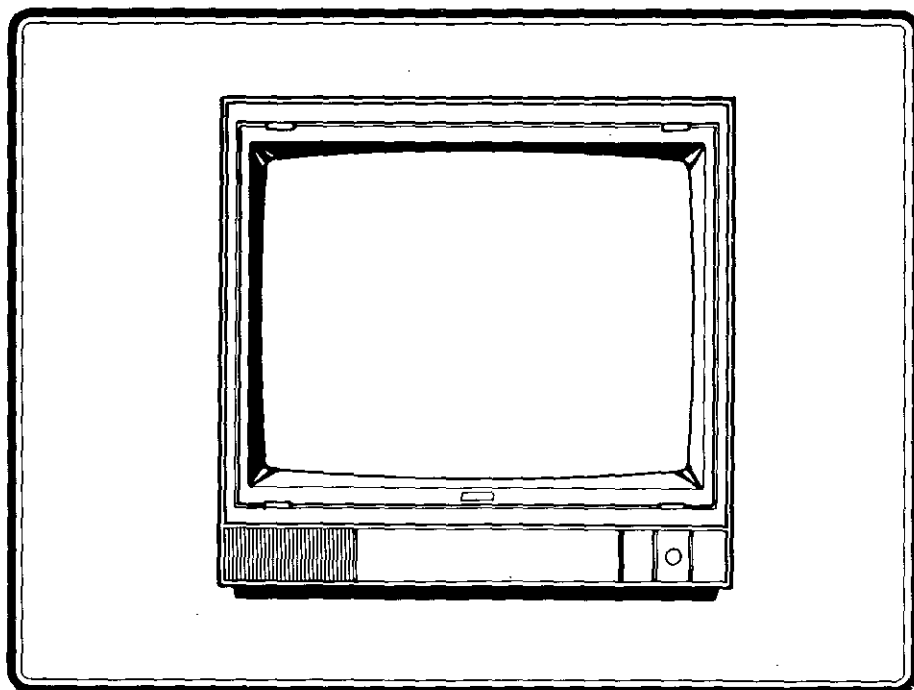


COLOUR TELEVISION SERVICE MANUAL

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

CONTENTS

Contents and Specifications	2
Safety Precautions	3
Servicing Precautions	4
Controls Location	6
Antenna Connections	7
Disassembly Instructions	8
Parts Location of Main Chassis	9
Adjustment Instructions	10
Circuit Descriptions	15
Troubleshooting Guide	20
Block Diagram	25
Wiring Diagram	26
Terminal Views of Semiconductor	27
Component Location Guide	28
Printed Circuit Board	29
Exploded View	31-32
Replacement Parts List	33
Special Parts Identification	38
Schematic Diagram	39

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.

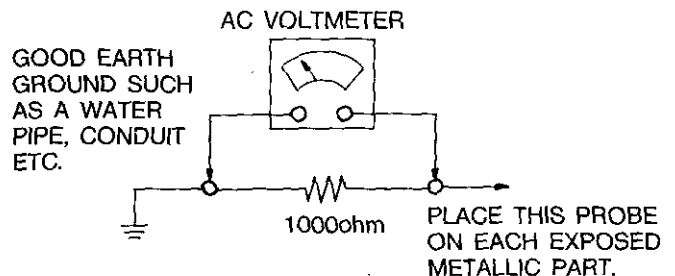
X-RAY RADIATION PRECAUTIONS

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

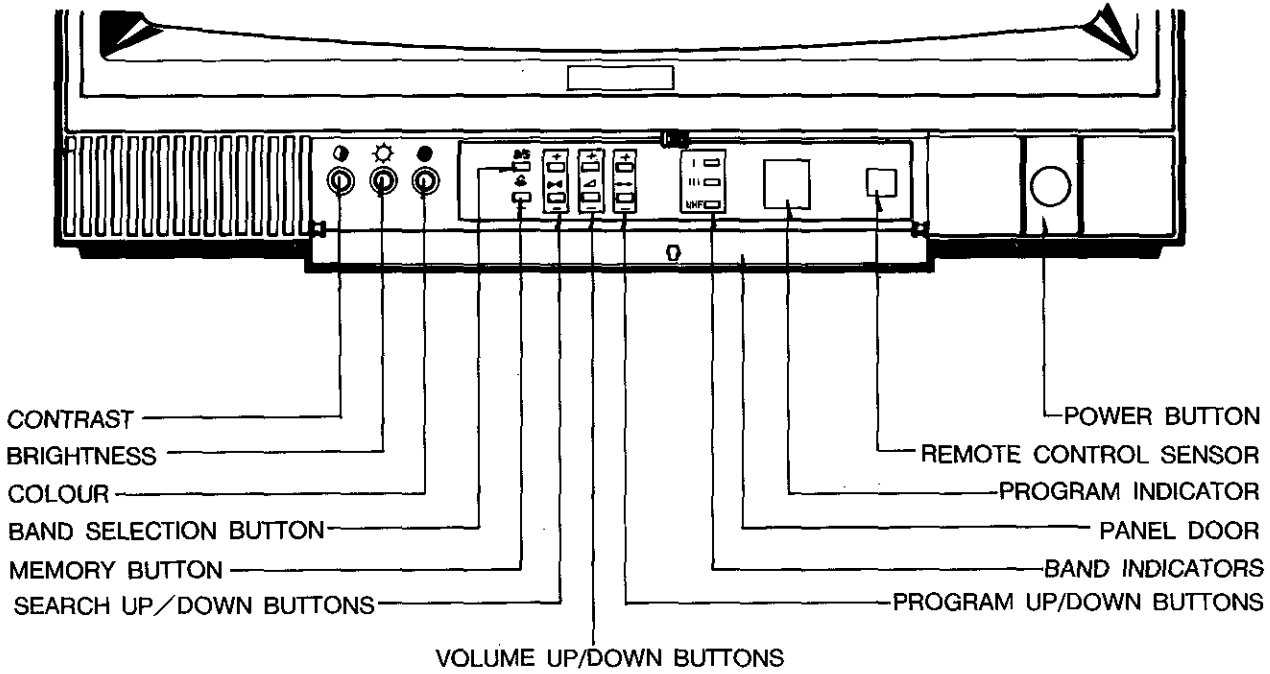


Figure 1

BACK

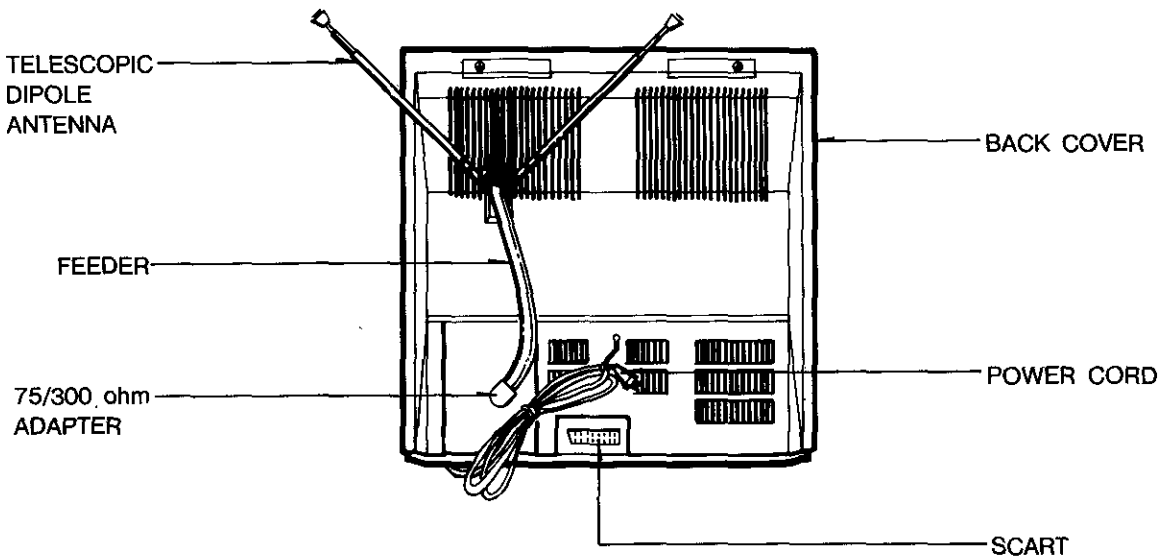


Figure 2

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.

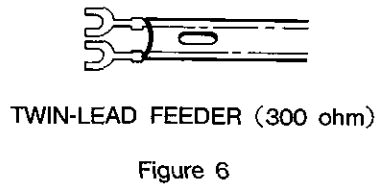
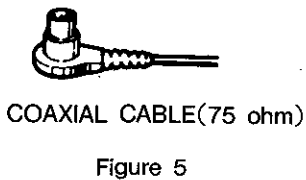
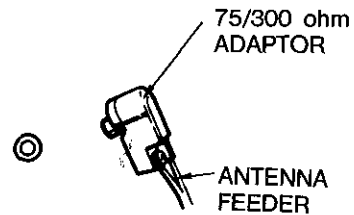
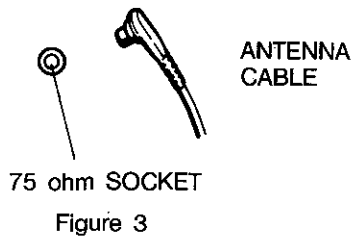
OUTDOOR ANTENNA

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.

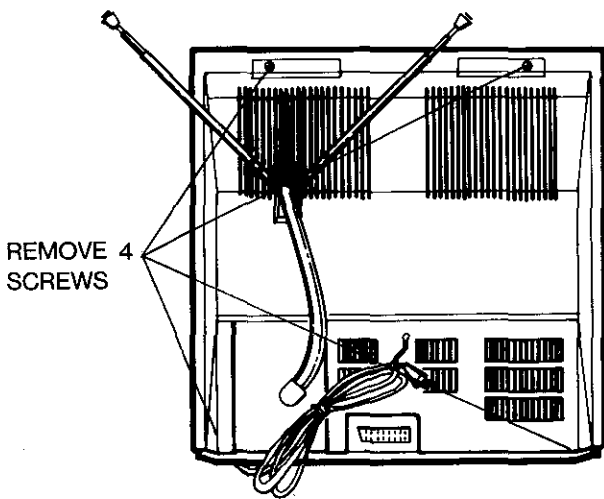


Figure 7

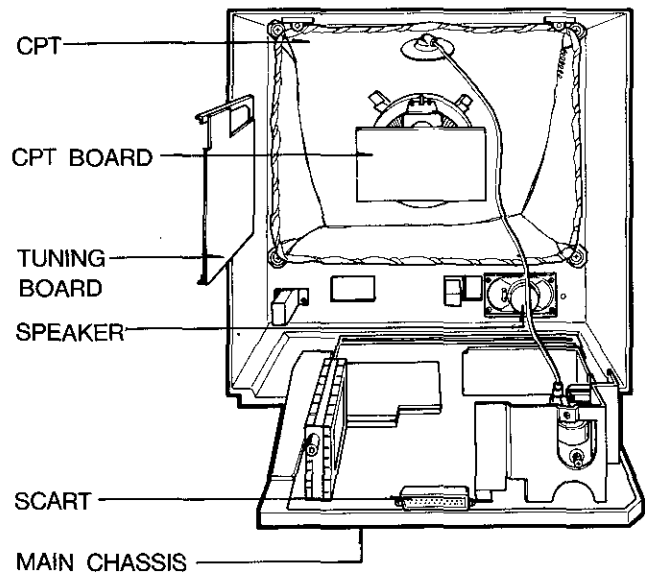
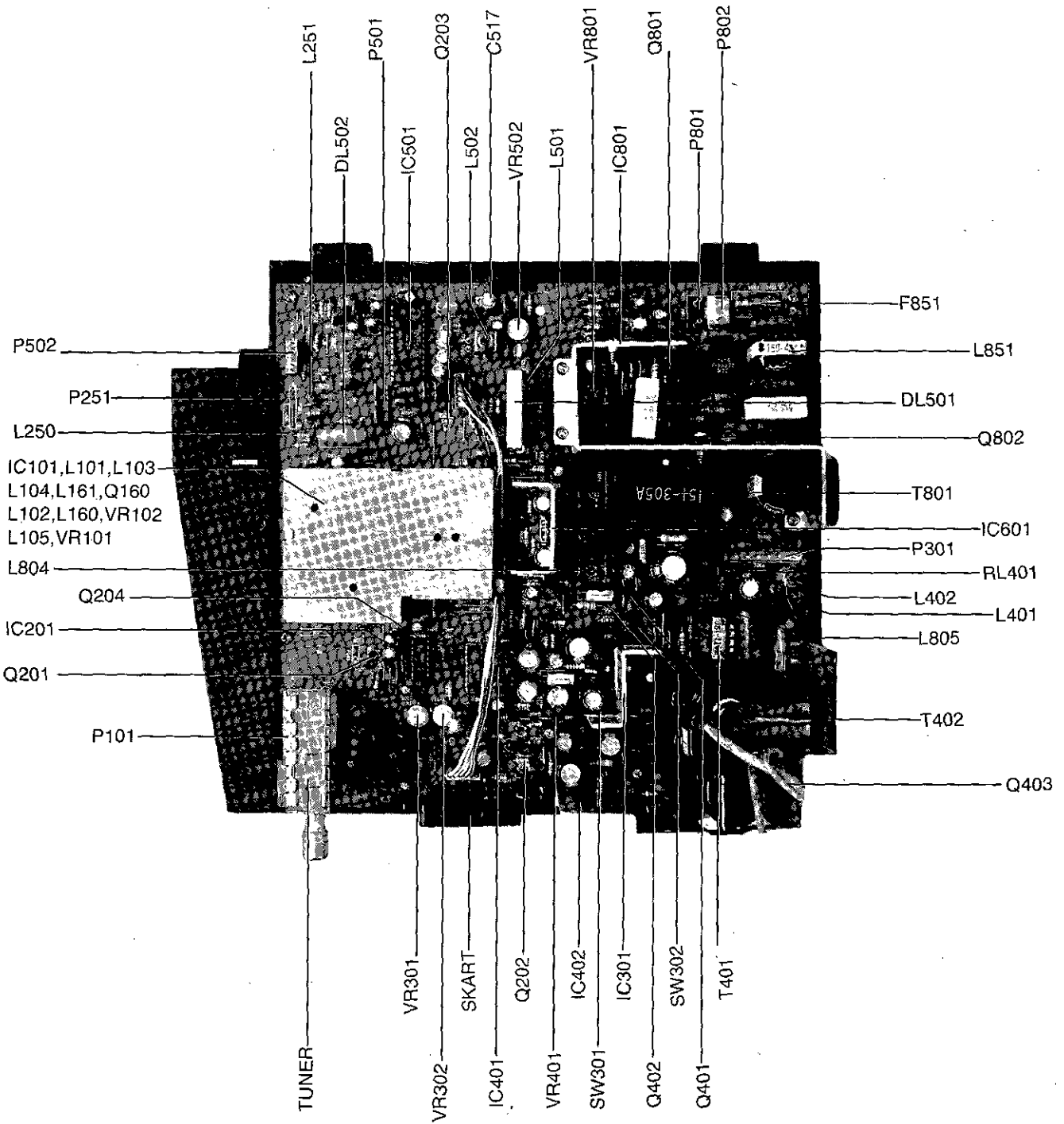


Figure 8

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.

