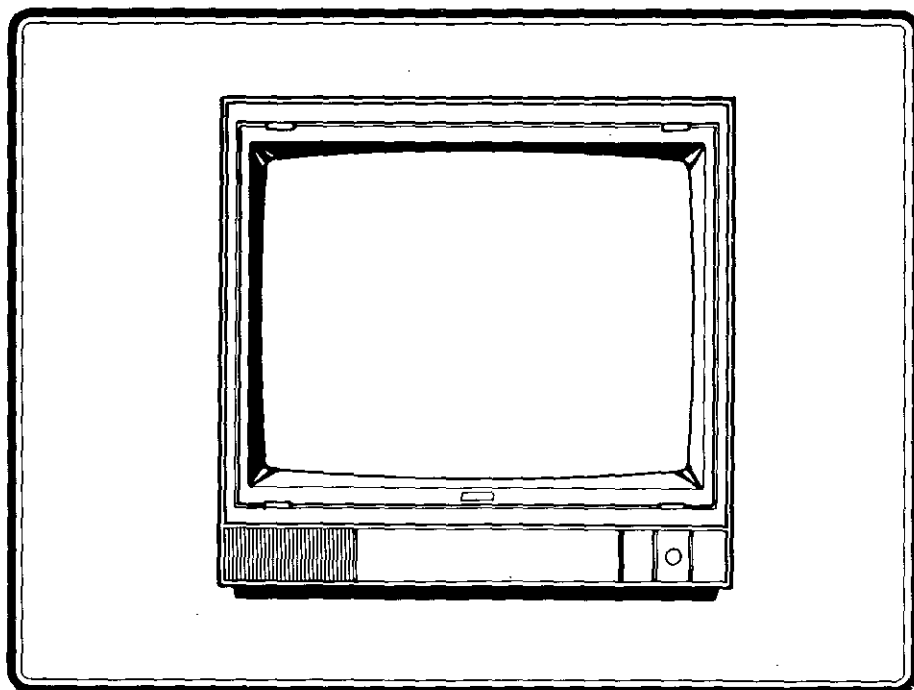


COLOUR TELEVISION SERVICE MANUAL

CAUTION

BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL.

CT-M14RC



CHASSIS: PC08X8

MODEL: CBT-4685

CTM 14RC

MASTER COPY
DO NOT REMOVE

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SPECIFICATIONS

Power Source	AC 180V—270V,50Hz
Power Consumption	65W
Receiving TV System	CCIR Standard
Colour Receiving System	PAL-B/G
Receiving Channels	VHF LOW : 2—4CH.,VHF High : 5—12CH, UHF : 21—69CH CATV : S1—S25
Intermediate Frequency	
Picture	38.9MHz
Sound	33.4MHz
Colour	34.47MHz
Tuning	16 Address Voltage Synthesizer Manual Search System
Audio Output	2W
Antenna Input Impedance	75 ohm IEC Type (300 ohm using balun supplied)
Picture Tube	370REB22TC
Speaker	75×40mm
Dimension	360(W)×360(H)×385(D)mm
Weight	13.2Kg

SAFETY PRECAUTIONS

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

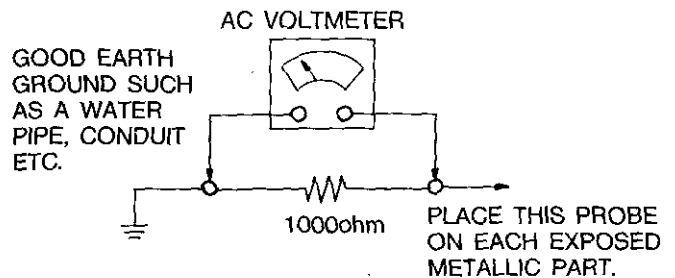
X-RAY RADIATION PRECAUTIONS

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 23KV(14"/16") at zero beam current(minimum brightness) under specified power source. The high voltage must not, under any circumstances, exceed 27.5KV. 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. Potentials as high as 19,000—23,000 volts are 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 potential 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. This TV receiver should be connected to AC 180—270V.
7. 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, ect., to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 180-270V AC outlet. (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 milliamp 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. 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 receivers 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 with which receivers covered by this service manual might be equipped.
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 reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your 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 1.25cm) 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 the 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 Devices 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 and heat sink from the circuit board.
4. Insert new transistor in 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. If necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of circuit board hollow stake.
2. Securely crimp 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 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 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.

CONTROLS LOCATION

FRONT

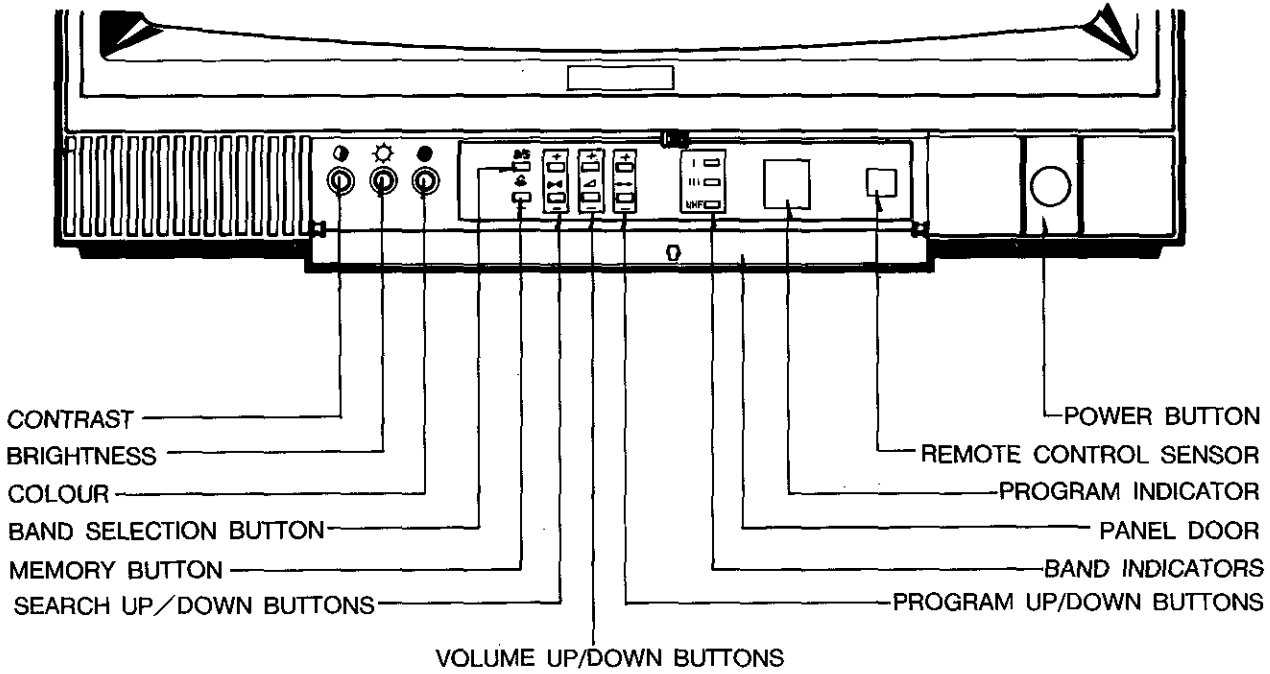


Figure 1

BACK

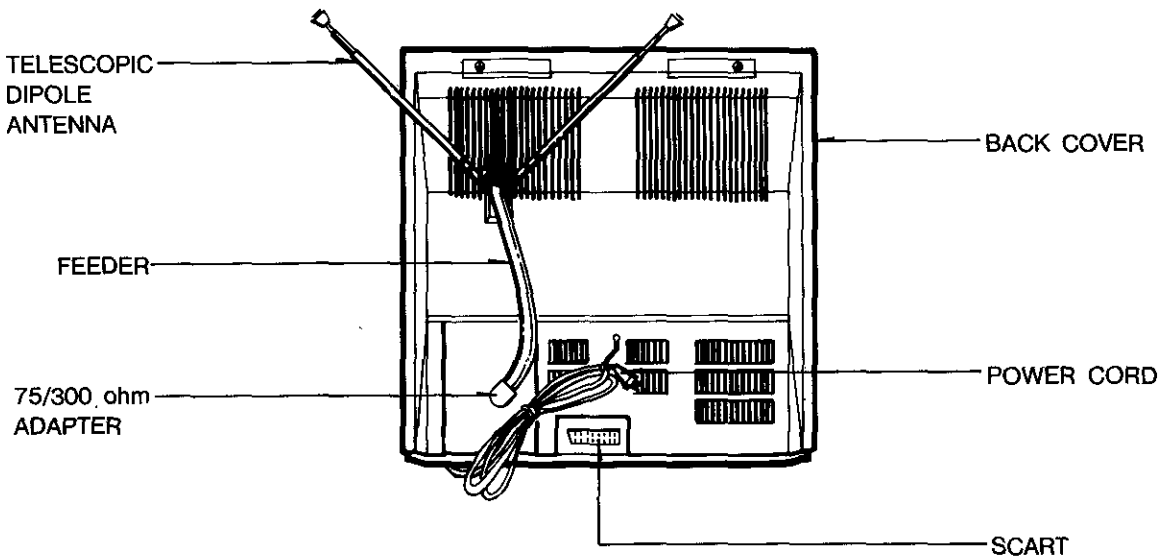


Figure 2

ANTENNA CONNECTIONS

INDOOR ANTENNA

This television set is equipped with the indoor antenna. To obtain the best possible picture, adjust the antenna in any way possible, length, direction or angle. Generally, the lower channels require the maximum length of the telescopic antenna.

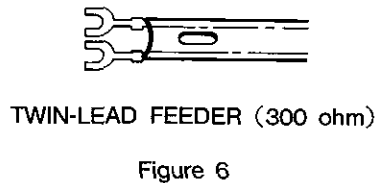
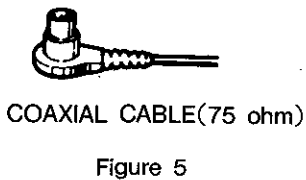
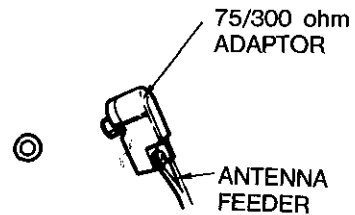
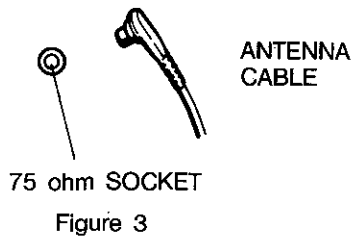
OUTDOOR ANTENNA

If it is difficult to get good reception with the indoor antenna, use the outdoor antenna for better results.

Optimum colour reception requires a good outdoor antenna. If you intend to use a previously installed outdoor antenna, check the antenna and its leads for the effects of weathering.

When using the outdoor antenna, disconnect the leads of the indoor antenna from the antenna terminal socket.

- In case of using the coaxial cable (75 ohm) for UHF/VHF antenna, connect the plug (refer to figure 5) into the 75 ohm socket as shown in figure 3.
- In case of using the twin-lead type feeder (300 ohm) for UHF/VHF antenna, trim the receptacle of lead of shown in figure 6 and connect the receptacle of lead to the 300 ohm connector on the adaptor. Then, connect the adaptor to the 75 ohm socket as shown in figure 4.



DISASSEMBLY INSTRUCTIONS

BACK CABINET REMOVAL

1. Remove 4 screws residing on the back cabinet and carefully separate the back cabinet from the front cabinet.

MAIN CHASSIS REMOVAL

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

TUNING BOARD REMOVAL.

1. Remove 4 screws fixing the tuning board.

SPEAKER ASSY REMOVAL

1. Remove P601 connector between the speaker and the main chassis.
2. Remove 4 screws.

CPT REMOVAL

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

PICTURE TUBE HANDLING CAUTION

Due to high vacuum and large surface area of picture tube, great care must be exercised when handling picture tube. Always lift picture tube by grasping it firmly around faceplate. NEVER LIFT TUBE BY ITS NECK. The picture tube must not be scratched or subjected excessive pressure as fracture of glass may result in an implosion of considerable violence which can cause personal injury or property damage.

