	14	5.0
	15	0.3
	16	5.0
	17	0.6
	18	8.0
	19	5.0
	20	8.0
	21	5.0
	22	0.0
	23	7.0
	24	0.0
	25	0.0
	26	8.3
	27	5.0
	28	5.0

Circuit No.	Pin No.	Voltage VDC
I401	29	3.0
	30	3.0
	31	—
	32	9.5
	33	0.0
	34	3.8
	35	4.5
	36	0.5
	37	3.8
	38	4.2
I401	39	5.0
	40	4.0
	41	—
	42	5.0

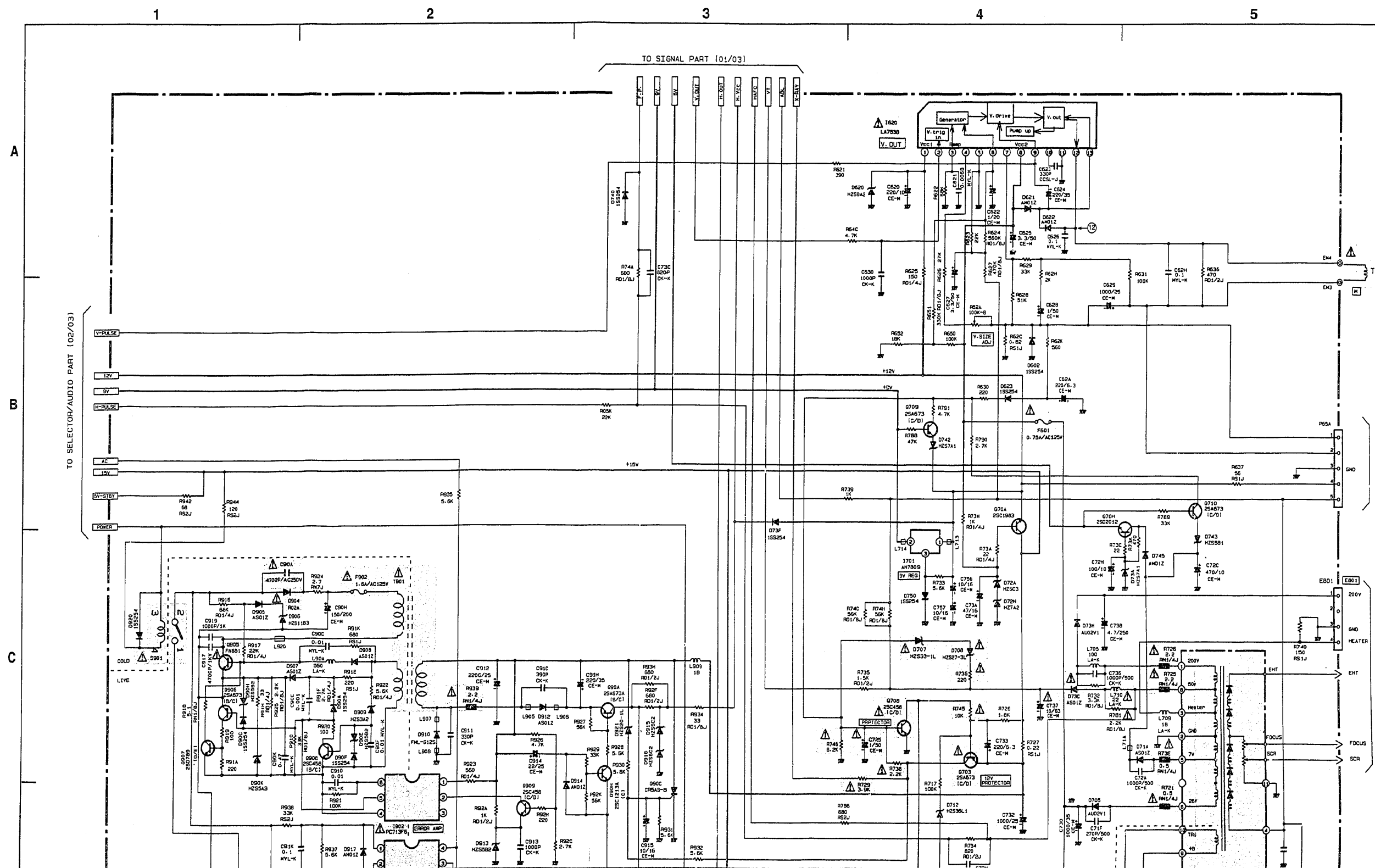
Circuit No.	Pin No.	Voltage VDC
I402	1	12.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	6.0
	7	0.0
	8	0.0
	9	6.0
	10	6.0
	11	6.0
	12	6.0
	13	—
	14	6.0
	15	0.0
	16	3.0
	17	3.0
	18	—
	19	0.0
	20	2.2
	21	6.0
	22	6.0
	23	5.2
	24	6.0
	25	6.0
	26	6.0
	27	6.0
	28	6.0

Circuit No.	Pin No.	Voltage VDC
I402	29	6.0
	30	6.0
Circuit No.	Pin No.	Voltage VDC
I404	1	6.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	0.0
	7	0.0
	8	0.0
	9	9.5
	10	9.5
	11	6.0
	12	6.0
	13	6.0
	14	6.0
	15	6.0
	16	12.0

27CX3B/C743

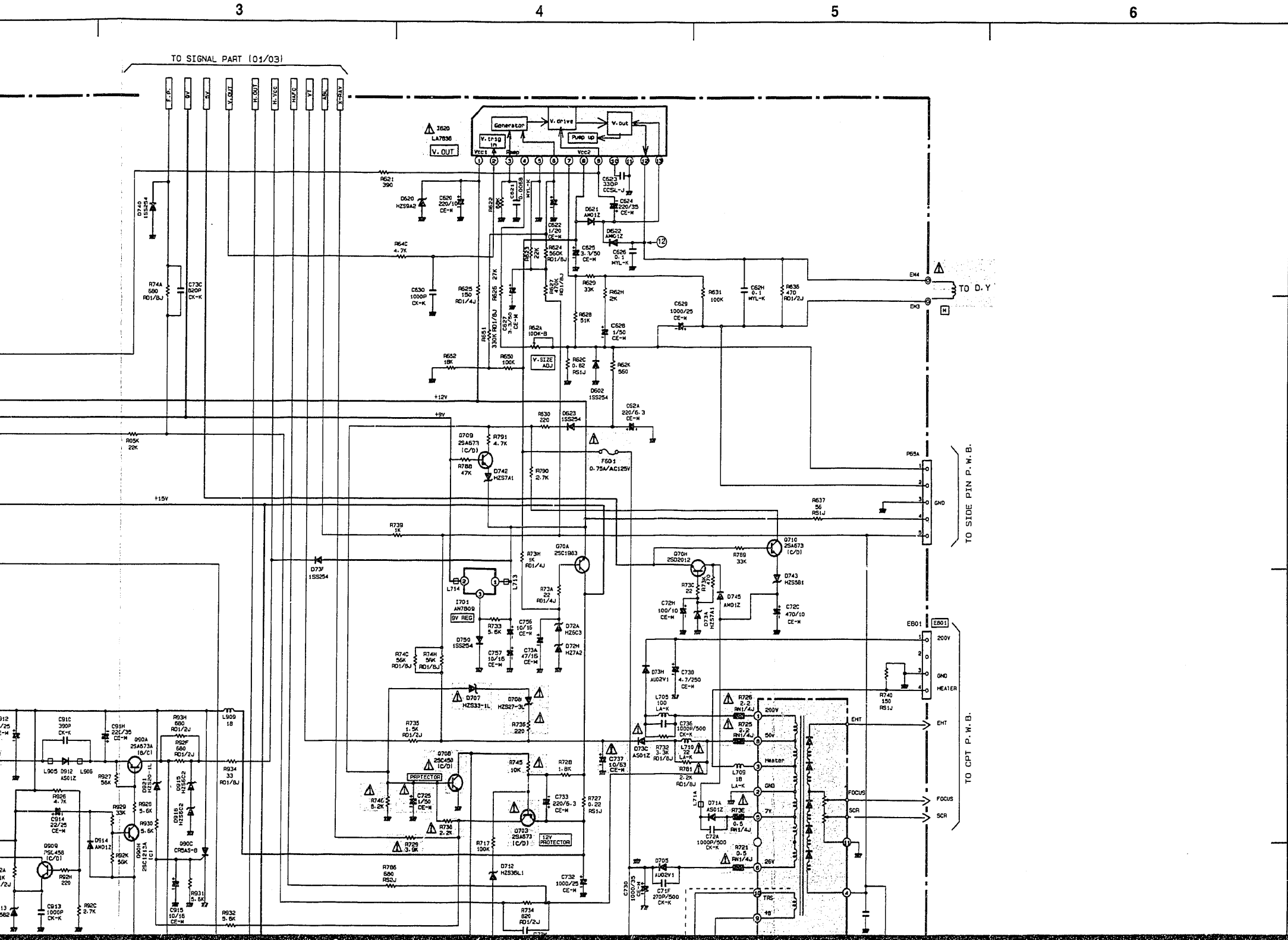
CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743

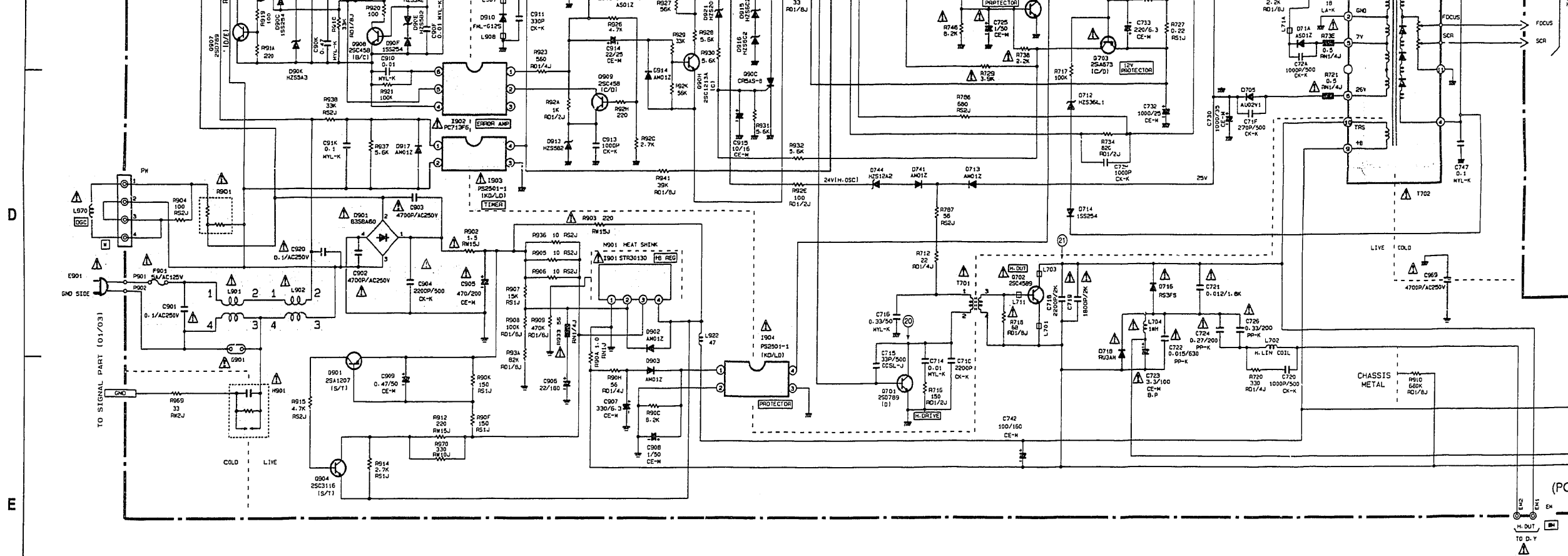
PRODUCT SAFETY NOTE: Components marked with a  and shaded any of these components, read carefully the **PRODUCT SAFETY NOTICE** through improper servicing.



CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





1

2

3

4

5

Circuit No.	Pin No.	Voltage VDC
I620	1	1.3
	2	0.9
	3	0.6
	4	0.5
	5	0.0
	6	0.6
	7	0.6
	8	5.0
	9	0.5
	10	0.5
	11	0.0
	12	2.5
	13	5.0

Circuit No.	Pin No.	Voltage VDC
I701	1	12.0
	2	9.0
	3	0.5

Circuit No.	Pin No.	Voltage VDC
I901	1	0.0
	2	130
	3	160
	4	130

Circuit No.	Pin No.	Voltage VDC
I902	1	14.0
	2	13.0
	3	—
	4	0.0
	5	2.0
	6	0.0

Circuit No.	Pin No.	Voltage VDC
I903	1	1.2
	2	0.5
	3	0.5
	4	0.0

Circuit No.	Pin No.	Voltage VDC
I904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0

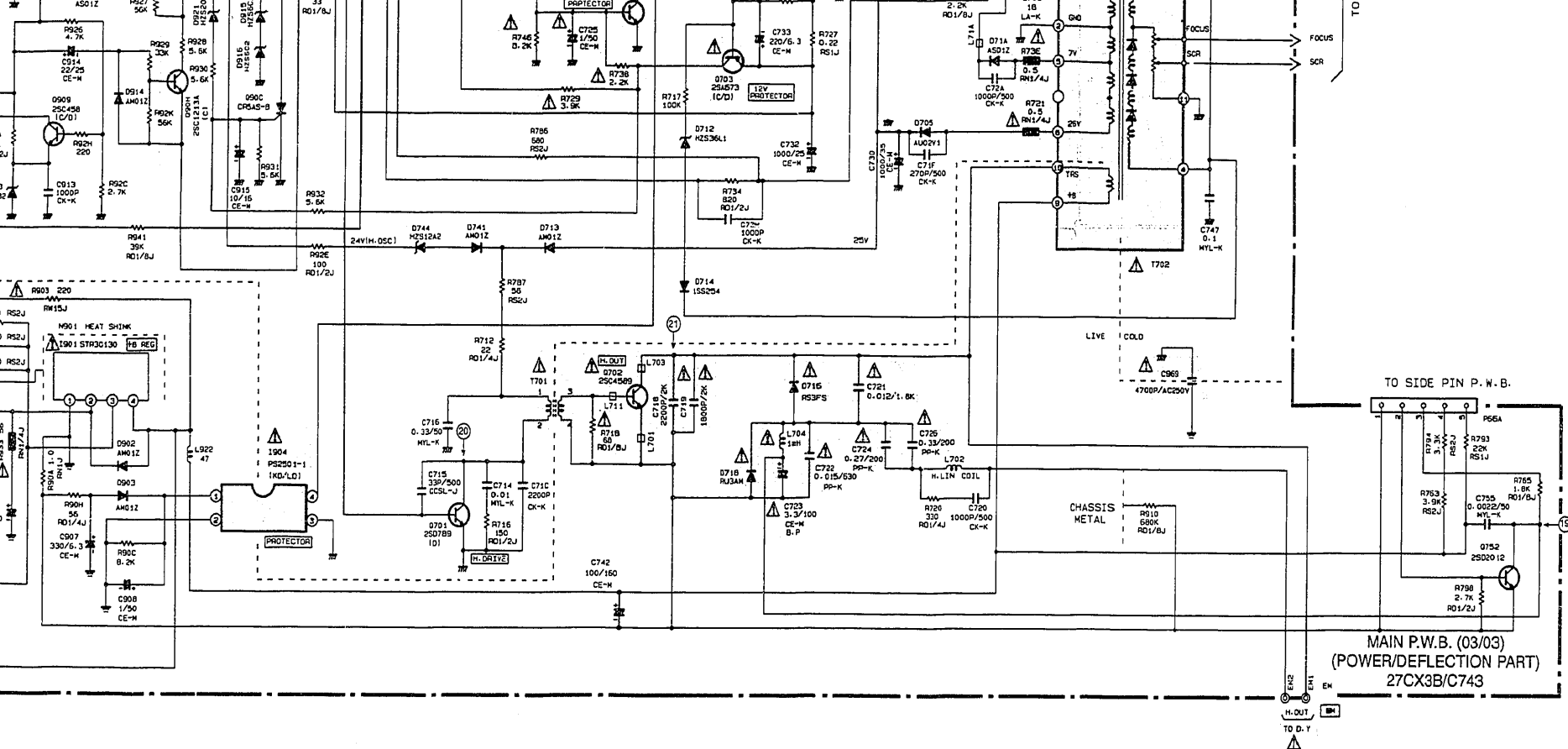
Circuit No.	Pin No.	Voltage VDC
Q402	B	2.4
	C	11.0
	E	1.7
Q403	B	12.0
	C	6.0
	E	12.0
Q404	B	2.4
	C	11.0
	E	1.7
Q405	B	0.5
	C	0.0
	E	0.0

Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (27v)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.6
	C	9.0
	E	7.0

Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

• Since this is a basic circuit diagram, the value of the parts is subject to change.
 • All DC voltage to be measured with a tester (100kΩ/V). Voltage taken with a 100kΩ/V tester.



Voltage VDC
1.3
0.9
0.6
0.5
0.0
0.6
0.6
5.0
0.5
0.5
0.0
2.5
5.0

Voltage VDC
12.0
9.0
0.5

Voltage VDC
0.0
130
160
130

Circuit No.	Pin No.	Voltage VDC
I902	1	14.0
	2	13.0
	3	—
	4	0.0
	5	2.0
	6	0.0

Circuit No.	Pin No.	Voltage VDC
I903	1	1.2
	2	0.5
	3	0.5
	4	0.0

Circuit No.	Pin No.	Voltage VDC
I904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q402	B	2.4
	C	11.0
	E	1.7
Q403	B	12.0
	C	6.0
	E	12.0
Q404	B	2.4
	C	11.0
	E	1.7
Q405	B	0.5
	C	0.0
	E	0.0

Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (27v)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.5
	C	9.0
	E	7.0

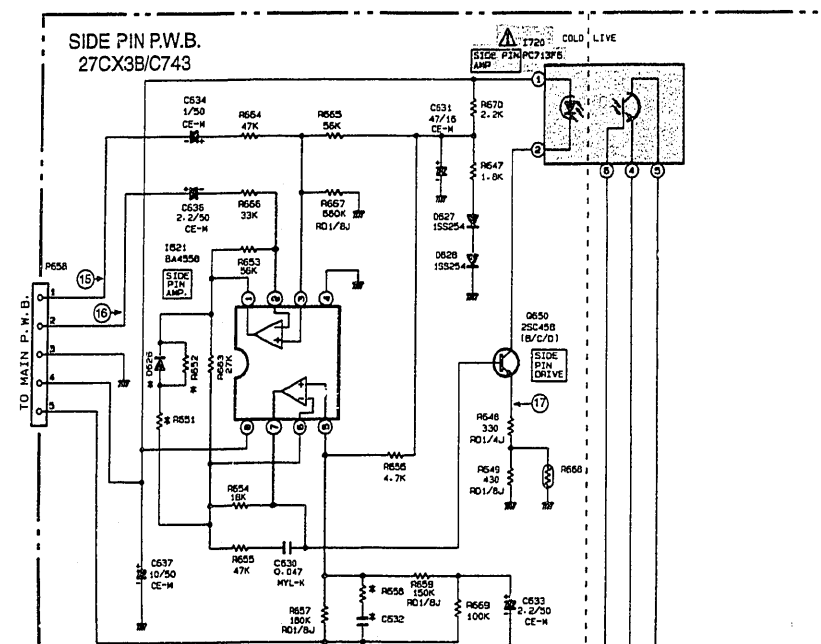
Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

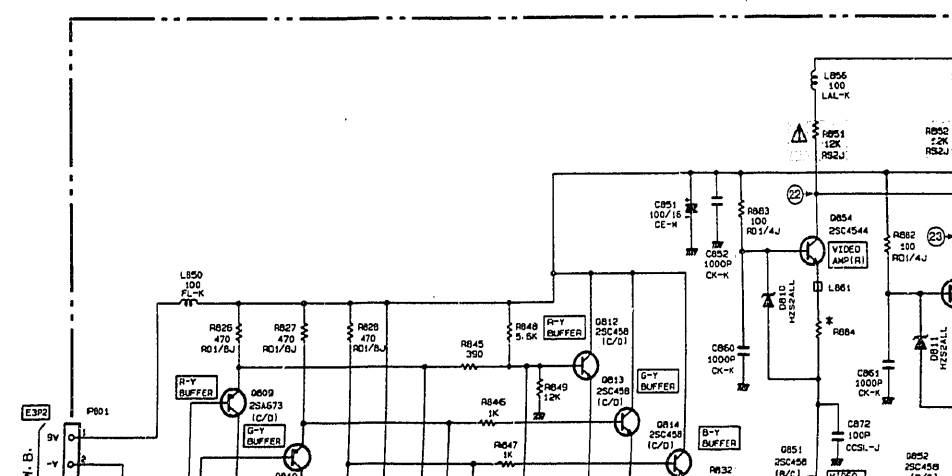
CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743

PRODUCT SAFETY NOTE: Do not use any of these components, reassembled through improper servicing.

