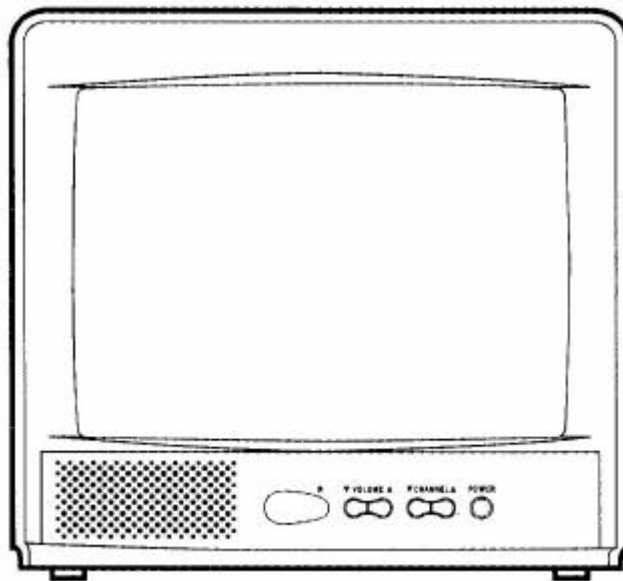


# *Service Manual*

**MT1191V**

**19" Color Television**



**THIS SERVICE MANUAL IS FOR MT1191V SUFFIX A , B ,  
C, D AND E CRT USAGE**

	SUFFIX A	SUFFIX B	SUFFIX C	SUFFIX D	SUFFIX E
V451	5721-015ST51N (51GGD95X)	5721-51CN020T (510UEB22DY)	5721-028TT48N (A48LRH93X (W))	5721-029NT48N (A48LSD095X)	5721-031ZT48N (A48LGS30X)
DY501	4993-118	4993-060	4993-122	4993-119	4993-123

***Memorex***®

## FEATURES

- ◆ On-screen graphics guide you through setup features and operations
- ◆ Automatic programming of channels allows easy selection of stations available in your viewing area
- ◆ Sleep timer programs the TV to turn itself off at a preset time
- ◆ One day timer programs the TV to come on once at a preset time
- ◆ Weekly timer programs the TV to come on at a preset time every day
- ◆ 26 button infrared remote control allows remote operation
- ◆ VHF/UHF/CATV tuning allows reception of standard broadcasts or cable TV channels
- ◆ Closed caption decoder displays captions or half-screen text
- ◆ V-Block function

## SPECIFICATIONS

AC Power Input:	120V, 60Hz
AC Power Consumption:	98Watts
Chassis Construction:	IC Solid State
Picture Tube:	19" ( measured diagonally )
Speaker:	3.5 x 2 in (90 x 50 mm) Oval, 8 ohms
Tuner:	181 Channel, Freq. Synthesized
Remote Control:	Infrared, Direct Access 26 Key, 2 "AA" batteries

Receiving Channels:	
VHF	2 - 13
UHF	14 - 69
CATV	
Mid Band	14 - 22
Super Band	23 - 36
Hyper Band	37 - 65
Ultra Band	66 - 94, 100 - 125
Sub Mid Band	1, 95 - 99
Cabinet:	Monitor Style
Antenna Input Impedance	75 ohm (VHF/UHF) Coaxial Input

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

# IMPORTANT SERVICE SAFETY INFORMATION

Operation of receiver outside of cabinet or with back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain connecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating chassis.

These receivers have a "Polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these receivers is 25 KV  $\pm$  1.0KV at zero beam current with a line voltage of 120V AC. Higher voltage may also increase possibility of failure in HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receiver that could cause a rise in high voltage, or operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram or identified by the safety mark in the replacement parts list should be replaced only with exact Factory recommended replacement parts. The use of unauthorized substitute parts may create shock, fire, X-radiation or other hazard.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between second anode lead and the CRT dag grounding device. When servicing the High Voltage System remove static charge from it by connecting 10K ohm resistor in series with an insulated wire (such as a test probe) between picture tube dag and 2nd anode lead (AC line cord disconnected from AC supply).

The picture tube used in this receiver employs integral implosion protection. Replace with tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatter-proof goggles and after discharging the high voltage completely. Keep others without shatter-proof goggles away.

When removing springs or spring mounting parts from tuner, tuner cluster or chassis, shatter-proof goggles must be worn. Keep others without shatter-proof goggles away.

## SAFETY INSPECTION

Before returning the receiver to the user, perform the following safety checks:

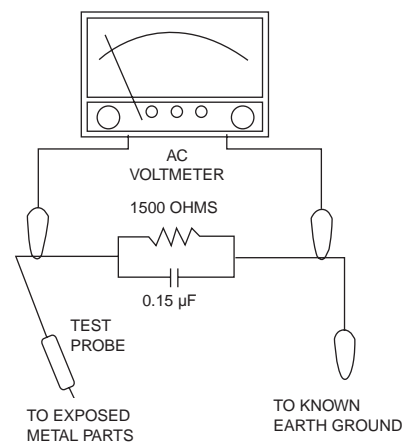
## PROTECT YOUR CUSTOMER

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. (Use Standard Item No. 25086,21641) Any reading of 0.4 mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15 MF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.61 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



## X-RAY PROTECTOR CIRCUIT CHECK

PERFORM WHENEVER HIGH VOLTAGE CIRCUITRY OR POWER SUPPLY CIRCUITRY IS SERVICED.

1. Plug the AC Line Cord (P1) into a AC 120V, 60Hz receptacle.
2. Turn the Power Switch (S101) on and wait for about 10 minutes.
3. Connect the antenna leads to the EXT. Antenna Terminal (TE1) and select a broadcasting station.
4. Connect DC Digital Voltmeter to TP11 (positive lead) and TP4 (negative lead).
5. Apply DC 11V between TP11 and TP9 from external equipment.
6. If picture and sound do not disappear, check IC301, D552, D553, D554, R554, R555, R556, R557, C555 and C556.

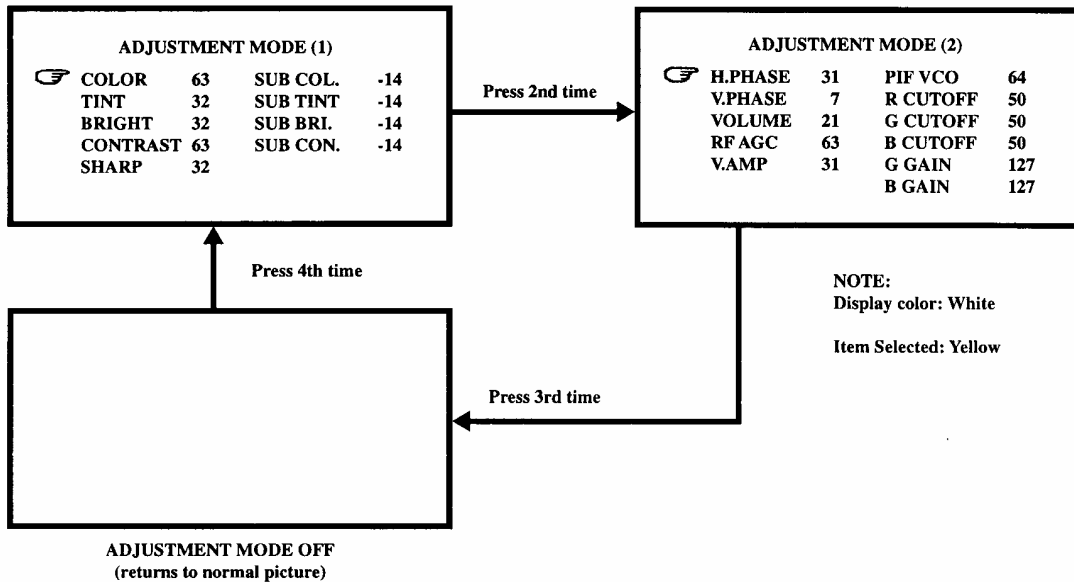
## ( ADJUSTMENT BY REMOTE CONTROL )

### ADJUSTMENT MODE

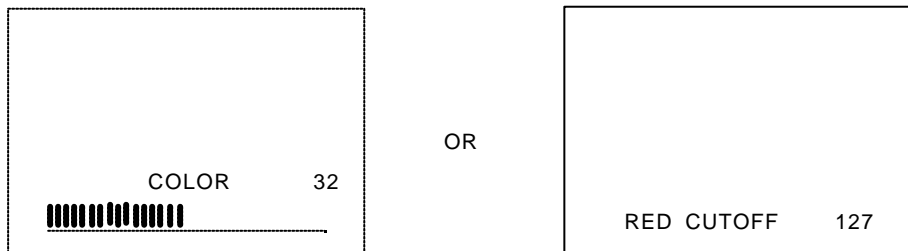
The following adjustment items can be performed from menus by Remote Control as shown below :

**NOTE: The button combination and position on the Remote Control to select the adjustment items is given on page 4.**

1. Press the SHIFT + ADJ. MODE buttons on the Remote Control simultaneously to bring up the adjustment mode menu screens shown below.



2. From the menu screen, press the + or - button on the Remote Control to select the item to be adjusted.
3. Press the MENU button on the Remote Control to enter adjustment mode for the item selected, and the display shown below appears :

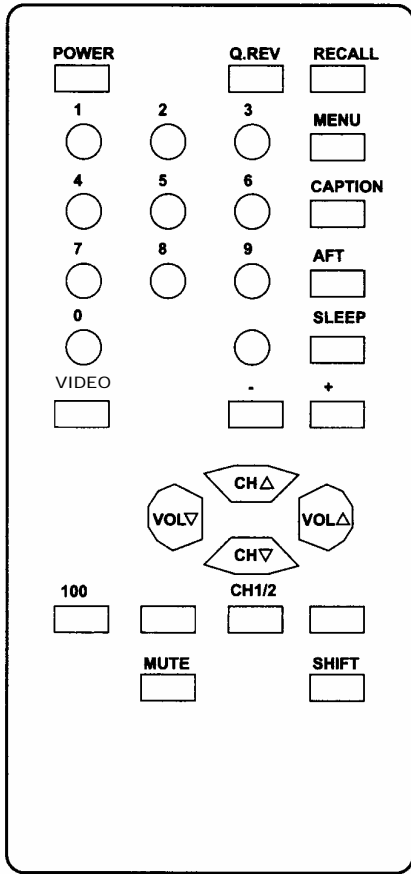


Example:

4. Use the + or - button on the Remote Control to adjust the data for the item selected.
5. When adjustment has been completed, press the SHIFT + ADJ. MODE buttons on the Remote Control simultaneously to return to the main menu.