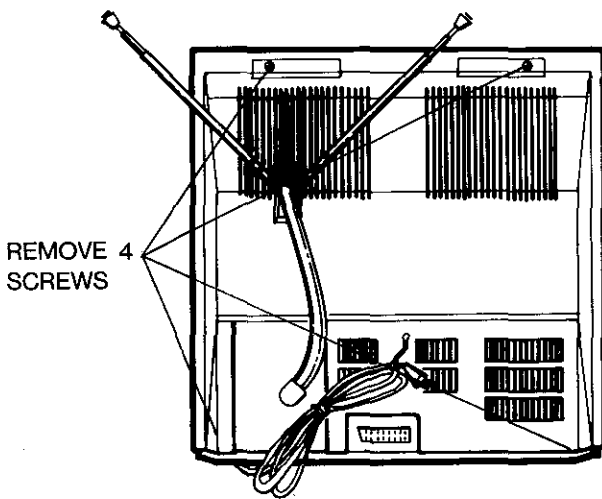


Figure 7

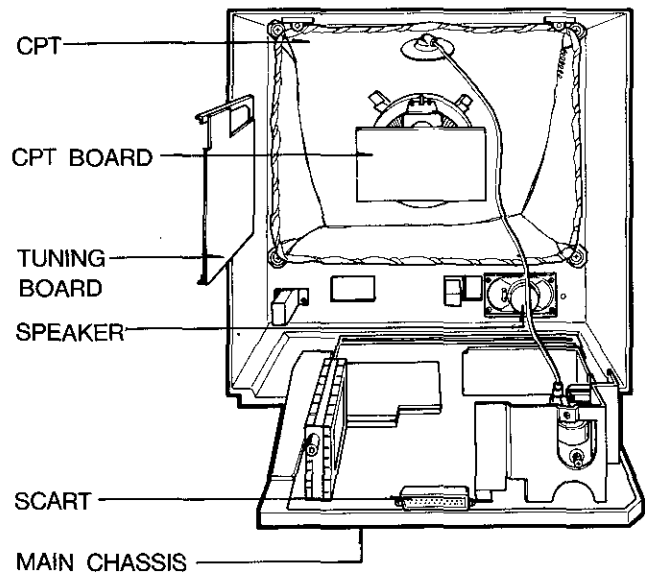
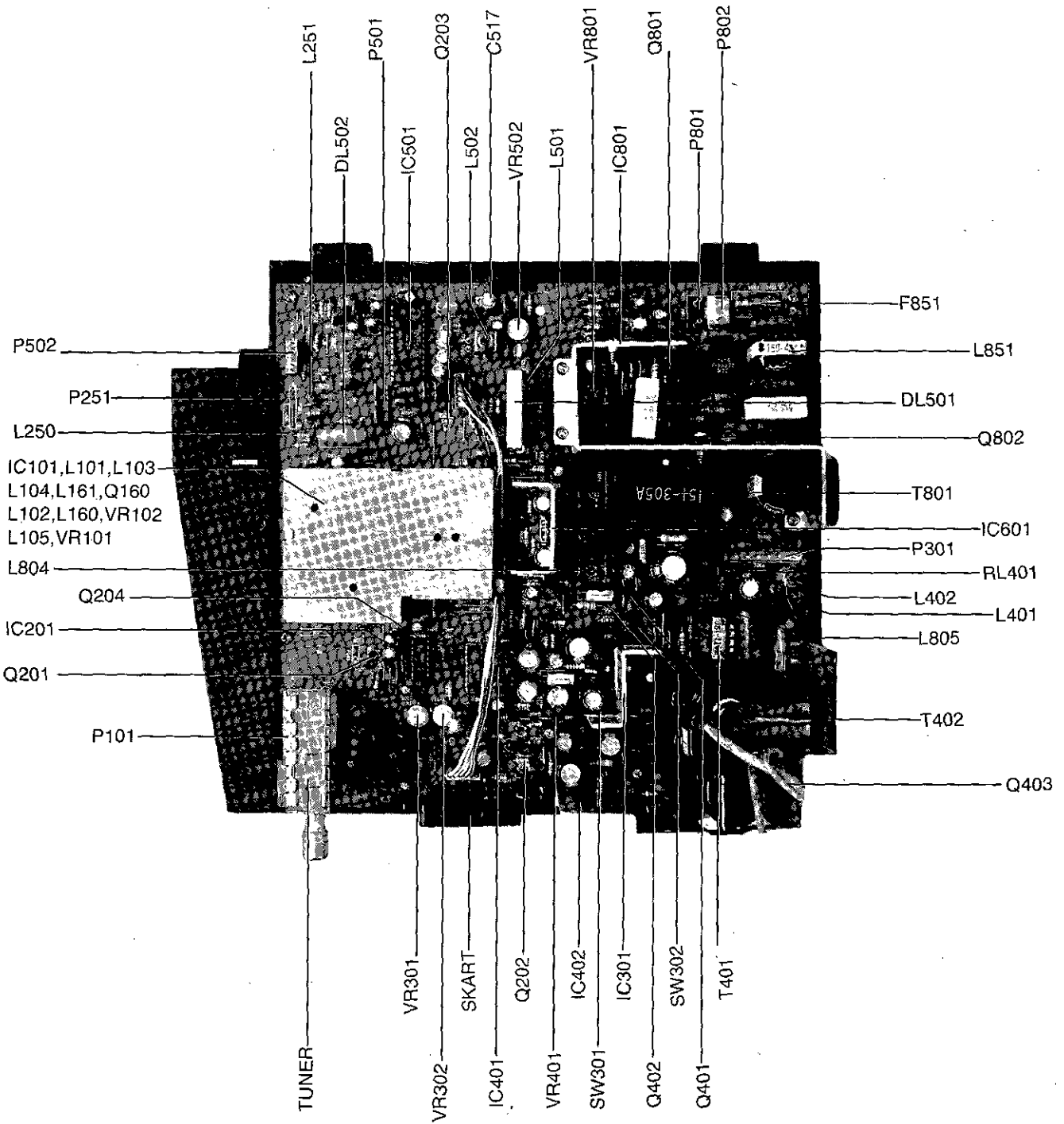


Figure 8

PARTS LOCATION OF MAIN CHASSIS



ADJUSTMENT INSTRUCTIONS

1. VIF ALIGNMENT.

DEVICES AND COMPONENTS

- | | |
|----------------------------|----------------|
| (1) SWEEP MARKER GENERATOR | |
| (2) PLUG UNIT | |
| (3) ALIGNMENT SCOPE | |
| (4) D.C. POWER SUPPLY | 3-5V |
| (5) D.C. POWER SUPPLY | 0-20V variable |
| (6) DUMMY-LOAD RESISTOR | 75 ohm |
| (7) COUPLING CAPACITOR | 1000pF ceramic |

PRELIMINARY STEPS (See figure 9)

- (1) Connect the output of the SWEEP MARKER GENERATOR to the output terminals of Tuner(IF OUT) or SAW FILTER as shown in figure 9.
- (2) Couple the H-scope terminal of the swemar generator to the H-input terminal of the alignment scope terminal and the pulse out terminal to marker input terminal.
- (3) Apply the detected output from the pin 22 of IC101 in main PCB assembly to the input terminal of the alignment scope.
- (4) Apply A.G.C. voltage to the pin 7 of IC101.(about $4.5 \pm 0.5V$)
- (5) Apply 16V D.C. to the pin 1 of connector IC402.

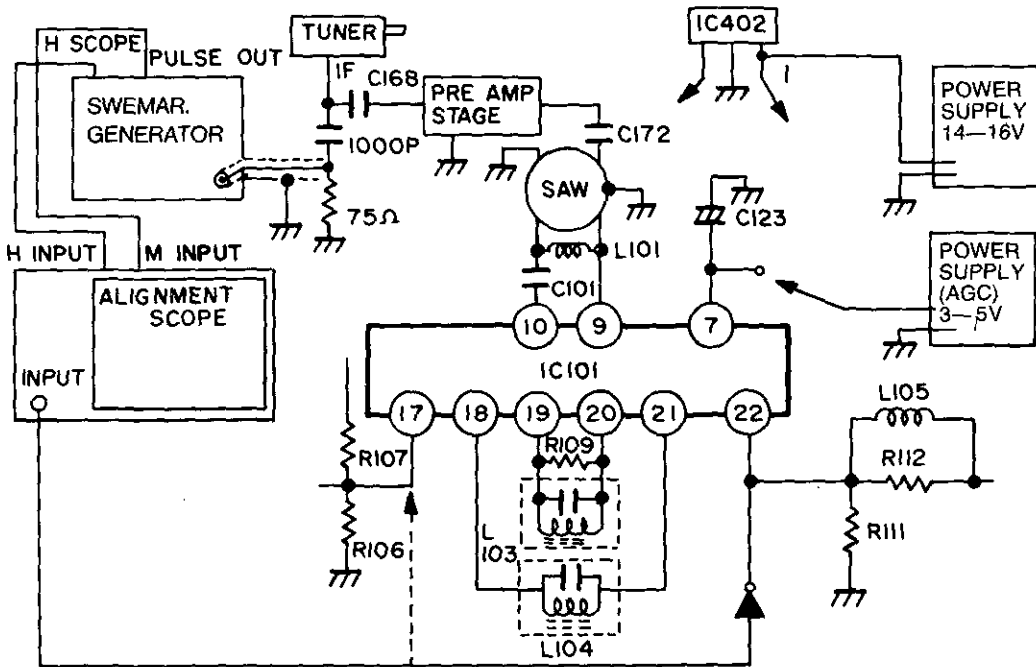


Figure 9

1) VIF ALIGNMENT PROCEDURE

- (1) Adjust the amplitude of the swemar generator output to make the signal response waveform as large as about 1Vp-p.
- (2) Adjust L103 to obtain the minimum amplitude of "A". Provided that the adjustment should be performed not so as to decrease the amplitude of the whole waveform.

2) AFT ALIGNMENT PROCEDURE

- (1) Change the coupling of the input terminal of the alignment scope from the pin 22 to the pin 17 of P101.
- (2) Adjust the sweep waveform of the alignment scope as shown in figure 11.
- (3) Adjust L104 to place the 38.9MHz marker at the position or D.C. $6.5V \pm 0.5V$ as shown in figure 11. Be sure to adjust after disconnecting C164 from the AFT terminal.

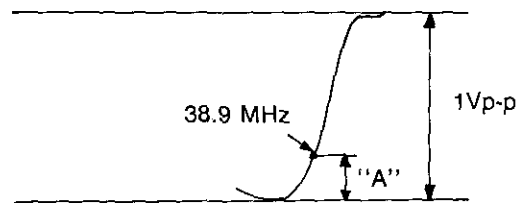


Figure 10

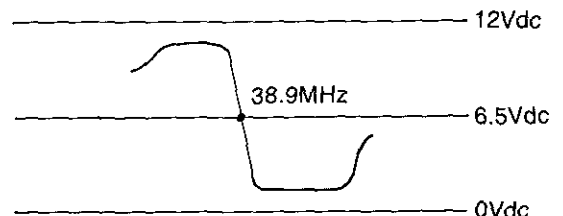


Figure 11

3) 40.4 MHz ALIGNMENT

- 1) This alignment is only applied to the model of ASC TRAP for FRZ.
- 2) Before VIF alignment, connecting the line of the instrumentation is done in the same way as VIF.
- 3) Turn the L162 counterclockwise and let the CORE PULL OUR enough.
And then, you must adjust it clockwise.
- 4) Adjust the L162 so that the right sidelobe of 40.4MHz point may be minimum position.

2. MAIN B⁺(112V) ALIGNMENT

- 1) Put the set in motion normally.
- 2) Receive the standard colour signal.
- 3) Set the position of the colour bright contrast to maximum.
- 4) Adjust the VR801 so that the voltage of the TP may be 112V.

3. HORIZONTAL SYNCHRONIZATION

- 1) Let the standard colour signal send to the TUNER ANTENNA.
- 2) Connect the SYNC. SEPARATION INPUT SIGNAL to the GROUND (Short between TP 13 and TP14.)
- 3) Adjust VR401 so that a screen may be maintained in a horizontal and vertical direction.

4. HORIZONTAL CENTER ALIGNMENT (HOR. SHIFT ALIGNMENT)

- 1) Receive the standard colour signal.
- 2) Adjust the VR401 as that the center of a screen may be adjusted.

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

- 1) When brightness of a screen in minimum by making use of 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 the effective CPT screen.
- 2) Again, change the signal into DIGITAL PATTERN, and adjust VR301 so that the length of upper and lower radius on vertical direction of the great circle may be equal.

6. VERTICAL CENTER ALIGNMENT

- 1) Adjust the SW302 CENTER SVC. S/W so that the center of the pattern gets to concur with the center of an effective CPT screen vertically.

7. COLOUR SYNCHRONIZATION

- 1) Receive the standard colour signal.
- 2) Set the contrast, brightness and colour VR to maximum.
- 3) Connect the colour saturation terminal to B+(12). (Short between TP11 and TP12)
- 4) Short (B-Y), (R-Y) INPUT of the pin 21 and the pin 22 of IC501. (Short between TP11 and TP12.)
- 5) Adjust the C517 so that the colour bars may not appear.
- 6) Remove the connection of item 3 and 4.

8. PAL MATRIX ALIGNMENT

- 1) Set the contrast, brightness and colour VR to maximum.
- 2) Receive DEM. PATTERN (COLOURNESS PATTERN.)
- 3) Connect SCOPE to B-OUT (The pin 16 of IC501.)
- 4) Adjust VR502 to obtain minimum fluctuation (A straight line) as shown in figure 12.

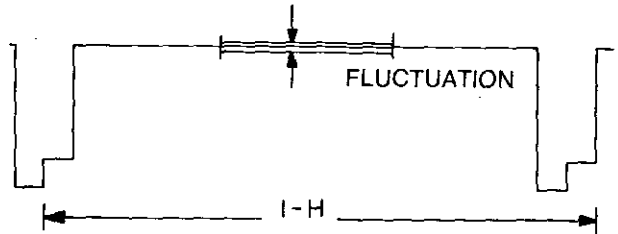


Figure 12

- 5) Adjust L502 to obtain minimum fluctuation as shown in figure 13 after changing PATTERN into the colour BAR.

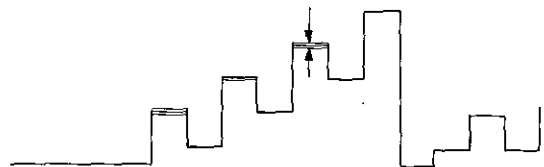


Figure 13

- 6) Adjust and confirm patterns as shown in figure 12 and 13.

9. RF AGC ALIGNMENT

- 1) Receive the standard colour signal (60dB ± 1dB.)
- 2) Connect DIGITAL MULTIMETER to TP4 (RF AGC INPUT.)
- 3) Adjust VR102 so that TP4 may be 6.0V ± 0.1 DC.

10. 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) Adjust SW301 SVC SWITCH 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) After setting the SW301 to the primary position, 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 $8000^{\circ}\text{K} \pm 800^{\circ}\text{K}$ ($X=296 \pm 8$, $Y=306 \pm 8$) to control colour analyzer.

NOTICE : Adjust the SW301 SVC SWITCH to obtain horizontal line to be composed of pattern of white spots. If not, adjust the vertical center switch of the SW302 in center position.

11. AUDIO DETECTION OUTPUT ALIGNMENT

- 1) Input the standard TV signal (9dB+1dB), which is the AUDIO signal for 40KHz to coincide with 14KHz, into the TUNER ANTENNA.
- 2) Connect the AC VOLTMETER to the SOUND OUTPUT TERMINAL(TP3) and set the VOLTAGE RANGE to 10V.
- 3) Adjust the VR101 as follows.
14"=4V
Above 18"=4.4V

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 coverage. Convergence magnet assembly and rubber wedges need mechanical positioning following the figure 14. 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. Rotate RED & BLUE BIAS controls(R557 & R559) fully clockwise. Slowly rotate green BIAS control clockwise to produce a green raster.
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 15) 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, referring to "WHITE BALANCE ADJUSTMENT"
10. Proceed with convergence adjustment.

