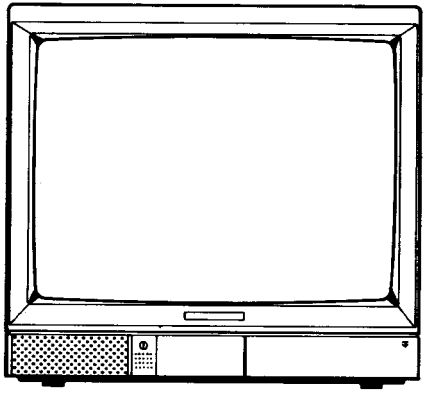
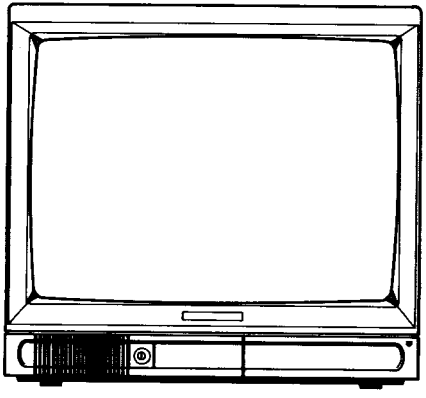
PC-91A CHASSIS'S COMMON



MODEL: CBT-9822/E
CIT-9822
CKT-9822



MODEL: CBT-9825/E
CIT-9825
CKT-9825

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SPECIFICATIONS

Power Consumption 80W
Receiving TV System ..... CCIR Standard

COLOUR RECEIVING SYSTEM		PAL/SECAM-B/G	PAL B/G-SECAM D/K	PAL-I	PAL-H
Intermediate Frequency	Picture	38.9 MHz	38.0 MHz	39.5 MHz	38.9 MHz
	Sound	33.4 MHz	31.5 MHz	33.5 MHz	33.4 MHz
	Colour	34.47 MHz	33.57 MHz	35.07 MHz	34.47 MHz
Receiving Channel	VHF Low	2–4 CH, S_1	1–5 CH	NONE	0–5 CH
	VHF High	5–12 CH, S_2–S_{25}	6–12 CH	NONE	5A–11 CH
	UHF	21–69 CH	21–69 CH	21–69 CH	21–69 CH
Power Source		220V/50Hz (SMPS)		240V/50Hz (SMPS)	

Tuning ..... Voltage Synthesizer
Audio Output ..... MAX. 4W
Antenna Input Impedance ..... 75 ohm IEC Type
(300 ohm using balun supplied)
Picture Tube A48KCS12XX-03
Speaker ..... 92 × 92 mm
Dimension ..... 492(W) × 462(D) × 458(H) mm
Weight ..... 18.4 Kg

SAFETY PRECAUTIONS

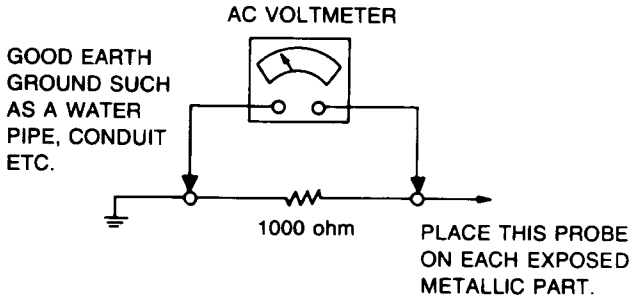
WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTIONS", "SAFETY INSTRUCTIONS" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTIONS

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 24 ± 1.5 kV at High beam current (maximun brightness) under specified power source. The high voltage must not, under any circumstances, exceed 27.5 KV. Each time a receiver requires servicing, the high voltage should be checked. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY INSTRUCTIONS

1. Potential as high as 25,000—27,000 volts is present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
   (1) Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
   (2) Always discharge the picture tube anode to the CHASSIS GROUND to reduce the shock hazard before removing the anode cap.
   (3) Perfectly discharge the high potentical of the picture tube before handling.
   (WARNING: Risk of implosion. Handle with care.)
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list only.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10 mm. away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Since this TV has AVC (Automatic Voltage Control) circuit, it may be operated nonadjustably within the voltage-area indicated in the label attached at back cover. (Do not use a line isolation transformer during this check). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner.
   Connect a 1000 ohm resistor between a known good earth ground, (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1000 ohm resistor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 1 volt RMS. This corresponds to 1 mA. AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by ⚠ marks on the schematic diagram and the replacement parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

SERVICING PRECAUTIONS

CAUTION: Before servicing receiver covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication. *NOTE:* If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. *Remember: Safety First.*

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before:
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
      CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
   d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc.) equipped with a suitable high voltage probe. *Do not test high voltage by "drawing an arc".*
3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
4. Do *not* spray chemicals on or near this receiver or any of its assemblies.
5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10 % (by volume) Acetone and 90 % (by volume) isopropyl alcohol (90 %-99 % strength).
   CAUTION: *This is a flammable mixture.*
   Unless specified otherwise in this service manual, lubrication of contacts is not required.
6. Do not defeat any plug/socket B + voltage interlocks equipped in receivers covered by this service manual.
7. Do *not* apply AC power to this receiver and/or any of its electrical assemblies unless *all* solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground *before* connecting the test receiver positive lead.
   Always remove the test receiver ground lead *last.*
9. Use with this receiver only the test fixtures specified in this service manual.
   CAUTION: Do *not* connect the test fixture ground strap to any heatsink in this receiver.

Electrostatically Sensitive (ES) Devices

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge build-up or exposure of the assembly.
3. Use only a *grounded-tip* soldering iron to solder or unsolder ES devices.
4. Use only an *anti-static* type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficent to damage ES devices.
5. Do *not* use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do *not* remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 500 °F to 600 °F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach the normal temperature (500 °F to 600 °F).
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      CAUTION: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach the normal temperature (500 °F to 600 °F).
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
CAUTION: Work quickly to avoid overheating the circuit board printed foil.

d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Removal/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/ Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output Transistor Device Removal/ Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicularly to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/ Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off", the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections):

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

BLUE: NEUTRAL BROWN : LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

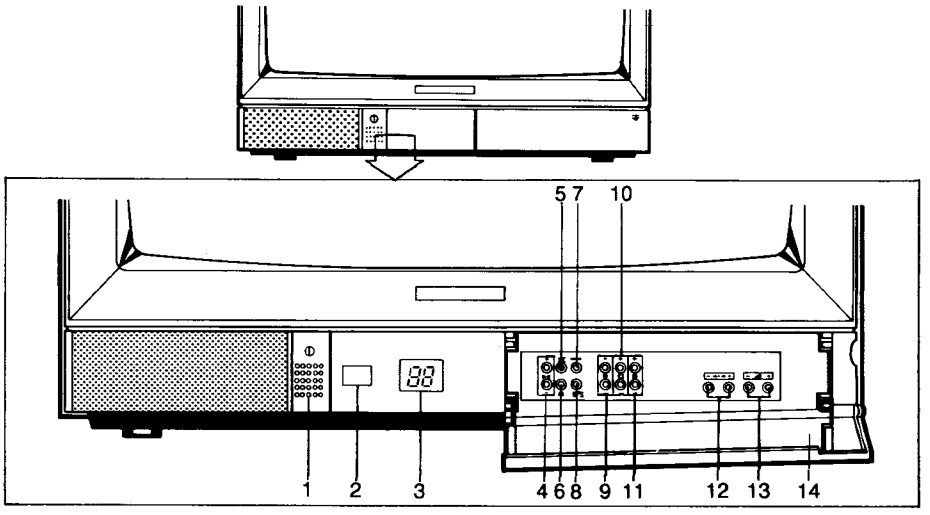
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

If a 13 Amp (BS1363) Plug or any other type of Plug is used a 5 Amp Fuse must be fitted, either in the Plug or Adapter, or on the Distribution board.

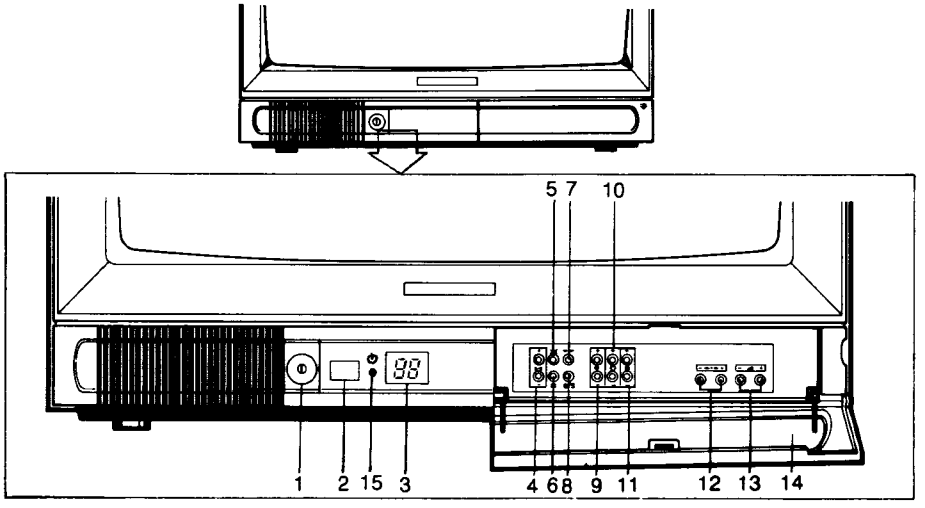
CONTROLS LOCATION

FRONT

CBT-9822/E
CIT-9822
CKT-9822

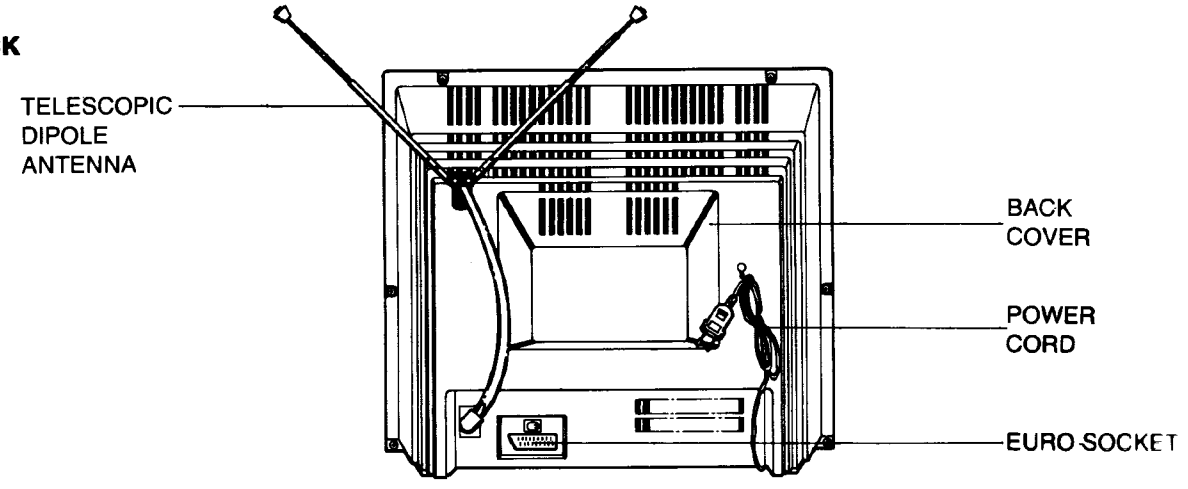


CBT-9825/E
CIT-9825
CKT-9825



1. POWER ON/OFF BUTTON
2. REMOTE CONTROL SENSOR
3. PROGRAM NUMBER INDICATOR
4. SEARCH UP/DOWN BUTTONS
5. MUTE BUTTON
6. MEMORY BUTTON
7. NORMAL BUTTON
8. BAND SELECTION (only PAL-B/G, SECAM-D/K)
9. CONTRAST UP/DOWN BUTTONS
10. BRIGHTNESS UP/DOWN BUTTONS
11. COLOUR UP/DOWN BUTTONS
12. PROGRAM UP/DOWN BUTTONS
13. VOLUME UP/DOWN BUTTONS
14. CONTROL DOOR
15. STAND-BY LED (only CIT-9822/9825)

BACK



DISASSEMBLY INSTRUCTIONS

BACK CABINET REMOVAL

Remove 6 screws holding on back cabinet and carefully separate the back cabinet from the front cabinet.

MAIN CHASSIS REMOVAL

1. Remove 6 screws holding the main chassis.
2. Grasp both sides of main chassis, pull it backward approximately 1/2".
3. Lift main chassis up and it may be removed.

SPEAKER ASSY REMOVAL

1. Remove PS01 connector between the speaker and the main chassis.
2. Pull out the speaker assy from the front cabinet.

CPT REMOVAL

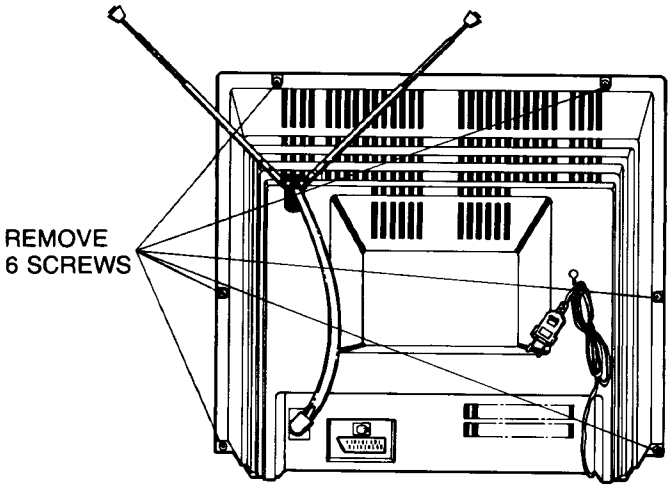
1. Pull out the CPT board from CPT neck.
2. Place the front cabinet on soft material so as not to mar the front surface or damage the control knobs.
3. Remove 4 nuts securing the picture tube mounting brackets to the front cabinet.
4. Carefully separate the CPT from the cabinet front.

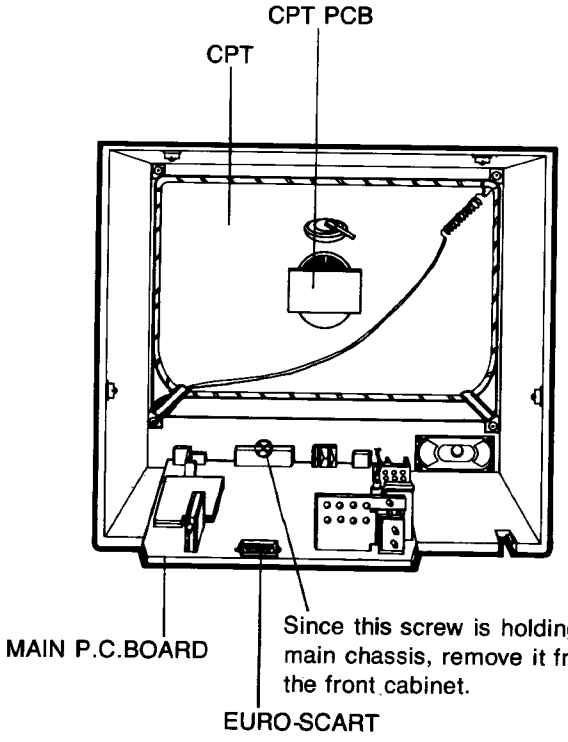
PICTURE TUBE HANDLING CAUTION

Due to the high vacuum and large surface area of the picture tube, great care must be exercised when handling the picture tube.