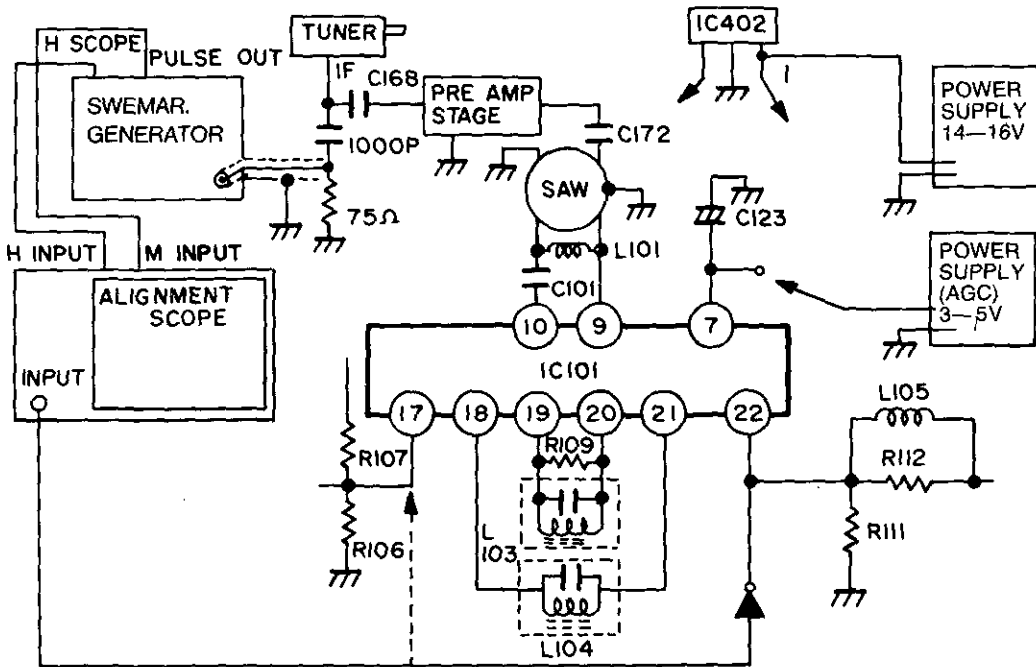


Figure 9

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.

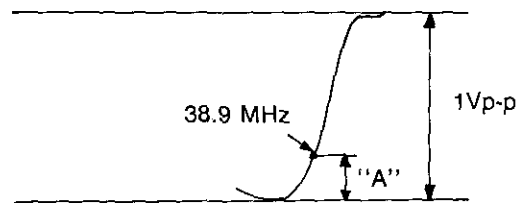


Figure 10

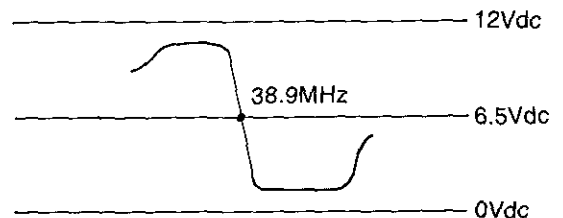


Figure 11

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.

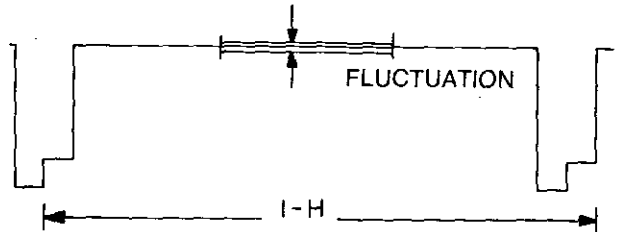


Figure 12

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

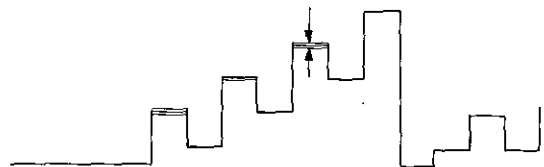


Figure 13

- 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. Coverage 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.

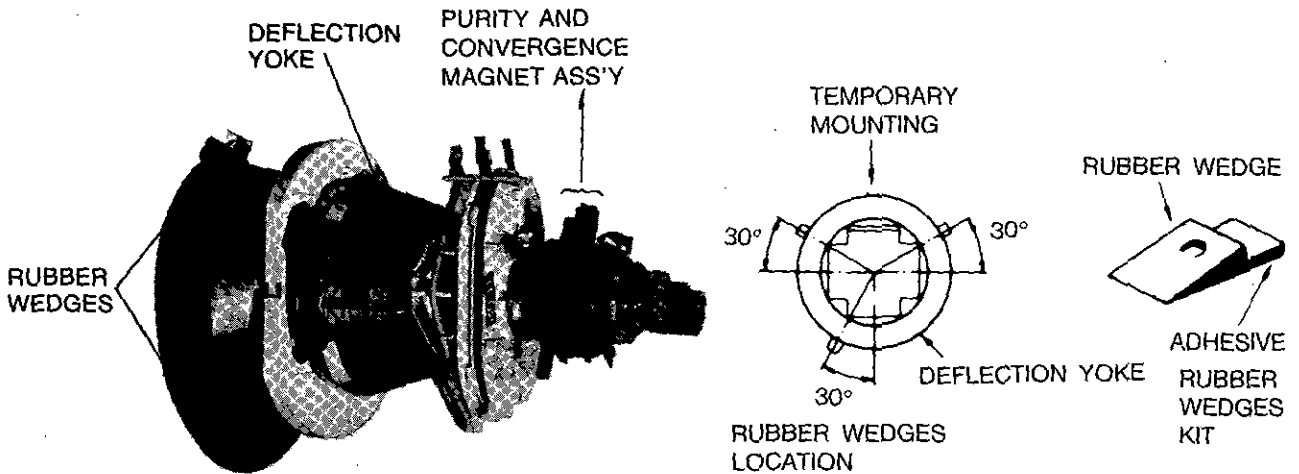


Figure 14

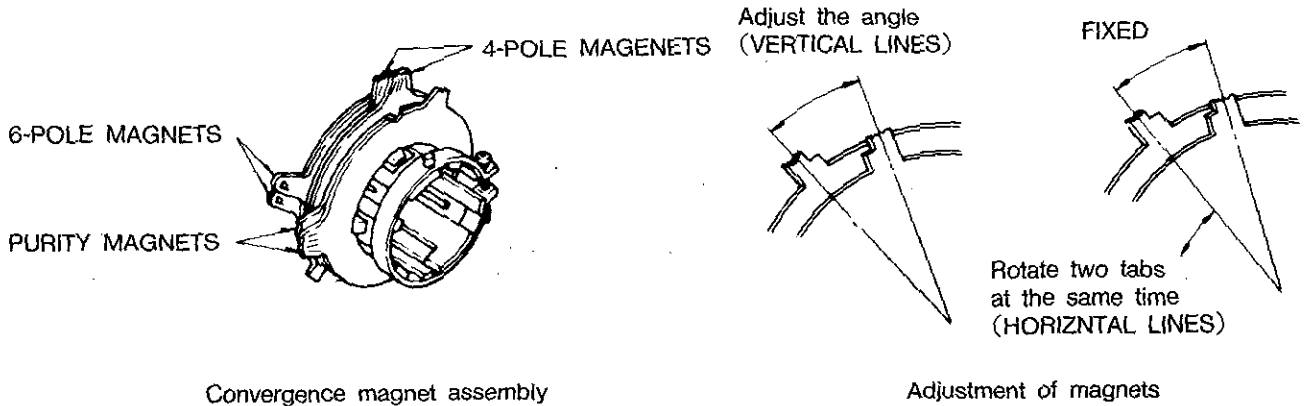


Figure 15

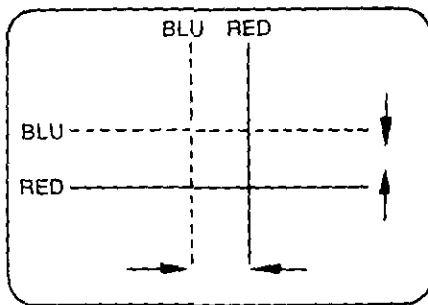
CENTER CONVERGENCE ADJUSTMENT

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.

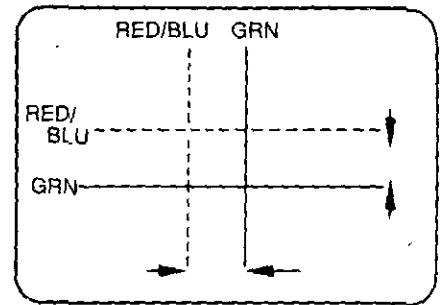
6. Repeat adjustments 1,2,3 keeping in mind red, green and blue movements because 4-Pole magnets and 6-Pole magnets interact and make not movement complex.

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.

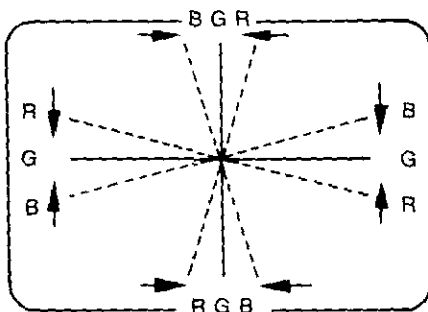


4-Pole Magnets Movement

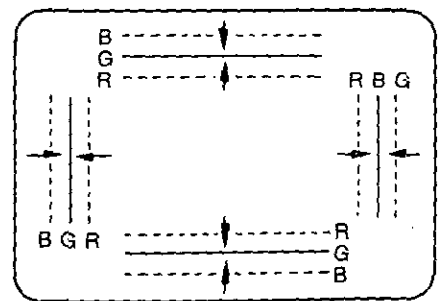


6-Pole Magnets Movement

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.

