

# COLOUR TV SERVICE MANUAL

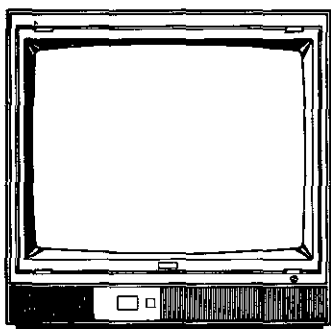
## CAUTION

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

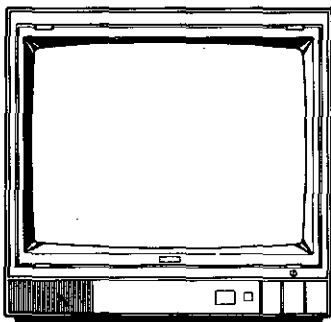
CTM-48RC

CTM-482

**CBT-4682T**



**CBT-4685T**



**CHASSIS: PC-08X8**

**MODEL: CBT-4682T  
CBT-4685T**

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# SPECIFICATIONS

Power Source .....	AC 180 V—270 V, 50 Hz
Power Consumption .....	70 W
Receiving TV System .....	CCIR Standard
Colour Receiving System .....	PAL-B/G
Receiving Channels .....	VHF Low: 2—4 CH., VHF High: 5—12 CH, UHF: 21—69 CH CATV: S1—S25
Intermediate Frequency	
Picture .....	38.9 MHz
Sound .....	33.4 MHz
Colour .....	34.47 MHz
Tuning .....	39 Voltage Synthesizer
Audio Output .....	2 W
Antenna Input Impedance .....	75 ohm IEC Type (300 ohm using balun supplied)
Picture Tube .....	370REB22
Speaker .....	90 × 50 mm
Dimension .....	360(W) × 364(H) × 387(D) mm
Weight .....	11.7 Kg

## SAFETY PRECAUTIONS

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

### X-RAY RADIATION PRECAUTIONS

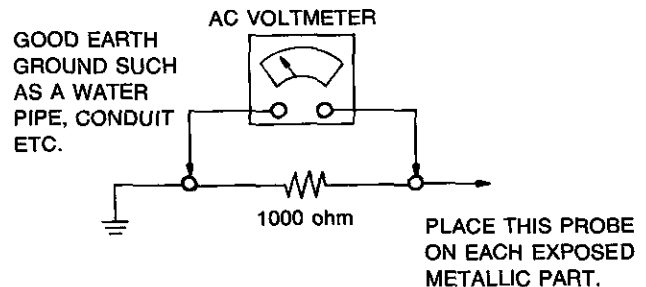
1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 23 KV (14"/16") at zero beam current (minimum brightness) under specified power source. The high voltage must not, under any circumstances, exceed 27.5 KV. Each time a receiver requires servicing, the high voltage should be checked. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

### SAFETY INSTRUCTIONS

1. 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 doesn't know the precautions necessary through and through, 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—270 V.
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 aerial, terminals, screwheads, metal overlays, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 180—270 V 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 mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



### PRODUCT SAFETY NOTICE

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

## SERVICING PRECAUTIONS

**CAUTION:** Before servicing 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 prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil to prevent electrostatic charge build-up or exposure of the assembly.
3. Use only a *grounded-tip* soldering iron to solder or unsolder ES devices.
4. Use only an *anti-static* type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges 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 1.25 cm.) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
  5. Use the following unsoldering technique
    - a. Allow the soldering iron tip to reach the normal temperature (500°F to 600°F).
    - b. Heat the component lead until the solder melts.
    - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
- CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique:
    - a. Allow the soldering iron tip to reach the normal temperature (500°F to 600°F).
    - b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

- c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.

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

### IC Removal/Replacement

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

#### Removal

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

#### Replacement

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

### "Small-Signal" Discrete Transistor Removal/Replacement

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

### Power Output Transistor Device Removal/Replacement

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

### Diode Removal/Replacement

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

### Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.

**CAUTION:** Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

### Circuit Board Foil Repair

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

#### At IC Connections

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

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

#### At Other Connections

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

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

**CAUTION:** Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

### IMPORTANT

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

BLUE: NEUTRAL                      BROWN : LIVE

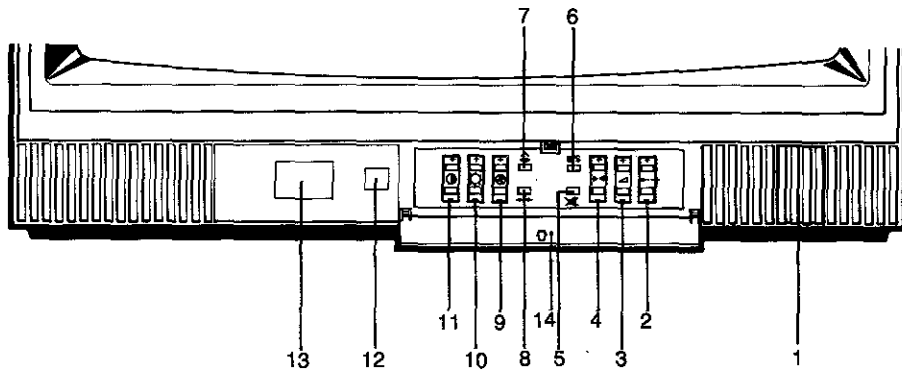
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red. If a 13 Amp (BS1363) Plug or any other type of Plug is used a 5 Amp Fuse must be fitted, either in the Plug or Adapter, or on the Distribution board.

# CONTROLS LOCATION

## FRONT

**CBT-4682T**



**CBT-4685T**

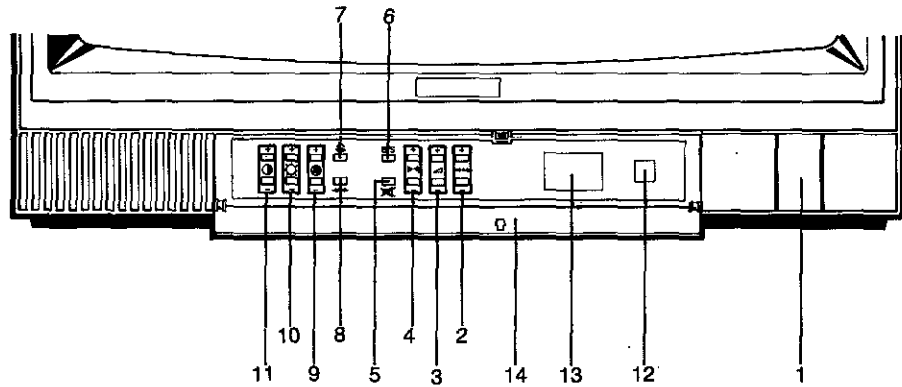


Figure 1

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| 1. POWER ON/OFF BUTTON           | 8. NORMAL BUTTON                     |
| 2. PROGRAM UP(+)/DOWN(-) BUTTONS | 9. COLOUR UP(+)/DOWN(-) BUTTONS      |
| 3. VOLUME UP(+)/DOWN(-) BUTTONS  | 10. BRIGHTNESS UP(+)/DOWN(-) BUTTONS |
| 4. SEARCH UP(+)/DOWN(-) BUTTONS  | 11. CONTRAST UP(+)/DOWN(-) BUTTONS   |
| 5. MUTE BUTTON                   | 12. REMOTE CONTROL SENSOR            |
| 6. BAND SELECTOR                 | 13. INDICATOR LED                    |
| 7. MEMORY BUTTON                 | 14. PANEL DOOR                       |

## BACK

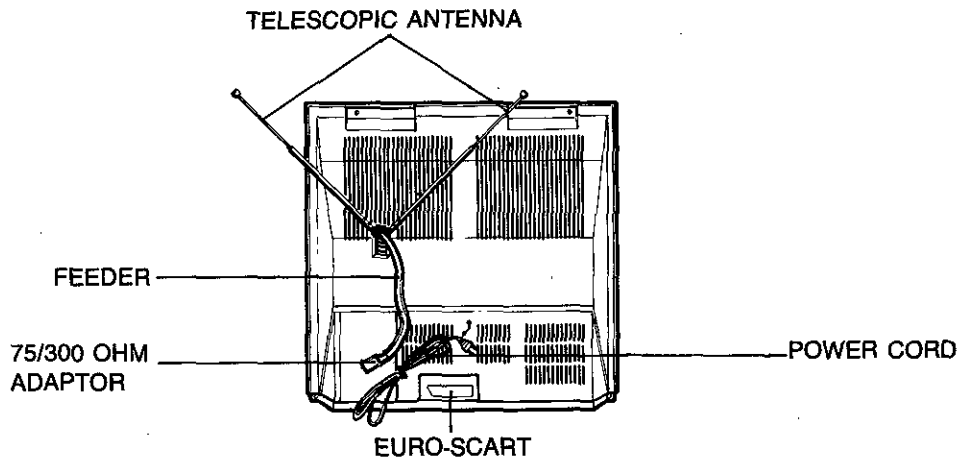


Figure 2

# 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 an 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 as 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.



Figure 3

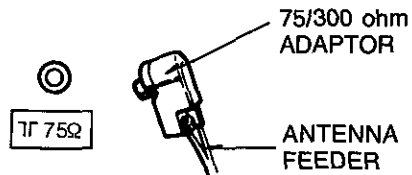
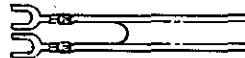


Figure 4



COAXIAL CABLE (75 ohm)

Figure 5



TWIN-LEAD FEEDER (300 ohm)

Figure 6

# 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.

## CONTROL ASSY REMOVAL

1. Remove 4 screws fixing the tuning/control board.

## TUNING ASSY REMOVAL

1. Remove 2 screws fixing the main chassis.

## SPEAKER ASSY REMOVAL

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

## CPT REMOVAL

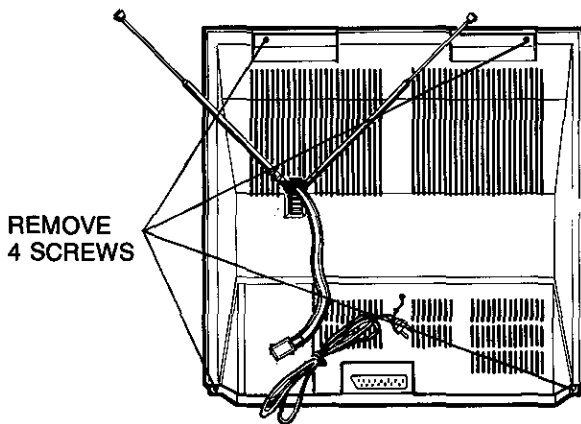
1. Pull out the CPT board from the CPT neck.
2. Place the front cabinet on soft material so as not to mar the front surface or damage the control knobs.
3. Remove 4 screws securing the picture tube mounting brackets to the front cabinet.
4. Carefully separate the CPT from the front cabinet.

## PICTURE TUBE HANDLING CAUTION

Due to high vacuum and large surface area of the picture tube, great care must be exercised when handling the picture tube. Always lift the picture tube by grasping it firmly around the faceplate.

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

(\* In case of CBT-4682T, the position of LED Display Assy and Switch Assy Pack is changed.)



Figur 7

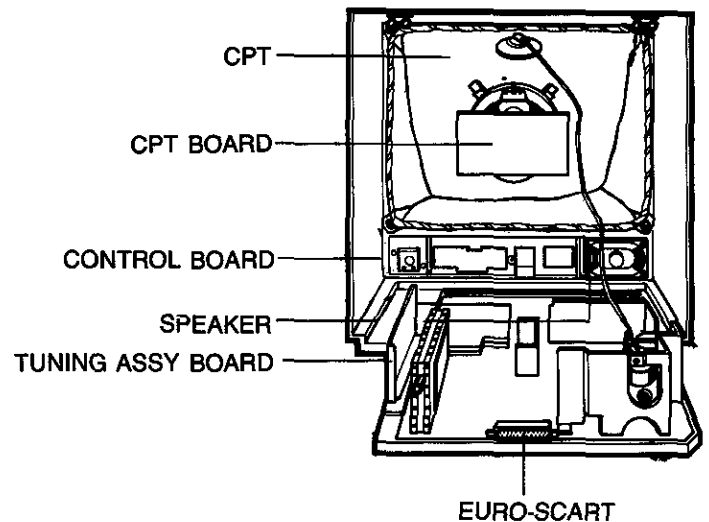
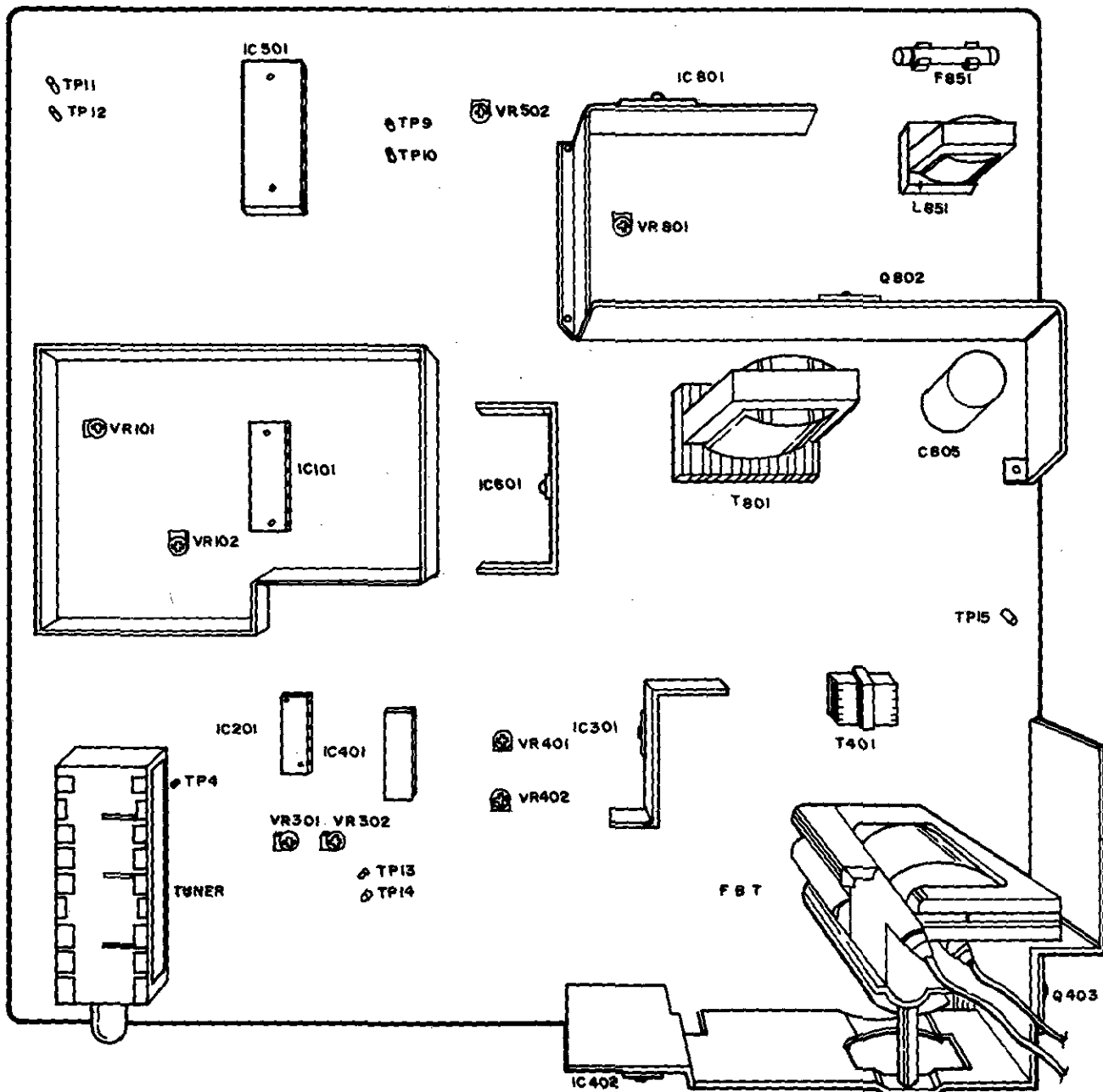