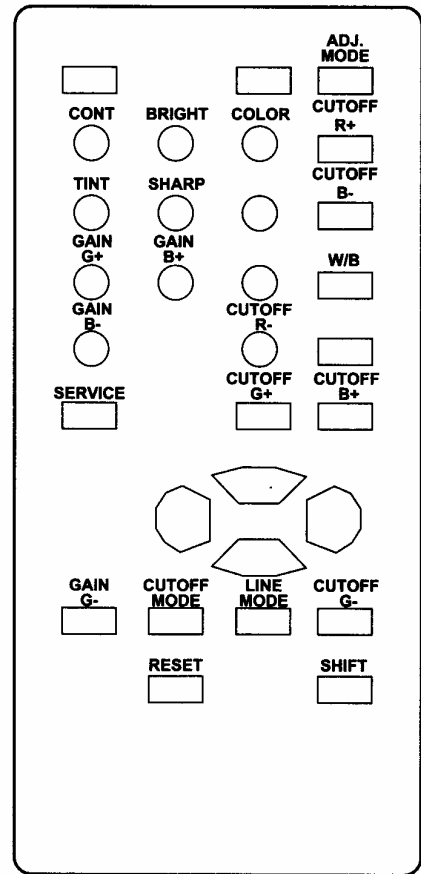
# REMOTE CONTROL LAYOUT

## NORMAL MODE LAYOUT (WITHOUT SHIFT KEY)



ONLY PRESS THE SELECTED ITEM BUTTON

## SPECIAL MODE LAYOUT (SHIFT + SELECTED ITEM)



MUST PRESS SHIFT + SELECTED ITEM BUTTON

# IC, TRANSISTOR AND CRT COMPLEMENT

## INTEGRATED CIRCUITS

IC101 TA87C-B2	Microcomputer
IC102 M24CO2B	EEPROM
IC301 TA1268N	IF/Video/Chroma/Deflection
IC311 NJ7809FA	Voltage Regulator
IC501 AN5512	Vertical Deflection Output
IC601 STR30130	AVR
IC671 NJ7805LD	Voltage Regulator and Reset

## TRANSISTORS

Q101 DTC143ZS	Vertical Synchronizing
Q102 2SC945(P)	Horizontal Synchronizing
Q173 2SC945(P)	SD Signal Buffer
Q301 2SC945(P)	SIF Signal Buffer
Q302 2SA733(P)	Video Buffer Amplifier
Q303 2SC945(P)	Video Out
Q351 DTC143ZS	Service Mode Switching
Q451 2SC1573A(R)	Red Color Driver
Q452 2SC1573A(R)	Blue Color Driver
Q453 2SC1573A(R)	Green Color Driver
Q551 2SC1473A(R)	Horizontal Driver
Q552 2SD1877	Horizontal Driver
Q601 2SC945(P)	Power On/Off Relay Driver
Q801 2SC945(P)	Audio Amplifier
Q802 2SA950(0)	Audio Amplifier
Q803 2SC2120(0)	Audio Amplifier

## PICTURE TUBE

V451 51GGD95X	CRT (SUFFIX A)	V451 A48LRH93X(W)	CRT (SUFFIX C)
V451 510UEB22(DY)	CRT (SUFFIX B)	V451 A48LSD095X	CRT (SUFFIX D)
V451 A48LGS30X	CRT (SUFFIX E)		

## CHASSIS REMOVAL

1. Remove 4 screws (177) from Cabinet Back (AB) and remove Cabinet Back from rear.
2. Discharge anode lead at CRT chassis ground through a 10kohm resistor.
3. Disconnect anode lead from CRT.
4. Disconnect CRT Socket P.C. board (PCB-2) from CRT(V451).
5. Disconnect 3 connectors (CN501 (DY501), CN601 (L601) and LCN801) from Main P.C. board (PCB-1).
6. When replacing chassis, reverse the above procedure making certain that all leads are fastened in their original places.

## CRT REMOVAL

**CAUTION:** Wear shatterproof goggles and exercise proper handling precautions when working around high vacuum picture tubes.

1. Remove chassis per instructions under CHASSIS REMOVAL.
2. Remove Convergence Magnet Assembly (MG451) from neck of CRT.
3. Remove Deflection Yoke (DY501) from neck of CRT
4. Remove 3 wedges (142) from CRT
5. Remove Degaussing Coil (L601) from CRT
6. Remove braid wire (331) and spring (158) from CRT
7. Lay cabinet face down on some protective material.
8. Remove 4 CRT mounting screws (156).
9. Remove CRT from Cabinet Front (AA).
10. To install new CRT, reverse above procedure.
11. Perform purity and convergence adjustments.

## INSTALLATION AND SERVICE INSTRUCTION

**CAUTION:** Use an isolation transformer when performing any service on this chassis.

**SHUTDOWN CIRCUIT:** When the high voltage rises, there are simultaneous voltage increase developed at terminal 6 of the Horizontal Output Transformer ( T671 ) and applied to pin 29 of IC301. If excessive high voltage is produced, the increased voltage developed exceeds the rating of zener diode D552 causing the Horizontal Oscillator to stop functioning and the high voltage system to shut down.

### AFT ( AUTOMATIC FINE TUNING ) ADJUSTMENT

1. Remove JP200. (See Figure 1 for positioning)
2. Connect positive wire of TV signal Generator (NTSC signal, 45.75MHz, 80dBu ) to JP199 and negative wire of TV Signal Generator to TP4.
3. Connect wire (+) of DC Digital Voltmeter to TP6 and wire (-) to TP4.
4. Adjust T202 so that the DC Digital Voltmeter reading is  $2.5V \pm 0.2V$ .
5. Re insert JP200 and put solder.

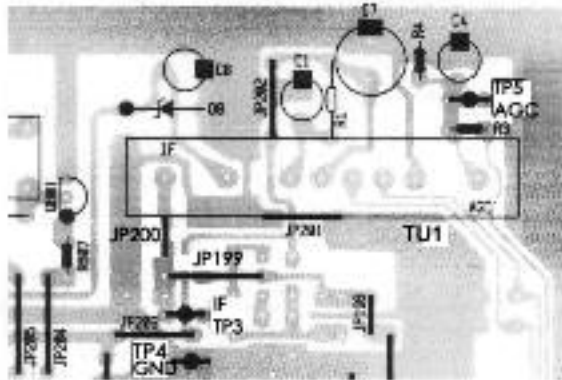


FIG. 1

### SUB TINT ADJUSTMENT

1. Connect TV Test Pattern Generator (NTSC signal, Color Bar signal, 70dB u , channel 6) to EXT. Antenna Terminal (TE1) through TV Channel Signal Generator.
2. Connect positive lead of Oscilloscope to TP14 and negative lead to TP10.
3. Connect EXT. trigger of Oscilloscope to R463.
4. Set Tint control to center position. (by Remote Control).

**( NOTE: For steps 5, 6 and 7 below, refer to page 3 for Adjustment By Remote Control Method).**

5. Go to Adjustment Mode (1) by remote control.
6. Select SUB TINT from Adjustment Mode (1) menu screen.
7. Adjust SUB TINT level (by using + or - button on remote control) so that waveform is the same as shown in Figure 2.

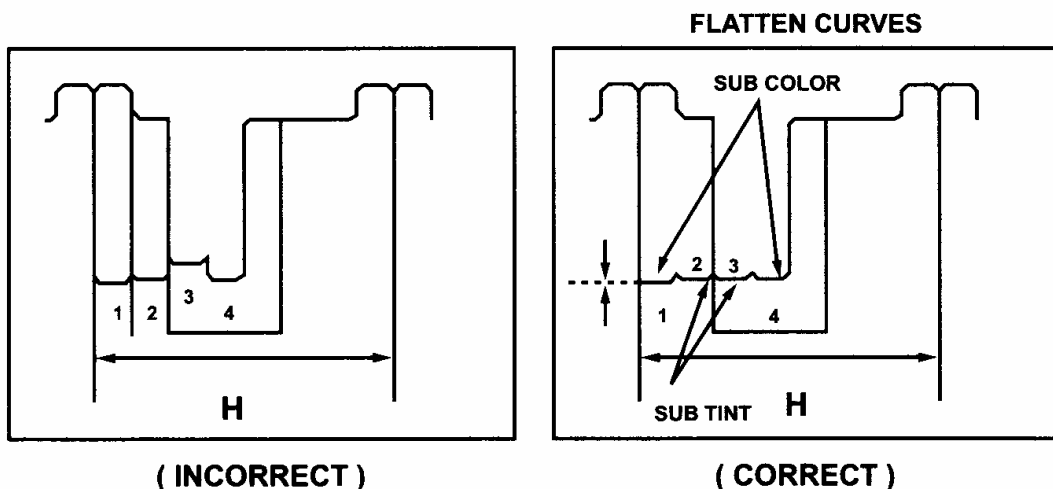


FIG. 2

### SOUND IF ADJUSTMENT

1. Connect TV Test Pattern Generator (NTSC signal, 70dB u, channel 2) to EXT. Antenna Terminal (TE1) through TV Channel Signal Generator. (Standard modulation is 400Hz at 25kHz deviation for sound signal).
2. Connect positive lead of DC Digital Voltmeter to TP7 and negative lead to TP4.
3. Adjust T203 so that the DC Digital Voltmeter reading is 4.0V.

### COLOR PURITY ADJUSTMENT

For best results, it is recommended that the purity adjustment be made in the final receiver location. If the receiver will be moved, perform this adjustment with it facing East.

The receiver must have been operating 15 minutes prior to this procedure and the face plate of the CRT must be at room temperature. The following procedure is recommended while using a Dot/Bar Generator.

1. Check correct location of all neck components. (Refer to Fig. 3)
  2. Rough-in the static convergence at the center of the CRT, as explained in the static convergence procedure.
  3. Set the Contrast control to minimum position and Brightness control as far maximum as possible without causing the picture to "bloom".
  4. Apply green raster signal from Dot/Bar Generator to receiver.
  5. Loosen the deflection yoke clamp screw and pull the deflection yoke toward the rear of the CRT.
  6. Begin the following adjustment with the tabs on the round purity magnet rings set together. Slowly separate the two tabs while at the same time rotating them to adjust for a uniform green vertical band at the center of the CRT screen.
  7. Carefully slide the deflection yoke forward to achieve green purity (Uniform green screen).  
(NOTE: Center purity is obtained by adjusting the tabs on the round purity magnet rings. Outer edge purity is obtained by sliding the deflection yoke forward.)
  8. Check for red and blue field purity by applying red and blue raster signal alternately from Dot/Bar Generator to receiver. Repeat steps 2 through 7, if required.
  9. Tighten deflection yoke clamp screw.
  10. Perform BLACK AND WHITE ADJUSTMENT procedure.
- (CW : clockwise, CCW : counterclockwise)

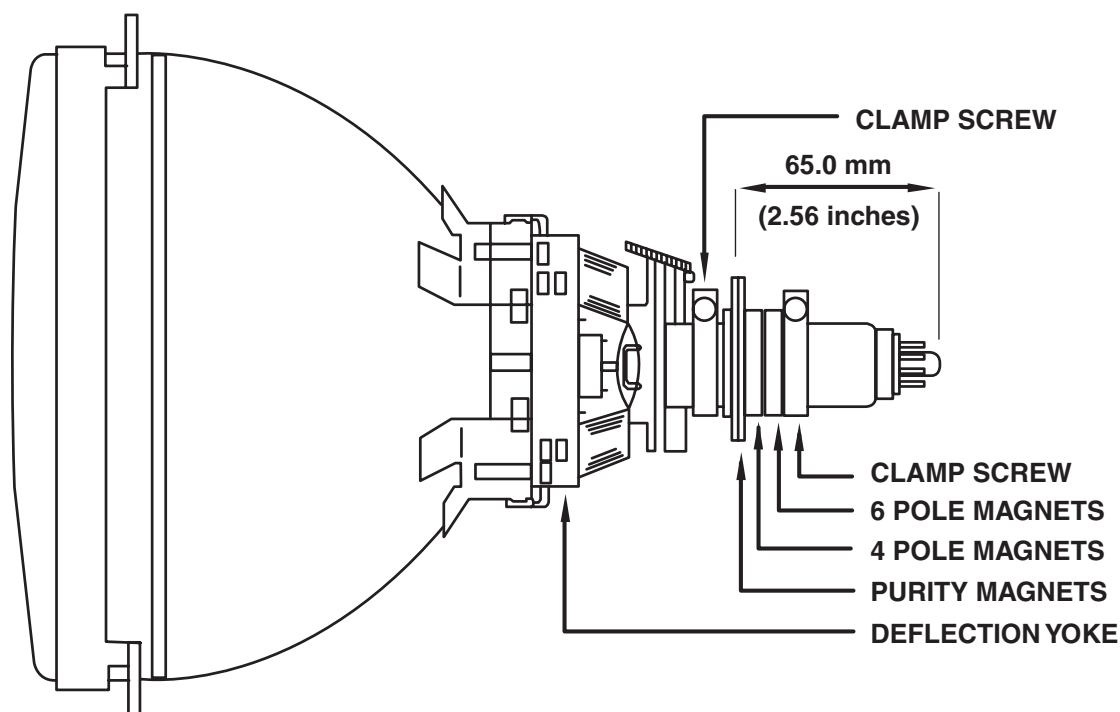


Fig. 3



## STATIC CONVERGENCE ADJUSTMENT ( Refer to Figure 3 and 4 )

IMPORTANT: Before proceeding, make sure the location of the convergence magnet assembly on the neck of the CRT is as shown in Figure 3. The rear edge of this assembly must be positioned 65 mm from the tip of the CRT base. If not properly positioned, convergence adjustment may be difficult, if not impossible.