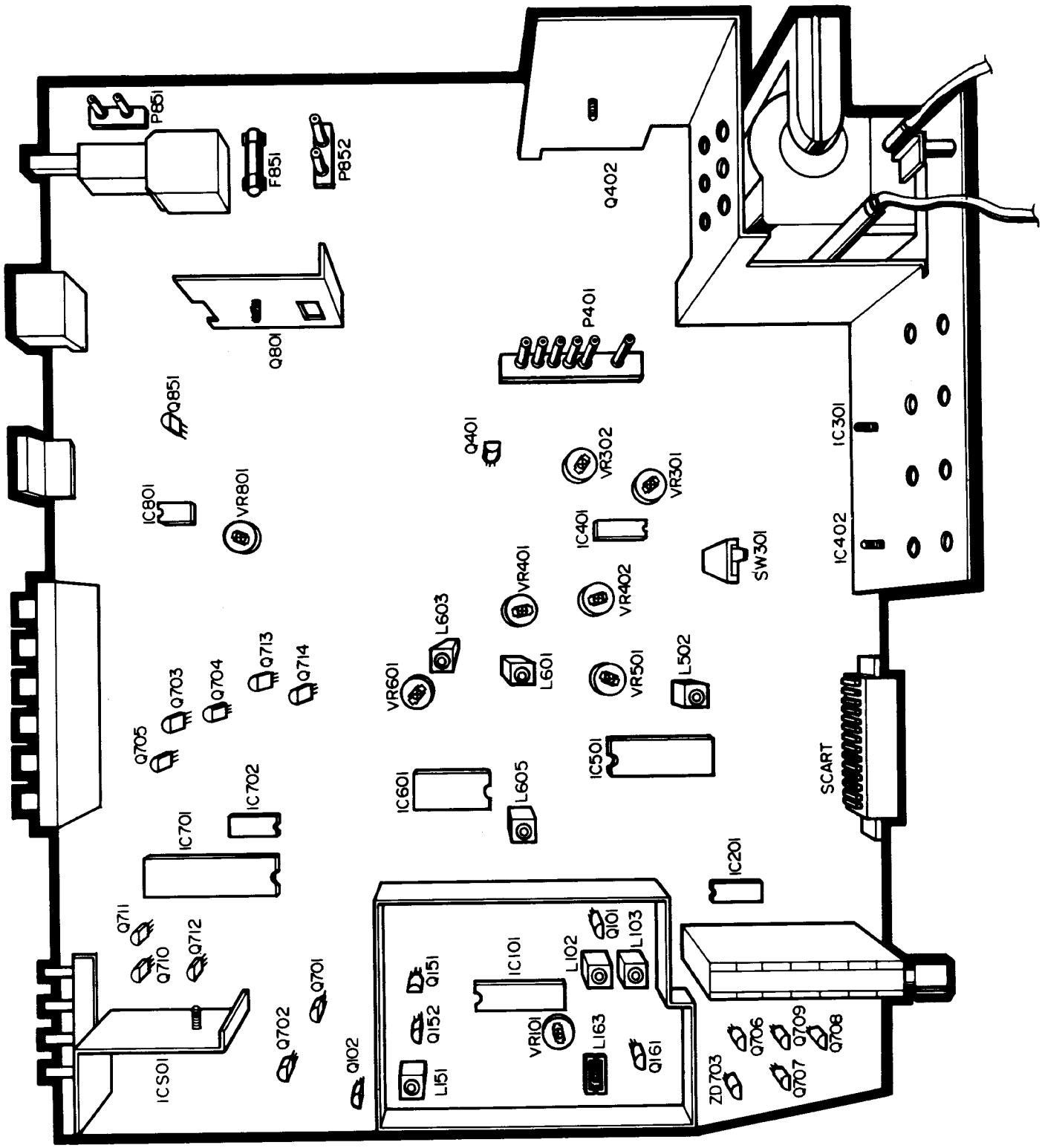
Always lift the picture tube by grasping it firmly around faceplate.

NEVER LIFT TUBE BY ITS NECK. The picture tube must not be scratched or subjected to excessive pressure as the fracture of glass may result in an implosion of considerable violence which can cause personal injury or property damage.





PARTS LOCATION DIAGRAM OF MAIN CHASSIS



ADJUSTMENT INSTRUCTIONS

1. APPLICATION SPHERE

This instruction applies to all the kinds of the colour television with PC91A chassis.

2. SPECIFICATION

1) Circumference Condition
   If there is no particular guidence, adjust PC91A chassis as follows.
   - Appropriate Temperature: 20°C ±5°C
   - Relative Humidity: 65% ±5%
2) Necessary Instruments
   - DC Power Supplier 0-20V/1A: 2EA
   - Sweep Generator and Marker Unit of Each System
   - Alignment Scope
   - DC Voltmeter (High Impedance)
   - PM5518 (PHILIPS PATTERN GENERATOR)
   - Frequency Counter
3) Signal
   - In this case, standard colour signal means GoldStar standard digital signal (PM5544 DIGITAL)
4) Power Source (Receiver Operation)
   AC 180V-270V,, 60/50Hz

3. VIF ALIGNMENT PROCEDURE

1) Connecting Block Diagram of Equipments

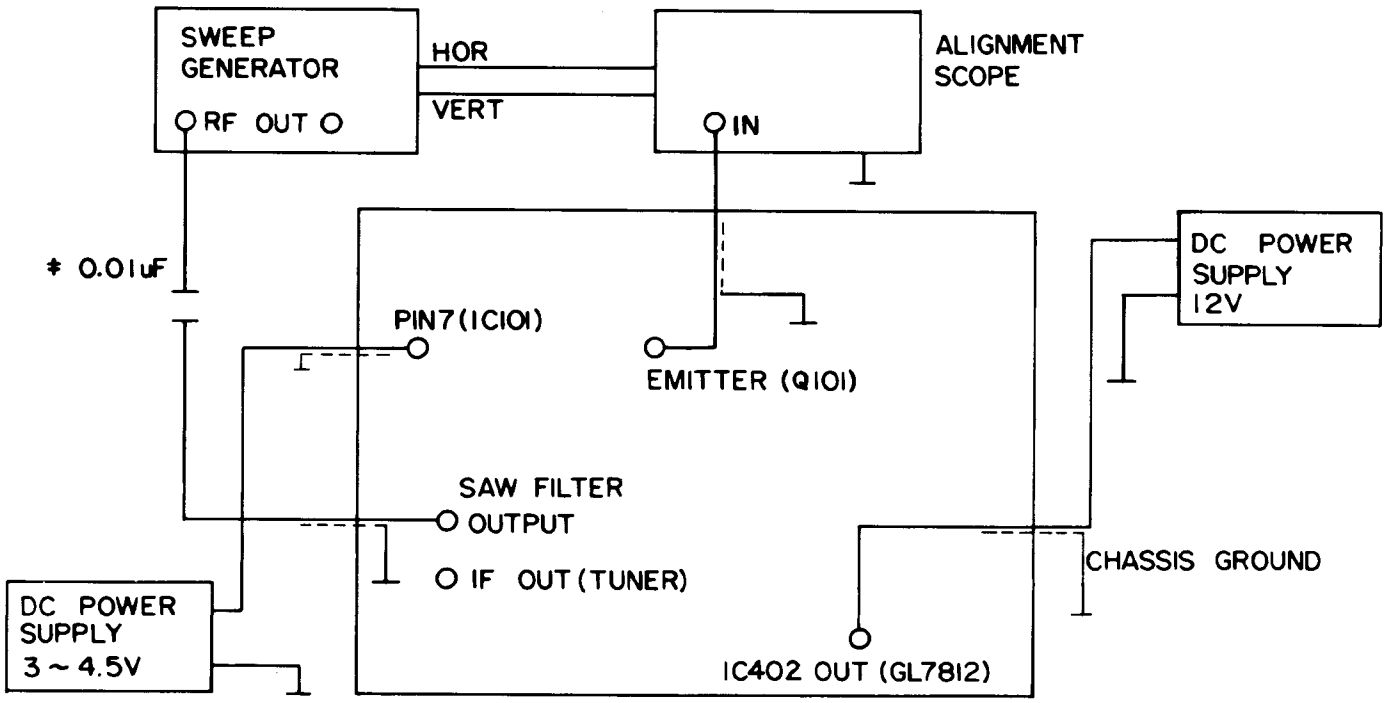


Figure 1

* Connect Ceramic Capacitor (0.01uF) between RF-OUT terminal of the Sweep Generator and Out terminal of Saw Filter as shown in figure 1.

2) VIF Detection Coil Alignment
   - Connect the equipments to the main board as shown in figure 1, and then turn the DC power supplier on.

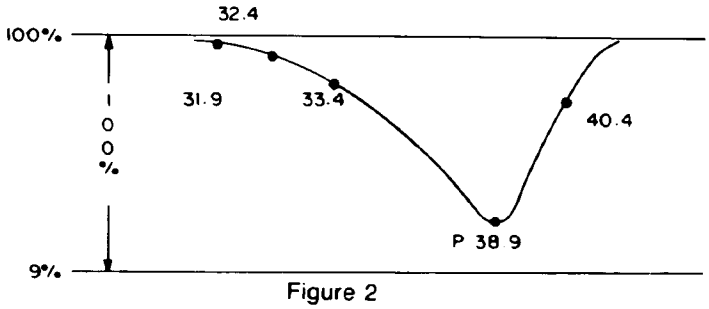


Figure 2

- Adjust L102 ((Detection Special Quality Adjustment Coil) on the main board in order to minimize the Picture Carrier Mark as shown in figure 2 (For Mark Frequency of Each System, refer to the below note (*)).

* Each frequence carrier of system

PAL B/G:	38.9 MHz
PAL I:	39.5 MHz
PAL I/I:	39.5 MHz
PAL/SECAM B/G:	38.9 MHz
PAL B/G+SECAM D/K:	38.0 MHz

4. ASC (40.4 MHz) ALIGNMENT PROCEDURE (L162)

1) This alignment is only applicable to the model with ASC TRAP for FTZ.
2) Do connecting Block Diagram of Equipments as shown in figure 1, but connect RF-OUT terminal of the sweep Gererator to IF-OUTPUT terminal of the TUNER on the Main PCB.
3) Turn L162 counterclockwise so that it may appear to maximum, and then adjust it clockwise slowly.
   NOTE: You have to use this adjustment after C168 and AFT terminal of the tuner open (SLIT1, SLIT3).
4) After setting output of sweep GENERTOR to maximum, apply about 5V to IF AGC voltage of pin7 (IC101) so that waveform may be distingished L162 in the saturated state.
5) Adjust L162 so that 40.4 MHz Point may be minimum.

5. AFT ALIGNMENT PROCEDURE

NOTE) AFT alignment must be acted with C168 and AFT Terminal of TUNER open (SLIT1, SLIT3)

1) Connecting Block Diagram of Equipments for AFT is the same procedure as that for VIF, but change Connection Position of Alignment scope from Emitter of Q101 to AFT Terminal of TUNER.
2) Set Vertical Gain of the Scope to 1Vp-p/div and set the Sweep Generator Output to a low state possibly.
3) Adjust L103 so that AFT adjustment waveform may be as shown in figure 3.
4) After finishing adjustment, connect C168 and AFT terminal of the TUNER to SLIT 1 and SLIT 3.

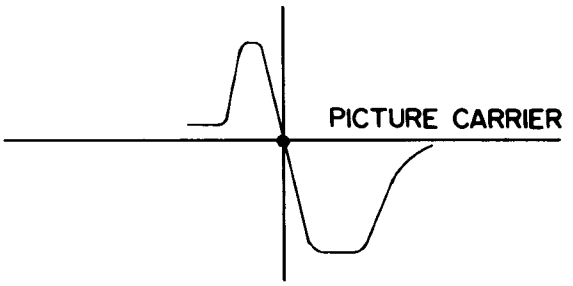


Figure 3 (AFT Alignment Waveform)

6. MAIN B+ (112V DC) ALIGNMENT

1) Put the set in motion normally.
2) Receive the standard colour signal.
3) Set the postion of the colour, bright, contrast to maximum.
4) Adjust the VR801 so that the voltage of TP1(J1) may be 112V.

7. HORIZONTAL SYNCHRONIZATION (HOR. OSC ALIGNMENT)

1) Let the FUBK TEST PATTERN send to the TUNER ANTENNA.
2) Connect the SYNC. SEPARATION INPUT SIGNAL to the GROUND. (Connect pin 5 of IC401 to GROUND)
3) Adjust VR402 so that a screen may be maintained in a horizontal and vertical direction.
4) Remove the pin 5 connection of IC401 to GROUND.

8. HORIZONTAL CENTER ALIGNMENT (HOR. SHIFT ALIGNMENT)

1) Receive the FUBK TEST PATTERN.
2) Adjust the VR401 so that the center of a screen may be adjusted.

9. VERTICAL AMPLITUDE AND LINEARITY ALIGNMENT (VERT. HEIGHT AND LINEARITY ALIGNMENT)

1) When brightness of a screen is maximum by receiving the FUBK test pattern, adjust VR302 so that the outline signal of upper and lower parts of great circle on screen may coincide with the edge of an effective CPT screen.
2) Again, change the signal into DIGITAL PATTERN, and adjust VR301 so that the length of upper and lower of the great circle may be equal.

10. VERTICAL CENTER ALIGNMENT

1) Ajust the SW301 (VERT. CENTER SVC. S/W) so that the center of the pattern coincide with the center of an effective CPT screen vertically.

11. COLOUR SYNCHRONIZATION ALIGNMENT

1) Reveive the standard COLOUR BAR signal.
2) Set the contrast, brightness and colour VR to maximum.
3) Connect the colour saturation terminal (PIN 6 of IC501) to 12V.
4) Short the pin 21 (B-Y) and the pin 22 (R-Y) of IC501. (Short between TP7 and TP8.)
5) Adjust the TC501 so that the colour bars may not appear.
6) After finishing adjustment, remove the connection of item 3) and 4).

12. PAL MATRIX ALIGNMENT

1) Set the contrast, brightness and colour VR to maximum
2) Receive DEM. PATTERN
3) Connect SCOPE to B-OUT (The pin 16 of IC501).
4) Adjust VR502 to obtain a minimum fluctuation (A straight line) as shown in figure 4-1.

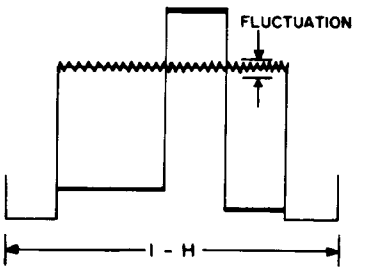


Figure 4-1 VR502 Alignment

5) Adjust L502 to obtain a minimum fluctuation as shown in figure 4-2 after changing PATTERN into the COLOUR BAR singal.