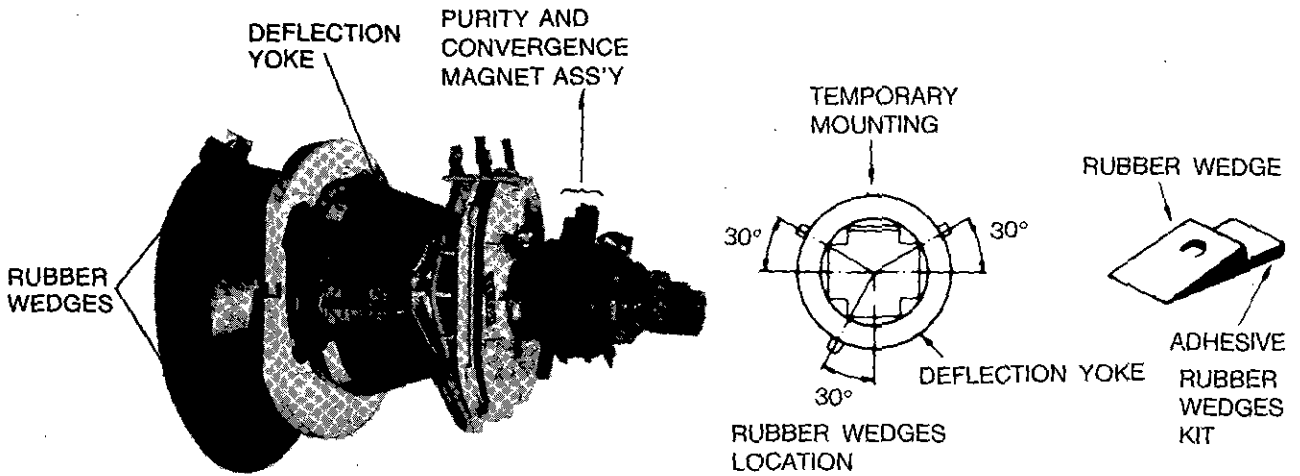


Figure 14

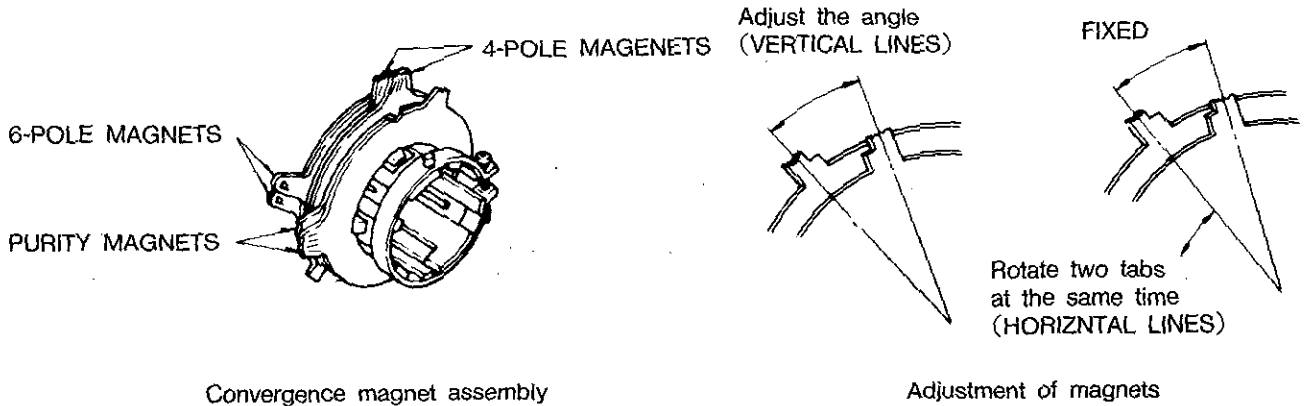


Figure 15

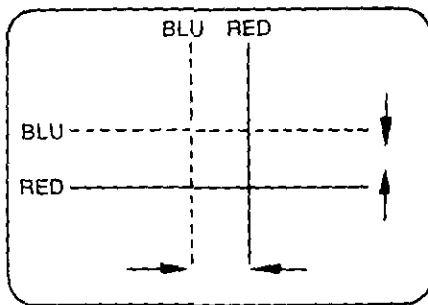
CENTER CONVERGENCE ADJUSTMENT

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 15) and superimpose the red and blue vertical lines in the center area of the picture screen. (See figure 16.)
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 16.)
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.

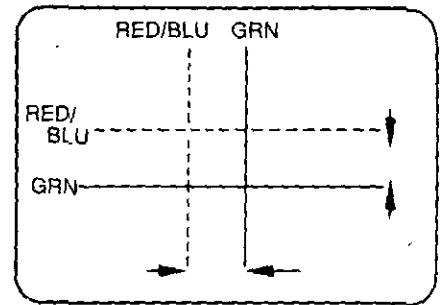
6. Repeat adjustments 1,2,3 keeping in mind red, green and blue movements because 4-Pole magnets and 6-Pole magnets interact and make not movement complex.

CIRCUMFERENCE CONVERGENCE ADJUSTMENT

1. Loosen the clamping screw of DY 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 14 Tighten screw holding the DY. Stick 3 adhesive tapes on wedges as shown in figure 14.

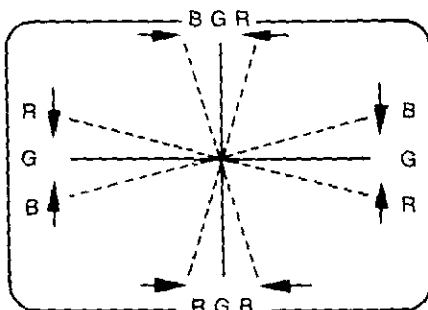


4-Pole Magnets Movement

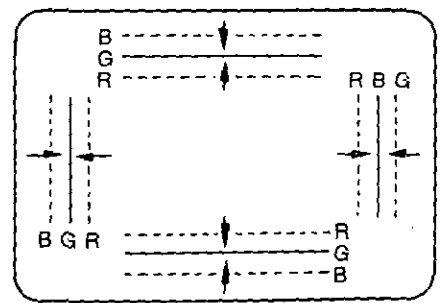


6-Pole Magnets Movement

Center Convergence by Convergence Magnets



Incline the Yoke up (or down)



Incline the Yoke right(or left)

Circumference convergence by Deflection Yoke

Figure 16 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 (GL 3120).

Video DET. Video IF AMP. Circuit and Video AMP. Circuit

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

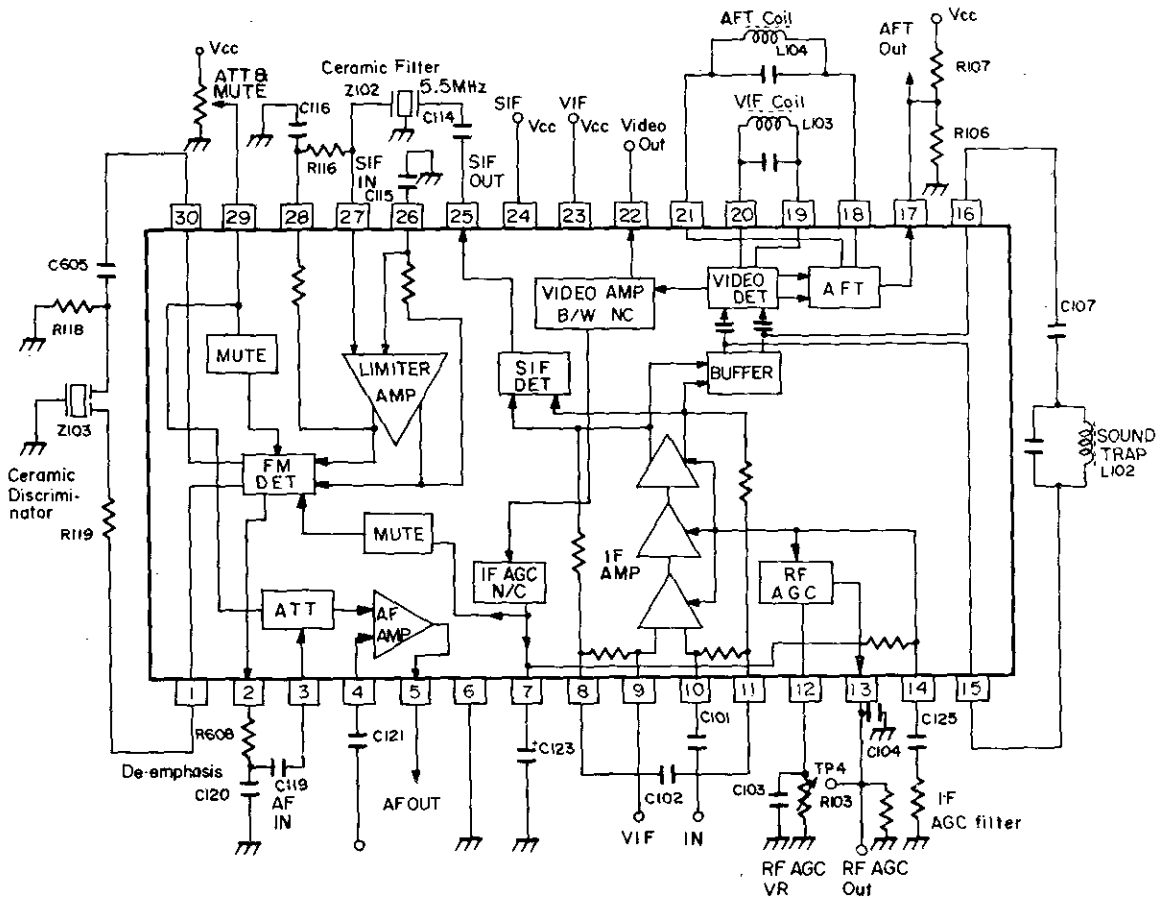
GL3120 used in this Chassis is a large-scale integrator which contains the VIF stage, SIF stage and Sound stage, and reduces 5.5 MHz Beat, 1 MHz beat and buzz by performing VIF, SIF DET. in a separate circuit.

At the same time, GL3120(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) DET. Circuit

The IF signal which is fed to IC101 is amplified in the IC AMP circuit, and detected in the SIF DET. circuit, so it creates the 5.5MHz SIF signal.

Also, after the amplified signal passes the Butter Circuit, the 33.4MHz (SIF) signal is attenuated and creates the Video signal, detected in the DET. circuit.

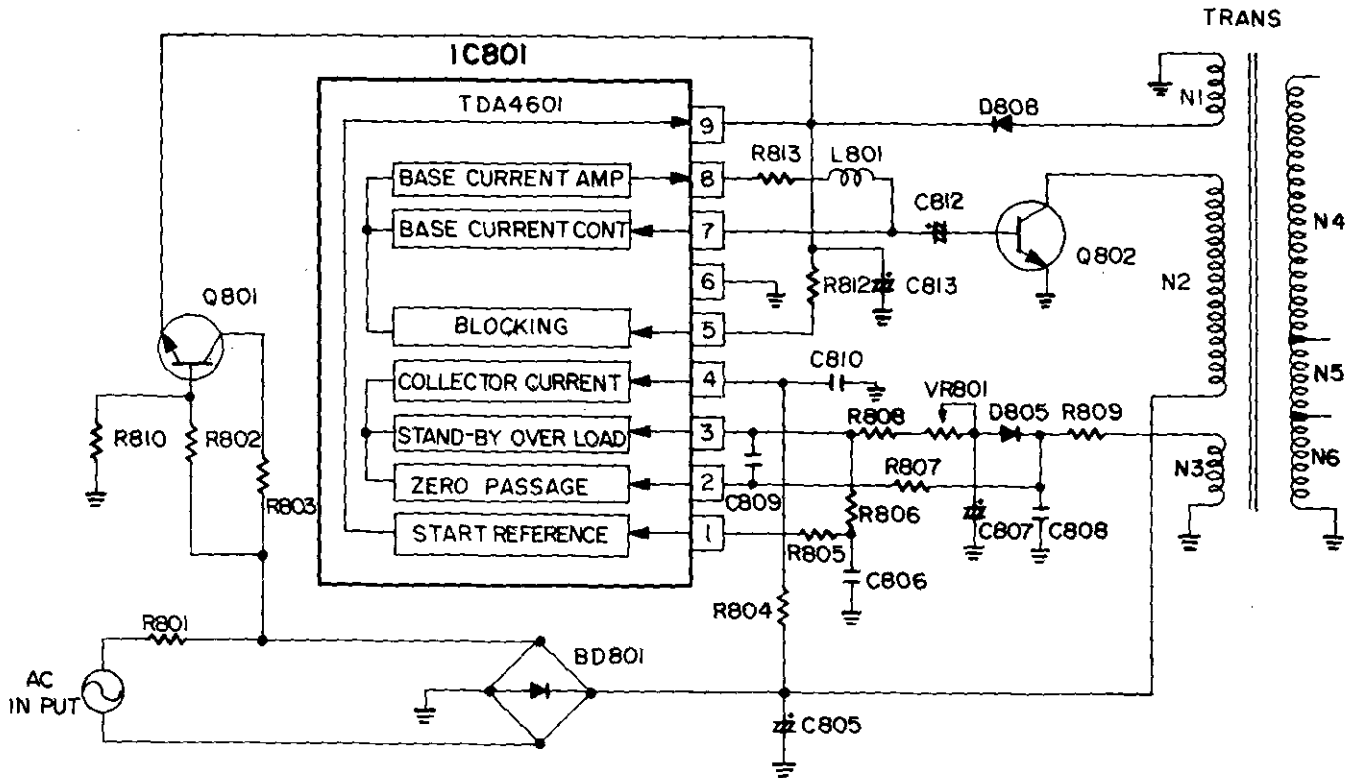


Schematic Diagram of IC101 (GL3120)

Pin Function Chart of IC101(GL3120)

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	I-F AGC Filter terminals. 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. VR102 is connected as the RF AGC VR.
13	The output of RF AGC. When the RF AGC voltage is below 9V, R102 and R103 divide the Resistance and C104 is necessary to stop the oscillator.
15, 16	VIF amp output is applied to L102 via the buffer and sound trap. Otherwise the output, which does not flow through the sound trap, is applied to the primary SIF detector.
17	The AFT DC voltage from pin 17 is varied by R106 and R107.
18, 21	AFT circuit is the quadrature detection circuit and is connected between the LLD coil output, pins 19 and 20 and the LC tank circuit, pins 18 and 21. R108 is the IC protection resistor.
19, 20	The carrier element is taken out from the LC tank circuit through pins 19 and 20.
22	The video output 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 the 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 R802 and R810 inputs the BASE of the Q801 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 Q801. After all, this voltage input the pin 9 of the IC801 to turn it on. And then, the DC 12-18 volts rectified by the D801 and C813 input the pin 9 continuously. At last the IC801 operates normally.