1. Apply dot or crosshatch pattern from Dot/Bar Generator to receiver. Reduce setting of Brightness and/or Contrast controls to eliminate any blooming in pattern.
2. Observe the blue and red pattern appearing on the CRT screen. Locate the 4 pole magnet rings and separate their adjusting tabs approximately the width of one tab.
3. Now rotate this pair of magnet rings as a unit without re-adjusting the spacing between the tabs. This will minimize the separation between the blue and red dots (lines).
4. If the blue and red dots are not completely converged at this point, readjust the spacing between the two tabs to complete convergence of the blue and red dots (lines), thus producing magenta dots (lines).
5. If necessary, repeat step 2, 3 and 4 until proper convergence is achieved.
6. Observe the magenta (B/R) and green pattern now appearing on the CRT screen.
7. Locate the 6 pole magnet rings and separate their adjusting tabs approximately the width of one tab.
8. Rotate this pair of magnet rings as a unit without re-adjusting the spacing between the tabs. This will minimize the separation between the magenta (B/R) and green dots (lines).
9. If the magenta and green dots (lines) are not completely converged at these points, readjust the spacing between the two tabs to complete convergence of the magenta and green dots (lines).
10. If necessary, repeat step 7, 8 and 9 until proper convergence is obtained.

To prevent accidental mis-adjustment of the magnets, apply a stripe of paint across all six rings and onto the neck of the CRT.

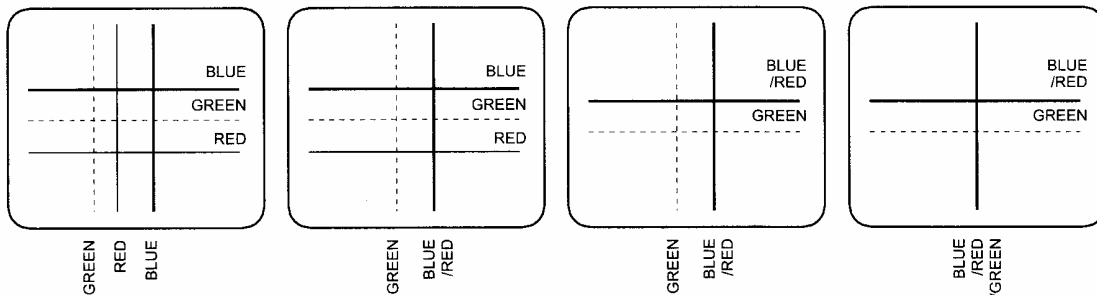


FIG. 4

## DYNAMIC CONVERGENCE ADJUSTMENT ( Refer to Figure 5 )

Dynamic convergence (convergence of the three edges of the CRT screen) is accomplished by proper insertion and positioning of three rubber wedges between the edges of the deflection yoke and funnel of the CRT. This is accomplished in the following manner.

1. Turn the receiver ON and allow it to warm up for 15 minutes.
2. Apply crosshatch pattern from Dot/Bar Generator to receiver. Observe spacing between lines around edges of CRT screen.
3. For the misconvergence shown in Figure 5 ( A ), tilt the deflection yoke down and insert wedge A between deflection yoke and CRT.
4. For the misconvergence shown in Figure 5 ( B ), tilt the deflection yoke up and insert wedge B between deflection yoke and CRT.
5. For the misconvergence shown in Figure 5 ( C ), tilt left side of the deflection yoke and slightly insert wedge C between deflection yoke and CRT. Then, deeply insert wedges A and B between deflection yoke and CRT.
6. For the misconvergence shown in Figure 5 ( D ), tilt right side of the deflection yoke and deeply insert wedge C between deflection yoke and CRT. Then, slightly insert and/or extract wedges A and B between deflection yoke and CRT.
7. Alternately change spacing between and depth of insertion of the three wedges until proper dynamic convergence is obtained.
8. Use a strong adhesive tape to firmly secure each of the three rubber wedges to the funnel of the CRT.

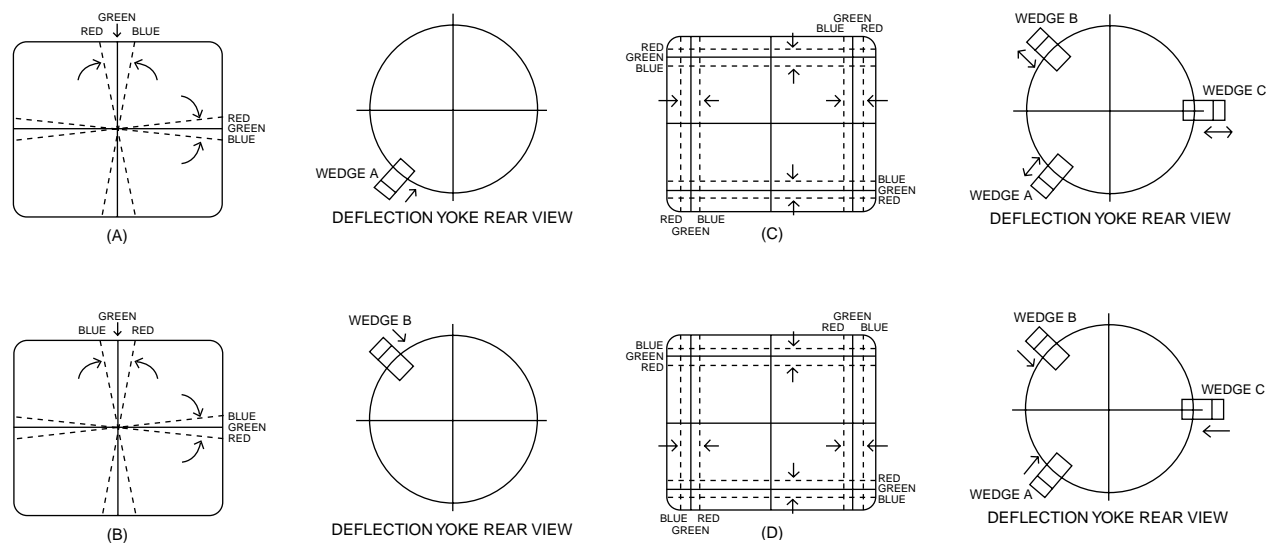


Fig. 5

### FOCUS ADJUSTMENT

Adjust focus control, located on the Horizontal Output Transformer (T671), for maximum overall definition and fine picture detail with Brightness and Contrast controls set at normal viewing levels.

### BLACK AND WHITE ADJUSTMENT (CUTOFF / WHITE BALANCE)

The purpose of this procedure is to adjust the bias applied to the color picture tube for reproducing a quality monochrome picture at all brightness levels and also to achieve maximum usable brightness. Confirm that proper purity and AGC adjustments have been completed before starting this adjustment.

1. Connect the TV test pattern generator (Monoscope pattern) to the EXT. antenna terminal via TV VHF/UHF signal generator (NTSC signal, 70dB u).
2. Select Cutoff Mode by remote control, (refer to page 4 for remote control key combination and position) and CUT OFF will be displayed on top-right screen for about 3 seconds. At the same time the data readings for Cutoff and Gain in Adjustment Mode (2) will become as follows:  
R CUTOFF: 50, G CUTOFF: 50, B CUTOFF: 50, G GAIN: 127, B GAIN: 127
3. Select Service Mode by remote control, (refer to page 4 for remote control key combination and position) and TV screen becomes horizontal line.
4. Turn the Screen control (located under the flyback transformer) clockwise until any blue, green or red color line appears.
5. Check the color of the line which appeared first, then turn the Screen control (located under the flyback transformer) fully counterclockwise.
6. Adjust the cutoff level of the color which appeared first by remote control, (refer to page 4 for remote control key combination and position) so that voltage between TP16 and TP15 (blue), TP14 (green) or TP13 (red) is  $20 \pm 1V$ .
7. Turn the Screen control (located under the flyback transformer) clockwise so that the bright color line can just be seen.
8. Adjust cutoff levels other than the above by remote control, (refer to page 4 for remote control key combination and position) so that the line color is white.
9. Press again Service Mode key by remote control, (refer to page 4 for remote control key combination and position) to return to TV position. Monoscope pattern will appear on TV screen.
10. Adjust the contrast and brightness controls to make the picture dim. Adjust the Green and Blue Cutoff levels by remote control, (refer to page 4 for remote control key combination and position) so that the picture is white.
11. Adjust the contrast and brightness controls to make the picture bright. Adjust the Green and Blue Gain levels by remote control, (refer to page 4 for remote control key combination and position) so that the picture is white.
12. Repeat steps 10 and 11 so that the picture is white in both dim and bright conditions.

### HORIZONTAL PHASE ADJUSTMENT

1. Connect TV Test pattern Generator (NTSC signal 70dB u, Monoscope Pattern) to Antenna Terminal (TE) through TV Channel Generator.

**(NOTE: For steps 2, 3 and 4 below, refer to page 3 for Adjustment By Remote Control Method).**

2. Go to Adjustment Mode (2) by remote control.
3. Select H. PHASE from Adjustment Mode (2) menu screen.
4. Adjust H. PHASE level (by using + or - button on remote control) so that horizontal reading of test pattern becomes the same value.

### VERTICAL PHASE ADJUSTMENT

1. Connect TV Test pattern Generator (NTSC signal 70dB u, Monoscope Pattern) to Antenna Terminal (TE) through TV Channel Generator.

**(NOTE: For steps 2, 3 and 4 below, refer to page 3 for Adjustment By Remote Control Method).**

2. Go to Adjustment Mode (2) by remote control.
3. Select V. PHASE from Adjustment Mode (2) menu screen.
4. Adjust V. PHASE level (by using + or - button on remote control) so that vertical reading of test pattern becomes the same value.

### VERTICAL AMPLITUDE ADJUSTMENT

1. Connect TV Test pattern Generator (NTSC signal 70dB u, Monoscope Pattern) to Antenna Terminal (TE) through TV Channel Generator.

**(NOTE: For steps 2, 3 and 4 below, refer to page 3 for Adjustment By Remote Control Method).**

2. Go to Adjustment Mode (2) by remote control.
3. Select V. AMP from Adjustment Mode (2) menu screen.
4. Adjust V. AMP level (by using + or - button on remote control) so that picture fills the picture opening from top to bottom and is proportionate to the width.

### RF AGC ADJUSTMENT

1. Connect TV Channel Signal Generator to Antenna Terminal (TE).
2. Connect positive lead of DC Digital Voltmeter to TP5 and negative lead of DC Digital Voltmeter to TP4.
3. Adjust level of TV Channel signal Generator so that the output level is 57dB u. (Monoscope Pattern)

**(NOTE: For steps 4, 5 and 6 below, refer to page 3 for Adjustment By Remote Control Method).**

4. Go to Adjustment Mode (2) by remote control.
5. Select RF AGC from Adjustment Mode (2) menu screen.
6. Adjust RF AGC level (by using + or - button on remote control) so that the DC Digital Voltmeter reading is  $6.0V \pm 0.2V$ .

### SUB BRIGHTNESS ADJUSTMENT

1. Connect TV Test Pattern Generator (NTSC signal, Color Bar Signal, 70dB u) to EXT. Antenna Terminal through TV Channel Signal Generator.