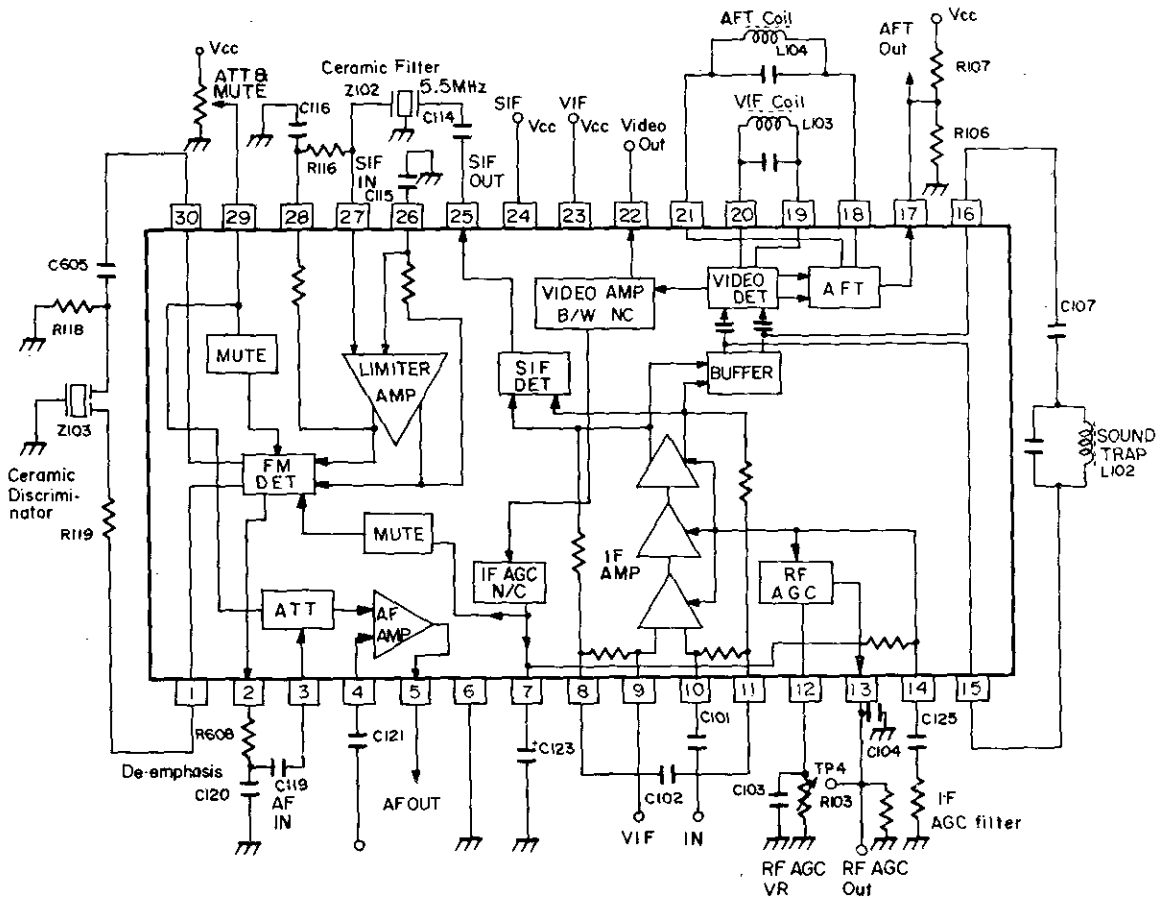
GL3120 used in this Chassis is a large-scale integrator which contains the VIF stage, SIF stage and Sound stage, and reduces 5.5 MHz Beat, 1 MHz beat and buzz by performing VIF, SIF DET. in a separate circuit.

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.

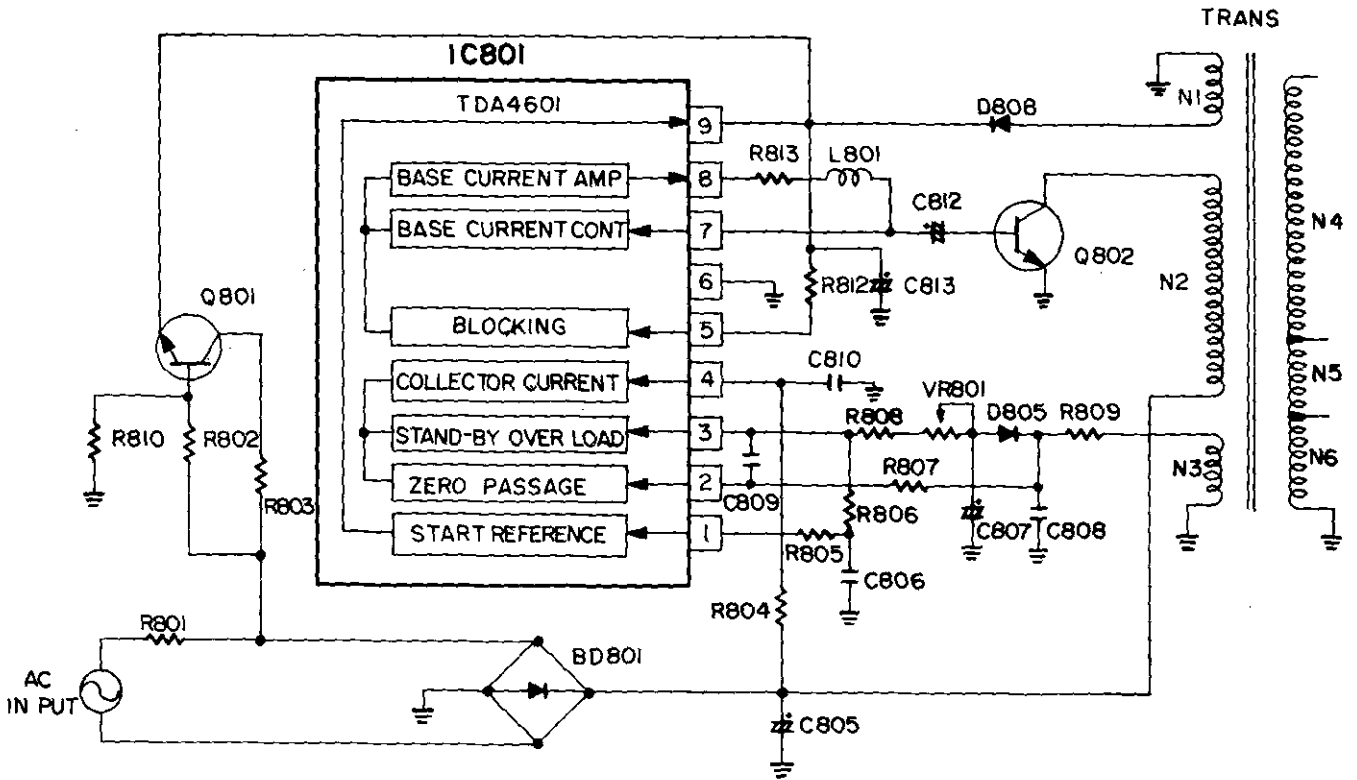


Schematic Diagram of IC101 (GL3120)

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.

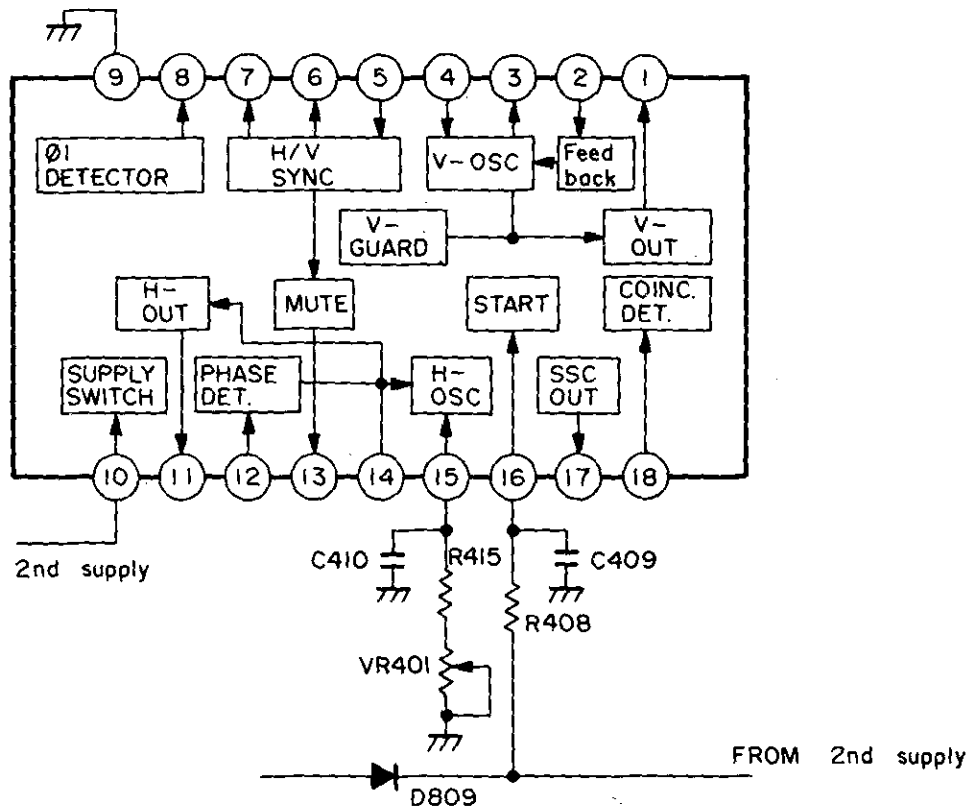
Over Load Operation

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.

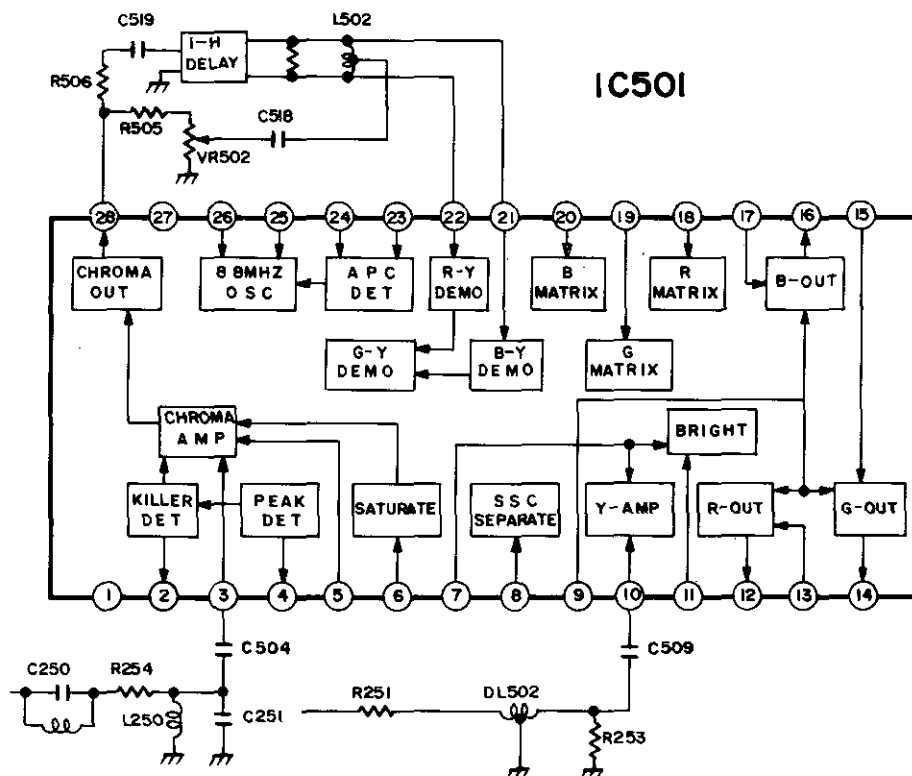
Sand Castle

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.

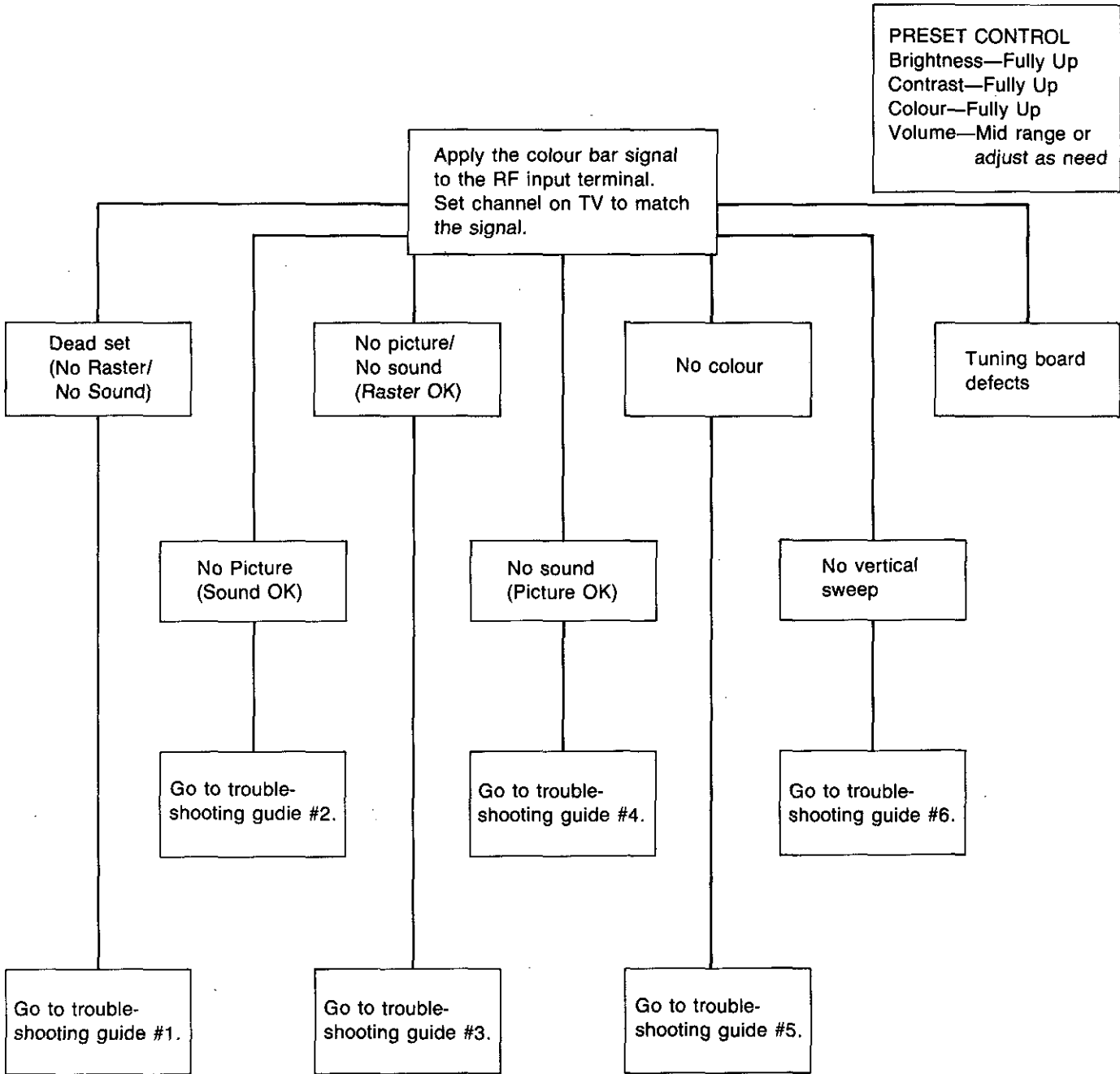
Luminance signal supplied on the pin 10 is commonly only 0.5Vp-p.