Normal Operation

The square wave output power which make the Q802 on and off flows out of the pin 8, and its extend is adjusted by the pin 7. Also, the sources generated by the load variation are detected from the wire wound (N3). The detected variation sources which is commuted with the D805 and the C807 input the voltage to the pin 3.

The pin 2 and the pin 3 have the function assisting the control operation. And adjusting R802 makes the secondary output voltage controlled.

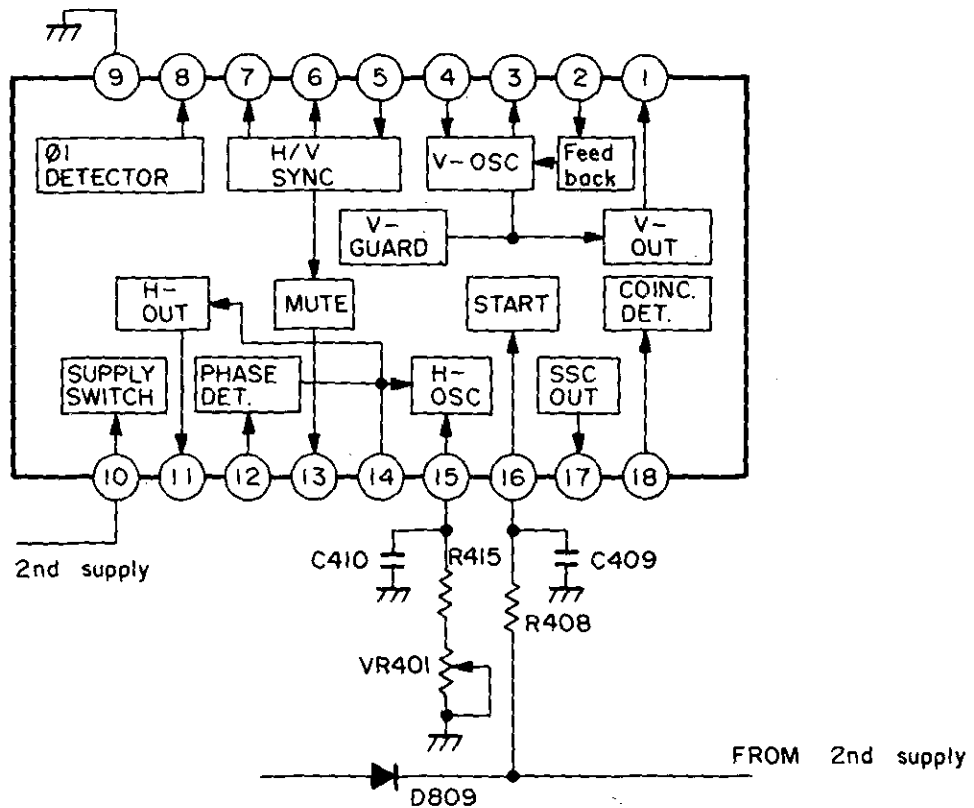
Over Load Operation

The maximum COLLECTOR current is decided by the R804 and the C810 connected to the pin 4. When this identified value is exceed, OVER LOAD OPERATION occurs. Fix the R804 for 270K ohm and change the value of the C810 to adjust the maximum OVER LOAD. If you use a big capacitor of C860, the maximum LOAD ELECTRIC POWER will increase.

High Voltage Protection

This is decided by the R812 of the pin 5. If the voltage of the pin 5 increase above the fixed voltage, the switching motion will stop.

H/V DEFLECTION



Start Up

If you turn the switch on, the output power of the 20 volts in the part of electric power source flow into the pin 16 of the IC401 through the D809. Therefore, the IC401 begins to oscillate and its output-power flows from the pin 11. In the result, the horizontal output-power of TR. Q403 is driven, and the second voltages from the FBT to the D404 and D405 are commutated. The 12 volts through the constant voltages, are inputted to the pin 10 of the IC401 and perform the IC401 in normal motion. On the other hand, the 22 volts are inputted to the pin 16 of the IC401 through the horizontal drive circuit (Q402 and T401) and R408. By cutting off an end of the D809, separate the part of electric power from the first voltage.

Vertical Section

The pin 3 and the pin 4 perform their duties of oscillating SAWTOOTH WAVE. That is to say, the pin 4 makes the NFB (negative feed back) information which the pin 2 generates through 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 sawtoothwave is finished to the vertical output circuit through this terminal.

Horizontal OSC and Phase Shift

The Oscillation signal, which is generated by C401, R415 and VR401 connecting to the pin 15, makes the horizontal synchronizing 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 then the last signal output-power generated. In that case, the phase is shifted by C411 and R414 connecting to the pin 14.

VCR Key

If you make the pin 18 low through 180K ohm, the movement of 2 DETECTOR flows FAST mode so that it is LOCKING and VCR mode.

Therefore, when Audio/Video is selected by R430, D401 and the HIGH LEVEL is applied to the pin 8 connecting to Peri Plug, VCR mode is selected.

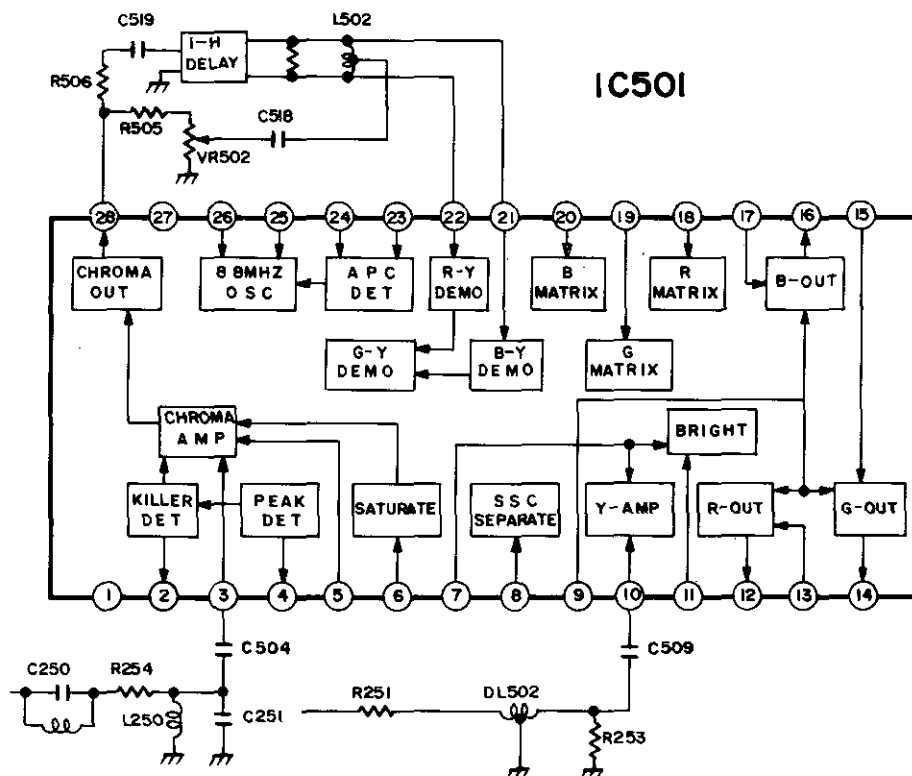
Sand Castle

The Output of three level sand castle from the pin 17 flows into the of IC501 (PAL Chroma IC).

Synchronization Separation and Slice Level

R401 and R402 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.E. Circuit into the pin 3 to be amplified, and then it flows into the second amplifier to do about 4Vp-p. The amplifier signal which is in output from the pin 28 is divided into two groups. One flows from R506, C519 into 1H-Delay Line, the other from R505, VR502 and C518 into mid-tap of L502.

At L502, two kinds of signal, which flows from 1-11 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 pin 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 pin 25, 26 oscillate to 8.86MHz to reconstitute a carrier wave.

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

After the 8.86MHz 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 35dBm.

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 voltage of the pin 2 less than 3V. The pin 6 is a saturation control circuit.

Luminance Path

As much as chroma path needs to perform chroma signal, DL502 delays Luminance signal about 380 nS, and then this flows into the pin 10 through C509 and control contrast, brightness with the pin 7 and the pin 11 to be supplied for each of R, G, B matrix circuit.

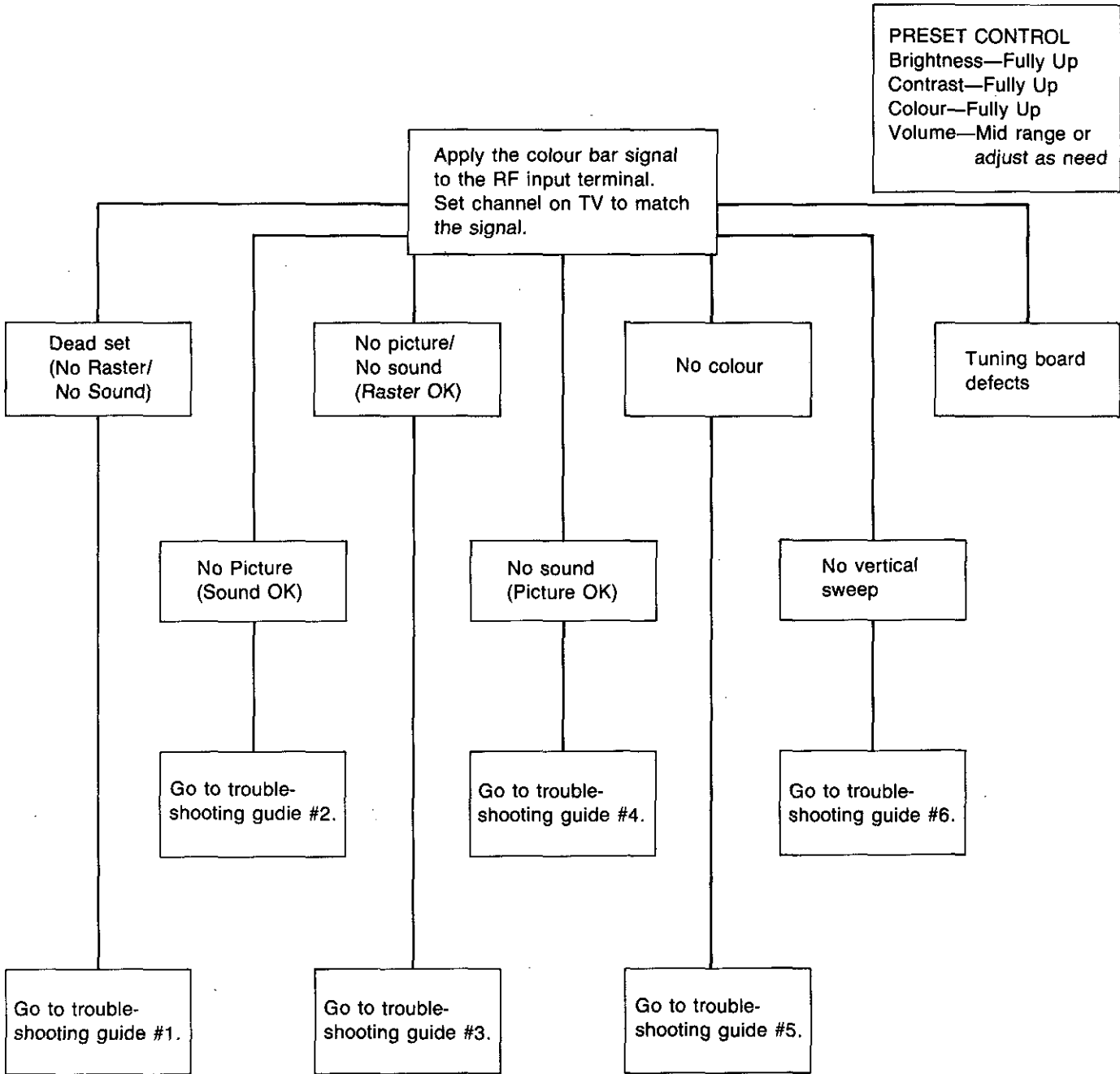
Luminance signal supplied on the pin 10 is commonly only 0.5Vp-p.

R.G.B. Data Input

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

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

TROUBLESHOOTING GUIDE



**1. DEAD SET
(NO RASTER/NO SOUND)**

Check +B voltage at TP15.

120V—130V

Normal

112V

0V

Check the voltage of IC401 pin 16.

Check/heater elements of CRT are lighting or not.

Check/the rectified voltage of main supply power.

below 7V

Check/replace R408, IC401.

No

Check/replace FR402 or CPT.

0V

Check/replace D801—804
F851, R801
Q802.

7—9V

Check/the voltage of Q402.

Yes

Check/the voltage of Pin 3 of IC402.

250V—380V

Check/the voltage of Pin 9 of IC801.

20V

Check/replace T401, Q402

0V

Check/replace FR401, D405, IC402.

Less than 8V

Check/replace R801, R802, Q801
R803, R810.

17V

Check/replace Q401, T401, T402.

12V

Check the voltage of pin 9 of IC201.

8V—18V

Check/replace secondary voltages are short
FR801, FR802, D809
D810, D811, D812, IC801.

