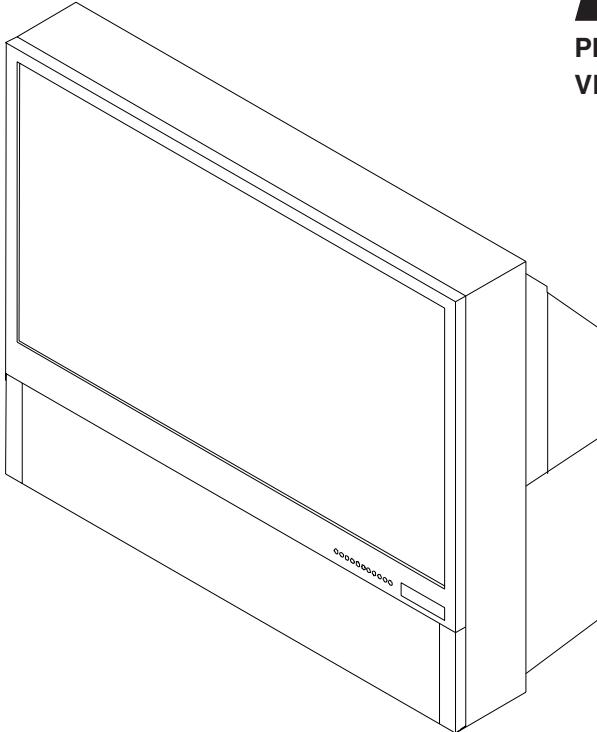


Service Manual

PROJECTION TELEVISION
VK20 CHASSIS



**WT-42311
WT-A42**

CAUTION:

Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" contained in this manual.

SPECIFICATIONS

• Power	: AC 120V, 60Hz 240W	• Speaker	: Two 5" round, full range (8Ω 5W)
• Frequency Range	: VHF 54 ~ 470MHz UHF 470 ~ 806MHz	• Input Level	: VIDEO IN JACK (RCA Type) 1.0Vp-p 75Ω unbalanced : AUDIO IN JACK (RCA Type) -4.7dBm 43kΩ unbalanced
• Antenna Input	: VHF/UHF 75Ω unbalanced		: S-VIDEO IN JACK (Y/C separate) Y=1.0 Vp-p C=0.286Vp-p(BURST) 75Ω unbalanced
• CRT Size	: [7 inches]		: COMP / Y, Cr, Cb (RCA Type) Y=1.0 Vp-p. Cr, Cb=700mVp-p
• High Voltage	: 32.0kV (at 0A)		: ATV / Y(G), Pr(R), Pb(B), H, V Y 1.0Vp-p with sync 75Ω (RCA Type) Pr, Pb: 700mV 75Ω
• Cabinet Dimensions	: 39"(W)x34"(H)x25"(D)		H, V: 3.0Vp-p 75Ω
• Weight	: 105 lbs	• Output Level	: VIDEO OUT JACK (RCA Type) 1.0Vp-p 75Ω unbalanced : AUDIO OUT JACK (RCA Type) -4.7dBm 4.7kΩ unbalanced

- Weight and dimensions shown are approximate.
- Design specifications are subject to change without notice.

MITSUBISHI DIGITAL ELECTRONICS AMERICA, INC.

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INTRODUCTION

This service manual provides service instructions for PTV Models WT-42311 and WT-A42 using the VK20 chassis. Service personnel should read this manual thoroughly before servicing this chassis.

This service manual includes:

1. Assembly and disassembly instructions for the front and rear cabinet components.
2. Servicing of the Lenticular Screen and Fresnel Lens.
3. Servicing printed circuit boards (PCBs).
4. CRT replacement procedure.
5. Electrical adjustments.
6. Chip parts replacement procedures.
7. Circuit path diagrams.

The parts list section of this service manual includes:

1. Cabinet and screen parts.
2. Electrical parts.

Schematic and block diagrams of the above listed models are included in this service manual for better understanding of the circuitry. PCB drawings are also included for easy location of parts and test points.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have special safety characteristics are identified in this service manual.

Electrical components having such features are identified by shading  on the schematic diagram and by **bold type** in the parts list of this service manual. **The replacement for any safety part should be identical in value and characteristics.**

SAFETY PRECAUTIONS

NOTICE: Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

WARNING:

1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver's power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
2. Do not install, remove or handle the picture tubes in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

X-Radiation warning

The surface of the cathode ray tubes (CRTs) may generate X-Radiation, so take proper precautions when servicing. It is recommended that a lead apron be used for shielding while handling the CRT. Use this method if possible.

When replacing the CRTs, use only the designated replacement part since it is a critical component with regard to X-Radiation. High voltage must be set as prescribed under the section titled Electrical Adjustments.

Leakage current check

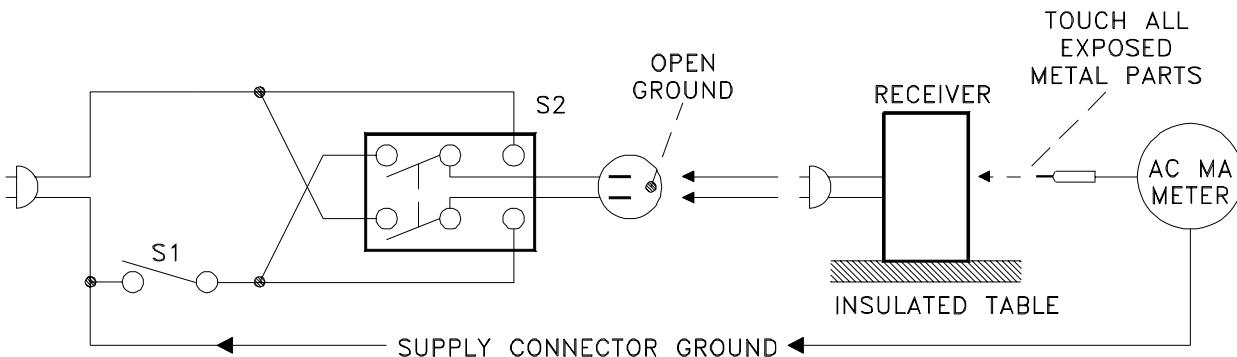
Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

1. Cold Check

With the alternating current (AC) plug removed from the AC source, place a jumper across the two AC plug prongs. Connect one lead of an ohm meter to the AC plug and touch the other lead to each exposed metal part (i.e. antennas, handle bracket, metal cabinet, screw heads, metal overlay, control shafts, etc.), particularly any exposed metal part that has a return path to the chassis. The resistance of the exposed metal parts having a return path to the chassis **should be a minimum of 1Mega Ohm**. Any resistance below this value indicates an abnormal condition and requires corrective action.

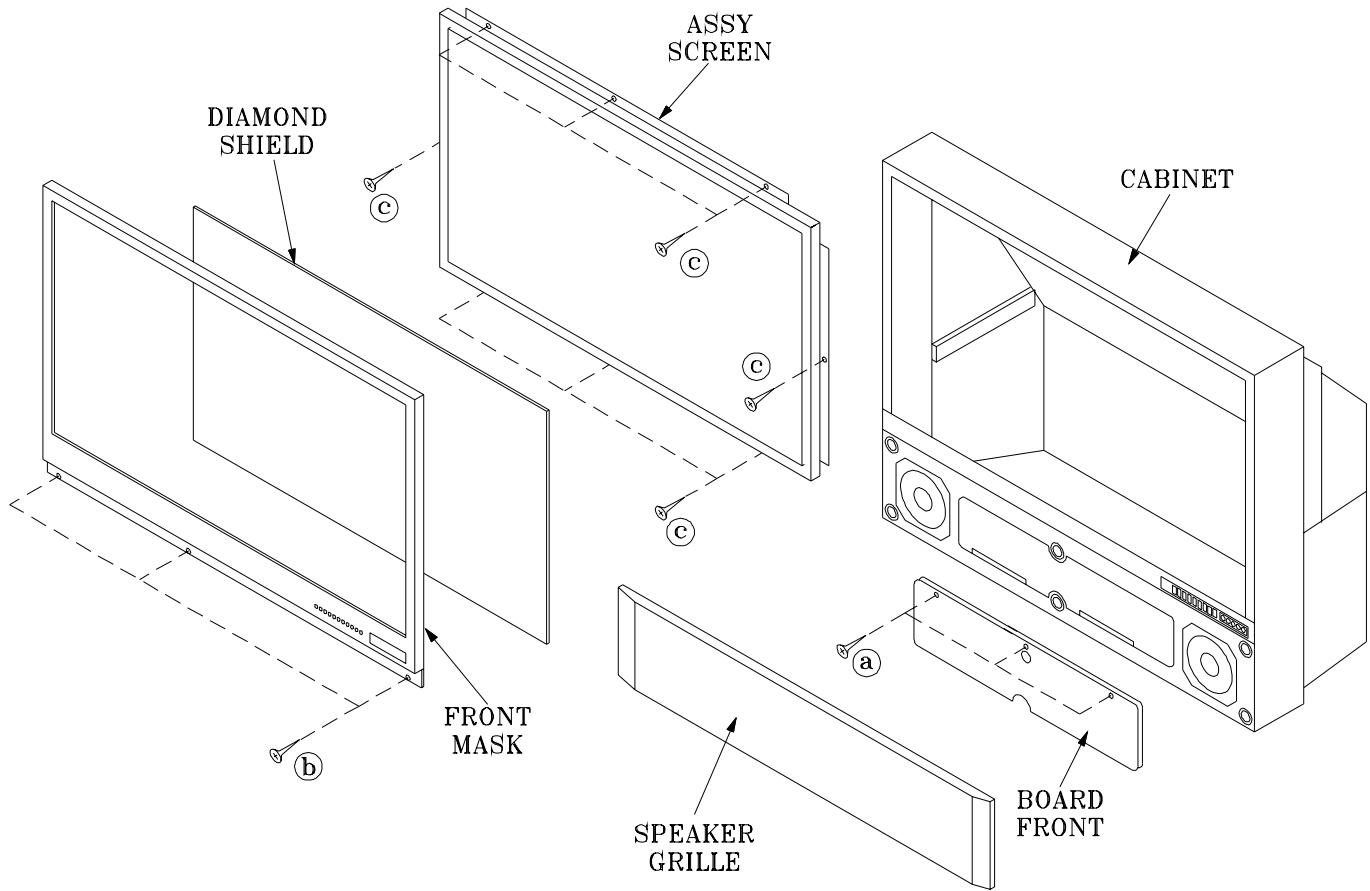
2. Hot Check ...Use the circuit shown below to perform the hot check test.

1. Keep switch S1 open and connect the receiver to the measuring circuit. Immediately after connection, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2.
2. Close switch S1, energizing the receiver. Immediately after closing switch S1, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2. Repeat the current measurements of items 1 and 2 after the receiver has reached thermal stabilization. **The leakage current must not exceed 0.5 milliampere (mA).**



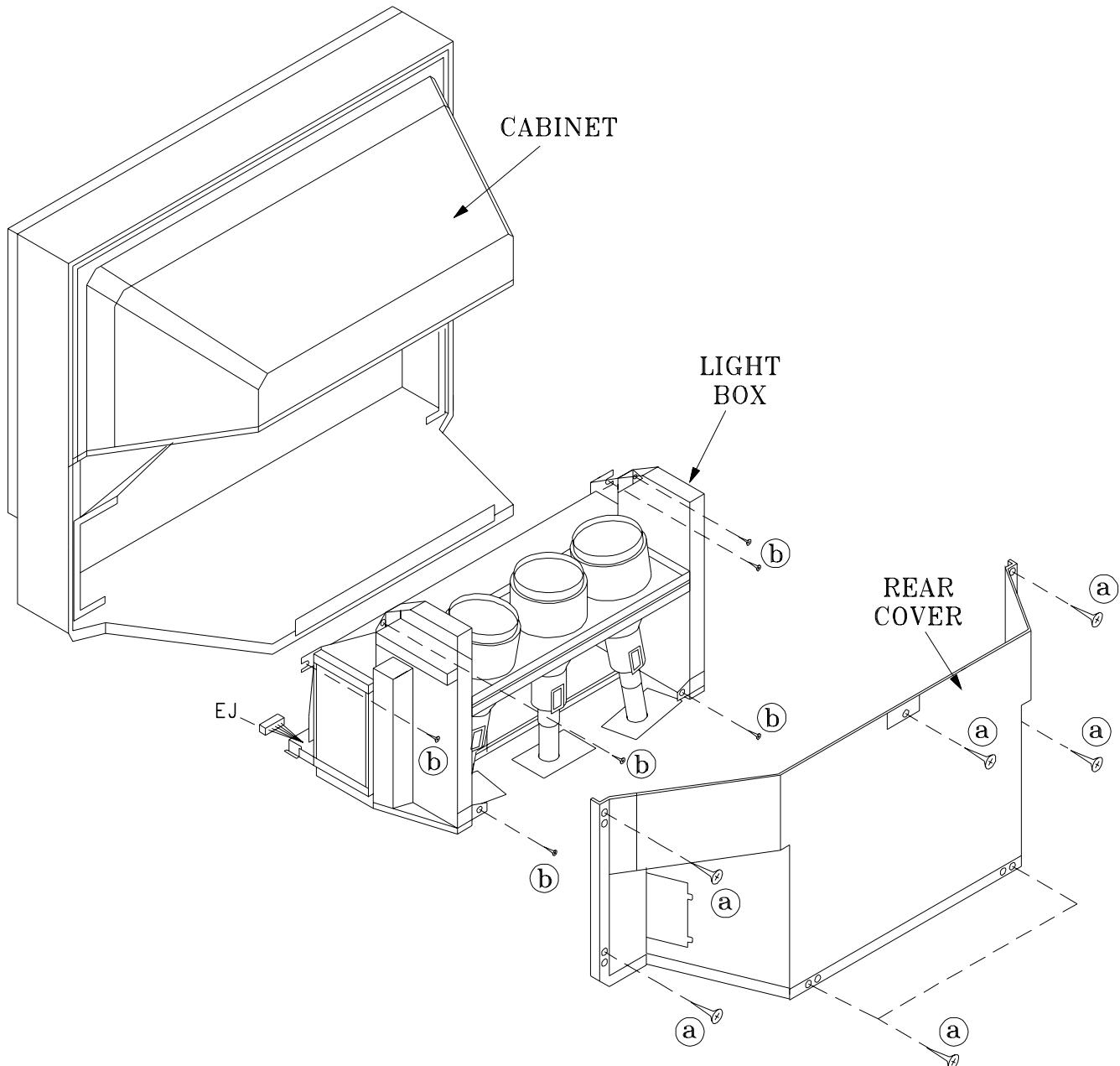
CABINET DISASSEMBLY (FRONT VIEW)

*Refer to PARTS LIST for Part Numbers



Front Cabinet Disassembly

1. Remove the Speaker Grille by pulling forward.
2. Remove the Board-Front by removing 3 screws "a".
3. Remove 3 screws "b" and then remove the Front Mask and Diamond Shield.
4. Remove 8 screws "c" and then the Assembly Screen.

CABINET DISASSEMBLY (REAR VIEW)**Rear Cabinet Disassembly**

1. Remove the Back Board by removing screws 7 "a".
2. Remove 6 screws "b" securing the Light Box Assembly.
3. Disconnect connector EJ.
4. Slide the Light Box Assembly out of the cabinet.

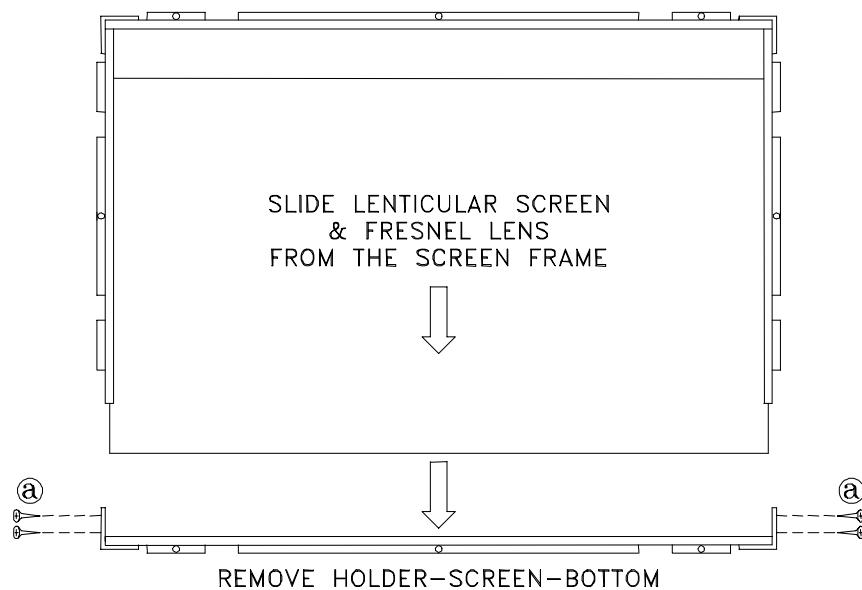
SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS

CAUTION: **Wear gloves** when handling the Lenticular Screen and Fresnel Lens.
 This prevents cuts and finger prints. **Do not place Fresnel Lens in the sun.**
 This may cause fire and heat related injuries.

1. Lenticular Screen and Fresnel Lens Removal

1. Remove the screen assembly as shown in the Cabinet Front Disassembly procedure.
2. Remove screws "a" from the bottom Corner Brackets.
3. Remove the Holder-Screen-Bottom.
4. Slide the Lenticular Screen and Fresnel Lens from the Assembly Screen as shown below..