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.

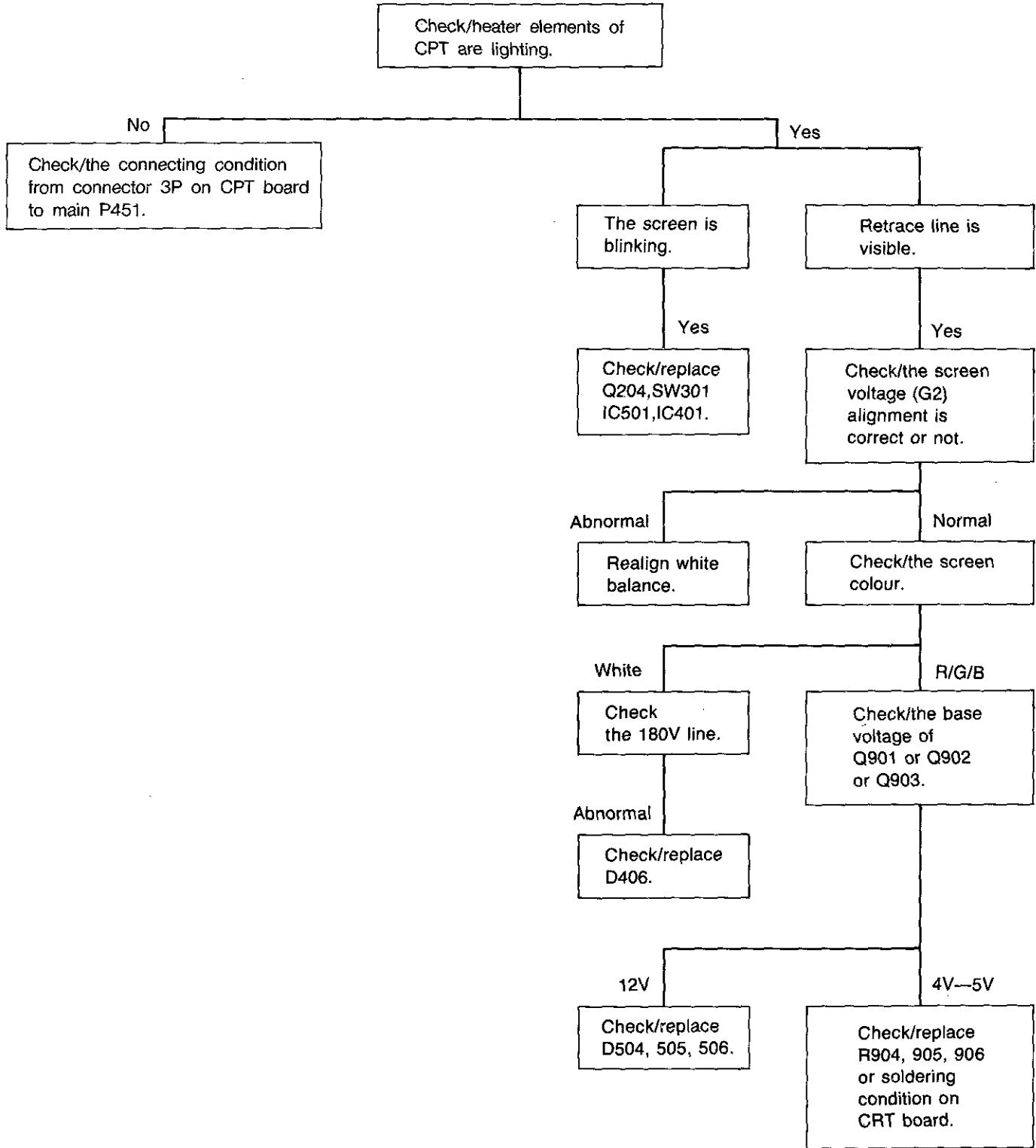
0V

Check/replace IC201, IC101.

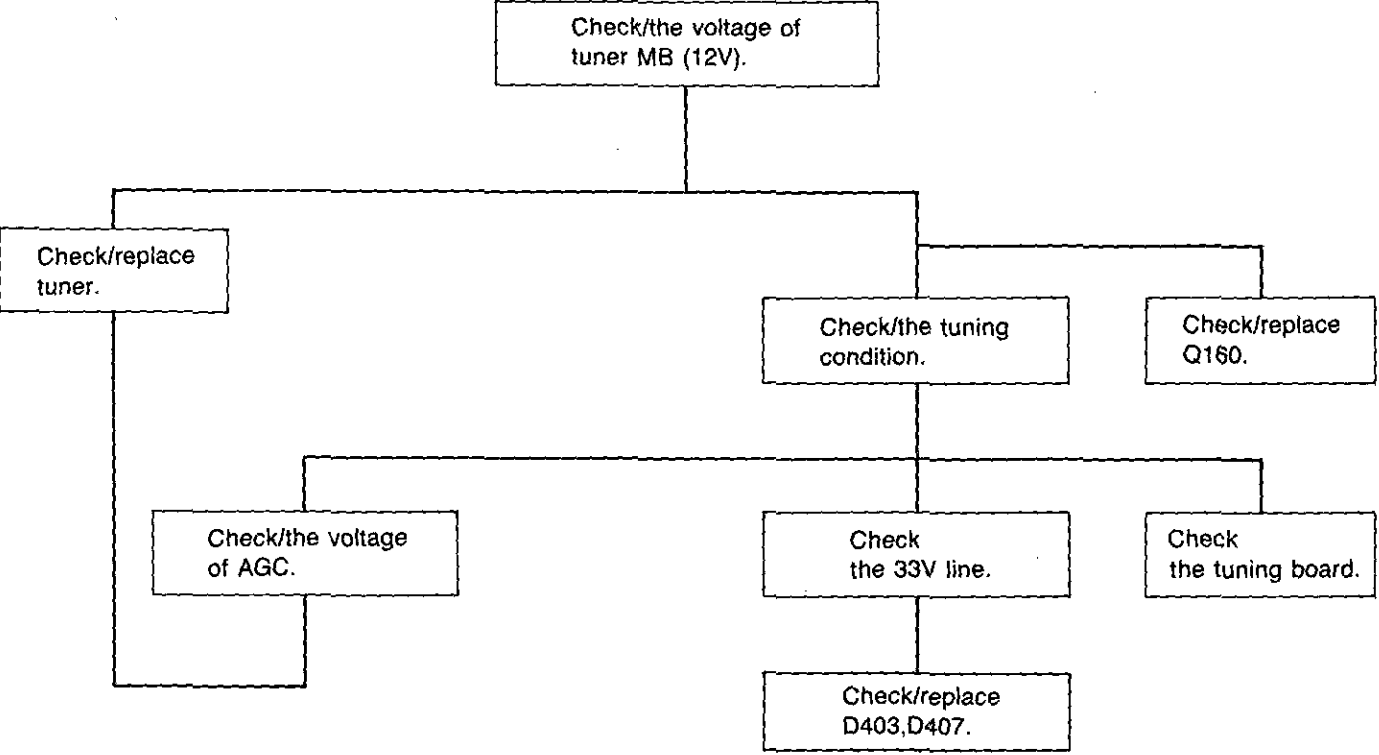
10V—12V

Check/replace the tuning board.