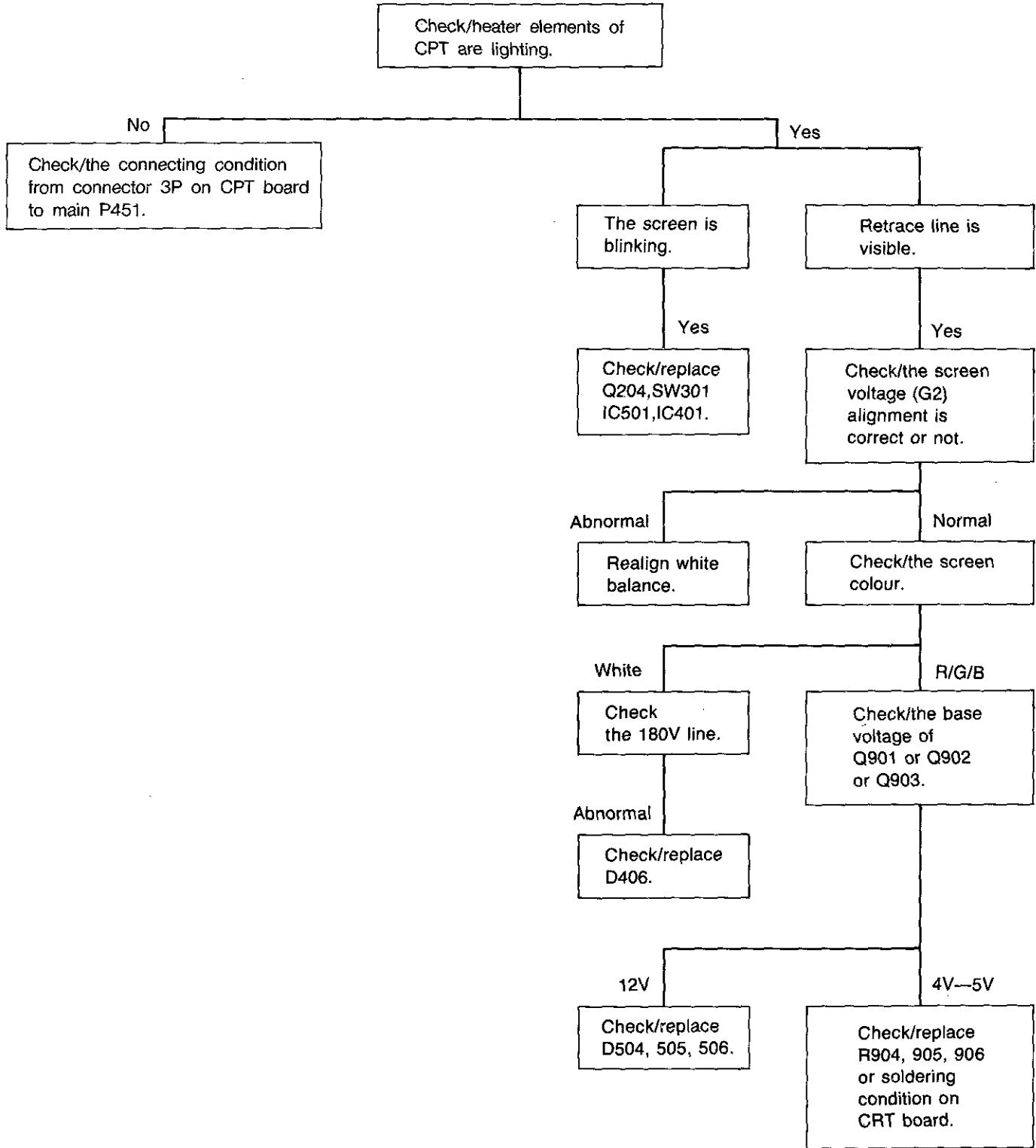
0V

Check/replace IC201, IC101.

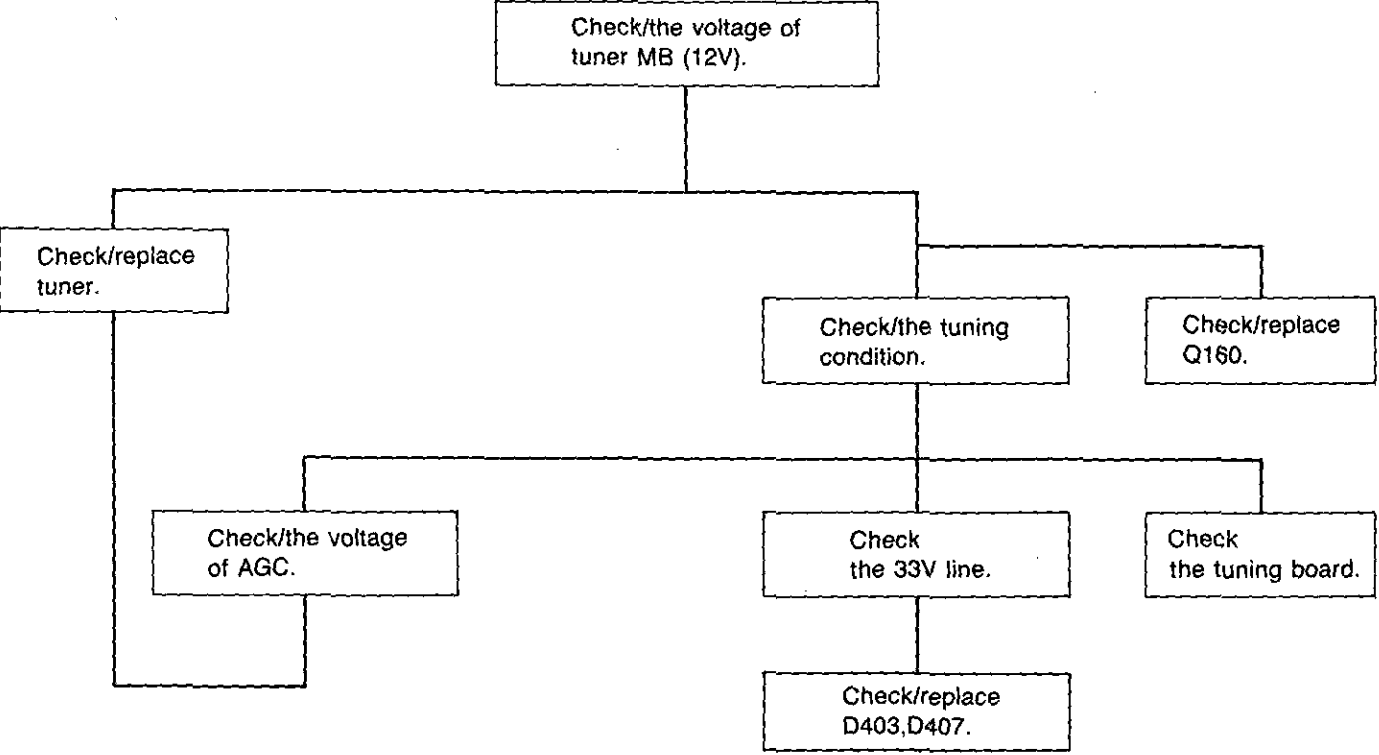
10V—12V

Check/replace the tuning board.

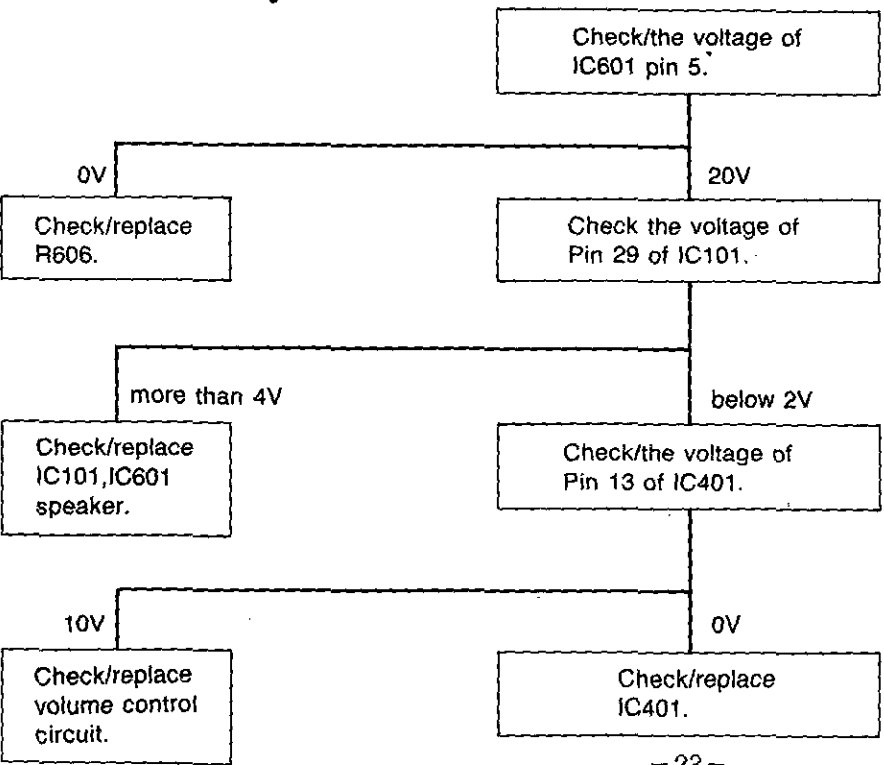
**2. NO PICTURE
(SOUND OK)**



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

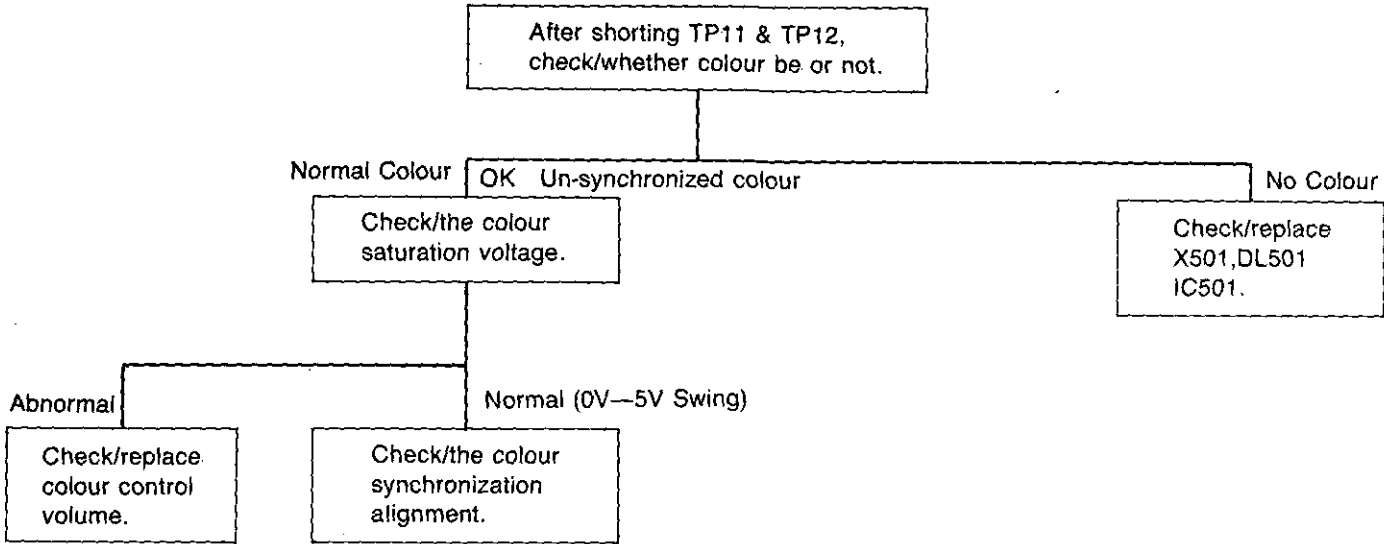


**4. NO SOUND
(PICTURE OK)**

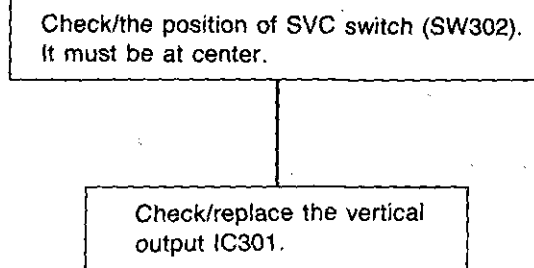


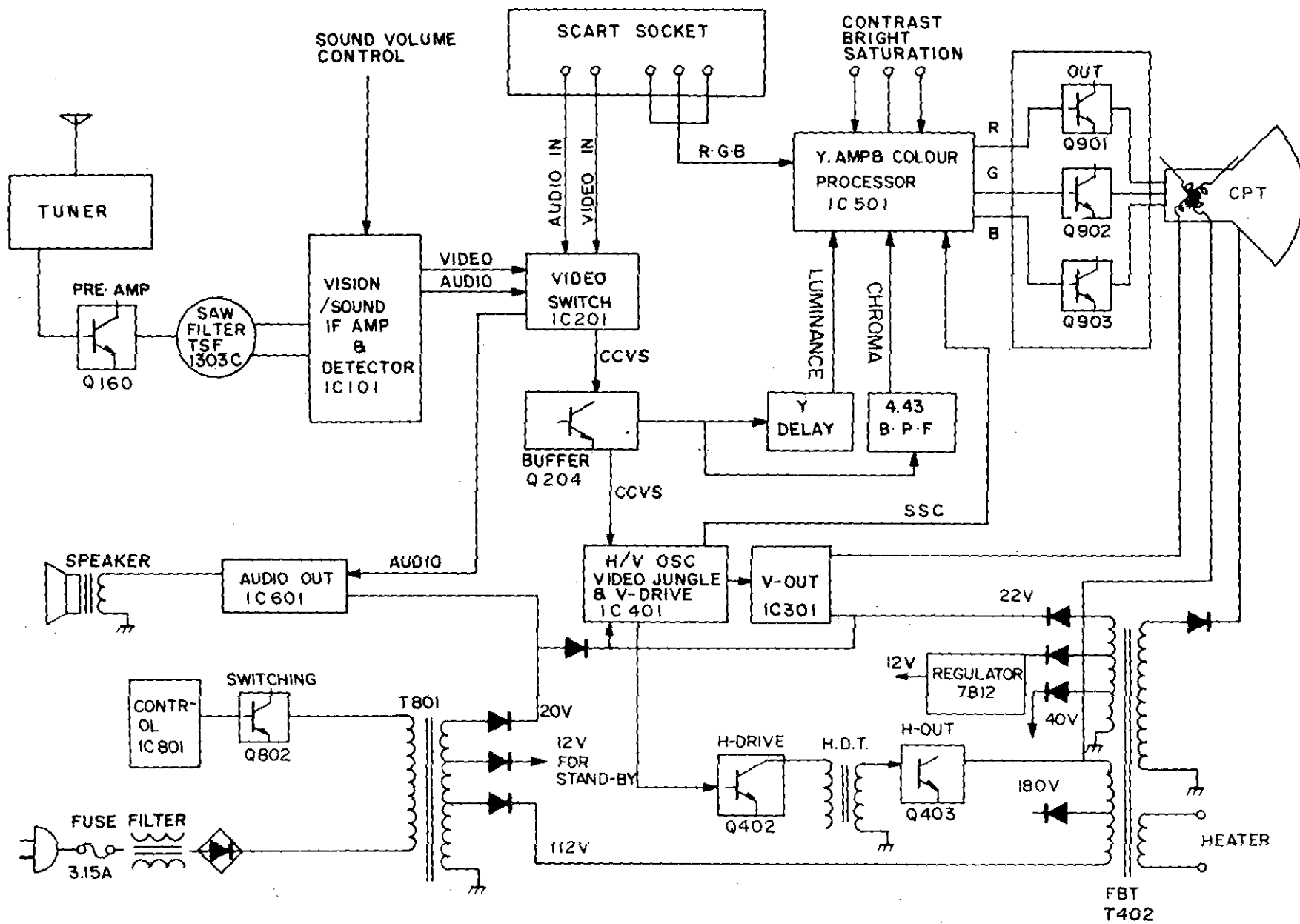
Note:
Sound is muted whenever the screen is noise condition, that is, broadcasting signal is not found