**(NOTE: For steps 3, 4 and 5 below, refer to page 3 for Adjustment By Remote Control Method).**

2. Go to Adjustment Mode (1) by remote control.
3. Set the COLOR and CONTRAST of the TV set to minimum and the SUB CONTRAST and SUB BRIGHT to '0' (using + or - button on remote control).
4. Adjust SUB BRIGHT level (by using + or - button on remote control) to obtain a dim pattern. (Refer to Fig.6)

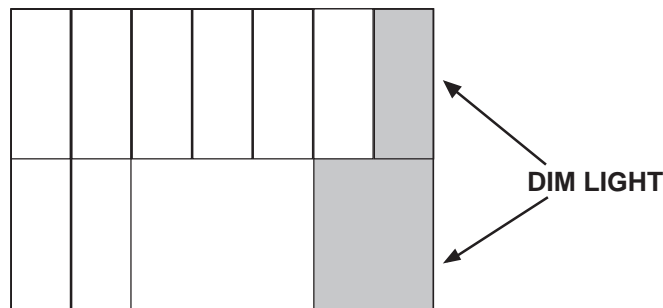
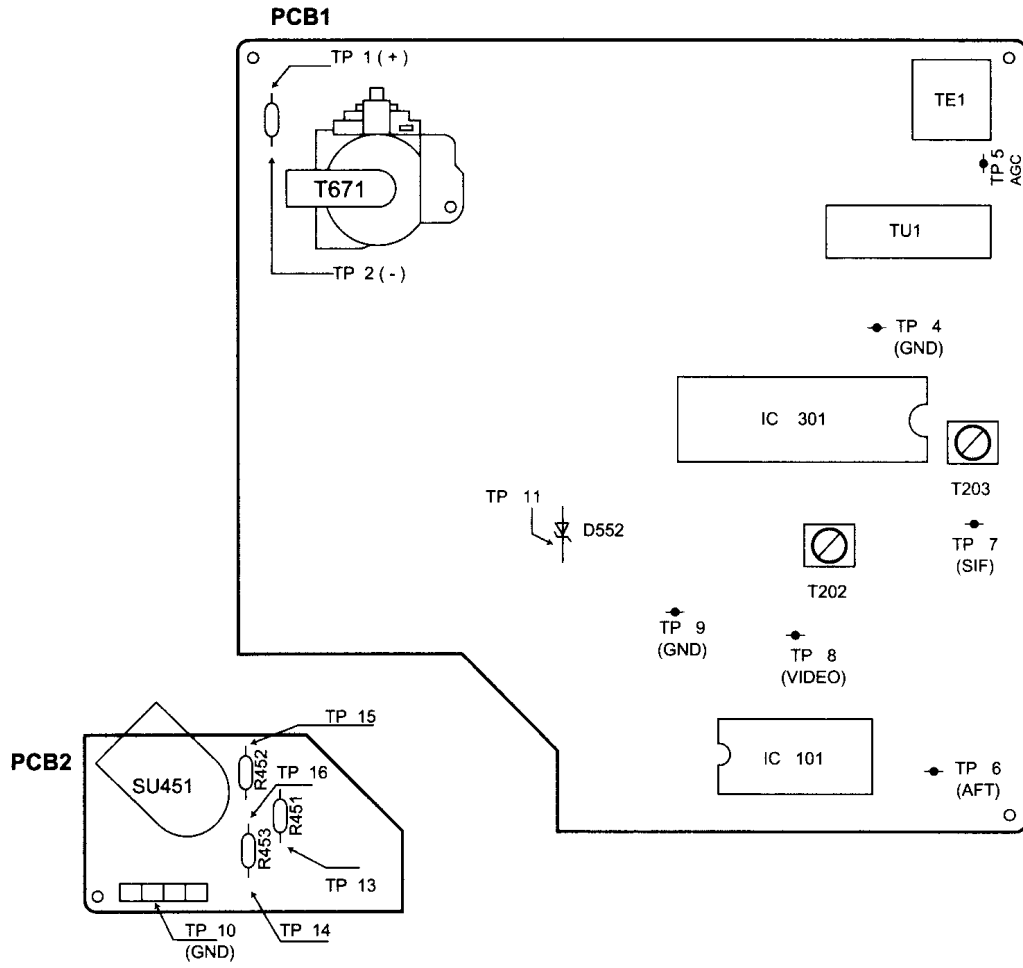


Fig. 6

# TEST POINT



## VOLTAGE CHART (all in volts)

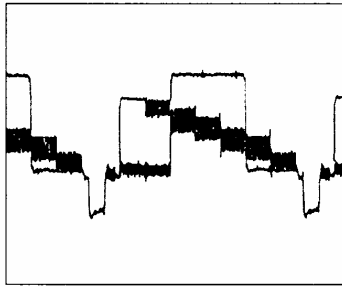
OPERATION CONDITION : TINT, BRIGHT and COLOR CONTROL..... CENTER  
 CONTRAST ..... MAXIMUM  
 COLOR BAR SIGNAL

IC101	TERMINAL No	1	2	3	4	5	6	7	8	9	10
	Volt	0.0	0.0	0.0	0.0	5.0	5.0	5.0	0.0	0.0	1.0
	TERMINAL No	11	12	13	14	15	16	17	18	19	20
	Volt	0.0	0.0	5.0	5.0	5.0	2.9	0.0	0.0	1.0	1.0
	TERMINAL No	21	22	23	24	25	26	27	28	29	30
	Volt	4.9	0.0	0.0	0.0	0.0	3.8	4.3	4.8	4.9	0.0
	TERMINAL No	31	32	33	34	35	36	37	38	39	40
	Volt	2.1	2.3	5.0	0.0	5.0	4.5	3.0	2.0	0.0	0.7
IC102	TERMINAL No	1	2	3	4	5	6	7	8		
	Volt	0.0	0.0	0.0	0.0	1.9	3.0	0.0	5.0		
IC301	TERMINAL No	1	2	3	4	5	6	7	8	9	10
	Volt	0.0	3.9	2.3	3.4	4.4	0.0	2.0	1.2	9.1	5.8
	TERMINAL No	11	12	13	14	15	16	17	18	19	20
	Volt	6.5	4.9	0.0	0.0	4.8	4.8	4.8	3.2	2.3	2.1
	TERMINAL No	21	22	23	24	25	26	27	28	29	30
	Volt	2.2	0.7	4.7	4.8	6.5	9.1	3.0	1.9	2.8	1.2
	TERMINAL No	31	32	33	34	35	36	37	38	39	40
	Volt	0.7	1.2	7.7	6.3	0.0	2.9	3.2	3.0	1.6	5.2
	TERMINAL No	41	42	43	44	45	46	47	48	49	50
	Volt	3.0	5.0	5.0	2.0	1.8	9.1	4.0	9.1	8.1	8.1
IC311	TERMINAL No	1	2	3							
	Volt	16.0	0.0	9.0							
IC501	TERMINAL No	1	2	3	4	5	6	7	8	9	
	Volt	0.0	11.4	0.0	23.0	12.6	0.0	-0.3	1.6	25.4	
IC601	TERMINAL No	1	2	3	4	5					
	Volt	0.0	121.0	160.0	160.0	0.0					
IC671	TERMINAL No	1	2	3	4	5	6	7	8		
	Volt	14.0	0.0	5.5	0.0	0.0	4.6	0.0	5.0		

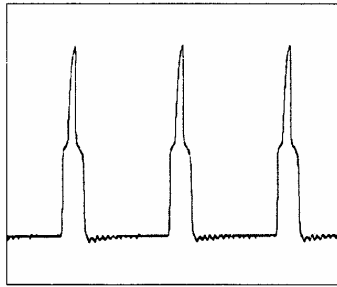
	B	E	C
	Volt	Volt	Volt
Q101	1.5	0.0	4.3
Q102	-0.8	0.0	3.8
Q173	-0.1	0.0	4.5
Q301	4.0	3.4	9.1
Q302	1.5	2.1	0.0
Q303	1.7	1.1	9.1
Q351	0.0	0.0	9.1
Q451	2.3	2.2	139
Q452	2.2	3.2	145

	B	E	C
	Volt	Volt	Volt
Q453	2.1	2.0	149
Q551	0.3	0.0	84.4
Q552	-0.2	0.0	-
Q601	0.7	0.0	0.2
Q801	0.7	0.0	7.1
Q802	7.1	7.8	0.0
Q803	8.4	7.8	16.0

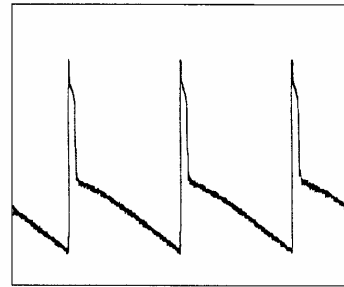
## CHASSIS WAVEFORM



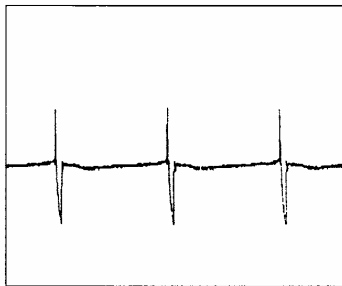
WF-1 1.0Vp-p(H)



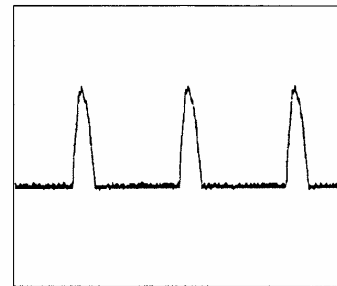
WF-2 9.7Vp-p(H)



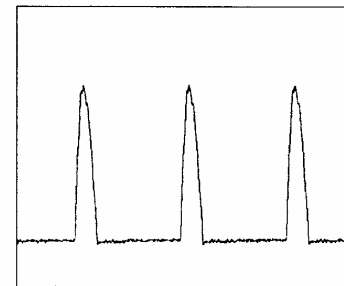
WF-3 47.2Vp-p(V)



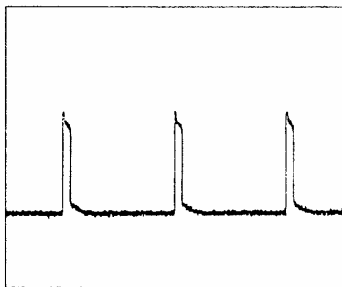
WF-4 1.7Vp-p(V)



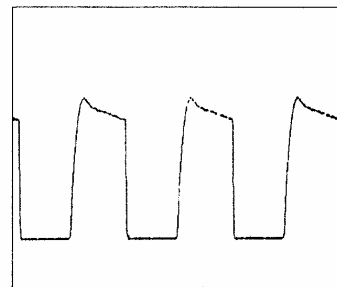
WF-5 27.4Vp-p(H)



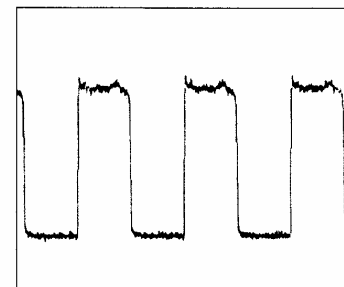
WF-6 24.4Vp-p(H)



WF-7 25.8Vp-p(V)



WF-8 202Vp-p(H)