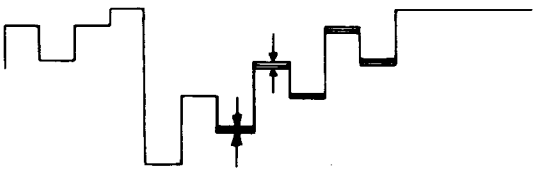


Figure 4-2 L502 Alignment

6) Repeat above item 4), 5) again.

13. RF AGC ALIGNMENT

1) Receive the standard colour signal (60dB ± 1dB).
2) Connect DIGITAL MULTIMENTER to AGC Terminal of TUNER.
3) Refer to a below diagram, and then adjust VR101.

TUNTER SYSTEM	B/G-D/K	I	I-I	H
SHARP	5.5 ± 0.1dc	X	X	
APLS	4.5 ± 0.1dc	4.5 ± 0.1dc	4.0 ± 0.1dc	6.0 ± 0.1dc

14. SCREEN AND WHITE BALANCE ALIGNMENT

1) Set the colour, brightness and contrast control to minimum.
2) Set the BIAS ALIGNMENT VR on the CPT board to minimum and the DRIVE ALIGNMENT VR(904-905) to the mechanical center position.
3) Receive the standard pattern.
4) SHORT between TP2 and TP3 to remove the vertical deflection and adjust SCREEN VR to obtain horizontal line on screen. And then, control BIAS VR so that WHITE BAR appears.
5) Adjust the screen so that the value of SCREEN VR may be lower and WHITE BAR almost disappear.
6) Remove the short between TP2 and TP3, adjust the drive control VR(VR904, 905) in the high light state to get white balance.
7) After adjusting the contrast, brightness control VR, continue to control the low light and high light until white remains.
8) Adjust 8000K ± 800K (X = 296 ± 8, Y = 306 ± 8) to control colour analyzer.

15. FOCUS ALIGNMENT

1) Receive the standard DIGITAL PATTERN, and then set the colour, brightness and control to maximum.
2) Adjust slowly the FOCUS control on the FBT so that the HALO phenomenon may not appear around center and letter.

16. SECAM BOARD ALIGNMENT

1) SECAM BELL FILTER ALIGNMENT
(1) Receive SECAM COLOUR BAR PATTERN.
(2) Connect LOW CAPACIRANCE PROBE to pin 3 of IC601.
(3) Adjust L601 to maximize and flatten the waveform.
(4) In case of not using FET PROBE, perform above adjustment (number 1 to 3) by the GS standard SECAM SIGNAL so that the COLOUR of 3.8 MHz portion may be red and minimize the colour of the COLOUR BAR MAGENTA on the shadow of LEVEL BAR boundary.
2) SECAM REFERENCE COIL ALIGNMENT.
(1) Connect OSCILLOSCOPE PROBE to pin 9 (J63) of IC601.
(2) Adjust L605 to minimize ① portion of waveform A and then change it into DIGITAL PATTERN to adjust the colour by maked eyes.

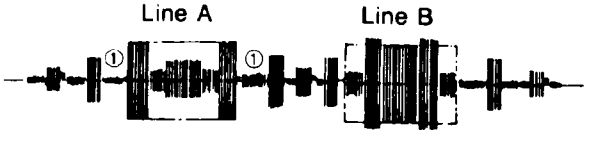


Figure 5

2) SECAM COLOUR SYNC ALIGNMENT (4.43 MHz OSC ALIGNMENT)
(1) After fishing the PAL DECODER COLOUR SYNC alignment, adjust it.
(2) Receive the Standard SECAM COLOUR BAR when item 2) and 4) of Colour Synchronization Alignment is acted.
(3) Adjust TC601 so that the colour bar doesn't flow down.
(4) Remove the connection item 2) and 4).
3) 1H-DELAY LINE ALIGNMENT
(1) Send the SECAM COLOUR BAR SIGNAL to the antenna and adjust colour +/− so that colour level may be the mechanical center set.
(2) Connect oscilloscope probe to pin 6 of the IC501.
(3) Adjust VR601 to waveform A in figure 6.
(4) Adjust L603 to minimum fluctuation as shown in figure 6.

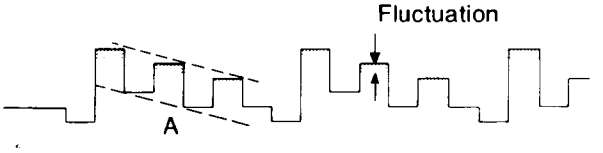


Figure 6

17. SOUND CONVERTER (5.5 MHz/6.5 MHz) ALIGNMENT (only SECAM-D/K)

1) Open SLIT2.
2) Connect Frequency Counter to Cathode of D151. (In this case, be sure to use OSCILLOSCOPE PROBE (10:1) in connection)
3) Adjust Coil (L151) so that the Value of Frequency Counter may be 500 ± 0.1 KHz.
4) After finishing alignment, short SLIT2.

PURITY AND CONVERGENCE ADJUSTMENT

CAUTION: Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments. However, the effects of adjacent receiver components, or replacement of picture tube or deflection yoke may require the need to readjust purity and convergence. Convergence magnet assembly and rubber wedges need mechanical positioning following the figure 7. Before attempting any convergence adjustments this receiver should be operated for at least fifteen minutes. If adjustment is required the adjustments should be made in the following sequence.

COLOUR PURITY ADJUSTMENT

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS controls to maximum.
3. Select the purity pattern consisted of green only on the pattern generator.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 8) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check purity of the red and blue rasters by selecting the purity pattern of pattern generator.
9. Obtain a white raster, refering to "WHITE BALANCE ADJUSTMENT".
10. Proceed with convergence adjustment.

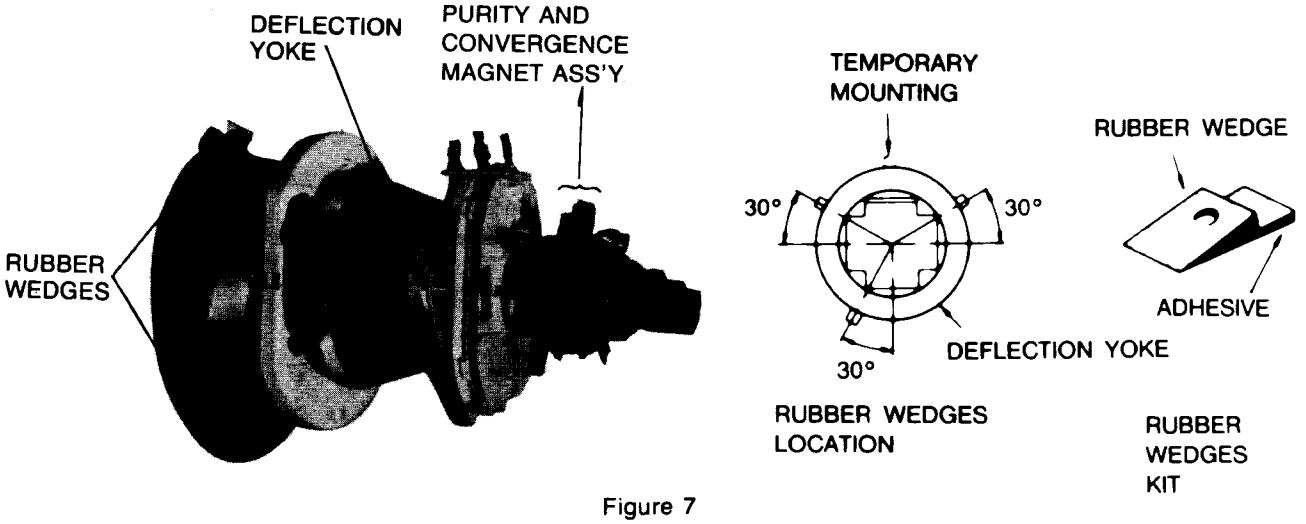


Figure 7

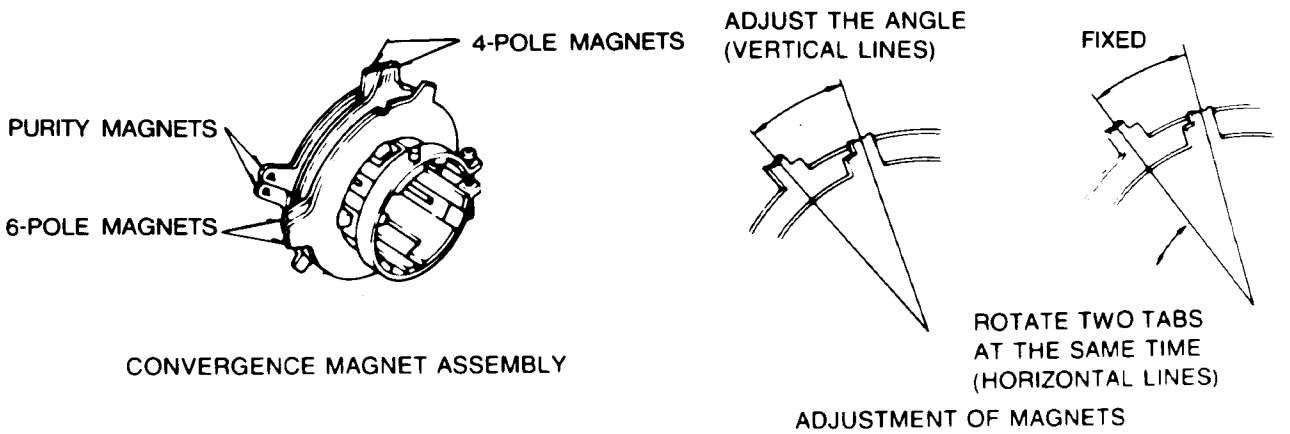


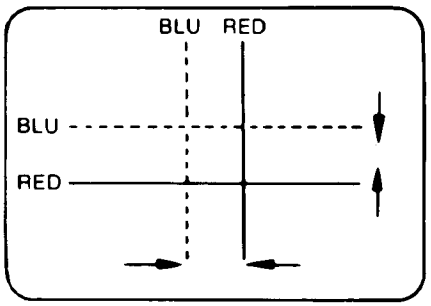
Figure 8

CENTER CONVERGENCE ADJUSTMENT

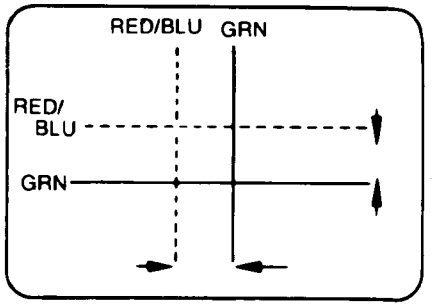
1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST controls for well defined pattern.
3. Adjust two tabs of the 4-pole magnets to change the angle between them (See figure 8) and superimpose the red and blue vertical lines in the center area of the picture screen. (See figure 9.)
4. Turn both tabs at the same time keeping their angles constant to superimpose red and blue horizontal lines at the center of the screen. (See figure 9)
5. Adjust two tabs of 6-pole magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 1,2,3, keeping in mind red, green and blue movements, because 4-Pole magnets and 6-Pole magnets interact and make dot movement complex.

CIRCUMFERENCE CONVERGENCE ADJUSTMENT

1. Loosen the clamping screw of DY to allow the yoke to tilt.
2. Adjust DY to obtain a better convergence in the circumference by orbital movement of the front of the yoke, then secure the DY in appropriate position by placing the wedges as illustrates in figure 7. Tighten screw holding the DY. Stick 3 adhesive tapes on wedges as shown in figure 7.

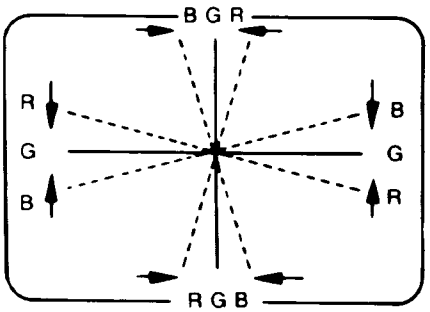


4-Pole Magnets Movement

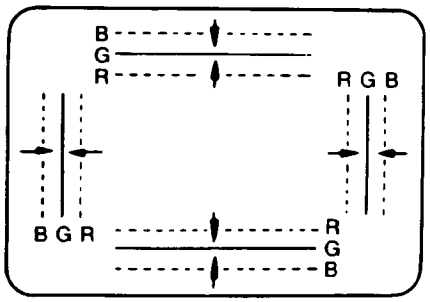


6-Pole Magnets Movement

Center Convergence by Convergence Magnets



Incline the Yoke up (or down)



Incline the Yoke right (or left)

Circumference Convergence by Deflection Yoke

Figure 9 DOT MOVEMENT PATTERN

CIRCUIT DESCRIPTIONS

VIDEO SIGNAL SYSTEM CIRCUIT

Video Signal System contains Tuner, Video IF AMP., Video DET., Video AMP., AGC Circuit and AFT Circuit. In this chassis, all functions except Tuner are performed within IC101 (GL3120A/LA7520).

Video DET, Video IF AMP, Circuit and Video AMP, Circuit

All functions are performed in IC101. The schematic diagram is below.

GL3120A/LA7520 used in this Chassis is a large-scale integrator which contains the VIF stage, SIF stage and Sound stage, and reduces 5.5(PAL-I: 6.0, SECAM D/K: 6.5)MHz Beat.

At the same time, GL3120A/LA7520(IC101) improves the sound quality and the picture quality compared with a conventional chassis as a result of detecting the sound in Quadrature DET. Circuit.

Video/Sound (5.5MHz, D/K: 6.5 MHz, PAL-I: 6.0MHz) DET. Circuit

The IF signal which is fed to IC101 is amplified in the IF AMP. circuit, and detected in the SIF DET. circuit, so it creates the 5.5(PAL-I: 6.0, SECAM D/K: 6.5) MHz SIF signal.

Also, after the amplified signal passes the Buffer Circuit, and creates the Video signal, detected in the DET. circuit.