5. NO COLOUR

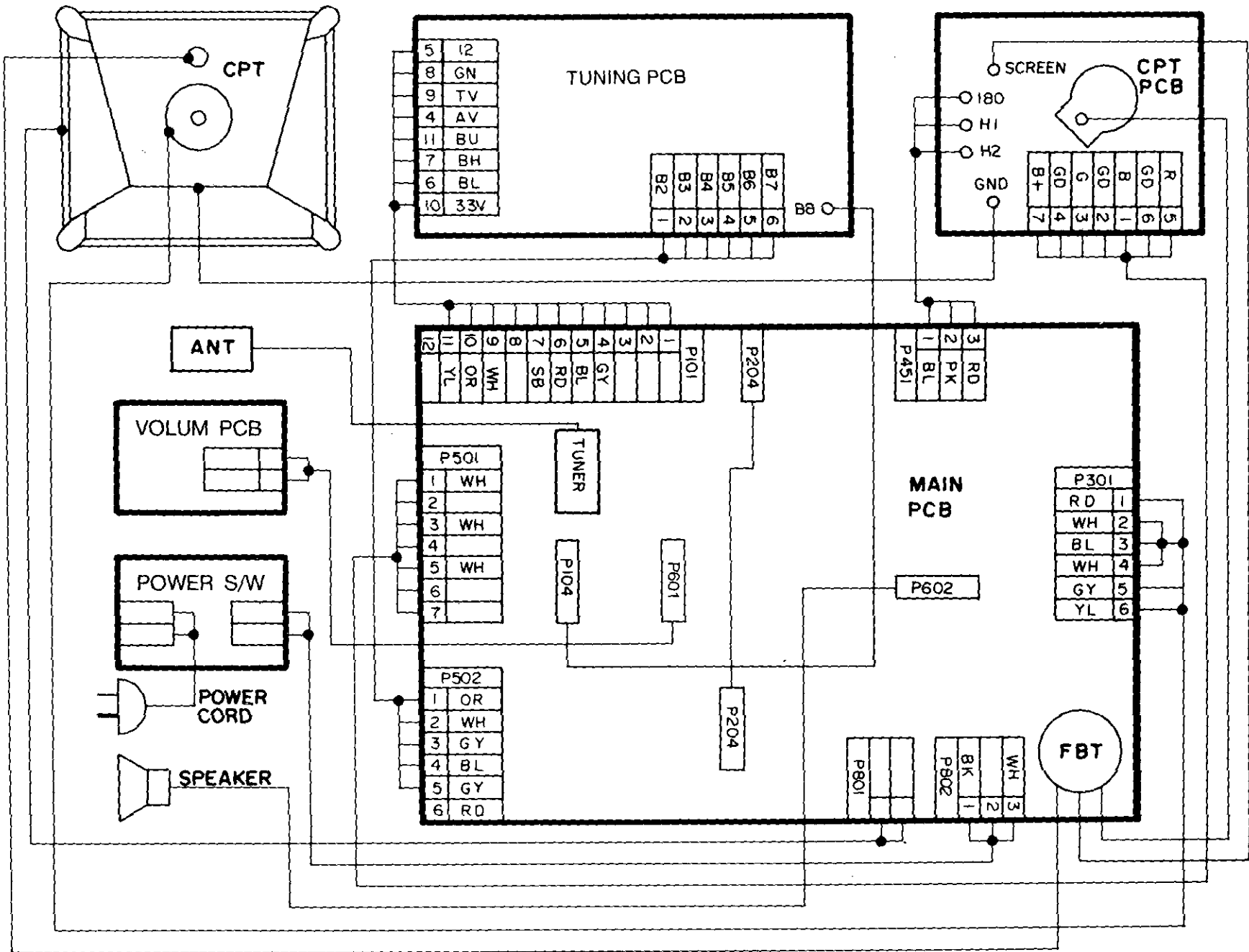


6. NO VERTICAL SWEEP






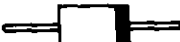
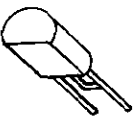
BLOCK DIAGRAM



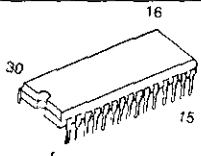
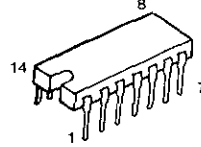
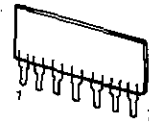
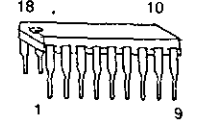
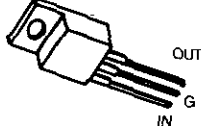
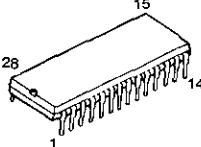
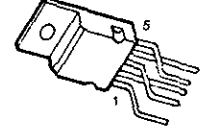
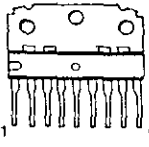
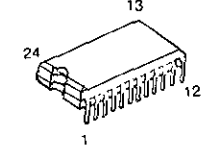

WIRING DIAGRAM

TERMINAL VIEW OF SEMICONDUCTOR

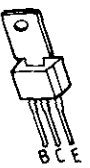


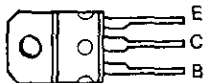
DIODE

FIGURE	DESCRIPTION	REFERENCE NO.
	IN4148TA	D101,D201,D202,D203 D204,D205,D206,D207 D208,D209,D210,D211 D212,D401,D409,D504 D505,D506,D506,D551 D552,SD01,BACK SIDE
	IS2471TA	D06,D07,D08,D09,D10
	1N4003TA	D301,D402,D809
	1N4005TA	D801,D802,D803 D804
	KF-105,1A/600V	D403,D404,D405,D406 D805,D806,D808,D810 D811
	KF-107,1A/1000V	D812
	KA33V	D1

IC

FIGURE	DESCRIPTIONS	REFERENCE NO.
	GL3120	IC101
	TEA1014	IC201
	LA7830	IC301
	TDA2579	IC401
	GL7812	IC402
	GL7805	IC2
	TDA3561A	IC501
	TDA2006	IC601
	TDA4601	IC801
	TDA3592A	SIC1
	M491	IC1

TRANSISTOR

	KTC2068	Q901,Q902,Q903
	KTC1815-0	Q02,Q03,Q04,Q05 Q06,Q08,Q09,Q10,Q17 Q18,Q201,Q202
	KTA1015-0	Q01,Q16
	KTC388A	Q160
	KTC1815-GR	Q07
	KTC2230A	Q402
	KTC2482	Q801
	BU508DF	Q403,Q802

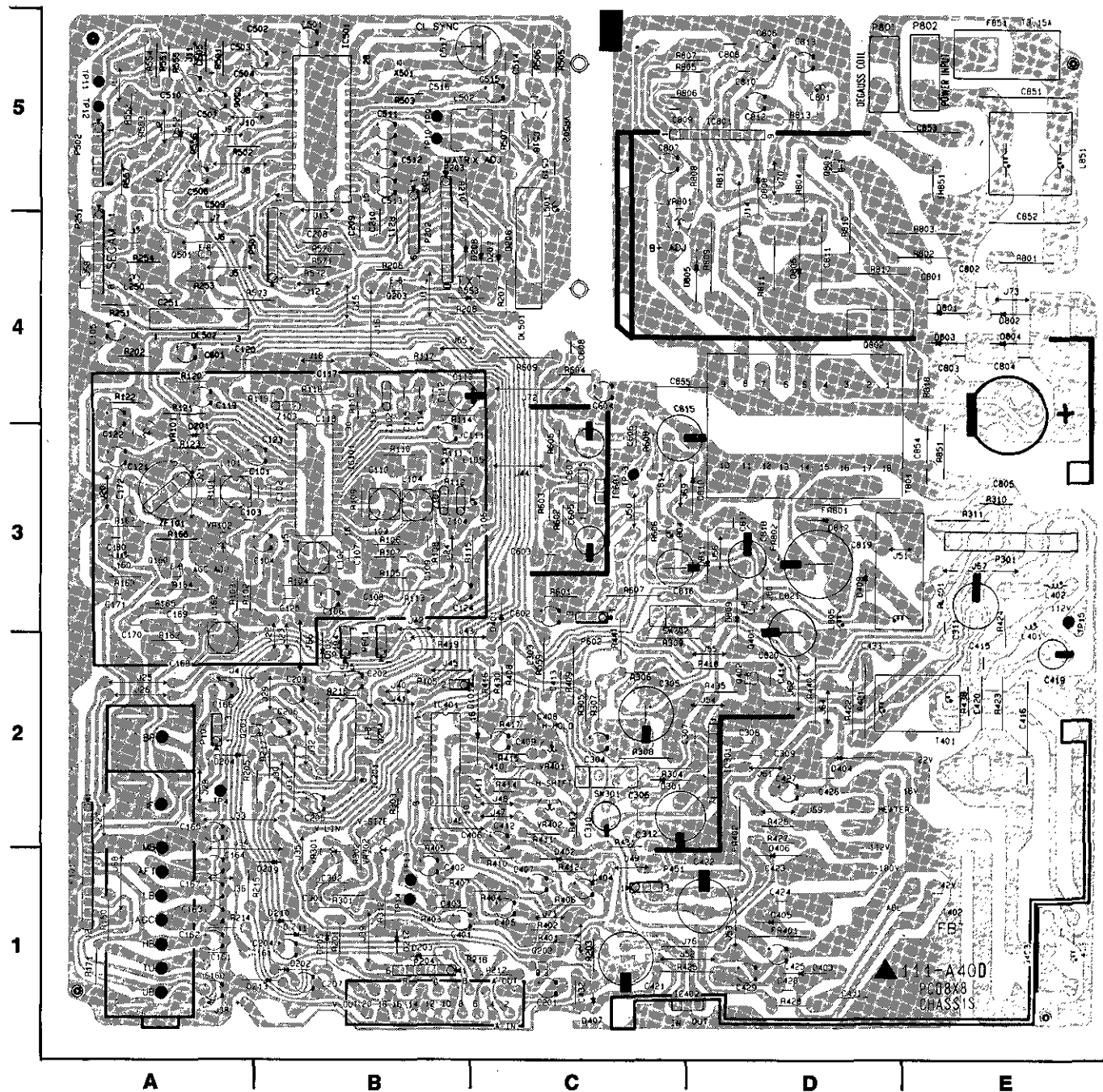
COMPONENT LOCATION GUIDE

(Refer to page 29)

