

FILE NO.

SERVICE MANUAL

Remote Control Color Television

DS25320 (U.S.A.)
(CANADA)
ORIGINAL VERSION



Chassis No. 25320-00

NOTE: Match the Chassis No. on the unit's back cover with the Chassis No. in the Service Manual.

If the Original Version Service Manual Chassis No. does not match the unit's, additional Service Literature is required. You **must** refer to "Notices" to the Original Service Manual prior to servicing the unit.

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Specifications

Power Rating	120V, 60Hz 78W (Avg), 2.0A (Max)
Antenna Input Impedance	75Ω UHF/VHF/CATV
Receiving Channel	2 - 13 (VHF), 14 - 69 (UHF), 01, 14-94, 95-125 (CATV)
Remote Ready	24 Key Remote Control
Sound Output	1.0 W/CH
Intermediate Frequency	
Picture IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz
Color Sub Carrier	42.17MHz
Picture Tube	A63AHC26X
Semiconductors	
Integrated Circuits	7
Transistors	17
	Except within Tuner and RC Pre-Amp.
Cabinet Dimensions	
Width	619mm
Height	570mm
Depth	517mm

SAFETY INSTRUCTIONS

SAFETY PRECAUTIONS

WARNING: The chassis of this receiver has a floating ground with the potential of one half the AC line voltage in respect to earth ground. Service should not be attempted by anyone not familiar with the precautions necessary when working on this type of equipment.

The following precautions must be observed:

1. An isolation transformer must be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Comply with all caution and safety-related notes provided on the side of the cabinet, inside the cabinet, on the chassis, and the picture tube.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as control knobs, adjustment covers, shields and barriers.

DO NOT OPERATE THIS TELEVISION RECEIVER WITHOUT THE PROTECTIVE SHIELD IN POSITION AND PROPERLY SECURED.

4. Before replacing the back cover of the set, thoroughly inspect the inside of the cabinet to see that no stray parts or tools have been left inside.

Before returning any television to the customer, the service technician must perform the following safety checks to be sure that the unit is completely safe to operate without danger of electrical shock.

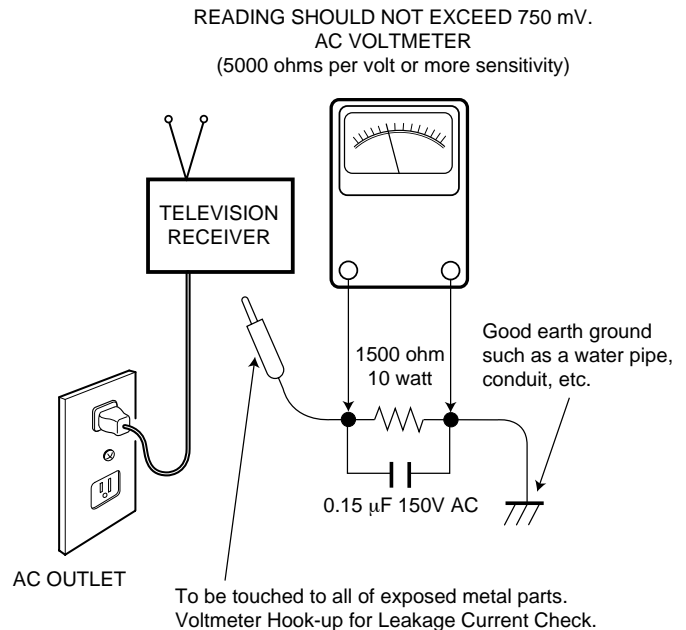
ANTENNA COLD CHECK

Remove AC plug from the 120 VAC outlet and place a jumper across the two blades. Connect one lead of an ohmmeter to the jumpered AC plug, and touch the other lead to each exposed antenna terminal (UHF and VHF antenna terminals). The resistance must measure between 1M ohm and 5.2M ohm. Any resistance value below or above this range indicates an abnormality which requires corrective action.