Figure 8



# PARTS LOCATION DIAGRAM



MAIN PCB

# ADJUSTMENT INSTRUCTIONS

## 1. VIF ALIGNMENT

### DEVICES AND COMPONENTS

- (1) SWEEP MARKER GENERATOR
- (2) PLUG UNIT
- (3) ALIGNMENT SCOPE
- (4) D.C. POWER SUPPLY 3—5 V
- (5) D.C. POWER SUPPLY 0—20 V variable
- (6) DUMMY-LOAD RESISTOR 75 ohm
- (7) COUPLING CAPACITOR 1000 pF 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 the main PCB assembly to the input terminal of the alignment scope.
- (4) Apply A.G.C. voltage to the pin 7 of IC101. (about  $4.5 \pm 0.5$  V)
- (5) Apply 16 V D.C. to the pin 1 of connector IC402.

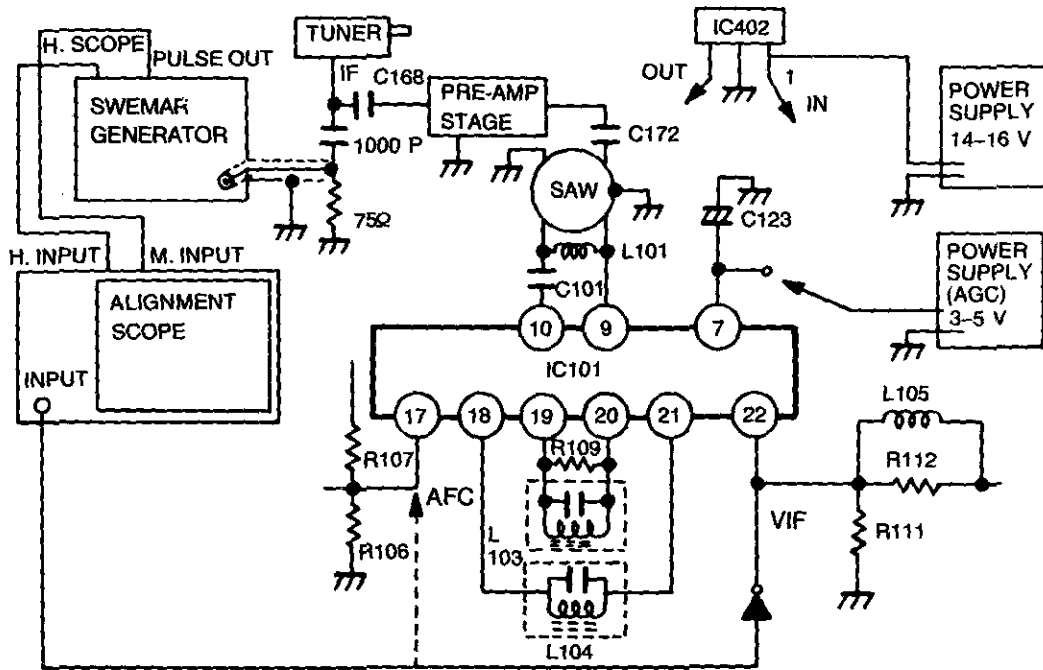


Figure 9

### 1) VIF ALIGNMENT PROCEDURE

- (1) Adjust the amplitude of the swemar generator output to make the signal response waveform as large as about 1 Vp-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) AFC 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 39.5 MHz marker at the position or D.C.  $6.5 \text{ V} \pm 0.5 \text{ V}$  as shown in figure 11. At that time the alignment scope must be able to measure D.C. voltage and the AFT switch of the receiver must be located at ON-position. Be sure to adjust after disconnecting C164 from the AFT terminal.

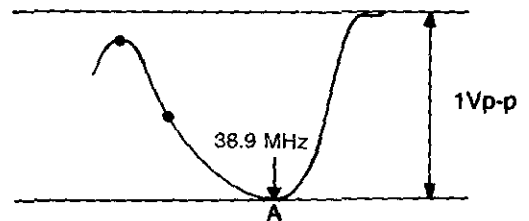


Figure 10

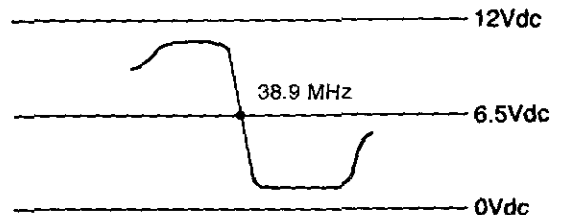


Figure 11

### 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 OUT enough.  
And then, you must adjust it clockwise.
- 4) Adjust the L162 so that the right sideloop of 40.4 MHz point may be minimum position.

### 2. ASC TRAP (40.4 MHz) COIL ADJUSTMENT

- 1) This adjustment procedure must be applicable for all models of using ASC trap coil (L162) and is carried out before VIF adjustment.
- 2) Adjusting method is also the same as VIF adjustment, but it is needed to increase AGC voltage and if input level 10% up so that ASC trap point (40.4 MHz) level is exhibited exactly on the alignment scope.
- 3) After tuning the core of L162 fully counter-clockwise, then by turning it clockwise, make the 40.4 MHz point moves up to nearly Min. position.

### 3. MAIN B+ ALIGNMENT

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

### 4. SYNC.

- 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.

### 5. CENTER ALIGNMENT (HOR. SHIFT ALIGNMENT)

- 1) Receive the standard colour signal.
- 2) Adjust the VR402 so that the center of a screen may be adjusted.

### 6. V. AMPLITUDE AND LINEARITY ALIGNMENT (VERT. HEIGHT AND LINEARITY ALIGNMENT)

- 1) When brightness of a screen is 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 an 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.

### 7. V. CENTER ALIGNMENT

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

### 8. COLOUR SYNC.

- 1) Receive the standard colour signal.
- 2) Set the contrast, brightness and colour VR to be 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 TP9 and TP10.)
- 5) Adjust the C517 so that the colour bars may not appear.
- 6) Remove the connection of item 3 and 4.

### 9. PAL MATRIX ALIGNMENT

- 1) Set the contrast, brightness and colour VR to maximum.
- 2) Receive the standard colour signal.
- 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.

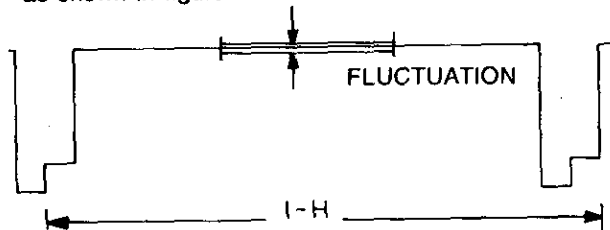


Figure 12

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

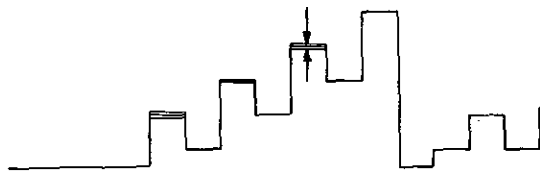


Figure 13

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

### 10. RF AGC ALIGNMENT

- 1) Receive the standard colour signal (60 dB  $\pm$  1 dB).
- 2) Connect DIGITAL MULTIMETER to TP4 (RF AG INPUT).
- 3) Adjust VR102 so that TP4 may be 6.0 V  $\pm$  0.1 VDC.

### 11. 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 K  $\pm$  800 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.

### 12. AUDIO DETECTION OUTPUT ALIGNMENT

- 1) Input the TV STANDARD SIGNAL (70  $\pm$  1 dB), which is the AUDIO SIGNAL deviated 40 KHz from 1 KHz, into the TUNER ANTENNA.
- 2) Connect the AC VOLTMETER to the SOUND OUTPUT TERMINAL (TP3) and set the VOLTAGE RANGE to 10 V.
- 3) Adjust the VR101 as follows.  
14" = 4 V

## PURITY AND CONVERGENCE ADJUSTMENT

**CAUTION:** Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments. However, the effects of adjacent receiver components, or replacement of picture tube or deflection yoke may require the need to readjust purity and convergence. Convergence magnet assembly and rubber wedges need mechanical positioning following the figure 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 the 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.

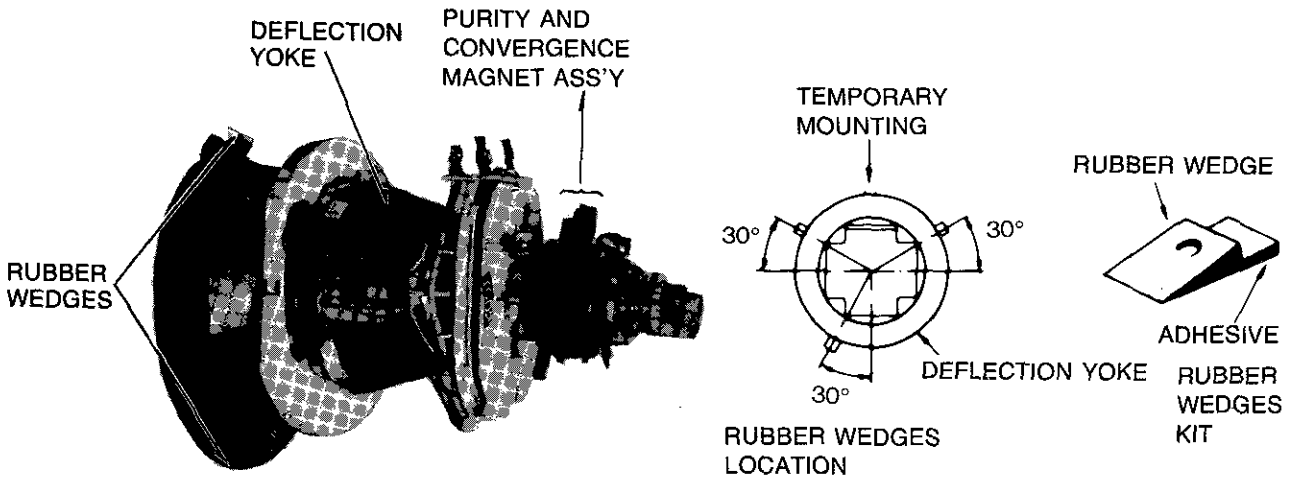


Figure 14

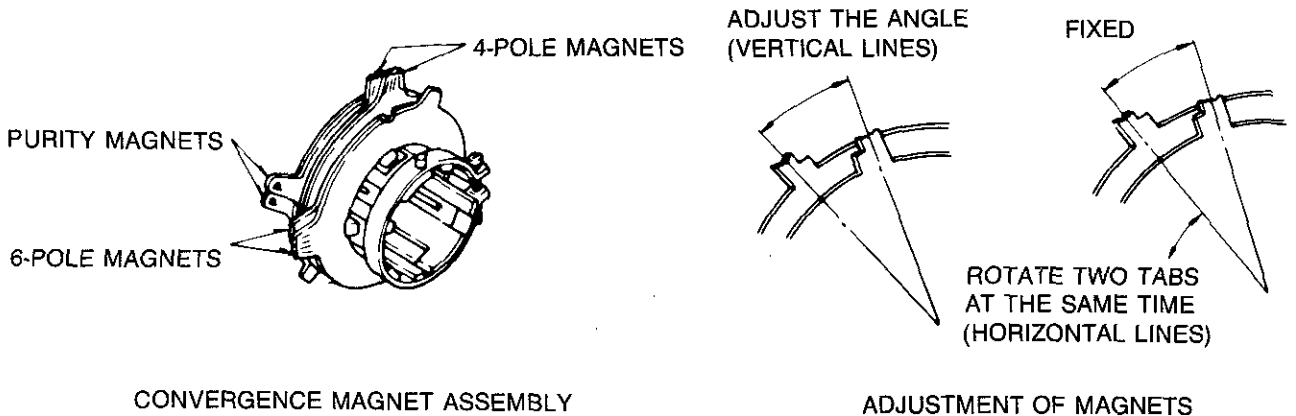


Figure 15

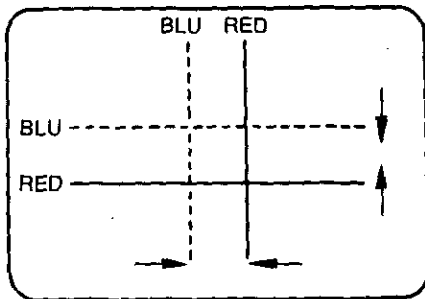
### CENTER CONVERGENCE ADJUSTMENT

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 15)
5. Adjust two tabs of 6-pole magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical

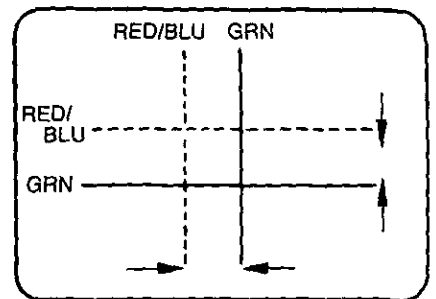
- lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 1,2,3, keeping in mind red, green and blue movements, because 4-Pole magnets and 6-Pole magnets interact and make dot movement complex.