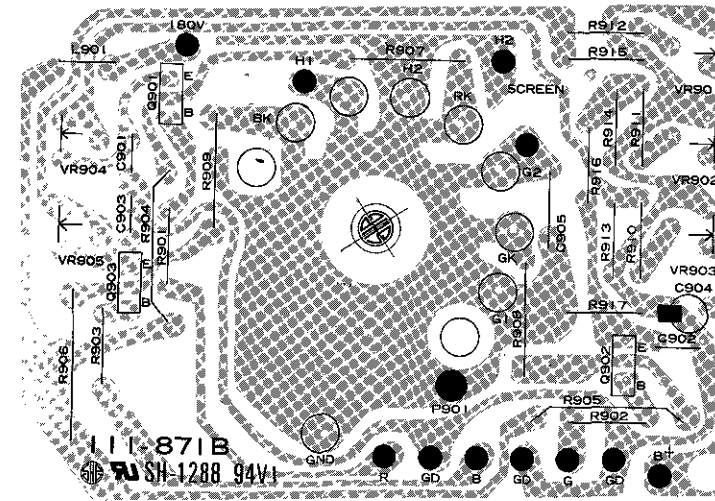
R101	3A	R405	1B	VR301	1B	C307	2D	C804	4E	D406	1D
R102	3A	R406	1C	VR302	1B	C308	2D	C805	3E	D407	1C
R103	3A	R407	1B	VR401	2C	C309	2D	C806	5D	D409	3D
R104	3B	R408	2C	VR402	2C	C310	1C	C807	5C	D504	4B
R105	3B	R409	2C	VR502	5C	C311	2E	C808	5D	D505	4B
R106	3B	R410	1C	VR801	5C	C312	1C	C809	5D	D506	4B
R107	3B	R411	1C	FR401	1D	C401	1B	C810	5D	D551	5A
R108	3B	R412	1C	FR402	1D	C402	1B	C811	4D	D552	5A
R109	3B	R413	2C	FR801	3D	C403	1B	C812	5D	D801	4E
R110	3B	R414	2C	FR802	3D	C404	1C	C813	5D	D802	4E
R111	3B	R415	2C			C405	1C	C814	3C	D803	4E
R112	3B	R416	2C	C101	3A	C406	1B	C815	4C	D804	4E
R113	3B	R417	2C	C102	3B	C407	1C	C816	3C	D805	4D
R114	4B	R418	2D	C103	3A	C408	2C	C817	3D	D806	4D
R115	3B	R419	2B	C104	3A	C409	2C	C818	3D	D808	5D
R116	4B	R421	2D	C105	4A	C410	2C	C819	3D	D809	3D
R117	4B	R422	2D	C106	3B	C411	2C	C820	2D	D810	3D
R118	4B	R423	2E	C107	3B	C412	1C	C821	3D	D811	3D
R119	4A	R424	3E	C108	3B	C413	2C	C851	5E	D812	3D
R120	4A	R425	1D	C109	3B	C414	2D	C852	4E		
R121	4A	R426	2D	C110	3B	C415	2E	C853	5E	Q160	3A
R122	4A	R427	1D	C111	3B	C416	2E	C854	3E	Q201	2A
R123	3A	R428	1D	C112	4B	C419	2E			Q202	1C
R160	1A	R430	2C	C113	4B	C420	2E	L101	3A	Q203	4B
R161	1A	R431	1C	C114	3B	C421	1C	L102	3B	Q204	2B
R162	2A	R501	5A	C115	3B	C422	1D	L103	3B	Q401	2D
R163	3A	R502	5A	C116	3B	C423	1D	L104	3B	Q402	2D
R164	3A	R503	5B	C117	4B	C424	1D	L105	3B	Q403	1E
R165	3A	R505	5C	C118	4B	C425	1D	L106	3C	Q801	5D
R166	3A	R506	5C	C119	4A	C426	2D	L160	3A	Q802	4D
R167	3A	R507	5C	C120	4A	C427	2D	L162	3A		
R201	1B	R551	5A	C121	3A	C428	1D	L250	4A	IC101	3B
R202	4A	R552	5A	C122	3A	C429	1D	L251	4A	IC201	2B
R203	1C	R553	5A	C123	3B	C431	1D	L401	2E	IC301	2D
R205	2A	R554	5A	C124	3B	C432	1C	L402	3E	IC401	2B
R206	4B	R555	5A	C125	3C	C433	2D	L403	1E	IC402	1D
R207	4C	R556	5A	C160	1A	C434	1C	L501	5C	IC501	5B
R208	4B	R557	5A	C161	1A	C501	5B	L502	5B	IC601	3C
R209	5B	R558	4B	C162	1A	C502	5A	L801	5D	IC801	5D
R211	4B	R559	2C	C163	1A	C503	5A	L804	3C		
R212	1C	R601	3C	C164	1A	C504	5A	L851	5E	P101	1A
R213	1A	R602	3C	C165	1A	C505	5A			P103	2A
R214	1A	R603	3C	C166	2A	C506	5A	DL501	4C	P104	2B
R215	1A	R604	4C	C167	1A	C507	5A	DL502	4A	P202	4B
R216	2B	R605	3C	C168	2A	C508	5A	T401	2E	P203	5B
R217	2A	R606	3C	C169	2A	C509	5A	T402	1E	P204	1B
R218	1C	R607	3C	C170	2A	C510	5A	T801	4D	P251	4A
R251	4A	R608	3C	C171	3A	C511	5B			P301	3E
R253	4A	R609	4C	C172	3A	C512	5B	D101	2B	P451	1C
R254	4A	R801	4E	C201	1C	C513	5B	D201	3A	P501	4A
R255	5A	R802	4E	C202	2B	C514	5C	D202	1B	P502	5A
R301	1B	R803	4E	C203	2B	C515	5C	D203	1B	P601	2B
R302	1B	R804	5D	C204	1A	C516	5B	D204	2A	P602	2C
R303	2B	R805	5D	C205	2B	C517	5B	D205	1B	P801	5D
R304	2C	R806	5D	C206	2B	C518	5C	D206	4C	P802	5E
R305	2C	R807	5D	C207	1B	C519	5C	D207	4C	SW301	2C
R306	2C	R808	5D	C208	4B	C601	4A	D208	4B	SW302	2C
R307	2C	R809	4D	C209	4B	C602	3C	D209	1B	X501	5B
R308	2C	R810	4D	C210	4B	C603	3C	D210	1B	TH851	5E
R309	2C	R811	4D	C250	4A	C604	4C	D211	1B	Z102	3B
R310	3E	R812	5D	C251	4A	C605	3C	D212	1B	Z103	4B
R311	3E	R813	5D	C301	1B	C606	3C	D301	2C	Z104	3B
R312	1B	R817	4D	C302	1B	C607	3C	D401	3C	ZF101	3A
R401	1C	R818	4E	C303	2C	C608	4C	D402	1C	RL401	3E
R402	1C	R851	3E	C304	2C	C801	4E	D403	1D	F851	5E
R403	1B	VR101	3A	C305	2C	C802	4E	D404	2D	LB05	3D
R404	1C	VR102	3A	C306	2C	C803	4E	D405	1D		

PRINTED CIRCUIT BOARD

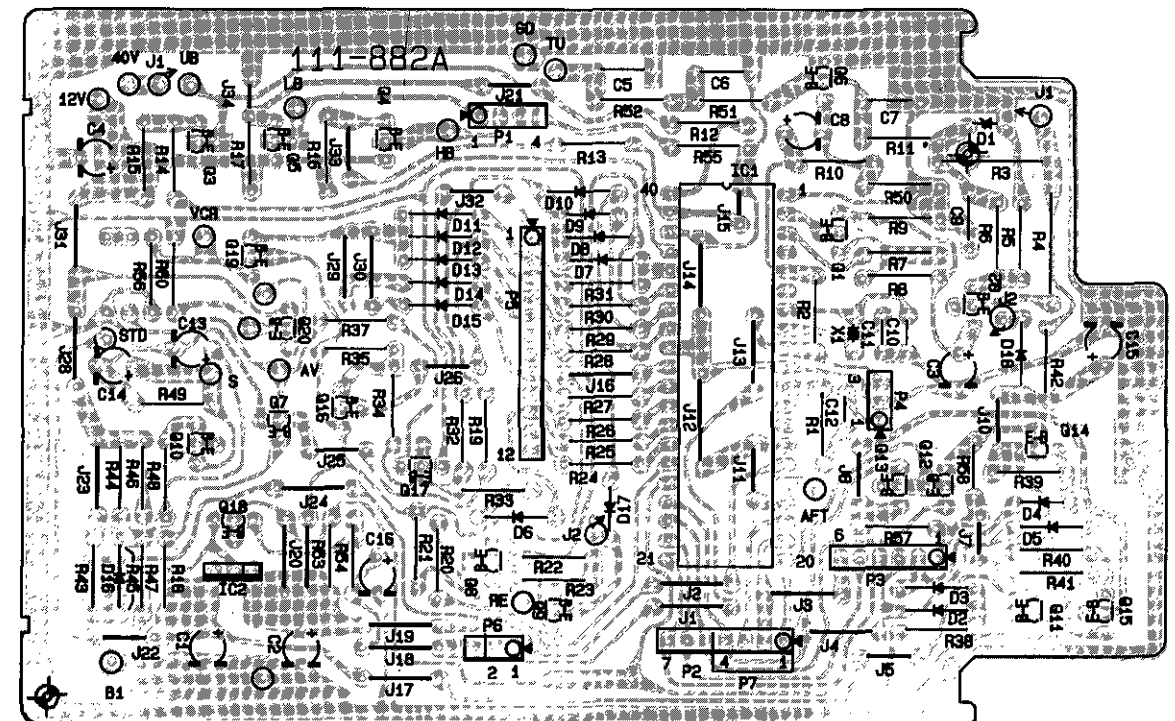
MAIN P. C. BOARD (COMPONENT SIDE)



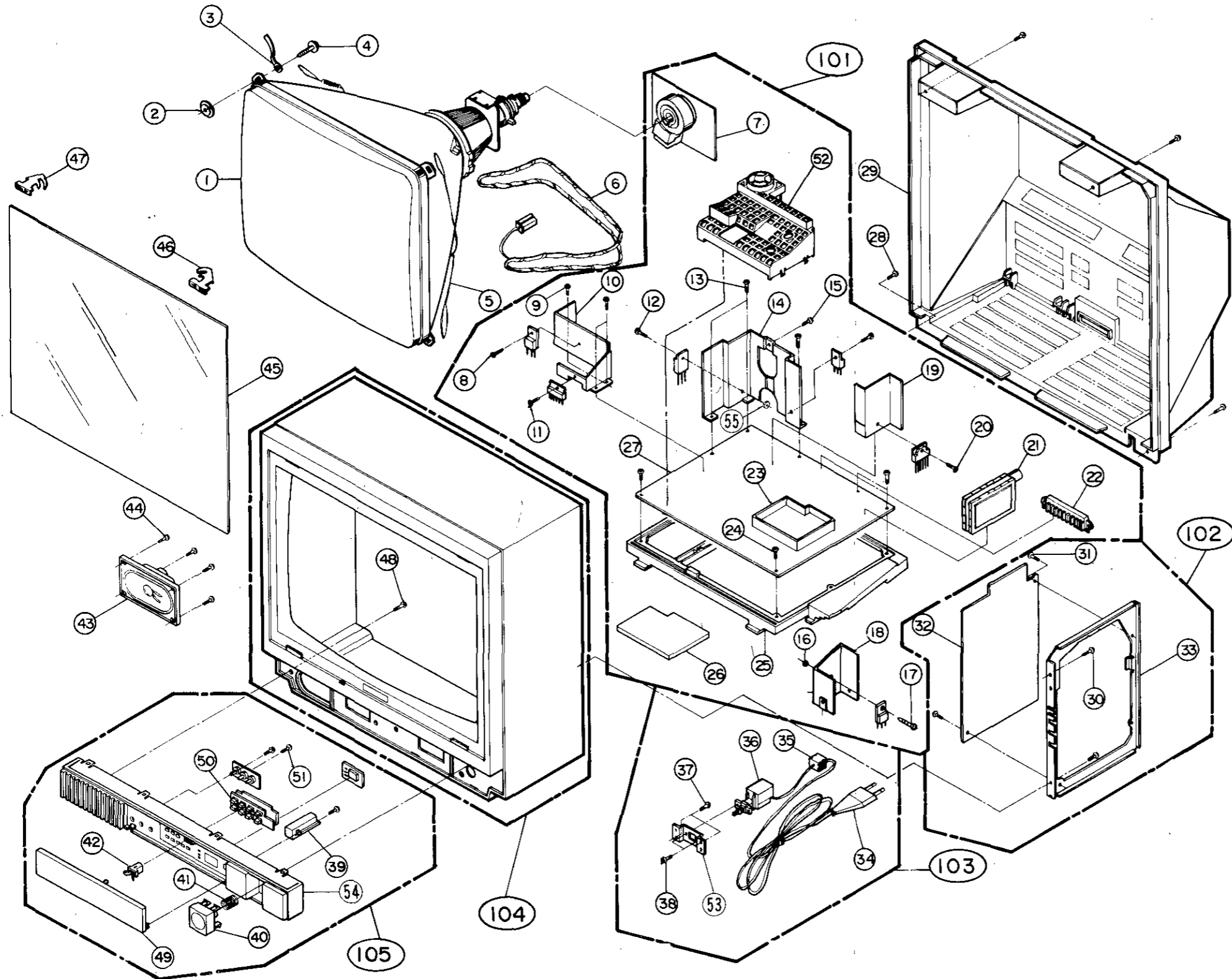
CPT P. C. BOARD (COMPONENT SIDE)



TUNING P. C. BOARD (COMPONENT SIDE)



EXPLODED VIEW



SP : Serviceable Parts.
NSP : Not Serviceable Parts.

NO.	DESCRIPTION	Q'TY	PART NO.	REMARKS
1	CPT, 370REB22TC	1	112-35HA	SP
2	SEAT, RUBBER	4	327-030A	NSP
3	HOLDER, METAL ASSY	4	341-335A	SP
4	SCREW ASSY, HEXAGON HEAD	4	332-057B	SP
5	LEAD SET, EARTH	1	170-588B	NSP
6	COIL, DEGAUSSING	1	150-438A	SP
7	PCB ASSY, CPT	1	110-A31Q	SP
8	SCREW, TAP-TITE C TYPE	1	332-069D	SP
9	SCREW (RTS1+3X12)	3	03281004	SP
10	PLATE, HEAT SINK	1	407-757A	SP
11	SCREW, TAP-TITE C TYPE	1	332-069B	SP
12	SCREW, TAP-TITE C TYPE	2	332-069D	SP
13	SCREW (RTS1+3X12)	3	03281004	SP
14	PLATE, HEAT SINK	1	407-755A	NSP
15	SCREW (RTS1+3X12)	1	03281004	SP
16	WASHER FOR TR	1	334-036A	SP
17	SCREW, TAP-TITE C TYPE	1	332-069D	SP
18	PLATE, HEAT SINK	1	407-734B	SP
19	PLATE, HEAT SINK	1	407-756A	NSP
20	SCREW, TAP, TITE C TYPE	1	332-069D	SP
21	TUNER	1	113-095G	SP
22	SOCKET ASSY, 21 PIN PERI-SOCKET	1	381-090A	SP
23	CASE SHIELD	1	302-C12A	SP
24	SCREW, WASHER	5	332-067C	SP
25	FRAME, MAIN	1	312-200A	SP
26	COVER, SHIELD	1	303-A88A	SP
27	PCB ASSY, MAIN	1	110-D83S	SP
28	SCREW (TTS1+4X16)	4	03232305	SP
29	COVER ASSY, BACK	1	303-A68F	SP
30	SCREW (TTS1+4X14)	2	03232304	SP
31	SCREW, WASHER	2	332-036A	SP
32	PCB ASSY, TUNING	1	110-E19A	SP
33	SUPPORTER, VS PCB	1	343-554B	SP
34	CORD, POWER	1	174-102B	SP
35	HOLDER, POWER CORD	1	341-242A	SP
36	SWITCH, MAIN	1	140-134B	SP
37	SCREW (RTS1+3X10)	2	03281003	SP
38	SCREW (TTS1+4X16)	2	03232305	SP
39	PRE AMP	1	106-031B	SP
40	BUTTON, POWER	1	441-582B	SP
41	SPRING	1	320-143A	SP
42	LOCK ASSY, DOOR	1	470-861A	SP
43	SPEAKER, C0091A06K1452	1	120-089F	SP
44	SCREW (RTS1+3X12)	4	03281004	SP
45	WINDOW GLASS	1	316-104A	SP
46	FIXER, FILTER(R)	1	342-031A	SP
47	FIXER, FILTER(L)	1	342-032A	SP
48	SCREW (TTS1+4X16)	1	03232305	SP
49	DOOR, CONTROL	1	315-286A	SP
50	PLATE, SILICON RUBBER	1	407-A09E	SP
51	SCREW CRTS(RTS+3X8A)	3	03220202	SP
52	COVER, SAFETY	1	303-B74A	SP
53	METAL POWER	1	430-692A	SP
54	PANEL ASSY	1	313-160C	SP
55	WASHER FOR TR	1	334-036A	SP