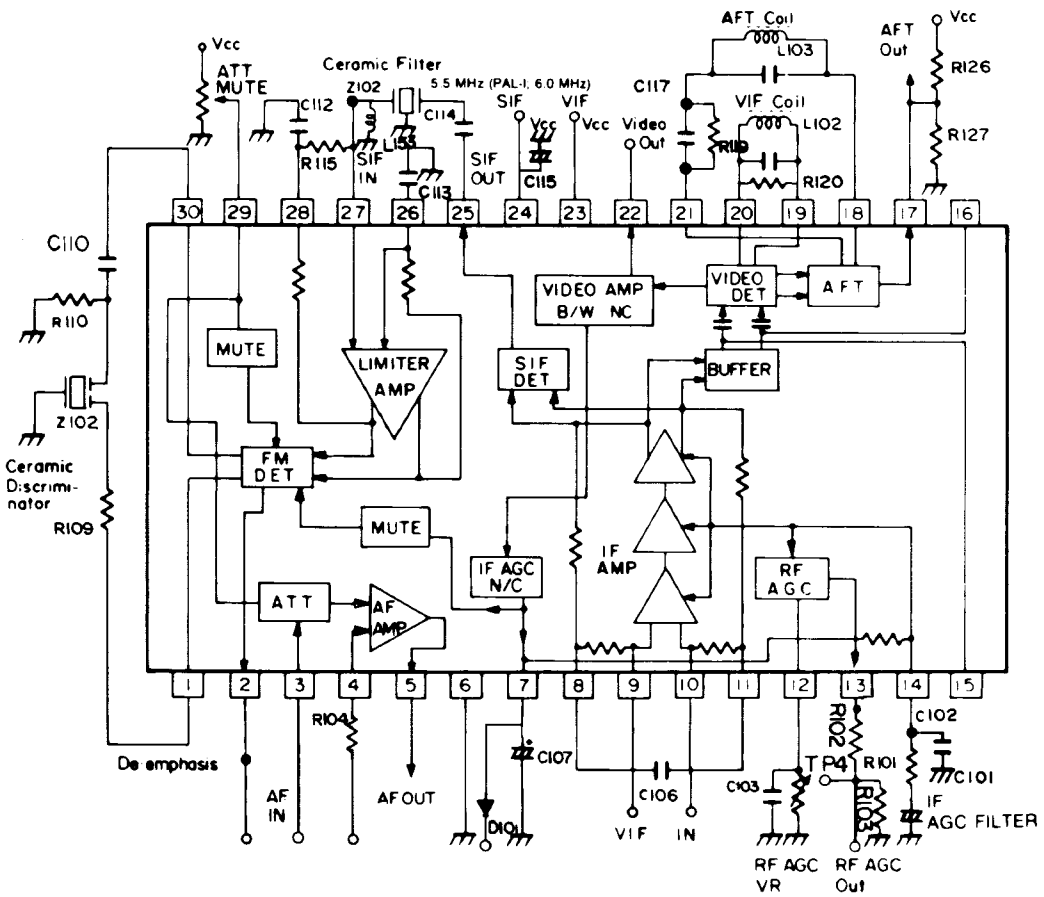
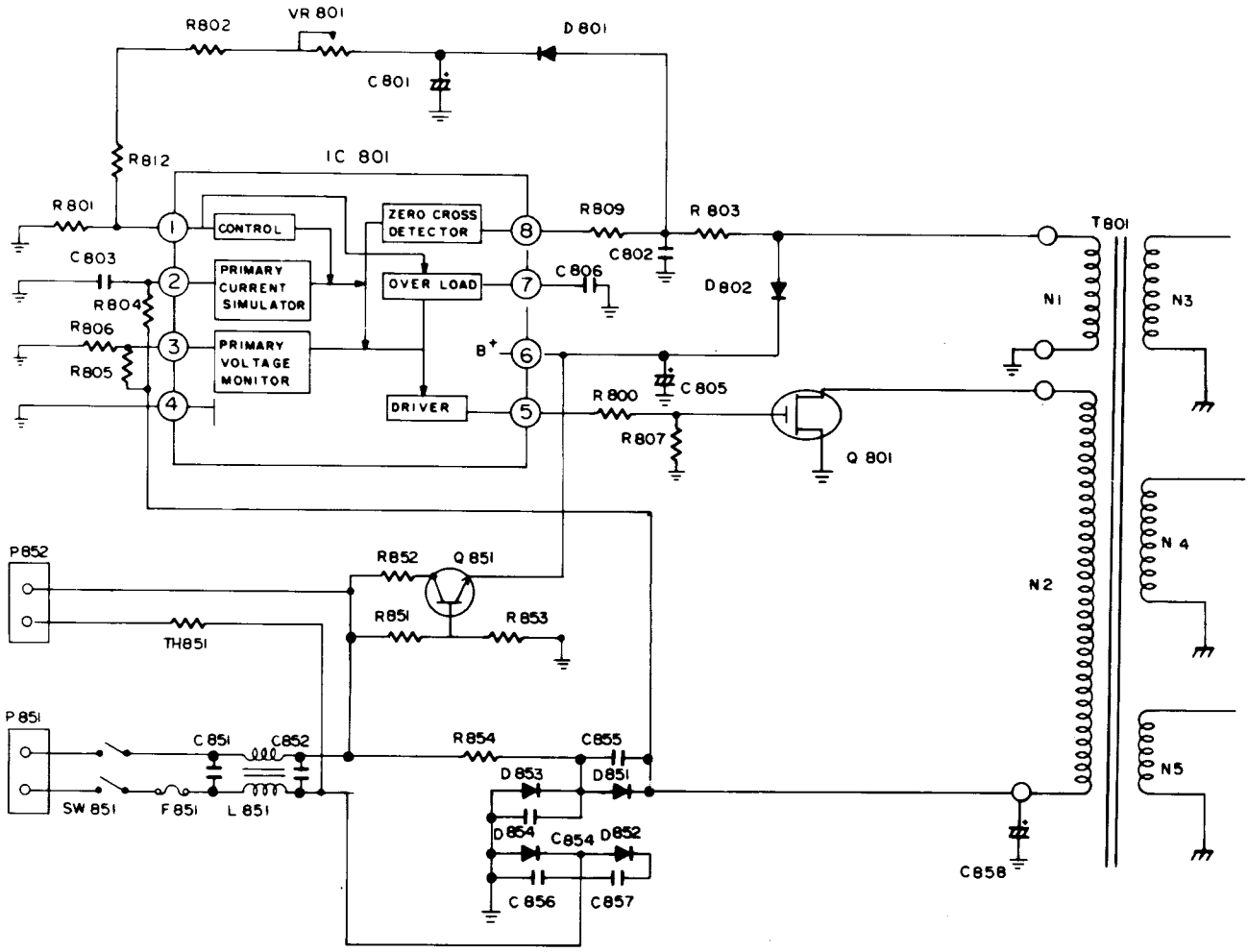


Figure 10 Schematic Diagram of IC101 (GL3120A/LA7520)

Pin Function Chart of IC101 (GL3120A/LA7520)

Pin No.	Description
1, 30	FM detector, pin 1 and 30, uses the quadrature detection circuit. After the signal, with its amplitude limited by the limit Amp, is output from pin 1 and 90° shifted by the phase shifter, it is input at pin 30.
2	Quadrature detected signal is output at pin 2 through emitter follower.
3	DC VR input terminal pin 3 attenuates the audio signal.
4	The sound Amp. NFB (Negative Feed-back) terminal.
5	The sound output terminal.
6	The ground terminal, and is connected to the ground of the SAW filter.
7, 14	IF AGC Filter terminals (PIN 7), RF AGC Filter terminal (PIN 14). Pin 7 is also used as the video and audio mute terminal.
8, 11	By-pass AC signal contained in VIF Amp signal.
9, 10	VIF input terminals.
12	The RF AGC VR (Variable Resistor) terminal. VR101 is connected as the RF AGC VR.
13	The output of RF AGC. When the RF AGC voltage is below 9 V, R102 and R103 divide the Resistance and C104 is necessary to stop the oscillator.
15, 16	
17	The AFT DC voltage from pin 17 is varied by R126 and R127.
18, 21	AFT circuit is the quadrature detection circuit and is connected between the pin 18 and pin 21.
19, 20	The carrier element is taken out from the LC tank circuit through pins 19 and 20.
22	The video ouptut terminal.
23, 24	These are the supply voltage input terminals. Pin 23 = VIF block Pin 24 = SIF block
25	The SIF primary detection output terminal.
26, 27, 28	Pins 26 and 28 are by-pass ground terminals. Pin 27 is the unbalanced input terminal.
29	The mute & sound volume control terminal.

POWER SUPPLY



Start Up

If you turn the switch on, the voltage generated by R851 and R853 inputs the BASE of the Q851 for a half period of the upper side frequency wave which corresponds with 50Hz. If that happens, about 8 volts is generated in the emitter of Q851. After all, this voltage input the pin 6 of the IC801 to turn it on. And then, the DC 12—18 volts rectified by the D802 and C805 input the pin 6 continuously. At last the IC801 operates normally.

Normal Operation

The square wave output power which make the Q801 on and off flows out of the pin 5. Also, the sources generated by the load variation are detected from the wire wound (N1). The detected variation sources which is communated with the D801 and the C801 input the voltage to the pin 1.
The pin 1, 2 and the pin 3 have the function assisting the control operation. And adjusting VR801 makes the secondary output voltage controlled.

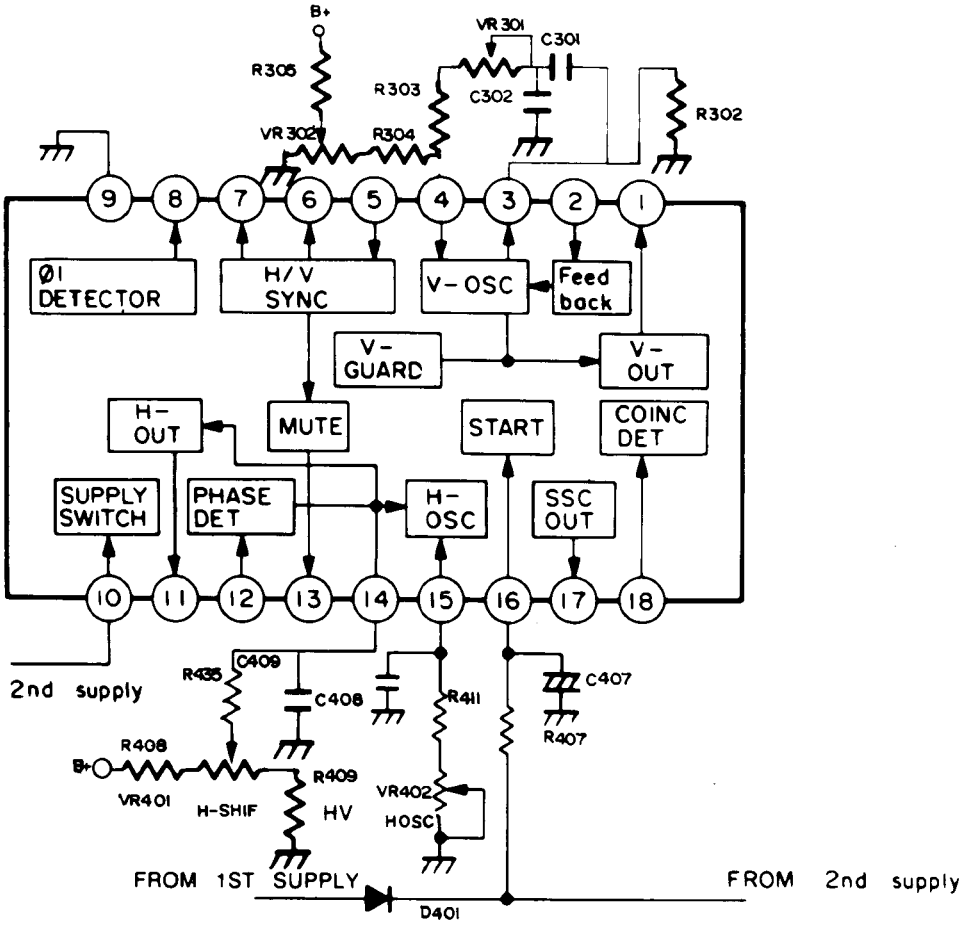
Over Load Operation

The maximum COLLECTOR current is decided by the pin 1 and the pin 6 of the IC801. If the secondary load is too exceeded, the decrease of voltage generated from N1 makes voltage of the pin 6 and the pin 1 of IC801 decrease and output pluse width of pin 5 extremly.

High Voltage Protection

This is decided by voltage of the pin 1 and the pin 6. If the secondary voltage increase above the fixed voltage, the voltage of N1 increase. When this voltage is above 15V, the motion of pin 5 output will stop.

H/V DEFLECTION



Start Up

If you turn the switch on, the output power of the 17 volts in the part of electric power source flow into the pin 16 of the IC401 through the D807. Therefore, the IC401 begins oscillating and its output-power flows from the pin 11. In the result, the horizontal output-power of TR. Q401 is driven, and the second voltages from the FBT to the D403 and D404 are commutated. The 12 volts through the constant voltages, are input to the pin 10 of the IC401 and perform the IC401 in normal motion. On the other hand, when the 2nd supply are input to the pin 16 of the IC401. By cutting off an end of the D807, separate the part of electric power from the first voltage.

Vertical Section

The pin 3 and the pin 4 perform their duties of oscillating SAW-TOOTH WAVE. That is to say, the pin 4 makes the NFB (negative feed back) information which the pin 2 generates though the vertical output-power circuit overlap C301 and C302 of the pin 3 and corrects a verticality. The pin 1 is a vertical output-power terminal. The sources of the vertical saw-tooth-wave is finished to the vertical output circuit through this terminal.

Horizontal OSC and Phase Shift

The Oscillation signal, which is generated by C408, R411 and VR402 connecting to the pin 15, makes the horizontal syncronizing signal which is detected by the pin 6, pin 7 and pin 8 among the image signals from the pin 5 compared with a part of vertical output-power signal from the pin 12. And than the last signal output-power generated. In that case, the phase is shifted by C408 and VR401 connecting to the pin 14.

A/V MODE

If you make the pin 18 low through R414, the movement of 2 DETECTOR flows FAST mode so that it is LOCKING and VCR mode.
Therefore, when Audio/Video is seleted by R414, D402 and the HIGH LEVEL is applied to the pin 8 connecting to Peri Plug, VCR mode is selected.

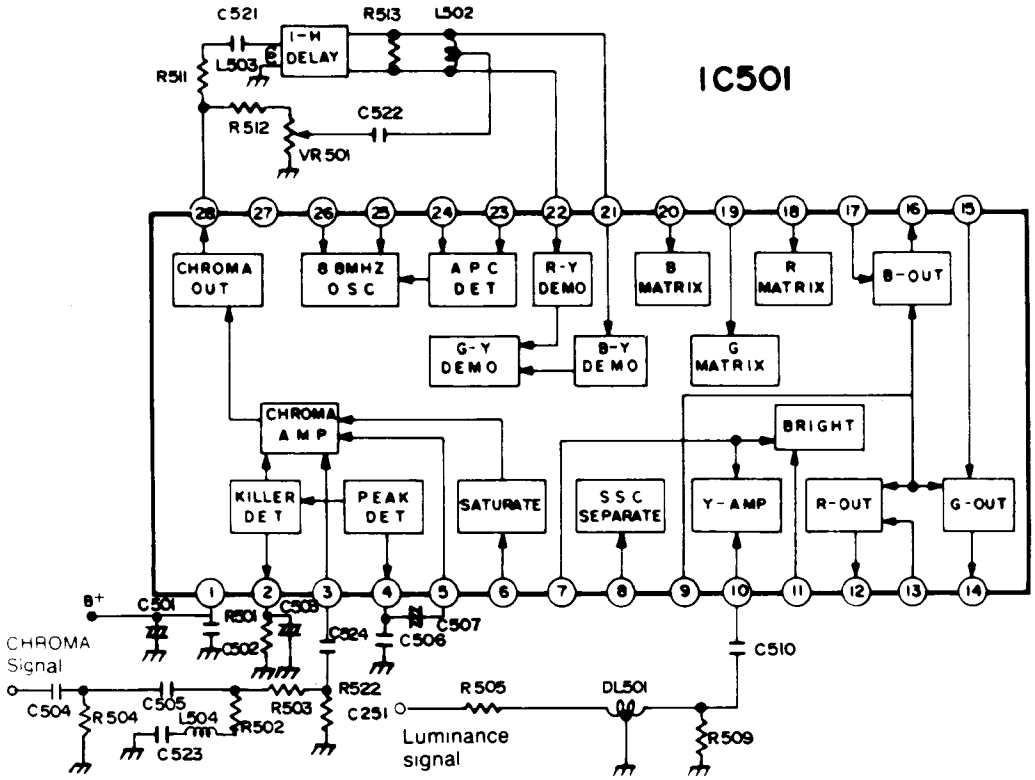
Sand Castle

The Output of three level sand castle from the pin 17 of IC401 flows into the pin 8 of IC501 (PAL Chroma IC), and pin 4, 19 of IC601 (SECAM charoma IC).