### CIRCUMFERENCE CONVERGENCE ADJUSTMENT

1. Loosen the clamping screw of DY to allow the yoke to tilt.
2. Adjust DY to obtain a better convergence in the circumference by orbital movement of the front of the yoke, then secure the DY in appropriate position by placing the wedges as illustrates in figure 14. Tighten screw holding the DY. Stick 3 adhesive tapes on wedges as shown in figure 14.

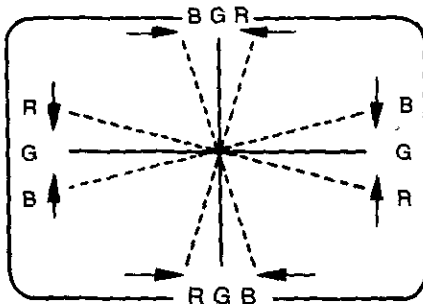


4-Pole Magnets Movement

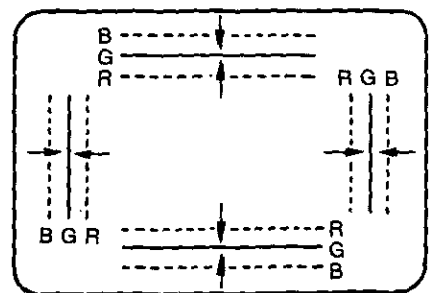


6-Pole Magnets Movement

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 (GL3120).

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

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

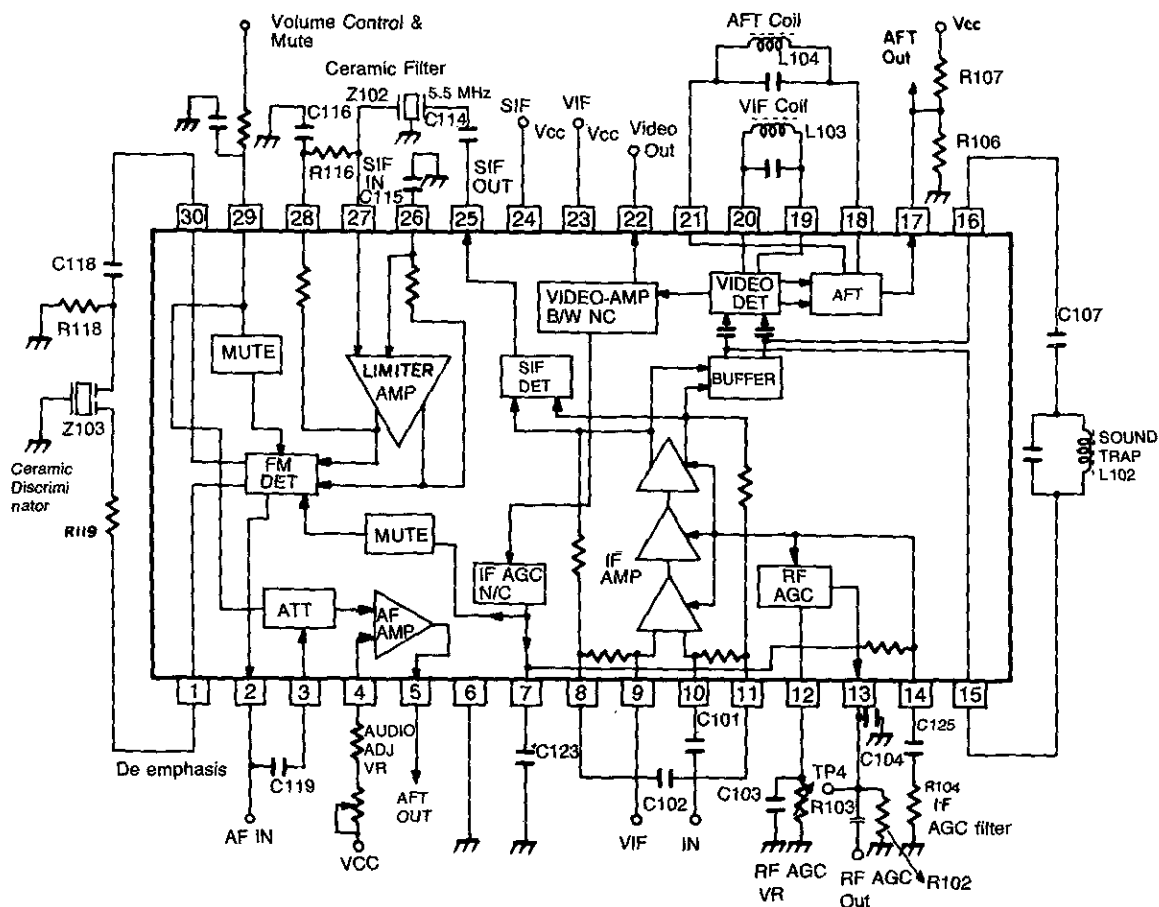
GL3120 used in this Chassis is a large-scale integrator which contains the VIF stage, SIF stage and Sound stage, and reduces 5.5 MHz Beat, 1 MHz beat and buzz by performing VIF, SIF DET. in a separate circuit.

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 (5.5 MHz) 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 5.5 MHz SIF signal.

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

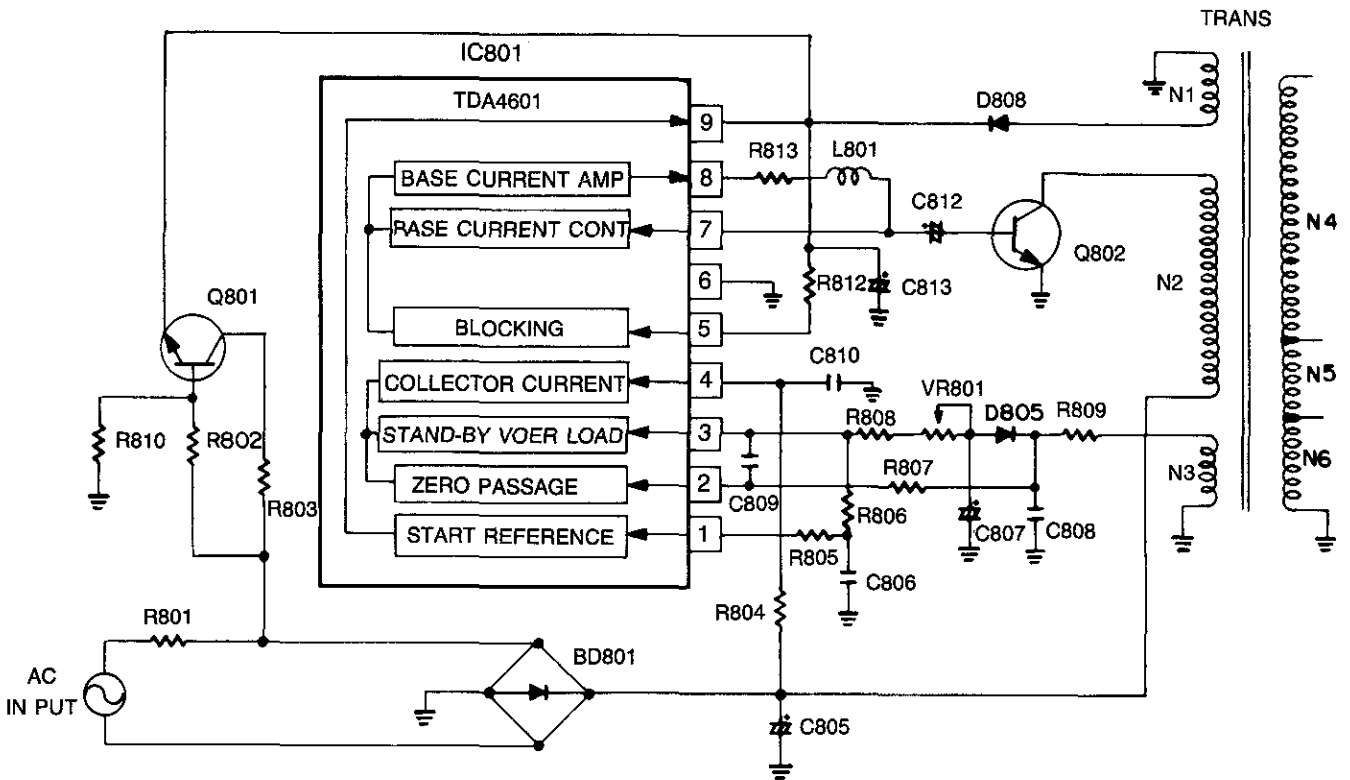


Schematic Diagram of IC101 (GL3120)

**Pin Function Chart of IC101 (GL3120)**

<b>Pin No.</b>	<b>Description</b>
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. VR (Variable Resistor) When the RF AGC voltage is below 9 V, R102 and R103 divide the Resistance and C104 is necessary to stop the oscillator.
15, 16	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 50 Hz. 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 VR801 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.

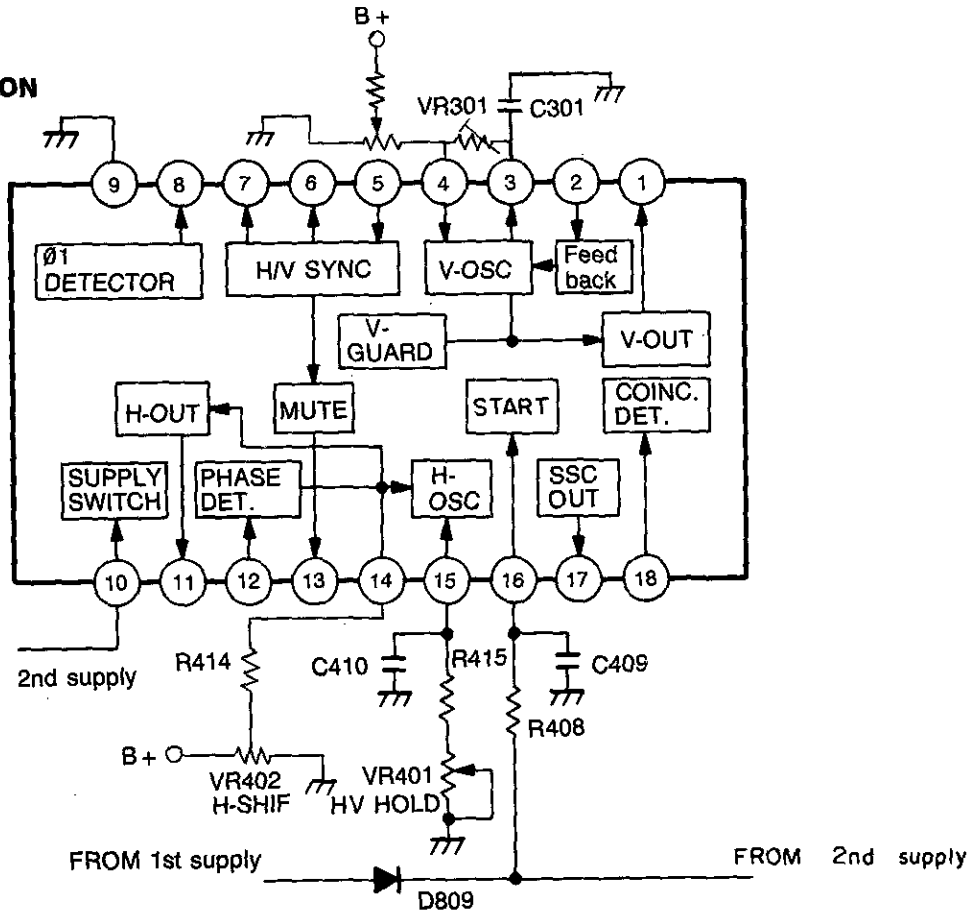
Fix the R804 for 270 K ohm and change the value of the C810 to adjust the maximum OVER LOAD. If you use a big capacitor of C860, the maximum LOAD ELECTRIC POWER will increase.

### 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 oscillating 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 input to the pin 10 of the IC401 and perform the IC401 in normal motion. On the other hand, the 22 volts are input 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 SAW-TOOTH WAVE. That is to say, the pin 4 makes the NFB (negative feed back) information which the pin 2 generates though the vertical output-power circuit overlap C301 and C302 of the pin 3 and corrects a verticality. The pin 1 is a vertical output-power terminal. The sources of the vertical saw-tooth-wave is finished to the vertical output circuit through this terminal.

### Horizontal OSC and Phase Shift

The Oscillation signal, which is generated by 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 than 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 180 K 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.