SUB ASSY

101	CHASSIS ASSY, MAIN	1	309-704A	SP
102	CHASSIS ASSY, TUNING	1	309-703A	SP
103	SWITCH ASSY, POWER	1	140-271A	SP
104	CABINET ASSY	1	300-752F	SP
105	PANEL ASSY, CONTROL	1	313-159G	SP

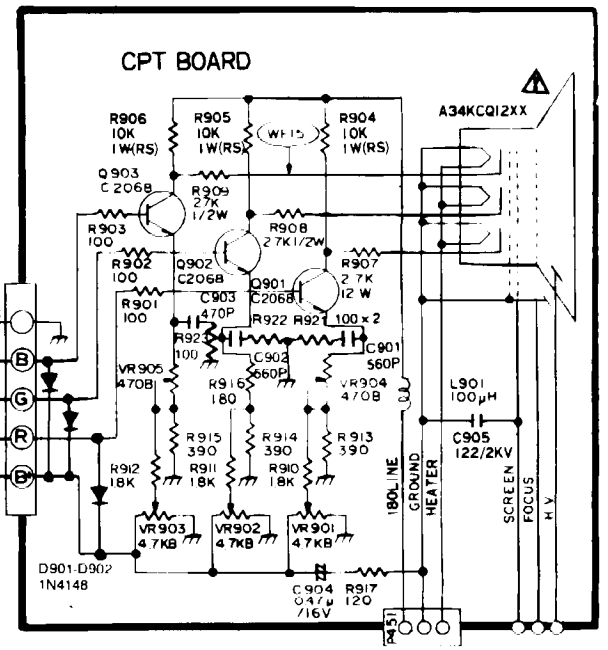
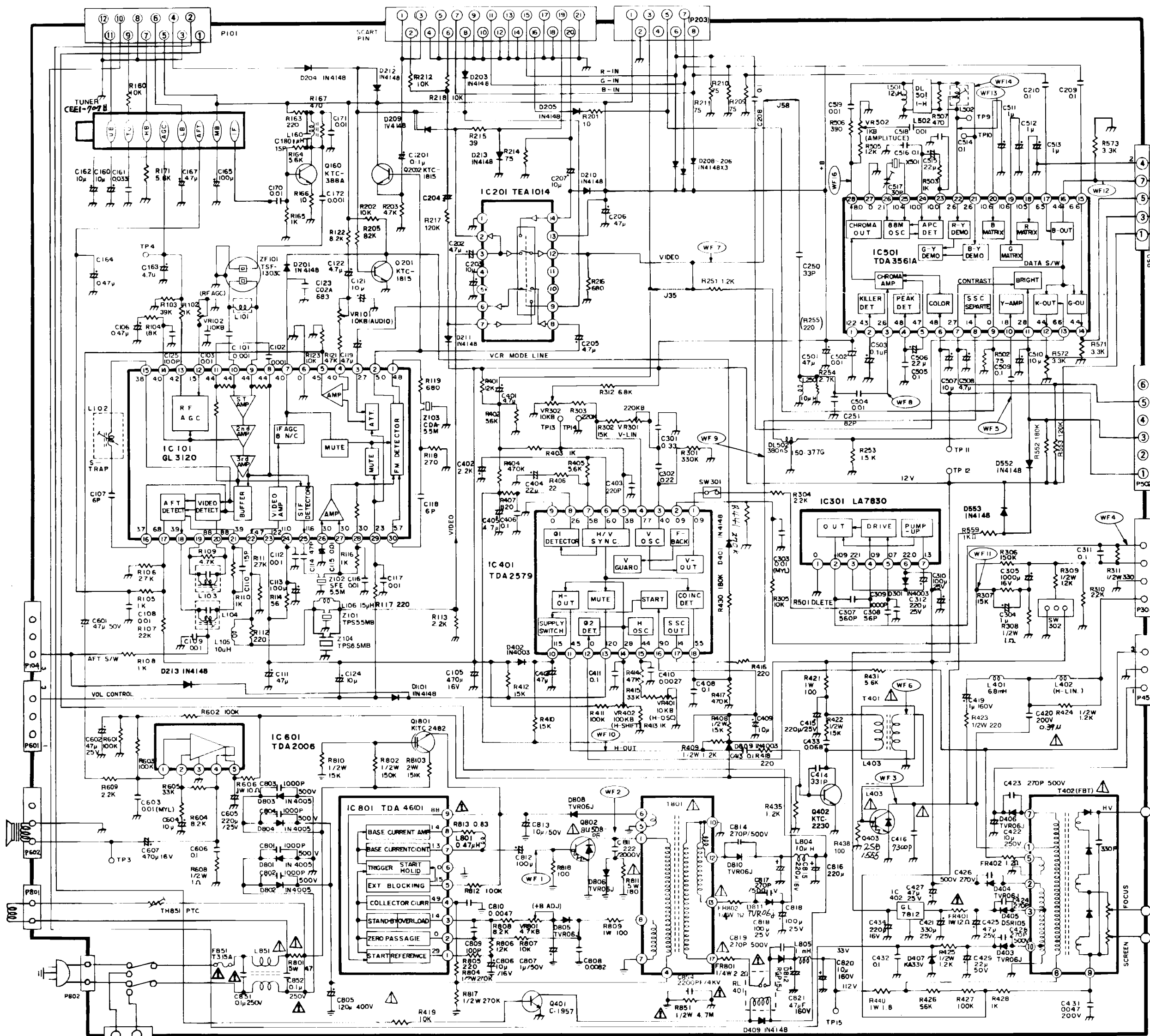
LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
R08	01157113	RD, 4.7K ohm	SP
R09	01157143	RD, 82K ohm	SP
R10	01157121	RD, 10K ohm	SP
R11	01157133	RD, 33K ohm	SP
R12	01157119	RD, 8.2K ohm	SP
R13	01157119	RD, 8.2K ohm	SP
R14	01157119	RD, 8.2K ohm	SP
R15	01157121	RD, 10K ohm	SP
R16	01157121	RD, 10K ohm	SP
R17	01157121	RD, 10K ohm	SP
R18	01157107	RD, 2.7K ohm	SP
R19	01157145	RD, 100K ohm	SP
R20	01157073	RD, 100 ohm	SP
R21	01157105	RD, 2.2K ohm	SP
R22	01157113	RD, 4.7K ohm	SP
R23	01157121	RD, 10K ohm	SP
R24	01157089	RD, 470 ohm	SP
R25	01157089	RD, 470 ohm	SP
R26	01157089	RD, 470 ohm	SP
R27	01157089	RD, 470 ohm	SP
R28	01157089	RD, 470 ohm	SP
R29	01157089	RD, 470 ohm	SP
R30	01157089	RD, 470 ohm	SP
R31	01157081	RD, 220 ohm	SP
R32	01157073	RD, 100 ohm	SP
R33	01157086	RD, 360 ohm	SP
R34	01157113	RD, 4.7K ohm	SP
R35	01157107	RD, 2.7K ohm	SP
R37	01157137	RD, 47K ohm	SP
R43	01157115	RD, 5.6K ohm	SP
R44	01157145	RD, 100K ohm	SP
R45	01157129	RD, 22K ohm	SP
R46	01157113	RD, 4.7K ohm	SP
R48	01157117	RD, 6.8K ohm	SP
R49	01157123	RD, 12K ohm	SP
R50	01157109	RD, 3.3K ohm	SP
R51	01157139	RD, 56K ohm	SP
R52	01157129	RD, 22K ohm	SP
R53	01157105	RD, 2.2K ohm	SP
R54	01157137	RD, 47K ohm	SP
R55	01157113	RD, 4.7K ohm	SP
CAPACITOR			
C01	02140325	CE, 1000uF/16V	SP
C02	02140319	CE, 100uF/16V	SP
C03	02140517	CE, 47uF	SP
C04	02140319	CE, 100uF/16V	SP
C05	02705337	MYL, 0.1uF/100V ± 10%	SP
C06	02705337	MYL, 0.1uF/100V ± 10%	SP
C08	08110413	CE, 10uF/25V	SP
C09	02705337	MYL, 0.1uF/100V ± 10%	SP
C10	08300136	CC, 100pF, ± 5%	SP
C11	08300136	CC, 100pF, ± 5%	SP
C12	02705327	MYL, 0.0047uF/100V ± 10%	SP
C13	08110507	CE, 1uF	SP
C14	08110507	CE, 1uF	SP
C16	08110413	CE, 10uF/25V	SP
DIODE			
D06	06200167	IS2471TA	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
D07	06200167	IS2471TA	SP
D08	06200167	IS2471TA	SP
D09	06200167	IS2471TA	SP
D10	06200167	IS2471TA	SP
TRANSISTOR			
Q01	06100083	KTA1015-O	SP
Q02	06120168	KTC1815-O	SP
Q03	06100083	KTA1015-O	SP
Q04	06100083	KTA1015-O	SP
Q05	06100083	KTA1015-O	SP
Q06	06120168	KTC1815-O	SP
Q07	06120204	KTC1815-BL	SP
Q08	06120168	KTC1815-O	SP
Q09	06120168	KTC1815-O	SP
Q10	06120168	KTC1815-O	SP
Q16	06100083	KTA1015-O	SP
Q17	06120168	KTC1815-O	SP
Q18	06120168	KTC1815-O	SP
IC			
IC01	06300390	M491	SP
IC02	06300342	GL7805	SP
D01	167-006B	KA33V	SP
MISCELLANEOUS			
X01	166-015E	FILTER, CSB455E	SP
P01	366-921C	WAFER IL-G4	SP
P02	366-921F	WAFER IL-G7	SP
P04	366-921B	WAFER IL-G3	SP
P05	366-921L	WAFER IL-G12	SP
P06	366-921A	WAFER IL-G	SP

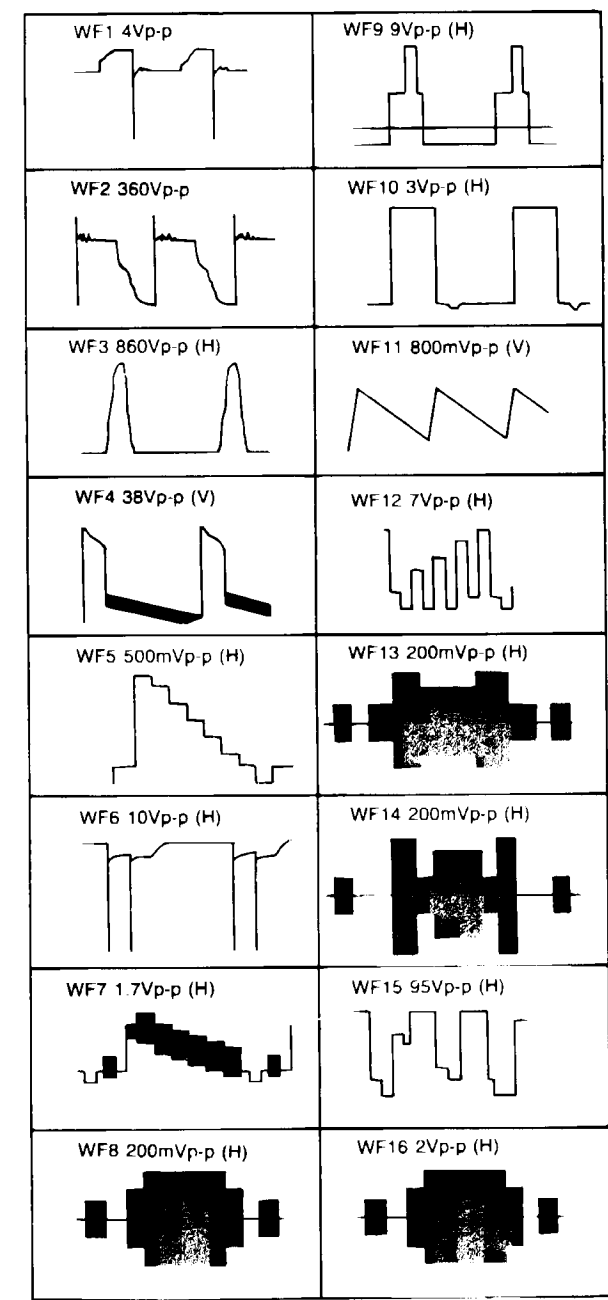
5. MISCELLANEOUS

CPT	450-018A	ADAPTER, ANT	SP
	150-438A	COIL, DEGAUSSING	SP
	132-021C	ANT ASSY, ROD	SP
	120-089F	SPEAKER, CO091A06K1542	SP
	112-35HA	CPT 370REB22TC	SP
	140-134B	SWITCH, MAIN 70060-045	SP
	174-102B	CORD, POWER	SP
	374-925P	WRAP ASSY	SP
	105-520X	TRANSMITTER	SP
	180-022A	COLOUR, BRGHT, CONTRAST	SP

CIRCUIT DIAGRAM (PC-08X8)



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



VALUE OF RESISTOR, CAPACITOR and INDUCTOR

- Resistance is shown in ohm, k=1,000, M=1,000,000
- Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
- Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μ H, and the values less than 1 in H.

OBSERVATION OF VOLTAGES AND WAVEFORMS

- Voltsages read with VTVM from point shown to chassis ground, line voltage 180-270V volts, colour bar signal.
- Voltsages reading may vary $\pm 20\%$.
- The schematic shown is representative only.
- All waveforms are taken using a wide band oscilloscope and a low capacity probe.

- 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.
- Waveforms are taken using a standard colour bar signal.

VS TUNING SYSTEM SCHEMATIC DIAGRAM

TX SCHEMATIC DIAGRAM