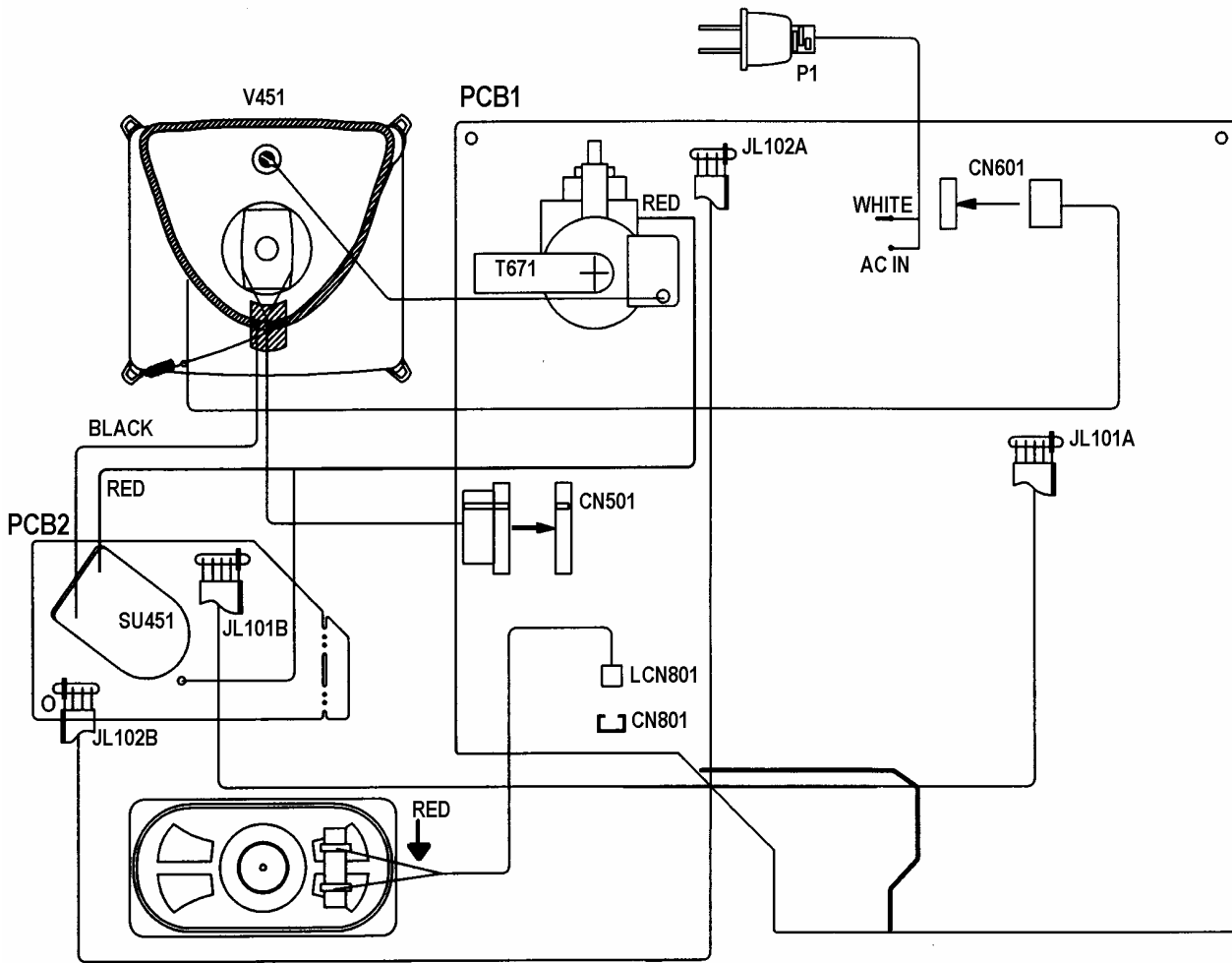


WF-9 0.75Vp-p(H)

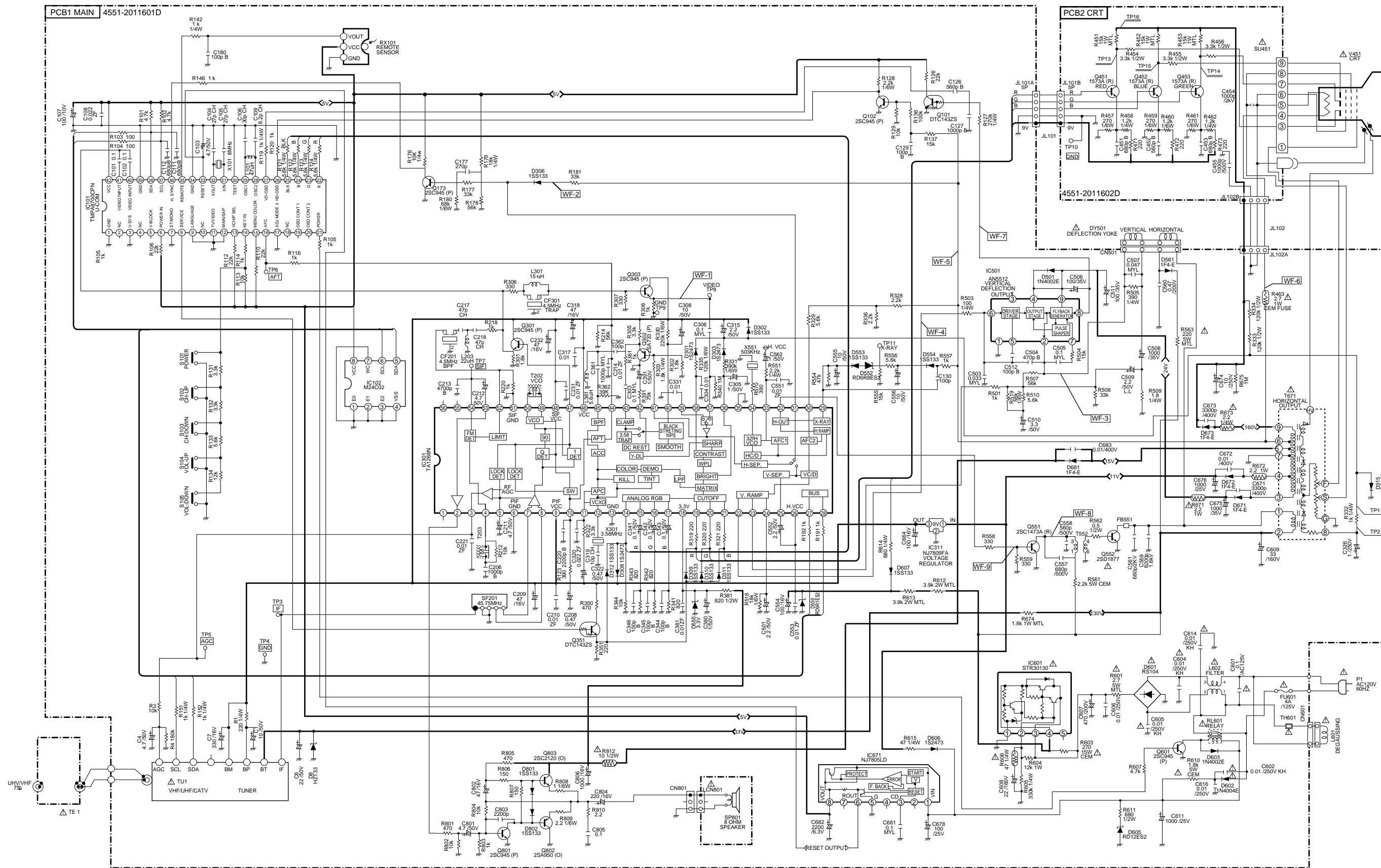
### NOTES:

WAVEFORMS SHOWN WERE PRODUCED USING A PATTERN GENERATOR WITH ITS CONTROL SET TO PRODUCE A COLOR BAR SIGNAL AND A WIDEBAND OSCILLOSCOPE WITH LOW CAPACITY PROBE TO PREVENT LOADING. RECEIVER OPERATING CONTROLS WERE ADJUSTED TO PRODUCE A NORMAL PICTURE. OSCILLOSCOPE SWEEP WAS SET AT 5ms FOR VERTICAL WAVEFORMS AND 20μs FOR HORIZONTAL WAVEFORMS. PEAK-TO-PEAK VOLTAGES INDICATED MAY VARY DEPENDING ON CALIBRATION OF TEST EQUIPMENT, CHASSIS PARTS TOLERANCES AND CONTROL SETTINGS. ALL WAVEFORMS ARE TAKEN WITH WIDEBAND OSCILLOSCOPE VOLTAGES AND WAVEFORMS ARE TAKEN WITH COLOR BAR SIGNAL GENERATOR APPLIED TO THE SET.

# WIRING DIAGRAM



# SCHEMATIC DIAGRAM



### SAFETY CRITICAL DEVICE

**SAFETY CRITICAL COMPONENTS**  
 THE DESIGN OF RECEIVER CONTAINS MANY CIRCUITS AND COMPONENTS INCLUDED SPECIFICALLY FOR SAFETY PURPOSES. FOR CONTINUED PROTECTION, NO CHANGES SHOULD BE MADE TO THE ORIGINAL DESIGN AND COMPONENTS SHOWN. A CHANGE ON THE SCHEMATIC SHOULD BE REPLACED WITH EXACT FACTORY REPLACEMENT PARTS. THE USE OF UNAUTHORIZED SUBSTITUTE PARTS MAY CREATE A SHOCK OR X-RAY RADIATION OR OTHER HAZARD. SERVICE SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY.

FOR CONTINUED RELIABLE AND PERFORMANCE EXACT FACTORY REPLACEMENTS ARE RECOMMENDED FOR ALL OTHER PARTS REPLACED. IF A SUBSTITUTE MUST BE USED BE SURE ITS QUALITY AND SPECIFICATIONS ARE IDENTICAL TO THE ORIGINAL PART.

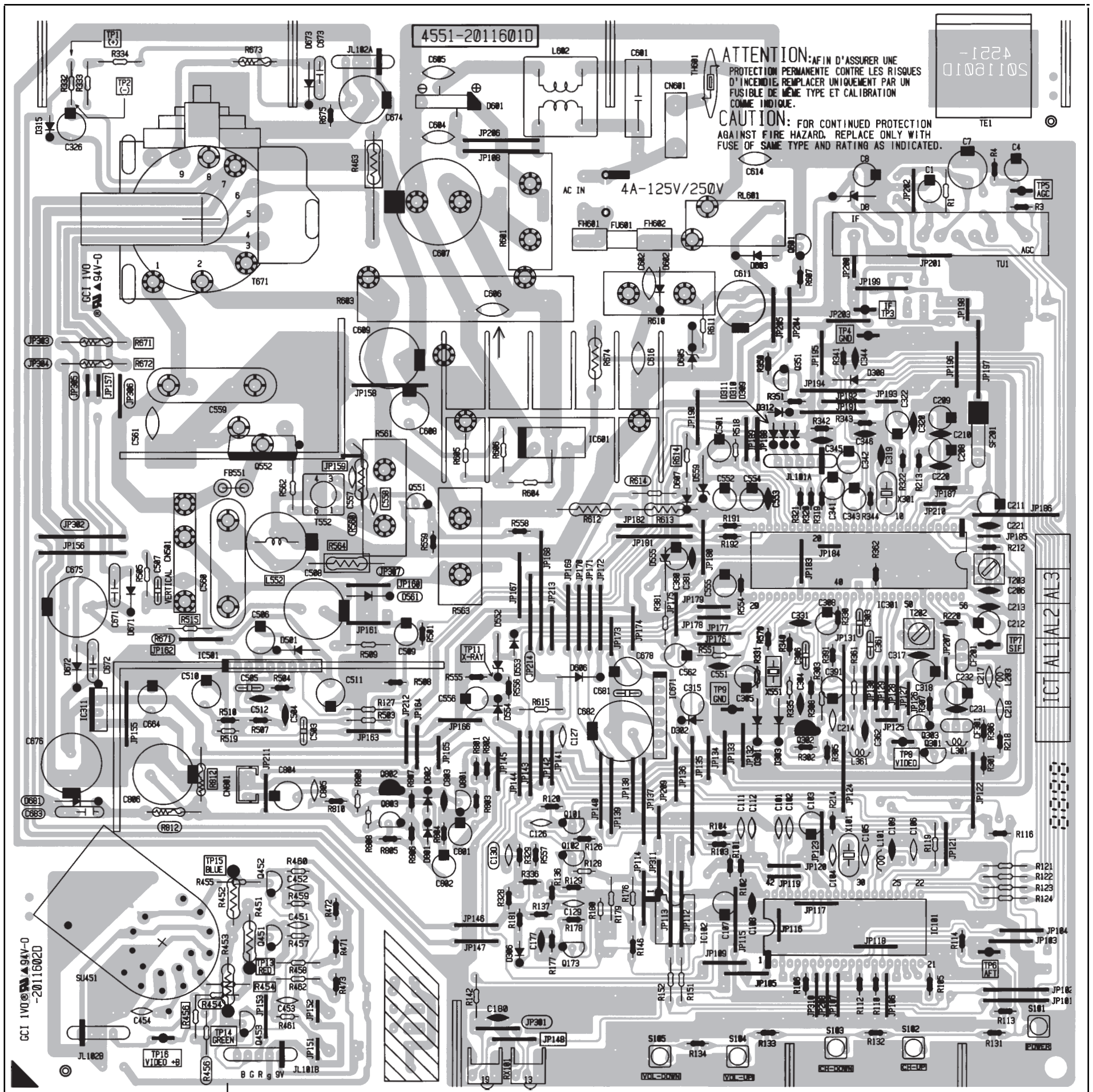
### SCHEMATIC DIAGRAM NOTES:

1. ALL RESISTANCE VALUES ARE IN Ω .  
 K = 1000 Ω    M = 1000K Ω
2. THE WATTAGE OF RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCE VALUES ARE IN μF UNLESS OTHERWISE NOTED.  
 p = pF = u u F.
4. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS, MOST ONLY BE REPLACED BY ORIGINAL PARTS.