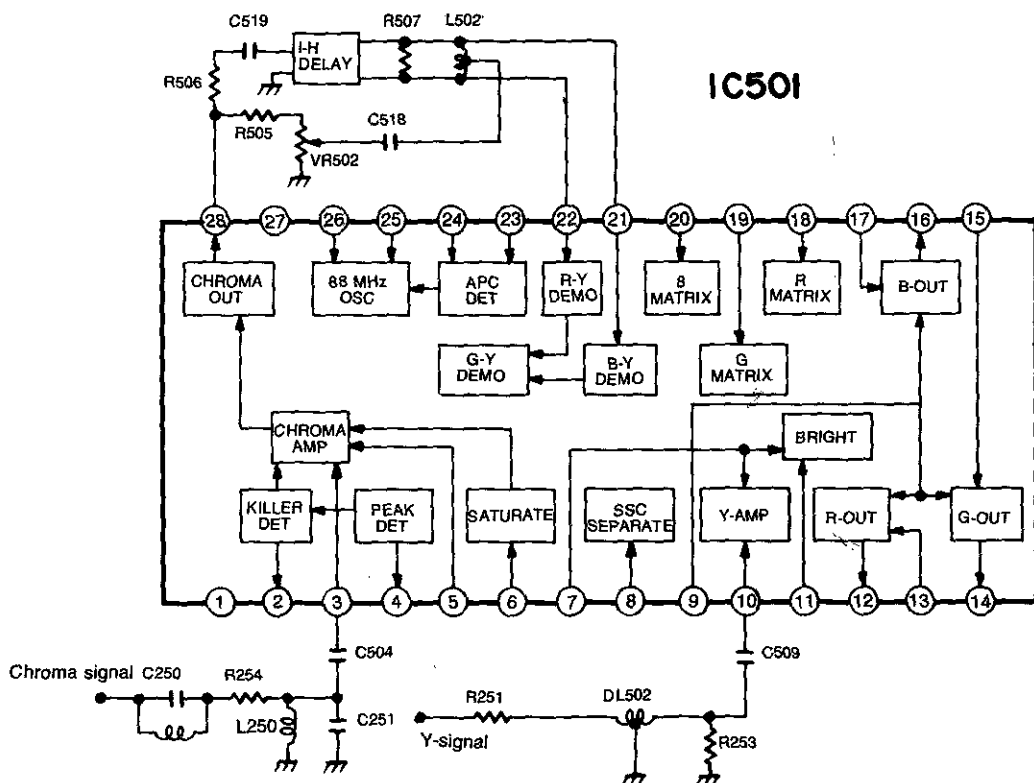
### Sand Castle

The Output of three level sand castle from the pin 17 flows into the pin 8 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.F. Circuit into the pin 3 to be amplified, and then it flows into the second amplifier to do about 4 Vp-p. The amplifier signal which is in output from the pin 28 is divided into two groups. One flows from 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-H delay and not, is vectored and adjusted, so that the signal is divided into R-Y (u) and B-Y (V).

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

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

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

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

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

### Luminance Path

As much as chroma path needs to perform chroma signal, 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.

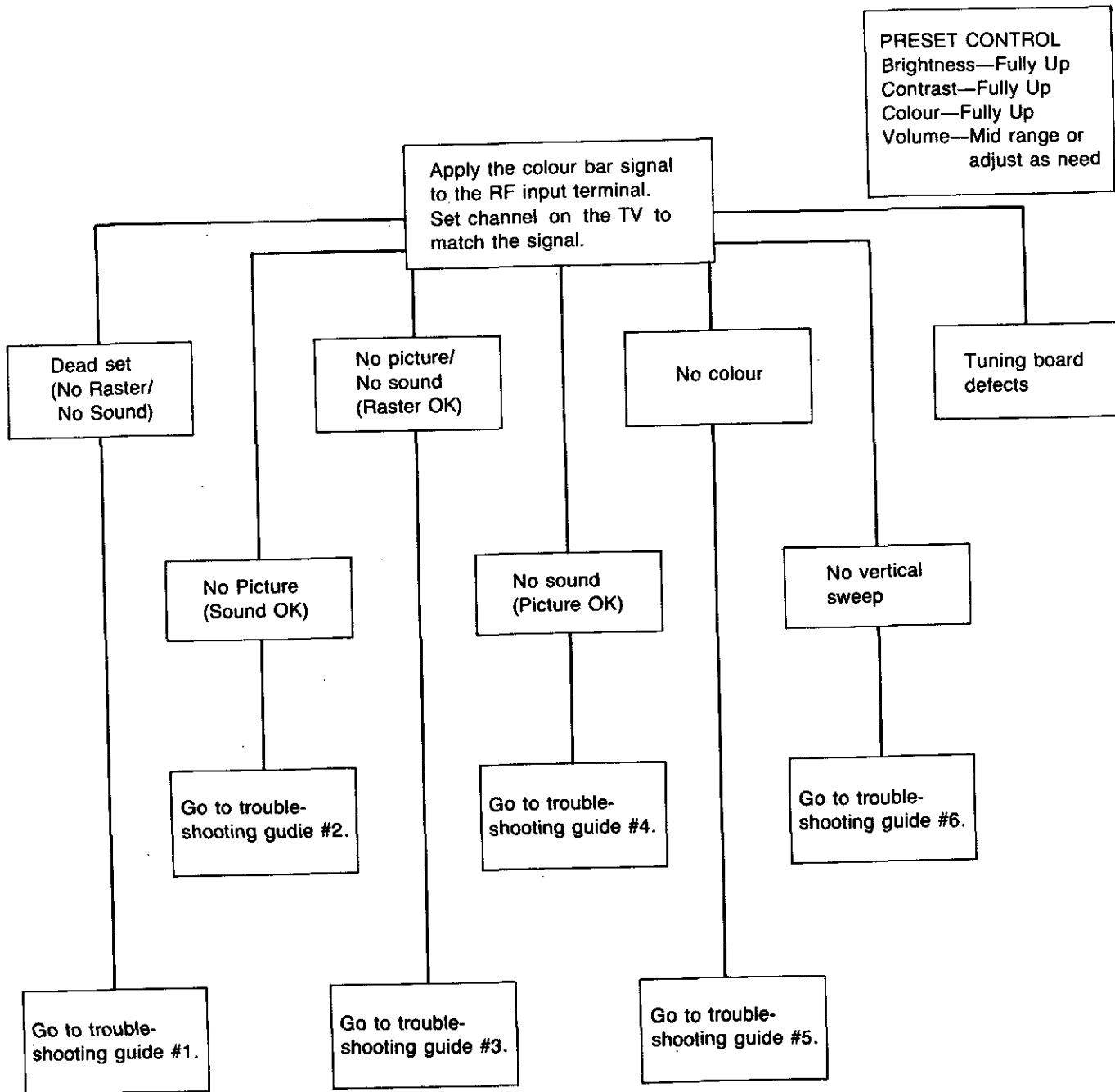
The luminance signal supplied on the pin 10 is commonly only 0.5 Vp-p.

### R.G.B. Data Input

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

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

# TROUBLESHOOTING GUIDE



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

Check B\* voltage at TP15.

120 V-130 V

Normal

112 V

0 V

Check the voltage of IC401 pin 16.

Check heater elements of the CPT are lighting not.

Check the rectified voltage of main supply power.

below 7 V

No

0 V

Check/replace R408, IC401.

Check/replace FR402 or CPT.

Check/replace D801-804, F851, R801, Q802.

7 V-9 V

Yes

250 V-380 V

Check the voltage of Q402.

Check the voltage of Pin 3 of IC402.

Check the voltage of Pin 9 of IC801.

20 V

0 V

Less than 8 V

Check/replace T401, Q402

Check/replace FR401, D405, IC402.

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

17 V

12 V

8 V-18 V

Check/replace Q401, T401, T402.

Check the voltage of pin 9 of IC201.

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

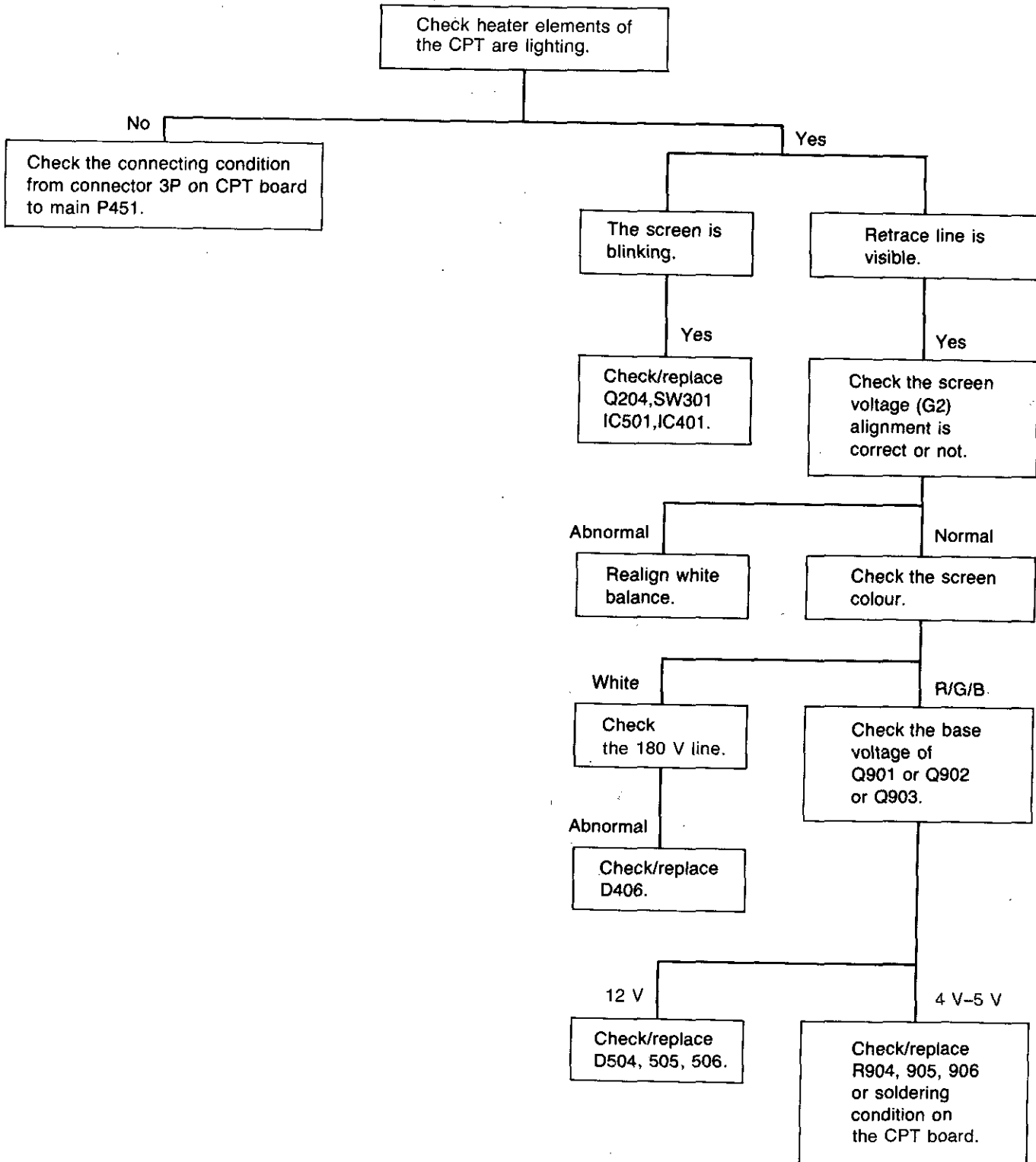
0 V

Check/replace IC201, IC101.

10 V-12 V

Check/replace the tuning board.

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



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

Check the voltage of  
tuner MB (12 V).

Check/replace  
tuner.

Check the tuning  
condition.

Check/replace  
Q160.

Check the voltage  
of AGC.

Check  
the 33 V line.

Check  
the tuning board.

Check/replace  
D403,D407.

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

Check the voltage of  
IC601 pin 5.

0 V

Check/replace  
R606.

20 V

Check the voltage of  
Pin 29 of IC101.

more than 4 V

Check/replace  
IC101, IC601  
speaker.

below 2 V

Check the voltage of  
Pin 13 of IC401.

10 V

Check/replace  
volume control  
circuit.

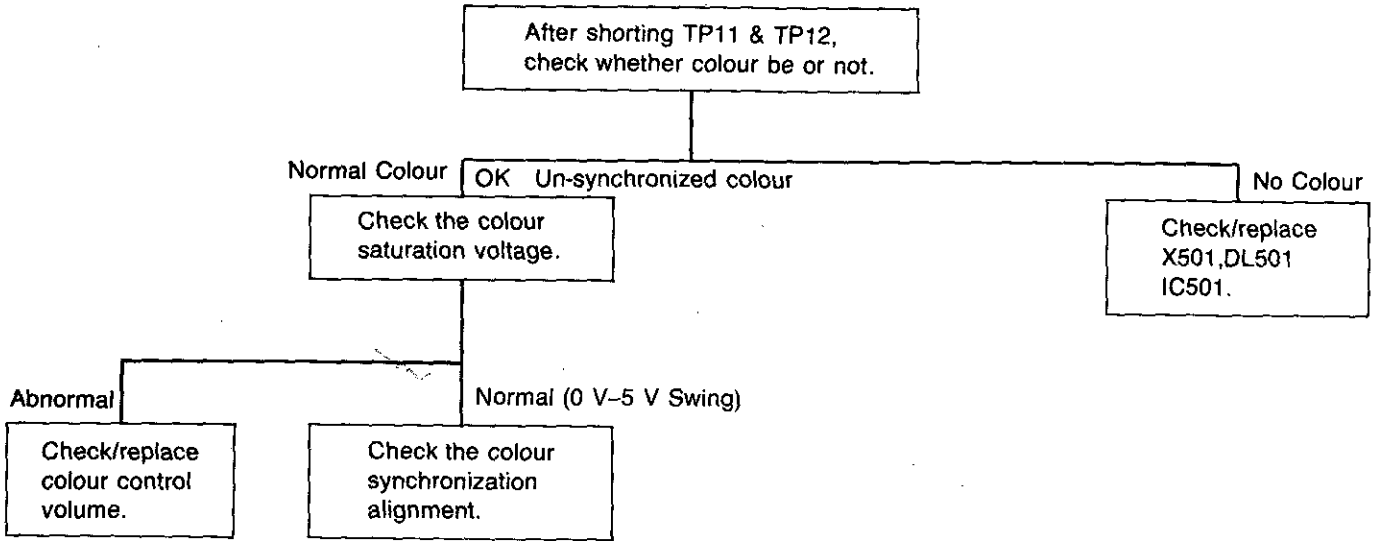
0 V

Check/replace  
IC401.