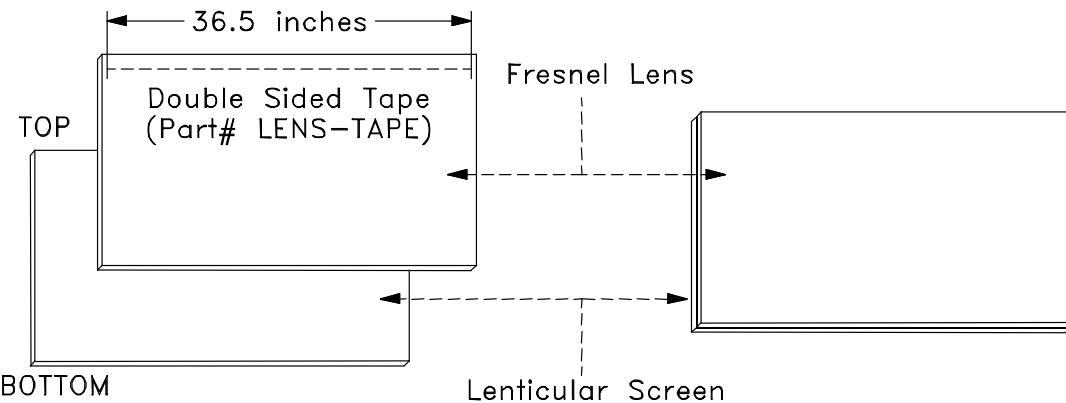
Note: When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart. Use a slot type screw drive, and remove the pressure sensitive double sided tape.



2. Installation of the Lenticular Screen and Fresnel Lens

Note: Store the Lenticular Screen and Fresnel Lens in a cool dry place. High humidity may deform the Lenticular Screen and Fresnel Lens.

1. Apply 36.5 inches of double sided tape (Part # LENS-TAPE) along the top front edge of the Fresnel Lens.
2. Place the Fresnel Lens on top of the Lenticular Screen and apply pressure at the top edge to bond them together as shown below.
3. Reverse the disassembly procedure to install the screens in the screen frame.



SERVICING PCBs

Accessing The Main Chassis

In the VK20 chassis, the Main Chassis is located in front of the CRTs. Use the following procedure to access the Main Chassis.

- 1) Remove the Light Box Assembly, refer to the Cabinet Rear Disassembly.
- 2) The shelf in the front of the Light Box Assembly is removable, refer to Figure 1.
- 3) Release the shelf lock. Apply pressure to the shelf lip on the right side (downward and towards the front). Refer to Figure 2
- 4) Hold both sides of the shelf, pull forward and then upward to remove the shelf.

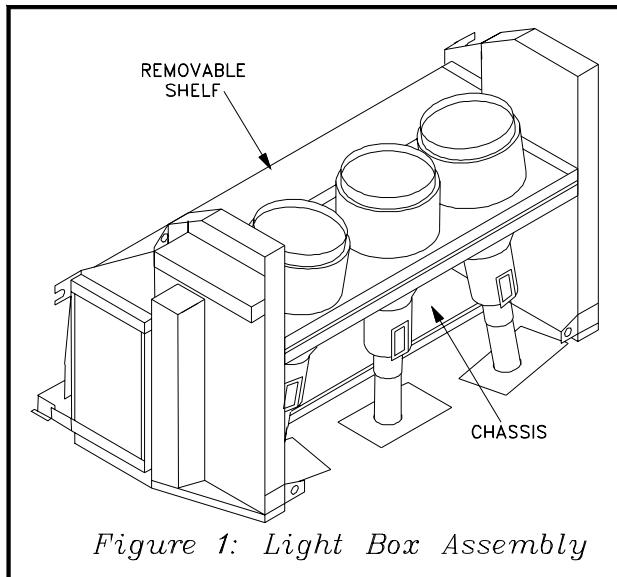


Figure 1: Light Box Assembly

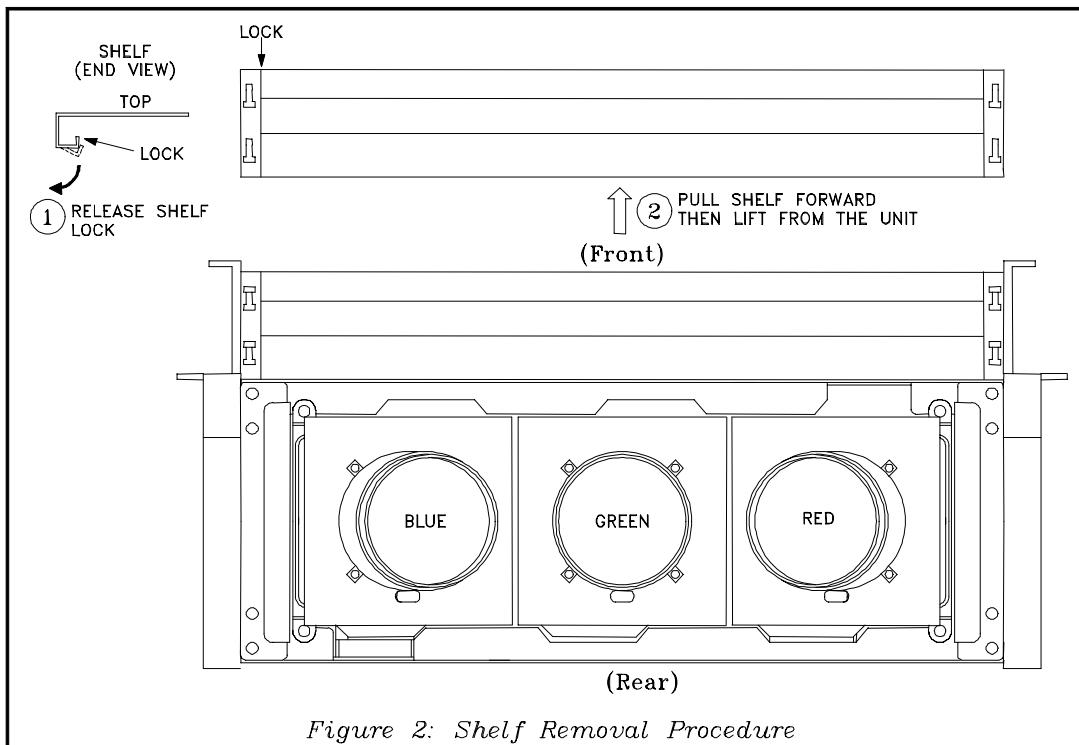
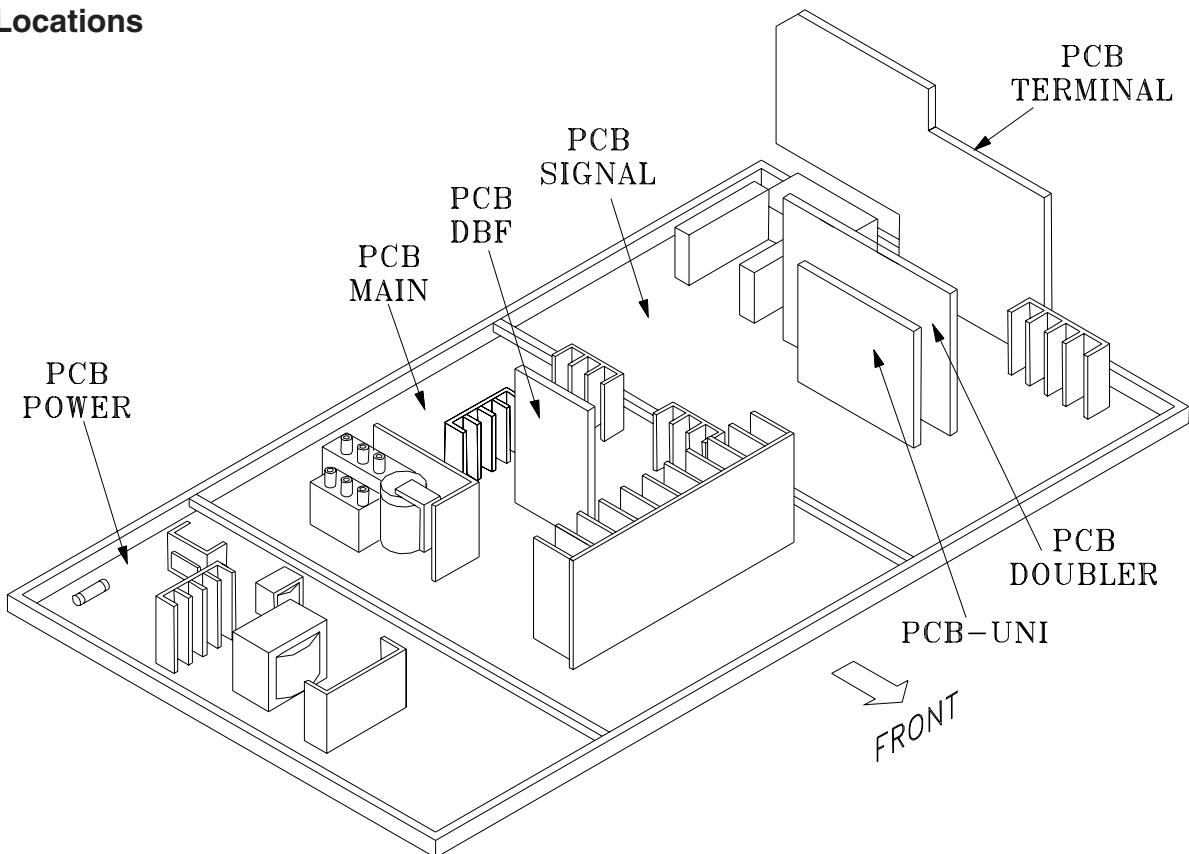
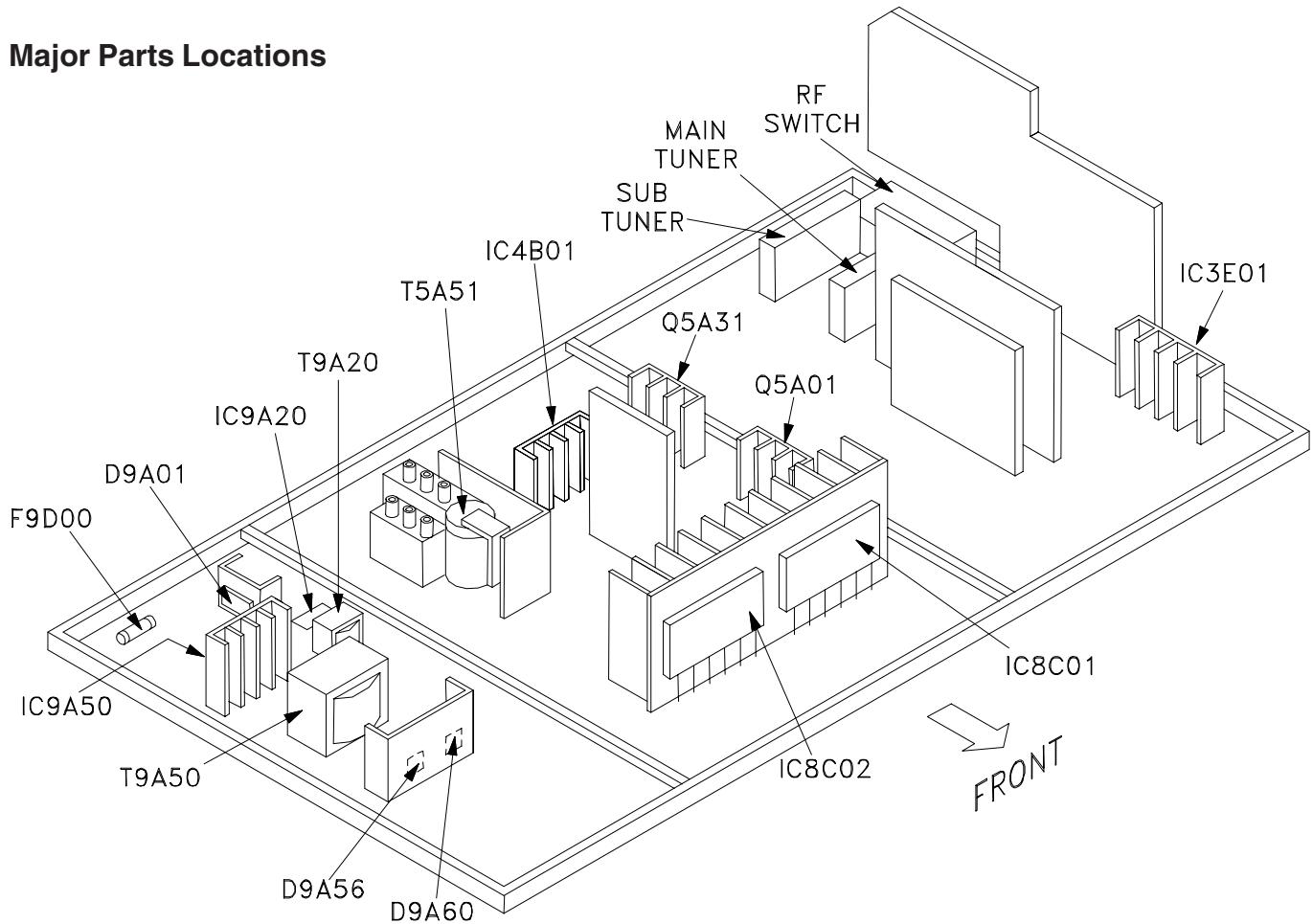


Figure 2: Shelf Removal Procedure

PCB Locations

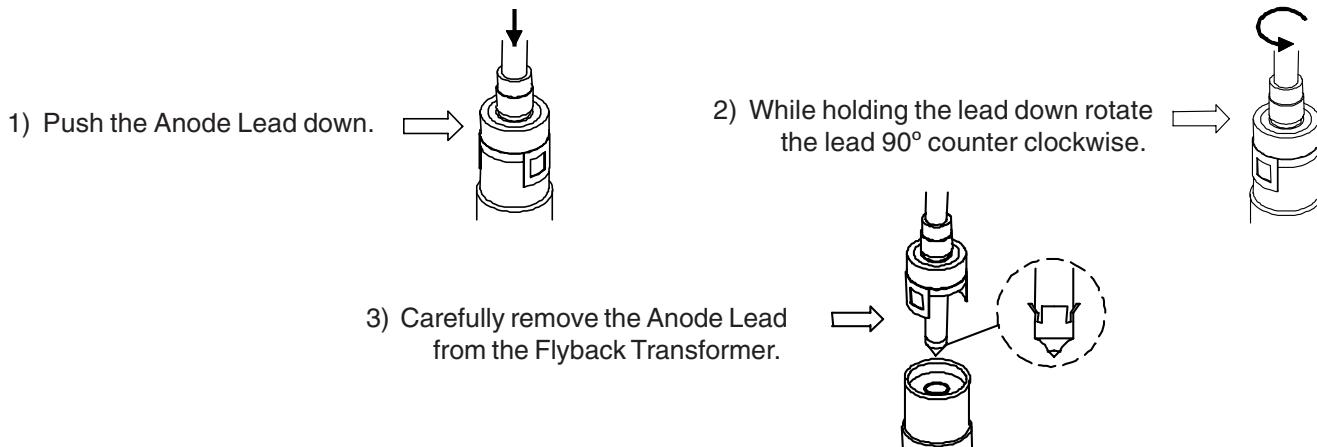


Major Parts Locations



ANODE LEAD REMOVAL

CAUTION: To prevent damage, the following procedure must be used when removing an Anode Lead from the Flyback Transformer.



CRT REPLACEMENT

1. Removal of the CRT

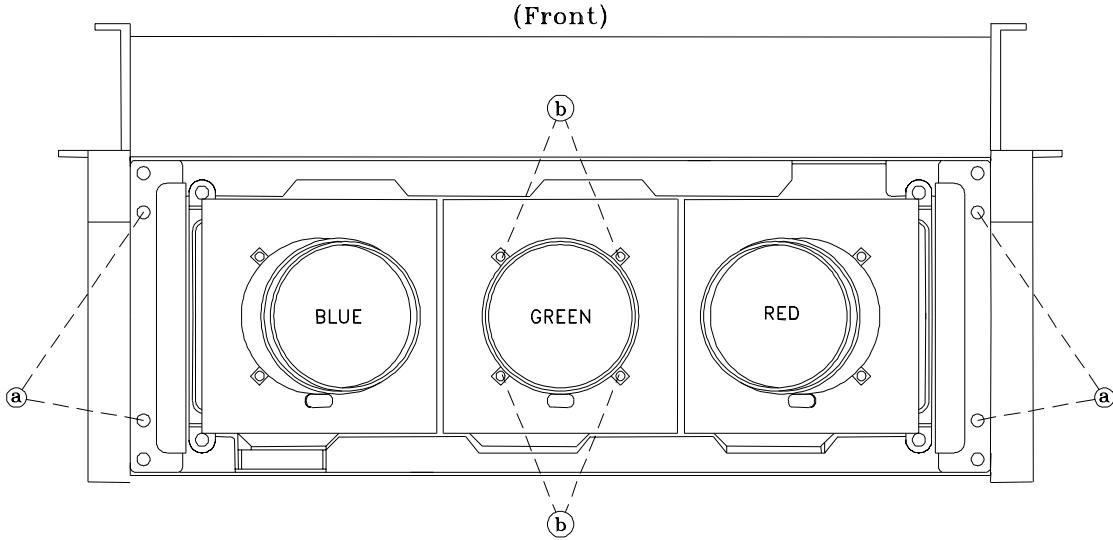
Caution! High voltage should be completely discharged prior to CRT removal.

Since the CRTs receive high voltage from the Flyback transformer, discharge the CRTs by shorting the open end of the respective high voltage cable to chassis ground.

1. Refer to Cabinet Disassembly and remove the Light Box Assembly.
2. Remove the three Anode Lead Wires from the Flyback transformer and discharge the CRTs. (Use the above procedure)
3. Unplug the three PCB-CRTs.
4. Remove 4 screws "a" retaining the Optical Unit. [Figure 1]
5. Remove 4 screws "b" retaining the Lens of the respective CRT
6. Lift the Optical Unit from the Light Box and set it lens down on a flat surface.
7. Remove 4 screws "c" retaining the CRT. [Figure 2]

Note: DO NOT loosen the spring loaded screws. Doing so will break the seal between the C-Element and the # 6 Lens, causing leakage of the CRT Coolant.