	R651	R652	D626	R658	C632
27CX3B	100K	100K	NO NEED	680	0.0068 MYL-K



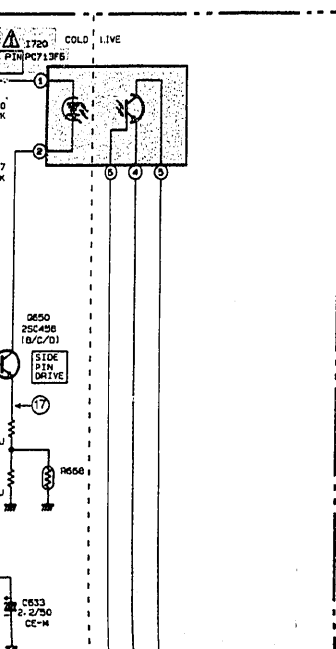
	27CX3B
C864	150 CK-K
C865	390 CK-K
C866	150 CK-K
C870	330 CK-K
C875	150 CK-K
C387	330 CK-K
R884	91
R885	91



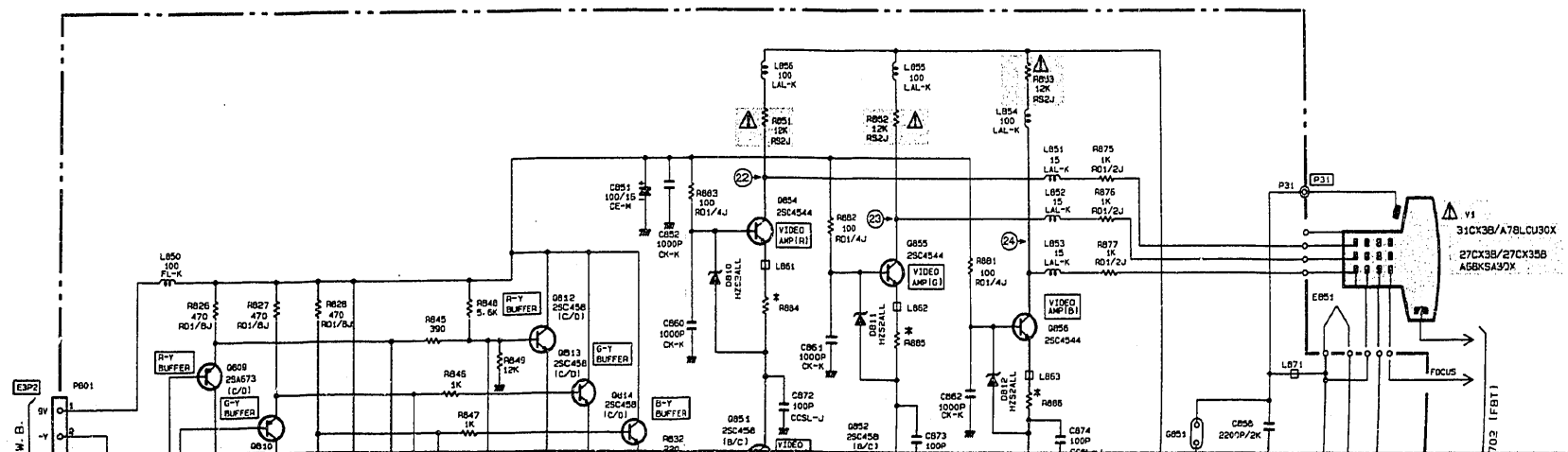
CIRCUIT SCHEMATIC DIAGRAM OF 27CX3B/C743

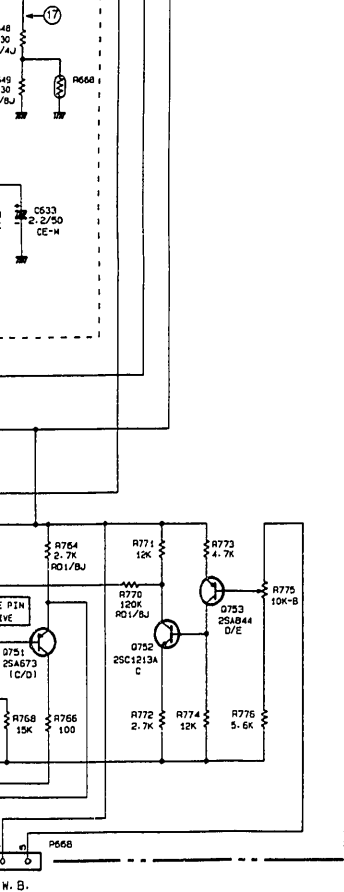
PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

0626	R658	C632
NEED	680	0.0068 MYL-K

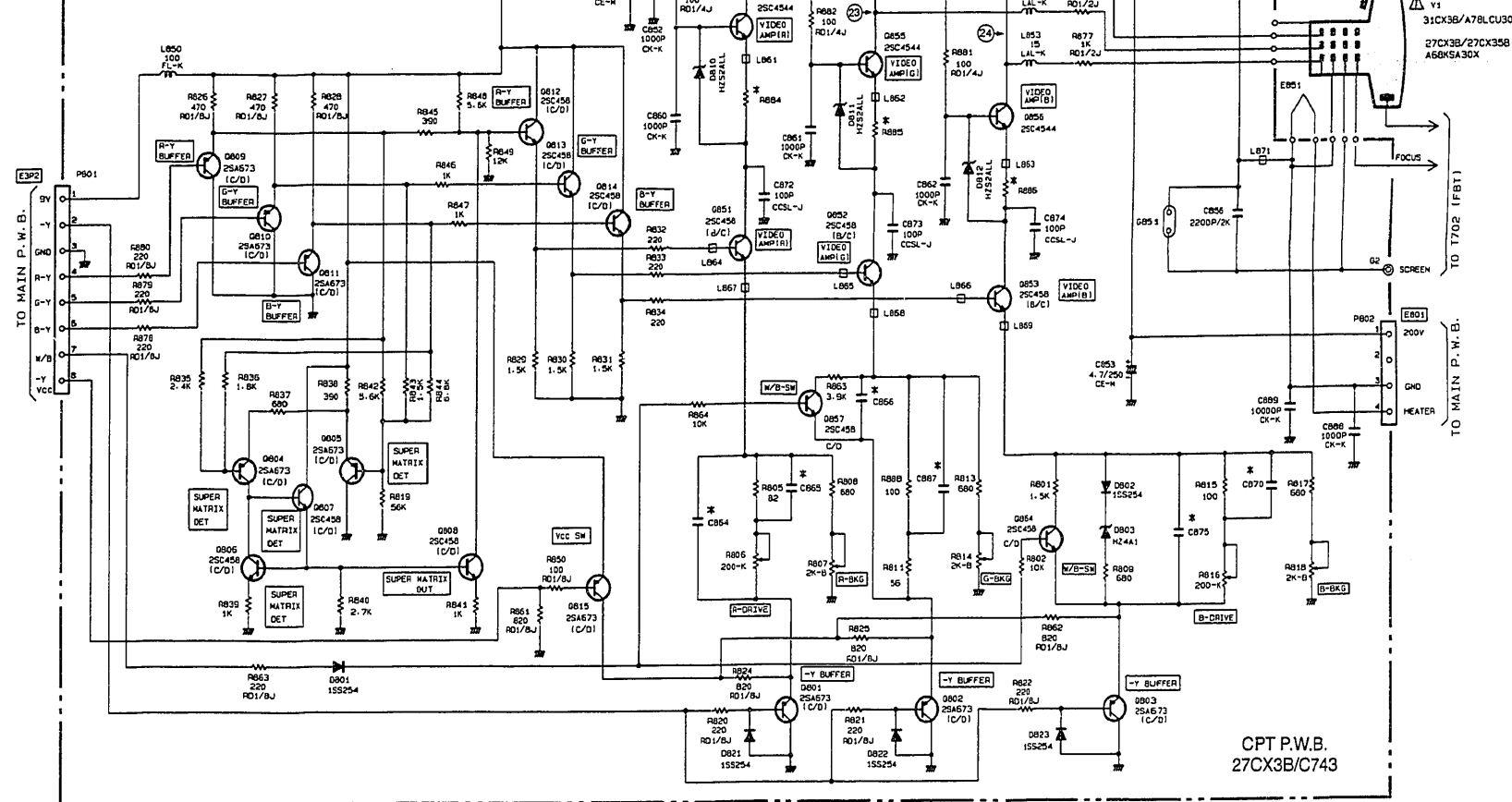


	27CX3B
C864	150 CK-K
C865	390 CK-K
C866	150 CK-K
C870	330 CK-K
C875	150 CK-K
C887	330 CK-K
R884	91
R885	91





C870	330 CK-K
C875	150 CK-K
C887	330 CK-K
R884	91
R885	91
R886	91



CPT P.W.B.
27CX3B/C743

2

3

4

5

6

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100KΩN). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I621	1	5.0
	2	5.0
	3	5.0
	4	0.0
	5	5.7
	6	5.7
	7	6.2
	8	10.9

Circuit No.	Pin No.	Voltage VDC
I720	1	11.0
	2	9.8
	3	0.0
	4	-56.0
	5	-36.0

Circuit No.	Pin No.	Voltage VDC
Q650 Side P.	B	6.5
	C	9.8
	E	5.6
Q750 Side P.	B	-60.0
	C	-50.0
	E	-60.0
Q751 Side P.	B	-41.0
	C	-60.0
	E	-41.0
Q752 Side P.	B	-60.0
	C	-35.0
	E	-60.0
Q753 Side P.	B	-35.0
	C	-60.0
	E	-35.0

Circuit No.	Pin No.	Voltage VDC
Q801 CPT	B	4.0
	C	0.0
	E	4.0
Q802 CPT	B	3.8
	C	0.0
	E	3.9
Q803 CPT	B	4.0
	C	0.0
	E	4.0
Q804 CPT	B	6.0
	C	1.4
	E	6.4
Q805 CPT	B	5.8
	C	0.0
	E	6.5

Circuit No.	Pin No.	Voltage VDC
Q806 CPT	B	0.7
	C	1.4
	E	0.0
Q807 CPT	B	1.3
	C	9.0
	E	0.6

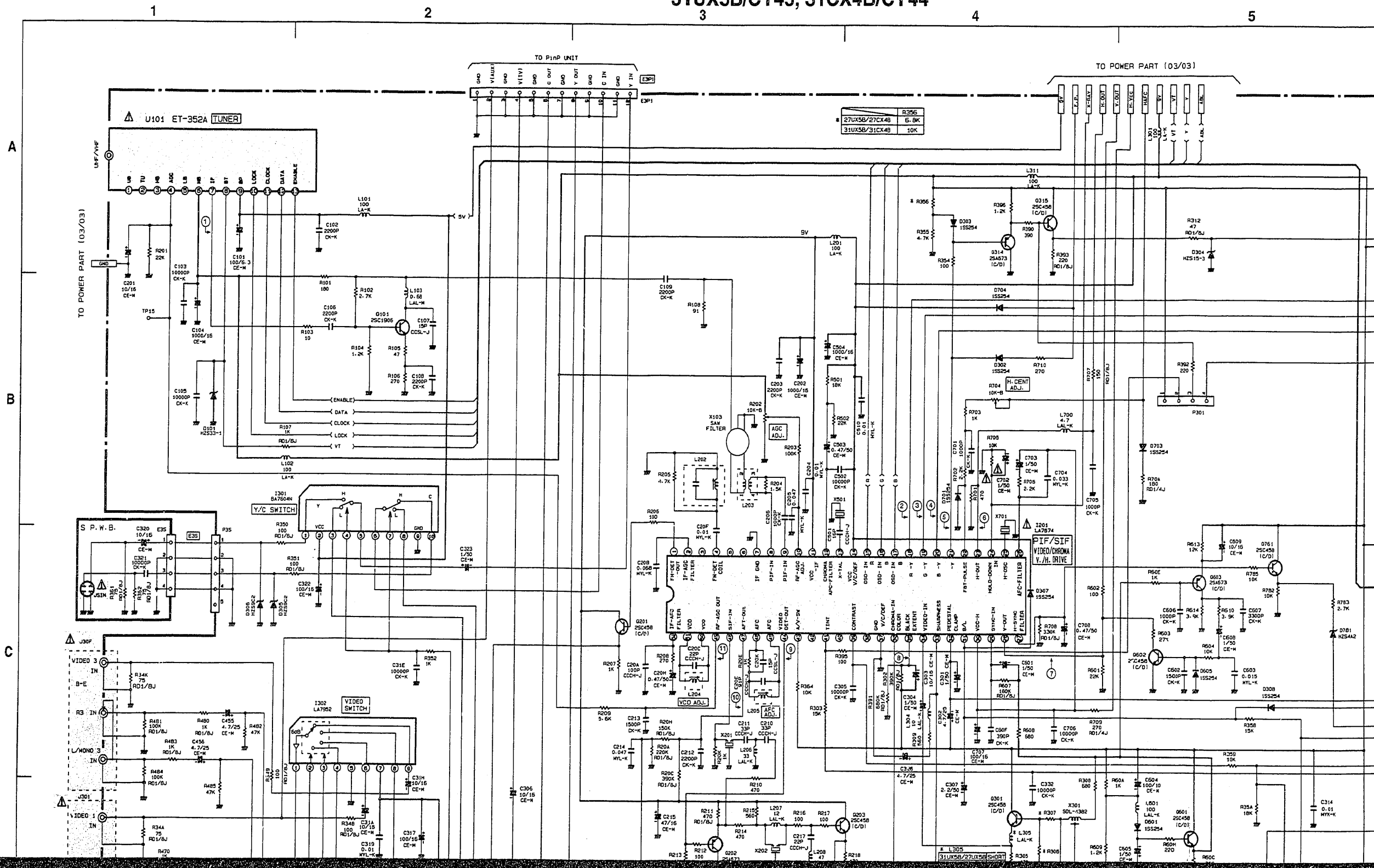
Circuit No.	Pin No.	Voltage VDC
Q808 CPT	B	0.9
	C	6.0
	E	0.0
Q809 CPT	B	5.0
	C	0.0
	E	6.0
Q810 CPT	B	5.0
	C	0.0
	E	6.0
Q811 CPT	B	5.0
	C	0.0
	E	6.0
Q812 CPT	B	6.0
	C	9.0
	E	5.0
Q813 CPT	B	6.0
	C	9.0
	E	5.0
Q814 CPT	B	0.9
	C	9.0
	E	0.9
Q815 CPT	B	5.0
	C	3.9
	E	3.9

Circuit No.	Pin No.	Voltage VDC
Q851 CPT	B	5.0
	C	8.0
	E	5.0
Q852 CPT	B	5.0
	C	7.6
	E	4.7
Q853 CPT	B	5.0
	C	8.0
	E	5.0
Q854 CPT	B	1.5
	C	26.0
	E	1.5
Q855 CPT	B	1.2
	C	24.0
	E	1.2
Q856 CPT	B	1.2
	C	24.0
	E	1.2
Q857 CPT	B	4.5
	C	3.9
	E	3.9
Q864 CPT	B	4.6
	C	4.0
	E	4.0

27UX5B/C745
27CX4B/C744
31UX5B/CY45
31CX4B/CY44

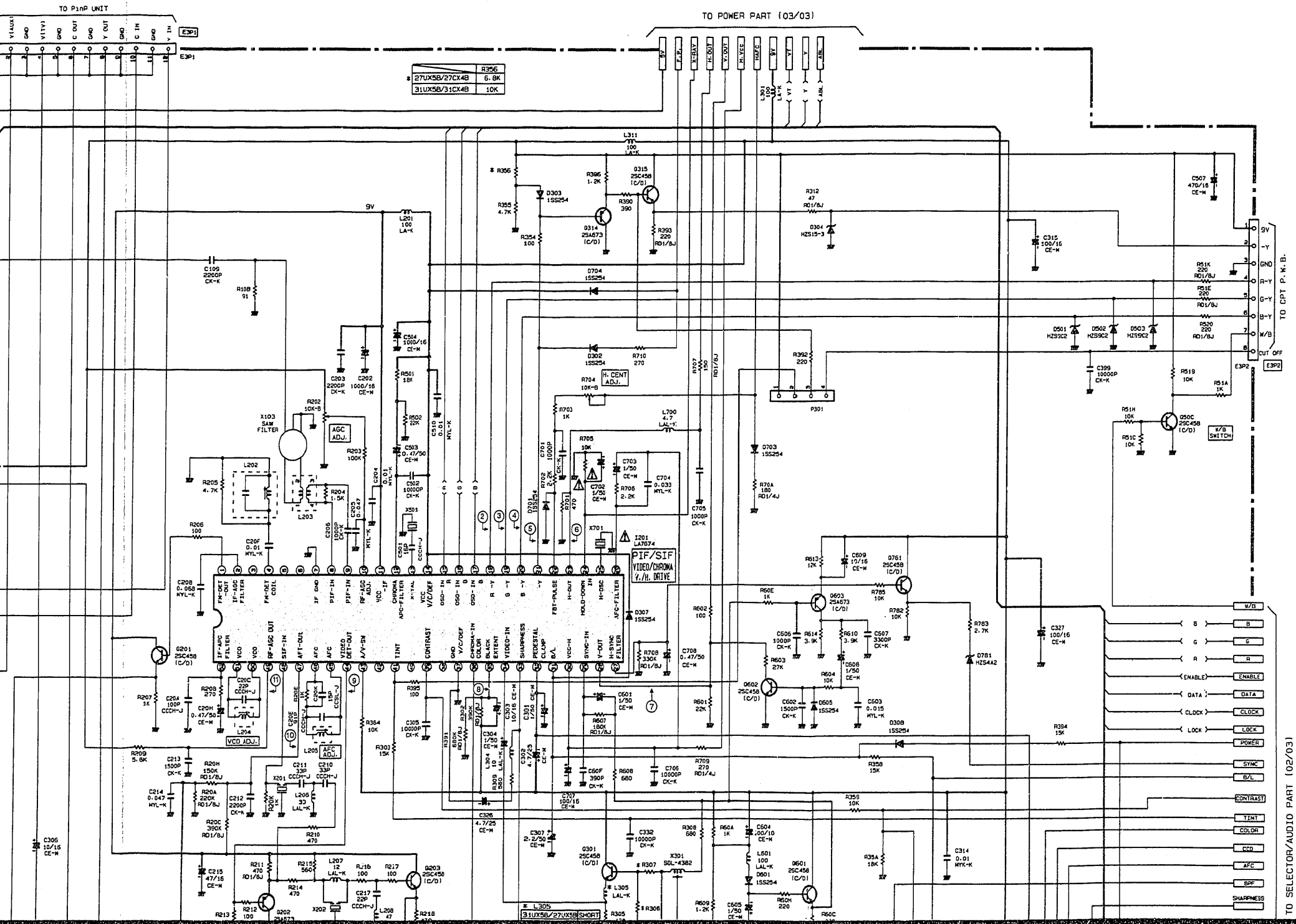
CIRCUIT SCHEMATIC DIAGRAM OF 27UX5B/C745, 27CX4B/C744, 31UX5B/CY45, 31CX4B/CY44

PRODUCT SAFETY NOTE: Components marked with a  and shaded any of these components, read carefully the PRODUCT SAFETY NOTICE through improper servicing.