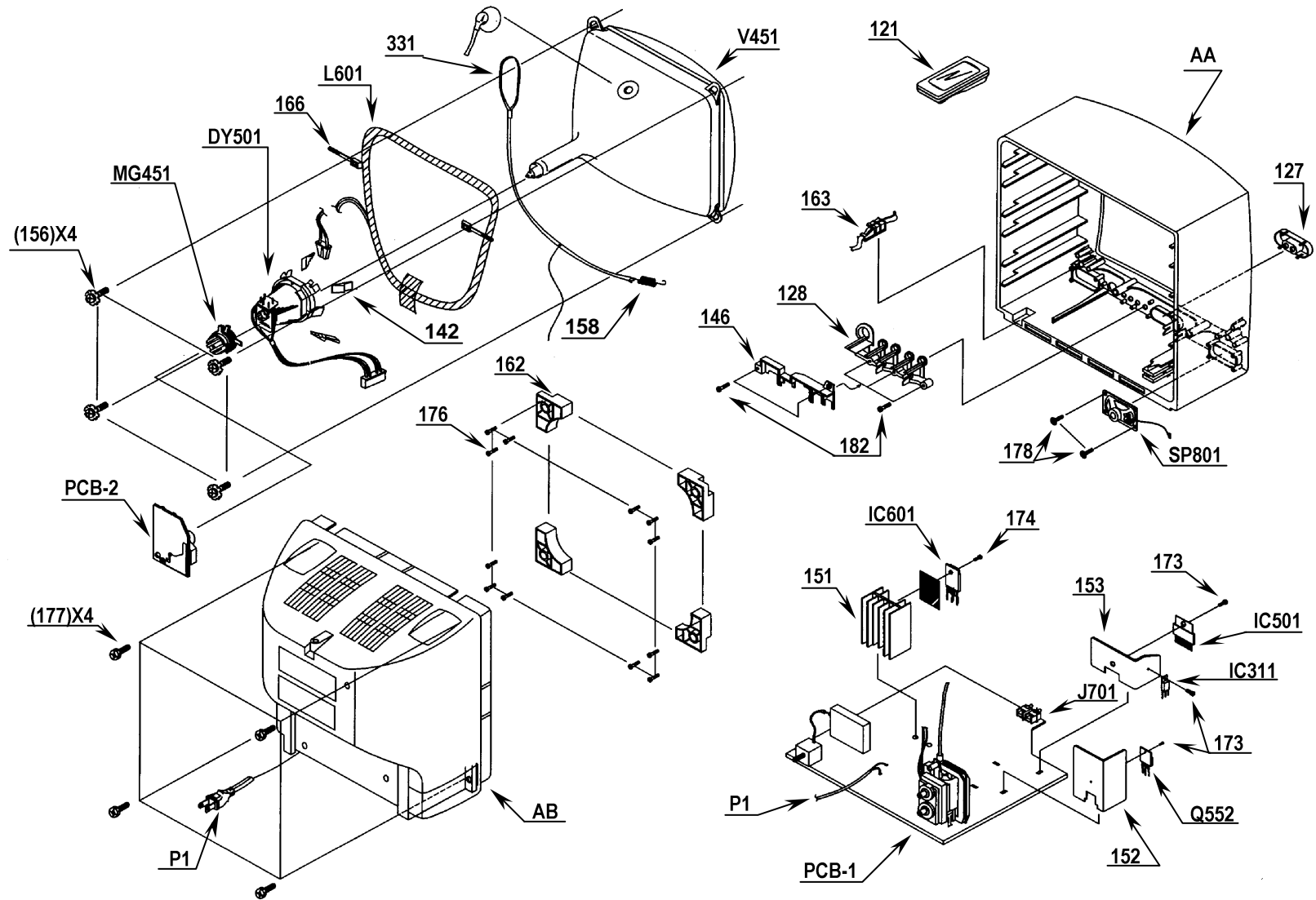
P.C. BOARDS

PCB-1 MAIN P.C. BOARD



PCB-2 CRT SOCKET P.C. BOARD

# EXPLODED VIEW



**Ref No. Part No. Description**

**GENERAL UNIT PARTS LIST**

⚠ 127	1532-24801	Window;SENSOR
⚠ 128	1662-78101	Push Button
⚠ 142	2132-412	Wedge Deflection Yoke;SPACER(x3)
⚠ 146	2133-314	Protector;BUTTON
⚠ 151	2222-379	Heat Sink;CA
⚠ 152	2222-294	Heat Sink;CA
⚠ 153	2222-302	Heat Sink;CA
156	2340-065	Screw (+);(x4)
158	2651-0000199	Spring CRT;WIRE
⚠ 161	2240-581	Holder
⚠ 162	2240-613	Holder;(x4)
⚠ 163	2240-742	Holder;CORD
166	2240-7052	Holder Wiring
167	2240-7051	Holder Wiring;DY L601/CRT WIRE,JL101
168	2240-R0101	Holder Wiring; (x4)
173	2347-R0130082	Self-Tapping Screw (+) (3x8 mm);(x3);CA
174	2347-R0130102	Self-Tapping Screw (+) (3x10 mm);(x12);CA
176	2347-R0140162	Self-Tapping Screw (+) (4x16 mm);
177	2347-R0140162	Self-Tapping Screw (+) (4x16 mm);BACK(x4)
178	2347-R0130082	Self-Tapping Screw (+) (3x8 mm);(x2)
182	2347-R0130102	Self-Tapping Screw(+)(3x10mm);314,BUTTONx3(x5)
⚠ 145	2133-313	Protector;SENSOR;AA
⚠ AA	A412-19V1131A	Cabinet
⚠ AB	A422-19V1131A	Cabinet Back; SUFFIX A
⚠ AB	A422-19V1131B	Cabinet Back; SUFFIX B
⚠ AB	A422-19V1131C	Cabinet Back; SUFFIX E
⚠ AB	A422-19V1131D	Cabinet Back; SUFFIX D
⚠ AB	A422-19V1131E	Cabinet Back; SUFFIX C

**ELECTRICAL PARTS LIST**

**COILS AND TRANSFORMER**

⚠ L601	4994-040	Coil
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**MISCELLANEOUS**

⚠ DY501	4993-118	Coil Deflection Yoke SUFFIX A
⚠ DY501	4993-060	Coil Deflection Yoke SUFFIX B
⚠ DY501	4993-122	Coil Deflection Yoke SUFFIX C
⚠ DY501	4993-119	Coil Deflection Yoke SUFFIX D
⚠ DY501	4993-123	Coil Deflection Yoke SUFFIX E
SP801	5812-0101G750	Speaker
⚠ LCN801	4163-06038003	Connector with Lead Wire;(SP)
⚠ V451	5721-015ST51N	CRT;(51GGD95X) SUFFIX A
⚠ V451	5721-51CN020T	CRT;(510UEB22(DY)) SUFFIX B
⚠ V451	5721-028TT48N	CRT;(A48LRH93X) SUFFIX C
⚠ V451	5721-029NT48N	CRT;(A48LSD095X) SUFFIX D
⚠ V451	5721-031ZT48N	CRT;(A48LGS30X) SUFFIX E
121	6142-09202	Infrared Remote Control;CONTROL

**Ref No. Part No. Description**

**MISCELLANEOUS**

315	4291-034	Magnet Assembly
315	4291-031	Magnet Assembly SUFFIX C
315	4291-031	Magnet Assembly SUFFIX E
⚠ 331	4105-01102	CRT Wire;(CRT GND)

**PCB-1 MAIN P.C.BOARD**

**CAPACITORS**

C1	5345-106-50	10 uF +-20% 50V Electrolytic
C4	5345-475-50	4.7 uF +-20% 50V Electrolytic
C7	5345-337-16	330 uF +-20% 16V Electrolytic
C8	5345-226-50	22 uF +-20% 50V Electrolytic
C101	5369-104144	0.1 uF +-10% 25V Semiconductor
C102	5369-104144	0.1 uF +-10% 25V Semiconductor
C103	5345-475-50	4.7 uF +-20% 50V Electrolytic
C104	5361-270JCH	27 pF +-5% 50V Ceramic CH
C105	5361-270JCH	27 pF +-5% 50V Ceramic CH
C106	5361-300JCH	30 pF +-5% 50V Ceramic CH
C107	5345-107-10	100 uF +-20% 10V Electrolytic
C108	V5369-S04FZ223	0.022 uF +-80%-20% 25V Semiconductor
C109	S5361-S17CJ8R2	8.2 pF +-5% 50V Ceramic CH
C111	5361-681KB	680 pF +-10% 50V Semiconductor
C112	5361-681KB	680 pF +-10% 50V Semiconductor
C126	5361-561KB	560 pF +-10% 50V Ceramic B
C127	5361-102KB	1000 pF +-10% 50V Semiconductor
C129	5361-101KB	100 pF +-10% 50V Ceramic B
C177	V5361-S17BK271	270 pF +-10% 50V Ceramic B
C180	V5361-S17BK101	100 pF +-10% 50V Ceramic B
C206	V5369-S05BK102	1000 pF +-10% 50V Semiconductor
C208	5345-474-50	0.47 uF +-20% 50V Electrolytic
C209	5345-476-16	47 uF +-20% 16V Electrolytic
C210	V5369-S04FZ103	0.01 uF +-80%-20% 25V Semiconductor
C211	5345-475-50	4.7 uF +-20% 50V Electrolytic
C212	5345-475-50	4.7 uF +-20% 50V Electrolytic
C213	V5369-S03XM472	4700 pF +-20% 16V Semiconductor
C214	5361-103ZF	0.01 uF +-80%-20% 25V Semiconductor
C217	5361-470JCH	47 pF +-5% 50V Ceramic CH
C218	5361-470JCH	47 pF +-5% 50V Ceramic CH
C220	V5369-S03XM222	2200 pF +-20% 16V Semiconductor
C221	V5369-S04FZ103	0.01 uF +-80%-20% 25V Semiconductor
C231	V5369-S04FZ103	0.01 uF +-80%-20% 25V Semiconductor
C232	5345-476-16	47 uF +-20% 16V Electrolytic
C303	5354-104K1HM	0.1 uF +-5% 50V TF
C304	V5369-S04FZ103	0.01 uF +-80%-20% 25V Semiconductor
C305	5345-105-50	1 uF +-20% 50V Electrolytic
C306	5354-104K1HM	0.1 uF +-10% 50V Mylar
C308	5345-106-50	10 uF +-20% 50V Electrolytic