8. Remove the Deflection Yoke from the neck of the CRT. [Figure 3]



LIGHT BOX (Top View)

Figure 1

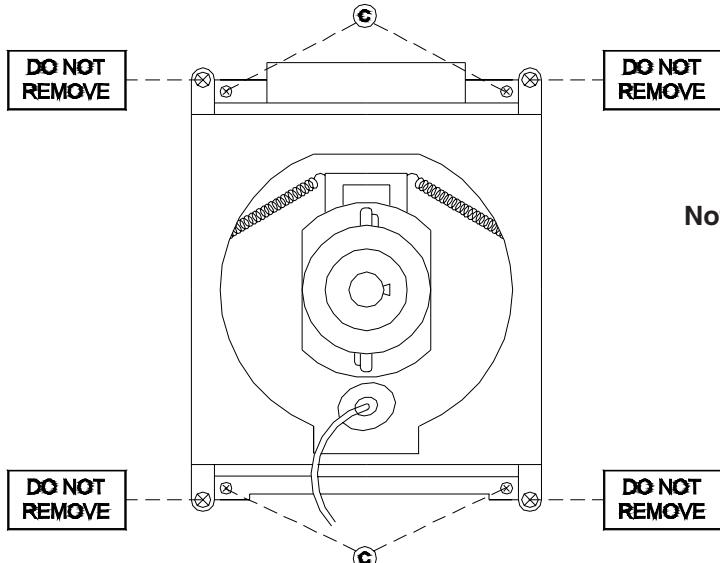


Figure 2

Note: The 4 spring-loaded screws shown in Fig 2 and labeled as "DO NOT REMOVE", should not be loosened under any circumstance. Doing so will break the seal between the CRT and the CRT-Spacer, causing leakage of the CRT Coolant.

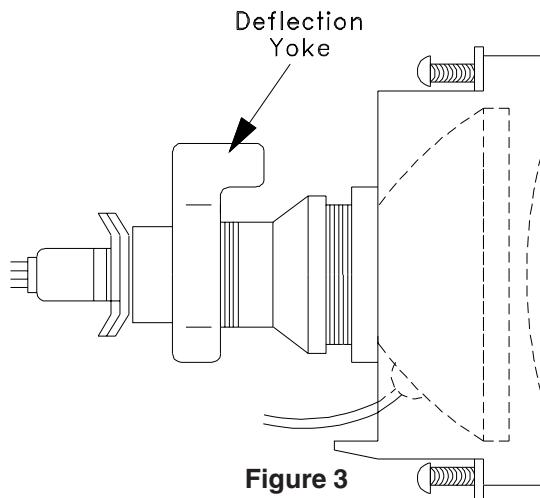


Figure 3

2. Installation of the CRT

Note: The replacement CRT is supplied as an assembly comprised of the CRT and the Inner Lens with the space between them filled with ethylene glycol. Care should be taken during handling and installation to prevent shock from disrupting the seal or alignment between the CRT and Inner Lens. [Figure 4]

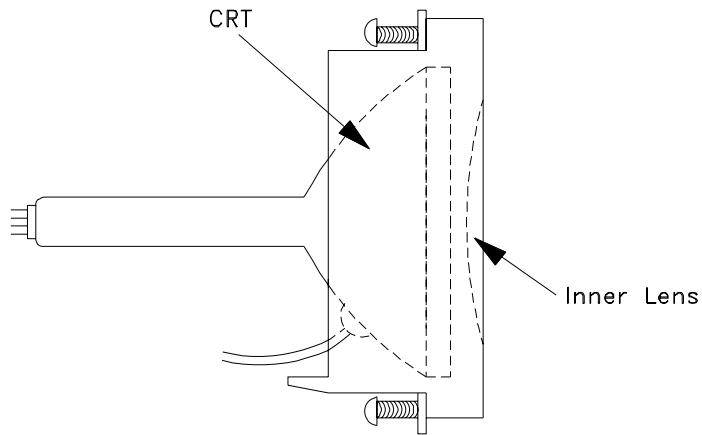
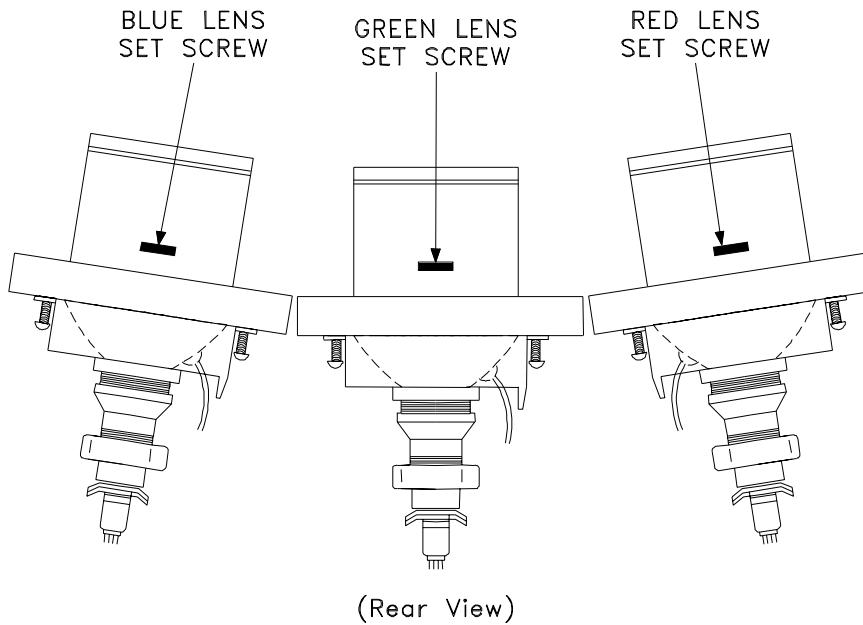


Figure 4

1. Carefully position the replacement CRT and fasten in place using 4 screws "c". [Figure 2]
2. Install the Deflection Yoke on the CRT neck. [Figure 3]
3. Install the Lens that was removed in step 5 of Removal of the CRT.
 - a) Position the Lens so that the Lens Adjustment Set Screw faces the rear of the TV [Figure 5].
 - b) Install the Lens mounting screws "b". [Figure 1]
4. Insert the Optical Unit into the Light Box Assembly and secure it with 4 screws "a" [Figure 1]..
5. Plug in the PCB-CRTs.
6. Insert the Anode Lead Wires into the Flyback Transformer.
7. Re-clamp the Lead Wire in its original position.



(Rear View)

Figure 5

Adjustment procedures after replacing the CRT(s)

- CRT Cut Off / White Balance Adjustment
- Static Convergence Adjustment
- Dynamic Convergence Adjustment

ELECTRICAL ADJUSTMENTS

Note: Perform only the adjustments required.
Do not attempt an alignment if proper equipment is not available.

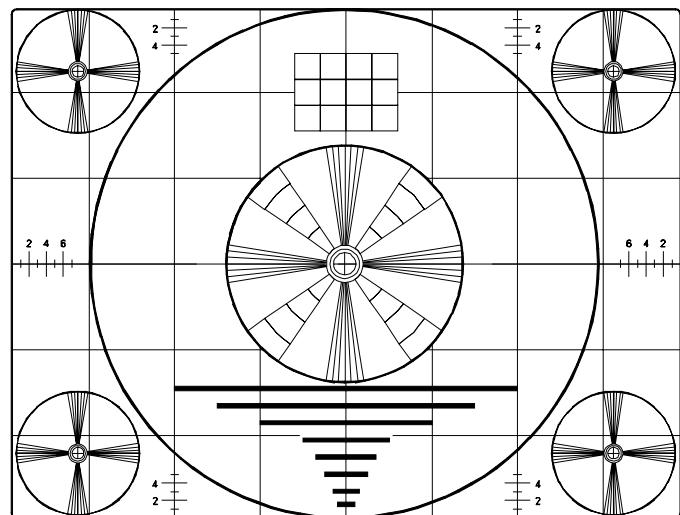
1. Test Equipment

- Oscilloscope (Unless otherwise specified, use 10:1 probes)
- Signal Generator (both SD and HD capable)
- Frequency Counter
- Direct Current Voltmeter
- Direct Current Power Supply
- Multiplex Audio Signal Generator
- Direct Current Ampere Meter

2. Test Signal

A. Monoscope Signal

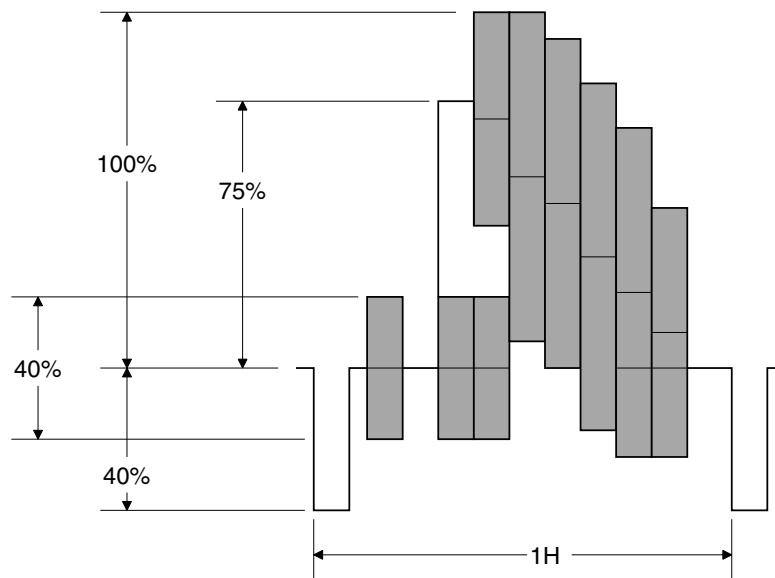
Note: If you do not have a monoscope signal source, connect the unit to a VCR and play a Monoscope *alignment tape.
(* Part Number: 859C568060)



Monoscope Signal

B. Color Bar Signal

Use the color bar signal shown below, unless otherwise specified in this manual.



Split-Field Color Bars (100% window)

3. Initial Setup

A. Option Menu Setup

Follow the steps below for the initial set-up:

1. Select the "MENU" display by pressing the "MENU" button once.
2. Press the number buttons "2", "2", "7", "0" in sequence to select the "OPTION MENU" display.
3. Press the "ADJUST" button to select "INITIAL."
4. Press "ENTER."

NOTE: At this time channel 3 is automatically selected.

MENU-2-2-7-0	
OPTION MENU	
Initial	
Power Restore	:OFF
DTV Port	:Auto
Direct Key Mode	:OFF

B. Default Settings

MAIN MENU DEFAULT SETTINGS

SETUP		AUDIO/VIDEO	
Memorize channels	ANT-A - Air	A/V Memory Reset	Ant-A
Language (idioma)	English	TV Speakers (Internal)	On
Front Button Lock	Off	Audio Output	Variable
CLOCK		AUDIO SETTINGS	
Clock Setting	Auto	TV Bass	50%
Time Zone	Eastern	TV Treble	50%
Daylight Savings Time	Applies	TV Balance	50%
Clock Time	N/A	TV Surround	Off
Set Day	N/A	TV Listen To	Stereo
CAPTIONS		TV Level Sound	Off
Closed Captions	On if Mute	VIDEO SETTINGS	
CC Background	Gray	TV Contrast	1
CHANNEL EDIT		TV Brightness	50%
Antenna	ANT-A	TV Sharpness	50%
Channel	3	TV Color	50%
Memory	Deleted	TV Tint	50%
Name	N/A	TV Color Temp	High
SQV	N/A	TV Video Noise	Standard
V-CHIP-LOCK		TV Film Mode (Auto)	Off
V-Chip	Off	TV VSM Sharpness	On
TV Rating	TV-PG	TV Volume	
FV- Fantasy Violence	Allow	Ant-A Ch 3	30%
D-Sexual Dialog	Allow	PIP Source	
L-Adult Language	Allow	Lower Right	Lower Right
S-Sexual Situations	Allow	PIP Position	
V-Violence	Allow	Right Half	Right Half
MANUAL COLOR ADJ (WT-42311)		Format	
		Stretch	Stretch
		PIP/POP Format	
		Side by Side	Side by Side
Magenta	50%		
Red	50%		
Yellow	50%		
Green	50%		
Cyan	50%		
Blue	50%		

Items in the table below are set to following after Initialization.

AV Memory Initial Settings

A/V Memory	Ant-A Ant-B	DTV	NTSC 1/2/3	COMP. 1/2
Contrast	Max	Max	Max	Max
Brightness	Mid	Mid	Mid	Mid
Sharpness	Mid	Mid	Mid	Mid
Color	Mid	Mid	Mid	Mid
Tint	Mid	Mid	Mid	Mid
Color Temp.	High	High	High	High
Video Noise	Stnd.	Stnd.	Stnd.	Stnd.
Image type	Video	Video	Video	Video
TV VSM	On	On	On	On
Sharpness	Mid	Mid	Mid	Mid
Bass	Mid	Mid	Mid	Mid
Treble	Mid	Mid	Mid	Mid
Balance	Mid	Mid	Mid	Mid
Surround	Off	Off	Off	Off
Listen To	Stereo	N/A	N/A	N/A
Level Sound	Off	Off	Off	Off

4. LED Indicator Diagnostics

The “Power ON LED” provides an indication of the sets operation, and the possible cause of a malfunction.

A. Initial Control Circuitry Check

Immediately after the TV is connected to an AC power source:

- The LED flashes three times ... indicating the Microprocessor has initialized and is functioning properly.
- If the LED does not flash ... the Microprocessor is NOT functioning.

B. Error Code Operational Check

Pressing the front panel “INPUT” and “MENU” buttons at the same time, and holding for 5 seconds, activates the Error Code Mode. The LED flashes denoting a two digit Error Code, or indicating no problem has occurred since the last Initialization.

Note: The front panel buttons must be used, NOT those on the Remote Control.

- The number of flashes indicates the value of the MSD (tens digit) of the Error Code.
- The flashing then pauses for approximately 1/2 second.
- The LED then flashes indicating the value of the LSD (ones digit) of the Error Code.
- The Error Code is repeated a total of 5 times.

Example: If the Error Code is “24”, the LED will flash two times, pause, and then flash four times.

C. Error Codes

The Error Code designations indicating a malfunction, or no malfunction, are listed below:

Error Code	Description
12	No error has occurred.
21	X-Ray Protect circuit.
22	Short Protect circuit.
23	Horizontal Deflection failure.
24	Vertical Deflection failure.

5. Circuit Adjustment Mode

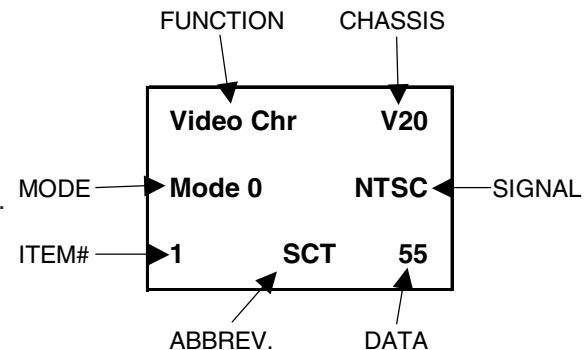
Except for the following, all adjustment items must be performed using the remote hand unit.

- Lens Focus
- Electrostatic Focus

A. Activating the Circuit Adjustment Mode

1. Press the "MENU" button on a remote hand unit.
2. Press the number buttons "2", "2", "5", "7" in sequence. The screen will change to the Adjustment Mode.

Note: Repeat steps 1 and 2 if the circuit adjustment mode display does not appear on screen

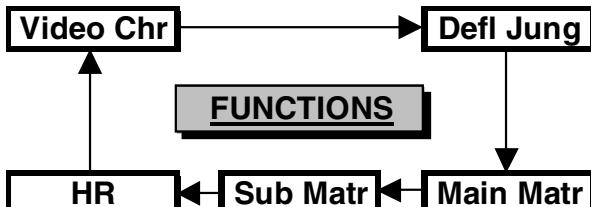


B. Selection of adjustment Functions and Adjustment Items

To select an adjustment item in the circuit adjustment mode, first select the adjustment function that includes the specific adjustment item to be selected. Then, select the adjustment item.

Refer to the following pages for the listing of adjustment functions and adjustment items.

1. Press the "AUDIO" button on a remote hand unit to select an adjustment function. Each time the button is pressed, the Function changes in the following sequence:

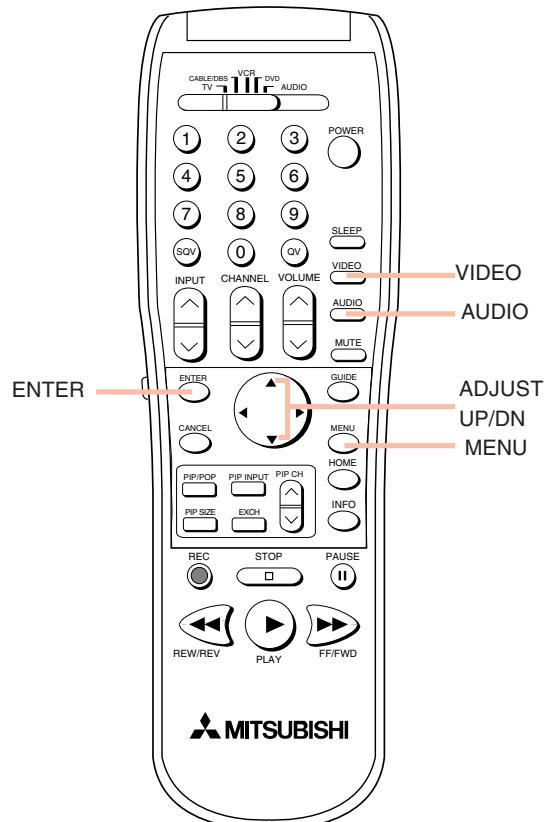


2. Press the "VIDEO" button to select a specific Adjustment Item. The Item number increases each time the "VIDEO" button is pressed.

C. Changing Data

After selecting an adjustment item, use the "ADJUST UP/DOWN" button to change data.

- Press "ADJUST DOWN" to decrease the data value.
- Press "ADJUST UP" to increase the data value.



D. Saving Adjustment Data

Press “ENTER” to save adjustment data in memory. The character display turns red for approximately one second in this step.

Note: If the circuit adjustment mode is terminated without pressing “ENTER”, changes in adjustment data are not saved.