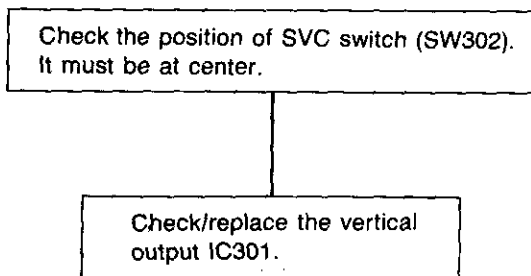
**Note:**

Sound is muted whenever  
the screen is noise con-  
dition, that is, broadcast-  
ing signal is not found

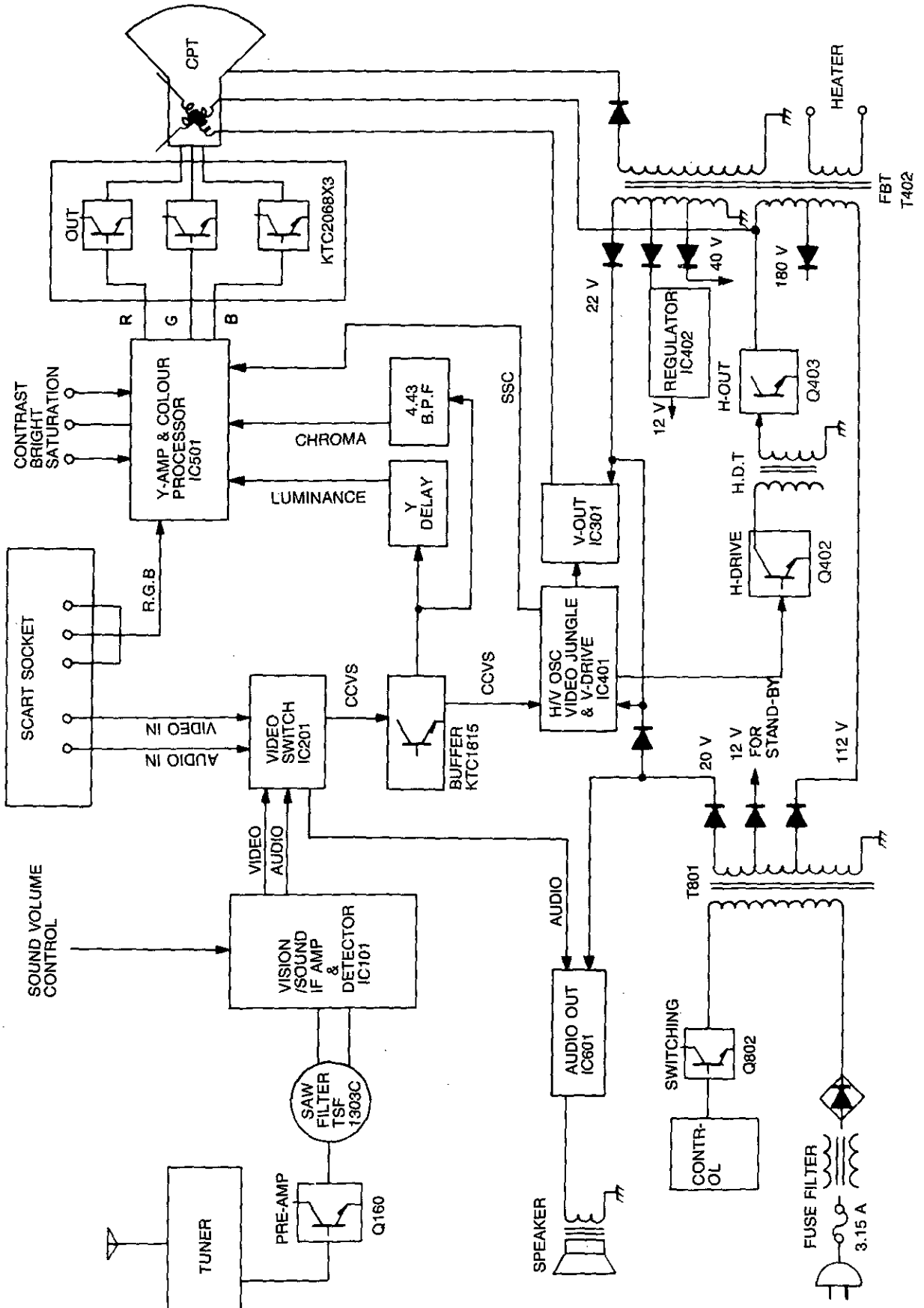
## 5. NO COLOUR



## 6. NO VERTICAL SWEEP



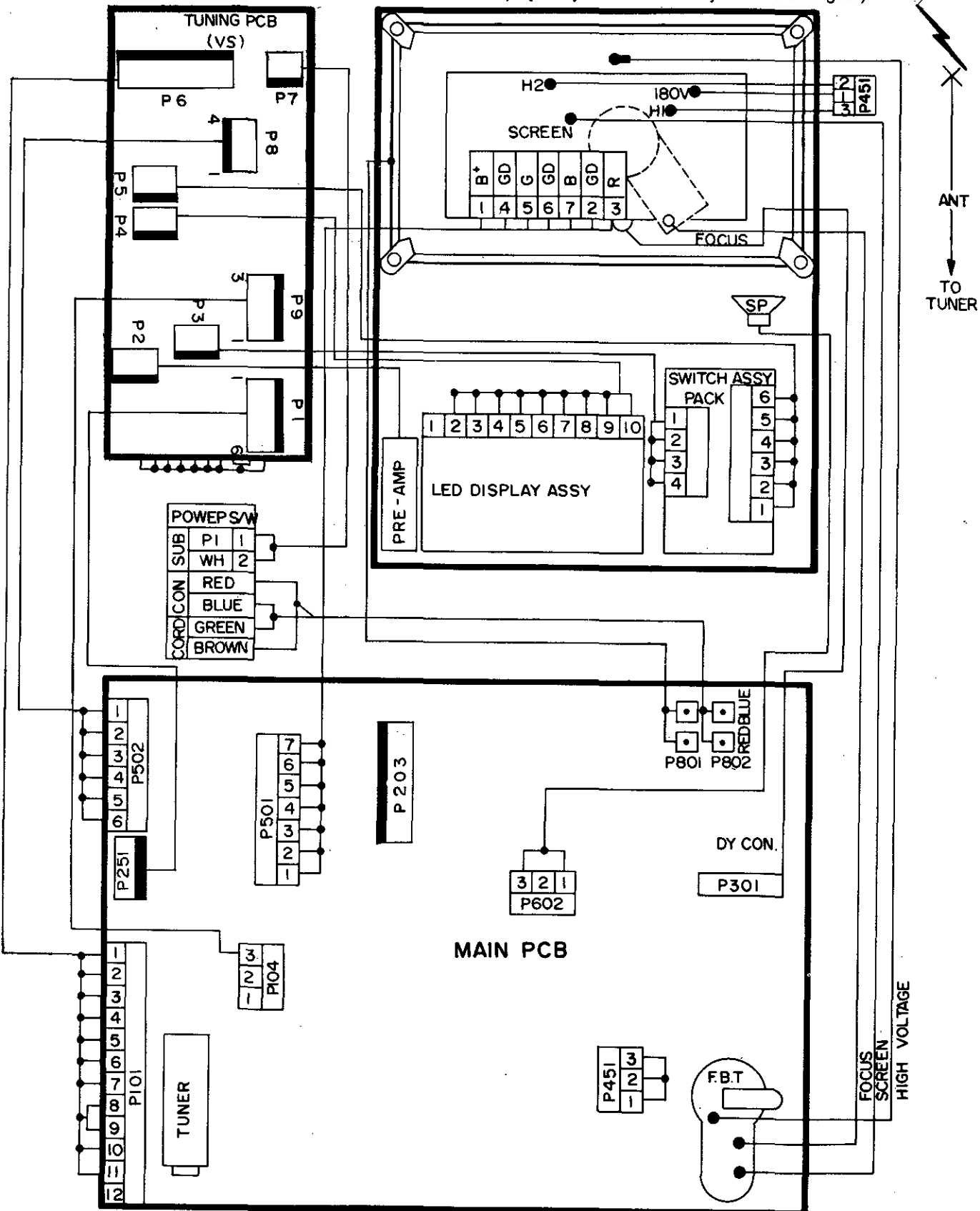
# BLOCK DIAGRAM





# WIRING DIAGRAM (CBT-4685T)

(\* In case of CBT-4682T, the position of LED Display Assy and Switch Assy Pack is changed.)



# COMPONENT LOCATION GUIDE

(Refer to page 27)




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		





# TERMINAL VIEW OF SEMICONDUCTOR

## DIODE

FIGURE	DESCRIPTION	REFERENCE NO.
	1K34A	D1
	1N4148TA	D2-D6,D101,D102 D201,D203,D204 D209,D210,D211 D212,D213,D401 D409,D552,D553 D901,D902,D903
	1N4003TA	D301,D402,D809
	1N4005TA	D801,D802,D803 D804
	RGP15J	D812
	ZENER Z5.6BM	ZD7,ZD9
	ZENER Z9.1BM	ZD8
	ZENER Z20BM	ZD10
	TVR-06J	D403,D406,D805 D806,D808,D810 D811
	DSR1005	D405
	KA33V	D407

## TRANSISTOR

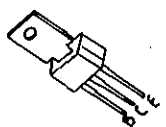
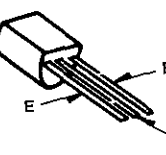
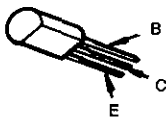
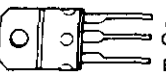
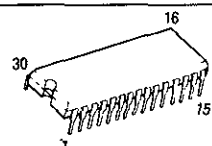
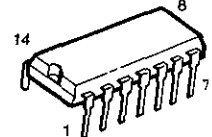
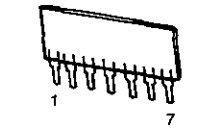
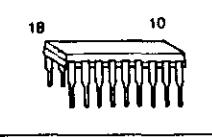
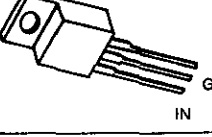
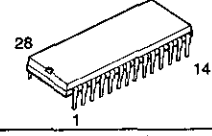
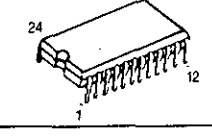
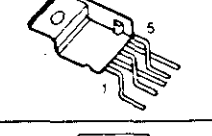
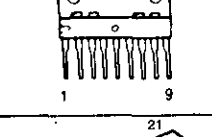
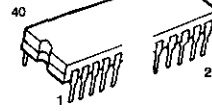
	KTC2482	Q901,Q902,Q903
	KTA1015-O	Q2,Q3,Q4,Q6 Q7,Q8,Q9
	KTC1815-O	Q5,Q10,Q12,Q13 Q201,Q202
	KTC2120-O	Q14
	KTC388A	Q160
	KTC2236A-O	Q14
	KTC2230A(Y)	Q402
	KTC1959-Y	Q401
	KTC2482	Q801
	2SD1555	Q403
	BU508DF	Q802

FIGURE	DESCRIPTION	REFERENCE NO.
	LA7520/ GL3120	IC101
	TEA1014	IC201
	MDA2062	IC3
	LA7830	IC301
	TDA2579	IC401
	GL7812	IC402
	TDA3560	IC501
	TDA3592A	IC1
	TDA2006	IC601
	TDA4601	IC801
	SAA1293	IC2

MODEL : CBT-4685T NPGRR  
CBT-4685T HPTRT

BUYER NAME :

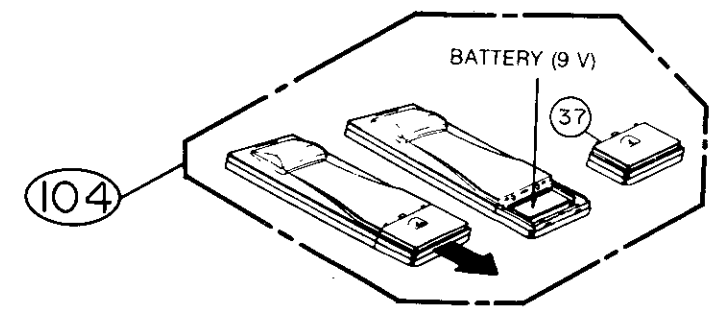
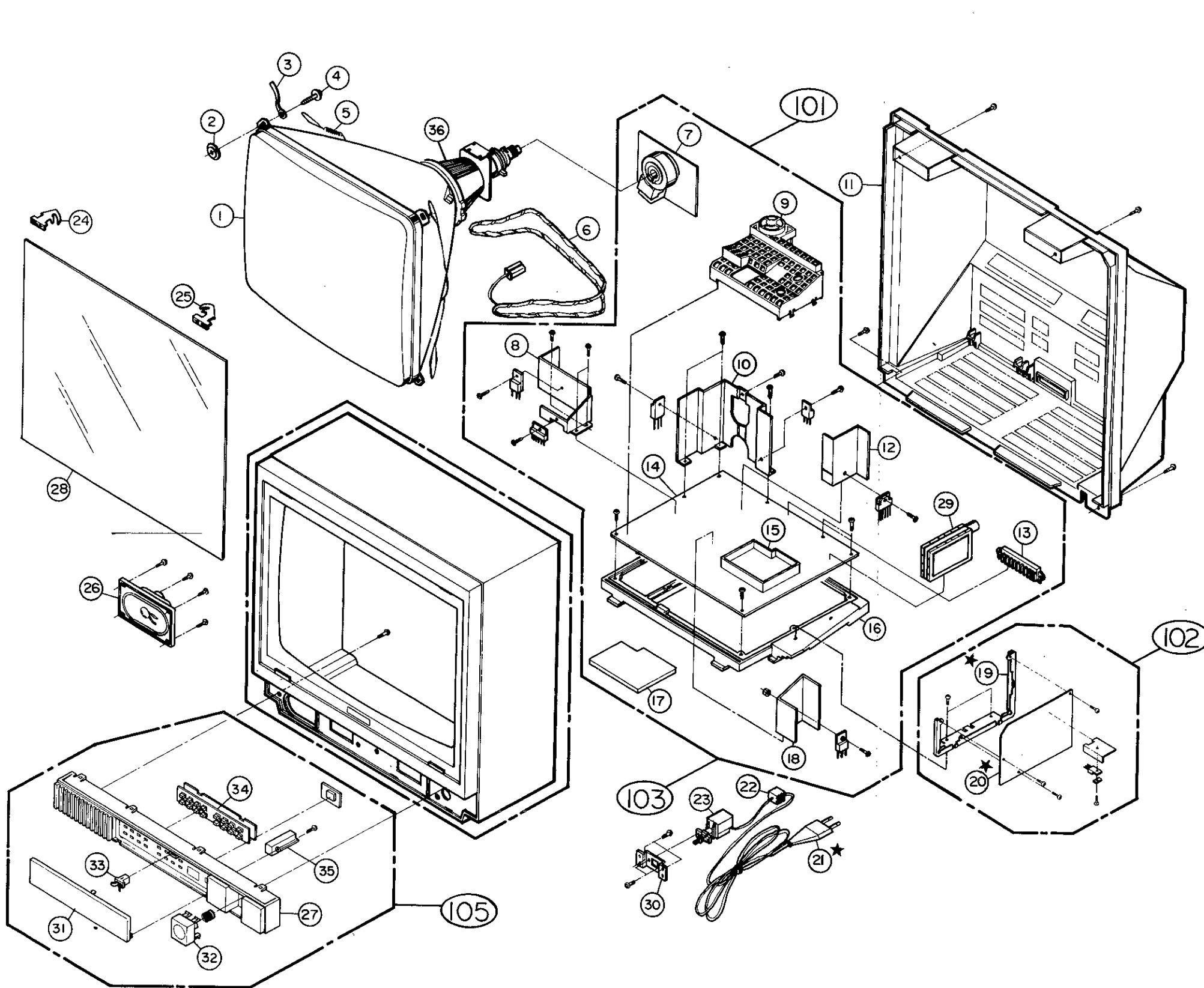
RUN-DATE : 89.12.20

**CAUTION:** Before replacing any of these components, read carefully the "SAFETY PRECAUTIONS" on page 2.  
Do not degrade the safety of the receiver through improper servicing.