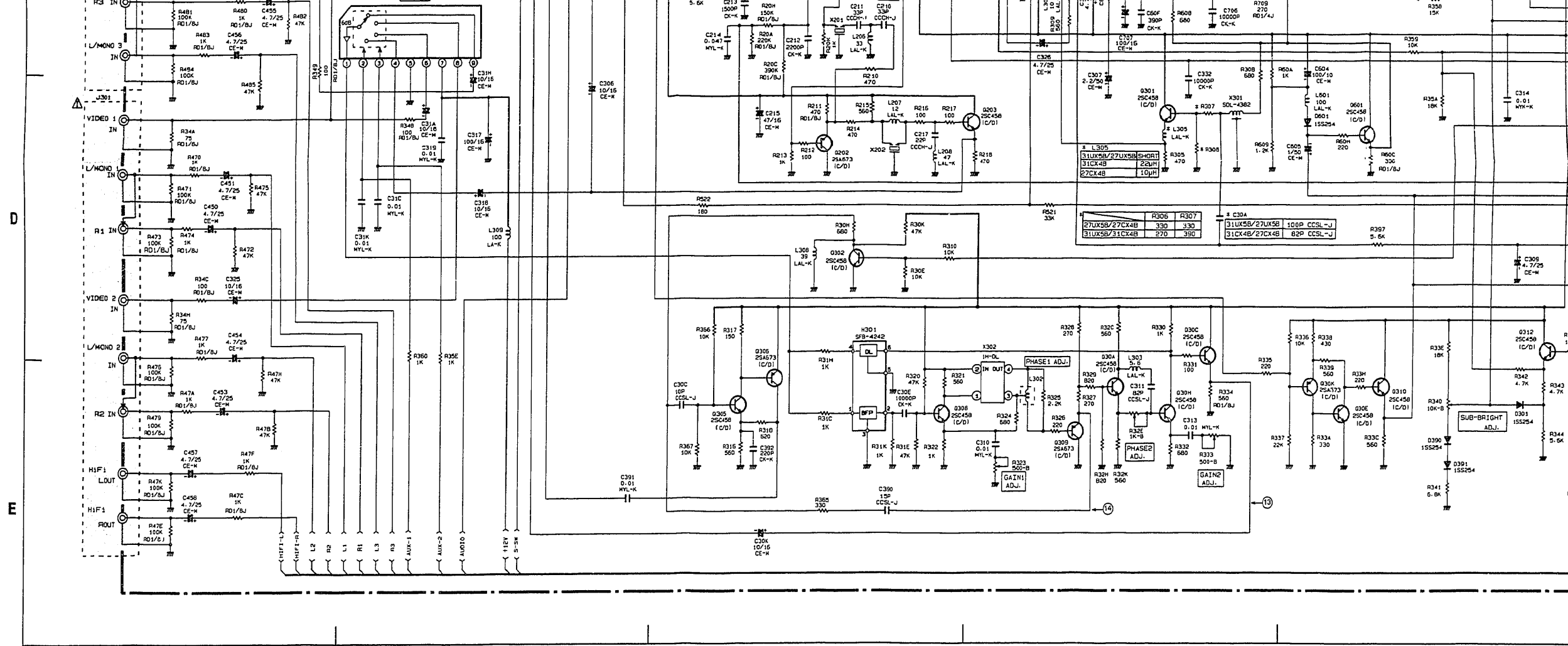


CIRCUIT SCHEMATIC DIAGRAM OF 27UX5B/C745, 27CX4B/C744, 31UX5B/CY45, 31CX4B/CY44

PRODUCT SAFETY NOTE: Components marked with a Δ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



TO SELECTOR/AUDIO PART (02/03)



• Since this is a basic circuit diagram, the value of the parts is subject to change.
• All DC voltage to be measured with a tester (100kΩ). Voltage take

Circuit No.	Pin No.	Voltage VDC
I201	1	4.4
	2	6.8
	3	5.6
	4	5.6
	5	4.3
	6	4.0
	7	0.0
	8	4.5
	9	4.5
	10	5.8
	11	8.8
	12	5.6
	13	5.4
	14	8.9
	15	0.0
	16	0.0
	17	0.0
	18	5.0
	19	5.0
	20	5.0
	21	4.0
	22	0.4
	23	0.4
	24	0.0
	25	5.0
	26	5.7
	27	7.6
	28	4.5
	29	7.0
	30	7.6

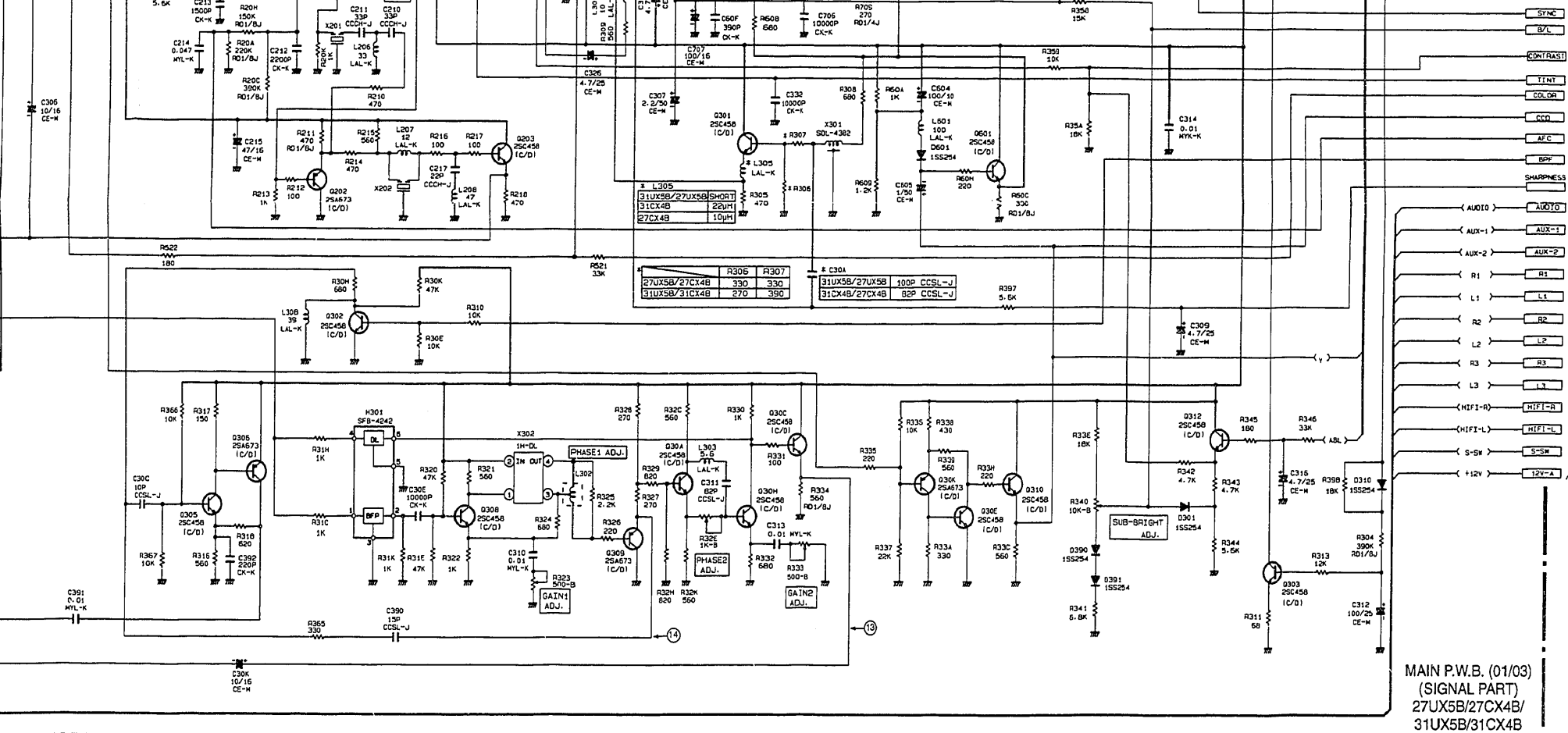
Circuit No.	Pin No.	Voltage VDC
I201	28	4.5
	29	7.0
	30	7.6
	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5
Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
	E	0.0
Q002	B	0.0
	C	5.0
	E	0.0
Q003	B	0.0
	C	4.2
	E	0.0
Q004	B	5.0
	C	5.0
	E	5.0
Q005	B	0.7
	C	0.0
	E	0.0
Q006	B	0.5
	C	2.0
	E	0.0
Q008	B	0.5
	C	2.8
	E	0.0
Q009	B	0.0
	C	5.0
	E	0.0
Q101	B	2.3
	C	7.5
	E	1.6
Q201	B	4.4
	C	9.0
	E	3.7

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0
Q402	B	2.4
	C	11.0
	E	1.7

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
	E	3.9
Q203	B	6.0
	C	9.0
	E	5.5
Q30A	B	3.0
	C	7.0
	E	2.0
Q30C	B	6.6
	C	9.0
	E	6.0
Q30E	B	0.7
	C	5.0
	E	0.0
Q30H	B	2.3
	C	6.6
	E	1.6
Q30K	B	6.0
	C	0.7
	E	7.0
Q301	B	1.5
	C	9.0
	E	0.5
Q302	B	0.5
	C	0.0
	E	0.0
Q303	B	0.0
	C	2.7
	E	0.0



3

4

5

6

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/M). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I201	28	4.5
	29	7.0
	30	7.6
	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

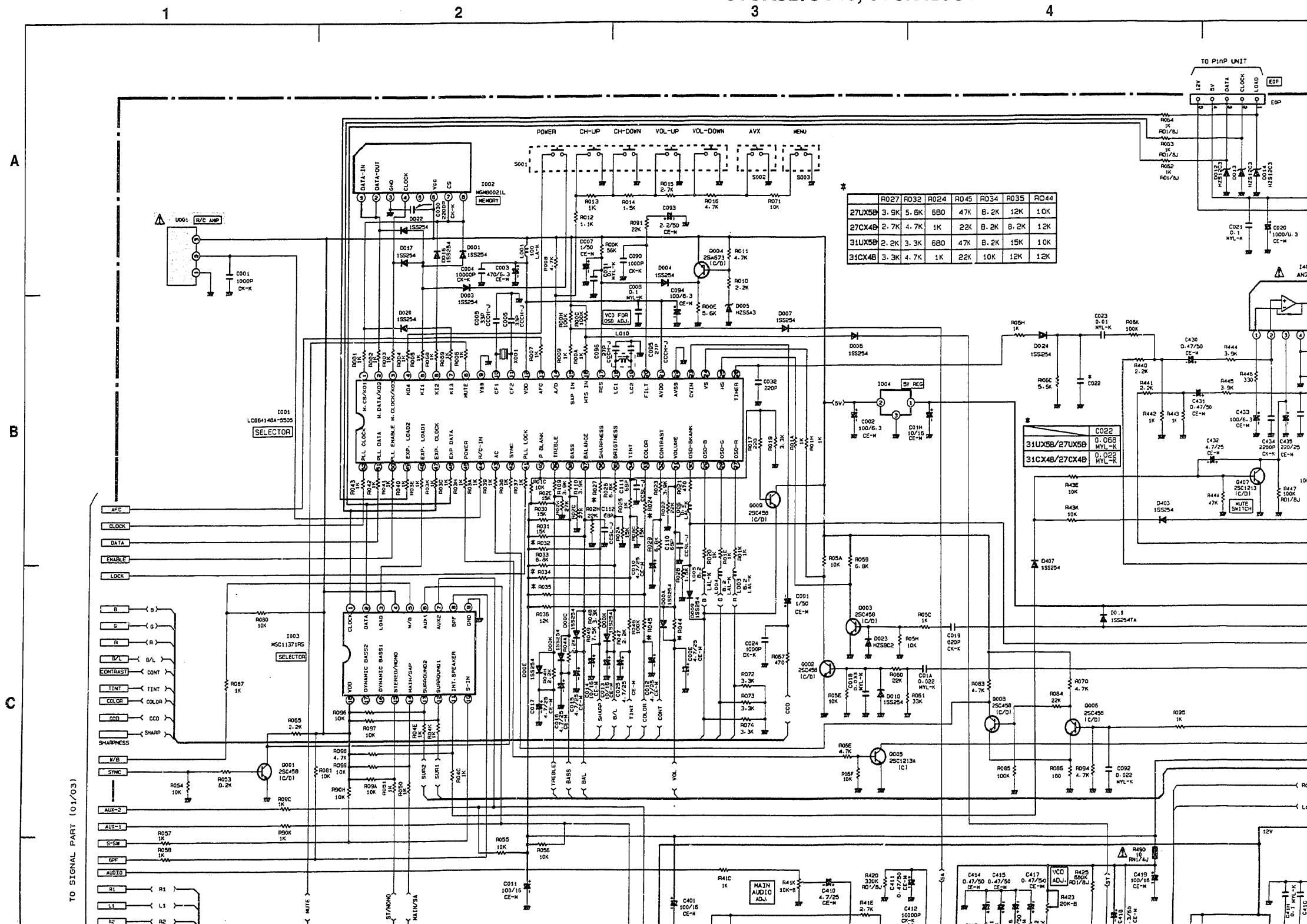
Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5
Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
	E	0.0
Q002	B	0.0
	C	5.0
	E	0.0
Q003	B	0.0
	C	4.2
	E	0.0
Q004	B	5.0
	C	5.0
	E	5.0
Q005	B	0.7
	C	0.0
	E	0.0
Q006	B	0.5
	C	2.0
	E	0.0
Q008	B	0.5
	C	2.8
	E	0.0
Q009	B	0.0
	C	5.0
	E	0.0
Q101	B	2.3
	C	7.5
	E	1.6
Q201	B	4.4
	C	9.0
	E	3.7

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0
Q402	B	2.4
	C	11.0
	E	1.7

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
	E	3.9
Q203	B	6.0
	C	9.0
	E	5.5
Q30A	B	3.0
	C	7.0
	E	2.0
Q30C	B	6.6
	C	9.0
	E	6.0
Q30E	B	0.7
	C	5.0
	E	0.0
Q30H	B	2.3
	C	6.6
	E	1.6
Q30K	B	6.0
	C	0.7
	E	7.0
Q301	B	1.5
	C	9.0
	E	0.5
Q302	B	0.5
	C	0.0
	E	0.0
Q303	B	0.0
	C	2.7
	E	0.0

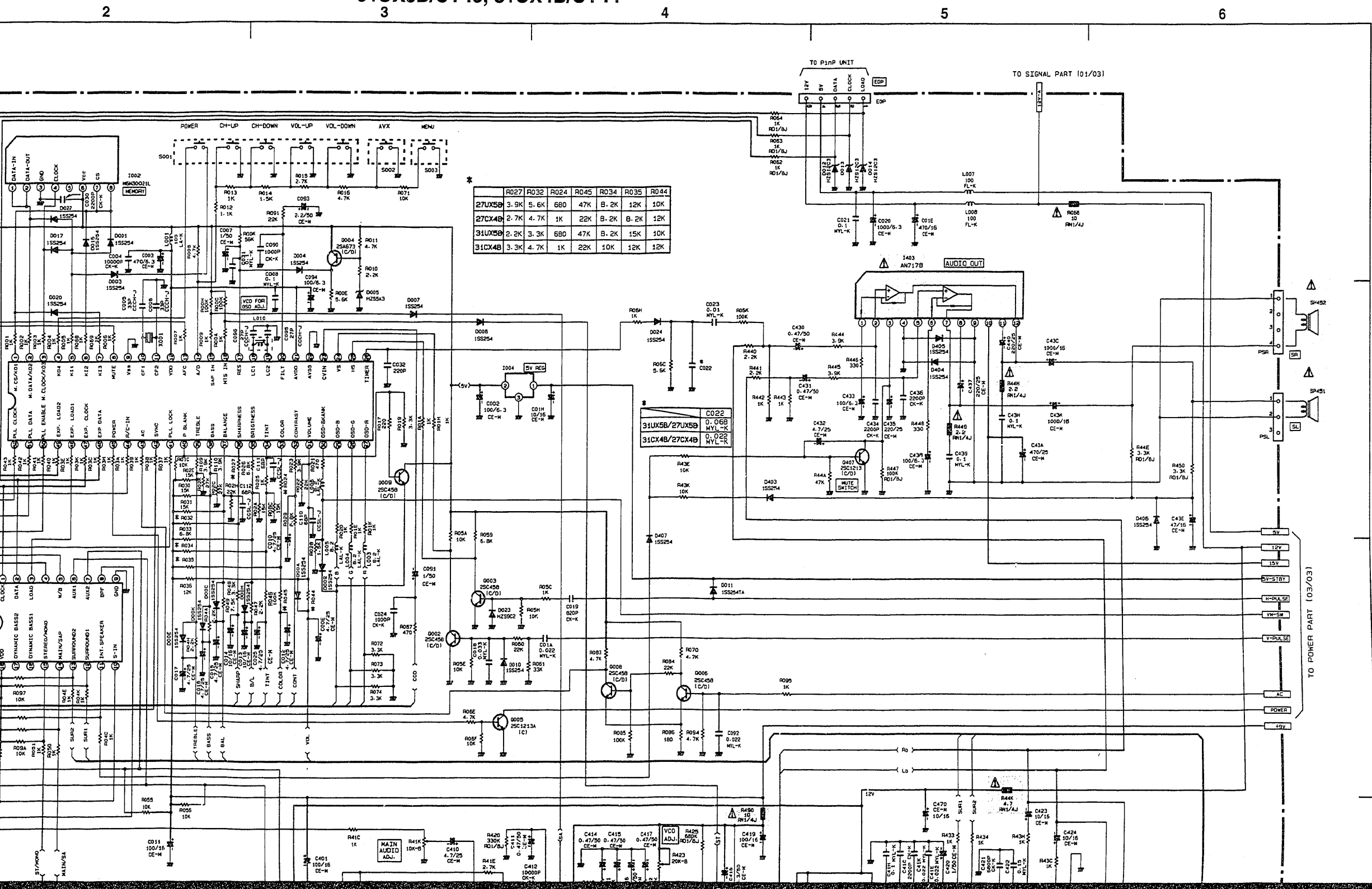
PRODUCT SAFETY NOTE
any of these components, or
through improper servicing.