E. Terminating the Circuit Adjustment Mode

Press the “MENU” button on the remote hand unit twice to terminate the adjustment mode.

Note: The circuit adjustment mode can also be terminated by turning power OFF.

6. Convergence Adjustment Mode

The Convergence mode is used to perform raster geometry correction, and convergence adjustments as specified in Adjustment Procedures 15 through 18.

A. Convergence Mode Activation

1. Press MENU-2-2-5-9
2. When the Convergence Mode is activated, the display at the right appears on a Green Crosshatch.

SD	Coarse BLUE
1	HSTA -50
<i>Coarse Conv. Display</i>	

B. Selecting the HD or SD Mode

1. **Select the Signal Source** before entering the Convergence Mode, either an NTSC or HD source.
2. **Enter the Convergence Mode** (MENU-2-2-5-9)
 - If the signal source is NTSC, the SD mode is activated.
 - If the signal source is HD 1080i, the HD mode is activated.
3. **Activating the HD mode when no HD signal is available.**
 - Activate the Factory Option Menu (MENU-2-2-7-0)
 - Use the “Adjust” keys to select “DTV Port” and press “Enter” to change the setting to “1080i”. Sequence = “Auto”-“480i”-“480-p”-“1080i”. **Ignore any loss of sync while changing modes.**
 - Exit the Option Menu (Press “MENU” twice).
 - Select the DTV Inputs as the signal source (INPUT button).
 - Activate the Convergence Mode ... the Convergence mode will be in the HD mode and the internal crosshatch is displayed.
4. **After adjusting Convergence, be sure to set the DTV Port back to AUTO.**
 - Select an analog input as the signal source (INPUT button).
 - Activate the Option Menu (MENU-2-2-7-0).
 - Use the “Adjust” keys to select “DTV Port” and press “Enter” to change the setting from “1080i” to “AUTO”.
 - Exit the Option Menu (Press MENU twice).

C. Convergence Mode Functions

In the Convergence Mode there are three main Functions (Categories).

- Pressing “6” activates CONV MISC
- Pressing “5” activates COARSE CONV
- Pressing “4” activates FINE CONV

D. CONV MISC (Press 6)

This mode is used to preset data values controlling the Convergence Generator, and to perform the HV Regulation adjustment.

1. Use the VIDEO button to select an item.
2. Use the ADJUST buttons to change data.

Note: When Item "1 HVOL" is selected the screen goes black except for the data display.
This occurs since a black screen is required when making the HV Regulation adjustment.

E. COARSE CONV (Press 5)

There are four Sub Functions in the Coarse mode, COARSE GREEN, COARSE RED, COARSE BLUE and DF.

- COARSE GREEN used to make Coarse Raster Geometry Adjustments.
 - COARSE RED ... used to make Coarse Red Convergence Adjustments.
 - COARSE BLUE ... used to make Coarse Blue Convergence Adjustments.
 - DF ... used to preset data values controlling the Dynamic Beam Focus circuit drive signal.
1. Use AUDIO button to select a Sub Function
 2. Use the VIDEO button to select an Adjustment Item.
 3. Use the ADJUST buttons to change data.

F. FINE CONV (Press 4)

Sub Functions

This mode is used to perform Fine Raster Correction, and Fine Red and Blue Convergence Adjustments.

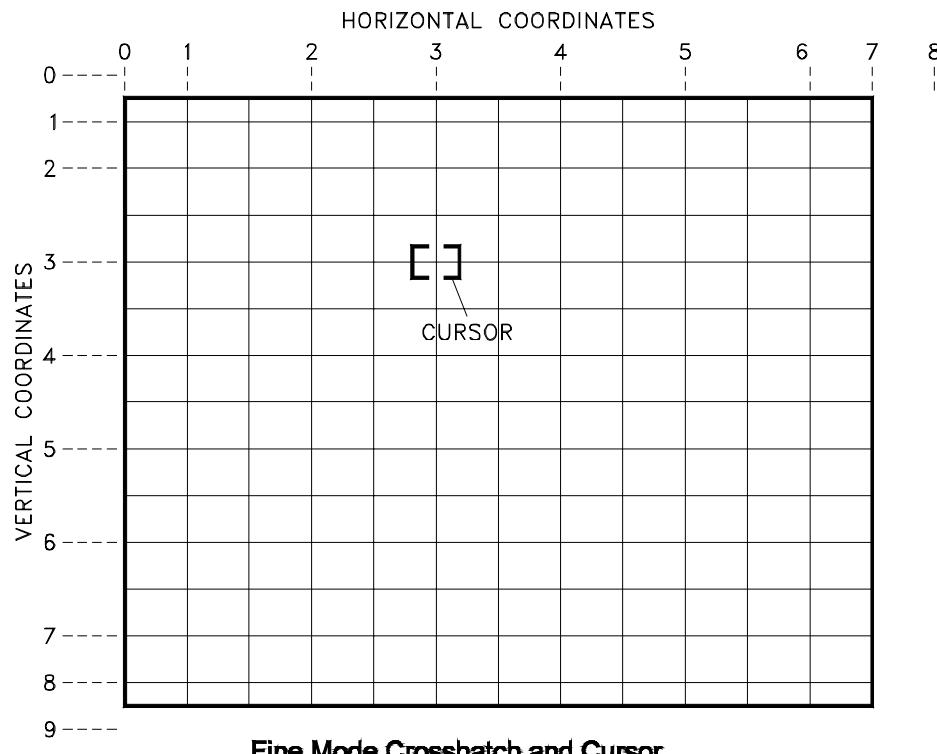
There are three Sub Adjustment Functions, selected with the AUDIO button:

- FINE GREEN a Green Crosshatch is displayed, for Fine Raster Corrections.
- FINE RED a White Crosshatch is displayed, for Fine Red Convergence Adjustments.
- FINE BLUE a White Crosshatch is displayed, for Fine Blue Convergence Adjustments.

Cursor

In the Fine mode a Cursor is added to the Crosshatch. The ENTER button toggles the Cursor between two modes:

- MOVE (blinking Cursor) use the ADJUST buttons to select any of 64 points on the Crosshatch.
- ADJUST (Non blinking Cursor) the ADJUST buttons adjust the active color at the current Cursor position, horizontally or vertically.



Fine Mode Crosshatch and Cursor

Cursor Coordinates

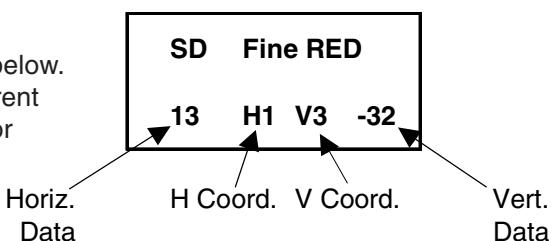
Specific intersections in the Crosshatch are assigned vertical and horizontal coordinates.

These are shown in the preceeding diagram. The Cursor can only be moved to those positions that have coordinates assigned. If the Cursor is at coordinates outside the screen area, the Cursor will not be visible. Use the ADJUST buttons to move the Cursor to an intersection on the screen.

Display

The on-screen display changes in the Fine mode, as shown below.

The display shows the vertical and horizontal data for the current Cursor Position, and the horizontal and vertical coordinates for that position.

**F. Saving Data and Exiting the Convergence Mode**

Press MENU twice to exit the Convergence mode, data is automatically saved.

Note: If power is interrupted prior to properly exiting the Convergence Mode, changes in adjustment data will not be saved.

ADJUSTMENT ITEMS LIST

Video Chroma Function			Data				Menu-2-2-5-7
Item#	Abbrev.	Description	Range	480i	480p	1080i	Adjustment
1	SCT	Picture Gain control	0~63	31	31	31	Sub Contrast
2	SBRT	Sub Brightness	0~63	31	31	31	Black Level
3	SCON	Sub Contrast	0~15	0	0	0	Preset
4	RDRH	R Drive (H temp)	0~63	31	31	31	White Balance
5	GDRH	G Drive (H temp)	0~63	41	41	41	Preset
6	BDRH	B Drive (H temp)	0~63	31	31	31	White Balance
7	CTRH	R Cutoff (H temp)	0~63	31	31	31	"
8	CTGH	G Cutoff (H temp)	0~63	46	46	46	Preset
9	CTBH	B Cutoff (H temp)	0~63	31	31	31	White Balance
10	RDRL	R Drive (L temp)	0~63	31	31	31	"
11	GDRL	G Drive (L temp)	0~63	41	41	41	Preset
12	BDRL	B Drive (L temp)	0~63	31	31	31	White Balance
13	CTRL	R Cutoff (L temp)	0~63	31	31	31	"
14	CTGL	G Cutoff (L temp)	0~63	55	55	55	Preset
15	CTBL	B Cutoff (L temp)	0~63	31	31	31	White Balance
16	GMMA	RGB Gamma Correction	0~3	1	1	1	Preset
17	GAML	Gamma Differential Corr. Switch	0~1	0	0	0	"
18	BRT	Brightness	0~63	31	31	31	"
19	COL	Color	0~63	35	31	31	White Balance
20	TINT	Tint	0~63	28	31	31	Preset
21	SHRP	Sharpness	0~63	31	33	31	"
22	CBOF	Cb DC Offset	0~63	31	31	31	"
23	CROF	Cr DC Offset	0~63	31	31	31	"
31	VMLE	VM Output Level	0~3	2	2	1	"
40	AGIW	White output aging mode switch	0~1	0	0	0	"
55	ABLT	Threshold Adjust for ABL input	0~15	7	7	7	"

COARSE CONV GREEN (MENU-2-2-5-9-5)

#	Abbrev.	Description	SD	HD
1	HSTA	Horiz. Position	0	0
2	VSTA	Vert. Position	0	0
3	SKEW	Skew (Y axis)	0	0
4	TILT	Tilt (X axis)	0	0
5	HWID	Width	50	50
6	HLIN	Horiz. Linearity	0	0
7	SPCC	Side PC Corr.	20	0
8	HKEY	Horiz. Keystone	0	0
9	TBPC	Top/Bottom PC	-180	-140
10	VKEY	Vert. Keystone	0	0
11	VWID	Height	11	20
12	VLIN	Vert. Linearity	-18	-18

COARSE CONV RED (MENU-2-2-5-9-5)

#	Abbrev.	Description	SD	HD
1	HSTA	Horiz. Position	50	50
2	VSTA	Vert. Position	0	0
3	SKEW	Skew (Y axis)	0	0
4	TILT	Tilt (X axis)	0	0
5	HLIN	Horiz. Linearity	-300	-250
6	HWID	Width	-20	0
7	VKEY	Vert. Keystone	-155	-190
8	VWID	Height	0	0
9	VLIN	Vert. Linearity	0	0
10	TBPC	Top/Bottom PC	70	100
11	SDBW	Side Bow	30	30

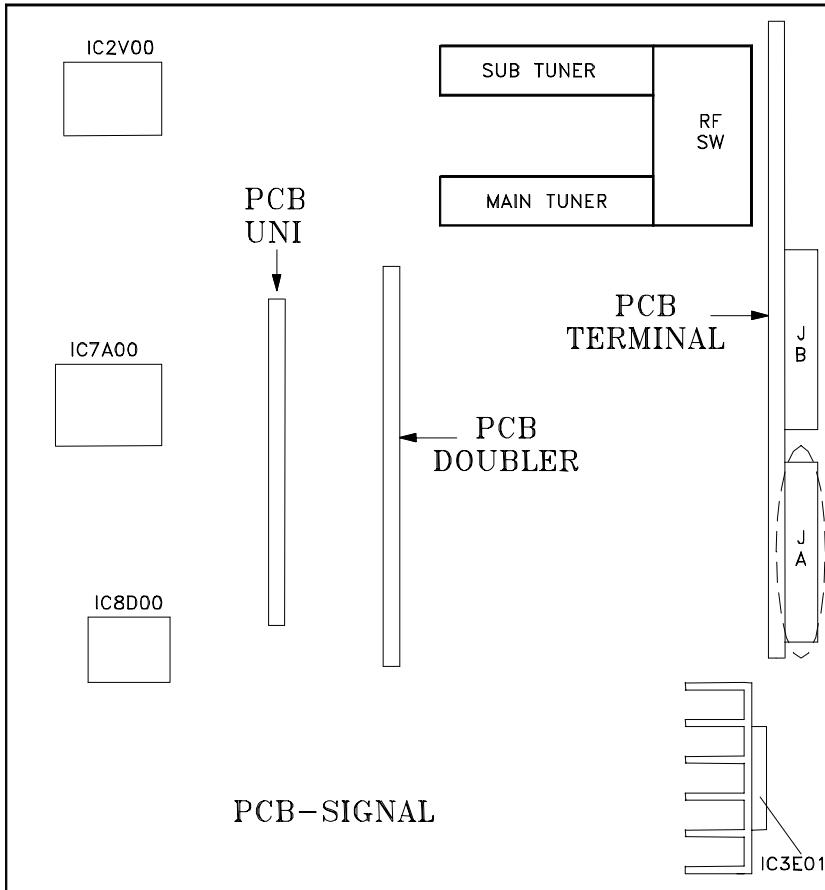
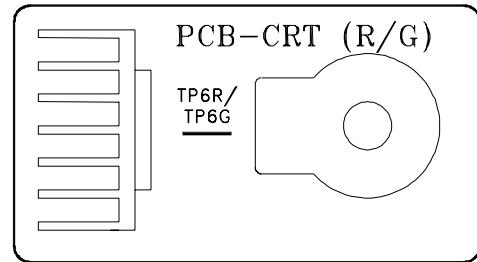
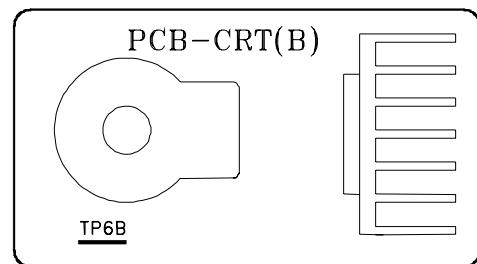
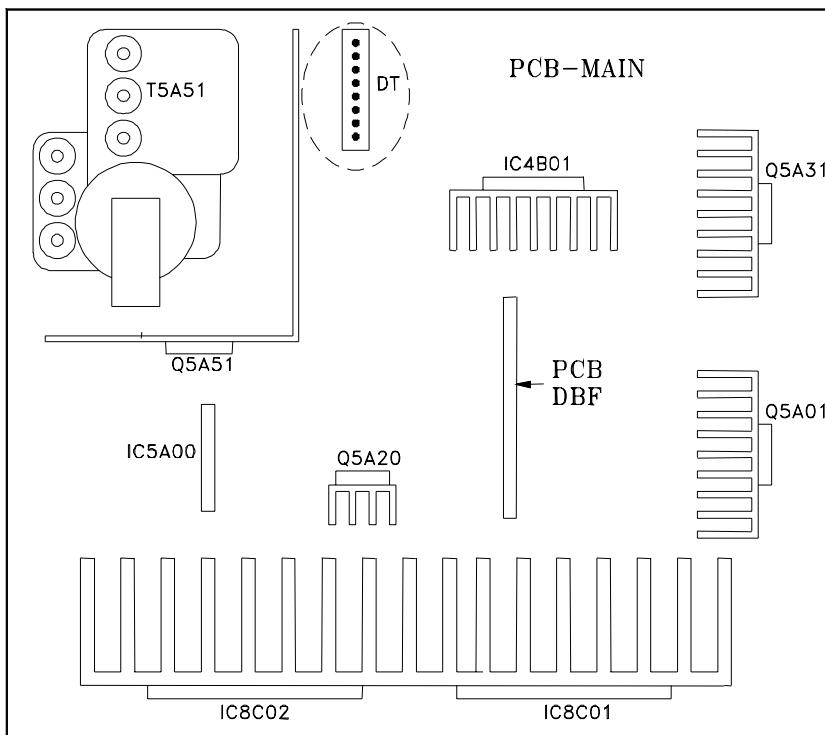
COARSE CONV BLUE (MENU-2-2-5-9-5)

#	Abbrev.	Description	SD	HD
1	HSTA	Horiz. Position	-50	-50
2	VSTA	Vert. Position	0	0
3	SKEW	Skew (Y axis)	0	0
4	TILT	Tilt (X axis)	0	0
5	HLIN	Horiz. Linearity	300	250
6	HWID	Width	0	0
7	VKEY	Vert. Keystone	180	175
8	VWID	Height	0	0
9	VLIN	Vert. Linearity	0	0
10	TBPC	Top/Bottom PC	-30	0
11	SDBW	Side Bow	-30	-30

DF (MENU-2-2-5-9-5)

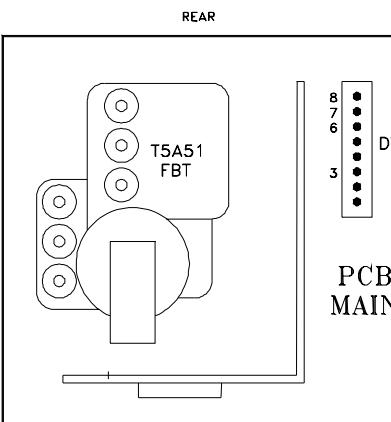
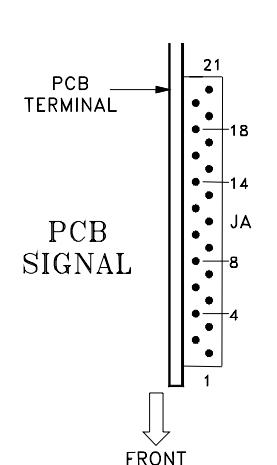
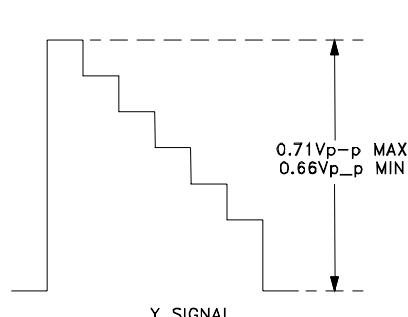
Item	Abbr.	Description	Data
0	DFH	Dynamic Focus (Horizontal)	-300
1	DFV	Dynamic Focus (Vertical)	-100