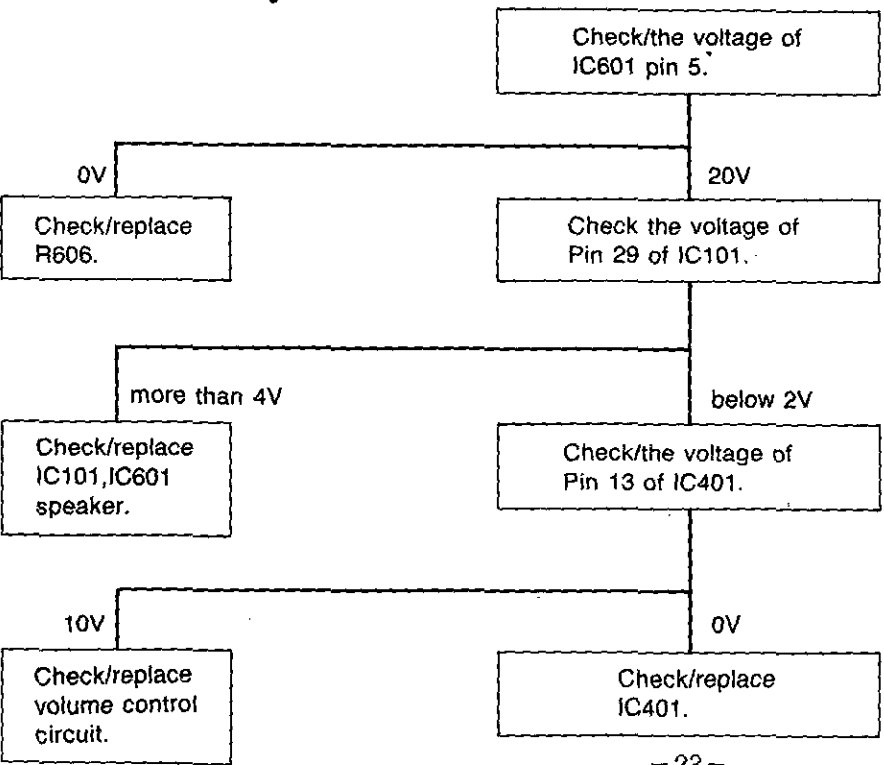
**2. NO PICTURE
(SOUND OK)**



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

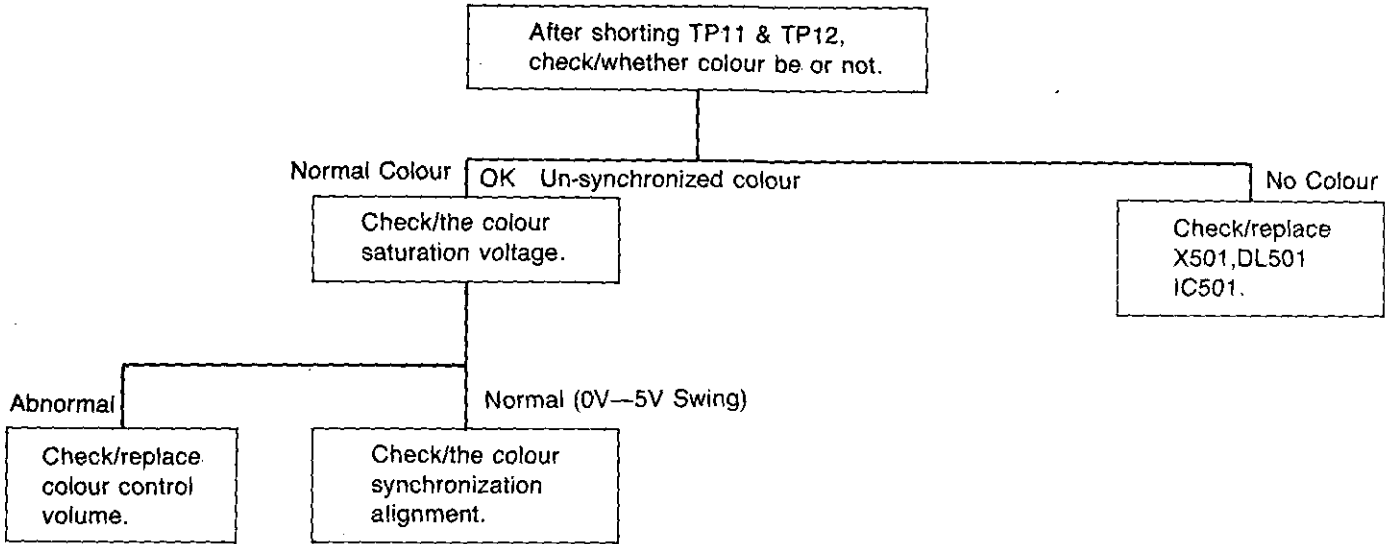


**4. NO SOUND
(PICTURE OK)**

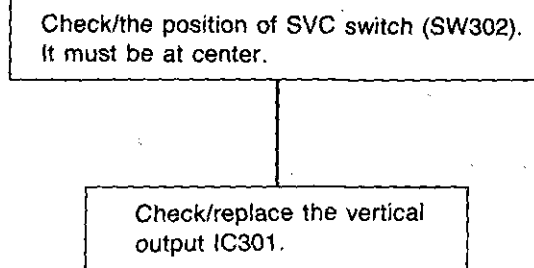


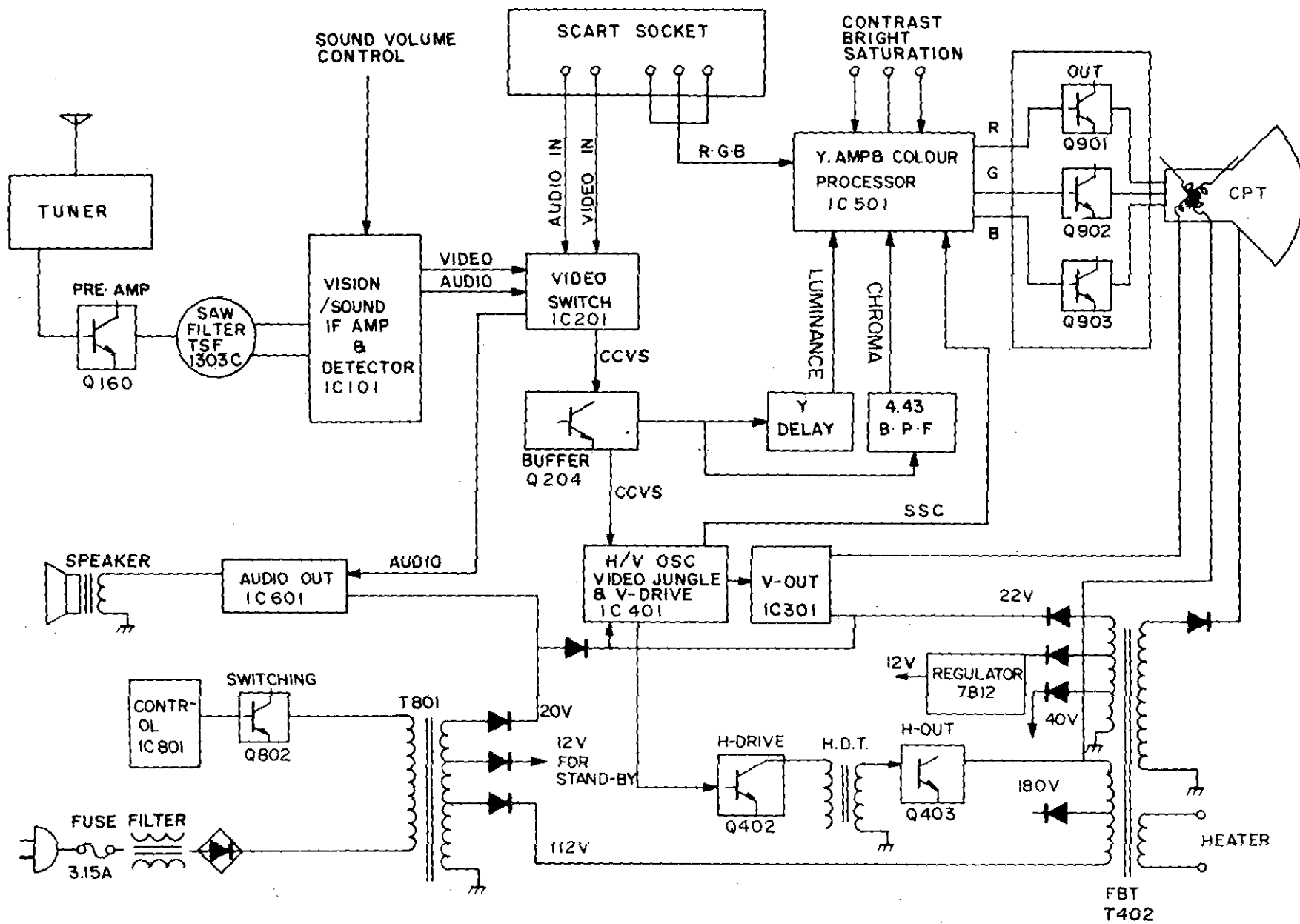
Note:
Sound is muted whenever the screen is noise condition, that is, broadcasting signal is not found

5. NO COLOUR

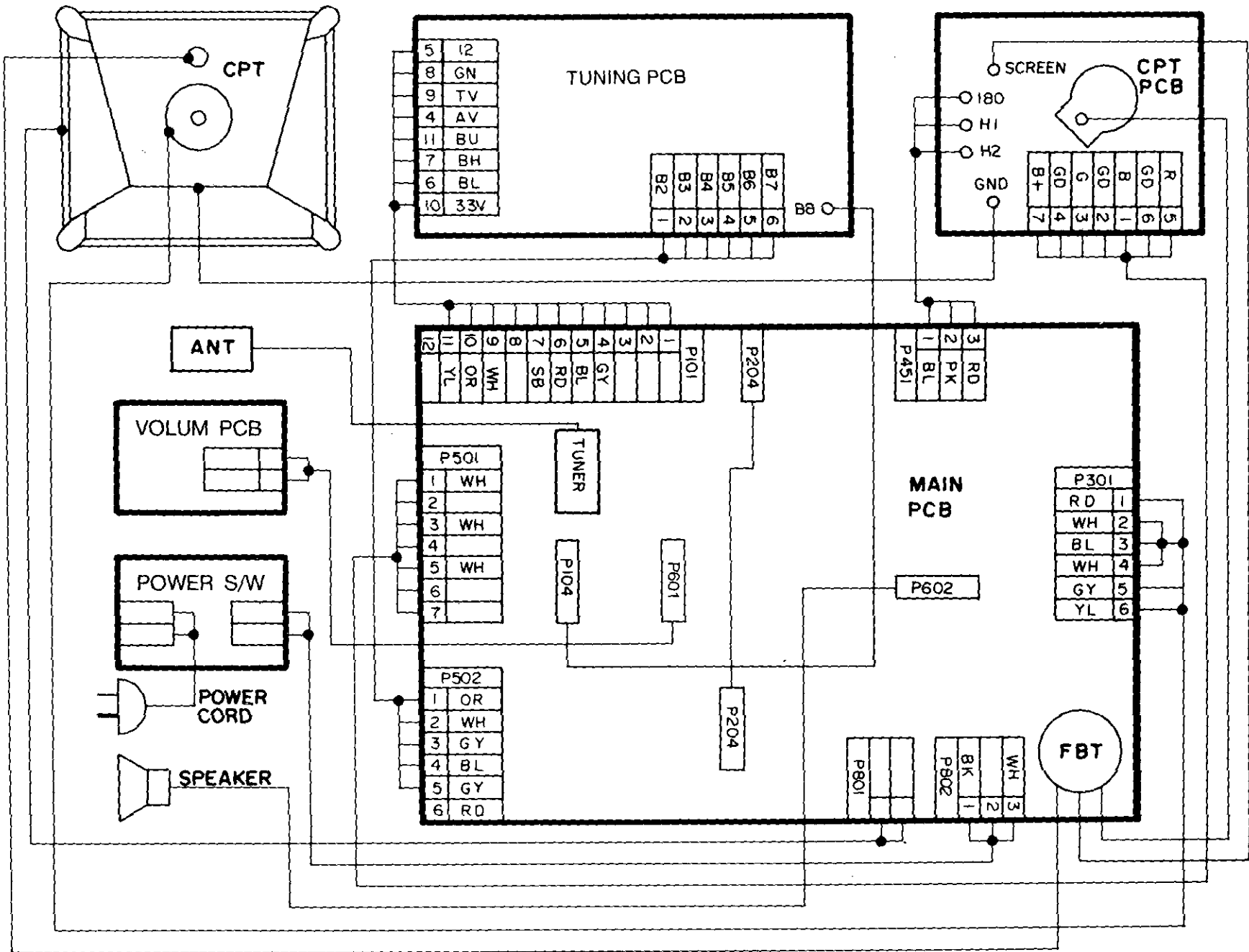


6. NO VERTICAL SWEEP






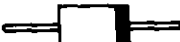
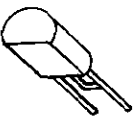
BLOCK DIAGRAM



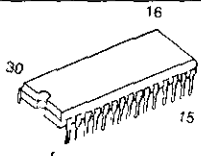
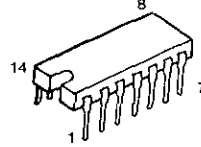
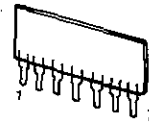
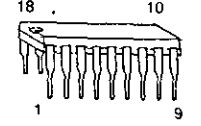
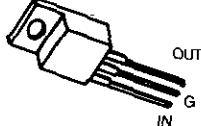
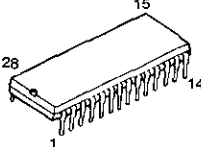
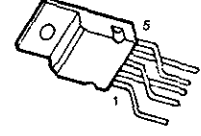
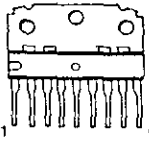
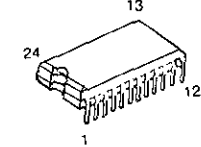
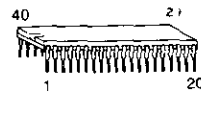
WIRING DIAGRAM

TERMINAL VIEW OF SEMICONDUCTOR

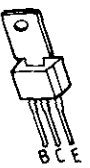


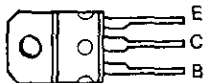
DIODE

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

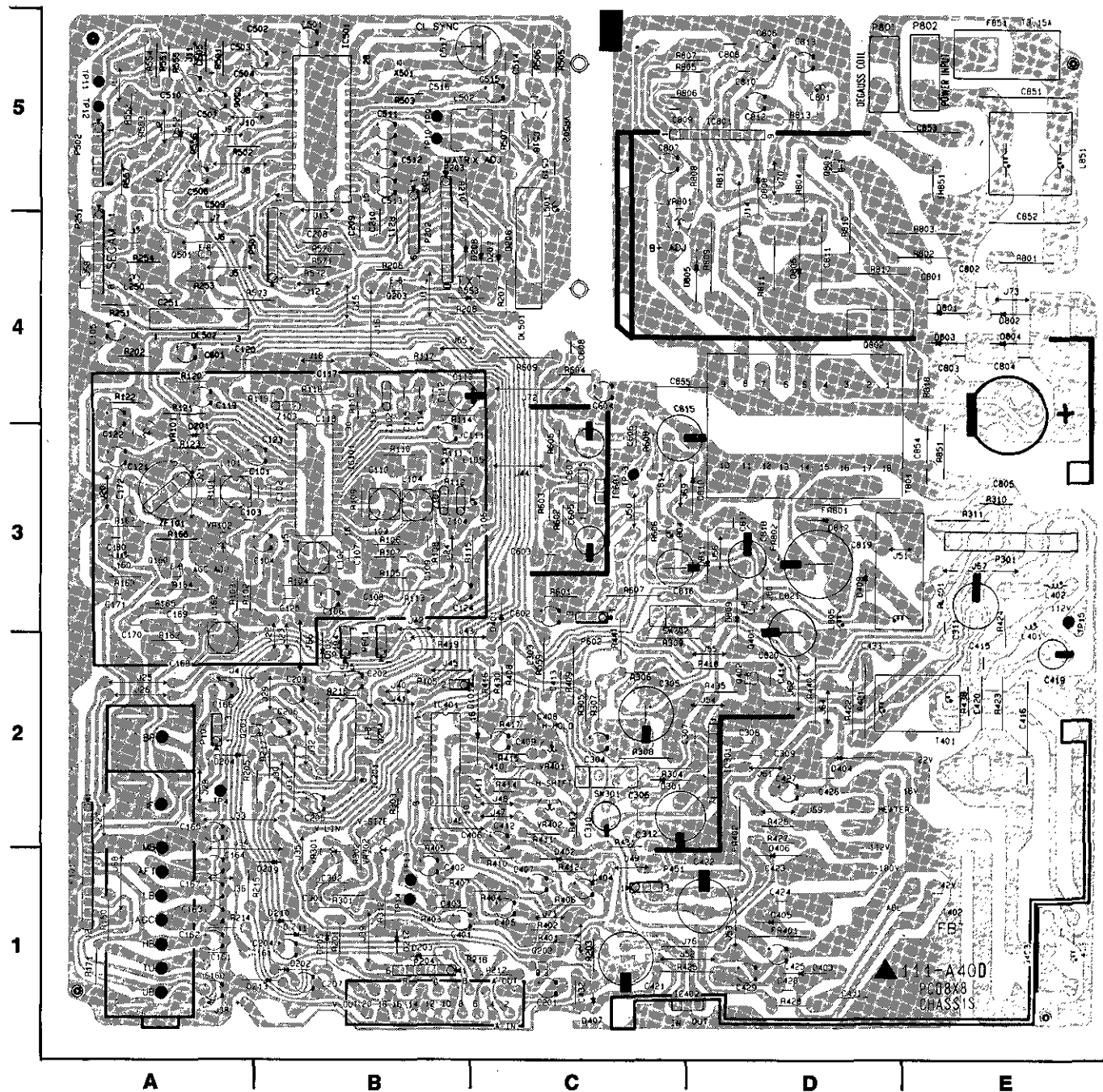
COMPONENT LOCATION GUIDE

(Refer to page 29)