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120 VAC outlet. (Do not use an isolation transformer for this check.) Use an AC voltmeter, that has 5000 ohms per volt or more sensitivity. Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 μ F 150 VAC capacitor, between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of the cabinet (antennas, handle bracket, metal cabinet, screw heads, metal overlays, control shafts, etc.). Measure the AC voltage across the 1500 ohm resistor. The AC voltage should not exceed 750 mV. A reading exceeding 750 mV indicates that a dangerous potential exists. The fault must be located and corrected. Repeat the above test with the receiver power plug reversed.

NEVER RETURN A RECEIVER TO THE CUSTOMER WITHOUT TAKING THE NECESSARY CORRECTIVE ACTION.



X-RADIATION PRECAUTION

The primary source of X-RADIATION in solid-state receivers is the picture tube. The picture tube is specially constructed to limit X-Ray emission. For continued X-RADIATION protection, the replacement tube must be the same type as the original (including the suffix letter in the part numbers). Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specific limits. Refer to the X-RADIATION WARNING NOTE on the CHASSIS SCHEMATIC in this service manual for specific high voltage limits. If the high voltage exceeds specified limits, check the components specified on the chassis schematic diagram and take the necessary corrective action. Carefully follow the instructions for the +B Voltage Check and the High Voltage Check to maintain the high voltage within the specified limits.

HIGH VOLTAGE HOLD-DOWN TEST

To prevent X-RADIATION from the picture tube due to excessive high voltage, a HOLD-DOWN circuit is provided in the high voltage circuit. Every time the receiver is serviced, the high voltage HOLD-DOWN circuit must be tested for proper operation. Refer to the HIGH VOLTAGE HOLD-DOWN TEST in service adjustments.

PRODUCT SAFETY NOTICE

When replacing components in a receiver, always keep in mind the necessary product safety precautions. Pay special attention to the replacement of components marked with a star (★) in the parts list and in the schematic diagrams. To ensure safe product operation, it is necessary to replace those components with the exact same PARTS.

SERVICE ADJUSTMENTS

GENERAL

This set has an On-screen Service Menu system included in the CPU that allows remote operation for most of the service adjustments.

IC802 (EEPROM) REPLACEMENT

When IC802 (EEPROM) is replaced, IC801 (CPU) will automatically write the initial reference data into IC802 for basic TV operation. However, the bus data should be checked and some bus data should be set up before attempting the service adjustments. (See pages 4 – 5 for detailed information.)

INITIAL BUS DATA SETUP

Note: When IC802 (EEPROM) is replaced, the Service Menu No. 4 VS (V Size), No. 7 VLN (V Linearity) No. 10 VSC (V S Cor.) No. 21 SBI (Sub Bias), No. 32 BSG (Blk Str Gain), No. 42 RAD (RF AGC Delay), No. 48 SCO (Sub Color), No. 49 STI (Sub Tint), No. 50 SSH (Sub Sharpness), and No. 51 OPT (Option 1), should be set up for proper TV operation before attempting the service adjustments.

Bus data is in the hexadecimal format.

1. Disconnect the AC power cord (AC 120V line).
2. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
3. Select No. 4 VS (V Size) with ▲ or ▼ key. Adjust the data with + or – key for 30.
4. Select No. 7 VLN (V Linearity) with ▲ or ▼ key. Adjust the data with + or – key for 12.
5. Select No. 10 VSC (V S Correction), with ▲ or ▼ key. Adjust the data with + or – key for 0B.
6. Select No. 32 BSG (Blk Str Gain) with ▲ or ▼ key. Adjust the data with + or – key for 20.
7. Select No. 42 RAD (RF AGC Delay), with ▲ or ▼ key. Adjust the data with + or – key for 20.
8. Select No. 48 SCO (Sub Color) with ▲ or ▼ key. Adjust the data with + or – key for 7.
9. Select No. 49 STI (Sub Tint) with ▲ or ▼ key. Adjust the data with + or – key for 14.
10. Select No. 50 SSH (Sub Sharpness) with ▲ or ▼ key. Adjust the data with + or – key for 0C.
11. Select No. 51 OPT (Option 1) with ▲ or ▼ key. Adjust the data with + or – key for 04.
12. Press the MENU key to turn off the Service Menu display.