**NOTE:** 1. When ordering the service parts, put this service manual No., page and your requesting parts No. to your document correctly, please. Then, We'll send the parts to you faster.

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
			371-517A	PACKING	TOP(CBT-4682/5682)	
			372-H57A	BOX, INNER	FOR TEAC	
			381-094C	SOCKET	PCS-624	
			316-104A	WINDOW	GLASS	
			150-438A	COIL	DEGAUSSING(DOUBLE INS.)	
			313-159K	PANEL ASSY, CONTROL	FOR TEAC	
			313-160J	PANEL, CONTROL	FOR TEAC	
			120-089F	SPEAKER	C0091A06K1452	
			132-204A	ANTENNA ASSY	ROD(3 SECT.,F/L 400)	
			174-102E	CORD ASSY,	POWER(AUSTRALIA,2PIN)	
			300-752L	CABINET ASSY, FRONT	FOR TEAC	
			112-391X	CPT	370REB22 W/O DY	
			300-752M	CABINET ASSY	CBT-4685T(G/S)	
			174-170A	CORD	POWER SAA 250AC 7.5AMP SWAIN	
			303-C58B	COVER	BATTERY(T-22,9V)	
			381-090A	SOCKET ASSY	21PIN PERI-SOCKET	
			343-547A	SUPPORTER	POWER-IN PWB	
			410-525A	MARK	BRAND, GS	
			313-160G	PANEL ASSY,	(CBT-4685 39,VS)	
			313-159H	PANEL ASSY,	CONTROL(CBT-4685 39,VS)	
			312-200A	FRAME	MAIN PC07X2	
			303-A58Q	COVER	BACK ASSY (CBT-4685TNPGR)	
			303-A58E	COVER ASSY, BACK	FOR TEAC	
			110-L53A	PWB ASSY	MAIN 08X8 4685/2 AUST	
			342-031A	FIXER	FILTER R	
			110-A31Q	PWB ASSY	CPT 14" 16" PC08X8	
			140-271B	SWITCH	POWER (CBT-4685T)	
			106-031D	PRE-AMP ASSY	FS CONN.480MM	
			341-335A	HOLDER	METAL ASSY	
			371-518A	PACKING	BOTTOM(CBT-4682/5682)	
			06300391	IC	TDA2320	
			342-033A	FIXER	FIXER,FILTER BUTTON	
			401-625A	BOARD	TUNING (39VS) CBT-4685T	
			372-H78H	BOX	INNER CBT-4685T NPGRR	
			105-057E	TRANSMITTER	TRANSMITTER(T-22)	
			450-A01A	ADAPTER	ANTENNA	
			489-135J	KIT PRINTING	CBT-4685TNPGR	
			303-B74A	COVER	SAFETY	
			113-095H	TUNER	CEE1-707N(AUS+N.Z)	
			140-134B	SWITCH	MAIN 70060-045	
			110-L15D	PCB ASSY	TUNING PC08X8 PAL-ONLY 39 PRO	
			309-704Y	CHASSIS ASSY	MAIN 4685/2 AUST	
			342-032A	FIXER	FILTER L	
			489-202E	KIT PRINTING ASSY	FOR TEAC	
	C1		02140323	C,ELECTROLYTIC	470MF/16V Y	
	C1		08110511	C,ELECTROLYTIC	4.7MF/50V Y	
	C10		08110507	C,ELECTROLYTIC	1MF/50V Y	
	C101		08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
	C102		08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
	C103		08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	

# EXPLODED VIEW



SP: Serviceable Parts  
NSP: Not Serviceable Parts

NO.	DESCRIPTION	QTY	PART NO.	REMARKS
1	CPT, 370REB22 (WITHOUT DY)	1	112-391X	SP
2	SEAT RUBBER	4	327-030A	SP
3	HOLDER, METAL ASSY	1	341-335A	SP
4	SCREW ASSY, HEXAGON HEAD	1	332-057B	SP
5	LEAD SET, EARTH	1	170-586B	NSP
6	COIL, DEGAUSSING	1	150-438A	SP
7	PCB ASSY, CPT	1	110-A31Q	SP
8	PLATE, HEAT SINK	1	407-757A	NSP
9	COVER, SAFETY	1	303-B74A	SP
10	PLATE, HEAT SINK	1	407-755A	NSP
11	COVER BACK	1	303-A58Q	SP
12	PLATE, HEAT SINK	1	407-756A	NSP
13	21 PIN-PERI SOCKET	1	381-090A	SP
14	PCB ASSY, MAIN	1	110-L53A	SP
15	CASE, SHIELD	1	302-C12A	SP
16	FRAME, MAIN	1	312-200A	SP
17	COVER, SHIELD	1	303-A88A	SP
18	PLATE, HEAT SINK	1	407-734B	NSP
19*	SUPPORTER, POWER-IN	1	343-547A	SP
20*	PCB ASSY, TUNING	1	110-L15D	SP
21*	CORD	1	174-170A	SP
22	HOLDER, POWER CORD	1	341-259E	SP
23	SWITCH, MAIN	1	140-134B	SP
24	FIXER FILTER (L)	1	342-032A	SP
25	FIXER FILTER (R)	1	342-031A	SP
26	SPEAKER	1	120-089F	SP
27	PANEL ASSY, CONTROL	1	313-160G/J	SP
28	WINDOW GLASS	1	316-104A	SP
29	TUNER	1	113-095H	SP
30	METAL, POWER	1	430-692A	SP
31	DOOR, CONTROL	1	166-286A	SP
32	BUTTON, POWER	1	441-582A	SP
33	LOCK, DOOR	1	470-861A	SP
34	PLATE, SILICON RUBBER	1	407-A09B	SP
35	PRE-AMP	1	106-031D	SP
36	DY	1	153-061A	SP
37	COVER, BATTERY	1	303-C58B	SP

## SUB ASSY

NO.	DESCRIPTION	QTY	PART NO.	REMARKS
101	CHASSIS ASSY, MAIN	1	309-704Y	SP
102	BOARD ASSY, TUNING	1	401-625A	SP
103	CABINET ASSY	1	300-752M/L	SP
104	REMOTE CONTROL ASSY	1	105-057E	SP
105	PANEL ASSY, CBT-4685T, 39 VS	1	313-159H/K	SP

In this exploded view, some figures (19,20,21) may differ from your actual TV a little. But each part on this page and the replacement parts list has a correct part No. You should refer to the page 32 when ordering the service parts, because some numbers (11,27,103,105) are described on the page 32.

REPLACEMENT PARTS LIST					PAGE : 4	
MODEL : CBT-4685T NPGRR CBT-4685T HPTRT			BUYER NAME :		RUN-DATE : 89.12.20	
S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C429	08110515	C,ELECTROLYTIC	22MF/50V M	
		C431	181-059D	C,POLYPROYLENE	0.047MF/200V K	
		C432	02705337	C,POLYESTER	0.1MF/100V K	
		C433	08700336	C,POLYESTER	0.068MF/100V K	
		C5	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C501	08110317	C,ELECTROLYTIC	47MF/16V Y	
		C502	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C503	08110503	C,ELECTROLYTIC	0.22MF/50V Y	
		C504	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C505	08110505	C,ELECTROLYTIC	0.47MF/50V Y	
		C506	08110509	C,ELECTROLYTIC	2.2MF/50V Y	
		C507	08110509	C,ELECTROLYTIC	2.2MF/50V Y	
		C508	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C509	02705337	C,POLYESTER	0.1MF/100V K	
		C510	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C511	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C512	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C513	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C514	08700337	C,POLYESTER	0.1MF/100V K	
		C515	08110509	C,ELECTROLYTIC	2.2MF/50V Y	
		C516	02705337	C,POLYESTER	0.1MF/100V K	
		C517	181-069B	CAPACITOR	TRIMMER	
		C518	08700331	C,POLYESTER	0.01MF/100V K	
		C519	08700331	C,POLYESTER	0.01MF/100V K	
		C6	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C601	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C602	08110417	C,ELECTROLYTIC	47MF/25V M	
		C603	08700331	C,POLYESTER	0.01MF/100V K	
		C604	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C605	02110421	C,ELECTROLYTIC	220MF/25V Y	
		C606	02705337	C,POLYESTER	0.1MF/100V K	
		C607	02110323	C,ELECTROLYTIC	470MF/16V M	
		C7	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C8	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C801	08201060	C,CERAMIC(HI-K)	0.001MF/500V K	
		C802	08201060	C,CERAMIC(HI-K)	0.001MF/500V K	
		C803	08201060	C,CERAMIC(HI-K)	0.001MF/500V K	
		C804	08201060	C,CERAMIC(HI-K)	0.001MF/500V K	
		C805	181-124A	C,ELECTROLYTIC	120MF/400V	
		C806	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C807	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C808	08756530	C,POLYESTER	8200PF/100V K	
		C809	08300736	C,CERAMIC(TC)	100PF/50V J	
		C810	08756530	C,POLYESTER	8200PF/100V K	
		C811	181-131E	C,METAL POLYPROPYLENE	2200PF/2KV J	
		C812	08110319	C,ELECTROLYTIC	100MF/16V Y	
		C813	08110513	C,ELECTROLYTIC	10MF/50V M	
		C814	08201046	C,CERAMIC(HI-K)	270PF/500V K	
		C815	02110321	C,ELECTROLYTIC	220MF/16V M	
		C816	02110321	C,ELECTROLYTIC	220MF/16V M	

REPLACEMENT PARTS LIST					PAGE : 5	
MODEL : CBT-4685T NPGRR CBT-4685T HPTRT			BUYER NAME :		RUN-DATE : 89.12.20	
S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C817	08201046	C,CERAMIC(HI-K)	270PF/500V K	
		C818	08110419	C,ELECTROLYTIC	100MF/25V Y	
		C819	08201046	C,CERAMIC(HI-K)	270PF/500V K	
		C820	02110713	C,ELECTROLYTIC	10MF/160V Y	
		C821	02110717	C,ELECTROLYTIC	47MF/160V Y	
		C851	181-408B	CAPACITOR	0.15UF(ISKRA1531)	
		C852	181-408B	CAPACITOR	0.15UF(ISKRA1531)	
		C854	181-410A	CAPACITOR	ECK-DNS472MEX	
		C9	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C901	02300154	C,CERAMIC(TC)	560PF/50V J	
		C902	02300154	C,CERAMIC(TC)	560PF/50V J	
		C903	02300152	C,CERAMIC(TC)	470PF/50V J	
		C904	08110317	C,ELECTROLYTIC	47MF/16V Y	
		C905	02201561	C,CERAMIC(HI-K)	1200PF/2KV K	
		DL501	175-013A	DELAY LINE	1H SD-11 P1D	
		DL502	150-377G	DELAY LINE COIL	(350N)	
		D101	06200226	DIODE	1N4148 (DS4148) TA.	
		D102	06200226	DIODE	1N4148 (DS4148) TA.	
		D2	06220234	DIODE	ZENER Z9.1BM TA	
		D201	06200226	DIODE	1N4148 (DS4148) TA.	
		D203	06200226	DIODE	1N4148 (DS4148) TA.	
		D204	06200226	DIODE	1N4148 (DS4148) TA.	
		D209	06200226	DIODE	1N4148 (DS4148) TA.	
		D210	06200226	DIODE	1N4148 (DS4148) TA.	
		D211	06200226	DIODE	1N4148 (DS4148) TA.	
		D212	06200226	DIODE	1N4148 (DS4148) TA.	
		D213	06200226	DIODE	1N4148 (DS4148) TA.	
		D3	06220300	DIODE	ZENER Z20BM TA	
		D301	06220070	DIODE	1N4003TA	
		D4	06200226	DIODE	1N4148 (DS4148) TA.	
		D401	06200226	DIODE	1N4148 (DS4148) TA.	
		D402	06220070	DIODE	1N4003TA	
		D403	06200363	DIODE	TVR-06J	
		D404	06200363	DIODE	TVR-06J	
		D405	06200455	DIODE	R10J,D10DE(1A/600V)	
		D406	06200363	DIODE	TVR-06J	
		D407	167-006B	IC	KA33V	
		D409	06200226	DIODE	1N4148 (DS4148) TA.	
		D5	06200226	DIODE	1N4148 (DS4148) TA.	
		D52	06200226	DIODE	1N4148 (DS4148) TA.	
		D553	06200226	DIODE	1N4148 (DS4148) TA.	
		D6	06200226	DIODE	1N4148 (DS4148) TA.	
		D7	06200226	DIODE	1N4148 (DS4148) TA.	
		D8	06220228	DIODE	ZENER Z5.6BM TA	
		D801	06220225	DIODE	1N4005 TA	
		D802	06220225	DIODE	1N4005 TA	
		D803	06220225	DIODE	1N4005 TA	
		D804	06220225	DIODE	1N4005 TA	
		D805	06200363	DIODE	TVR-06J	
		D806	06200363	DIODE	TVR-06J	