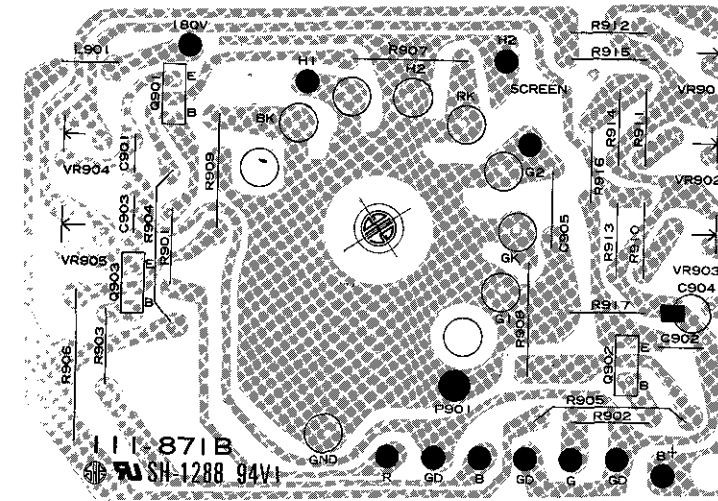
R101	3A	R405	1B	VR301	1B	C307	2D	C804	4E	D406	1D
R102	3A	R406	1C	VR302	1B	C308	2D	C805	3E	D407	1C
R103	3A	R407	1B	VR401	2C	C309	2D	C806	5D	D409	3D
R104	3B	R408	2C	VR402	2C	C310	1C	C807	5C	D504	4B
R105	3B	R409	2C	VR502	5C	C311	2E	C808	5D	D505	4B
R106	3B	R410	1C	VR801	5C	C312	1C	C809	5D	D506	4B
R107	3B	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

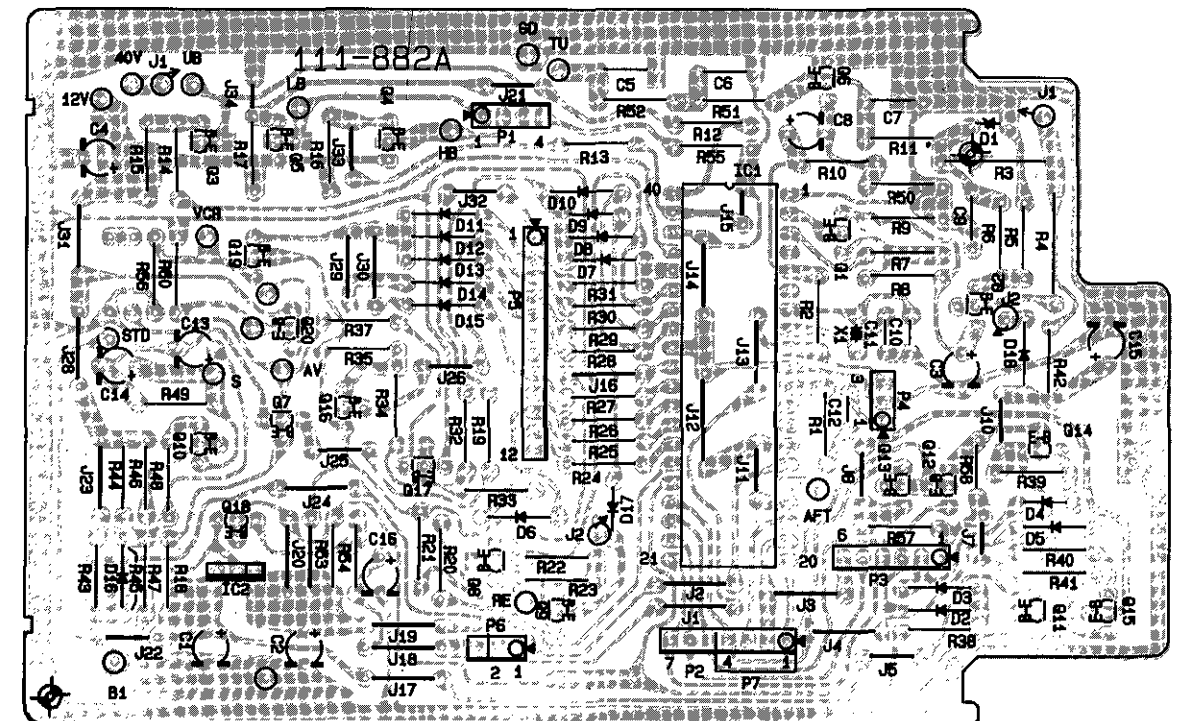
MAIN P. C. BOARD (COMPONENT SIDE)



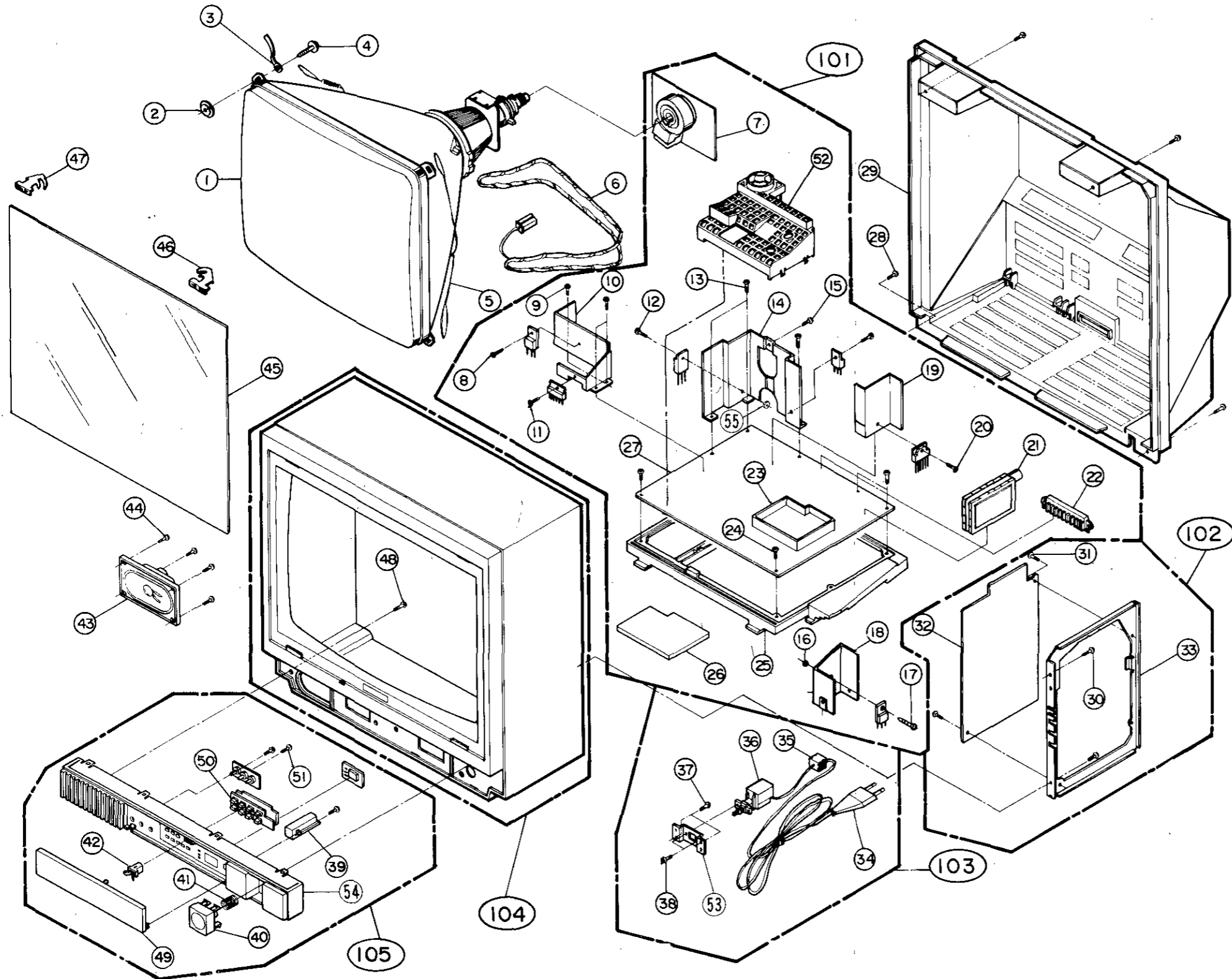
CPT P. C. BOARD (COMPONENT SIDE)



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

NO.	DESCRIPTION	Q'TY	PART NO.	REMARKS
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

REPLACEMENT PARTS LIST

CAUTION: Before replacing any of these components, read carefully the "SAFETY PRECAUTIONS" on page 3.
Do not degrade the safety of the receiver through improper servicing.

ABBREVIATIONS: Capacitors ... CC: Ceramic(TC), MYL: Mylar, CE: Electrolytic, CK: Ceramic(Hi-k)
PP: Polypropylene film MPP: Metal Polypropylene film MPE: Metal Polyester film
Resistors..... RD: Carbon film, RS: Metal Oxide film, RN: Metal film, RV: Variable or semifix

NOTE: 1. All Capacitors are $\pm 20\%$, 50Volts and all resistor, $\pm 5\%$, 1/8W unless otherwise noted.
2. SP marked parts at the remarks mean the parts which are serviceable parts.
NSP marked parts at the remarks mean the parts which are not serviceable parts.

1. ASSEMBLED P.C.BOARD

NO. ON BOARD	ASSEMBLY PART NO.	DESCRIPTION	RE-MARKS
111-882A	110-E19A	PCB ASSY, TUNING	SP
111-871B	110-A31Q	PCB ASSY, CPT	SP
111-A40D	110-D83S	PCB ASSY, MAIN	SP