ON-SCREEN SERVICE MENU SYSTEM

1. Enter the Service Menu:

- While pressing the MENU key, reconnect the AC power cord. The Service Menu Display will now appear. (See Figure 1.)

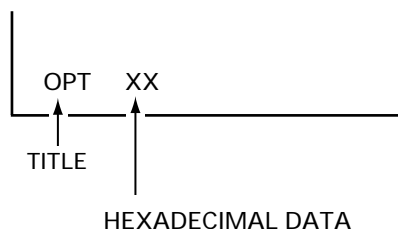


Figure 1. Service Menu Display

2. Service Adjustments:

- Press the ▲ or ▼ key to select the desired service menu item you want to adjust. (See page 4 for On-screen Service Menu.)
- Use the + or – key to adjust the data.

3. Exit from the Service Menu:

- Press the MENU key to turn off the Service Menu display.

Table 1. ON-SCREEN SERVICE MENU

When IC802 (EEPROM) is replaced, check the bus data to confirm they are the same as below. The shaded menu should be checked and be set up or readjusted according to the procedures described in the following pages. Initial Setup Data marked with an * should be changed from Initial Reference Data. (See page 3 for Initial Bus Data Setup.)

No.	TITLE	INITIAL REFERENCE DATA	INITIAL SETUP DATA	RANGE OF DATA	FUNCTION
1	HFR	1E	1E	00~3F	Horizontal Frequency
2	AFC	00	00	00, 01	AFC Gain and Gate
3	HP	0E	0E	00~1F	Horizontal Phase (Horizontal Centering)
4	VS	32	30*	00~7F	Vertical Size
5	VPO	05	05	00~3F	Vertical Position
6	VSP	00	00	00, 01	Vertical Set Up (Sync Sensitivity)
7	VLN	13	12*	00~1F	Vertical Linearity
8	CRS	00	00	00~03	Cross B/W
9	GRY	01	01	00, 01	Grey Mode
10	VSC	08	0B*	00~1F	Vertical S Correction
11	HBR	03	03	00~07	Horizontal Blanking Right
12	HBL	04	04	00~07	Horizontal Blanking Left
13	CDM	00	00	00, 01	Color Difference Mode
14	VC	07	07	00~07	Vertical Compression
15	RB	00	00	00~FF	Red Bias
16	GB	00	00	00~FF	Green Bias
17	BB	00	00	00~FF	Blue Bias
18	RD	40	40	00~7F	Red Drive
19	GD	08	08	00~0F	Green Drive Reduction
20	BD	40	40	00~7F	Blue Drive
21	SBI	30	30	00~7F	Sub Bias
22	OSD	02	02	00~03	On Screen Display Contrast
23	POS	01	01	00, 01	Preshoot Overshoot Switch
24	FLS	01	01	00, 01	Filter System
25	CKO	03	03	00~07	Color Killer operation
26	GYA	00	00	00, 01	G-Y Angle
27	CRG	02	02	00~03	Corring Gain
28	PRE	03	03	00~03	Preshoot Adjust
29	WP	01	01	00, 01	White Peak Limiter 01: OFF 00: ON
30	FSW	00	00	00, 01	Flyback Blanking Switch
31	VBL	00	00	00, 01	Vertical Blanking Switch
32	BSG	01	02*	00~03	Black Stretch Gain
33	BSS	01	01	00~03	Black Stretch Start
34	DCR	01	01	00~03	DC Reset
35	YGM	01	01	00~03	Y Gamma Start
36	CBP	00	00	00, 01	C Bypass
37	AF	01	01	00, 01	Auto Flesh 0: OFF 1: ON
38	BAT	04	04	00~07	Bright ABL Threshold
39	MSD	00	00	00, 01	Mid Stop Defeat
40	ABL	00	00	00, 01	ABL Defeat 0: OFF 1: ON
41	RYA	02	02	00~0F	R-Y/B-Y Angle
42	RAD	0F	20*	00~3F	RF AGC Delay
43	IAS	00	00	00, 01	IF AGC Switch 0: TV (Normal) 1: AV (IF Gain Minimum)
44	FMM	00	00	00, 01	FM Mute