REPLACEMENT PARTS LIST					PAGE : 2	
MODEL : CBT-4685T NPGRR CBT-4685T HPTRT			BUYER NAME :		RUN-DATE : 89.12.20	
S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C105	02110323	C,ELECTROLYTIC	470MF/16V M	
		C106	08110505	C,ELECTROLYTIC	0.47MF/50V Y	
		C107	08300708	C,CERAMIC(TC)	6PF/50V D	
		C109	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C11	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C110	08300716	C,CERAMIC(TC)	15PF/50V J	
		C111	08110317	C,ELECTROLYTIC	47MF/16V Y	
		C112	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C113	08110319	C,ELECTROLYTIC	100MF/16V Y	
		C114	08300728	C,CERAMIC(TC)	47PF/50V J	
		C115	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C116	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C117	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C118	08300708	C,CERAMIC(TC)	6PF/50V D	
		C119	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C12	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C121	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C122	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C123	08700336	C,POLYESTER	0.068MF/100V K	
		C124	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C125	08300736	C,CERAMIC(TC)	100PF/50V J	
		C13	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C14	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C15	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C16	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C160	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C161	08700331	C,POLYESTER	0.01MF/100V K	
		C162	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C163	08110311	C,ELECTROLYTIC	4.7MF/16V Y	
		C164	08110505	C,ELECTROLYTIC	0.47MF/50V Y	
		C165	08110319	C,ELECTROLYTIC	100MF/16V Y	
		C167	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C17	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C170	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C171	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C172	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C18	08300150	C,CERAMIC(TC)	390PF/50V J	
		C180	08300116	C,CERAMIC(TC)	15PF/50V J	
		C19	08110317	C,ELECTROLYTIC	47MF/16V Y	
		C2	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C20	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C201	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C202	08110316	C,ELECTROLYTIC	33MF/16V M	
		C203	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C204	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C205	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C206	08110317	C,ELECTROLYTIC	47MF/16V Y	
		C207	08110313	C,ELECTROLYTIC	10MF/16V Y	
		C21	08700331	C,POLYESTER	0.01MF/100V K	
		C22	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	

REPLACEMENT PARTS LIST					PAGE : 3	
MODEL : CBT-4685T NPGRR CBT-4685T HPTRT			BUYER NAME :		RUN-DATE : 89.12.20	
S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C23	08110315	C,ELECTROLYTIC	22MF/16V M	
		C24	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C25	02110323	C,ELECTROLYTIC	470MF/16V M	
		C250	08300724	C,CERAMIC(TC)	33PF/50V J	
		C251	08300734	C,CERAMIC(TC)	82PF/50V J	
		C26	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C27	08700337	C,POLYESTER	0.1MF/100V K	
		C28	08700337	C,POLYESTER	0.1MF/100V K	
		C29	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C3	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C30	08110503	C,ELECTROLYTIC	0.22MF/50V Y	
		C301	181-155B	C,METAL POLYPROPYLENE	0.33MF/100V J	
		C302	181-155A	C,METAL POLYPROPYLENE	0.22MF/100V J	
		C303	08700331	C,POLYESTER	0.01MF/100V K	
		C304	08110507	C,ELECTROLYTIC	1MF/50V Y	
		C305	02110325	C,ELECTROLYTIC	1000MF/16V M	
		C306	02700321	C,POLYPROPYLENE	1500PF/100V K	
		C307	08300154	C,CERAMIC(TC)	560PF/50V J	
		C308	08300730	C,CERAMIC(TC)	56PF/50V J	
		C309	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C31	08200972	C,CERAMIC(HI-K)	0.01MF/50V Z	
		C310	08110419	C,ELECTROLYTIC	100MF/25V Y	
		C311	08700337	C,POLYESTER	0.1MF/100V K	
		C312	02110421	C,ELECTROLYTIC	220MF/25V Y	
		C4	08200760	C,CERAMIC(HI-K)	1000PF/50V Y	
		C401	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C402	08110509	C,ELECTROLYTIC	2.2MF/50V Y	
		C403	08300144	C,CERAMIC(TC)	220PF/50V J	
		C404	08110315	C,ELECTROLYTIC	22MF/16V M	
		C405	08110511	C,ELECTROLYTIC	4.7MF/50V Y	
		C406	08700337	C,POLYESTER	0.1MF/100V K	
		C408	08700337	C,POLYESTER	0.1MF/100V K	
		C409	08110513	C,ELECTROLYTIC	10MF/50V M	
		C410	181-057F	C,ELECTROLYTIC	0.0027MF/100V K	
		C411	08700337	C,POLYESTER	0.1MF/100V K	
		C412	08110317	C,ELECTROLYTIC	47MF/16V Y	
		C413	02705337	C,POLYESTER	0.1MF/100V K	
		C414	08201048	C,CERAMIC(HI-K)	330PF/500V K	
		C415	02110421	C,ELECTROLYTIC	220MF/25V Y	
		C416	181-131F	C,META POLYPROPYLENE	7300PF J	
		C419	08110707	C,ELECTROLYTIC	1MF/160V M	
		C420	181-414A	CAPACITOR	MPE,BOX TYPE 0.39UF	
		C421	02140422	C,ELECTROLYTIC	330MF/25V M	
		C422	02140813	C,ELECTROLYTIC	10MF/250V M	
		C423	08201046	C,CERAMIC(HI-K)	270PF/500V K	
		C424	08201046	C,CERAMIC(HI-K)	270PF/500V K	
		C425	08110417	C,ELECTROLYTIC	47MF/25V M	
		C426	08201046	C,CERAMIC(HI-K)	270PF/500V K	
		C427	08110417	C,ELECTROLYTIC	47MF/25V M	
		C428	08201046	C,CERAMIC(HI-K)	270PF/500V K	



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MODEL : CBT-4685T NPGRR  
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BUYER NAME :

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S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		D808	06200363	DIODE	TVR-06J	
		D809	06220070	DIODE	1N4003TA	
		D810	06200363	DIODE	TVR-06J	
		D811	06200363	DIODE	TVR-06J	
		D812	06220202	DIODE	RGP15J	
		D9	06220228	DIODE	ZENER 25.6BM TA	
		D901	06200226	DIODE	1N4148 (DS4148) TA.	
		D902	06200226	DIODE	1N4148 (DS4148) TA.	
		D903	06200226	DIODE	1N4148 (DS4148) TA.	
		FR401	180-305D	R,FUSING	1.2 OHM 1W	
		FR402	180-305C	R,FUSING	0.82 OHM 1/2W	
		FR801	180-140B	R,FUSING	1.0-J 0.5W	
		FR802	180-140A	R,FUSING	1-J 0.25W	
		FR803	180-140A	R,FUSING	1-J 0.25W	
	△	F851	131-027A	FUSE	GLASS TUBE MINI 3.15A/250	
		IC1	06300732	IC	SAA1250 (ITT,TRANSMITTER)	
		IC1	06300728	IC	SAA1293 (ITT VS U-COMPUTER)	
		IC101	06300616	IC	GL3120(VIF+SIF)	
		IC2	06300729	IC	MDA2062 (ITT VS EEPROM)	
		IC201	06300170	IC	TEA1014	
		IC301	06300360	IC	LA7830	
		IC401	06300826	IC	TDA2579A/N8	
		IC402	06300218	IC	GL7812	
		IC501	06300754	IC	TDA-3560(TFK)	
		IC601	06300386	IC	TDA2006(TFK)	
		IC801	06300323	IC,	TDA4601(SIEMENS)	
		L101	150-489A	SAW MATCHING COIL	(0.68U)	
		L102	150-327N	COIL	APC TRAP(PC04X)	
		L103	150-327M	VIF COIL	(PC04X)	
		L104	150-327Q	AFT COIL	(PC04X)	
		L105	04513341	COIL,TAPING(AXIAL)	03TYPE(10UH,160MA)STANDING	
		L106	04513345	COIL,TAPING(AXIAL)	03TYPE(15UH,145MA)STANDING	
		L160	150-167D	CHOKE COIL	1.0MH	
		L250	150-1096	PEAKING COIL	10MH	
		L401	150-1096	PEAKING COIL	6800MH-J SPL	
		L402	150-224L	LINEARITY COIL		
		L501	04513345	COIL,TAPING(AXIAL)	03TYPE(15UH,145MA)STANDING	
		L502	150-163G	MATRIX COIL	ADJ(PC07X)	
		L801	04523309	COIL,TAPING(AXIAL)	03TYPE(0.47UH,330MA)STANDING	
		L804	04513341	COIL,TAPING(AXIAL)	03TYPE(10UH,160MA)STANDING	
		L805	150-235E	HOR.CHOKE COIL	1MH(1A)	
	△	L851	150-151A	COIL	LINE FILTER	
		Q1	06100083	TRANSISTOR	KTA1015-0	
		Q10	06120168	TRANSISTOR,	KTC1815-0	
		Q12	06120168	TRANSISTOR,	KTC1815-0	
		Q13	06120168	TRANSISTOR,	KTC1815-0	
		Q14	06100083	TRANSISTOR	KTA1015-0	
		Q160	06120235	TRANSISTOR,	KTC388A(TA)	
		Q2	06100083	TRANSISTOR	KTA1015-0	
		Q201	06120239	TRANSISTOR,	KTC1815-0(TA)	

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MODEL : CBT-4685T NPGRR  
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BUYER NAME :

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S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		Q202	06120239	TRANSISTOR,	KTC1815-0(TA)	
		Q3	06100083	TRANSISTOR	KTA1015-0	
		Q4	06100083	TRANSISTOR	KTA1015-0	
		Q401	06120172	TRANSISTOR	KTC1959-Y	
		Q402	06120225	TRANSISTOR	KTC2230A(Y)	
		Q403	06130134	TRANSISTOR,	2SD 1555	
		Q5	06100083	TRANSISTOR	KTA1015-0	
		Q6	06100083	TRANSISTOR	KTA1015-0	
		Q7	06120213	TRANSISTOR	KTC2236A-0	
		Q8	06120173	TRANSISTOR	KTC2120-0	
		Q801	06120236	TRANSISTOR	KTC2482(TA)	
	△	Q802	06120291	TRANSISTOR,	BU5080F (PHILIPS)	
		Q9	06120168	TRANSISTOR,	KTC1815-0	
		Q901	06120218	TRANSISTOR,	KTC2482	
		Q902	06120218	TRANSISTOR,	KTC2482	
		Q903	06120218	TRANSISTOR,	KTC2482	
	△	RL401	141-018A	RELAY	DG12D1-0(M)	
		R1	01157129	R,CARBON FILM	22K-J	1/8W
		R10	01165121	R,CARBON FILM	10K-J	1/16W
		R102	01157097	R,CARBON FILM	1K-J	1/8W
		R103	01157135	R,CARBON FILM	39K-J	1/8W
		R104	01157099	R,CARBON FILM	1.2K-J	1/8W
		R105	01157097	R,CARBON FILM	1K-J	1/8W
		R106	01157131	R,CARBON FILM	27K-J	1/8W
		R107	01157129	R,CARBON FILM	22K-J	1/8W
		R108	01157097	R,CARBON FILM	1K-J	1/8W
		R109	01157113	R,CARBON FILM	4.7K-J	1/8W
		R11	01165121	R,CARBON FILM	10K-J	1/16W
		R110	01157097	R,CARBON FILM	1K-J	1/8W
		R111	01157107	R,CARBON FILM	2.7K-J	1/8W
		R112	01157081	R,CARBON FILM	220-J	1/8W
		R113	01157105	R,CARBON FILM	2.2K-J	1/8W
		R114	01157067	R,CARBON FILM	56-J	1/8W
		R116	01157097	R,CARBON FILM	1K-J	1/8W
		R117	01157081	R,CARBON FILM	220-J	1/8W
		R118	01157083	R,CARBON FILM	270-J	1/8W
		R119	01157093	R,CARBON FILM	680-J	1/8W
		R12	01165137	R,CARBON FILM	47K-J	1/16W
		R121	01157113	R,CARBON FILM	4.7K-J	1/8W
		R122	01157119	R,CARBON FILM	8.2K-J	1/8W
		R123	01157121	R,CARBON FILM	10K-J	1/8W
		R13	01165121	R,CARBON FILM	10K-J	1/16W
		R14	01165117	R,CARBON FILM	6.8K-J	1/16W
		R15	01165109	R,CARBON FILM	3.3K-J	1/16W
		R16	01165097	R,CARBON FILM	1K-J	1/16W
		R160	01157121	R,CARBON FILM	10K-J	1/8W
		R162	01157055	R,CARBON FILM	18-J	1/8W
		R163	01157081	R,CARBON FILM	220-J	1/8W
		R164	01157115	R,CARBON FILM	5.6K-J	1/8W
		R165	01157093	R,CARBON FILM	680-J	1/8W

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MODEL : CBT-4685T NPGRR  
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BUYER NAME :

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S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION		REMARKS
		R166	01157049	R.CARBON FILM	10-J	1/8W	
		R167	01157089	R.CARBON FILM	470-J	1/8W	
		R17	01165097	R.CARBON FILM	1K-J	1/16W	
		R171	01165115	R.CARBON FILM	5.6K-J	1/16W	
		R18	01165097	R.CARBON FILM	1K-J	1/16W	
		R19	01165097	R.CARBON FILM	1K-J	1/16W	
		R2	01165129	R.CARBON FILM	22K-J	1/16W	
		R20	01165121	R.CARBON FILM	10K-J	1/16W	
		R202	01157121	R.CARBON FILM	10K-J	1/8W	
		R203	01157113	R.CARBON FILM	4.7K-J	1/8W	
		R205	01157143	R.CARBON FILM	82K-J	1/8W	
		R21	01165139	R.CARBON FILM	56K-J	1/16W	
		R212	01157121	R.CARBON FILM	10K-J	1/8W	
		R214	01157070	R.CARBON FILM	75-J	1/8W	
		R215	01157063	R.CARBON FILM	39-J	1/8W	
		R216	01157093	R.CARBON FILM	680-J	1/8W	
		R217	01157147	R.CARBON FILM	120K-J	1/8W	
		R218	01157121	R.CARBON FILM	10K-J	1/8W	
		R22	01165131	R.CARBON FILM	27K-J	1/16W	
		R23	01165131	R.CARBON FILM	27K-J	1/16W	
		R24	01165111	R.CARBON FILM	3.9K-J	1/16W	
		R25	01165121	R.CARBON FILM	10K-J	1/16W	
		R251	01157099	R.CARBON FILM	1.2K-J	1/8W	
		R253	01157101	R.CARBON FILM	1.5K-J	1/8W	
		R254	01157107	R.CARBON FILM	2.7K-J	1/8W	
		R26	01165107	R.CARBON FILM	2.7K-J	1/16W	
		R27	01165129	R.CARBON FILM	22K-J	1/16W	
		R28	01165129	R.CARBON FILM	22K-J	1/16W	
		R29	01165107	R.CARBON FILM	2.7K-J	1/16W	
		R3	01165129	R.CARBON FILM	22K-J	1/16W	
		R30	01157129	R.CARBON FILM	22K-J	1/8W	
		R301	01157157	R.CARBON FILM	330K-J	1/8W	
		R302	01157125	R.CARBON FILM	15K-J	1/8W	
		R303	01157153	R.CARBON FILM	220K-J	1/8W	
		R304	01157105	R.CARBON FILM	2.2K-J	1/8W	
		R305	01157121	R.CARBON FILM	10K-J	1/8W	
		R306	01157149	R.CARBON FILM	150K-J	1/8W	
		R307	01157125	R.CARBON FILM	15K-J	1/8W	
		R308	01154025	R.CARBON FILM	1-J	1/2W	
		R309	01154099	R.CARBON FILM	1.2K-J	1/2W	
		R31	01157129	R.CARBON FILM	22K-J	1/8W	
		R310	01157105	R.CARBON FILM	2.2K-J	1/8W	
		R311	01154085	R.CARBON FILM	330-J	1/2W	
		R312	01157117	R.CARBON FILM	6.8K-J	1/8W	
		R32	01165087	R.CARBON FILM	390-J	1/16W	
		R33	01165087	R.CARBON FILM	390-J	1/16W	
		R34	01165087	R.CARBON FILM	390-J	1/16W	
		R35	01165087	R.CARBON FILM	390-J	1/16W	
		R36	01165087	R.CARBON FILM	390-J	1/16W	
		R37	01165087	R.CARBON FILM	390-J	1/16W	