Adjustment Test Point Locations



Test Points	
DT pin 3	- HV Adjust
DT pin 6	- Ground
DT pin 7	- 12 Volts
DT pin 8	- ACL
JA pin 14	- Main Picture (Y)
JA pin 18	- Main Color (Cr)
JA pin 4	- Sub Picture (Y)
JA pin 8	- Sub Picture (Cr)
TP6(R, G or B)	- CRT Cathode

MODEL: WT-42311 / WT-A42

[HV Circuit] 1. HV Regulation		Purpose: To set the CRT Anode voltage. Symptom: Dark Picture																		
<table border="1"> <tr> <td>Measuring Instrument</td><td>DC Voltmeter</td></tr> <tr> <td>Test Point</td><td>DT connector pins 3 & 6</td></tr> <tr> <td>Ext. Trigger</td><td>-----</td></tr> <tr> <td>Measuring Range</td><td>-----</td></tr> <tr> <td>Input Signal</td><td>Video Signal Monoscope</td></tr> <tr> <td>Input Terminal</td><td>Video Input</td></tr> </table>		Measuring Instrument	DC Voltmeter	Test Point	DT connector pins 3 & 6	Ext. Trigger	-----	Measuring Range	-----	Input Signal	Video Signal Monoscope	Input Terminal	Video Input							
Measuring Instrument	DC Voltmeter																			
Test Point	DT connector pins 3 & 6																			
Ext. Trigger	-----																			
Measuring Range	-----																			
Input Signal	Video Signal Monoscope																			
Input Terminal	Video Input																			
		Note: This adjustment must be rechecked following Adjustment 9 CRT Cutoff.																		
		<ol style="list-style-type: none"> Supply a video monoscope signal. Set Contrast to maximum, and Brightness to mid position. Connect a DC volt meter between pins 3 and 6 of the DT connector. (Positive lead to pin 3) Activate the Conv-Misc Mode. Select Item "1 HVOL" (screen goes black). Adjust Item "1 HVOL" for $15.4V \pm 0.05V$ on the meter. Save data and exit the Conv-Misc mode. Confirm that the voltage does not change more than 0.15V. 																		
		Note: This adjustment must be performed if E2RESET or Convergence E2RESET are activated.																		
		<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">CONVERGENCE MODE</p> <table> <tr><td>Activate</td><td>.....MENU-2-2-5-9</td></tr> <tr><td>Misc.</td><td>....."6"</td></tr> <tr><td>Coarse</td><td>....."5"</td></tr> <tr><td>Fine</td><td>....."4"</td></tr> <tr><td>Color (R,G or B)</td><td>.....AUDIO</td></tr> <tr><td>Item No.</td><td>.....VIDEO</td></tr> <tr><td>Adjust/Move</td><td>.....ADJUST</td></tr> <tr><td>Cursor Toggle</td><td>.....ENTER</td></tr> <tr><td>Save & Exit</td><td>.....MENU (twice)</td></tr> </table> </div>	ActivateMENU-2-2-5-9	Misc."6"	Coarse"5"	Fine"4"	Color (R,G or B)AUDIO	Item No.VIDEO	Adjust/MoveADJUST	Cursor ToggleENTER	Save & ExitMENU (twice)
ActivateMENU-2-2-5-9																			
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Color (R,G or B)AUDIO																			
Item No.VIDEO																			
Adjust/MoveADJUST																			
Cursor ToggleENTER																			
Save & ExitMENU (twice)																			
[Video Circuit] 2. Main/Sub Y Level		Purpose To set picture luminance Symptom: Excess or insufficient brightness.																		
<table border="1"> <tr> <td>Measuring Instrument</td><td>Oscilloscope</td></tr> <tr> <td>Test Point</td><td>JA Connector pin 14 JA Connector pin 4</td></tr> <tr> <td>Ext. Trigger</td><td>-----</td></tr> <tr> <td>Measuring Range</td><td>----- Color Bars</td></tr> <tr> <td>Input Signal</td><td></td></tr> <tr> <td>Input Terminal</td><td>Video Input</td></tr> </table>		Measuring Instrument	Oscilloscope	Test Point	JA Connector pin 14 JA Connector pin 4	Ext. Trigger	-----	Measuring Range	----- Color Bars	Input Signal		Input Terminal	Video Input							
Measuring Instrument	Oscilloscope																			
Test Point	JA Connector pin 14 JA Connector pin 4																			
Ext. Trigger	-----																			
Measuring Range	----- Color Bars																			
Input Signal																				
Input Terminal	Video Input																			
		<ol style="list-style-type: none"> Supply a color bar signal to a Video Input (not an RF input). Select the color bar signal for both the main and sub pictures. Connect the oscilloscope to connector JA pin 14 (Main-Y). Activate the Adjustment Mode Select Item "3 YDRM" in the Main Matrix function. Adjust the data so the Main-Y signal is between 0.71 Vp-p max. and 0.66 Vp-p min. at JA pin 14. (If it cannot be adjusted within this range, set to the lower value) Move the oscilloscope to connector JA pin 4 (Sub-Y). Activate PIP if the waveform is unstable. Select Item "3 YDRS" in the Sub Matrix function. Adjust the data to equal the MAIN-Y Gain (+0.0V -0.1V). 																		
		 <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">CIRCUIT ADJUST MODE</p> <table> <tr><td>Activate</td><td>..... MENU-2-2-5-7</td></tr> <tr><td>Function</td><td>.....AUDIO</td></tr> <tr><td>Item No.</td><td>.....VIDEO</td></tr> <tr><td>Adjust Data</td><td>.....ADJUST</td></tr> <tr><td>Save Data</td><td>.....ENTER</td></tr> <tr><td>Exit</td><td>.....MENU (twice)</td></tr> </table> </div>	Activate MENU-2-2-5-7	FunctionAUDIO	Item No.VIDEO	Adjust DataADJUST	Save DataENTER	ExitMENU (twice)						
Activate MENU-2-2-5-7																			
FunctionAUDIO																			
Item No.VIDEO																			
Adjust DataADJUST																			
Save DataENTER																			
ExitMENU (twice)																			

MODEL: WT-42311 / WT-A42

[Video Circuit]

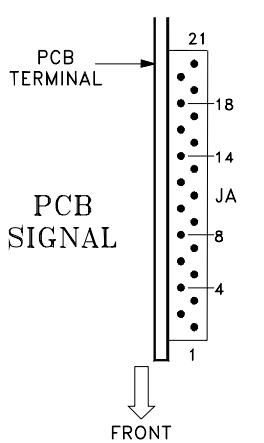
3. Main/Sub Color Level

Purpose: To match the sub picture color to that of the main picture.

Symptom: Main and sub pictures colors differ.

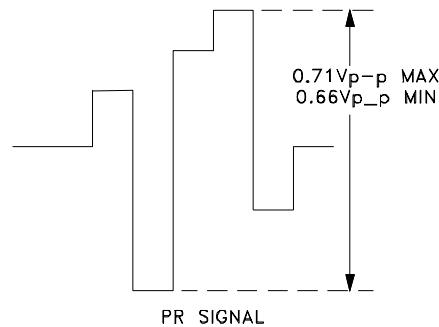
Measuring Instrument	Oscilloscope
Test Point	JA pin 18 JA pin 8
Ext. Trigger	-----
Measuring Range	-----
Input Signal	Color Bars
Input Terminal	Video

- Supply an NTSC signal to an External Video Input.
- Select the NTSC signal as the source for both the main and sub pictures.
- Connect an oscilloscope to connector JA pin 18 (Main PR).
- Activate the Adjustment mode.
- Select Item "2 COLM" in the Main Matrix Function.
- Adjust data so the PR signal is 0.71 Vp-p max. - 0.66 Vp-p min (If it cannot be adjusted within this range, set to the lower value)
- Connect an oscilloscope to connector JA pin 8 (Sub PR). If the waveform is unstable, activate PIP.
- Select item "2 COLS" in the Sub Matrix Function.
- Adjust so Sub PR = Main PR.



CIRCUIT ADJUST MODE

Activate	MENU-2-2-5-7
Function	AUDIO
Item No.	VIDEO
Adjust Data	ADJUST
Save Data	ENTER
Exit	MENU (twice)



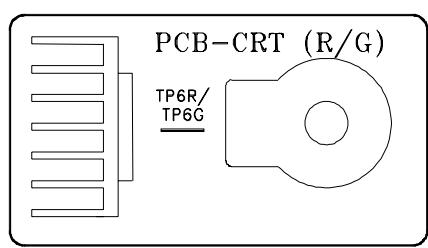
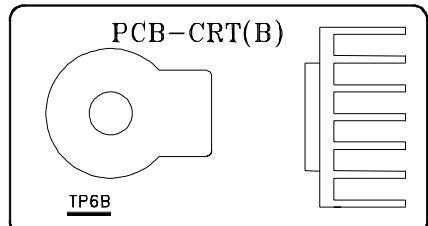
[CRT Circuit]

4. CRT Cutoff

Purpose To set the cutoff point for all three CRTs.

Symptom: Monochrome has a color tint, or incorrect brightness.

Measuring Instrument	Oscilloscope
Test Point	TP6R, TP6G, TP6B
Ext. Trigger	-----
Measuring Range	50V/Div. 2msec/Div.
Input Signal	None
Input Terminal	Video Input

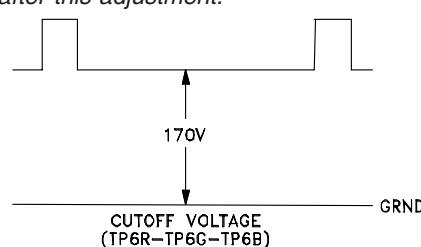


Note: Use the Expand mode (full screen)

- Select an External Input with no signal.
- Enter the Adjustment Mode, Video Chroma Function.
- Press "1", automatically blanks the screen and sets COL to 0.
- Set the data to the values given in the table below.
- Connect the oscilloscope to TP6R.
- Adjust the Red Screen VR so the black level is 170V, as shown below, or 176V ±1VDC using an DC Voltmeter.
- Repeat Steps 4 and 5 to set the Blue and Green Screen VRs, using TP6G and TP6B.

Note: White Balance must be performed after this adjustment.

Cutoff Preset VC Data		
Item	Abbr	Data
1	SCT	31
2	SBRT	31
3	SCON	0
4	RDRH	31
5	GDRH	41
6	BDRH	31
7	CTRH	31
8	CTGH	46
9	CTBH	31



CIRCUIT ADJUST MODE

Activate	MENU-2-2-5-7
Function	AUDIO
Item No.	VIDEO
Adjust Data	ADJUST
Save Data	ENTER
Exit	MENU (twice)

MODEL: WT-42311 / WT-A42

[CRT Circuit] 5. White Balance (NTSC)		<p>Purpose: To set the CRTs white level in the NTSC mode.</p> <p>Symptom: Monochrome has a color tint.</p>
Measuring Instrument	DC Voltmeter	Note: Use the "FORMAT" button to activate the Expand mode (full screen).
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	NTSC White Raster	
Input Terminal	RF or Video	

CIRCUIT ADJUST MODE

Activate MENU-2-2-5-7
 FunctionAUDIO
 Item No.VIDEO
 Adjust DataADJUST
 Save DataENTER
 ExitMENU (twice)

Maximum CRT Current

CRT	CURRENT
RED	580 uA
GREEN	580 uA
BLUE	580 uA

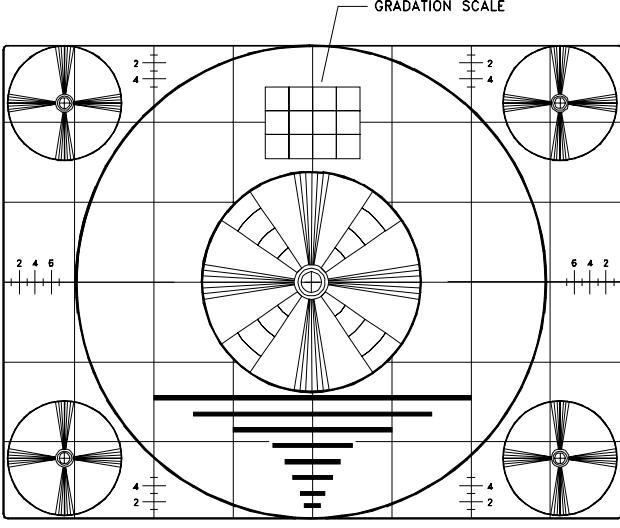
[CRT Circuit] 6. White Balance (HD)		<p>Purpose To set the CRTs white level in the HD mode.</p> <p>Symptom: Monochrome pictures have a color tint.</p>
Measuring Instrument	-----	
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	HD White Raster	
Input Terminal	DTV Inputs	

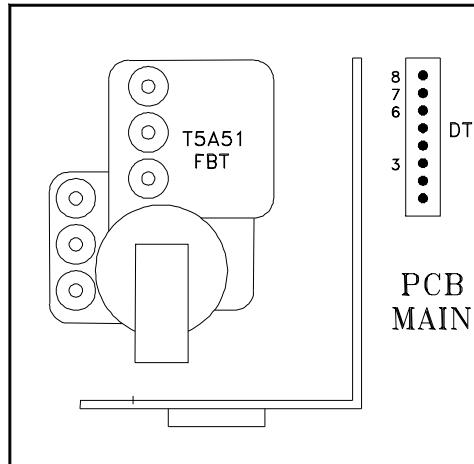
CIRCUIT ADJUST MODE

Activate MENU-2-2-5-7
 FunctionAUDIO
 Item No.VIDEO
 Adjust DataADJUST
 Save DataENTER
 ExitMENU (twice)

NOTE: After completing HD White Balance, set the corresponding adjustment items in 480p to the same data values

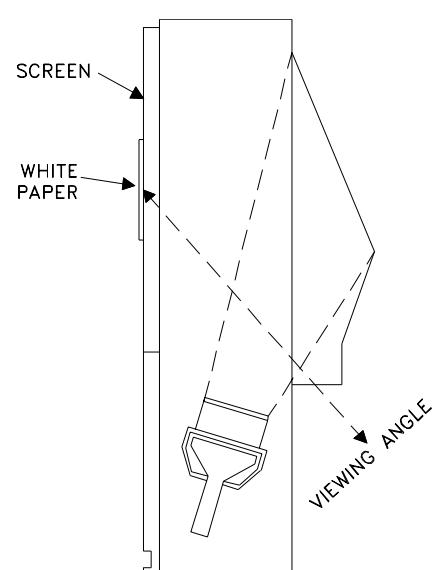
MODEL: WT-42311 / WT-A42

[Video Circuit] 7. Black Level		Purpose: To set the black level of the picture. Symptom: Excess or insufficient brightness.												
Measuring Instrument ----- Test Point ----- Ext. Trigger ----- Measuring Range ----- Input Signal Monoscope Input Terminal Video Input		<ol style="list-style-type: none"> Supply a Monoscope signal to a Video Input. Activate the Adjust Mode, Video Chroma Function. Adjust Item "2 SBRT" so the 0% and 10% black levels on the gradation scale are the same. (SBRT data should fall between 24 and 28.) Press ENTER to save data. Exit the Service Mode. 												
CIRCUIT ADJUST MODE Activate MENU-2-2-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice)		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>40%</td><td>30%</td><td>20%</td><td>10%</td></tr> <tr> <td>50%</td><td>0%</td><td>0%</td><td>0%</td></tr> <tr> <td>60%</td><td>70%</td><td>80%</td><td>90%</td></tr> </table> <p style="text-align: center;">GRADATION SCALE</p>	40%	30%	20%	10%	50%	0%	0%	0%	60%	70%	80%	90%
40%	30%	20%	10%											
50%	0%	0%	0%											
60%	70%	80%	90%											
														

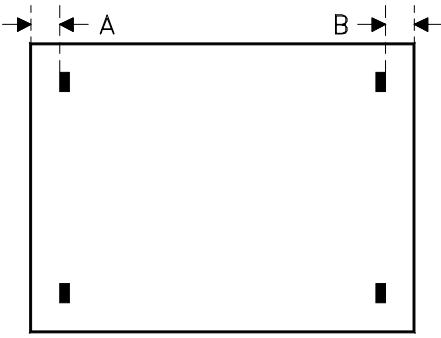
[Video Circuit] 8. Sub Contrast		Purpose To set overall beam current to its' optimum level. Symptom: Excess or insufficient contrast.
Measuring Instrument DC ma meter Test Point DT connector pins 7 & 8 Ext. Trigger ----- Measuring Range ----- Input Signal Grayscale Input Terminal RF Input		<p>Note: Activate the Expand mode (full screen).</p> <ol style="list-style-type: none"> Supply a Grayscale signal to a RF Input. Activate the Adjust Mode, Video Chroma Function. Select Item "1 SCT", signal level automatically reduces. Connect a 3ma DC meter between DT connector pins 7 and 8. Positive lead to pin 7. Adjust Item "1 SCT" for $500\mu A \pm 10\mu A$. Remove the meter. Save data and Exit the Service Mode.
CIRCUIT ADJUST MODE Activate MENU-2-2-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice)		 <p style="text-align: center;">REAR</p> <p>PCB MAIN</p>

MODEL: WT-42311 / WT-A42

[Focus Circuit] 9. Dynamic Focus Preset		Purpose: To improve edge focus. Symptom: Poor focus at the edges of the screen.									
Measuring Instrument		1. Supply a Monoscope signal to a Video Input									
Test Point		2. Activate the Convergence Mode.									
Ext. Trigger		3. Select the DF Function under the Conv. Coarse Mode.									
Measuring Range		4. Set Items "0 DFH" and "1 DFV" to the data values given in the DF Table.									
Input Signal		5. Press "6" to activate CONV-MISC									
Input Terminal		6. Set "0 FPHS" and "1 DPHS" to data values given in the CONV-MISC Table.									
		5. Exit the Conv. Mode.									
CONVERGENCE MODE											
ActivateMENU-2-2-5-9											
Misc."6"											
Coarse....."5"											
Fine"4"											
Color (R,G or B).....AUDIO											
Item No.....VIDEO											
Adjust/Move.....ADJUST											
Cursor Toggle.....ENTER											
Save & Exit.....MENU (twice)											
		DF									
		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Item</th> <th>Abbr.</th> <th>Data</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DFH</td> <td>-300</td> </tr> <tr> <td>2</td> <td>DFV</td> <td>-100</td> </tr> </tbody> </table>	Item	Abbr.	Data	1	DFH	-300	2	DFV	-100
Item	Abbr.	Data									
1	DFH	-300									
2	DFV	-100									
		CONV MISC									
		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Item</th> <th>Abbr.</th> <th>Data</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>DPHS</td> <td>1</td> </tr> <tr> <td>10</td> <td>DOFS</td> <td>33</td> </tr> </tbody> </table>	Item	Abbr.	Data	9	DPHS	1	10	DOFS	33
Item	Abbr.	Data									
9	DPHS	1									
10	DOFS	33									

[Video Circuit] 10. Lens Focus		Purpose To set the Lens position for optimum focus. Symptom: Poor focus
Measuring Instrument		Note: This adjustment must be done before Electrostatic Focus. Perform this adjustment for RED, GREEN, and BLUE monochrome pictures.
Test Point		1. Supply a VIDEO signal (Monoscope).
Ext. Trigger		2. Cover the Red and Blue Lens (producing a green raster).
Measuring Range		3. Adjust the Green Lens for best focus at the center of the Monoscope pattern.
Input Signal		Note: Attach a white paper to the screen center. During adjustment, observe the picture on the screen from inside for easier adjustment.
Input Terminal		4. Supply a crosshatch signal
		5. Confirm that the width at the top and bottom of the center vertical line are the same. If not, check mechanical centering adjustment..
		6. Repeat Steps 2 and 5 for the Red and Blue monochrome pictures.
		