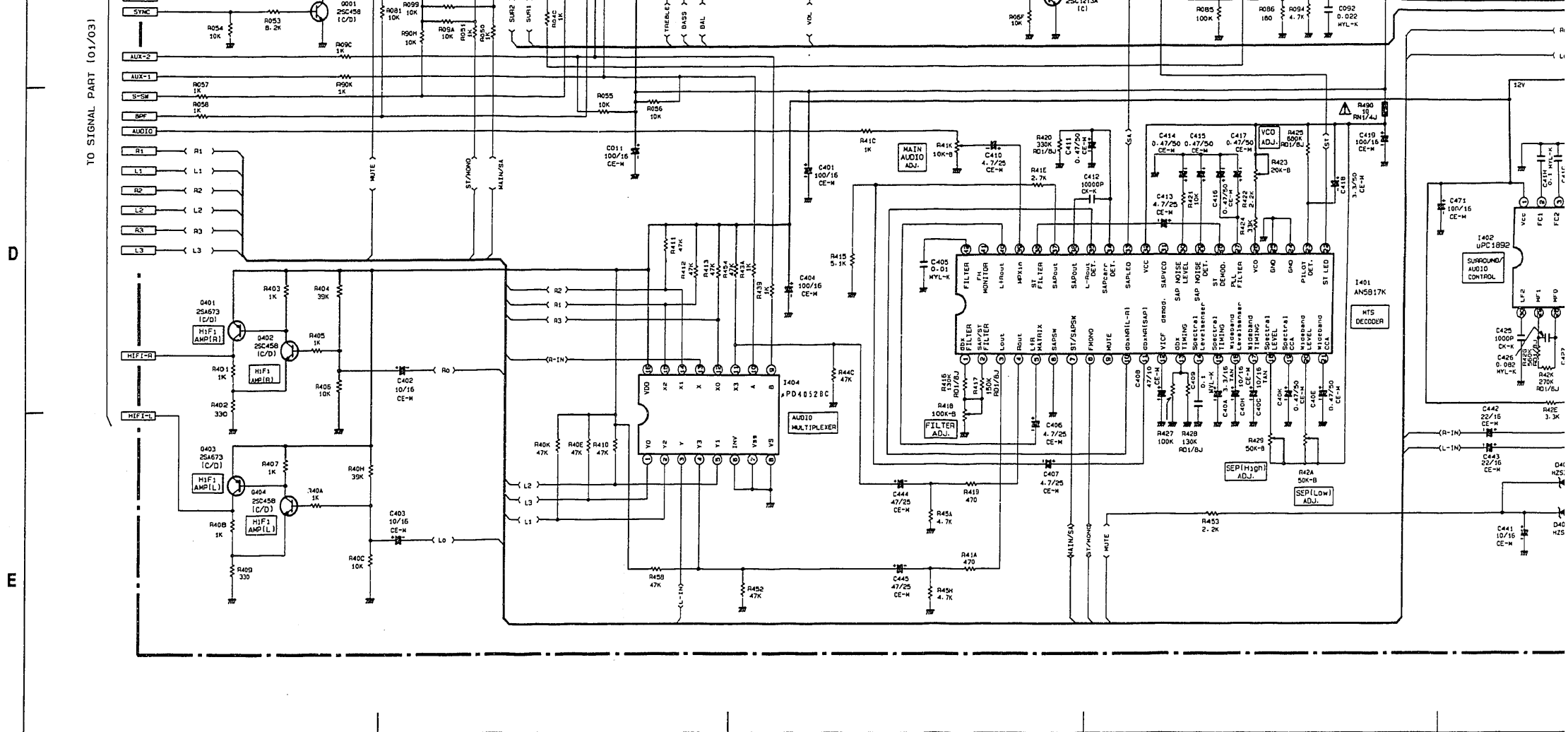


CIRCUIT SCHEMATIC DIAGRAM OF 27UX5B/C745, 27CX4B/C744, 31UX5B/CY45, 31CX4B/CY44

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

27UX5B/C745
27CX4B/C744
31UX5B/CY45
31CX4B/CY44





Circuit No.	Pin No.	Voltage VDC
I001	1	5.0
	2	5.0
	3	5.0
	4	5.0
	5	12mv
	6	12mv
	7	12mv
	8	-3mv
	9	0.0
	10	2.5
	11	2.5
	12	5.0
	13	2.2
	14	5.0
	15	0.5
	16	0.5
	17	5.0
	18	2.3
	19	2.3
	20	2.5
	21	5.0
	22	0.0
	23	3.0
	24	5.0
	25	4.2
	26	0.0
	27	0.0

Circuit No.	Pin No.	Voltage VDC
I001	28	0.0
	29	0.0
	30	0.0
	31	42mv
	32	7.0
	33	4.4
	34	3.0
	35	2.3
	36	4.1
	37	1.5
	38	1.8
	39	1.8
	40	47mv
	41	120mv
	42	85mv
	43	2.3
	44	5.0
	45	5.0
	46	5.0
	47	0.3
	48	2.5mv
	49	5mv
	50	180mv
	51	5.0
	52	5.0

Circuit No.	Pin No.	Voltage VDC
I002	1	5.0
	2	5.0
	3	0.0
	4	5.0
	5	5.0
	6	5.0
	7	5.0
	8	5.0

Circuit No.	Pin No.	Voltage VDC
I003	1	0.3
	2	5.0
	3	2.4mv
	4	5.0
	5	1.5mv
	6	9.5
	7	9.5
	8	0.0
	9	0.0
	10	1.2mv
	11	3.5mv
	12	0.0
	13	0.0
	14	5.0
	15	3.5
	16	—
	17	—
	18	5.0

Circuit No.	Pin No.	Voltage VDC
I004	1	15.0
	2	5.0
	3	0.0

Circuit No.	Pin No.	Voltage VDC
I403	1	5.3
	2	9.9
	3	15.0
	4	0.0
	5	10.5
	6	5.8
	7	1.3
	8	0.0
	9	0.0
	10	12.0
	11	0.0
	12	1.3

Circuit No.	Pin No.	Voltage VDC
I401	1	1.2
	2	1.2
	3	5.0
	4	5.0
	5	5.0
	6	0.0
	7	5.0
	8	3.5
	9	—
	10	4.5
	11	5.0
	12	5.0
	13	1.2
	14	5.0
	15	0.3
	16	5.0
	17	0.6
	18	8.0
	19	5.0
	20	8.0
	21	5.0
	22	0.0
	23	7.0
	24	0.0
	25	0.0
	26	8.3
	27	5.0
	28	5.0

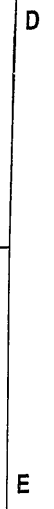
Circuit No.	Pin No.	Voltage VDC
I401	29	3.0
	30	3.0
	31	—
	32	9.5
	33	0.0
	34	3.8
	35	4.5
	36	0.5
	37	3.8
	38	4.2
	39	5.0
	40	4.0
	41	—
	42	5.0

Circuit No.	Pin No.	Voltage VDC
I402	1	12.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	6.0
	7	0.0
	8	0.0
	9	6.0
	10	6.0
	11	6.0
	12	6.0

Circuit No.	Pin No.	Voltage VDC
I402	13	—
	14	6.0
	15	0.0
	16	3.0
	17	3.0
	18	—
	19	0.0
	20	2.2
	21	6.0
	22	6.0
	23	5.2
	24	6.0
	25	6.0
	26	6.0
	27	6.0
	28	6.0
	29	6.0
	30	6.0

Circuit No.	Pin No.	Voltage VDC
I404	1	—
	2	—
	3	—
	4	—
	5	—
	6	—
	7	—
	8	—
	9	—
	10	—
	11	—
	12	—

• Since this is a basic
• All DC voltage to be



2

3

4

5

•

- | Pin No. | Voltage VDC |
|---------|-------------|
| 1 | 5.0 |
| 2 | 5.0 |
| 3 | 5.0 |
| 4 | 5.0 |
| 5 | 12mv |
| 6 | 12mv |
| 7 | 12mv |
| 8 | -3mv |
| 9 | 0.0 |
| 10 | 2.5 |
| 11 | 2.5 |
| 12 | 5.0 |
| 13 | 2.2 |
| 14 | 5.0 |
| 15 | 0.5 |
| 16 | 0.5 |
| 17 | 5.0 |
| 18 | 2.3 |
| 19 | 2.3 |
| 20 | 2.5 |
| 21 | 5.0 |
| 22 | 0.0 |
| 23 | 3.0 |
| 24 | 5.0 |
| 25 | 4.2 |
| 26 | 0.0 |
| 27 | 0.0 |

Circuit No.	Pin No.	Voltage VDC
I002	1	5.0
	2	5.0
	3	0.0
	4	5.0
	5	5.0
	6	5.0
	7	5.0
	8	5.0

Circuit No.	Pin No.	Voltage VDC
I003	1	0.3
	2	5.0
	3	2.4mv
	4	5.0
	5	1.5mv
	6	9.5
	7	9.5
	8	0.0
	9	0.0
	10	1.2mv
	11	3.5mv
	12	0.0
	13	0.0
	14	5.0
	15	3.5
	16	—
	17	—
	18	5.0

Circuit No.	Pin No.	Voltage VDC
I004	1	15.0
	2	5.0
	3	0.0

Circuit No.	Pin No.	Voltage VDC
I403	1	5.3
	2	9.9
	3	15.0
	4	0.0
	5	10.5
	6	5.8
	7	1.3
	8	0.0
	9	0.0
	10	12.0
	11	0.0
	12	1.3

Circuit No.	Pin No.	Voltage VDC
I401	1	1.2
	2	1.2
	3	5.0
	4	5.0
	5	5.0
	6	0.0
	7	5.0
	8	3.5
	9	—
	10	4.5
	11	5.0
	12	5.0
	13	1.2
	14	5.0
	15	0.3
	16	5.0
	17	0.6
	18	8.0
	19	5.0
	20	8.0
	21	5.0
	22	0.0
	23	7.0
	24	0.0
	25	0.0
	26	8.3
	27	5.0
	28	5.0

Circuit No.	Pin No.	Voltage VDC
I401	29	3.0
	30	3.0
	31	—
	32	9.5
	33	0.0
	34	3.8
	35	4.5
	36	0.5
	37	3.8
	38	4.2
	39	5.0
	40	4.0
41	—	
42	5.0	

Circuit No.	Pin No.	Voltage VDC
I402	1	12.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	6.0
	7	0.0
	8	0.0
	9	6.0
	10	6.0
	11	6.0
	12	6.0

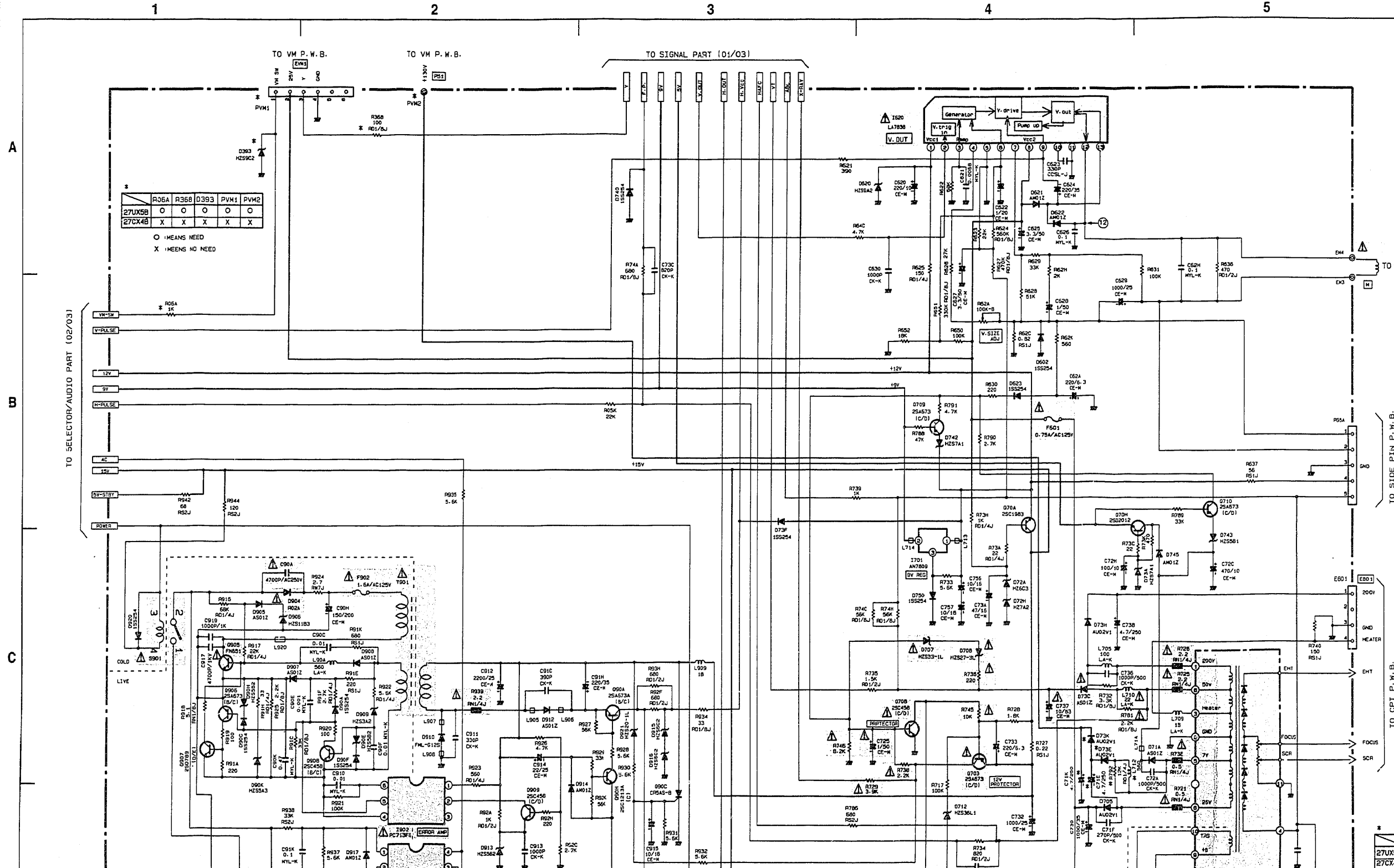
Circuit No.	Pin No.	Voltage VDC
1402	13	—
	14	6.0
	15	0.0
	16	3.0
	17	3.0
	18	—
	19	0.0
	20	2.2
	21	6.0
	22	6.0
	23	5.2
	24	6.0
	25	6.0
	26	6.0
	27	6.0
28	6.0	
29	6.0	
30	6.0	

Circuit No.	Pin No.	Voltage VDC
I404	1	6.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	0.0
	7	0.0
	8	0.0
	9	9.5
	10	9.5
	11	6.0
	12	6.0
	13	6.0
	14	6.0
	15	6.0
	16	12.0

27UX5B/C745
27CX4B/C744

CIRCUIT SCHEMATIC DIAGRAM OF 27UX5B/C745, 27CX4B/C744

PRODUCT SAFETY NOTE: Components marked with a  and shaded in gray are critical for safe operation. If any of these components are replaced, read carefully the PRODUCT SAFETY NOTICE through improper servicing.



3

4

5

6



1

10

	D73K	D73E	C71K	C71E	R792	L71
27UX5B	○	○	○	○	○	○
27CX4B	x	x	x	x	x	x





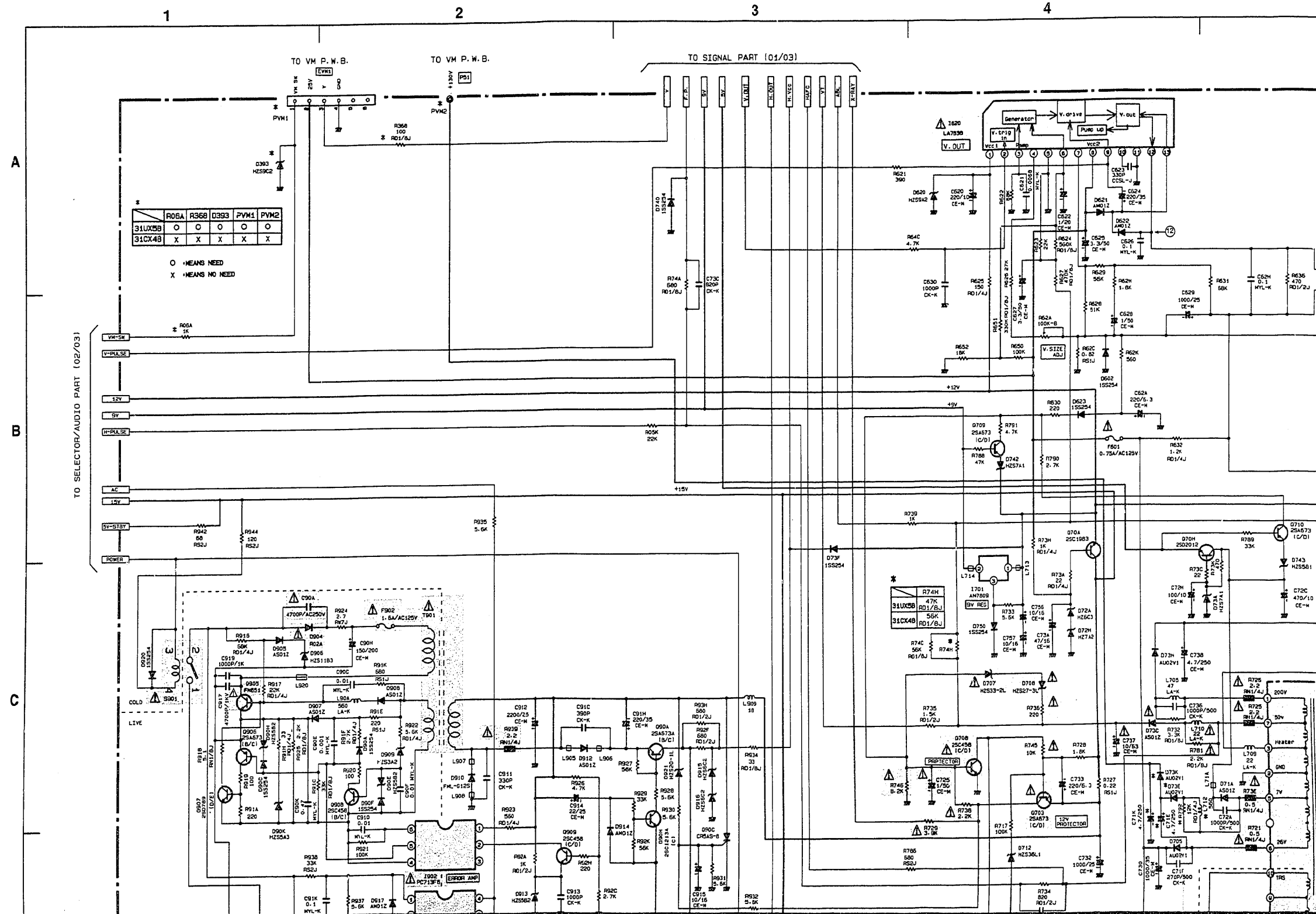
O : MEANS NEED
X : MEENS NO NEED

Circuit No.	Pin No.	Voltage VDC
1904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

- 56

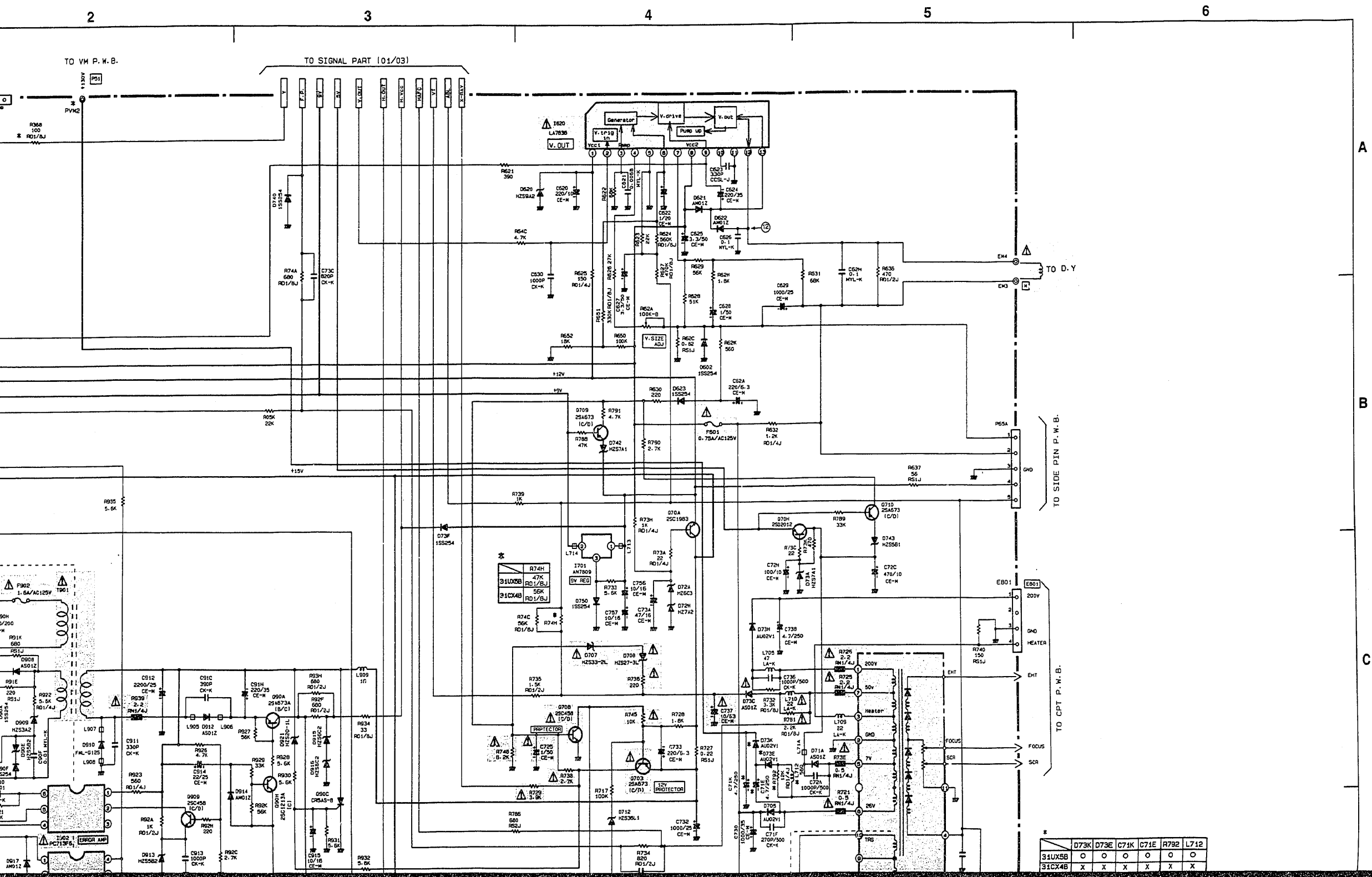
CIRCUIT SCHEMATIC DIAGRAM OF 31UX5B/CY45, 31CX4B/CY44

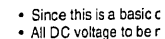
PRODUCT SAFETY NOTE: Caution: Do not touch any of these components, read through improper servicing.