Synchronization Separation and Slice Level

R405 and R406 connecting to the pin 5 determine the value of direct voltage and fix slice level and select the horizontal synchronization signal among the image signals or negative going synchronization pulse inputting the pin 5.

CHROMA & LUMINANCE



Chroma Path

First, the CHROMA signal flows from B.P.F. Circuit into the pin 3 to be amplified, and then it flows into the second amplifier to do about 4 Vp-p. The amplifier signal which is in output from the pin 28 is divided into two groups. One flows from R511, C521 into 1H-Delay Line, the other from R512, VR501 and C522 into mid-tap of L502.

At L502, two kinds of signal, which flows from 1-H delay and not, is vectored and adjusted, so that R-Y (u) signal is divided into B-Y (u) and B-Y (V).

Each of the signals is demodulated inside the pins 21, 22. G-Y is generated by R-Y and B-Y.

In course of demodulation, colour system is a Carrier Wave Suppression, therefore the pins 25, 26 oscillate to 8.86 MHz to reconstitute a carrier wave.

The DC voltage which the Colour Burst of the pins 23, 24 generates flow into oscillator for 8.86 MHz and adjust the oscillating frequency and the false image so that they may concide with original signal.

After the 8.86 MHz which is generated in this way decrease by half, R-Y and B-Y flow into G-Y demodulator in order to generate a complete demodulation. On the other hand, the pin 2 discharges its duty of controlling the first amplifier of an outcome so that colour killer does not generate colour noise during receiving black and white signal or in electric field less than 35 dBm.

That is to say, the pin 4 detects the colour Burst and makes it generate DC voltage, which is supplied and controlled on the pin 2, and kills the DC volage of the pin 2 less than 3 V. The pin 6 is a saturation control circuit.

Luminance Path

As much as chroma path needs to perform chroma signal, DL501 delays Luminance signal about 380 nS., and then this flows into the pin 10 through C510 and control contrast, brightness with the pin 7 and the pin 11 to be supplied for each of R, G, B matrix circuit.

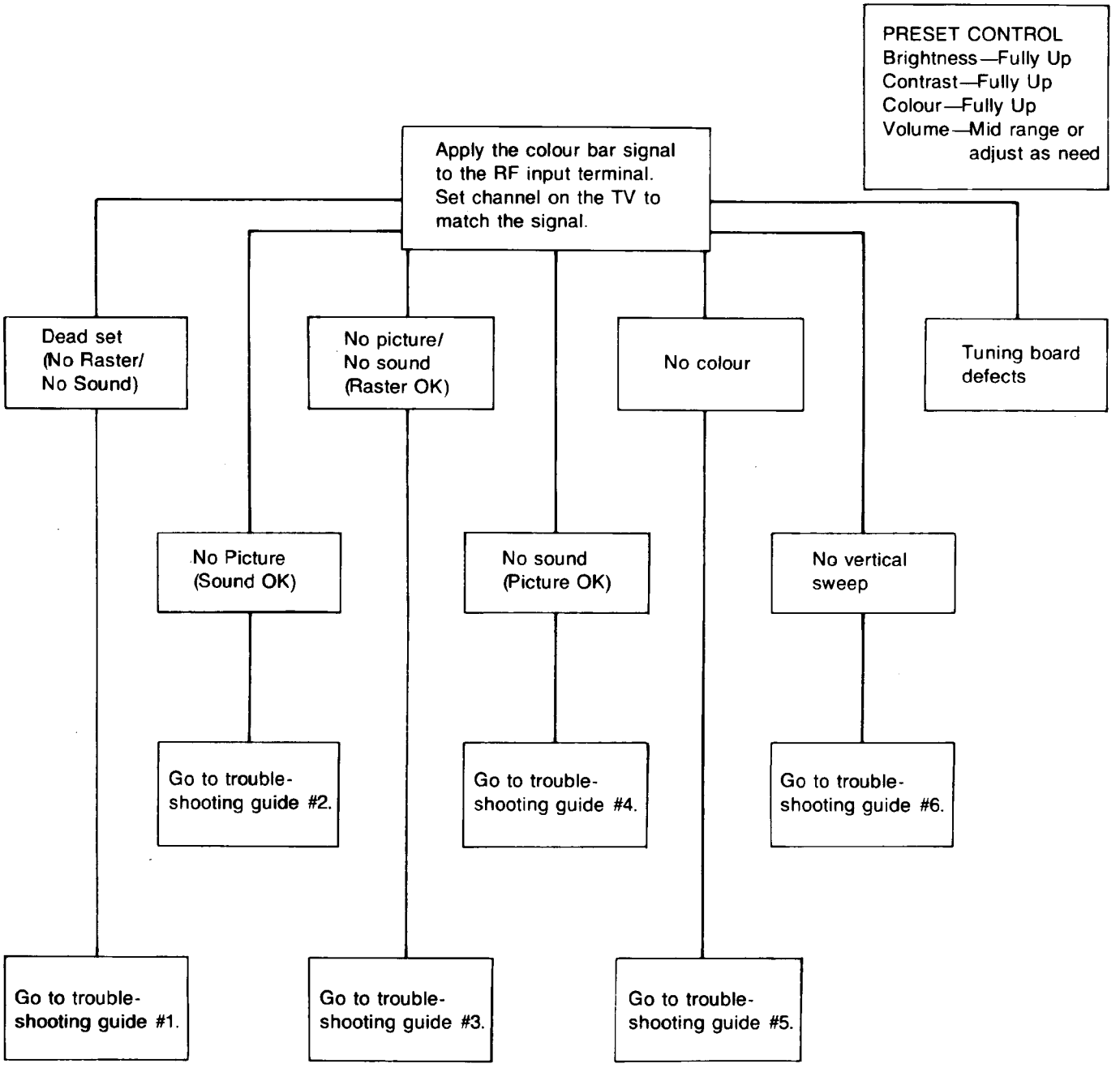
luminance signal supplied on the pin 10 is commonly only 0.5 Vp-p.

R.G.B. Data Input

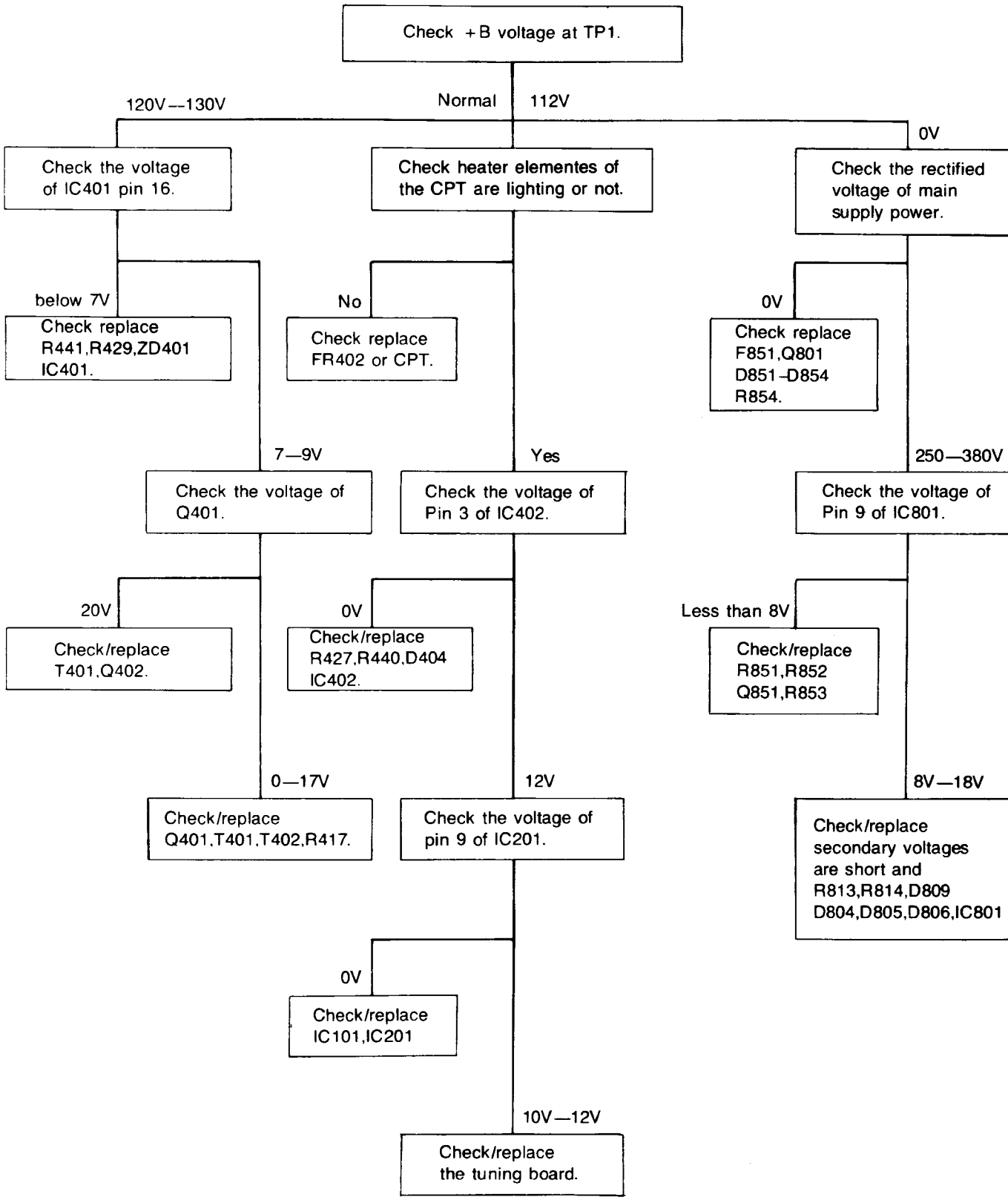
When the DC voltage of the pin 9 remains 1—3 V, IC501 is converted into it in data input and when each of R.G.B. signals flows into the pins 13, 15, 17, each signal is in output at the pins 12, 14, 16.

In case that DC voltage of the pin 9 remains less than 0.4 V, normal state remains.