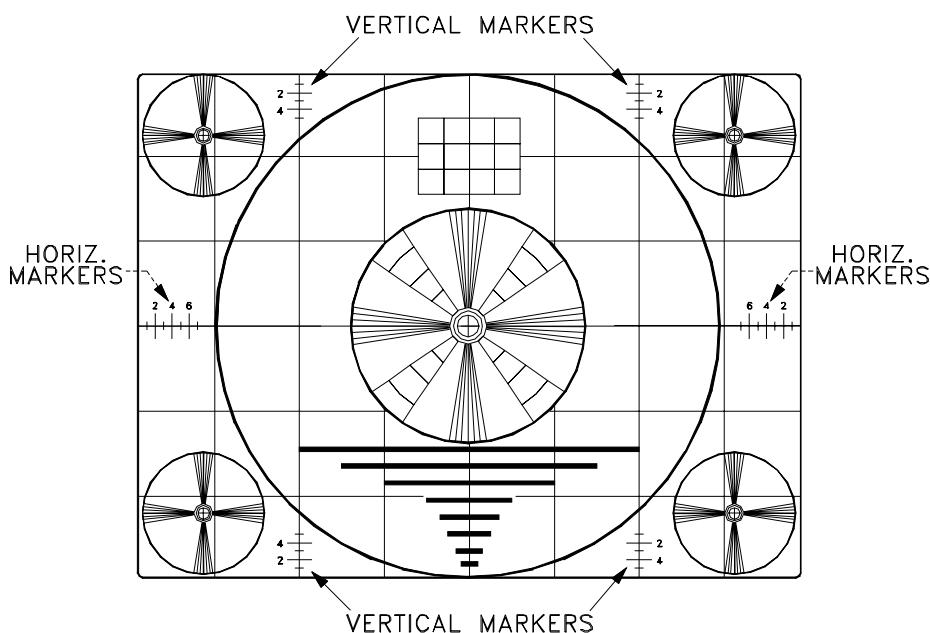
MODEL: WT-42311 / WT-A42

[CRT Circuit] 11. Electrostatic Focus		Purpose: To set electrostatic focus to the optimum point. Symptom: Poor focus.								
Measuring Instrument	Note: This adjustment must be performed after the Sub Contrast adjustment.									
Test Point										
Ext. Trigger										
Measuring Range										
Input Signal	Monoscope & Crosshatch									
Input Terminal	Video Input									
Raster Color Selection <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Color Raster</th><th>Activation Code</th></tr> <tr> <td>Red</td><td>MENU-2-2-5-9-1</td></tr> <tr> <td>Green</td><td>MENU-2-2-5-9-2</td></tr> <tr> <td>Blue</td><td>MENU-2-2-5-9-3</td></tr> </table>			Color Raster	Activation Code	Red	MENU-2-2-5-9-1	Green	MENU-2-2-5-9-2	Blue	MENU-2-2-5-9-3
Color Raster	Activation Code									
Red	MENU-2-2-5-9-1									
Green	MENU-2-2-5-9-2									
Blue	MENU-2-2-5-9-3									
[On Screen Display] 12. Character Position		Purpose To position the character display horizontally. Symptom: Incorrect display position								
Measuring Instrument	1. Supply a Monoscope signal to the Video or RF Input. 2. Select the Monoscope as the source for the main picture (Input button). 3. Activate the Service Mode, HR Function. 4. Use the Adjust Right/Left buttons to center the display horizontally. (A = B) 5. Save data and exit the Service Mode..									
Test Point										
Ext. Trigger										
Measuring Range										
Input Signal	Video Signal (HD/NTSC)									
Input Terminal	ANT-A/DTV									
										

MODEL: WT-42311 / WT-A42

[Conv/Defl] 13. Geometry Preset		Purpose: To preset data controlling raster geometry Symptom: Raster distortion.																																																																																															
Measuring Instrument	-----																																																																																																
Test Point	-----																																																																																																
Ext. Trigger	-----																																																																																																
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Input Signal	NTSC & HD																																																																																																
Input Terminal	Video & DTV Inputs																																																																																																
DEFL JUNGLE (MENU-2-2-5-7)		COARSE CONV GREEN (MENU-2-2-5-9-5)																																																																																															
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COARSE CONV RED (MENU-2-2-5-9-5)		COARSE CONV BLUE (MENU-2-2-5-9-5)																																																																																															
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MODEL: WT-42311 / WT-A42

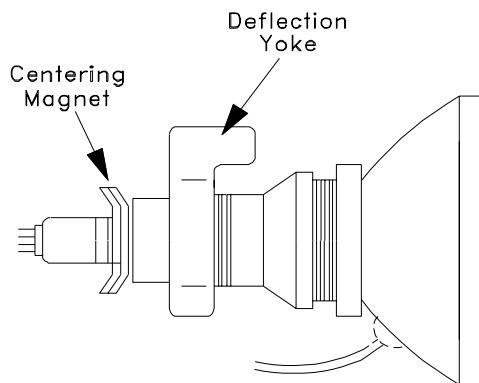
[Deflection Circuit] 14: Deflection Geometry Height & Width Adjustments		Purpose: To set the height, width and linearity of the raster. Symptom: Incorrect height, width and/or linearity.
Measuring Instrument	-----	<p>Preliminary:</p> <ol style="list-style-type: none"> 1. <u>DO NOT</u> change the initial values for "#8 VLIN" in the Defl. Jungle Function. 2. <u>DO NOT</u> exceed the following VHGT adjustment ranges: NTSC ... from -4 to +10 HD ... from -10 TO +5 <p>NTSC Mode</p> <ol style="list-style-type: none"> 1. Supply an NTSC Monoscope signal to a Video Input. 2. Select the Monoscope as the signal source. 3. Activate the Adjustment Mode, JNGL Function. 4. Select and adjust each of the following items. <ul style="list-style-type: none"> • "7 VHGT" ... so the vertical marker sum = 4 • "1 HWD" ... so the horizontal marker sum = 7 5. Save data and Exit the Service Mode. <p>HD Mode</p> <ol style="list-style-type: none"> 1. Supply an HD Monoscope signal to the DTV HD Inputs. 2. Select the DTV Inputs as the signal source (Input button) 3. Activate the Service Mode, Defl. Jungle Function. 4. Select and adjust each of the following items. <ul style="list-style-type: none"> • "7 VHGT" ... so the vertical marker sum = 2 • "1 HWD" ... so the horizontal marker sum = 5 5. Save data and Exit the Service Mode.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	Monoscope (NTSC & HD)	
Input Terminal	Video & DTV Inputs	
CIRCUIT ADJUST MODE Activate MENU-2-2-5-7 FunctionAUDIO Item No.VIDEO Adjust DataADJUST Save DataENTER ExitMENU (twice)		
		

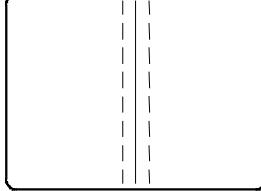
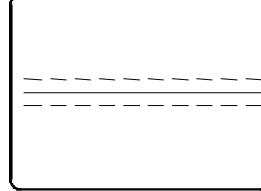
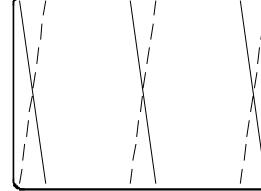
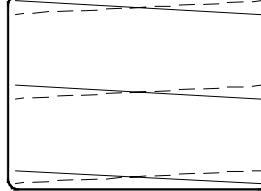
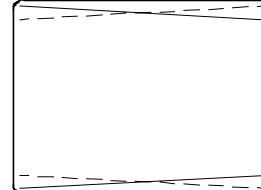
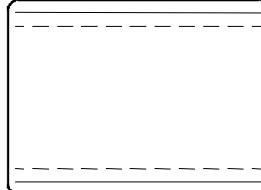
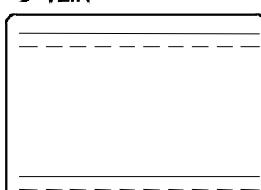
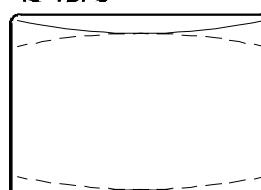
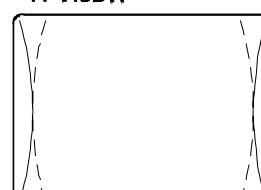
[Convergence Circuit] 15. Convergence Geometry Adjustments		Purpose: To set the Convergence circuit geometry adjustments. Symptom: Raster distortion at the top, bottom or sides of the picture.	
Measuring Instrument	----		
Test Point	-----		
Ext. Trigger	-----		
Measuring Range	-----		
Input Signal	NTSC -- None HD -- HD sync		
Input Terminal	Video & DTV Inputs		
		Note: <i>Deflection Circuit Geometry must be performed before this adjustment.</i>	
NTSC mode 1. Select a Video Input with no signal. 2. Activate the Convergence Mode, Coarse Green. 3. Adjust the Coarse Green Items shown below for straight crosshatch lines. 4. Select the Fine Green Mode, a Cursor is displayed on the crosshatch. 5. Use the Cursor to adjust for straight crosshatch lines. 6. Exit the Convergence Mode.			
HD mode 1. Supply horizontal and vertical HD sync to the DTV Inputs and select the DTV Inputs as the source. Note: <i>If an HD signal is not available, use the Conv. HD with No Signal Procedure</i> 2. Enter the Convergence Mode, Coarse Green. 3. Repeat NTSC Steps 3 through 6 in the HD mode.			
CONVERGENCE MODE ActivateMENU-2-2-5-9 Misc."6" Coarse....."5" Fine"4" Color (R,G or B).....AUDIO Item No.....VIDEO Adjust/Move.....ADJUST Cursor Toggle.....ENTER Save & Exit.....MENU (twice)		CONV. HD WITH NO SIGNAL 1. MENU-2-2-7-0 2. Set DTV Port to 1080i 3. MENU (Twice) 4. INPUT select DTV inputs 5. MENU-2-2-5-9 After Adjusting, set the DTV Port to AUTO	
COARSE GREEN ADJUSTMENTS			
3 SKEW	4 TILT	6 HLIN	7 SPCC
8 HKEY	9 TBPC	10 VKEY	12 VLIN

[Convergence Circuit] 16. Centering and Static Convergence		Purpose: To converge red, green and blue at the center of the screen Symptom: Color edging over the entire picture.									
Measuring Instrument	-----	<p>Preliminary Degauss the shield cover and bracket unit of the CRT assembly and chassis. DO NOT degauss the CPM Assemblies.</p> <p>HD mode</p> <ol style="list-style-type: none"> Supply an HD Monoscope signal to the DTV Inputs. Select the DTV Inputs as the signal source (Input button). Enter the Convergence Coarse mode. Set the data for the "HSTA" and "VSTA" items to: <table style="margin-left: 40px;"> <tr> <th style="text-align: center;">GREEN</th> <th style="text-align: center;">RED</th> <th style="text-align: center;">BLUE</th> </tr> <tr> <td style="text-align: center;">HSTA = 0</td> <td style="text-align: center;">HSTA = 50</td> <td style="text-align: center;">HSTA = -50</td> </tr> <tr> <td style="text-align: center;">VSTA = 0</td> <td style="text-align: center;">VSTA = 0</td> <td style="text-align: center;">VSTA = 0</td> </tr> </table> <ol style="list-style-type: none"> In the Coarse Green mode: <ul style="list-style-type: none"> Center the Green Raster using the Green Centering Magnet. Rotate the Green Deflection Yoke to correct any tilt. In the Coarse Red mode, use the Red Centering Magnet to converge red on the green at the center of screen. Correct any red tilt with the Red Deflection Yoke. In the Coarse Blue mode, repeat Step 6 using the Blue Centering magnet and the Blue Deflection Yoke. Exit the Convergence mode. <p>SD mode</p> <ol style="list-style-type: none"> Supply an NTSC Monoscope signal to a Video Input. Select the Monoscope as the signal source (Input button). Enter the Convergence Coarse Green mode. If needed, center the green raster using "1 HSTA" and "2 VSTA" adjustments. In the Coarse Red mode, use "1 HSTA" and "2 VSTA" adjustments to converge the red on the green at the center of the screen. In the Coarse Blue mode, repeat step 5 to converge the blue of the green. Exit the Convergence Mode 	GREEN	RED	BLUE	HSTA = 0	HSTA = 50	HSTA = -50	VSTA = 0	VSTA = 0	VSTA = 0
GREEN	RED	BLUE									
HSTA = 0	HSTA = 50	HSTA = -50									
VSTA = 0	VSTA = 0	VSTA = 0									
Test Point	-----										
Ext. Trigger	-----										
Measuring Range	-----										
Input Signal	NTSC -- Monoscope HD -- Monoscope										
Input Terminal	Video & DTV Inputs										

CONVERGENCE MODE

ActivateMENU-2-2-5-9
 Misc. "6"
 Coarse..... "5"
 Fine "4"
 Color (R,G or B).....AUDIO
 Item No.....VIDEO
 Adjust/Move.....ADJUST
 Cursor Toggle.....ENTER
 Save & Exit.....MENU (twice)



[Convergence Circuit] 17. Coarse Convergence		Purpose: To converge red and blue on green at the edges of the screen. Symptom: Color edging at the top, bottom and sides of the screen.											
<table border="1"> <tr><td>Measuring Instrument</td><td>-----</td></tr> <tr><td>Test Point</td><td>-----</td></tr> <tr><td>Ext. Trigger</td><td>-----</td></tr> <tr><td>Measuring Range</td><td>-----</td></tr> <tr><td>Input Signal</td><td>NTSC -- None HD -- HD sync</td></tr> <tr><td>Input Terminal</td><td>Video & HD Inputs</td></tr> </table>		Measuring Instrument	-----	Test Point	-----	Ext. Trigger	-----	Measuring Range	-----	Input Signal	NTSC -- None HD -- HD sync	Input Terminal	Video & HD Inputs
Measuring Instrument	-----												
Test Point	-----												
Ext. Trigger	-----												
Measuring Range	-----												
Input Signal	NTSC -- None HD -- HD sync												
Input Terminal	Video & HD Inputs												
<p>SD mode</p> <ol style="list-style-type: none"> 1. Select an External Input with no signal. 2. Activate the Convergence Mode, Coarse Red. 3. Adjust the Items shown below to converge the red on the green. 4. Select Coarse Blue mode. 5. Adjust the Items shown below to converge the blue on the green. Note: If center convergence shifts, use red and blue items "1 HSTA" and "2 VSTA" to correct the shift. 6. Exit the Convergence Mode. 													
<p>HD mode</p> <ol style="list-style-type: none"> 1. Supply horizontal and vertical HD sync to the DTV Inputs and select the DTV Inputs as the source. Note: If an HD signal is not available, use the Conv. HD with No Signal Procedure. 2. Repeat SD Steps 2 through 5 in the HD mode. 3. Exit the Convergence mode. 													
<p>CONVERGENCE MODE</p> <p>ActivateMENU-2-2-5-9 Misc."6" Coarse....."5" Fine"4" Color (R,G or B).....AUDIO Item No.....VIDEO Adjust/Move.....ADJUST Cursor Toggle.....ENTER Save & Exit.....MENU (twice)</p>													
<p>CONV. HD WITH NO SIGNAL</p> <ol style="list-style-type: none"> 1. MENU-2-2-7-0 2. Set DTV Port to 1080i 3. MENU (Twice) 4. INPUT select DTV inputs 5. MENU-2-2-5-9 <p>After Adjusting, set the DTV Port to AUTO</p>													
<p>COARSE CONVERGENCE RED & BLUE ADJUSTMENTS</p>													
1 HSTA*	2 VSTA*	3 SKEW	4 TILT										
													