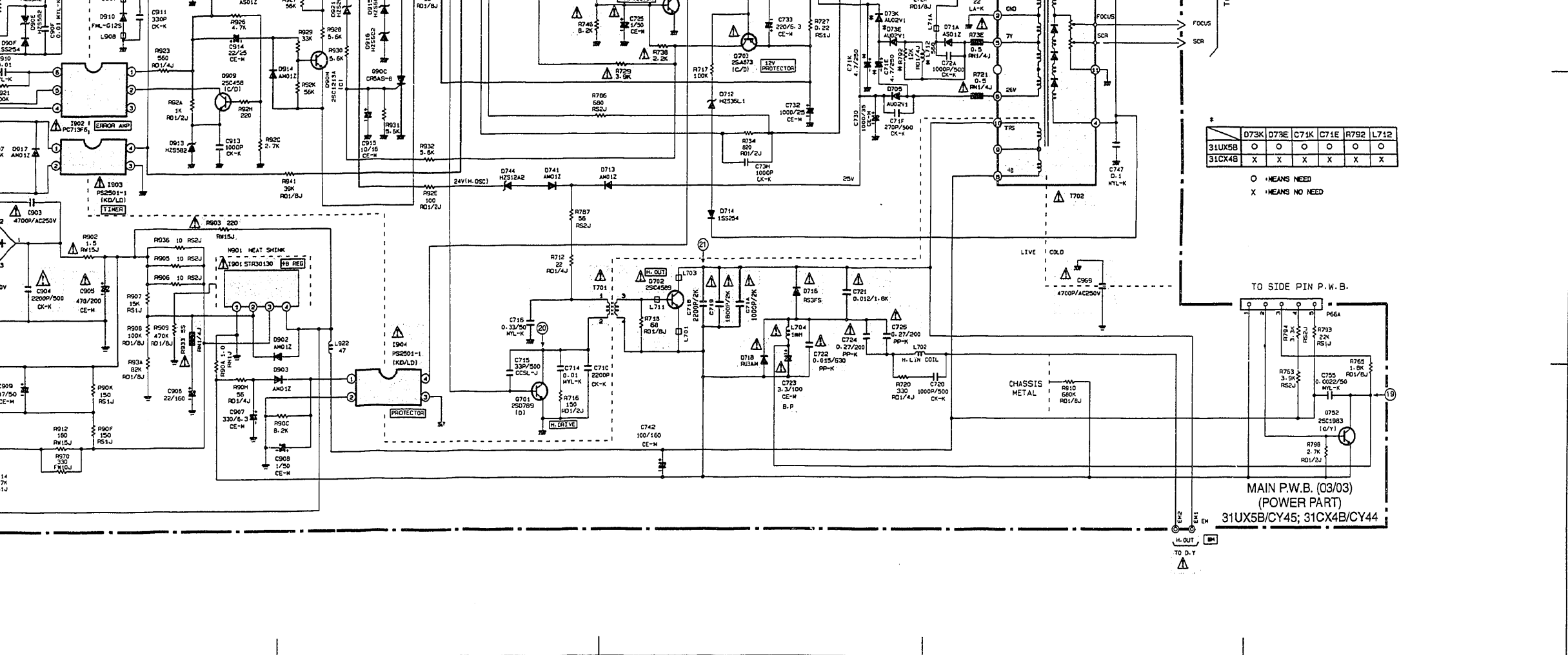


PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM OF 31UX5B/CY45, 31CX4B/CY44







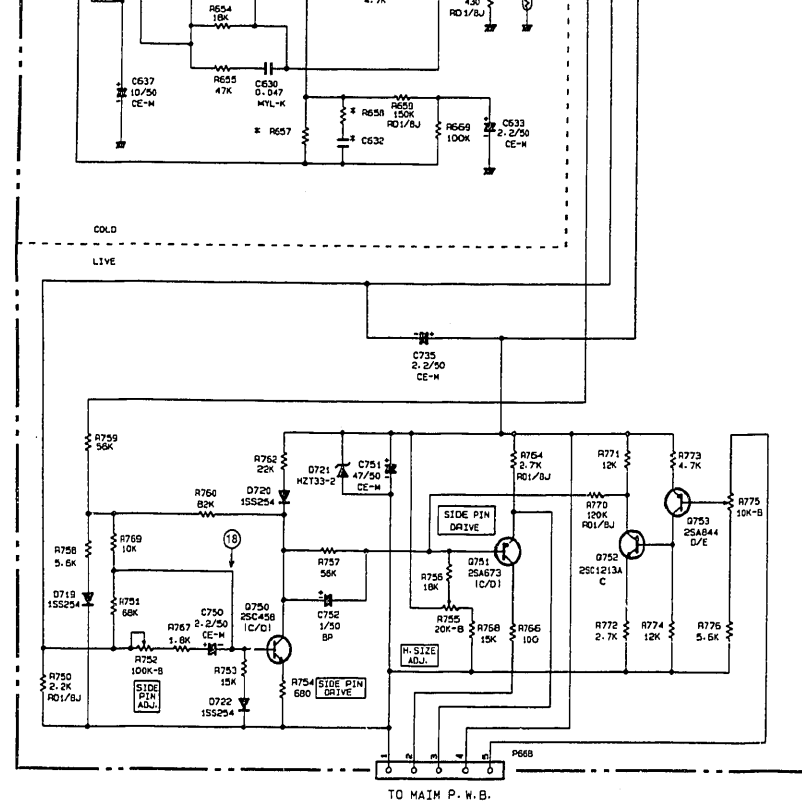
2 3 4 5 6

• Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
• All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I620	1	1.3
	2	0.9
	3	0.6
	4	0.5
	5	0.0
	6	0.6
	7	0.6
	8	5.0
	9	0.5
	10	0.5
	11	0.0
	12	2.5
	13	5.0
Circuit No.	Pin No.	Voltage VDC
I701	1	12.0
	2	9.0
	3	0.5
Circuit No.	Pin No.	Voltage VDC
I901	1	0.0
	2	130
	3	160
	4	130
Circuit No.	Pin No.	Voltage VDC
I902	1	14.0
	2	13.0
	3	—
	4	0.0
	5	2.0
	6	0.0
Circuit No.	Pin No.	Voltage VDC
I903	1	1.2
	2	0.5
	3	0.5
	4	0.0
Circuit No.	Pin No.	Voltage VDC
I904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

D

E



1

2

Circuit No.	Pin No.	Voltage VDC
I621	1	5.0
	2	5.0
	3	5.0
	4	0.0
	5	5.7
	6	5.7
	7	6.2
	8	10.9
I720	1	11.0
	2	9.8
	3	0.0
	4	-56.0
	5	-36.0
Q403	B	12.0
	C	6.0
	E	12.0
Q404	B	2.4
	C	11.0
	E	1.7
Q405	B	0.5
	C	0.0
	E	0.0

Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (27v)	B	-60.0
	C	-44.0
	E	-60.0
Q752 (31v)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.6
	C	9.0
	E	7.0

3

Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

4

Circuit No.	Pin No.	Voltage VDC
Q650 Side P.	B	6.5
	C	9.8
	E	5.6
Q750 Side P.	B	-60.0
	C	-50.0
	E	-60.0
Q751 Side P.	B	-41.0
	C	-60.0
	E	-41.0
Q752 Side P.	B	-60.0
	C	-35.0
	E	-60.0
Q753 Side P.	B	-35.0
	C	-60.0
	E	-35.0
Q801 CPT	B	4.0
	C	0.0
	E	4.0
Q802 CPT	B	3.8
	C	0.0
	E	3.9
Q803 CPT	B	4.0
	C	0.0
	E	4.0
Q804 CPT	B	6.0
	C	1.4
	E	6.4
Q805 CPT	B	5.8
	C	0.0
	E	6.5

Circuit No.	Pin No.	Voltage VDC
Q806 CPT	B	0.7
	C	1.4
	E	0.0
Q807 CPT	B	1.3
	C	9.0
	E	0.6
Q808 CPT	B	0.9
	C	6.0
	E	0.0
Q809 CPT	B	5.0
	C	0.0
	E	6.0
Q810 CPT	B	5.0
	C	0.0
	E	6.0
Q811 CPT	B	5.0
	C	0.0
	E	6.0
Q812 CPT	B	6.0
	C	9.0
	E	5.0
Q813 CPT	B	6.0
	C	9.0
	E	5.0
Q814 CPT	B	0.9
	C	9.0
	E	0.9
Q815 CPT	B	5.0
	C	3.9
	E	3.9

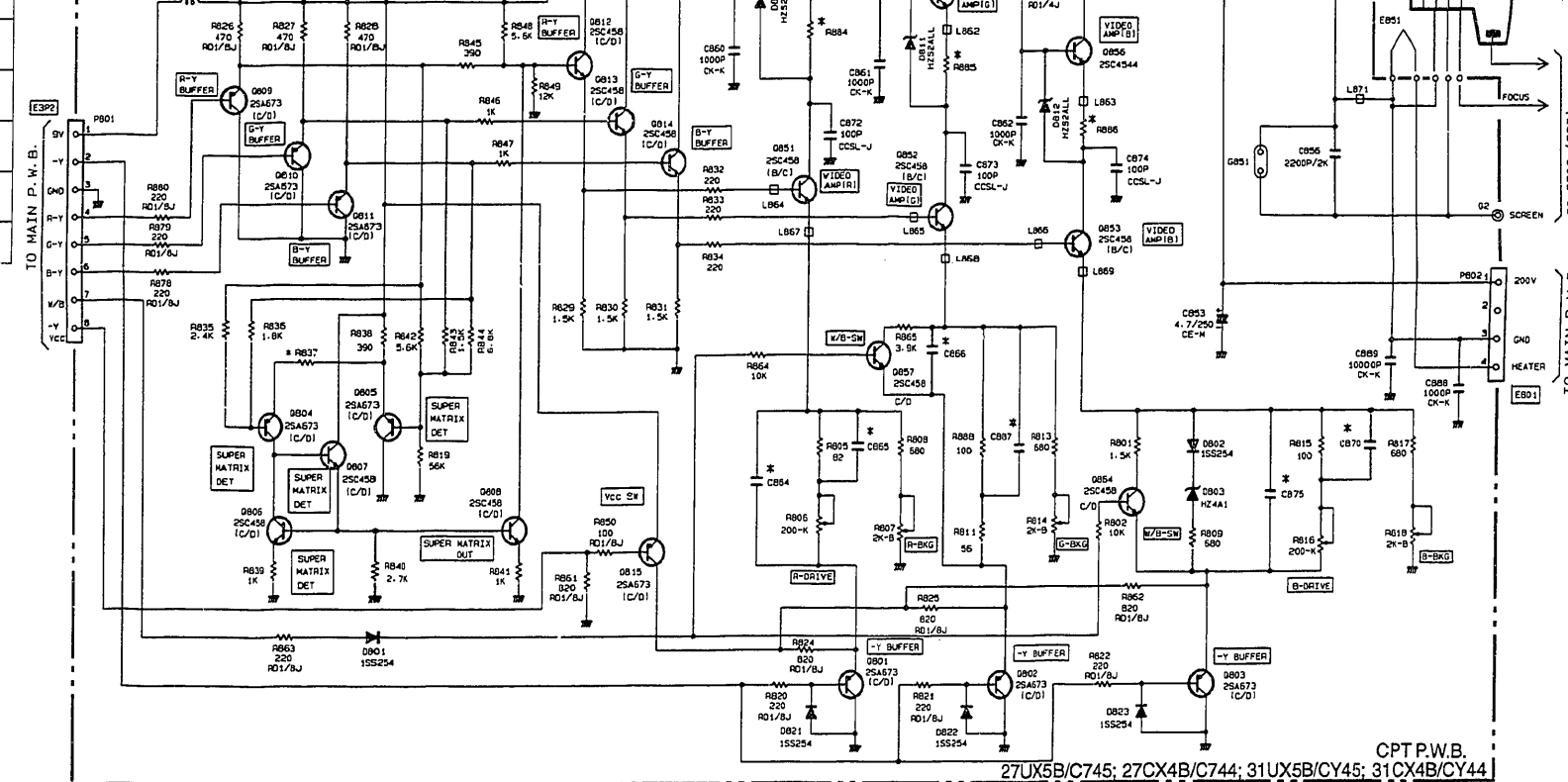
Circuit No.	Pin No.	Voltage VDC
Q851 CPT	B	5.0
	C	8.0
	E	5.0
Q852 CPT	B	5.0
	C	7.6
	E	4.7
Q853 CPT	B	5.0
	C	8.0
	E	5.0
Q854 CPT	B	1.5
	C	26.0
	E	1.5
Q855 CPT	B	1.2
	C	24.0
	E	1.2
Q856 CPT	B	1.2
	C	24.0
	E	1.2
Q857 CPT	B	4.5
	C	3.9
	E	3.9
Q864 CPT	B	4.6
	C	4.0
	E	4.0
QW02 VM	B	2.5
	C	2.0
	E	0.0
QW03 VM	B	0.0
	C	1.3
	E	0.0

Circuit No.	Pin No.	Voltage VDC
QW04 VM	B	5.0
	C	8.0
	E	5.0
QW05 VM	B	5.0
	C	7.6
	E	4.7
QW06 VM	B	5.0
	C	8.0
	E	5.0
QW07 VM	B	1.5
	C	26.0
	E	1.5
QW08 VM	B	1.2
	C	24.0
	E	1.2
QW09 VM	B	1.2
	C	24.0
	E	1.2
QW10 VM	B	4.5
	C	3.9
	E	3.9
QW11 VM	B	4.6
	C	4.0
	E	4.0
QW12 VM	B	2.5
	C	2.0
	E	0.0
QW13 VM	B	0.0
	C	1.3
	E	0.0

5

• Since this is a basic circuit diagram, the value of the parts is subject to change.
• All DC voltage to be measured with a tester (100kΩ/V). Voltage taken at the test point.

C887	220	CK-K	330	CK-K	150	CK-K	220	CK-K
R884	68		82		68		82	
R885	68		82		68		82	
R886	68		82		68		82	
R837	470		680		680		680	



3

4

5

6

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (27V)	B	-60.0
	C	-44.0
	E	-60.0
Q752 (31V)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.6
	C	9.0
	E	7.0

Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

Circuit No.	Pin No.	Voltage VDC
Q650 Side P.	B	6.5
	C	9.8
	E	5.6
Q750 Side P.	B	-60.0
	C	-50.0
	E	-60.0
Q751 Side P.	B	-41.0
	C	-60.0
	E	-41.0
Q752 Side P.	B	-60.0
	C	-35.0
	E	-60.0
Q753 Side P.	B	-35.0
	C	-60.0
	E	-35.0
Q801 CPT	B	4.0
	C	0.0
	E	4.0
Q802 CPT	B	3.8
	C	0.0
	E	3.9
Q803 CPT	B	4.0
	C	0.0
	E	4.0
Q804 CPT	B	6.0
	C	1.4
	E	6.4
Q805 CPT	B	5.8
	C	0.0
	E	6.5

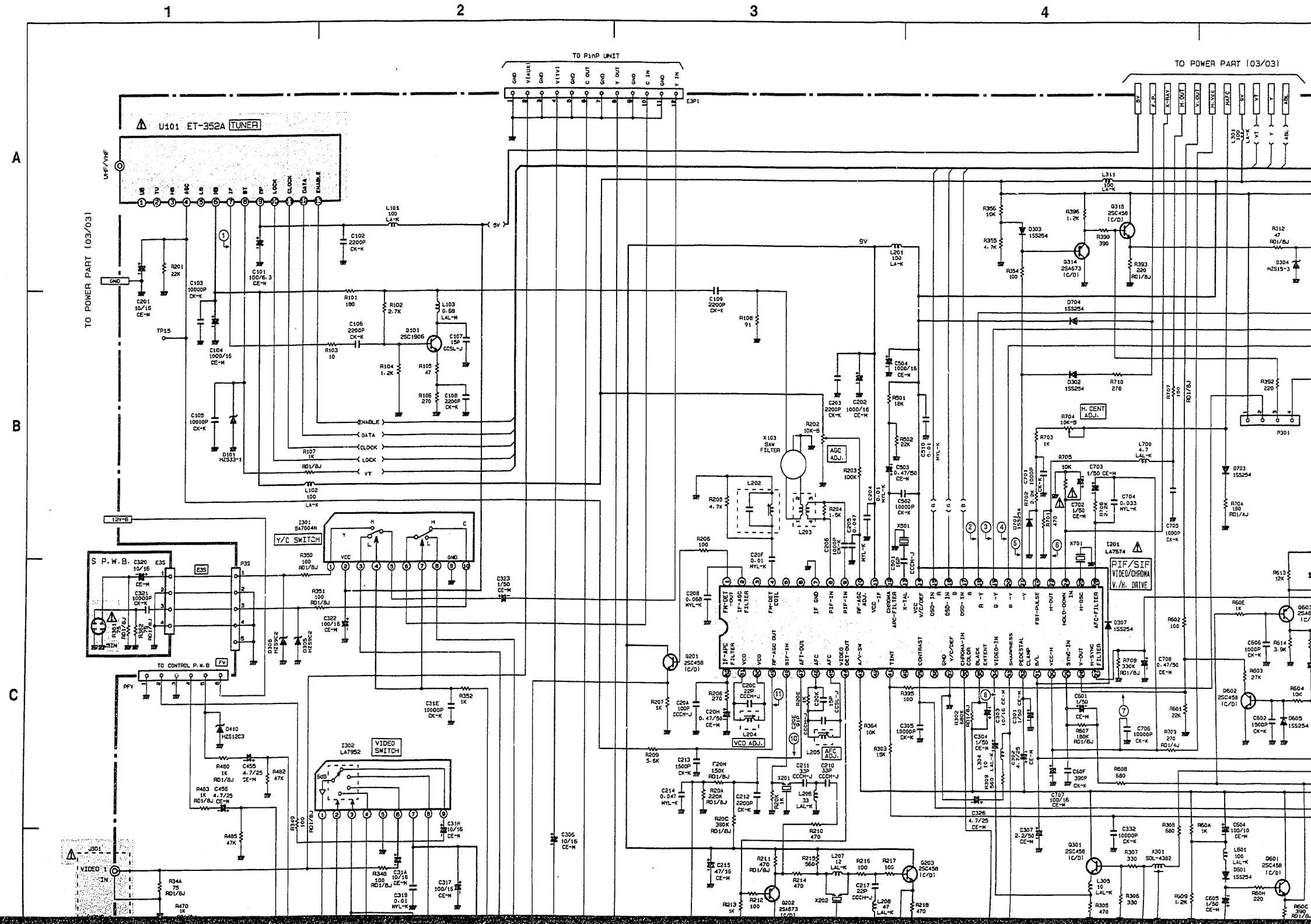
Circuit No.	Pin No.	Voltage VDC
Q806 CPT	B	0.7
	C	1.4
	E	0.0
Q807 CPT	B	1.3
	C	9.0
	E	0.6
Q808 CPT	B	0.9
	C	6.0
	E	0.0
Q809 CPT	B	5.0
	C	0.0
	E	6.0
Q810 CPT	B	5.0
	C	0.0
	E	6.0
Q811 CPT	B	5.0
	C	0.0
	E	6.0
Q812 CPT	B	6.0
	C	9.0
	E	5.0
Q813 CPT	B	6.0
	C	9.0
	E	5.0
Q814 CPT	B	0.9
	C	9.0
	E	0.9
Q815 CPT	B	5.0
	C	3.9
	E	3.9

Circuit No.	Pin No.	Voltage VDC
Q851 CPT	B	5.0
	C	8.0
	E	5.0
Q852 CPT	B	5.0
	C	7.6
	E	4.7
Q853 CPT	B	5.0
	C	8.0
	E	5.0
Q854 CPT	B	1.5
	C	26.0
	E	1.5
Q855 CPT	B	1.2
	C	24.0
	E	1.2
Q856 CPT	B	1.2
	C	24.0
	E	1.2
Q857 CPT	B	4.5
	C	3.9
	E	3.9
Q864 CPT	B	4.6
	C	4.0
	E	4.0
QW02 VM	B	2.5
	C	2.0
	E	0.0
QW03 VM	B	0.0
	C	1.3
	E	0.0