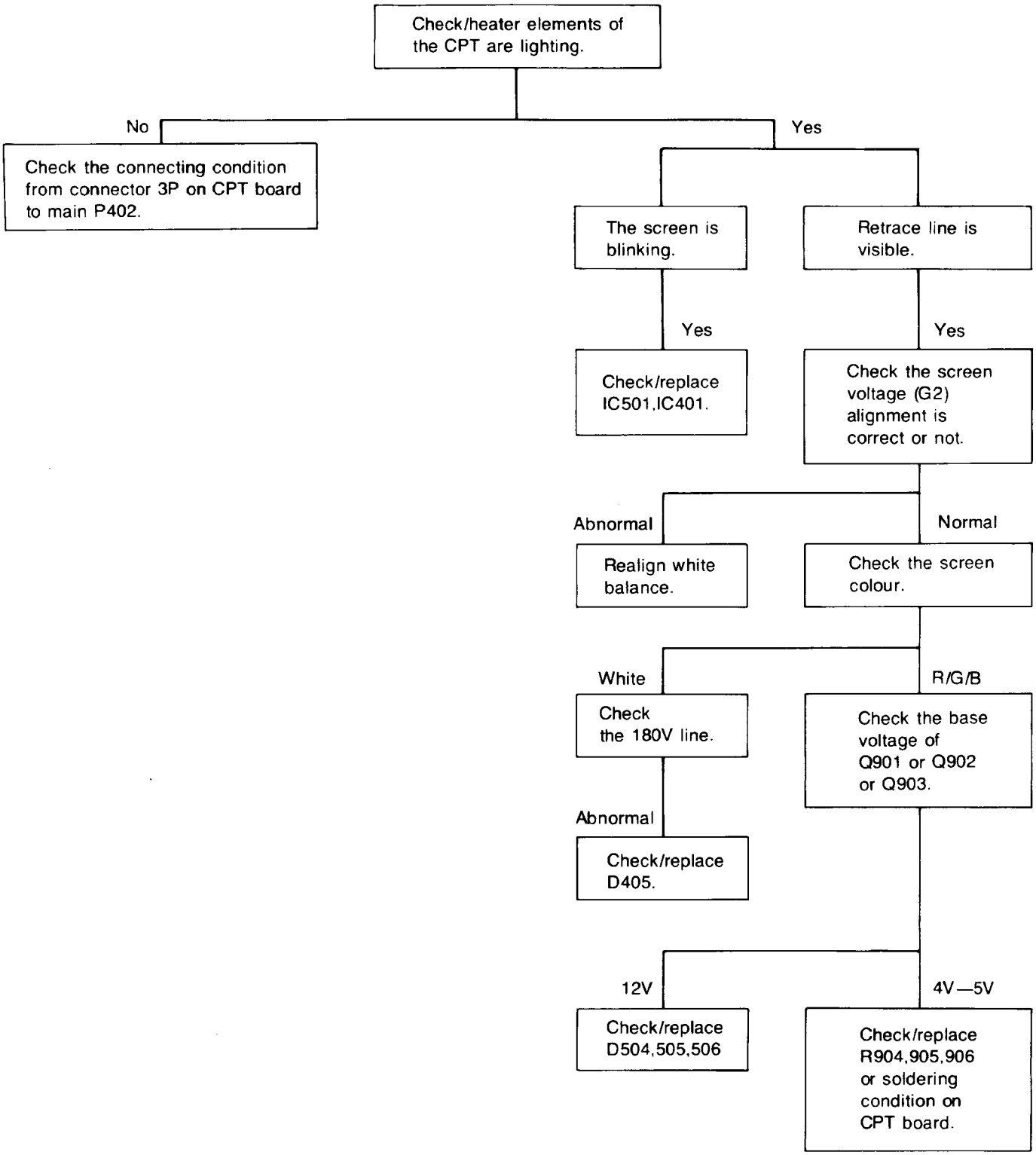
TROUBLESHOOTING GUIDE



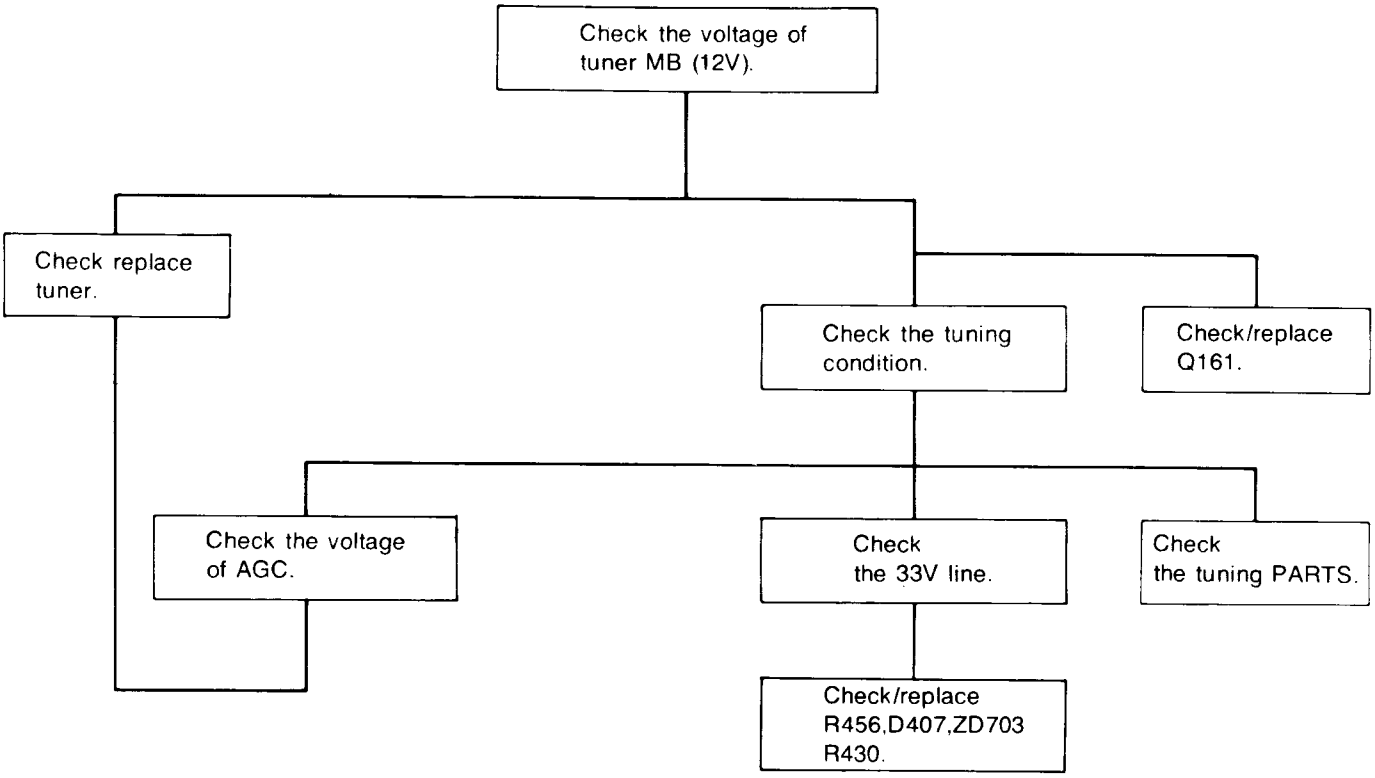
1. DEAD SET (NO RASTER/NO SOUND)



2. NO PICTURE (SOUND OK)

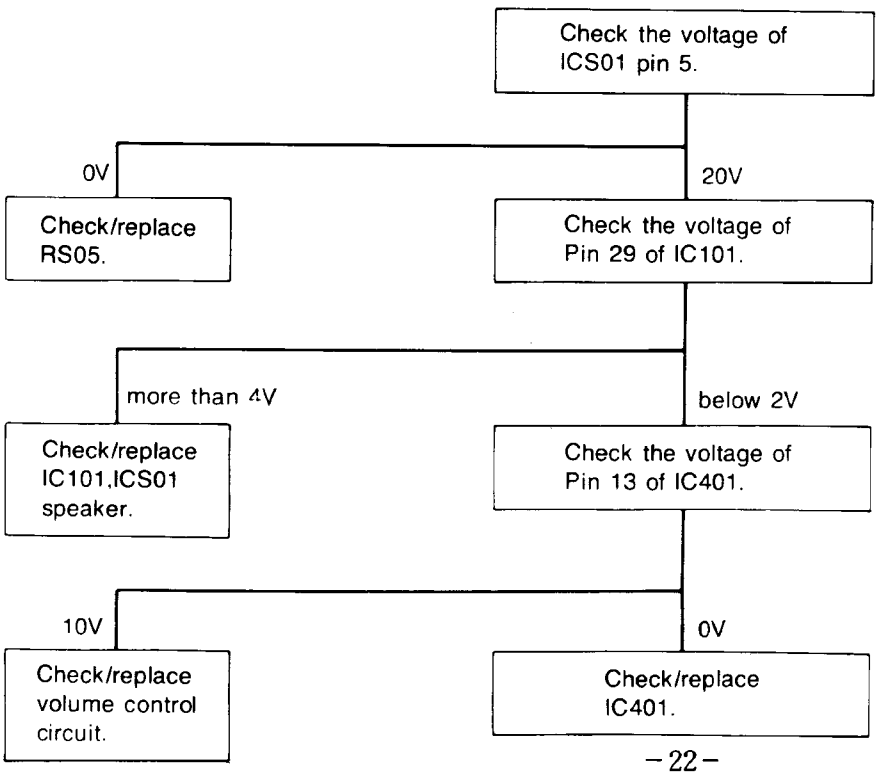


3. NO PICTURE/NO SOUND (RASTER OK WHITE NOISE ONLY)

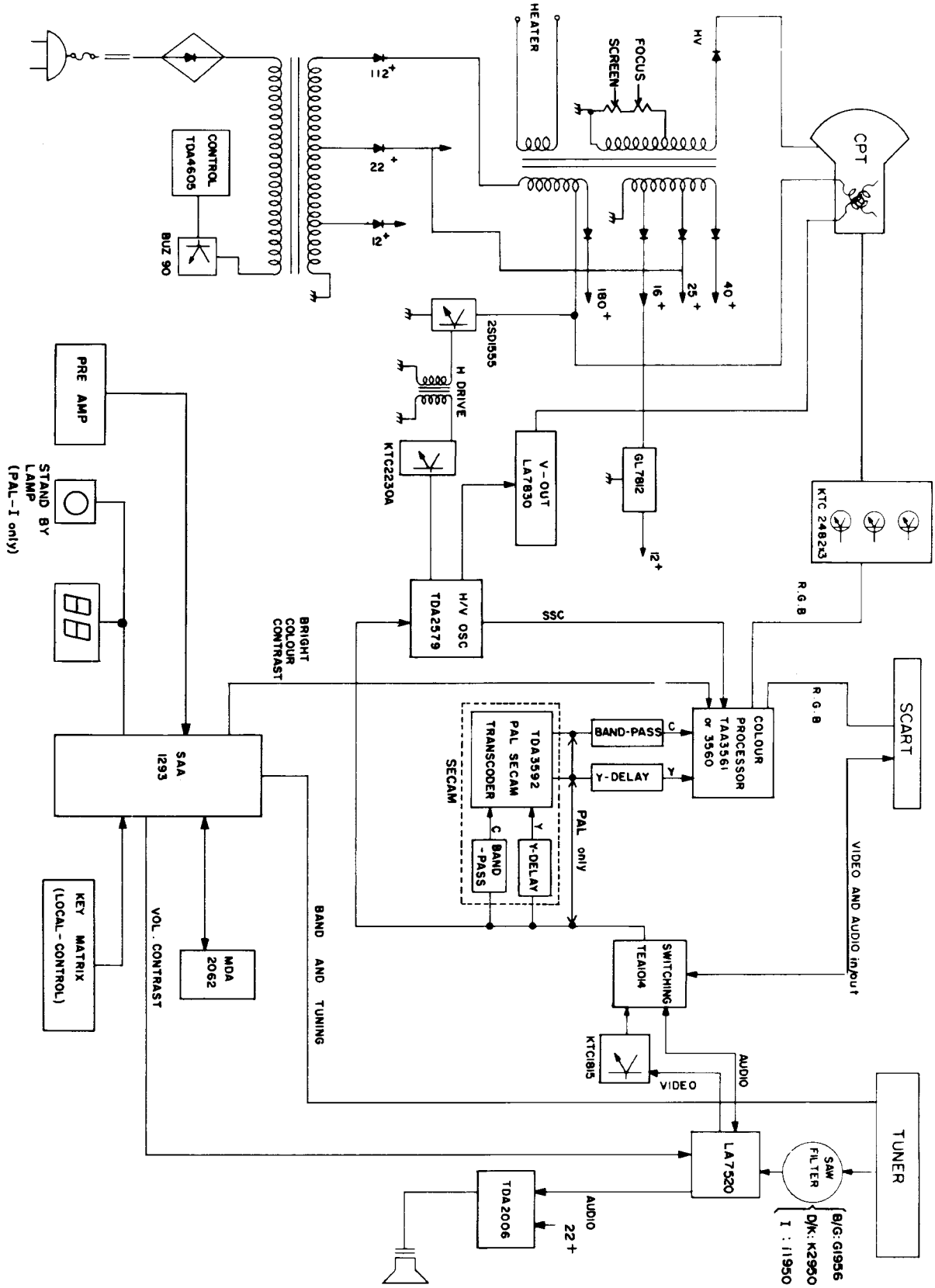


4. NO SOUND (PICTURE OK)

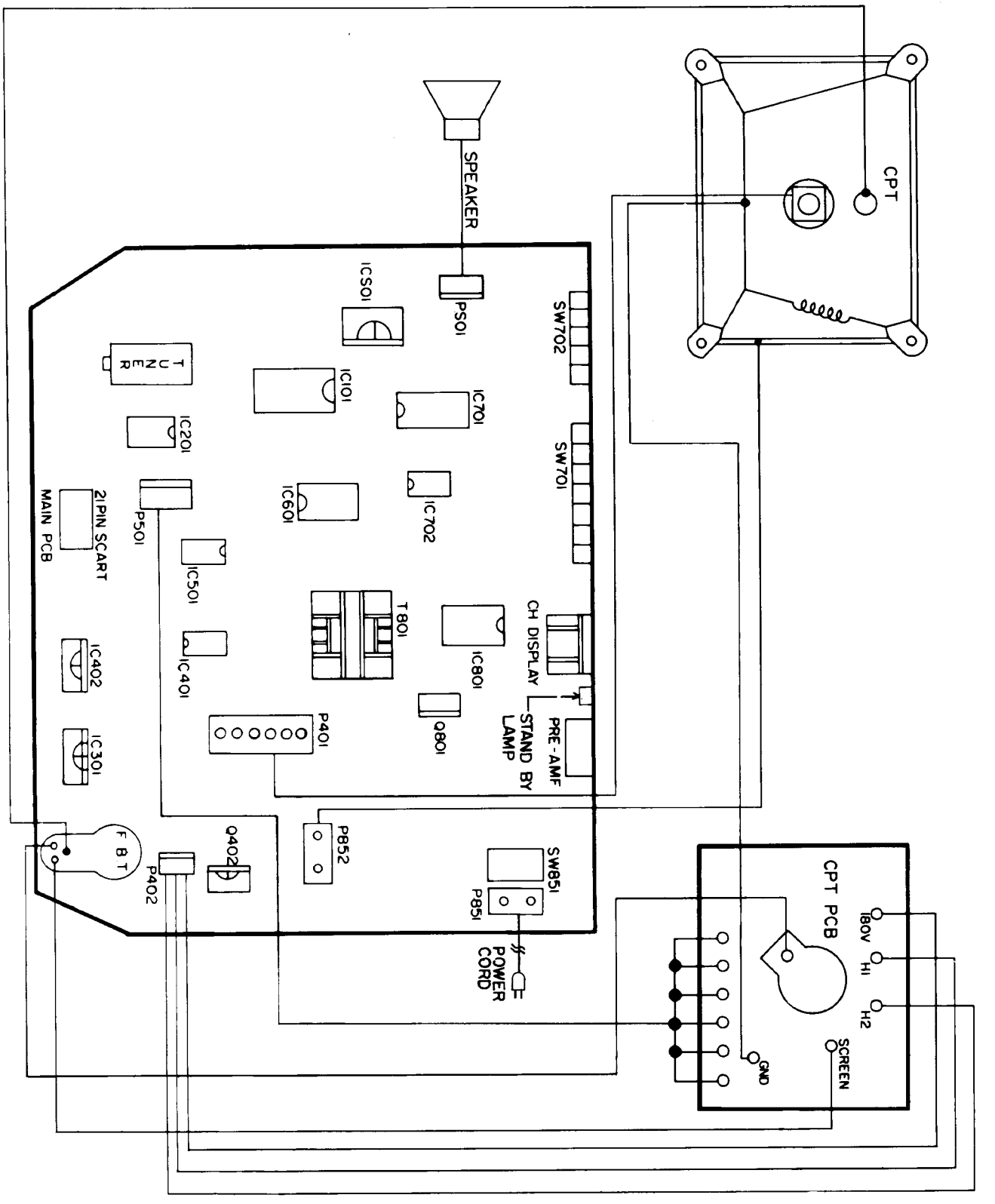
Note:
Sound is muted whenever the screen is noise condition, that is, broadcasting signal is not found.



BLOCK DIAGRAM

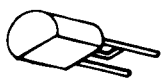


WIRING DIAGRAM

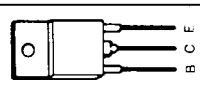
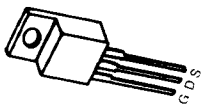


TERMINAL VIEW OF SEMICONDUCTOR

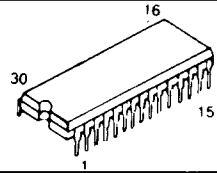
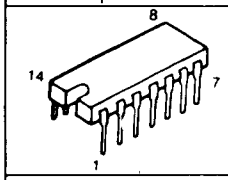
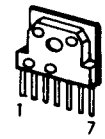
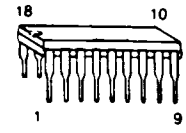
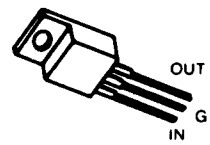
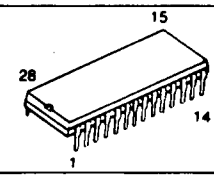
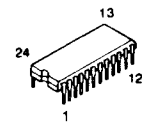
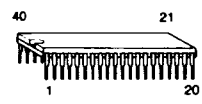
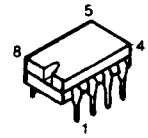
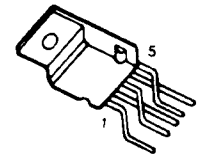
DIODE

FIGURE	DESCRIPTION	REFERENCE NO.
	1N4148TA	D101-D104 D201-D203,D204 D402,D406,D601 D703-D708,D801 D802,D901-D903
	1K34A TP-A	D701,D702,DS01
	1N4005 GP	D851,D852,D853 D854
	1N4003TA	D301,D401,D807
	TVR-06J	D403,D404,D405 D407,D803,D805 D806
	RGB15J	D804
	KA33V	ZD703
	ZENER Z9.1BMTA	ZD701
	ZENER Z20BMTA	ZD702
	ZENER Z5.6BMTA	ZD704,ZD705
	EQA02-17VB	ZD401