2. MAIN P.C.BOARD(110-D83S)

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
RESISTOR			
R102	01157097	RD, 100 ohm	SP
R103	01157135	RD, 39K ohm	SP
R104	01157103	RD, 1.8K ohm	SP
R105	01157097	RD, 1K ohm	SP
R106	01157131	RD, 27K ohm	SP
R107	01157129	RD, 22K ohm	SP
R108	01157097	RD, 1K ohm	SP
R109	01157113	RD, 4.7K ohm	SP
R110	01157097	RD, 1K ohm	SP
R111	01157107	RD, 2.7K ohm	SP
R112	01157081	RD, 220 ohm	SP
R113	01157105	RD, 2.2K ohm	SP
R114	01157067	RD, 56 ohm	SP
R117	01157081	RD, 220 ohm	SP
R118	01157083	RD, 270 ohm	SP
R119	01157093	RD, 680 ohm	SP
R121	01157113	RD, 4.7K ohm	SP
R122	01157119	RD, 8.2K ohm	SP
R123	01157121	RD, 10K ohm	SP
R160	01157121	RD, 10K ohm	SP
R162	01157055	RD, 18 ohm	SP
R163	01157081	RD, 220 ohm	SP
R164	01157115	RD, 5.6K ohm	SP
R165	01157093	RD, 680 ohm	SP
R166	01157049	RD, 10 ohm	SP
R167	01157089	RD, 470 ohm	SP
R171	01165115	RD, 5.6K ohm	SP
R202	01157121	RD, 10K ohm	SP
R203	01157113	RD, 4.7K ohm	SP
R205	01157143	RD, 82K ohm	SP
R212	01157121	RD, 10K ohm	SP
R214	01157070	RD, 75 ohm	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
R215	01157063	RD, 39 ohm	SP
R216	01157093	RD, 680 ohm	SP
R217	01157147	RD, 120K ohm	SP
R218	01157121	RD, 10K ohm	SP
R251	01157099	RD, 1.2K ohm	SP
R253	01157101	RD, 1.5K ohm	SP
R254	01157107	RD, 2.7K ohm	SP
R301	01157157	RD, 330K ohm	SP
R302	01157125	RD, 15K ohm	SP
R303	01157153	RD, 220K ohm	SP
R304	01157105	RD, 2.2K ohm	SP
R305	01157121	RD, 10K ohm	SP
R306	01157149	RD, 150K ohm	SP
R307	01157125	RD, 15K ohm	SP
R308	01154025	RD, 1 ohm 1/2W	SP
R309	01154099	RD, 1.2K ohm 1/2W	SP
R310	01157105	RD, 2.2K ohm	SP
R311	01154085	RD, 330K ohm 1/2W	SP
R312	01157117	RD, 6.8K ohm	SP
R401	01157123	RD, 12K ohm	SP
R402	01157115	RD, 5.6K ohm	SP
R403	01157097	RD, 1K ohm	SP
R404	01157161	RD, 470K ohm	SP
R405	01157115	RD, 5.6K ohm	SP
R406	01157057	RD, 22K ohm	SP
R407	01157095	RD, 320 ohm	SP
R408	01154101	RD, 1.5K ohm 1/2W	SP
R409	01154099	RD, 1.2K ohm	SP
R410	01157101	RD, 1.5K ohm	SP
R411	01157145	RD, 100K ohm	SP
R412	01157125	RD, 15K ohm	SP
R414	01157137	RD, 47K ohm	SP
R415	01157133	RD, 33K ohm	SP
R416	01157081	RD, 220K ohm	SP
R417	01157161	RD, 470K ohm	SP
R418	01157081	RD, 220 ohm	SP
R421	01332073	RS, 100K ohm 1W	SP
R422	01154101	RD, 1.5K ohm	SP
R423	01154081	RD, 220 ohm 1/2W	SP
R424	01154099	RD, 1.2K ohm	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
R425	01154099	RD, 1.2K ohm 1/2W	SP
R426	01157139	RD, 56K ohm	SP
R427	01157145	RD, 100K ohm	SP
R430	01157151	RD, 180K ohm	SP
R431	01157115	RD, 5.6K ohm	SP
R435	01157109	RD, 1.2K ohm	SP
R438	01157073	RD, 100 ohm	SP
R440	01332031	RS, 1.8 ohm	SP
R441	01157155	RD, 270K ohm	SP
R501	01157165	RD, 680K ohm	SP
R502	01157070	RD, 75 ohm	SP
R503	01157097	RD, 1K ohm	SP
R505	01157087	RD, 390 ohm	SP
R506	01157099	RD, 1.2K ohm	SP
R507	01157089	RD, 470 ohm	SP
R551	01157128	RD, 20K ohm	SP
R552	01157133	RD, 33K ohm	SP
R553	01157145	RD, 100K ohm	SP
R555	01157111	RD, 3.9K ohm	SP
R556	01157101	RD, 1.5K ohm	SP
R557	01157130	RD, 24K ohm	SP
R570	01157109	RD, 3.3K ohm	SP
R571	01157109	RD, 3.3K ohm	SP
R572	01157109	RD, 3.3K ohm	SP
R573	01157117	RD, 6.8K ohm	SP
R601	01157145	RD, 100K ohm	SP
R602	01157145	RD, 100K ohm	SP
R603	01157145	RD, 100K ohm	SP
R604	01157119	RD, 8.2K ohm	SP
R605	01157133	RD, 33K ohm	SP
R606	01521049	RN, 10K ohm 1W	SP
R608	01157025	RD, 1 ohm	SP
R609	01157105	RD, 2.2K ohm	SP
R801	180-142V	RWR, 4.7 ohm 5W $\pm 5\%$	SP
R802	C1154149	RD, 150K ohm 1/2W	SP
R803	01317125	RS, 15K ohm 2W	SP
R804	01154155	RD, 270K ohm 1/2W	SP
R805	01157081	RD, 220 ohm	SP
R806	01157099	RD, 1.2K ohm	SP
R807	01157121	RD, 10K ohm	SP
R808	01157119	RD, 8.2K ohm	SP
R809	01332073	RS, 100 ohm 1W	SP
R810	01154125	RD, 15K ohm 1/2W	SP
R811	180-142E	RWR, 180 ohm 5W	SP
R812	01157145	RD, 100K ohm	SP
R813	01518023	RN, 0.82 ohm	SP
R817	01154155	RD, 270K ohm 1/2W	SP
R818	01157073	RD, 100 ohm	SP
R851	180-042B	COMP, 4.7M ohm 1/2W	SP
VR101	180-422H	RV, 10KB	SP
VR102	180-422H	RV, 10KB	SP
VR301	180-422M	RV, 200KB	SP
VR302	180-422H	RV, 10KB	SP
VR401	180-422H	RV, 10KB	SP
VR402	180-422L	RV, 100KB	SP
VR502	180-422D	RV, 1KB	SP
VR801	180-422G	RV, 5KB	SP
FR401	180-305D	Fusible, 1.2 ohm 1W	SP
FR402	180-305C	Fusible, 0.82 ohm 1/2W	SP
FR801	180-286J	Fusible, 2.2 ohm 0.25W	SP
FR802	180-140A	Fusible, 1 ohm 0.25W $\pm 5\%$	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
CAPACITOR			
C101	08200760	CK, 1000pF $\pm 10\%$	SP
C102	08200760	CK, 1000pF $\pm 10\%$	SP
C103	08200972	CK, 0.01uF +80%, -20%	SP
C105	02110323	CE, 470uF/16V	SP
C106	08110505	CE, 0.47uF	SP
C107	08300708	CC, 6pF $\pm 0.5P$	SP
C108	08200972	CK, 0.01uF +80%, -20%	SP
C109	08200972	CK, 0.01uF +80%, -20%	SP
C110	08300716	CC, 15pF $\pm 5\%$	SP
C111	081103317	CE, 47uF/16V	SP
C112	08200972	CK, 0.01uF +80%, -20%	SP
C113	08110319	CE, 100uF/16V	SP
C114	08300728	CC, 47pF $\pm 5\%$	SP
C115	08200972	CK, 0.01uF +80%, -20%	SP
C116	08200972	CK, 0.01uF +80%, -20%	SP
C117	08200972	CK, 0.01uF +80%, -20%	SP
C118	08300708	CC, 6pF $\pm 0.5P$	SP
C119	08110511	CE, 4.7uF	SP
C121	08110313	CE, 10uF/16V	SP
C122	08110511	CE, 4.7uF	SP
C123	08110336	CQ, 0.068uF/100V $\pm 10\%$	SP
C124	08110313	CE, 10uF/16V +20%, -10%	SP
C125	08300736	CC, 100pF $\pm 5\%$	SP
C160	08110511	CE, 4.7uF	SP
C161	02705331	CQ, 0.01uF/100V $\pm 10\%$	SP
C162	08110511	CE, 4.7uF	SP
C163	08110311	CE, 4.7uF/16V	SP
C164	08110505	CE, 0.47uF	SP
C165	08110319	CE, 100uF/16V	SP
C167	08110511	CE, 4.7uF	SP
C170	08200972	CK, 0.01uF, +80%, -20%	SP
C171	08200972	CK, 0.01uF, +80%, -20%	SP
C172	08200760	CK, 1000pF, $\pm 10\%$	SP
C201	08110511	CE, 4.7uF	SP
C202	08110511	CE, 4.7uF	SP
C203	08110313	CE, 10uF/16V	SP
C204	08110511	CE, 4.7uF	SP
C205	08110511	CE, 4.7uF	SP
C206	08110317	CE, 47uF/16V	SP
C207	08110313	CE, 10uF/16V	SP
C250	02300724	CC, 33pF $\pm 5\%$	SP
C251	08300734	CC, 82pF $\pm 5\%$	SP
C301	181-155B	MR, 0.33uF/100V $\pm 5\%$	SP
C302	181-155A	MR, 0.22uF/100V $\pm 5\%$	SP
C303	02705331	MYL, 0.01uF/100V $\pm 10\%$	SP
C304	08110507	CE, 1uF	SP
C305	02110325	CE, 1000uF/16V	SP
C307	08300154	CC, 560pF $\pm 5\%$	SP
C308	08300730	CC, 56pF $\pm 5\%$	SP
C309	08200760	CK, 1000pF $\pm 10\%$	SP
C310	08110419	CE, 100uF/25V, +20%, -10%	SP
C311	02705337	MYL, 0.1uF/100V $\pm 10\%$	SP
C312	02110421	CE, 220uF/25V +20%, -10%	SP
C401	08110511	CE, 4.7uF	SP
C402	08110509	CE, 2.2uF	SP
C403	08300144	CC, 220pF	SP
C404	08110315	CE, 22uF/16V	SP
C405	08110511	CE, 4.7uF	SP
C406	02705337	MYL, 0.1uF/100V $\pm 10\%$	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
C408	02705337	MYL, 0.1uF/100V ± 10%	SP
C409	08200513	CK, 10uF +80%, -20%	SP
C410	181-057F	PE, 0.0027uF/100V	SP
C411	02705337	MYL, 0.1uF/100V ± 10%	SP
C412	08110317	CE, 47uF/16V	SP
C413	02705337	MYL, 0.1uF/100V ± 10%	SP
C414	08201048	CK, 330pF/500V ± 10%	SP
C415	02110421	CE, 220uF/25V +20%, -10%	SP
C416	181-131F	0.0073uF/1.6KV	SP
C419	08110707	CE, 1uF/160V	SP
C420	181-059W	PP, 0.39uF/200V	SP
C421	02140422	CE, 330uF/25V	SP
C422	02140813	CE, 10uF/250V	SP
C423	08201046	CK, 270uF/500V ± 10%	SP
C424	08201046	CK, 270pF/500V ± 10%	SP
C425	08110417	CE, 47uF/25V	SP
C426	08201046	CK, 270pF/500V ± 10%	SP
C427	08110417	CE, 47uF/25V	SP
C428	08201046	CK, 270pF/500V ± 10%	SP
C429	08110515	CE, 22uF	SP
C431	181-059D	PP, 0.047uF/200V	SP
C433	02705336	MYL, 0.068uF/100V ± 10%	SP
C501	08110317	CE, 47uF/16	SP
C502	08200972	CK, 0.01uF +80%, -20%	SP
C503	08110503	CE, 0.22uF	SP
C504	08200972	CK, 0.01uF +80%, -20%	SP
C505	02705337	MYL, 0.1uF/100V ± 10%	SP
C506	08110509	CE, 2.2uF +20%, -10%	SP
C507	08110509	CE, 2.2uF +20%, -10%	SP
C508	08110511	CE, 4.7uF	SP
C509	02705337	MYL, 0.1uF/100V ± 10%	SP
C510	08110313	CE, 10uF/16V	SP
C511	08110507	CE, 1uF	SP
C512	08110507	CE, 1uF	SP
C513	08110507	CE, 1uF	SP
C514	02705337	MYL, 0.1uF/100V ± 10%	SP
C515	08110509	CE, 2.2uF +80%, -20%	SP
C516	02705337	MYL, 0.1uF/100V ± 10%	SP
C517	181-069B	CAPACITOR, TRIMMER	SP
C518	02705331	MYL, 0.01uF/100V ± 10%	SP
C519	02705331	MYL, 0.01uF/100V ± 10%	SP
C601	08110511	CE, 4.7uF	SP
C602	08110417	CE, 47uF/25V	SP
C603	02705331	MYL, 0.01uF/100V ± 10%	SP
C604	08110313	CE, 10uF/16V	SP
C605	02110421	CE, 220uF/25V +20%, -10%	SP
C606	02705337	MYL, 0.1uF/100V ± 10%	SP
C607	02110323	CE, 470uF/16V	SP
C801	08201060	CK, 0.001uF/500V ± 10%	SP
C802	08201060	CK, 0.001uF/500V ± 10%	SP
C803	08201060	CK, 0.001uF/500V ± 10%	SP
C804	08201060	CK, 0.001uF/500V ± 10%	SP
C805	181-124A	CE, 120uF/400V	SP
C806	08110313	CE, 10uF/16V	SP
C807	08110507	CE, 1uF	SP
C808	181-057Q	PE, 0.0082uF/100V	SP
C809	08300736	CC, 100pF ± 10%	SP
C810	03706627	0.00047uF/100V	SP
C811	181-131E	MPP, 0.0022uF/2KV	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
C812	08110319	CE, 100uF/16V	SP
C813	08110513	CE, 10uF	SP
C814	08201046	CK, 270pF/500V ± 10%	SP
C815	02110321	CE, 220uF/16V	SP
C816	02110321	CE, 220uF/16V	SP
C817	08201046	CK, 270pF/500V ± 10%	SP
C818	08110419	CE, 100uF/25V, +20%, -10%	SP
C819	08201046	CK, 270pF/500V ± 10%	SP
C820	02110713	CE, 10uF/160V, +20%, -10%	SP
C821	02110717	CE, 47uF/160V, +20%, -10%	SP
C851	181-408A	ECQ, 0.15uF/100V	SP
C853	181-408A	ECQ, 0.15uF/100V	SP
C854	181-157B	DE, 0.0022uF	SP
TRANSISTOR			
Q160	06120025	KTC388A	SP
Q201	06120168	KTC1815-O	SP
Q202	06120168	KTC1815-O	SP
Q402	06120225	KTC2230-A	SP
Q403	06120291	BU508DF	SP
Q501	06120168	KTC1815-O	SP
Q801	06120218	KTC2482	SP
Q802	06120291	BU508DF	SP
IC			
IC101	06300616	IC, GL3120	SP
IC201	06300170	IC, TEA1014	SP
IC301	06300360	IC, LA7830	SP
IC401	06300381	IC, TDA2579	SP
IC402	06300218	IC, GL7812	SP
IC501	06300754	TDA-4360	SP
IC601	06300386	IC, TDA2006	SP
IC801	06300323	IC, TDA4601	SP
DIODE			
D101	06200226	1N4148TA	SP
D201	06200226	1N4148TA	SP
D203	06200226	1N4148TA	SP
D204	06200226	1N4148TA	SP
D207	06200226	1N4148TA	SP
D209	06200226	1N4148TA	SP
D210	06200226	1N4148TA	SP
D211	06200226	1N4148TA	SP
D212	06200226	1N4148TA	SP
D213	06200226	1N4148TA	SP
D301	06220070	1N4003TA	SP
D401	06200226	1N4148TA	SP
D402	06220070	1N4003TA	SP
D403	06200363	TVR-06J	SP
D404	06200363	TVR-06J	SP
D405	06200418	DSR1005 1A/600V	SP
D406	06200363	TVR-06J	SP
D409	06200226	1N4148TA	SP
D552	06200226	1N4148TA	SP
D553	06200226	1N4148TA	SP
D801	06200225	1N4005TA	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
D802	06200225	1N4005TA	SP
D803	06200225	1N4005TA	SP
D804	06200225	1N4005TA	SP
D805	06200363	TVR-06J	SP
D806	06200363	TVR-06J	SP
D808	06200363	TVR-06J	SP
D809	06220070	1N4003TA	SP
D810	06200363	TVR-06J	SP
D811	06200363	TVR-06J	SP
D812	06200355	KF-107 1A/1000V	SP
BACK SIDE	06220202	RGP15J	
D901	06200226	DIODE, 1N4148(DS4148)	SP
D902	06200226	DIODE, 1N4148(DS4148)	SP
D903	06200226	DIODE, 1N4148(DS4148)	SP
COIL AND TRANSFORMER			
L101	150-489A	COIL, SAW MATCHING	SP
L102	150-327N	COIL, APC TRAP	SP
L103	150-327M	COIL, VIF	SP
L104	150-327Q	COIL, AFT	SP
L105	150-109G	COIL, PEAKING 10uH	SP
L106	150-109N	COIL, PEAKING 15uH	SP
L160	150-167D	COIL, CHOKE 1.0uH	SP
L250	150-109G	COIL, PEAKING 10uF	SP
L401	150-109E	COIL, PEAKING 6800uH ± 5%	SP
L402	125-224L	COIL, LINEARITY	SP
L403	125-022B	CORE, FERRITE	NSP
L501	150-109N	COIL, PEAKING 15uH	SP
L502	150-163G	COIL, MATRIX ADJ	SP
L801	04040009	PL 0.47uH, ± 10%	SP
L804	150-109G	COIL, PEAKING SPL 10uH	SP
L805	150-235E	HOR, CHOKE COIL, 1MH	SP
L851	150-151A	COIL, LINE FILTER	SP
DL501	175-013A	DELAY LINE 1H SD-11PID	SP
DL502	150-377G	COIL, DELAY LINE	SP
T401	151-116B	TRANS, H. DRIVE	SP
T402	154-125A	FBT	SP
T801	151-305A	TRANS, SMPS	SP
RL401	141-005B	RELAY, VS12MB	SP
J70	150-109C	COIL, PEAKING 4.7uF	SP
MISCELLANEOUS			
P101	366-921L	WAFER IL-GI2	SP
P104	366-921B	WAFER IL-G3	SP
P301	366-033H	PIN, FLATE WAFER 6P	SP
P451	366-921B	WAFER IL-G3	SP
P501	366-921F	WAFER IL-G7	SP
P502	366-921E	WAFER IL-G6	SP
P601	366-921B	WAFER IL-G3	SP
P602	366-921B	WAFER IL-G3	SP
P801	366-043B	PIN ASSY, PLUG	SP
P802	366-043B	PIN ASSY, PLUG	SP
SW301	140-111A	SWITCH	SP
SW302	140-111A	SWITCH	SP
X501	156-007A	OSC, X-TAL 8.86MHz	SP
TH851	163-012A	THERMISTOR, PTH 451A02	SP
F851	131-027A	FUSE, GLASS TUBE	SP

LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
Z101	166-031B	TRAP, CERAMIC TPG 5.5MB	SP
Z102	166-002D	FILTER, CERAMIC SFE 5.5MB	SP
Z103	166-032D	FILTER, CERAMIC CDA 5.5MB	SP
ZF101	166-089A	FILTER, SAW TSF 1303C	SP
	113-095G	TUNER	SP

3. CPT P.C.BOARD(110-A31Q)

RESISTOR			
R901	01157073	RD, 100ohm	SP
R902	01157073	RD, 100ohm	SP
R903	01157073	RD, 100ohm	SP
R904	01332123	METAL, 12K ohm	SP
R905	01332123	METAL, 12K ohm	SP
R906	01332123	METAL, 12K ohm	SP
R907	01154107	RD, 2.7K ohm 1/2W	SP
R908	01154107	RD, 2.7K ohm 1/2W	SP
R909	01154107	RD, 2.7K ohm 1/2W	SP
R910	01154103	RD, 1.8K ohm	SP
R911	01154103	RD, 1.8K ohm	SP
R912	01154103	RD, 1.8K ohm	SP
R913	01157087	RD, 390 ohm	SP
R914	01157087	RD, 390 ohm	SP
R915	01157087	RD, 390 ohm	SP
R916	01157079	RD, 180 ohm	SP
R917	01157049	RD, 10 ohm	SP
R921	01157073	RD, 100 ohm	SP
R922	01157073	RD, 100 ohm	SP
R923	01157073	RD, 100 ohm	SP
VR901	180-422G	RV, 422G, 5KB	SP
VR902	180-422G	RV, 5KB	SP
VR903	180-422G	RV, 5KB	SP
VR904	180-422C	RV, 500B	SP
VR905	180-422C	RV, 500B	SP
CAPACITOR			
C901	02300154	CC, 560pF ± 5%	SP
C902	02300154	CC, 560pF ± 5%	SP
C903	02300152	CC, 470pF ± 5%	SP
C904	08110317	CE, 47uF/16V	SP
C905	02201561	CK, 0.0012uF 2KV ± 10%	SP
TRANSISTOR			
Q901	06120218	KTC2482	SP
Q902	06120218	KTC2482	SP
Q903	06120218	KTC2482	SP
MISCELLANEOUS			
P901	366-009B	PIN PLUG	SP
CPT SOCKET	381-094C	SOCKET, CPT PCS-624	SP

4. TUNING P.C.BOARD(110-E19A)

RESISTOR			
R01	01157105	RD, 2.2K ohm	SP
R02	01157115	RD, 5.6K ohm	SP
R03	01157095	RD, 820 ohm 1/2W	SP
R04	01157073	RD, 100 ohm 1/2W	SP
R05	01160115	RD, 5.6K ohm ± 2%	SP
R06	01160102	RD, 1.6K ohm ± 2%	SP
R07	01157117	RD, 6.8K ohm	SP

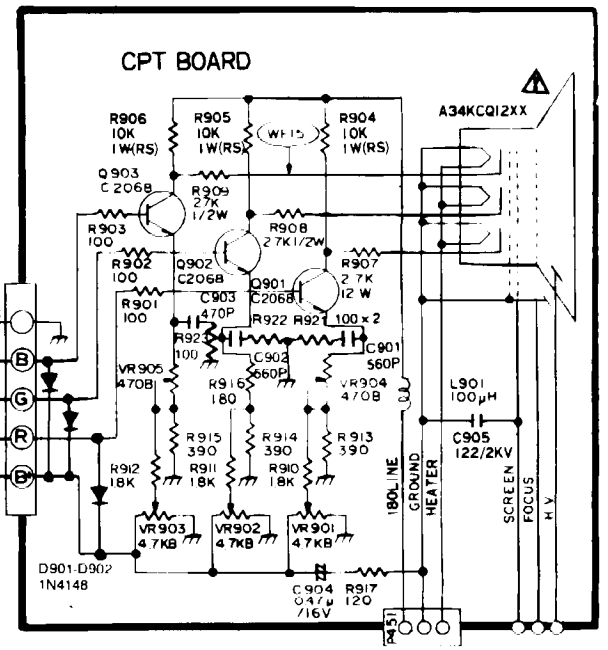
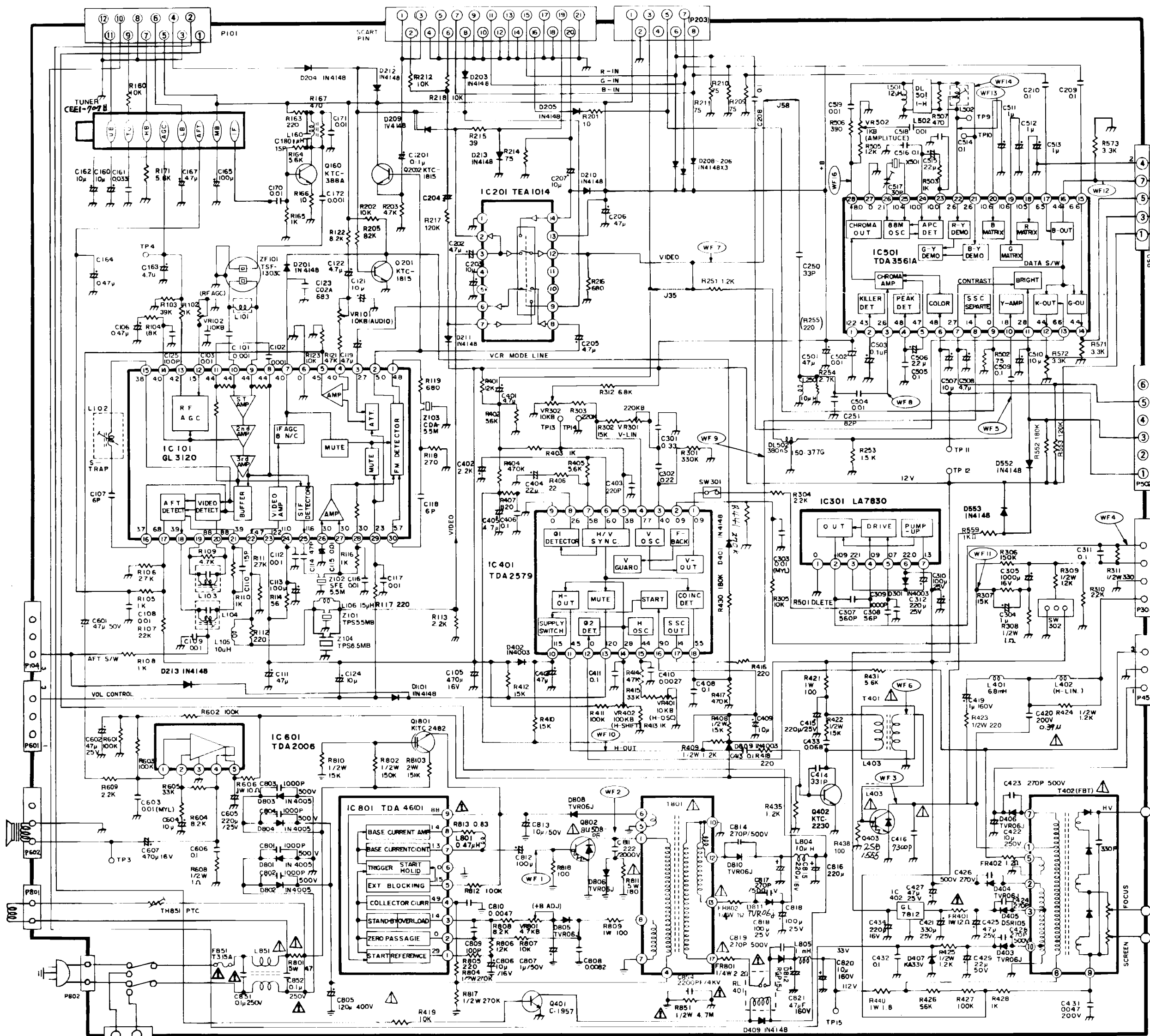
LOCATION NO.	PART NO.	DESCRIPTION	RE-MARKS
R08	01157113	RD, 4.7K ohm	SP
R09	01157143	RD, 82K ohm	SP
R10	01157121	RD, 10K ohm	SP
R11	01157133	RD, 33K ohm	SP
R12	01157119	RD, 8.2K ohm	SP
R13	01157119	RD, 8.2K ohm	SP
R14	01157119	RD, 8.2K ohm	SP
R15	01157121	RD, 10K ohm	SP
R16	01157121	RD, 10K ohm	SP
R17	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

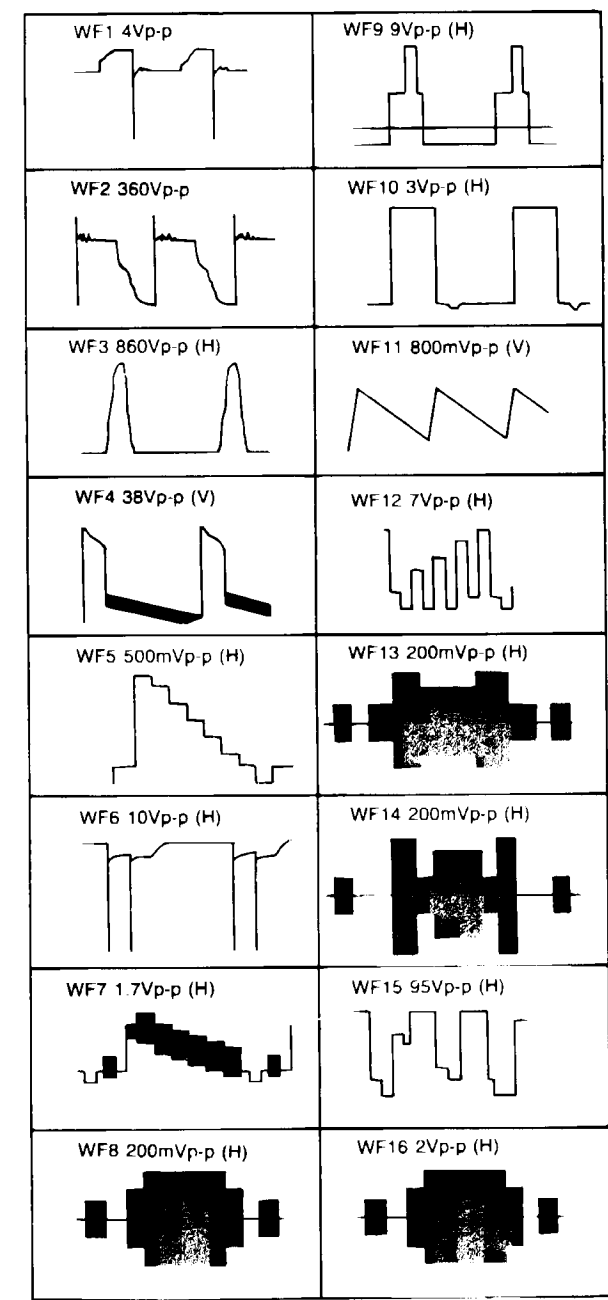
5. MISCELLANEOUS

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.



The components marked with a triangle (Δ) are IEC standards and are essential for safe operation of the set, while those marked with a circle (○) are required for correct operation. Use specified parts only when replacing.

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 μH, 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 ±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