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>
<b><u>CAPACITORS</u></b>		
C315	5342-S06FM225	2.2 uF +-20% 50V Electrolytic NP
C317	V5369-S04FZ103	0.01 uF +80%-20% 25V Semiconductor
C318	5345-476-16	47 uF +-20% 16V Electrolytic
C319	V5361-S17CJ100	10 pF +-5% 50V Ceramic CH
C320	V5369-S04FZ223	0.022 uF +80%-20% 25V Semiconductor
C322	5345-474-50	0.47 uF +-20% 50V Electrolytic
C326	5345-105-250	1 uF +-20% 250V Electrolytic
C331	V5369-S04FZ103	0.01 uF +80%-20% 25V Semiconductor
C341	5345-104-50	0.1 uF +-20% 50V Electrolytic
C342	5345-104-50	0.1 uF +-20% 50V Electrolytic
C343	5345-104-50	0.1 uF +-20% 50V Electrolytic
C344	V5361-S17BK101	100 pF +-10% 50V Ceramic B
C345	V5361-S17BK101	100 pF +-10% 50V Ceramic B
C346	V5361-S17BK101	100 pF +-10% 50V Ceramic B
C361	5354-102K1HM	1000 pF +-10% 50V Mylar
C362	V5361-S17BK101	100 pF +-10% 50V Ceramic B
C380	5345-105-50	1 uF +-20% 50V Electrolytic
C381	V5369-S04FZ103	0.01 uF +80%-20% 25V Semiconductor
C391	5345-105-50	1 uF +-20% 50V Electrolytic
C501	5345-L225M50	2.2 uF +-20% 50V Electrolytic L.L
C503	5354-333K1HM	0.033 uF +-10% 50V Mylar
C504	V5361-S17BK471	470 pF +-10% 50V Ceramic B
C505	5354-104K1HM	0.1 uF +-5% 50V TF
C506	5345-107-35	100 uF +-20% 35V Electrolytic
C507	5354-473K1HM	0.047 uF +-10% 50V Mylar
C508	5345-108-35	1000 uF +-20% 35V Electrolytic
C509	5345-L225M50	2.2 uF +-20% 50V Electrolytic L.L
C510	5345-L335M50	3.3 uF +-20% 50V Electrolytic L.L
C511	5345-107-35	100 uF +-20% 35V Electrolytic
C512	V5361-S17BK101	100 pF +-10% 50V Ceramic B
C551	V5369-S04FZ103	0.01 uF +80%-20% 25V Semiconductor
C552	5345-225-50	2.2 uF +-20% 50V Electrolytic
C553	V5369-S04FZ103	0.01 uF +80%-20% 25V Semiconductor
C554	5345-107-16	100 uF +-20% 16V Electrolytic
C555	5345-106-50	10 uF +-20% 50V Electrolytic
C556	5345-106-50	10 uF +-20% 50V Electrolytic
C557	5361-R01BK681	680 pF +-10% 500V Ceramic
C558	5361-R01BK561	560 pF +-10% 500V Ceramic
C559	5352-S020J822	8200 pF +-5% 1.6 kV Metalized Polyester
C560	5352-S261J474	0.47 uF +-5% 200V Metalized Polyester
C561	5361-S11BK102	1000 pF +-10% 2 kV Ceramic; SUFFIX A
C561	5361-S11BK681	680 pF +-10% 2 kV Ceramic; SUFFIX C
C561	5361-S11BK102	1000 pF +-10% 2 kV Ceramic; SUFFIX D
C562	5345-105-50	1 uF +-20% 50V Electrolytic
⚠ C601	5352-S331K104	0.1uF+-10% Metalized Polyester
C602	5361-S40FM103	0.01 uF +-20% 250V Cetamic F

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>
<b><u>CAPACITORS</u></b>		
C604	5361-S40FM103	0.01 uF +-20% 250V Cetamic F
C605	5361-S40FM103	0.01 uF +-20% 250V Cetamic F
C606	5361-S09VZ103	0.01 uF +80%-20% 250V Ceramic
C607	5341-S52LM477	470 uF +-20% 200V Electrolytic
C608	5345-S59KM226	22 uF +-20% 160V Electrolytic
C609	5345-S59KM336	33 uF +-20% 160V Electrolytic
C611	5345-108-25	1000 uF +-20% 25V Electrolytic
C614	5361-S40FM103	0.01 uF +-20% 250V Cetamic F
C616	5361-S09VZ103	0.01 uF +80%-20% 250V Ceramic
C664	5345-107-16	100 uF +-20% 16V Electrolytic
C671	5359-3321959	3300 pF +-10% 400V Polypropylene
C672	5359-1031959	0.01 uF +-10% 400V Polypropylene
C673	5359-3321959	3300 pF +-10% 400V Polypropylene
C674	5345-106-250	10 uF +-20% 250V Electrolytic
C675	5345-108-35	1000 uF +-20% 35V Electrolytic
C676	5345-108-25	1000 uF +-20% 25V Electrolytic
C678	5345-107-25	100 uF +-20% 25V Electrolytic
C681	5354-104K1HM	0.1 uF +-10% 50V Mylar
C682	5345-228-06	2200 uF +-20% 6.3V Electrolytic
C801	5345-475-50	4.7 uF +-20% 50V Electrolytic
C802	5345-476-16	47 uF +-20% 50V Electrolytic
C803	V5369-S03XM222	2200pF +-20% 16V Semiconductor
C804	5345-227-16	220 uF +-20% 16V Electrolytic
C805	5369-104144	0.1 uF +-10% 25V Semiconductor
C806	5345-108-16	1000 uF +-20% 16V Electrolytic

**RESISTORS**

R1	5134-221J25P	220 ohm +-5% 1/4W Carbon
R3	V5133-R010J103	10 k ohm +-5% 1/8W Carbon
R4	V5133-R010J184	180 k ohm +-5% 1/8W Carbon
R101	V5133-R010J472	4.7 k ohm +-5% 1/4W Carbon
R102	V5133-R010J472	4.7 k ohm +-5% 1/4W Carbon
R103	V5133-R010J101	100 ohm +-5% 1/4W Carbon
R104	V5133-R010J101	100 ohm +-5% 1/4W Carbon
R105	V5133-R010J102	1 k ohm +-5% 1/8W Carbon
R106	V5133-R010J223	22 k ohm +-5% 1/8W Carbon
R107	V5133-R010J223	22 k ohm +-5% 1/8W Carbon
R110	V5133-R010J223	22 k ohm +-5% 1/8W Carbon
R112	V5133-R010J223	22 k ohm +-5% 1/8W Carbon
R113	V5133-R010J103	10 k ohm +-5% 1/8W Carbon
R114	V5133-R010J102	1 k ohm +-5% 1/8W Carbon
R116	V5133-R010J102	1 k ohm +-5% 1/8W Carbon
R119	5134-102J25P	1 k ohm +-5% 1/4W Carbon
R120	V5133-R010J102	1 k ohm +-5% 1/4W Carbon
R121	5134-562J25P	5.6 k ohm +-5% 1/4W Carbon
R122	5134-562J25P	5.6 k ohm +-5% 1/4W Carbon
R123	5134-562J25P	5.6 k ohm +-5% 1/4W Carbon

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>
<b><u>RESISTORS</u></b>		
R124	5134-562J25P	5.6 k ohm +5% 1/4W Carbon
R126	V5133-R010J223	22 k ohm +5% 1/8W Carbon
R127	5134-274J25P	270 k ohm +5% 1/4W Carbon
R128	5232-222J16P	2.2 k ohm +5% 1/6W Carbon
R129	V5133-R010J103	10 k ohm +5% 1/8W Carbon
R131	V5133-R010J332	3.3 k ohm +5% 1/8W Carbon
R132	V5133-R010J332	3.3 k ohm +5% 1/8W Carbon
R133	V5133-R010J562	5.6 k ohm +5% 1/8W Carbon
R134	V5133-R010J123	12 k ohm +5% 1/8W Carbon
R136	V5133-R010J104	100 k ohm +5% 1/8W Carbon
R137	V5133-R010J153	15 k ohm +5% 1/8W Carbon
⚠ R142	5134-102J25P	1 k ohm +5% 1/4W Carbon
⚠ R146	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R151	5134-102J25P	1 k ohm +5% 1/4W Carbon
R152	5134-102J25P	1 k ohm +5% 1/4W Carbon
R176	5134-103J25P	10 k ohm +5% 1/4W Carbon
R177	V5133-R010J333	33 k ohm +5% 1/8W Carbon
R178	V5133-R010J563	56 k ohm +5% 1/8W Carbon
R179	5134-183J25P	18 k ohm +5% 1/4W Carbon
R180	5232-683J16P	68 k ohm +5% 1/6W Carbon
R181	V5133-R010J333	33 k ohm +5% 1/8W Carbon
R191	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R192	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R212	V5133-R010J103	10 k ohm +5% 1/8W Carbon
R213	V5133-R010J391	390 ohm +5% 1/8W Carbon
R214	V5133-R010J563	56 k ohm +5% 1/8W Carbon
R218	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R220	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R301	V5133-R010J182	1.8 k ohm +5% 1/8W Carbon
R302	V5133-R010J182	1.8 k ohm +5% 1/8W Carbon
R303	5134-182J25P	1.8 k ohm +5% 1/4W Carbon
R305	V5133-R010J332	3.3 k ohm +5% 1/8W Carbon
R306	V5133-R010J331	330 ohm +5% 1/8W Carbon
R307	V5133-R010J331	330 ohm +5% 1/8W Carbon
R308	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R319	V5133-R010J221	220 ohm +5% 1/8W Carbon
R320	V5133-R010J221	220 ohm +5% 1/8W Carbon
R321	V5133-R010J221	220 ohm +5% 1/8W Carbon
R322	V5133-R010J332	3.3 k ohm +5% 1/8W Carbon
R328	V5133-R010J222	2.2 k ohm +5% 1/8W Carbon
R329	V5133-R010J562	5.6 k ohm +5% 1/8W Carbon
R330	V5133-R010J224	220 k ohm +5% 1/8W Carbon
R331	5232-394J16P	390 k ohm +5% 1/6W Carbon
R332	5134-102J25P	1 k ohm +5% 1/4W Carbon
R333	5135-124J50P	120 k ohm +5% 1/2W Carbon
R334	5135-124J50P	120 k ohm +5% 1/2W Carbon