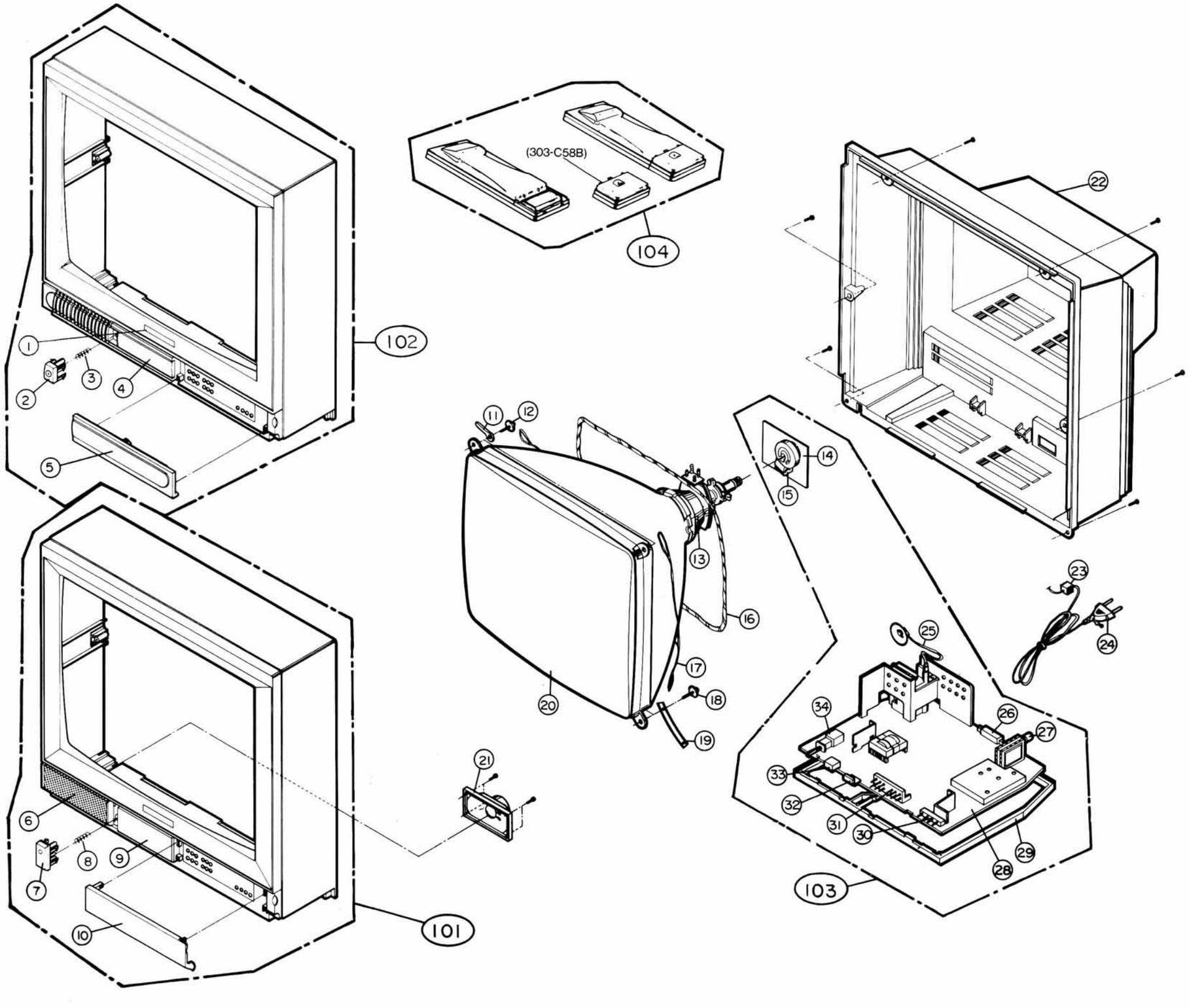
TRANSISTOR

	KTC1815-GR	Q705
	KTC2120-O	Q713
	KTC1815-O	Q101,Q102,Q201 Q151,Q152,Q701 Q707
	KTC388A	Q161
	KTA1015-O/Y	Q704,Q706 Q708-Q712
	2SD1555	Q402
	KTC2230A(Y)	Q401
	KTC2236A-O	Q714
	KTC2482	Q851,Q901-Q903
	KTC1959-Y	Q703
	SIP MOS BUZ-90	Q801

IC

FIGURE	DESCRIPTION	REFERENCE NO.
	LA7520 or GL3120	IC101
	TEA1014 MDA2062	IC201 IC702
	LA7830	IC301
	TDA2579	IC401
	GL7812	IC402
	TDA3561A	IC501
	TDA3592A	IC601
	SAA1293	IC701
	TDA4605	IC801
	TDA2006	ICS01

GOLD STAR
CKT-9822
CKT-9825



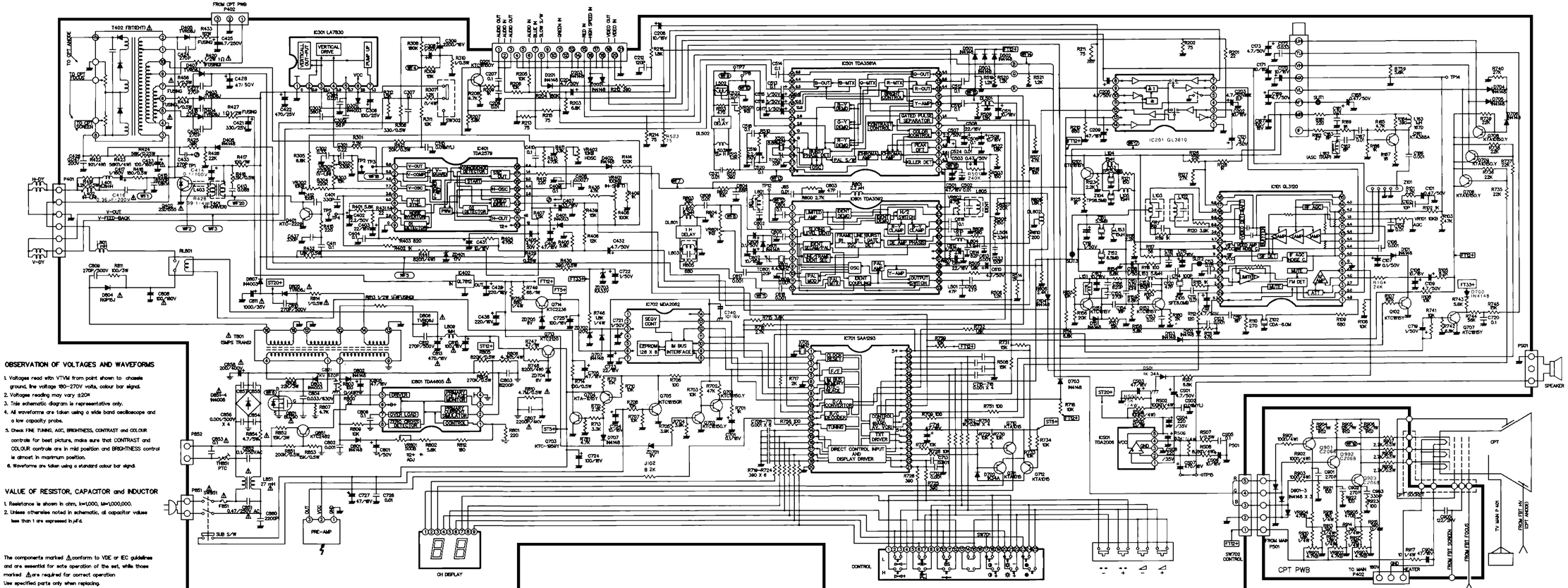
NOTICE:
In this exploded view, some figures may differ from your actual TV a little. But each parts on the exploded view and the replacement parts list has the correct part number. Therefore, when ordering the service parts, put this service manual number, page and your requesting parts number on your document correctly, please. Then, we'll send the parts to you faster. The *marks below are out of all relation to your TV.

SP : Serviceable Parts
NSP : Not Serviceable Parts

NO	DESCRIPTION	PART NO.	REMARKS
*1	MARK, BRAND(GS)	410-552B	SP
*2	BUTTON, POWER	441-158A	SP
*3	SPRING, BUTTON	320-062G	NSP
*4	WINDOW, LED DISPLAY	316-255A	SP
*5	DOOR, FRONT CONTROL	315-433A	SP
6	GRILL, SPEAKER	314-192A	SP
7	BUTTON, POWER	441-157A	SP
8	SPRING, POWER	320-062G	NSP
9	WINDOW, LED DISPLAY	316-254A	SP
10	DOOR, FRONT CONTROL	315-432A	SP
11	HOLDER, METAL ASSY	341-335A	NSP
12	SCREW, HEXAGON	332-057B	NSP
⚠13	DEFLECTION YOKE	153-051C	SP
14	PRINTED CIRCUIT BOARD ASSEMBLY, CPT	110-A31P	SP
15	SOCKET, CPT	381-090C	SP
⚠16	COIL, DEGAUSSING	150-276B	SP
17	LEAD SET, EARTH	170-704S	NSP
18	SCREW, HEXAGON HEAD	332-057B	NSP
19	HOLDER, LEAD WIRE	341-409H	NSP
⚠20	COLOUR PICTURE TUBE (WITH DY)	2055-V0081A	SP
21	SPEAKER	120-480A	SP
22	COVER, BACK	303-D72Q	SP
23	HOLDER, POWER CORD	341-242F	NSP
24	POWER CORD	174-003L	SP
⚠25	FLY BACK TRANSFORMER	154-177B	SP
26	21 PIN PERI-SOCKET	381-090A	SP
27	TUNER	113-105H	SP
28	PRINTED CIRCUIT BOARD ASSEMBLY, MAIN	110-K32A	SP
29	FRAME, MAIN CHASSIS ASSEMBLY	312-258A	SP
30	SWITCH, 4 KEYS	140-219A	SP
31	SWITCH, 12 KEYS	140-227A	SP
32	LED DISPLAY ASSEMBLY	262-006A	SP
33	PRE-AMP	106-042A	SP
34	SWITCH, MAIN POWER	140-278A	SP

SUB ASSEMBLY

101	CABINET ASSEMBLY, FRONT(9822)	300-852E	SP
*102	CABINET ASSEMBLY, FRONT(9825)	300-853A	SP
103	CHASSIS ASSEMBLY, PC91A MAIN	309-741A	SP
104	REMOTE CONTROL ASSEMBLY	105-057E	SP



OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 180~270V volts, colour bar signal.
2. Voltages reading may vary ±20%
3. This schematic diagram is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, AGC, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=1,000,000.
2. Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF.

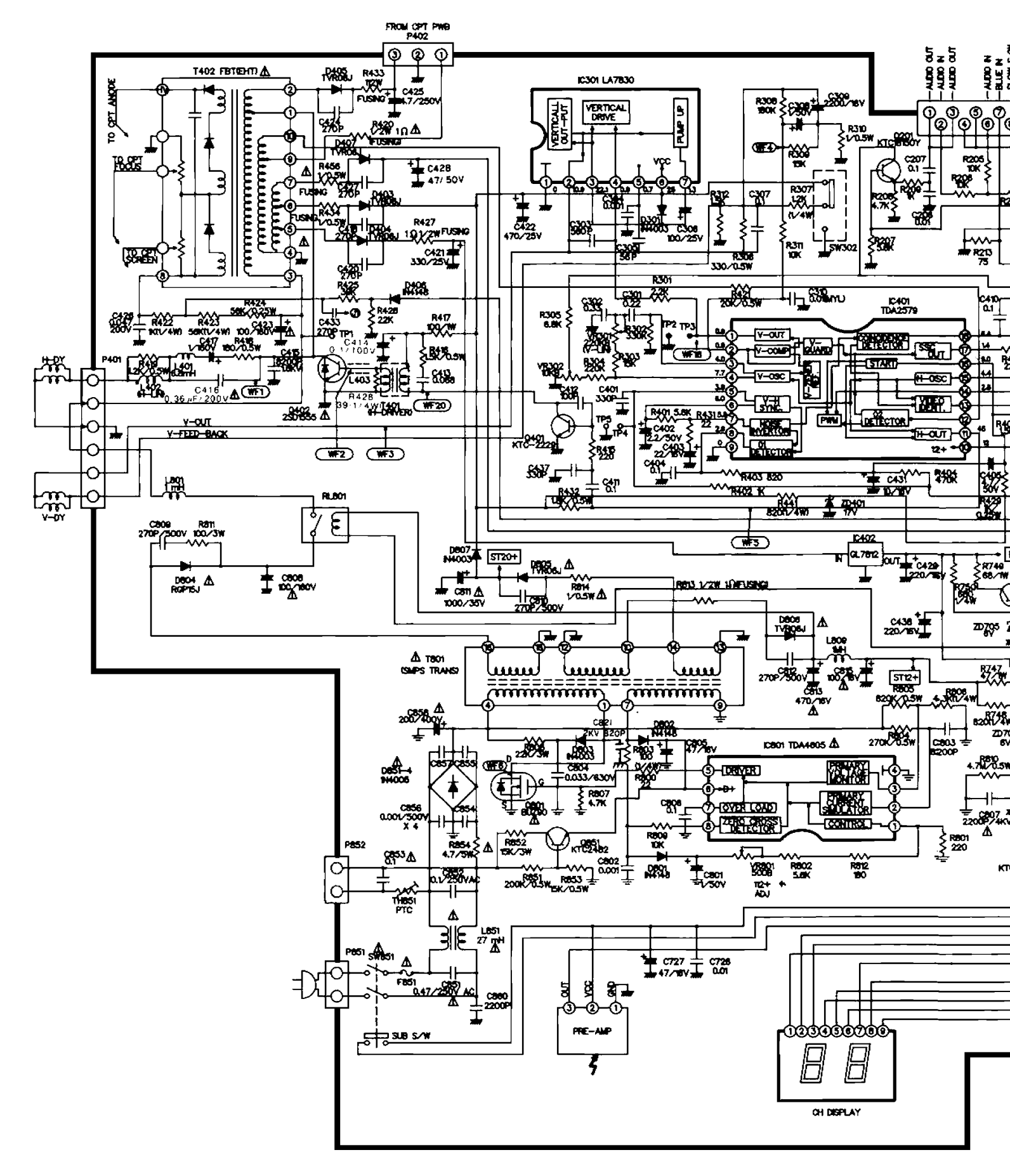
The components marked ⚠ conform to VDE or IEC guidelines and are essential for safe operation of the set, while those marked ⚠ are required for correct operation.
Use specified parts only when replacing.