Circuit No.	Pin No.	Voltage VDC
QW04 VM	B	1.5
	C	2.0
	E	0.2
QW05 VM	B	2.0
	C	5.5
	E	1.5
QW06 VM	B	1.7
	C	14.0
	E	1.0
QW07 VM	B	10.0
	C	14.0
	E	10.0
QW08 VM	B	10.0
	C	0.0
	E	10.0
QW09 VM	B	138.0
	C	11.0
	E	138.0
QW10 VM	B	0.3
	C	11.5
	E	0.0
QW11 VM	B	0.0
	C	0.0
	E	0.0
QW12 VM	B	0.5
	C	2.0
	E	0.0
QW13 VM	B	1.0
	C	10.0
	E	0.3

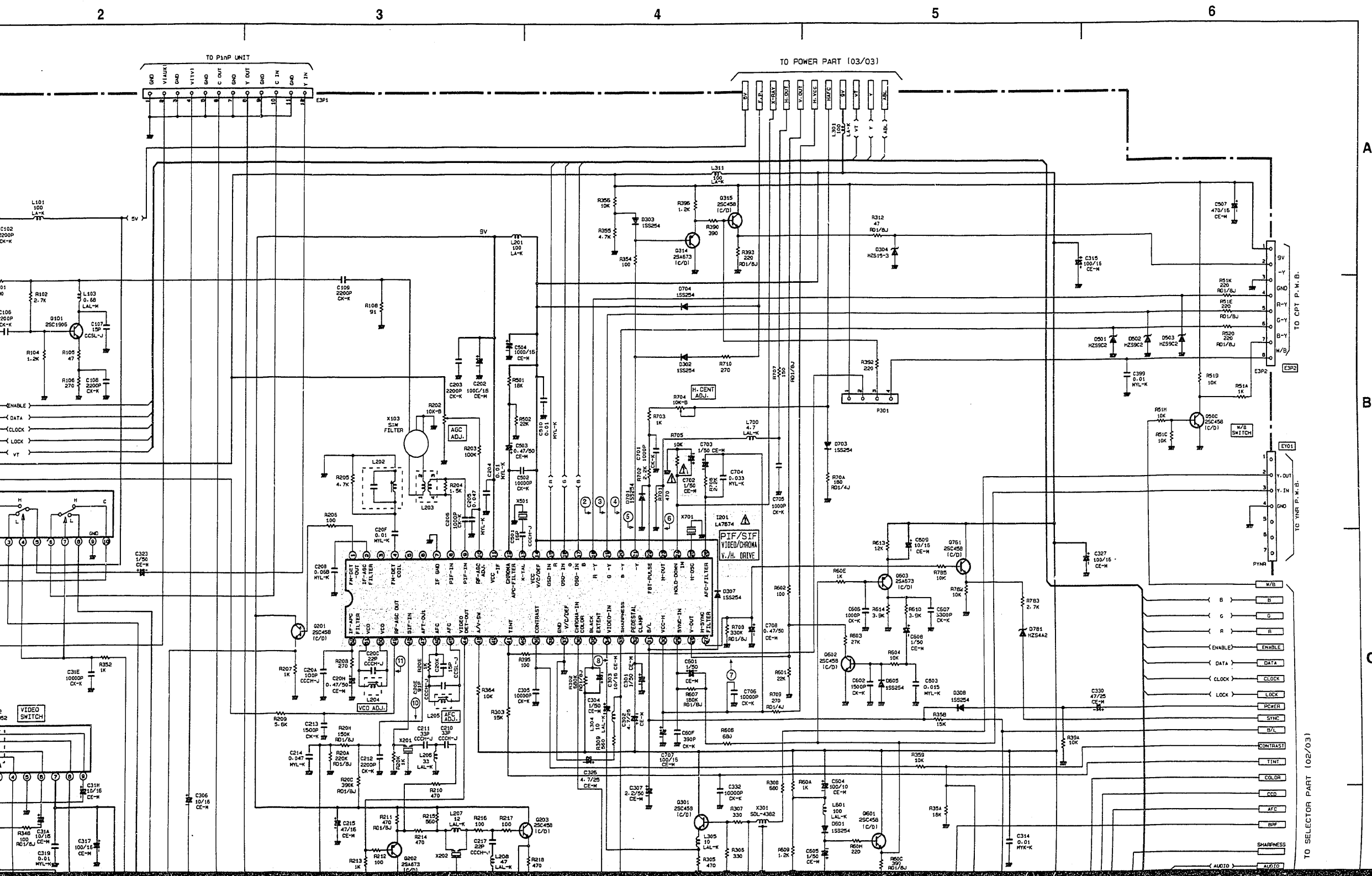
CIRCUIT SCHEMATIC DIAGRAM OF 35TX10B/CZ41

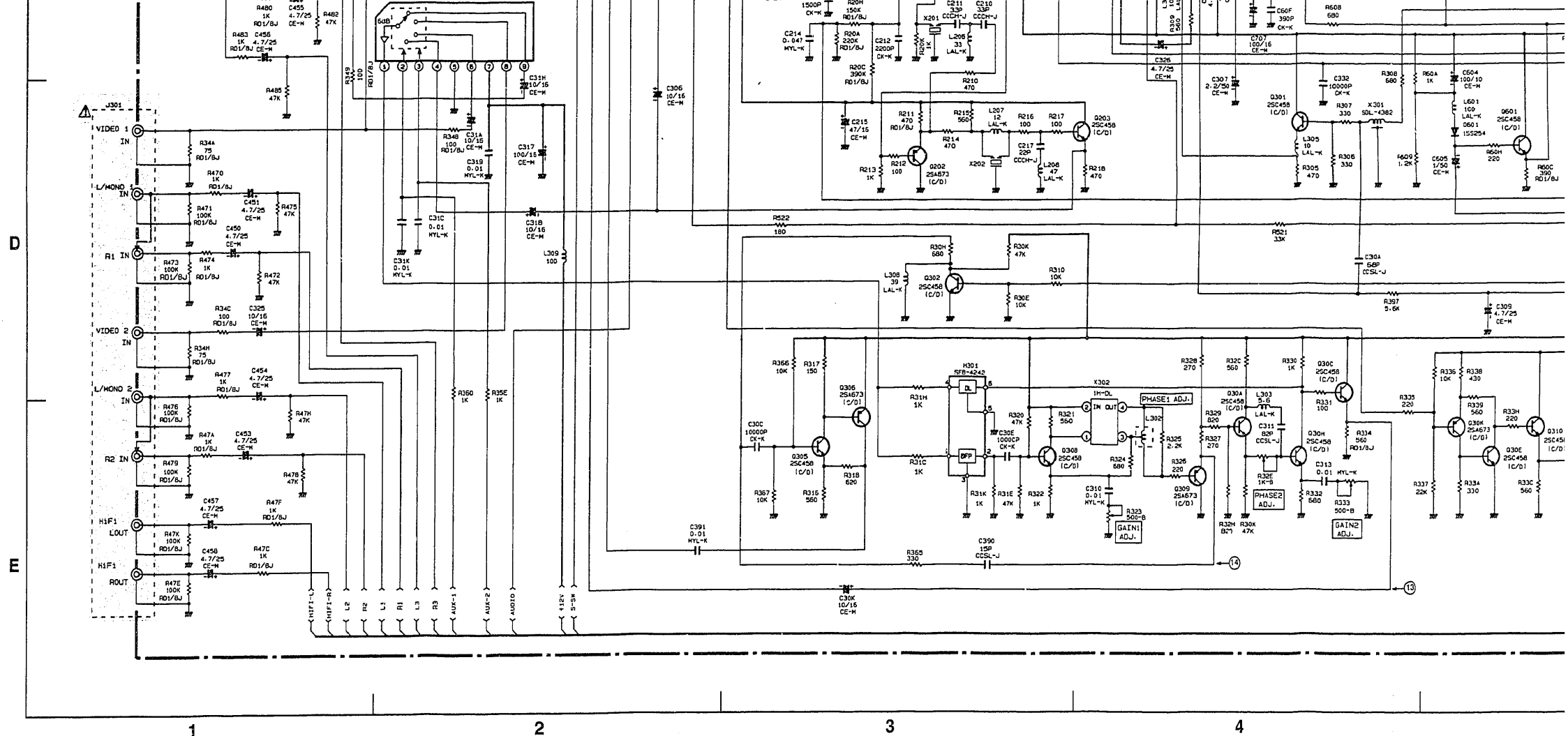
PRODUCT SAFETY NOTE: (C)
any of these components, rea
through improper servicing.



CIRCUIT SCHEMATIC DIAGRAM OF 35TX10B/CZ41

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





Circuit No.	Pin No.	Voltage VDC
I201	1	4.4
	2	6.8
	3	5.6
	4	5.6
	5	4.3
	6	4.0
	7	0.0
	8	4.5
	9	4.5
	10	5.8
	11	8.8
	12	5.6
	13	5.4
	14	8.9
	15	0.0
	16	0.0
	17	0.0
	18	5.0
	19	5.0
	20	5.0
	21	4.0
	22	0.4
	23	0.4
	24	0.0
	25	5.0
	26	5.7
	27	7.6
	28	4.5

Circuit No.	Pin No.	Voltage VDC
I201	29	7.0
	30	7.6
	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

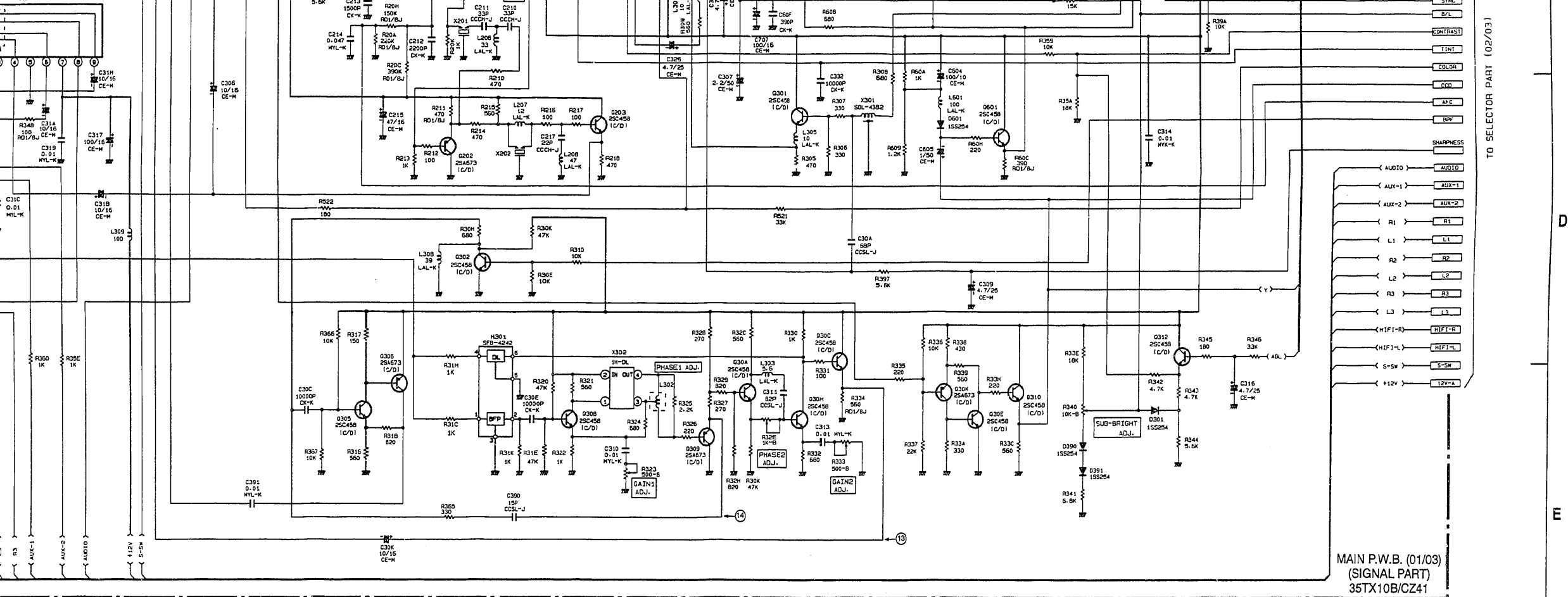
Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5

Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
Q002	E	0.0
	B	0.0
Q003	C	5.0
	E	0.0
Q004	B	5.0
	E	5.0
Q005	B	0.7
	C	0.0
Q006	E	0.0
	B	0.5
Q008	C	2.0
	E	0.0
Q009	B	0.5
	C	5.0
Q101	B	2.3
	E	7.5
Q201	B	4.4
	C	9.0

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
Q203	E	3.9
	B	6.0
Q30A	C	9.0
	E	5.5
Q30C	B	3.0
	C	7.0
Q30E	B	6.6
	C	9.0
Q30H	B	6.0
	C	6.6
Q30K	B	1.6
	C	6.0
Q301	B	0.7
	C	7.0
Q302	B	1.5
	C	0.5
Q303	B	0.5
	C	0.0

• Since this is a basic circuit
• All DC voltage to be measured



2

3

4

5

6

Circuit No.	Pin No.	Voltage VDC
I201	1	4.4
	2	6.8
	3	5.6
	4	5.6
	5	4.3
	6	4.0
	7	0.0
	8	4.5
	9	4.5
	10	5.8
	11	8.8
	12	5.6
	13	5.4
	14	8.9
	15	0.0
	16	0.0
	17	0.0
	18	5.0
	19	5.0
	20	5.0
	21	4.0
	22	0.4
	23	0.4
	24	0.0
	25	5.0
	26	5.7
	27	7.6
	28	4.5

Circuit No.	Pin No.	Voltage VDC
I201	29	7.0
	30	7.6
	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5

Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

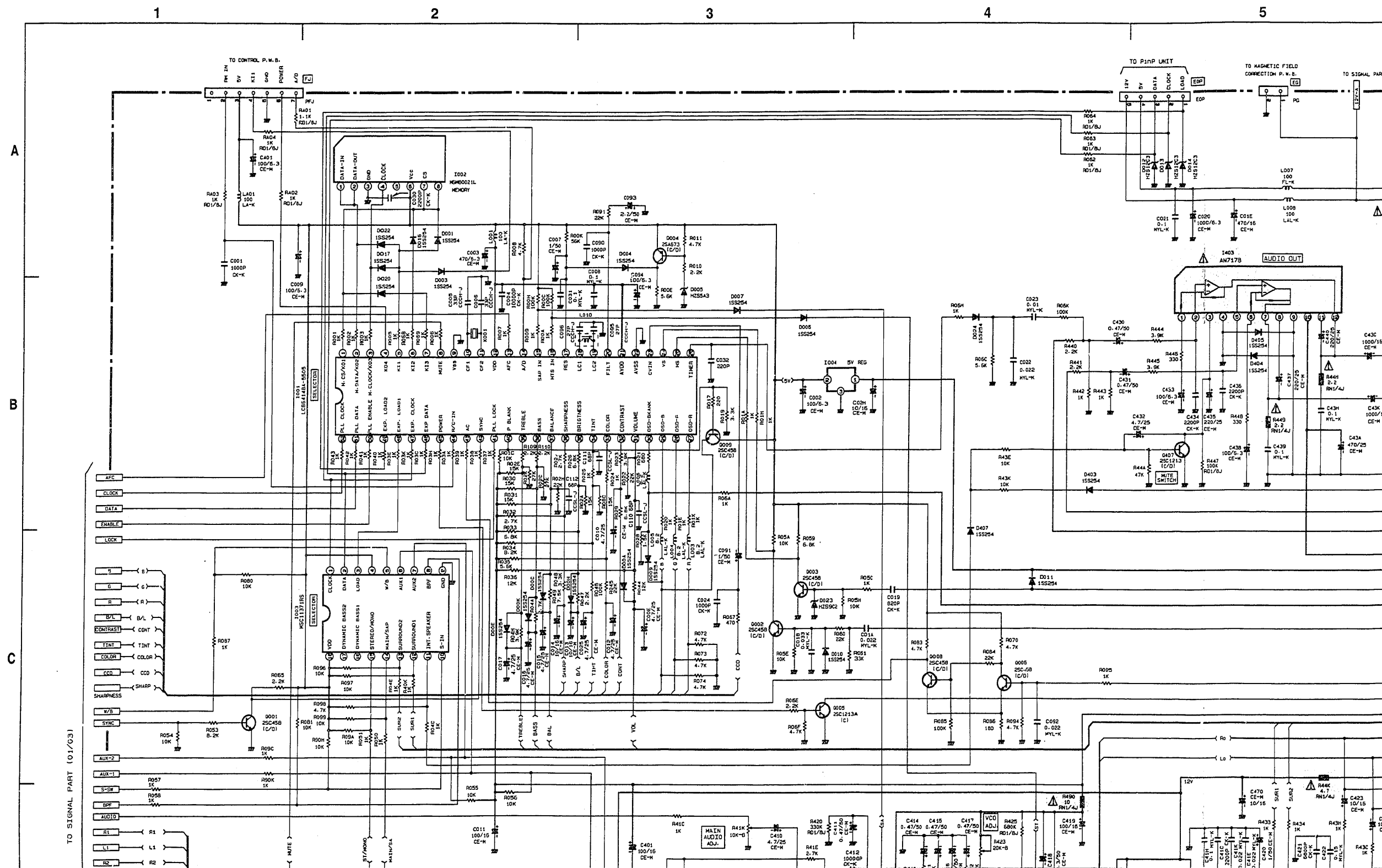
Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
	E	0.0
Q002	B	0.0
	C	5.0
	E	0.0
Q003	B	0.0
	C	4.2
	E	0.0
Q004	B	5.0
	C	5.0
	E	5.0
Q005	B	0.7
	C	0.0
	E	0.0
Q006	B	0.5
	C	2.0
	E	0.0
Q008	B	0.5
	C	2.8
	E	0.0
Q009	B	0.0
	C	5.0
	E	0.0
Q101	B	2.3
	C	7.5
	E	1.6
Q201	B	4.4
	C	9.0
	E	3.7

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
	E	3.9
Q203	B	6.0
	C	9.0
	E	5.5
Q30A	B	3.0
	C	7.0
	E	2.0
Q30C	B	6.6
	C	9.0
	E	6.0
Q30E	B	0.7
	C	5.0
	E	0.0
Q30H	B	2.3
	C	6.6
	E	1.6
Q30K	B	6.0
	C	0.7
	E	7.0
Q301	B	1.5
	C	9.0
	E	0.5
Q302	B	0.5
	C	0.0
	E	0.0
Q303	B	0.0
	C	2.7
	E	0.0

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/M). Voltage taken on a complex color bar signal including a standard color bar signal.