5 HLIN	6 HWID	7 VKEY	8 VVID										
													
9 VLIN	10 TBPC	11 HSBW											
													
<p>* Data should not exceed ± 100</p>													

MODEL: WT-42311 / WT-A42

[Convergence Circuit] 18. Fine Convergence		Purpose: To converge red, green and blue at the edges of the screen Symptom: Color edging at the edges of the picture.
Measuring Instrument	-----	SD Fine Adjustment 1. Select an External Input, no signal. 2. Activate the Convergence Mode, Fine Red. 3. Use the Cursor to converge red on the green. 4. Select the Fine Blue mode. 5. Use the Cursor to converge blue on the green. 6. Exit the Convergence mode. HD Fine Adjustment 1. Supply an HD signal (sync only) to the DTV inputs and select DTV with the "Audio" button. <i>Note: If an HD signal is not available, use the Conv. HD with No Signal Procedure.</i> 2. Repeat SD Fine Adjustment Steps 2 through 6, in the HD mode.
Test Point	-----	
Ext. Trigger	-----	
Measuring Range	-----	
Input Signal	NTSC -- None HD -- HD sync	
Input Terminal	Video & DTV Inputs	
<u>CONVERGENCE MODE</u> ActivateMENU-2-2-5-9 Misc."6" Coarse....."5" Fine"4" Color (R,G or B).....AUDIO Item No.....VIDEO Adjust/Move.....ADJUST Cursor Toggle.....ENTER Save & Exit....MENU (twice)		<u>CONV. HD WITH NO SIGNAL</u> 1. MENU-2-2-7-0 2. Set DTV Port to 1080i 3. MENU (Twice) 4. INPUT select DTV inputs 5. MENU-2-2-5-9 After Adjusting, set the DTV Port to AUTO

CHIP PARTS REPLACEMENT

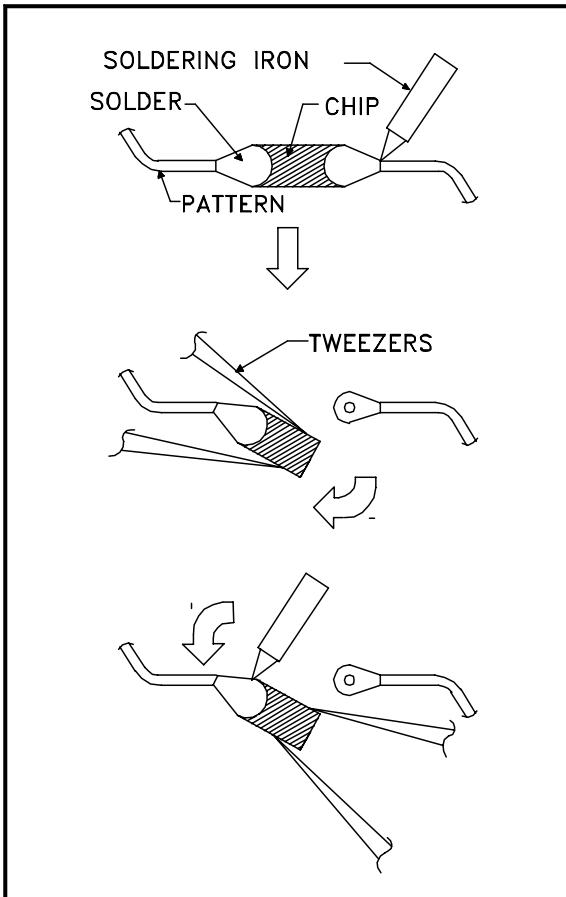
Some resistors, shorting jumpers (0 Ohm resistors), ceramic capacitors, transistors and diodes are chip parts. The following precautions should be taken when replacing these parts.

Cautions:

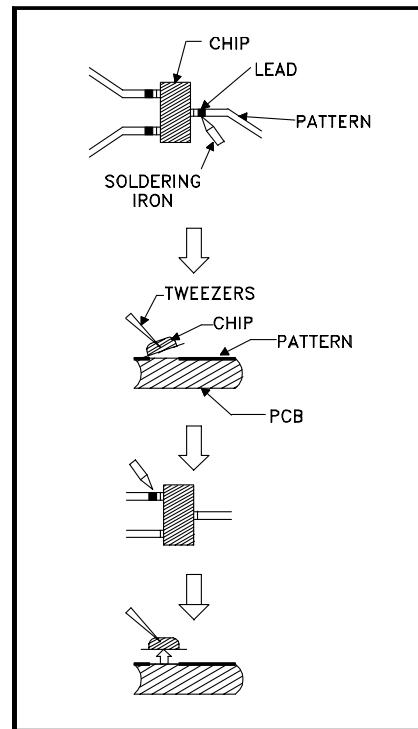
1. Use a fine tipped, well insulated soldering iron (approximately 30 watts), and tweezers.
2. Melt the solder and remove the chip parts carefully so as not to tear the copper foil from the printed circuit board.
3. Discard removed chips; do not reuse them.
4. Do not apply heat for more than 3 (three) seconds to new chip parts.
5. Avoid using a rubbing stroke when soldering.
6. Take care not to scratch, or damage the chip parts when soldering.
7. Supplementary cementing is not required.

Chip Parts Removal (Resistors, Capacitors, etc.)

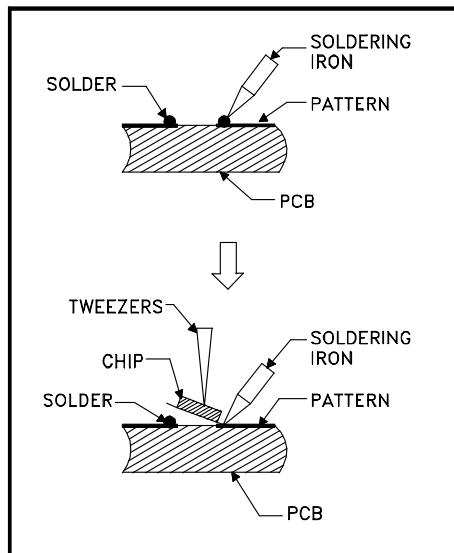
1. Grasp the part with tweezers. Melt the solder at both sides alternately, and remove one side of the part with a twisting motion.
2. Melt the solder at the other side and remove the part.


Chip Parts Removal (Transistors)

1. Melt the solder of one lead and lift the side of that lead upward.
2. Simultaneously melt the solder of the other two leads and lift the part from the PCB.


Replacement

1. Presolder the contact points on the circuit pattern.
2. Press the part downward with tweezers and apply the soldering iron as shown.



REPLACEMENT PARTS

Parts Ordering

To expedite delivery of replacement parts orders, specify the following:

1. Model Number/Serial Number
2. Part Number and description
3. Quantity

Note: Unless complete information is supplied, delay in processing of orders will result.

Critical and Warranty Parts Designation

Critical Electrical Components are indicated by **Bold Type** in the Parts List, and in the schematic diagrams by shading. 

Warranty Return Parts are indicated in the Parts List with an (*).

Parts Tolerance Codes

Refer to the following chart for tolerance characteristics of electrical components.

MARK	B	C	D	F	G	J	K
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10

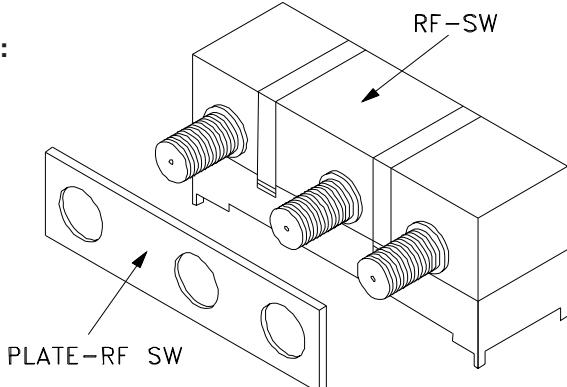
MARK	M	N	V	X	Z	P	Q
Tolerance %	± 20	± 30	± 10	$+40$ -20	$+80$ -20	$+100$ -0	$+30$ -10

MARK	M	N	V	X	Z
Tolerance (pF)	± 0.1	± 0.25	± 0.5	± 1	± 2

Replacement Part Notes

When Replacing the RF-Switch (RF-SW) or the PCB-SIGNAL:

1. Remove the PLATE-RF SW from the original component, shown in the diagram at the right.
2. Install the PLATE-RF SW on the new RF-SW.



When Replacing the EEPROM

The EEPROMs (IC7C01, IC2K02 and IC8D0) store the adjustment data. After replacing the EEPROM, readjust the data to the values given in the "Adjustment Items List" tables. If good performance is not obtained with these values, perform the Adjustment Procedure(s) given in the Description and Adjustment columns.

QUICK REFERENCE FOR COMMON REPLACEMENT PARTS**CRT ASSEMBLIES**

PART NO.	DESCRIPTION
251C219010	ASSY-CRT-RED
251C219020	ASSY-CRT-GREEN
251C219030	ASSY-CRT-BLUE

REMOTE CONTROL

290P111010 REMOTE CONTROL

HIGH VOLTAGE / DEFLECTION COMPONENTS

Q5A31 261P122010 HORIZ-OUT 2SC5778
 Q5A51 261P082010 HV-OUT 2SK2771-O1R
 T5A51 334P281010 TRANS-FLYBACK
 129P059050 VR-FOCUS

330P288010 DEFL-YOKE
 453B036010 CAP-ANOD - SHORT - RED
 453B036040 CAP-ANODE - GREEN
 453B036050 CAP-ANOD - BLUE
 453B036060 CAP-ANODE - RED

MODEL	MIRROR	LENTICULAR SCREEN	FRESNEL LENS	DIAMOND SHIELD
WT-42311	494D006010	491P136010	491P137010	760D628070
WT-A42	494D006010	491P136010	491P137010	760D639050

MODELS: WT-42311 / WT-A42

[#] Model Legend: (1) WT-A42, (2) WT-42311

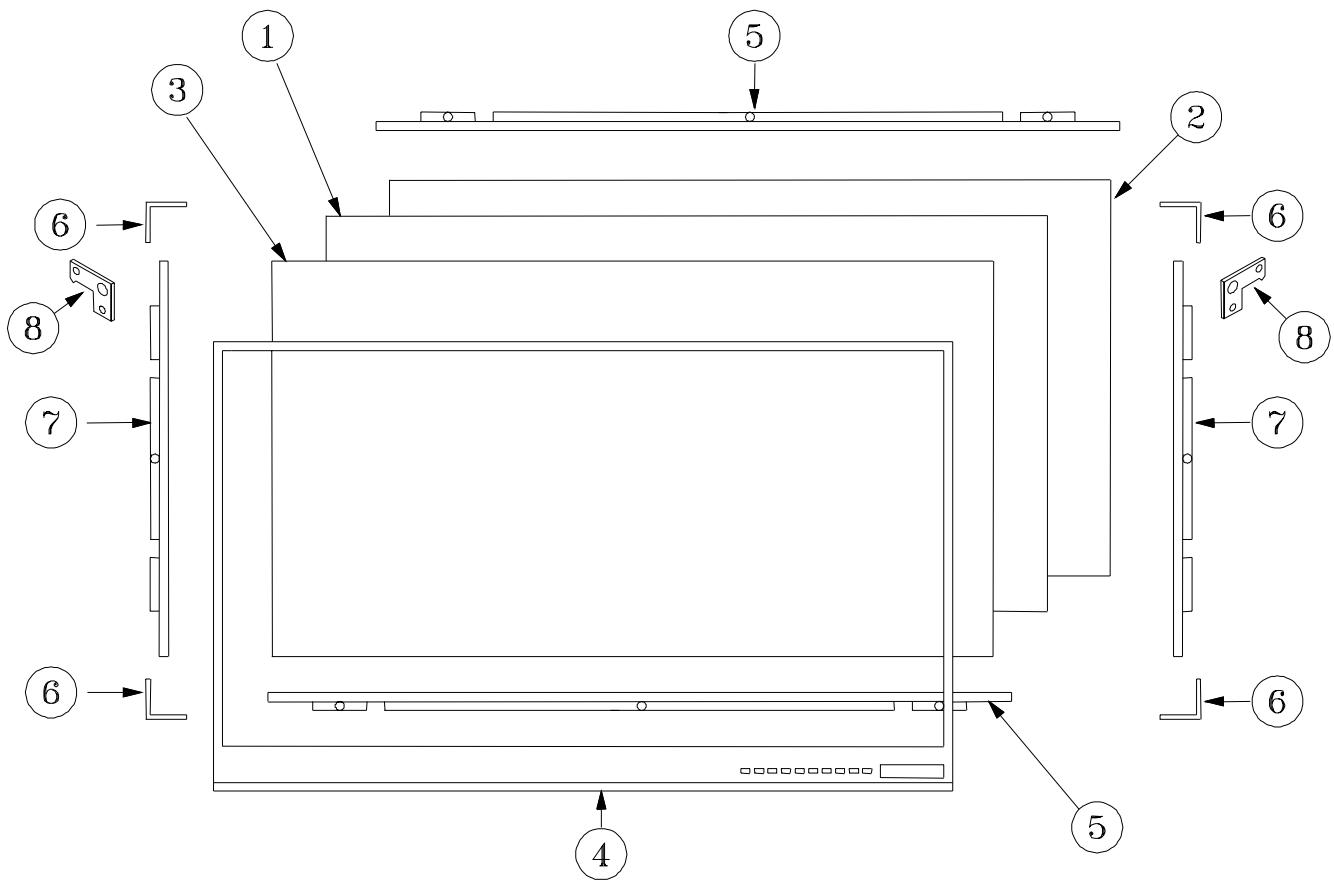
Ref #	Part #	Part Name & Description	[#]
	490P220030	LENS - ALL COLORS	
	494D006010	MIRROR - 42"	
	750A436010	COVER-TERMINAL	
	750A437010	TERMINAL BOARD	
AG6B01	224D019090	AIR-GAP - 1.5+-0.5KV S.LEAD	
AG6G01	224D019090	AIR-GAP - 1.5+-0.5KV S.LEAD	
AG6R01	224D019090	AIR-GAP - 1.5+-0.5KV S.LEAD	
DL6Y50	337P134010	DELAY-LINE	
F5A00	283P043060	FUSE - LF251 3A	
F9A02	283P044020	FUSE - LF251 10A	
F9A03	283P043090	FUSE - LF251 5A	
F9A04	283P044020	FUSE - LF251 10A	
F9A05	283P043090	FUSE - LF251 5A	
F9B01	283P043060	FUSE - LF251 3A	
F9D00	283D131040	FUSE - S10A 125A	
K9A50	287P100010	RELAY-POWER - DG9D1-0(M)-II-0.25W	
PC9A21	268P058020	PHOTO-COUPLER - ON3131-R/ON3161-R	
PC9A50	268P106010	PHOTO-COUPLER - CNZ3133	
PJ2J00	440C407010	PIN-JACK-BOARD-6P	
PJ2J04	440C409010	PIN-JACK-BOARD-2P	
PJ2J05	440C408010	PIN-JACK-BOARD-3P	
PJ2J11	440C412010	PIN-JACK-BOARD-3P	
TU1A01	295P516010	TUNER-TV - 115-V-F045AP	
TU1B01	295P516020	TUNER-TV - 115-V-F025AP	
X2L00	285P426010	QUARTZ-CRYST - 3.579 MHZ	
X2LA0	285P426010	QUARTZ-CRYST - 3.579 MHZ	
X2M30	285P426040	QUARTZ-CRYST - 20.000 MHZ	
X2N00	285P426020	QUARTZ-CRYST - 4.000 MHZ	
X2S00	285P426020	QUARTZ-CRYST - 4.000 MHZ	
X3A01	285P413010	QUARTZ-CRYST - 18.43 MHZ	
X7A13	285P426030	QUARTZ-CRYST - 10.000 MHZ	
X7H00	285P335050	QUARTZ-CRYST - 80.000MHZ	
Z7K01	939P617010	UNIT-PREAMP - GP1U283Q	

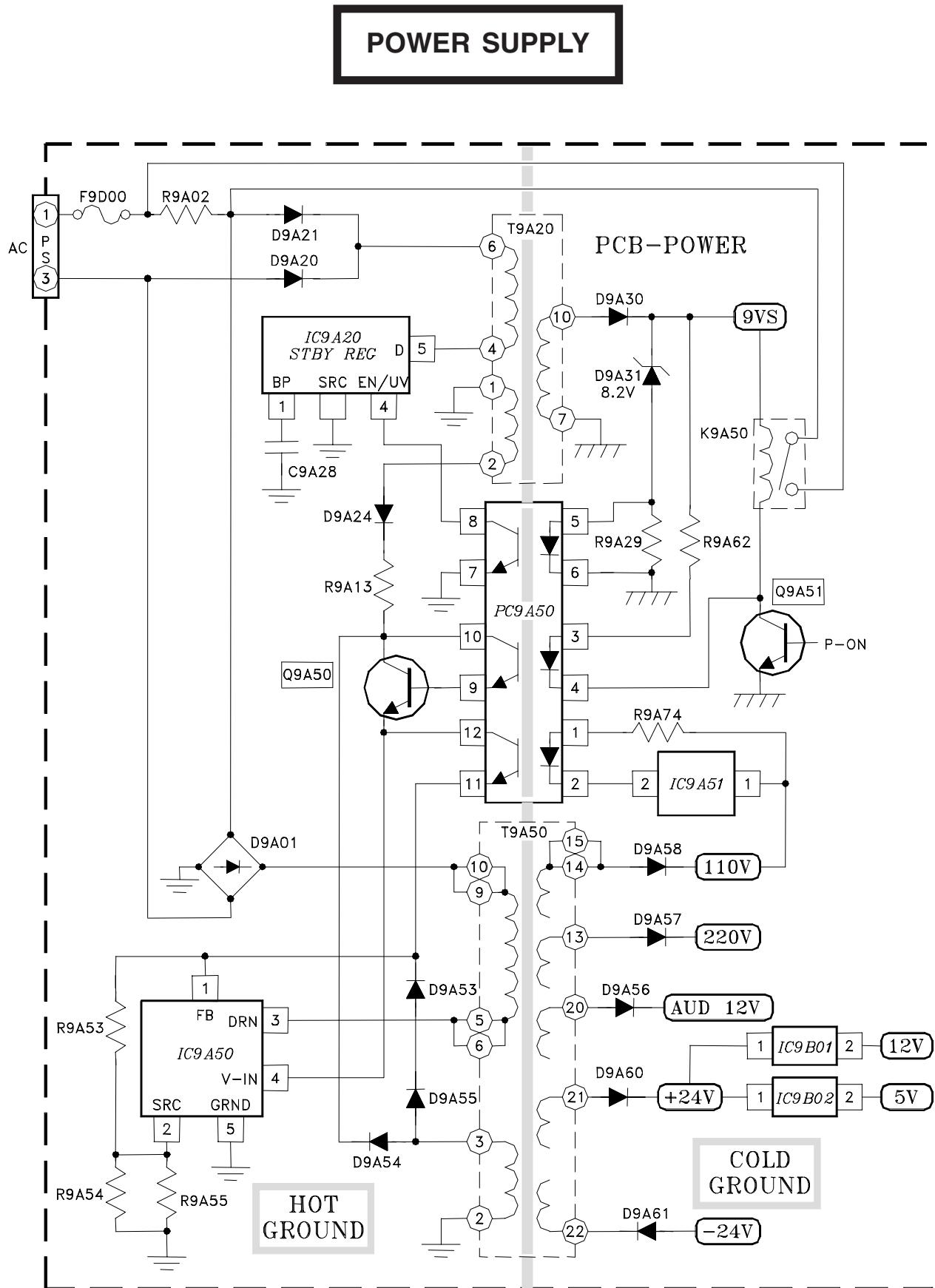
Ref #	Part #	Part Name & Description	[#]
PRINTED CIRCUIT BOARDS			
	930B888001	ASSY-PWB-MAIN	
	930B889001	ASSY-PWB-POWER	
	930B890001	ASSY-PWB-SIGNAL	2
	930B890002	ASSY-PWB-SIGNAL	1
	930B891001	ASSY-PWB-TERMINAL	
	935C996001	ASSY-PWB-DOUBLER	
	935D660001	ASSY-PWB-PREAMP	
	935D661001	ASSY-PWB-UNI	
	935D662001	ASSY-PWB-CONTROL	
	935D663001	ASSY-PWB-DBF	
COSMETIC PARTS			
	598D417010	PLATE-RF SWITCH - COLD ROLL	
	750A432010	CABINET	
	750A433010	BACK-COVER	
	750A434010	FRONT-MASK	
	750A435010	GRILL-SP - PS	
	871D362010	TC INSTRUCTION	
ACCESSORIES			
	290P111010	TRANSMITTER REMOTE - V20	
	I/QR WT42311	QR-GUIDE	2
	I/QR WTA42	QR-GUIDE	1
	I/B WT42311	IB - OWNERS GUIDE	2
	I/B WTA42	IB - OWNERS GUIDE	1