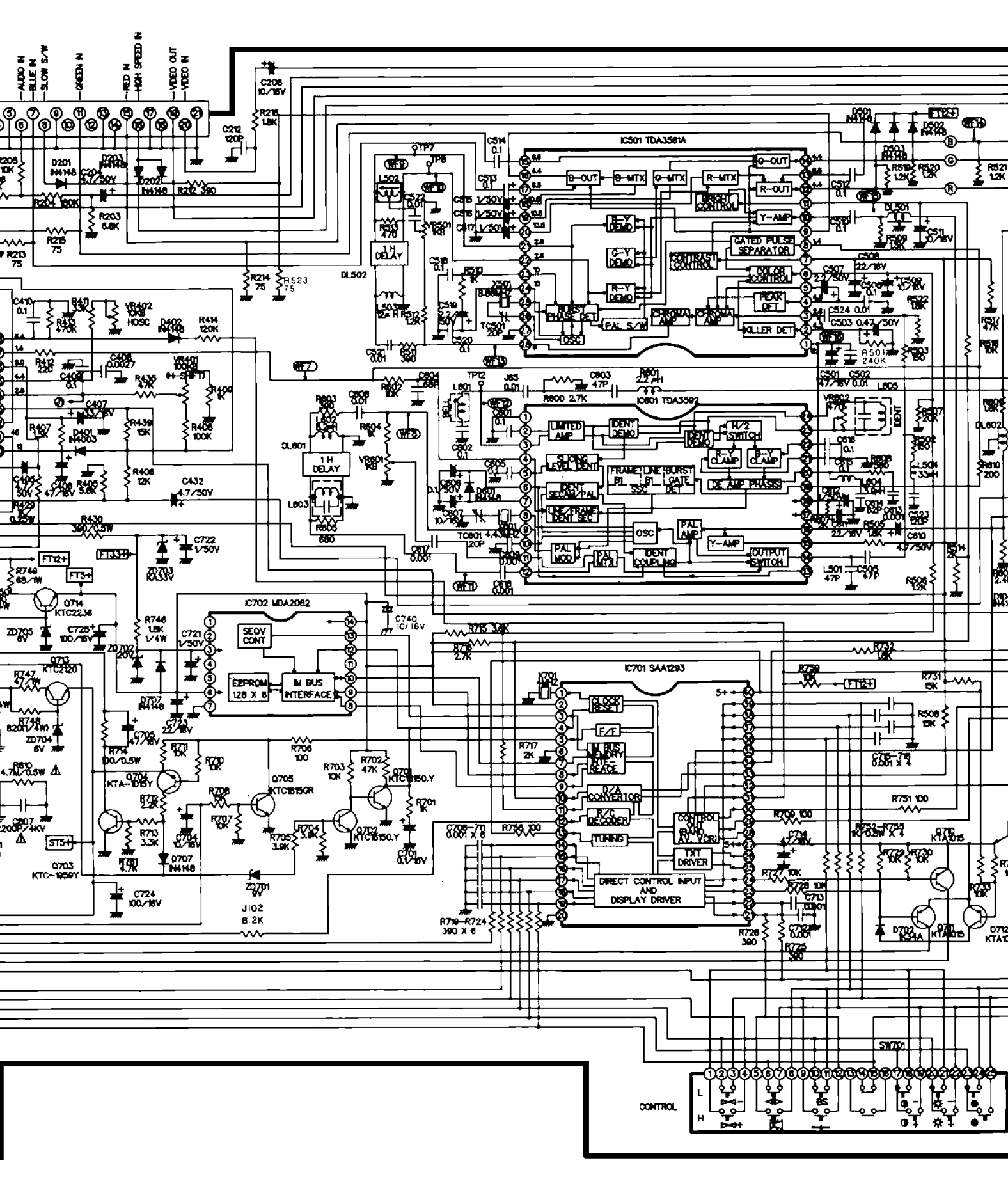
NOTICE

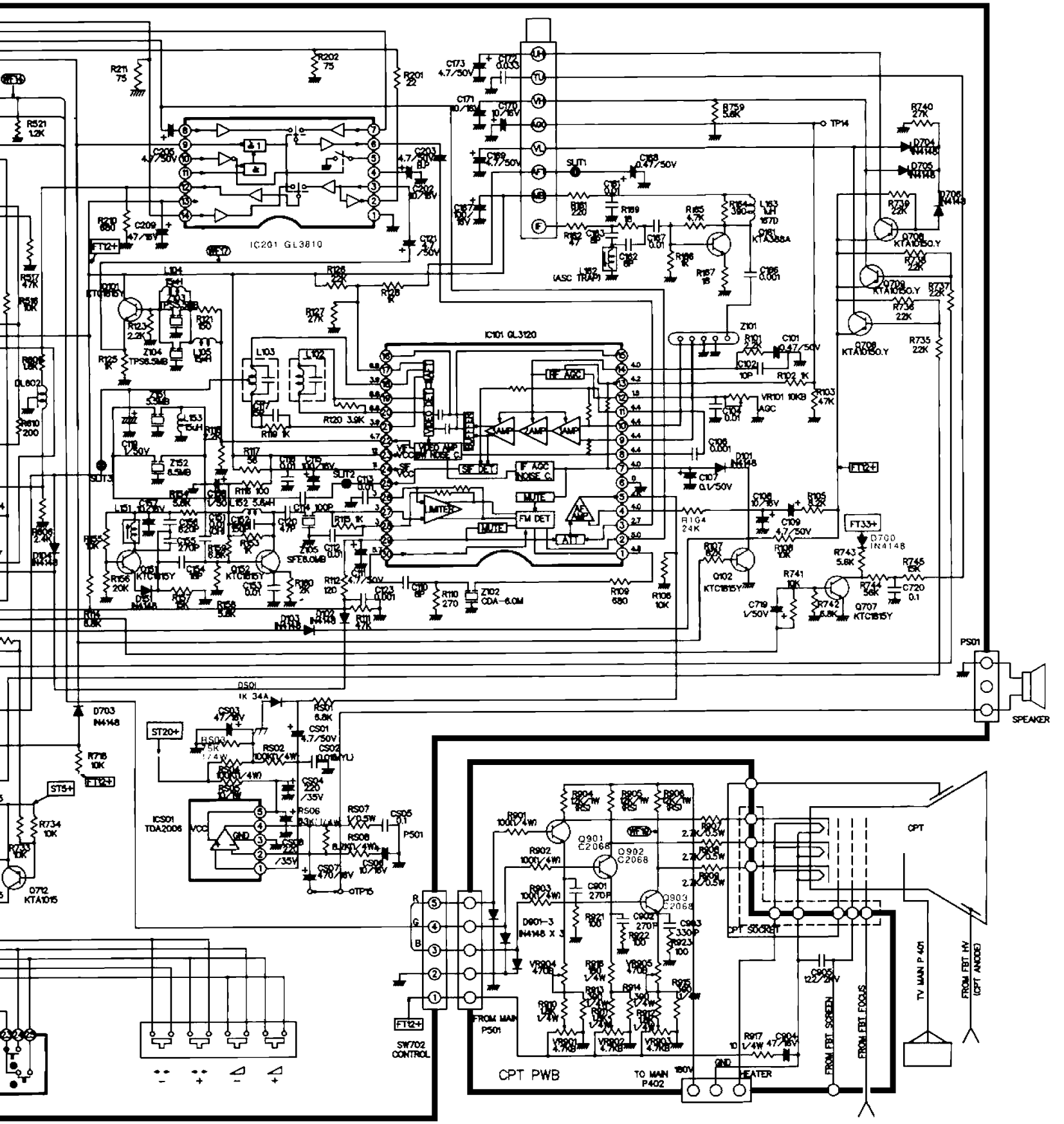
Since this is basic circuit diagram,
the value of components and some partial connection are subject to be changed for improvement.

WF1 800Vp-p⊕	WF11
WF2 11Vp-p⊕	WF12
WF3 40Vp-p(V)	WF13 2Vp-p⊕
WF4 1Vp-p(V)	WF14 7Vp-p⊕
WF5 3Vp-p⊕	WF15 500mVp-p⊕
WF6 520Vp-p	WF16 200mVp-p⊕
WF7 9Vp-p⊕	WF17 1.7Vp-p⊕
WF8	WF18 5.5Vp-p(V)
WF9 200mVp-p⊕	WF19 95Vp-p⊕
WF10 200mVp-p⊕	WF20 40Vp-p⊕

P/N : 484-722A


FROM CPT PWB
P402
T402 FBT(EHT)
TO CPT ANODE
TO CPT HEATER
TO CPT SCREEN
IC301 LA7830
VERTICAL OUT-PUT
VERTICAL DRIVE
PUMP UP
IC401 TDA2579
V-OUT
V-COMP
V-GUARD
V-OSC
V-H SYNC.
H-OSC
START
PWM
H-OUT
IC402 GL7812
IC801 TDA4605
DRIVER
OVER LOAD
ZERO CROSS DETECTOR
CONTROL
T801 (SMPS TRANS)
P401
H-DY
V-DY
V-OUT
V-FEED-BACK
RL801
P852
P851
SW851
SUB S/W
PRE-AMP
CH DISPLAY
AUDIO OUT
AUDIO IN
VIDEO OUT
VIDEO IN
KTC1850Y
KTC2482
KTC2228
2SD555

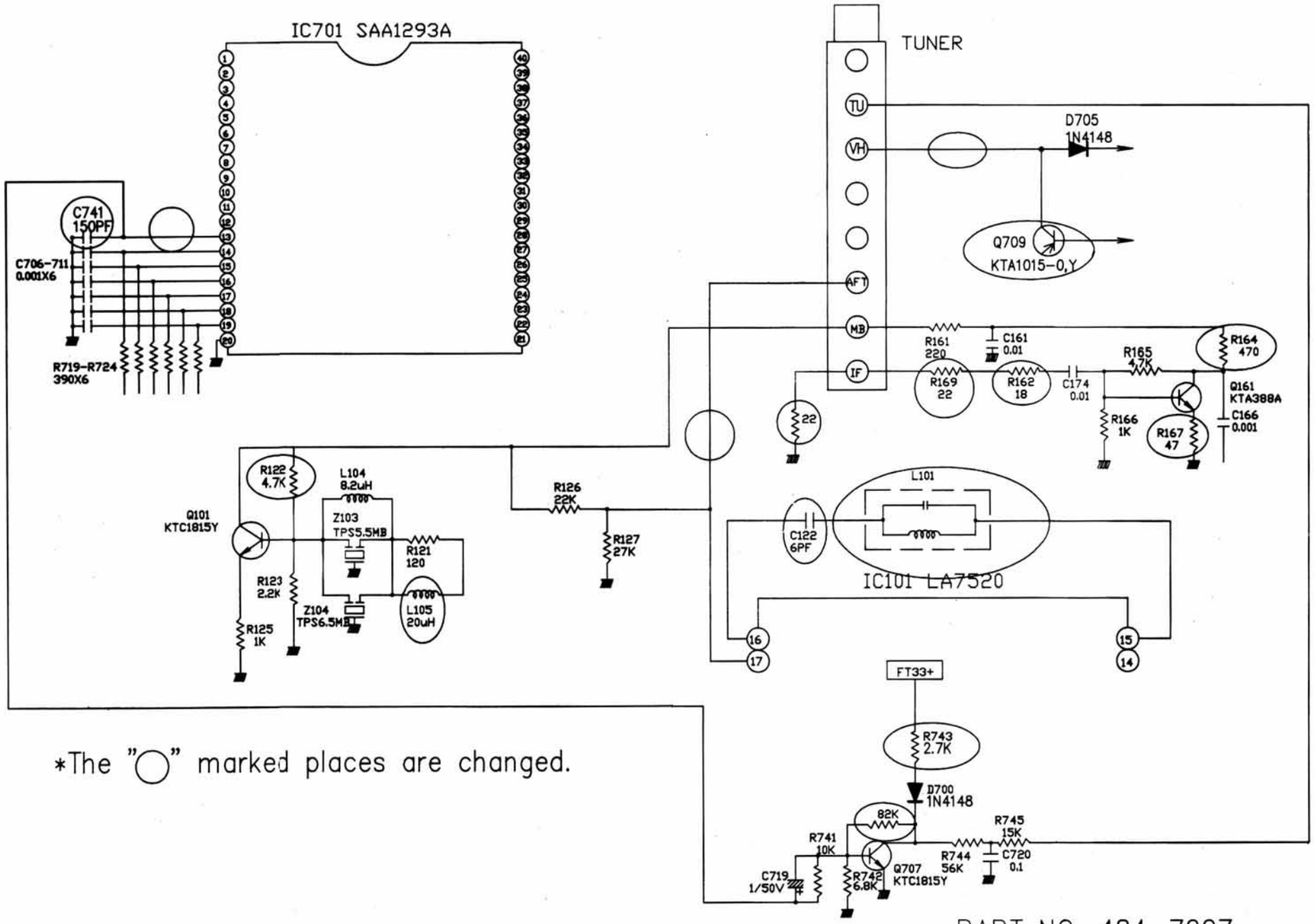

AUDIO IN
BLUE IN
SLOW S/W
GREEN IN
RED IN
HIGH SPEED IN
VIDEO OUT
VIDEO IN
IC501 TDA3561A
IC601 TDA3592
IC702 MDA2082
IC701 SAA1293
1H DELAY
EEPROM 128 X 8
IM BUS INTERFACE
SEQV CONT
CONTROL
SW701


IC201 GL3810
IC101 GL3120
IC501 TDA2006
CPT PWB
SW702 CONTROL
FROM MAIN P501
TO MAIN P402
SPEAKER
PS01
CPT
CPT SOCKET
TV MAIN P401
FROM FBT HV (CPT ANODE)
FROM FBT SCREEN
FROM FBT FOCUS
HEATER
VIDEO AMP
SIF AMP
IF AGC
MUTE
FM DET
AFC
AMP
LIMITER
VIDEO DET
SIF DET
IF AGC NOISE C.
VCO
AGC
(ASC TRAP)

CIRCUIT DIAGRAM(PC91A) FOR SANYO'S TUNER AND THE PARTS LIST

		BEFORE CHANGE ((14")ALPS TUNER(113-105K) (19")SHARP TUNER(113-105H))		AFTER CHANGE (SANYO TUNER(113-148D))	
	LACATION NO.		P/N		P/N
1	R164	NOT IN USE		470ohm(ADD)	01165089
2	R169	33ohm	01165061	22ohm	01165057
3	R162	LEAD WIRE	971-0050	18ohm	01165055
4	R121	120ohm	01165075	100ohm	01165073
5	R122	NOT IN USE		4.7Kohm(ADD)	01165113
6	L105	6.8uH	04040037	20uH	04040048
7	L163	0.85 uH	150-167J	(DELETE)	
8	Z101	K2950	166-227A	K1950	166-018A
9	R167	18 ohm	01165055	47ohm	01165065
10	R128	1Kohm	01165097	LEAD WIRE	971-0050
11	L101	NOT IN USE		COIL(ADD)	150-327N
12	R743	5.6Kohm	01165115	2.7K ohm	01154107
13	C122	NOT IN USE		6pF(ADD)	08300708
14	J54	NOT IN USE		LEAD WIRE	971-0050
15	C741	NOT IN USE		150pF(ADD)	08300740
16	Q709	KTA1015-0	06100083	KTA1015-Y	06100084
17	R759	5.6K ohm	01165115	(DELETE)	

As we have some problems that the tuner suppliers are running short, we explain the changed parts and place. So, when servicing and ordering TV set and its parts, refer to this page and the parts price list (ppl), please.



*The "◯" marked places are changed.

PART NO. 484-722Z

*Add two wires on the back side.
1. Between GND of X701 and emitter of Q707
2. Between GND of C717 and GND of J72

*Add a resistor(22 ohm) on the back side, between IF of tuner and GND.

*Add a resistor(82 Kohm) on the back side, between base and collector of Q707

MECHANICAL PARTS

		ALPS/SHARP TUNER	SANYO TUNER
1	B/C PLATE	407-E80B	407-E80E
2	B/C ASSY	303-C74C	303-C74P