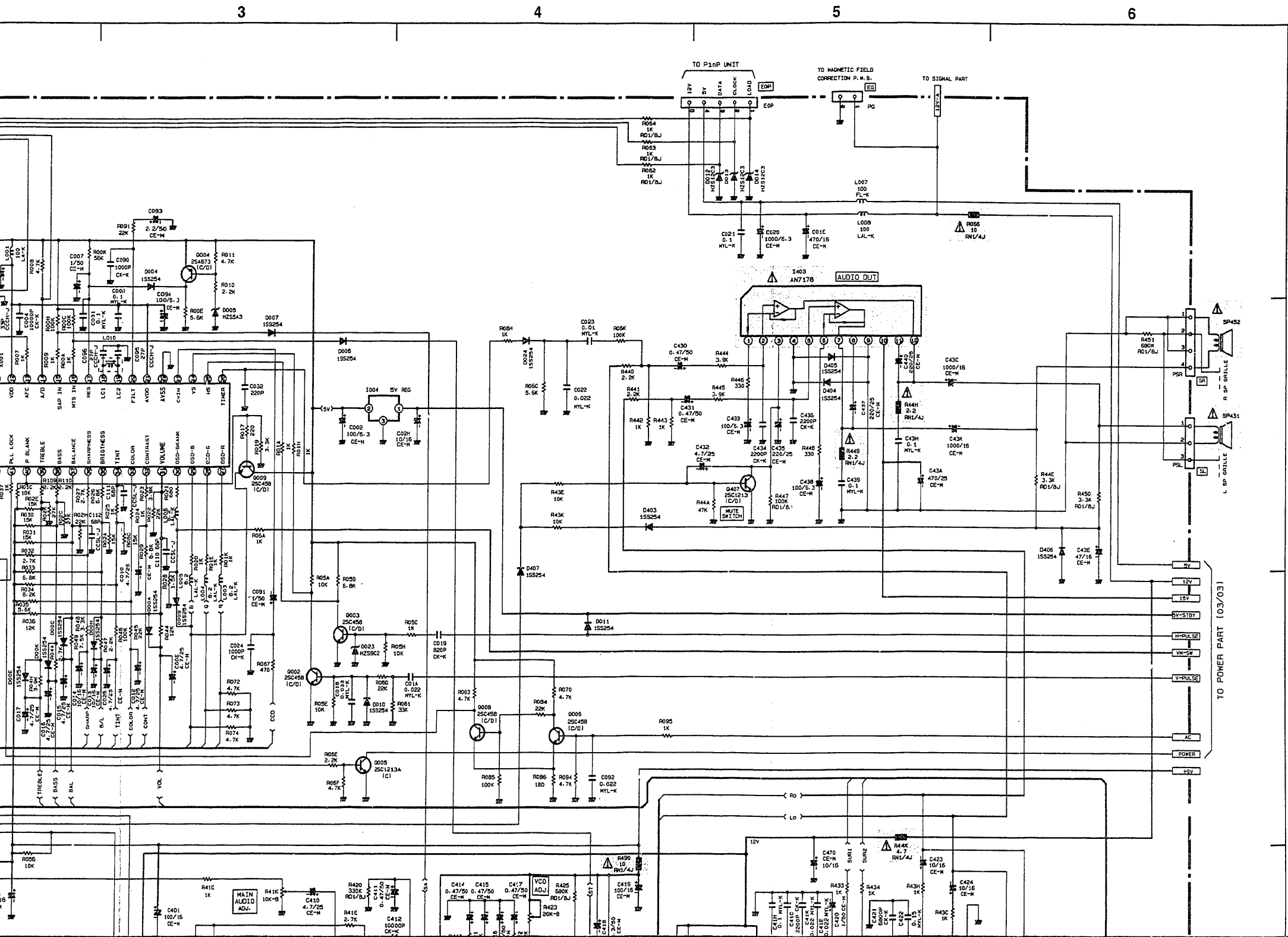
CIRCUIT SCHEMATIC DIAGRAM OF 35TX10B/CZ41

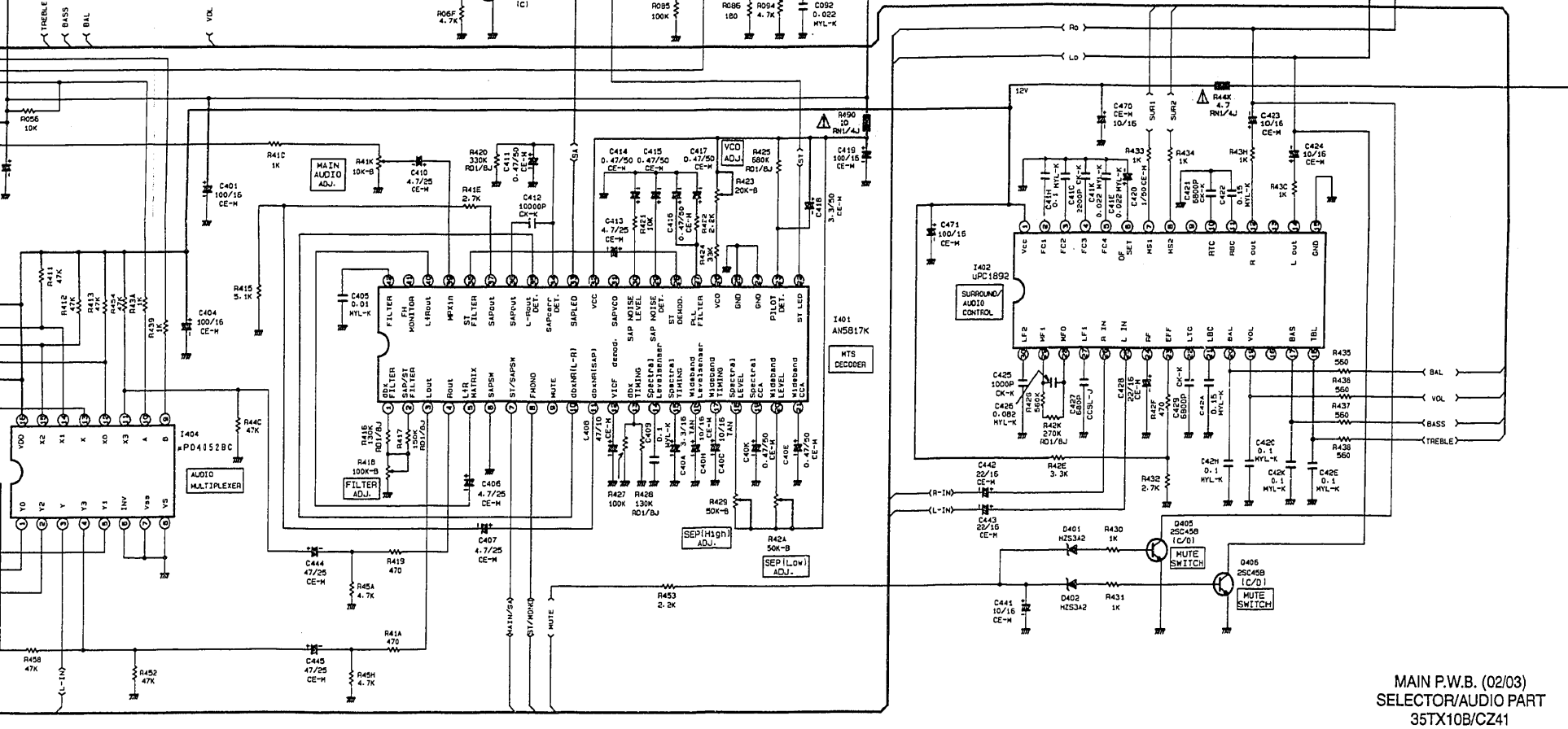
PRODUCT SAFETY NOTE: Components marked with a  and shaded any of these components, read carefully the **PRODUCT SAFETY NOTICE** through improper servicing.



CIRCUIT SCHEMATIC DIAGRAM OF 35TX10B/CZ41

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





3

4

5

6

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100k Ω 2M). Voltage taken on a complex color bar signal including a standard color bar signal.

Voltage VDC
5.0
5.0
5.0
5.0
12mv
12mv
12mv
-3mv
0.0
2.5
2.5
5.0
2.2
5.0
0.5
0.5
5.0
2.3
2.3
2.5
5.0
0.0
3.0
5.0
4.2
0.0
0.0
0.0

Circuit No.	Pin No.	Voltage VDC
I001	29	0.0
	30	0.0
	31	42mv
	32	7.0
	33	4.4
	34	3.0
	35	2.3
	36	4.1
	37	1.5
	38	1.8
	39	1.8
	40	47mv
	41	120mv
	42	85mv
	43	2.3
	44	5.0
	45	5.0
	46	5.0
	47	0.3
	48	2.5mv
	49	5mv
	50	180mv
	51	5.0
	52	5.0

Circuit No.	Pin No.	Voltage VDC
I002	1	5.0
	2	5.0
	3	0.0
	4	5.0
	5	5.0
	6	5.0
	7	5.0
	8	5.0
I003	1	0.3
	2	5.0
	3	2.4mv
	4	5.0
	5	1.5mv
	6	9.5
	7	9.5
	8	0.0
	9	0.0
	10	1.2mv
	11	3.5mv
	12	0.0
	13	0.0
	14	5.0
	15	3.5
	16	—
	17	—
	18	5.0

Circuit No.	Pin No.	Voltage VDC
I004	1	15.0
	2	5.0
	3	0.0
I403	1	5.3
	2	9.9
	3	15.0
	4	0.0
	5	10.5
	6	5.8
	7	1.3
	8	0.0
	9	0.0
	10	12.0
	11	0.0
	12	1.3

Circuit No.	Pin No.	Voltage VDC
I401	1	1.2
	2	1.2
	3	5.0
	4	5.0
	5	5.0
	6	0.0
	7	5.0
	8	3.5
	9	—
	10	4.5
	11	5.0
	12	5.0
	13	1.2
	14	5.0
	15	0.3
	16	5.0
	17	0.6
	18	8.0
	19	5.0
	20	8.0
	21	5.0
	22	0.0
	23	7.0
	24	0.0
	25	0.0
	26	8.3
	27	5.0
	28	5.0
	29	3.0

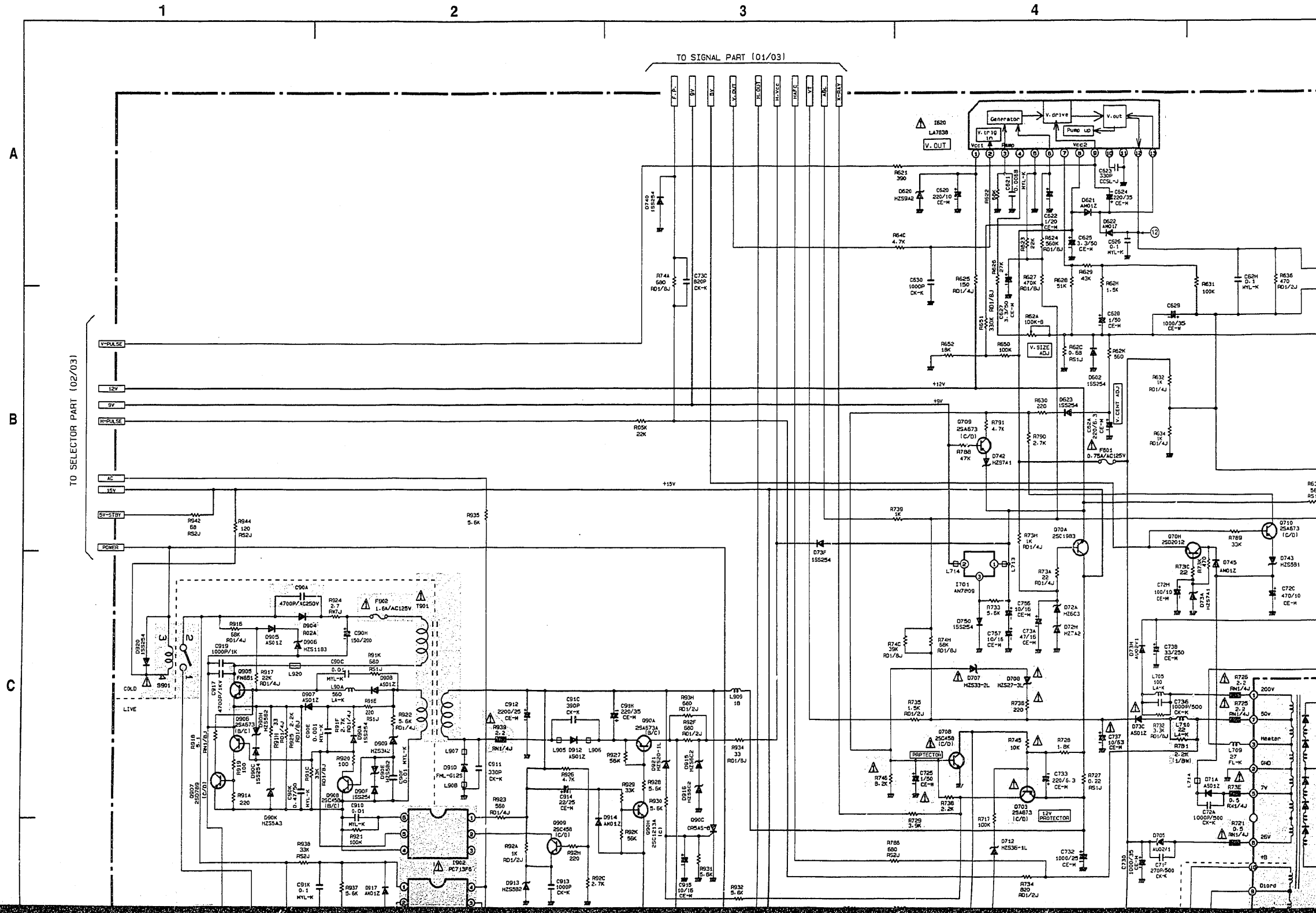
Circuit No.	Pin No.	Voltage VDC
I401	30	3.0
	31	—
	32	9.5
	33	0.0
	34	3.8
	35	4.5
	36	0.5
	37	3.8
	38	4.2
	39	5.0
	40	4.0
	41	—
	42	5.0

Circuit No.	Pin No.	Voltage VDC
I402	1	12.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	6.0
	7	0.0
	8	0.0
	9	6.0
	10	6.0
	11	6.0
	12	6.0
	13	—
	14	6.0
	15	0.0
	16	3.0
	17	3.0
	18	—
	19	0.0
	20	2.2
	21	6.0
	22	6.0
	23	5.2
	24	6.0
	25	6.0
	26	6.0
	27	6.0
	28	6.0
	29	6.0
	30	6.0

Circuit No.	Pin No.	Voltage VDC
I404	1	6.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	0.0
	7	0.0
	8	0.0
	9	9.5
	10	9.5
	11	6.0
	12	6.0
	13	6.0
	14	6.0
	15	6.0
	16	12.0

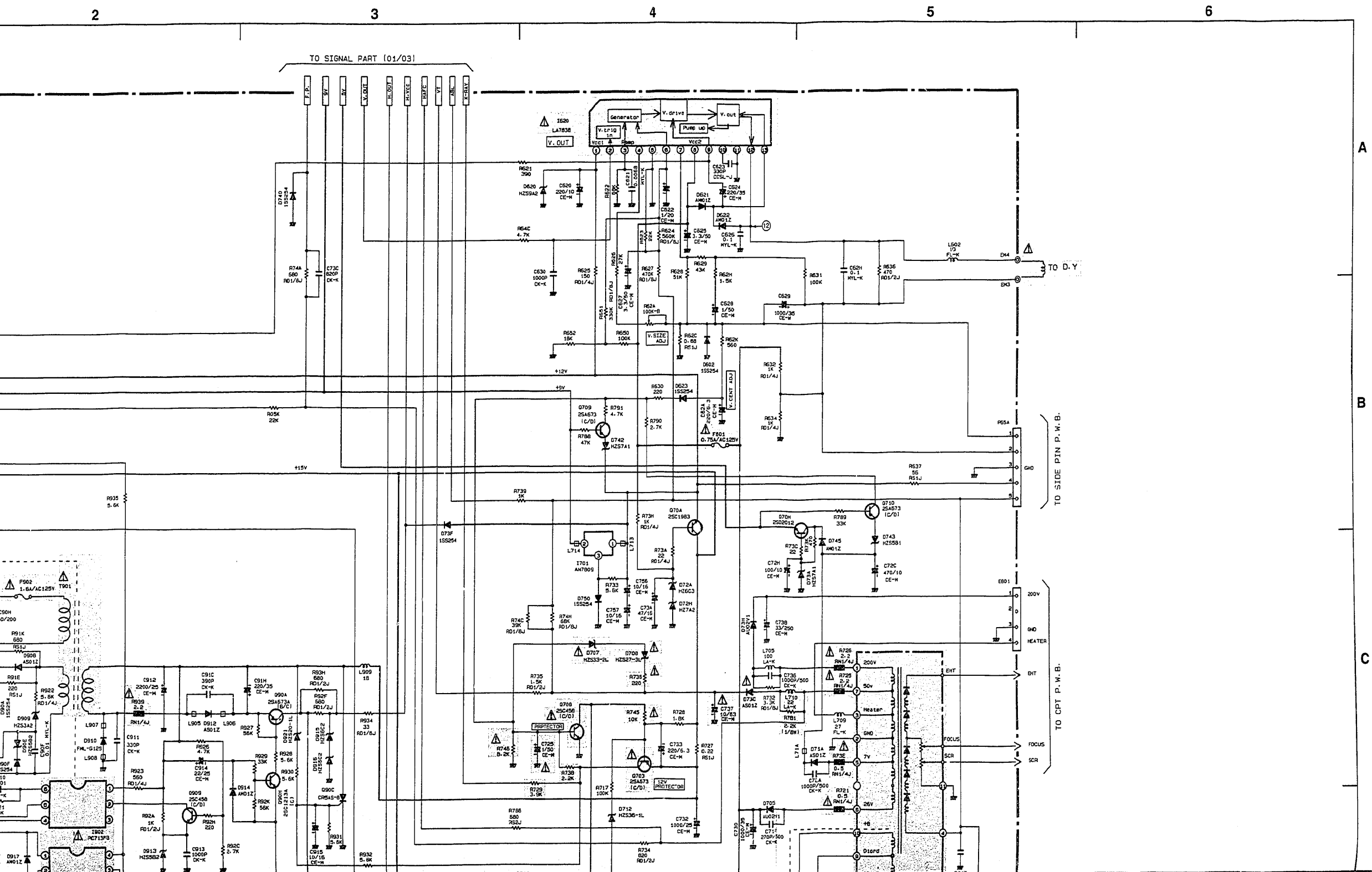
CIRCUIT SCHEMATIC DIAGRAM OF 35TX10B/CZ41

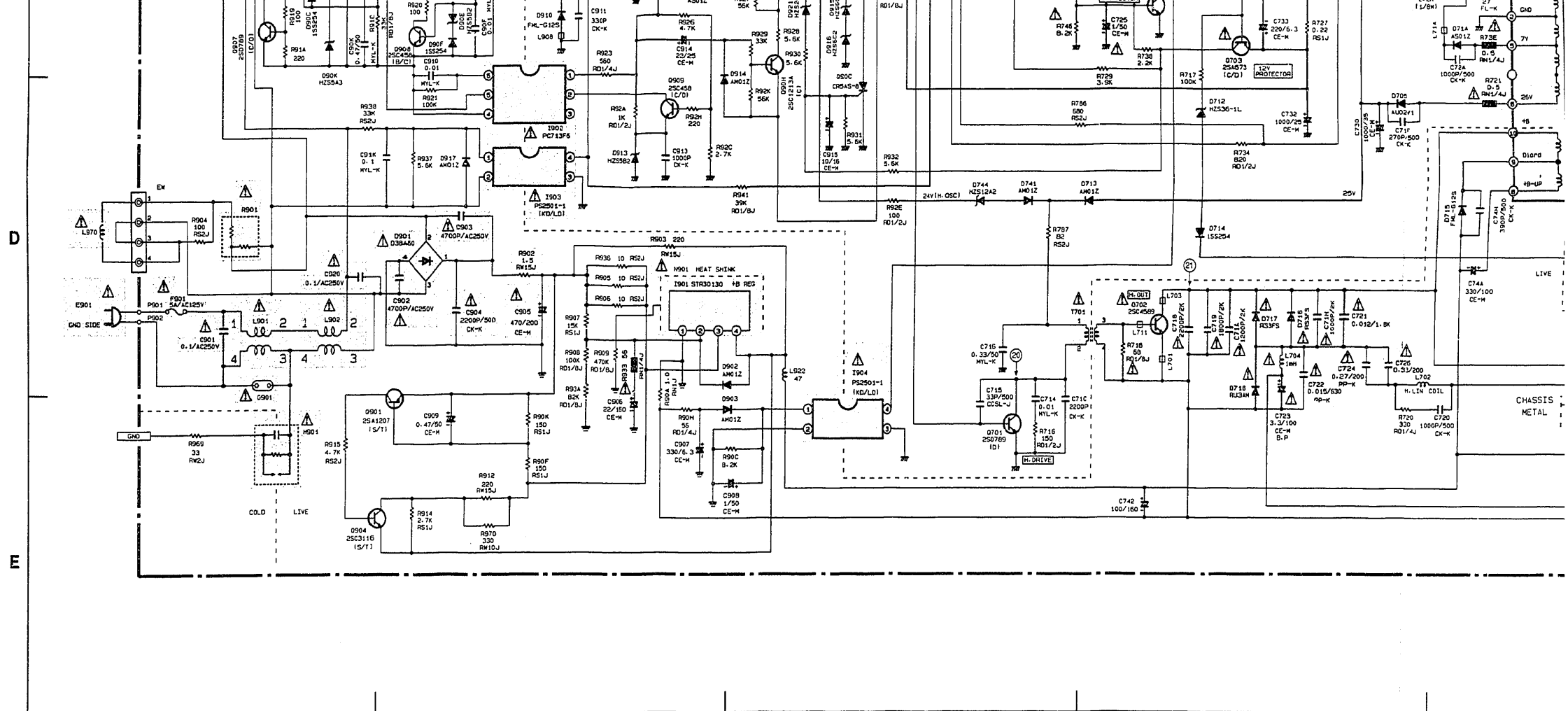
PRODUCT SAFETY NOTE: Comp any of these components, read ca through improper servicing.