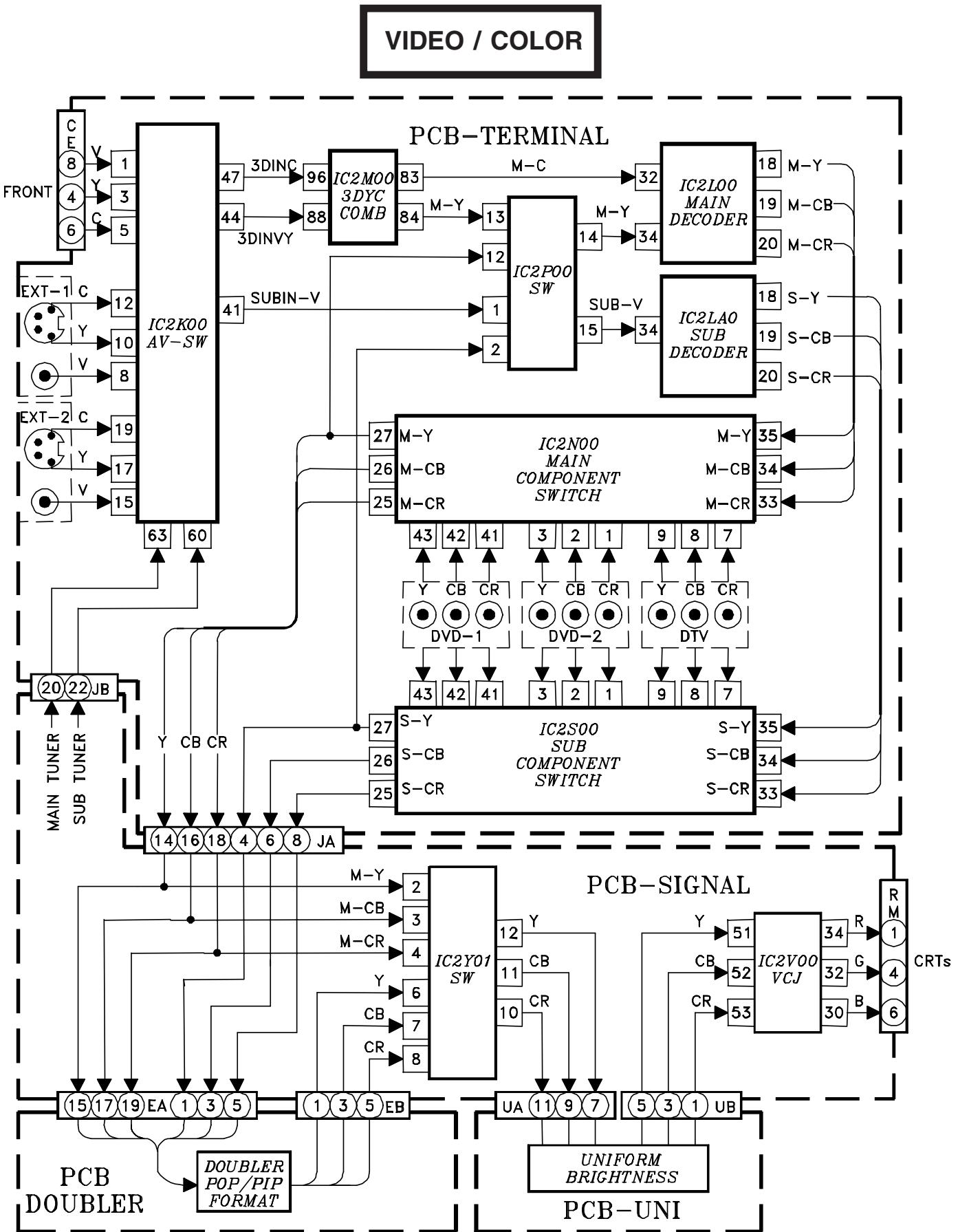
MODELS: WS-42311 / WT-A42

[#] Model Legend: (1) WT-A42, (2) WT-42311

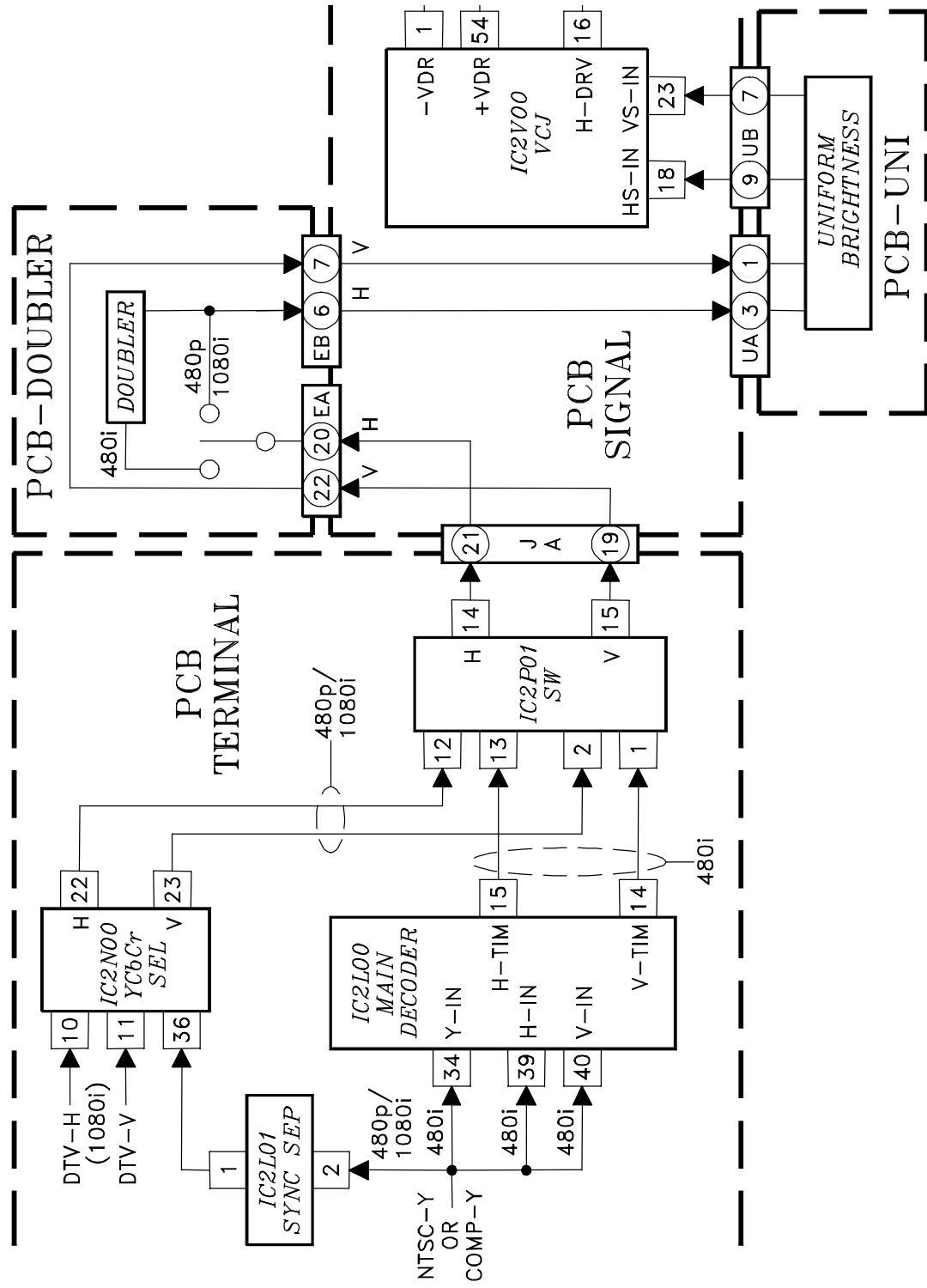
Ref #	Part #	Part Name & Description	[#]		Ref #	Part #	Part Name & Description	[#]
SCREEN ASSEMBLY PARTS								
(4)	750A434010	FRONT-MASK			(5)	641B942010	HOLDER-SCREEN-T - .	
(1)	491P136010	SCREEN-LENTICULAR - LENTI-4			(7)	641B943010	HOLDER-SCREEN-S	
(2)	491P137010	LENS-FRESNEL - FRESNEL-42W-			(3)	760D628070	DIAMOND SHIELD - 42"	2
(6)	596C569010	BRACKET,SCREEN CORNER			(3)	760D639050	DIAMOND SHIELD - 42"	1
(8)	598D300010	BRACKET,SCREEN SIDE						



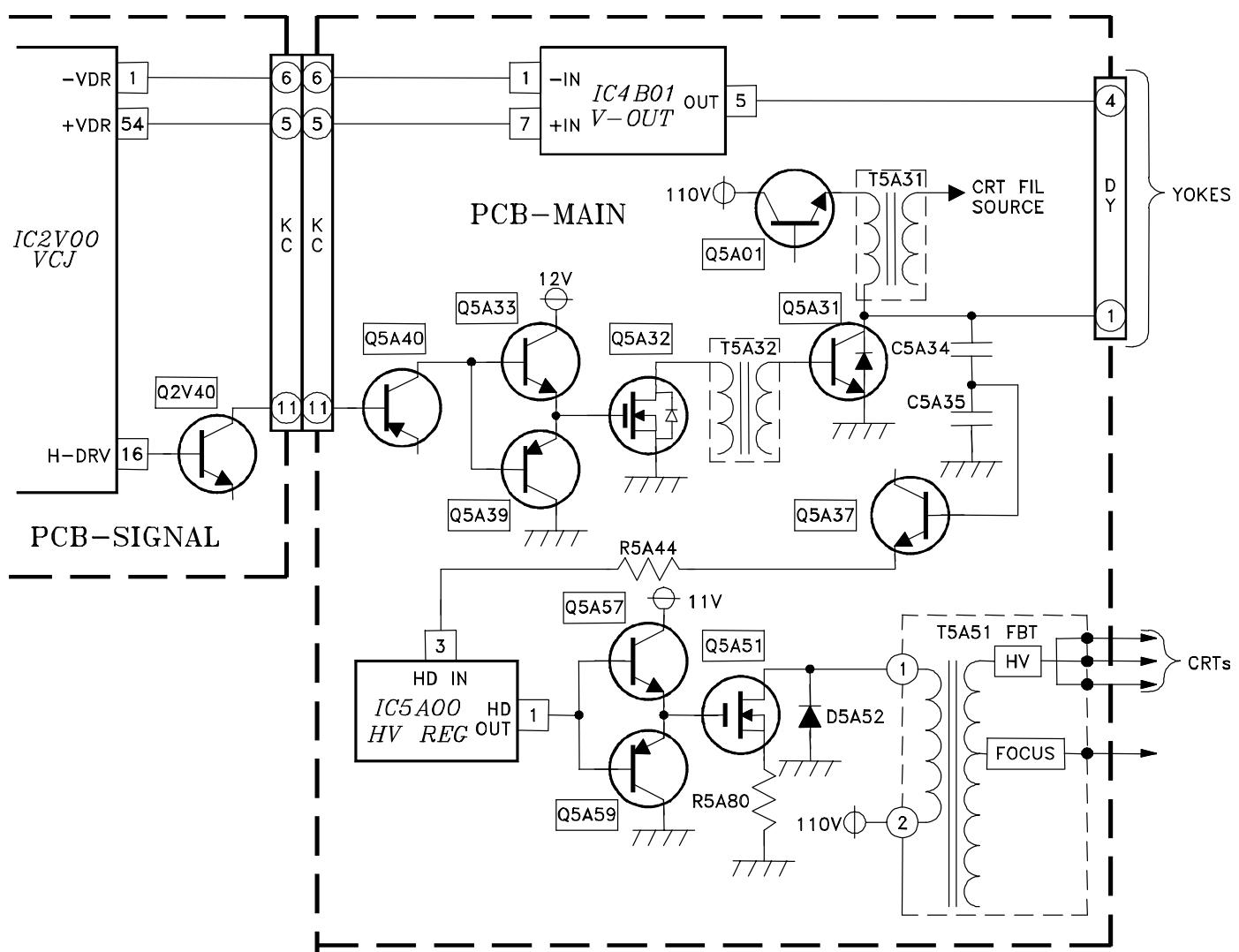




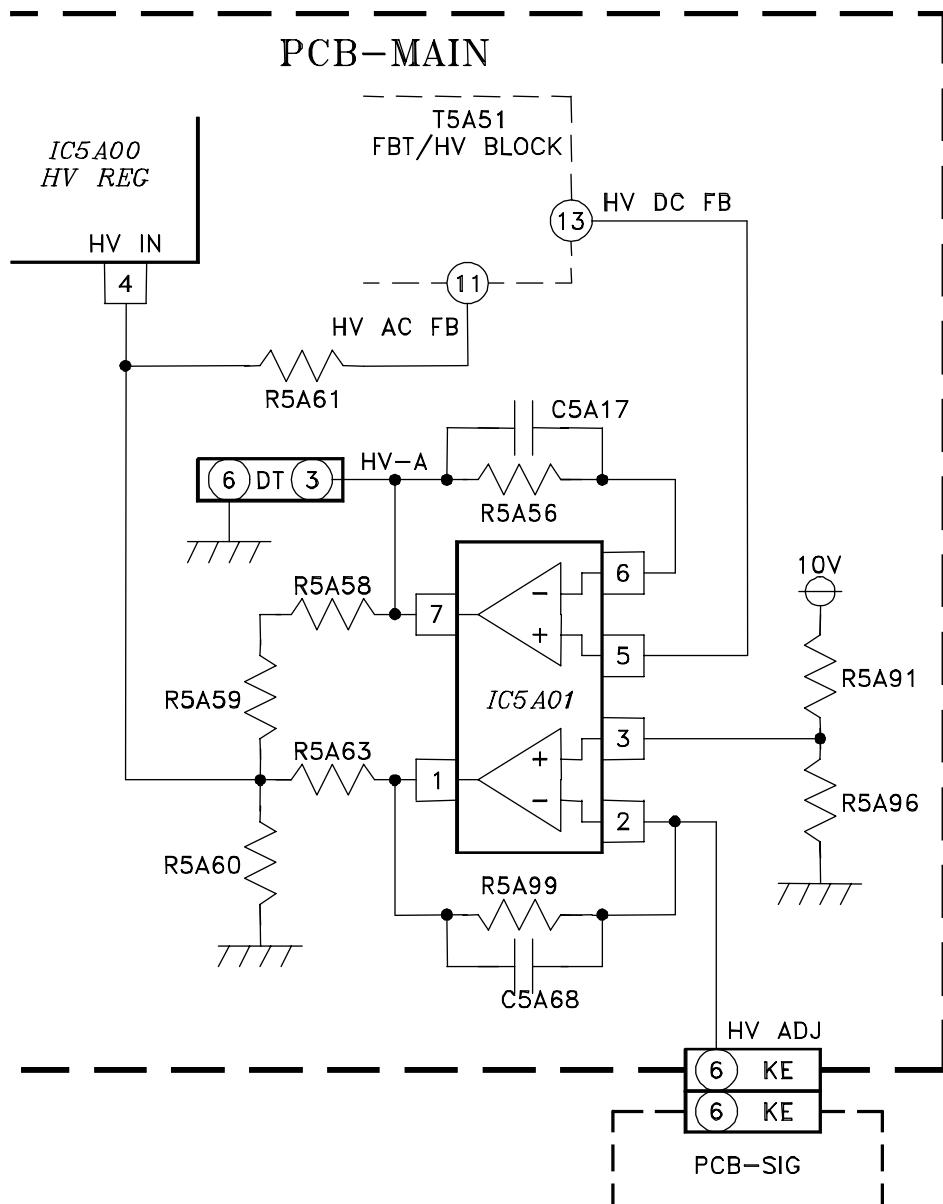
SYNC SIGNAL PATH



DEFLECTION / HV



HV REGULATION



X-RAY PROTECT