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>
<b><u>RESISTORS</u></b>		
R335	5232-124J16P	120 k ohm +5% 1/6W Carbon
R336	V5133-R010J222	2.2 k ohm +5% 1/8W Carbon
R340	V5133-R010J105	1 M ohm +5% 1/8W Carbon
R341	V5133-R010J821	820 ohm +5% 1/8W Carbon
R342	V5133-R010J821	820 ohm +5% 1/8W Carbon
R343	V5133-R010J821	820 ohm +5% 1/8W Carbon
R344	V5133-R010J103	10 k ohm +5% 1/8W Carbon
R350	V5133-R010J471	470 ohm +5% 1/8W Carbon
R351	V5133-R010J221	220 ohm +5% 1/8W Carbon
R361	5134-102J25P	1 k ohm +5% 1/4W Carbon
R362	V5133-R010J393	39K ohm +5% 1/8W Carbon
R381	5135-821J50P	820 ohm +5% 1/2W Carbon
R391	V5133-R010J753	75 k ohm +5% 1/8W Carbon
⚠ R463	5102-S141J2R2	2.2 ohm +5% 2W Fuse;SUFFIX A
⚠ R463	5102-S141J2R7	2.7 ohm +5% 2W Fuse;SUFFIX B
⚠ R463	5102-S141J5R6	5.6 ohm +5% 2W Fuse;SUFFIX C
⚠ R463	5102-S141J2R7	2.7 ohm +5% 2W Fuse;SUFFIX D
⚠ R463	5102-S141J5R6	5.6 ohm +5% 2W Fuse;SUFFIX E
R501	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R503	5134-101J25P	100 ohm +5% 1/4W Carbon
R504	V5133-R010J153	15 k ohm +5% 1/8W Carbon
R505	5134-391J25P	390 ohm +5% 1/4W Carbon
R507	V5133-R010J563	56 k ohm +5% 1/8W Carbon
R508	V5133-R010J333	33 k ohm +5% 1/8W Carbon
R509	5135-1R8J50P	1.8 ohm +5% 1/2W Carbon
R510	V5133-R010J562	5.6 k ohm +5% 1/8W Carbon
R515	5134-222J25P	2.2 k ohm +5% 1/4W Carbon
R518	5232-183J16P	18 k ohm +5% 1/6W Carbon
R518	5232-223J16P	22 k ohm +5% 1/6W Carbon; SUFFIX E
R518	5232-153J16P	15 k ohm +5% 1/6W Carbon; SUFFIX D
R518	5232-153J16P	15 k ohm +5% 1/6W Carbon; SUFFIX C
R519	5232-473J16P	47 k ohm +5% 1/6W Carbon; SUFFIX D
R519	5232-822J16P	8.2 k ohm +5% 1/6W Carbon; SUFFIX C
R551	5134-222J25P	2.2 k ohm +5% 1/4W Carbon
R554	V5133-R010J473	47 k ohm +5% 1/8W Carbon
R555	V5133-R010J153	15 k ohm +5% 1/8W Carbon
R556	V5133-R010J562	5.6 k ohm +5% 1/8W Carbon
R557	V5133-R010J102	1 k ohm +5% 1/8W Carbon
R558	V5133-R010J331	330 ohm +5% 1/8W Carbon
R559	V5133-R010J331	330 ohm +5% 1/8W Carbon
R561	5275-S080K222	2.2 k ohm +10% 5W Cement
R562	5135-0R5J50P	0.5 ohm +5% 1/2W Carbon
R563	5275-S080K221	220 ohm +10% 5W Cement
⚠ R564	5102-6815711	680 ohm +5% 1W Fuse
R570	V5133-R010J391	390 ohm +5% 1/8W Carbon
⚠ R601	5275-S080K2R7	2.7 ohm +10% 5W Cement

**Ref No. Part No. Description**

**RESISTORS**

⚠ R603	5277-271591	270 ohm 15W Cement
R604	5171-S071J123	12 k ohm +-5% 1W Metal
R605	5134-334J25P	330 k ohm +-5% 1/4W Carbon
⚠ R606	5102-S101J470	47 ohm +-5% 1/4W Fuse
R607	V5133-R010J472	4.7 k ohm +-5% 1/8W Carbon
⚠ R610	5275-S080K152	1.5 k ohm +-10% 5W Cement
R611	5135-681J50P	680 ohm +-5% 1/2W Carbon
R612	5173-S051J392	3.9 k ohm +-5% 2W Metal
R613	5173-S051J392	3.9 k ohm +-5% 2W Metal
R614	5134-681J25P	680 ohm +-5% 1/4W Carbon
R615	5134-470J25P	47 ohm +-5% 1/4W Carbon
⚠ R671	5102-2R25720	2.2 ohm +-5% 1W Fuse
⚠ R672	5102-2R25720	2.2 ohm +-5% 1W Fuse
⚠ R673	5102-S101J2R2	2.2 ohm +-5% 1/4W Fuse
R674	5171-S071J183	18 k ohm +-5% 1W Metal
R675	V5133-R010J105	1 M ohm +-5% 1/8W Carbon
R801	V5133-R010J471	470 ohm +-5% 1/8W Carbon
R802	V5133-R010J103	10 k ohm +-5% 1/8W Carbon
R803	V5133-R010J102	1 k ohm +-5% 1/8W Carbon
R804	V5133-R010J103	10 k ohm +-5% 1/8W Carbon
R805	V5133-R010J471	470 ohm +-5% 1/8W Carbon
R806	V5133-R010J151	150 ohm +-5% 1/8W Carbon
R807	V5133-R010J151	150 ohm +-5% 1/8W Carbon
R808	5232-1R0J16P	1 ohm +-5% 1/6W Carbon
R809	5232-2R2J16P	2.2 ohm +-5% 1/6W Carbon
R810	V5133-R010J2R2	2.2 ohm +-5% 1/8W Carbon
⚠ R812	5102-S111J100	10 ohm +-5% 1/2W Fuse

**TRANSISTORS**

Q101	5613-C143ZS	Transistor, DTC143ZS
Q102	5613-945(P)	Transistor, 2SC945(P)
Q173	5613-945(P)	Transistor, 2SC945(P)
Q301	5613-945(P)	Transistor, 2SC945(P)
Q302	5611-733(P)	Transistor, 2SA733(P)
Q303	5613-945(P)	Transistor, 2SC945(P)
Q351	5613-C143ZS	Transistor, DTC143ZS
Q551	5613-1473A(R)	Transistor, 2SC1473A(R)
⚠ Q552	5614-1877	Transistor, 2SD1877;(HORIZONTAL)
Q601	5613-945(P)	Transistor, 2SC945(P)
Q801	5613-945(P)	Transistor, 2SC945(P)
Q802	5611-950(O)	Transistor, 2SA950(O)
Q803	5613-2120(O)	Transistor, 2SC2120(O)

**Ref No. Part No. Description**

**INTEGRATED CIRCUITS**

IC101	5654-TA87C-B2	IC;(u-COM)
IC102	5654-M24C02B	IC;(EEPROM)
IC301	5653-TA1268N	IC, TA1268N ;(IF/VIDEO/CHROMA/DEF)
IC311	5653-NJ7809FA	IC, NJM7809FA;(9V REGULATOR)
IC501	5652-AN5512	IC, AN5512;(VERTICAL)
⚠ IC601	5653-STR30130	IC, STR30130;(AVR)
IC671	5653-NJ7805LD	IC, NJM78LR05L-D;(5V REGULATOR/RESET 4.2V)

**DIODES**

D8	5635-HZT33	Zener, HZT33 33V 400mW
D301	5636-1S2473	Diode,1S2473
D302	5636-1SS133	Diode,1SS133
D303	5636-1S2473	Diode,1S2473
D306	5636-1SS133	Diode,1SS133
D308	5636-1S2473	Diode,1S2473
D309	5636-1SS133	Diode,1SS133
D310	5636-1SS133	Diode,1SS133
D311	5636-1SS133	Diode,1SS133
D312	5636-1SS133	Diode,1SS133
D315	5636-1SS133	Diode,1SS133
D501	5632-1N4002E	Diode, RL1N4002-E
D552	5635-RD6R8ES2	Zener;6.8V
D553	5636-1SS133	Diode,1SS133
D554	5636-1SS133	Diode,1SS133
D555	5635-RD3R3ES2	Zener;3.3V
D559	5635-RD9R1ES2	Zener;9.1V
⚠ D601	5685-RS204LST	Bridge Silicon Diode
⚠ D602	5632-1N4004E	Diode, RL1N4004-E
D603	5632-1N4002E	Diode, RL1N4002-E
D605	5635-RD8R2ES2	Zener;8.2V
D606	5636-1S2473	Diode,1S2473
D607	5636-1SS133	Diode, 1SS133
D671	5632-1F4-E	Diode, 1F4
D672	5632-1F4-E	Diode, 1F4
D673	5632-1F4-E	Diode, 1F4
D701	5632-1F4-E	Diode, 1F4
D702	5636-1N4148M	Diode,1N4148M
D703	5636-1N4148M	Diode,1N4148M
D801	5636-1SS133	Diode, 1SS133
D802	5636-1SS133	Diode, 1SS133

**COILS AND TRANSFORMERS**

L101	5995-470098	Coil 47 uH
L203	5995-220098	Coil 22 uH
L301	5995-150098	Coil 15 uH
L361	5995-5R6098	Coil 5.6 uH

**Ref No. Part No. Description**

**COILS AND TRANSFORMERS**

L552	5995-540084	Coil;(LINEARITY)
⚠ L602	5583-52301	Coil AF CH;(LINE FILTER)
T202	5932-12502	Coil;(AFT)
T203	5562-0019	Transformer SIF Det.:(SIF DET)
T552	5581-18801	Transformer
⚠ T671	4992-078	Transformer; SUFFIX A,B,D
⚠ T671	4992-091	Transformer; SUFFIX E
⚠ T671	4992-091	Transformer; SUFFIX C

**MISCELLANEOUS**

CF201	5671-02810452	Ceramic Filter;(4.5MHz BAND PASS F.)
CF301	5671-02410452	Ceramic Filter;(4.5MHz TRAP)
CN501	4443-0501142	Connector 5-pin;(DY)
CN601	4443-10101002	Connector 2-pin.:(DEGAUSS)
CN801	4443-03201003	Connector;(SP)
FB551	5597-51001	Ferrite Bead
FH601	4472-05001	Fuse Holder;(FU601)
FH602	4472-05001	Fuse Holder;(FU601)
⚠ FU601	5732-02401402	Fuse;(4A/125V)
JL101	4242-R0505401	Jumper Lead 5-Wire;(MAIN-CRT)
JL102	4242-R0504351	Jumper Lead 4-Wire;(MAIN-CRT)
⚠ P1	4161-14701212	Cord w/Plug;(AC CORD)
⚠ RL601	4331-03401	DC Relay
RX101	6143-02401	Remote Control Receiver Unit
S101	4437-0611	Push Switch
S102	4437-0611	Push Switch
S103	4437-0611	Push Switch
S104	4437-0611	Push Switch
S105	4437-0611	Push Switch
SF201	5679-01501450	Surface Acoustic Wave Filter
⚠ TE1	4363-01201	Antenna Coupler;(ANT)
⚠ TH601	5192-01101	Posistor
⚠ TU1	6119-15501	VHF/UHF/CATV Tuner Assembly
X101	5691-S1903802	Crystal Osc.8.0MHz
X301	5691-S1901362	Crystal Osc. 3.579545MHz
X551	5693-SB503F30	Ceramic Osc. 503 kHz

**Ref No. Part No. Description**

**PCB-2 CRT SOCKET P.C.BOARD(D551-19V1114B)**

**CAPACITORS**

C451	5361-681KB	680 pF +-10% 50V Ceramic B
C452	5361-561KB	560 pF +-10% 50V Ceramic B
C453	5361-681KB	680 pF +-10% 50V Ceramic B
C454	5361-S11BK102	1000 pF +-10% 2 kV Ceramic

**RESISTORS**

R451	5171-S071J153	15 k ohm +-5% 1W Metal
R452	5171-S071J153	15 k ohm +-5% 1W Metal
R453	5171-S071J153	15 k ohm +-5% 1W Metal
R454	5135-332J50P	3.3 k ohm +-5% 1/2W Carbon
R455	5135-332J50P	3.3 k ohm +-5% 1/2W Carbon
R456	5135-332J50P	3.3 k ohm +-5% 1/2W Carbon
R457	5232-271J16P	270 ohm +-5% 1/6W Carbon
R458	5134-122J25P	1.2 k ohm +-5% 1/4W Carbon
R459	5232-271J16P	270 ohm +-5% 1/6W Carbon
R460	5134-122J25P	1.2 k ohm +-5% 1/4W Carbon
R461	5232-271J16P	270 ohm +-5% 1/6W Carbon
R462	5134-122J25P	1.2 k ohm +-5% 1/4W Carbon
R471	V5133-R010J221	220 ohm +-5% 1/8W Carbon
R472	V5133-R010J221	220 ohm +-5% 1/8W Carbon
R473	V5133-R010J221	220 ohm +-5% 1/8W Carbon

**TRANSISTORS**

Q451	5613-1573A(R)	Transistor, 2SC1573A(R)
Q452	5613-1573A(R)	Transistor, 2SC1573A(R)
Q453	5613-1573A(R)	Transistor, 2SC1573A(R)

**MISCELLANEOUS**

⚠ SU451	4474-08101	Socket; SUFFIX A,B,D
⚠ SU451	4474-08001	Socket; SUFFIX E
⚠ SU451	4474-08001	Socket; SUFFIX C

**Note:** ⚠ Safety Related Components.  
**Use Only Exact Replacement Parts.**