CIRCUIT SCHEMATIC DIAGRAM OF 35TX10B/CZ41

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





1

2

3

4

Circuit No.	Pin No.	Voltage VDC
I620	1	1.3
	2	0.9
	3	0.6
	4	0.5
	5	0.0
	6	0.6
	7	0.6
	8	5.0
	9	0.5
	10	0.5
	11	0.0
	12	2.5
	13	5.0

Circuit No.	Pin No.	Voltage VDC
I701	1	12.0
	2	9.0
	3	0.5

Circuit No.	Pin No.	Voltage VDC
I901	1	0.0
	2	130
	3	160
	4	130

Circuit No.	Pin No.	Voltage VDC
I902	1	14.0
	2	13.0
	3	—
	4	0.0
	5	2.0
	6	0.0

Circuit No.	Pin No.	Voltage VDC
I903	1	1.2
	2	0.5
	3	0.5
	4	0.0

Circuit No.	Pin No.	Voltage VDC
I904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0

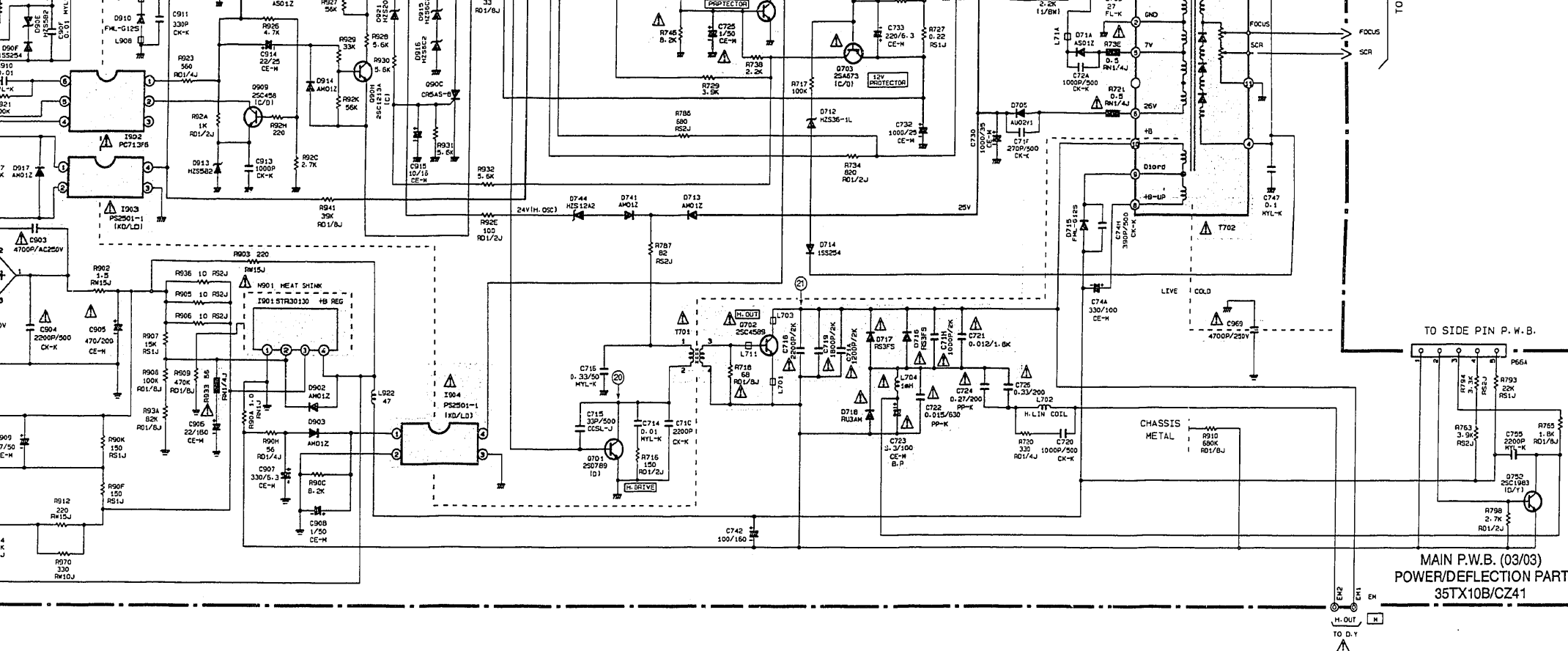
Circuit No.	Pin No.	Voltage VDC
Q402	B	2.4
	C	11.0
	E	1.7
Q403	B	12.0
	C	6.0
	E	12.0
Q404	B	2.4
	C	11.0
	E	1.7
Q405	B	0.5
	C	0.0
	E	0.0

Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (35V)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.6
	C	9.0
	E	7.0

Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

• Since this is a basic circuit, all DC voltage to be measured is relative to the common ground.



2

3

4

5

6

Circuit No.	Pin No.	Voltage VDC
0	1	1.3
	2	0.9
	3	0.6
	4	0.5
	5	0.0
	6	0.6
	7	0.6
	8	5.0
	9	0.5
	10	0.5
	11	0.0
	12	2.5
	13	5.0

Circuit No.	Pin No.	Voltage VDC
I902	1	14.0
	2	13.0
	3	—
	4	0.0
	5	2.0
	6	0.0

Circuit No.	Pin No.	Voltage VDC
I903	1	1.2
	2	0.5
	3	0.5
	4	0.0

Circuit No.	Pin No.	Voltage VDC
I904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

Circuit No.	Pin No.	Voltage VDC
1	1	12.0
	2	9.0
	3	0.5
	4	0.5

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q402	B	2.4
	C	11.0
	E	1.7
Q403	B	12.0
	C	6.0
	E	12.0
Q404	B	2.4
	C	11.0
	E	1.7
Q405	B	0.5
	C	0.0
	E	0.0

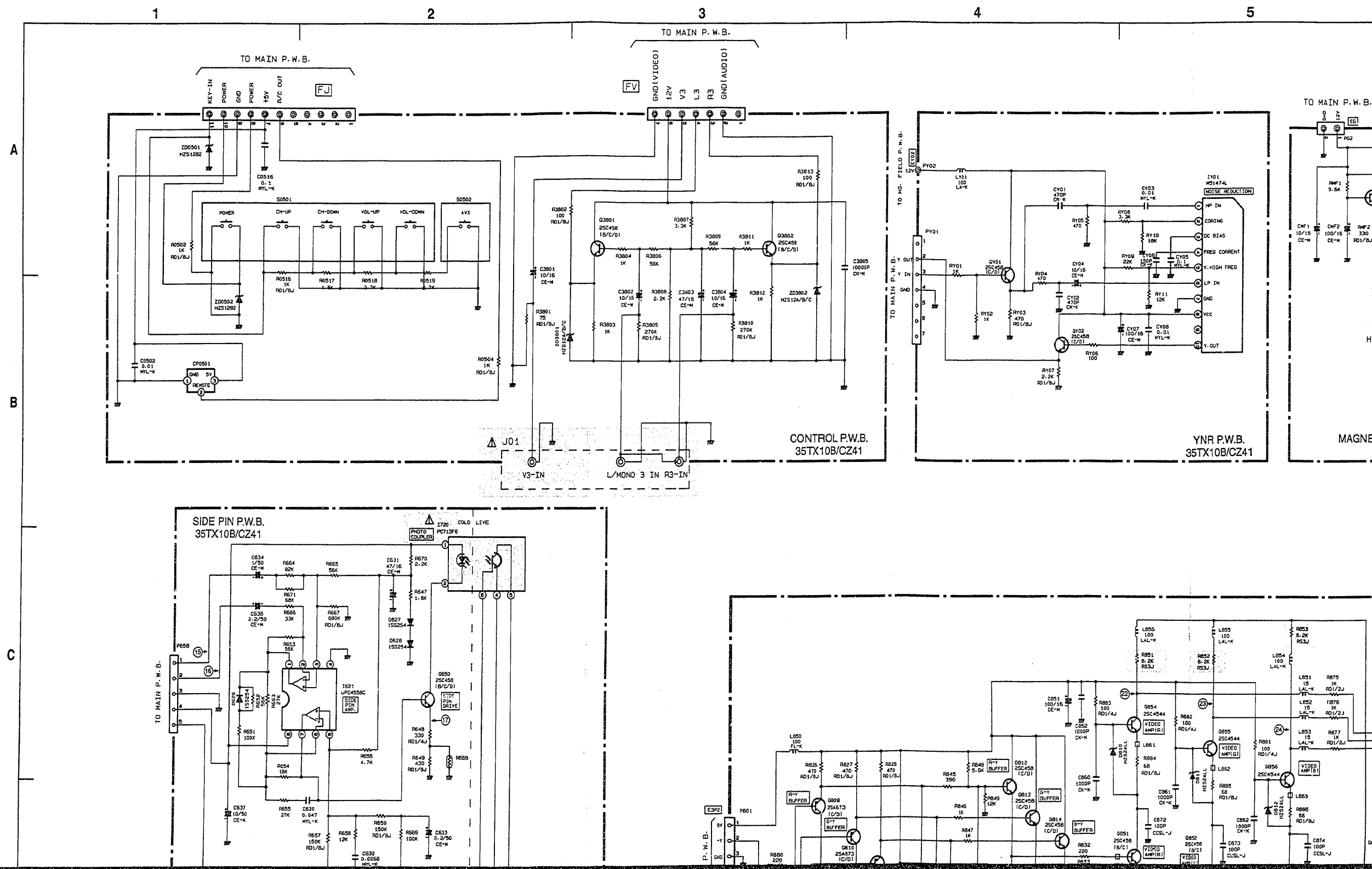
Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (35V)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.6
	C	9.0
	E	7.0

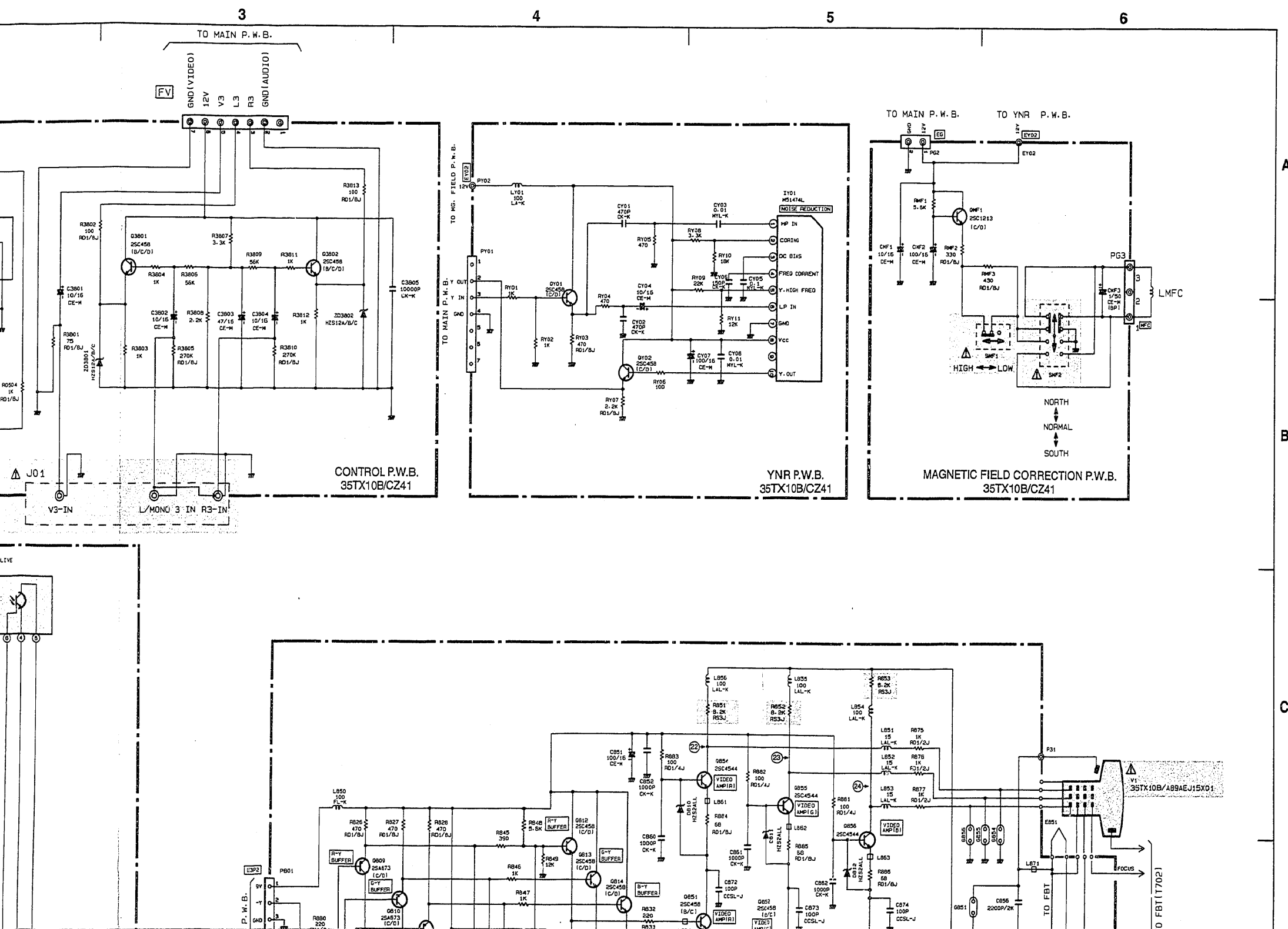
Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

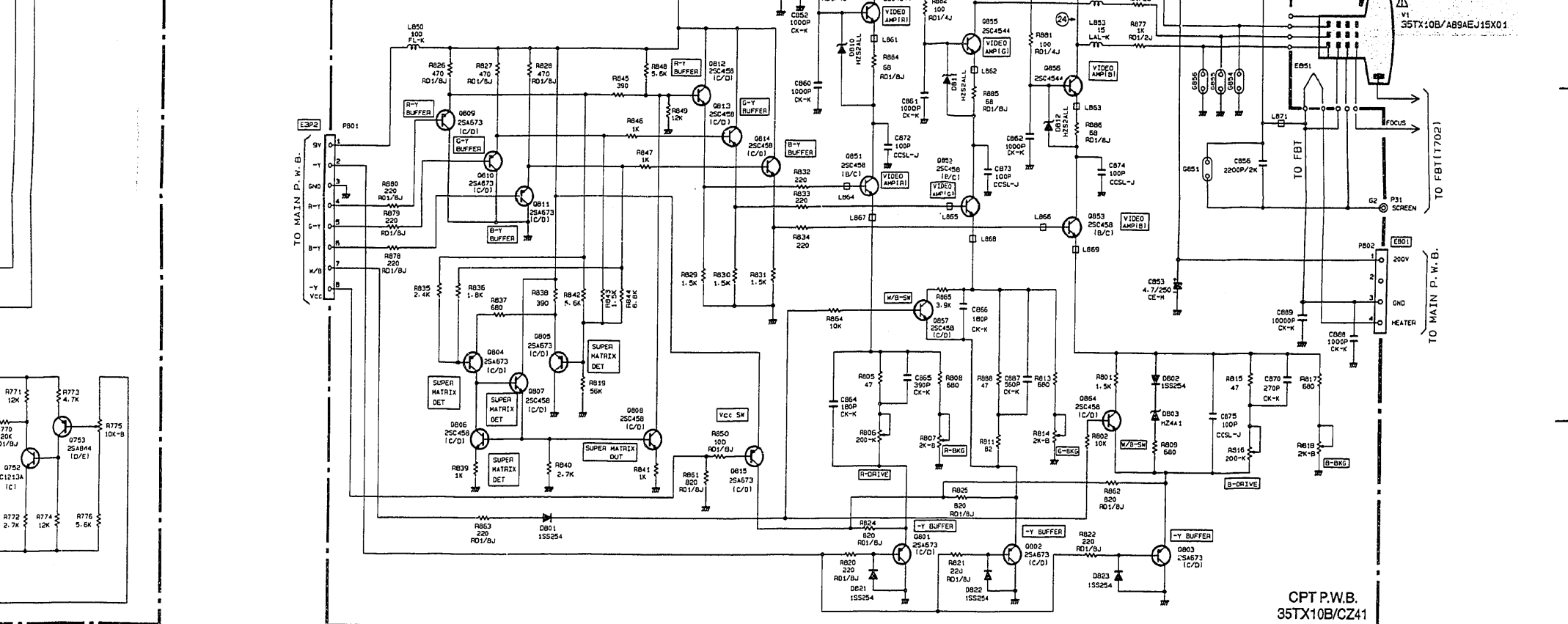
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/M). Voltage taken on a complex color bar signal including a standard color bar signal.

PRODUCT SAFETY NOTE: Components marked with a  and shaded any of these components, read carefully the **PRODUCT SAFETY NOTICE** through improper servicing.



PRODUCT SAFETY NOTE: Components marked with a and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





3

4

5

6

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
1621	1	5.0
	2	5.0
	3	5.0
	4	0.0
	5	5.7
	6	5.7
	7	6.2
	8	10.9

Circuit No.	Pin No.	Voltage VDC
1720	1	11.0
	2	9.8
	3	0.0
	4	-56.0
	5	-36.0

Circuit No.	Pin No.	Voltage VDC
Q650 Side P.	B	6.5
	C	9.8
	E	5.6
Q750 Side P.	B	-60.0
	C	-50.0
	E	-60.0
Q751 Side P.	B	-41.0
	C	-60.0
	E	-41.0
Q752 Side P.	B	-60.0
	C	-35.0
	E	-60.0
Q753 Side P.	B	-35.0
	C	-60.0
	E	-35.0

Circuit No.	Pin No.	Voltage VDC
Q801 CPT	B	4.0
	C	0.0
	E	4.0
Q802 CPT	B	3.8
	C	0.0
	E	3.9
Q803 CPT	B	4.0
	C	0.0
	E	4.0
Q804 CPT	B	6.0
	C	1.4
	E	6.4
Q805 CPT	B	5.8
	C	0.0
	E	6.5

Circuit No.	Pin No.	Voltage VDC
Q806 CPT	B	0.7
	C	1.4
	E	0.0
Q807 CPT	B	1.3
	C	9.0
	E	0.6
Q808 CPT	B	0.9
	C	6.0
	E	0.0
Q809 CPT	B	5.0
	C	0.0
	E	6.0
Q810 CPT	B	5.0
	C	0.0
	E	6.0
Q811 CPT	B	5.0
	C	0.0
	E	6.0
Q812 CPT	B	6.0
	C	9.0
	E	5.0
Q813 CPT	B	6.0
	C	9.0
	E	5.0
Q814 CPT	B	0.9
	C	9.0
	E	0.9
Q815 CPT	B	5.0
	C	3.9
	E	3.9

Circuit No.	Pin No.	Voltage VDC
Q851 CPT	B	5.0
	C	8.0
	E	5.0
Q852 CPT	B	5.0
	C	7.6
	E	4.7
Q853 CPT	B	5.0
	C	8.0
	E	5.0
Q854 CPT	B	1.5
	C	26.0
	E	1.5
Q855 CPT	B	1.2
	C	24.0
	E	1.2
Q856 CPT	B	1.2
	C	24.0
	E	1.2
Q857 CPT	B	4.5
	C	3.9
	E	3.9
Q864 CPT	B	4.6
	C	4.0
	E	4.0

Circuit No.	Pin No.	Voltage VDC
Q0501 Control 35v	B	0.0
	C	0.0
	E	0.0
Q3801 Control 35v	B	3.8
	C	12.0
	E	3.2
Q3802 Control 35v	B	3.6
	C	12.0
	E	3.2