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BUYER NAME :

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S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION		REMARKS
		R38	01165155	R.CARBON FILM	270K-J	1/16W	
		R39	01165121	R.CARBON FILM	10K-J	1/16W	
		R4	01165073	R.CARBON FILM	100-J	1/16W	
		R40	01165121	R.CARBON FILM	10K-J	1/16W	
		R401	01157123	R.CARBON FILM	12K-J	1/8W	
		R402	01157115	R.CARBON FILM	5.6K-J	1/8W	
		R403	01157097	R.CARBON FILM	1K-J	1/8W	
		R404	01157161	R.CARBON FILM	470K-J	1/8W	
		R405	01157115	R.CARBON FILM	5.6K-J	1/8W	
		R406	01157057	R.CARBON FILM	22-J	1/8W	
		R407	01157095	R.CARBON FILM	820-J	1/8W	
		R408	01154101	R.CARBON FILM	1.5K-J	1/2W	
		R409	01154099	R.CARBON FILM	1.2K-J	1/2W	
		R41	01165137	R.CARBON FILM	47K-J	1/16W	
		R410	01157101	R.CARBON FILM	1.5K-J	1/8W	
		R411	01157145	R.CARBON FILM	100K-J	1/8W	
		R412	01157125	R.CARBON FILM	15K-J	1/8W	
		R413	01157097	R.CARBON FILM	1K-J	1/8W	
		R414	01157137	R.CARBON FILM	47K-J	1/8W	
		R415	01157133	R.CARBON FILM	33K-J	1/8W	
		R416	01157081	R.CARBON FILM	220-J	1/8W	
		R417	01157161	R.CARBON FILM	470K-J	1/8W	
		R418	01157081	R.CARBON FILM	220-J	1/8W	
		R419	01157121	R.CARBON FILM	10K-J	1/8W	
		R42	01165129	R.CARBON FILM	22K-J	1/16W	
		R421	01332073	R.METAL OXIDE FILM	100-J	1W	
		R422	01154101	R.CARBON FILM	1.5K-J	1/2W	
		R423	180-140F	R.FUSING	220-J	1/2W	
		R424	180-305H	R.FUSING	1.2K	1/2W	
		R425	01154093	R.CARBON FILM	680-J	1/2W	
		R426	01157139	R.CARBON FILM	56K-J	1/8W	
		R427	01157145	R.CARBON FILM	100K-J	1/8W	
		R428	01157097	R.CARBON FILM	1K-J	1/8W	
		R43	01165121	R.CARBON FILM	10K-J	1/16W	
		R430	01157151	R.CARBON FILM	180K-J	1/8W	
		R431	01157115	R.CARBON FILM	5.6K-J	1/8W	
		R435	01157099	R.CARBON FILM	1.2K-J	1/8W	
		R438	01157073	R.CARBON FILM	100-J	1/8W	
		R44	01165111	R.CARBON FILM	3.9K-J	1/16W	
		R440	01314025	R.METAL OXIDE FILM	1-J	1W	
		R441	01157155	R.CARBON FILM	270K-J	1/8W	
		R45	01165121	R.CARBON FILM	10K-J	1/16W	
		R46	01165121	R.CARBON FILM	10K-J	1/16W	
		R47	01165137	R.CARBON FILM	47K-J	1/16W	
		R48	01157093	R.CARBON FILM	680-J	1/8W	
		R49	01314069	R.METAL OXIDE FILM	68-J	1W	
		R5	01165121	R.CARBON FILM	10K-J	1/16W	
		R50	01157095	R.CARBON FILM	820-J	1/8W	
		R501	01157165	R.CARBON FILM	680K-J	1/8W	
		R502	01157070	R.CARBON FILM	75-J	1/8W	

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MODEL : CBT-4685T NPGRR  
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BUYER NAME :

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S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION		REMARKS
		R503	01157097	R.CARBON FILM	1K-J	1/8W	
		R505	01157087	R.CARBON FILM	390-J	1/8W	
		R506	01157099	R.CARBON FILM	1.2K-J	1/8W	
		R507	01157089	R.CARBON FILM	470-J	1/8W	
		R51	01154080	R.CARBON FILM	200-J	1/2W	
		R52	01165117	R.CARBON FILM	6.8K-J	1/16W	
		R53	01157133	R.CARBON FILM	33K-J	1/8W	
		R54	01165139	R.CARBON FILM	56K-J	1/16W	
		R55	01165125	R.CARBON FILM	15K-J	1/16W	
		R552	01157149	R.CARBON FILM	150K-J	1/8W	
		R553	01157147	R.CARBON FILM	120K-J	1/8W	
		R559	01157097	R.CARBON FILM	1K-J	1/8W	
		R56	01157103	R.CARBON FILM	1.8K-J	1/8W	
		R570	01157109	R.CARBON FILM	3.3K-J	1/8W	
		R571	01157109	R.CARBON FILM	3.3K-J	1/8W	
		R572	01157109	R.CARBON FILM	3.3K-J	1/8W	
		R58	01165121	R.CARBON FILM	10K-J	1/16W	
		R59	01165097	R.CARBON FILM	1K-J	1/16W	
		R6	01165087	R.CARBON FILM	390-J	1/16W	
		R601	01157145	R.CARBON FILM	100K-J	1/8W	
		R602	01157145	R.CARBON FILM	100K-J	1/8W	
		R603	01157145	R.CARBON FILM	100K-J	1/8W	
		R604	01157119	R.CARBON FILM	8.2K-J	1/8W	
		R605	01157133	R.CARBON FILM	33K-J	1/8W	
		R606	01521049	R.METAL FILM	10-J	1W	
		R608	01157025	R.CARBON FILM	1-J	1/8W	
		R609	01157105	R.CARBON FILM	2.2K-J	1/8W	
		R7	01165073	R.CARBON FILM	100-J	1/16W	
		R8	01165087	R.CARBON FILM	390-J	1/16W	
	△	R801	180-142V	RESISTOR CEMENT RWR	4.7-J	5W	
		R802	01154149	R.CARBON FILM	150K-J	1/2W	
		R803	01335125	R.METAL OXIDE FILM	15K-J	2W	
		R804	01154155	R.CARBON FILM	270K-J	1/2W	
		R805	01157081	R.CARBON FILM	220-J	1/8W	
		R806	01157099	R.CARBON FILM	1.2K-J	1/8W	
		R807	01157121	R.CARBON FILM	10K-J	1/8W	
		R808	01157119	R.CARBON FILM	8.2K-J	1/8W	
		R809	01332073	R.METAL OXIDE FILM	100-J	1W	
		R810	01154125	R.CARBON FILM	15K-J	1/2W	
	△	R811	180-142E	RESISTOR CEMENT RWR	180 OHM	5W	
	△	R812	01157145	R.CARBON FILM	100K-J	1/8W	
	△	R813	01518023	R.METAL FILM	0.82-J	1/8W	
		R817	01154155	R.CARBON FILM	270K-J	1/2W	
		R818	01157073	R.CARBON FILM	100-J	1/8W	
	△	R851	180-042B	RESISTOR COMP GF	4.7 OHM	1/2W	
		R9	01165121	R.CARBON FILM	10K-J	1/16W	
		R901	01157073	R.CARBON FILM	100-J	1/8W	
		R902	01157073	R.CARBON FILM	100-J	1/8W	
		R903	01157073	R.CARBON FILM	100-J	1/8W	
		R904	01332123	R.METAL OXIDE FILM	12K-J	1W	

## [REPLACEMENT PARTS LIST]

PAGE : 11

MODEL : CBT-4685T NPGRR  
CBT-4685T HPTRT

BUYER NAME :

RUN-DATE : 89.12.20

S	AL	LOCA.NO	PART NO.(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		R905	01332123	R,METAL OXIDE FILM	12K-J 1W	
		R906	01332123	R,METAL OXIDE FILM	12K-J 1W	
		R907	01154107	R,CARBON FILM	2.7K-J 1/2W	
		R908	01154107	R,CARBON FILM	2.7K-J 1/2W	
		R909	01154107	R,CARBON FILM	2.7K-J 1/2W	
		R910	01157103	R,CARBON FILM	1.8K-J 1/8W	
		R911	01157103	R,CARBON FILM	1.8K-J 1/8W	
		R912	01157103	R,CARBON FILM	1.8K-J 1/8W	
		R913	01157087	R,CARBON FILM	390-J 1/8W	
		R914	01157087	R,CARBON FILM	390-J 1/8W	
		R915	01157087	R,CARBON FILM	390-J 1/8W	
		R916	01157079	R,CARBON FILM	180-J 1/8W	
		R917	01157049	R,CARBON FILM	10-J 1/8W	
		R921	01157073	R,CARBON FILM	100-J 1/8W	
		R922	01157073	R,CARBON FILM	100-J 1/8W	
		R923	01157073	R,CARBON FILM	100-J 1/8W	
		SW301	140-111C	SWITCH,	JRS-1301	
		SW302	140-111C	SWITCH,	JRS-1301	
		TH851	163-012A	THERMISTOR	PTH451A02BG180M290	
		T401	151-116B	TRANSFORMER	H.DRIVE(PC04X)	
		T402	154-132C	FBT	PC05X14INCH	
		T801	151-305A	TRANSFORMER	SMPS FOR PC08X8(NARROW)	
		VR101	180-428H	RESISTOR	SEMI VR EVN-D4A A01 B10K OHM	
		VR102	180-428H	RESISTOR	SEMI VR EVN-D4A A01 B10K OHM	
		VR301	180-425M	RESISTOR SEMI VR	220K OHM	
		VR302	180-428H	RESISTOR	SEMI VR EVN-D4A A01 B10K OHM	
		VR401	180-428H	RESISTOR	SEMI VR EVN-D4A A01 B10K OHM	
		VR402	180-425L	RESISTOR SEMI VR	100K OHM	
		VR502	180-428D	RESISTOR	SEMI VR EVN-D4A A01 B1.0KOHM	
		VR801	180-428G	RESISTOR	SEMI VR EVN-D4A A01 B5.0KOHM	
		VR901	180-428G	RESISTOR	SEMI VR EVN-D4A A01 B5.0KOHM	
		VR902	180-428G	RESISTOR	SEMI VR EVN-D4A A01 B5.0KOHM	
		VR903	180-428G	RESISTOR	SEMI VR EVN-D4A A01 B5.0KOHM	
		VR904	180-428C	RESISTOR	SEMI VR EVN-D4A A01 B500 OHM	
		VR905	180-428C	RESISTOR	SEMI VR EVN-D4A A01 B500 OHM	
		X1	156-008B	OSCILLATOR	X-TAL 4.000MHZ HC-18/U	
		X501	156-007A	OSCILLATOR	X-TAL 8.86 MHZ	
		ZF101	166-089A	FILTER	SAW TSF1303C	
		Z101	166-031B	FILTER	TRAP,CERAMIC TPS 5.5MB	
		Z102	166-002D	FILTER	CERAMIC SFE 5.5MB	
		Z103	166-032D	FILTER	CERAMIC CDA 5.5MD	
			153-061A	DY	14-PL P1	
				*** END OF DATA ***		

# VS TUNING SYSTEM SCHEMATIC DIAGRAM (PAL ONLY)

## REFERENCE

1. THE APPLICATION OF MODEL  
ALL MODEL, PC08X8 39 VS TUNING SYSTEM.
2. A COMPARISON
  - 1) THE ONLY PARTS FOR PAL B/G SYSTEM  
R1, 2, 3, 30, 31, 47  
D5, 6, 7  
Q3, 4, 5
  - 2) THE ONLY PARTS FOR PAL I SYSTEM  
R0, 57, 60, ST/BY LAMP. ( )  
D1  
Q11  
P8  
J0
3. THE CONNECTION OF PIN

TUNING PIN NO.	MUTUAL PIN NO.	LOCATION	FUNCTION
P1	P104	MAIN	VOLUME/AFT
P2	PCAK	LOCAL KEY(CTL)	
P3	P502	MAIN	CO. BR. CONT.
P4	CONTROL	PCAK	LOCAL KEY(LED)
P5	LED	DRIVE	CH. INDICATOR
P6	PRE	AMP	REMOTE CONTROL
P7	SUB	S/W	REMOTE POWER
P8	ST/BY	LAMP	ST/BY INDICATOR
P9	P101	MAIN	THE WHOLE CONTROL

4. ABOUT MDA2082
  - 1) EPROM
  - 2) USEFUL MEMORY ADDRESS

DIV.	PAL-I	PAL-B/G
FB	CD	CD
FC	86	86
FD	1C	0C
FE	11	11
*	UHF ONLY	UHF / VHF