Table 1. ON-SCREEN SERVICE MENU (Continued)

When IC802 (EEPROM) is replaced, check the bus data to confirm they are the same as below. The shaded menu should be checked and be set up or readjusted according to the procedures described in the following pages. Initial Setup Data marked with an * should be changed from Initial Reference Data. (See page 3 for Initial Bus Data Setup.)

NO.	TITLE	INITIAL REFERENCE DATA	INITIAL SETUP DATA	RANGE OF DATA	FUNCTION
45	FL	0F	0F	00~1F	FM Level
46	VL	05	05	00~07	Video Level
47	SB	20	20	00~3F	Sub Bright
48	SCO	0A	07*	00~1F	Sub Color
49	STI	16	14*	00~1F	Sub Tint
50	SSH	12	0C*	00~1F	Sub Sharpness
51	OPT	00	04*	00~FF	Option 1 (See Note 1 below.)
52	OPT2	00	00	00~FF	Option 2 (See Note 2 below.)
53	HR	13	13	00~3F	On Screen Display Horizontal Position
54	SBO	05	05	00~FF	Sub Bright Offset
55	DRV	R40	R40	00~7F	Red Drive Adjustment (See Note 3 below.)
		R40	R40	00~7F	Blue Drive Adjustment (See Note 3 below.)
56	-	0	0	00~FF	Red Bias Adjustment (See Note 4 below.)
		0	0	00~FF	Green Bias Adjustment (See Note 4 below.)
		0	0	00~FF	Blue Bias Adjustment (See Note 4 below.)
57	R00	0	0	00~FF	N/A
↓	↓	↓	↓	↓	↓
115	R48	0	0	00~FF	N/A

PROGRAM CODE

The microprocessor used in this model is a multi-purpose type and is used in several different models. To ensure proper operation and the correct features for your particular model, the Program Code must be correct.

Note 1. Option Data (NO. 51 OPT) should be set to hexadecimal 04. See page 3 INITIAL DATA SETUP step 11 for set up procedure. If this program code is wrong the TV will not operate properly.

BIT	FUNCTION	DATA	
		0	1
0, 1	TV HOTEL	00: TV 01: HOTEL 10: — 11: —	
2 ~ 7	NOT USED		

Note 2. Option Data (NO. 52 OPT2) should be set to hexadecimal 00. If this program code is wrong the TV will not operate properly.

Note 3. Red/Blue Drive Adjustments in Service Menu NO. 55 DRV: Adjust Red and Blue Drive Levels alternately with 1, 3, 7, and 9 keys on the remote control. (See Figure 2.) The Drive Level adjustment data will be written in the Service Menu No. 18 RD and 20 BD automatically.

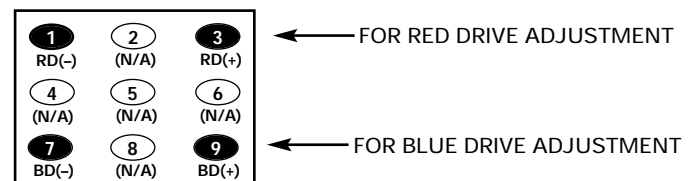


Figure 2.

Note 4. Red/Green/Blue Bias Adjustments in Service Menu NO. 56: Adjust each Bias Level with 1, 3, 4, 6, 7, or 9 key on the remote control. (See Figure 3.) The Bias Level adjustment data will be written in the Service Menu No. 15 RB, No. 16 GB, and No. 17 BB automatically.

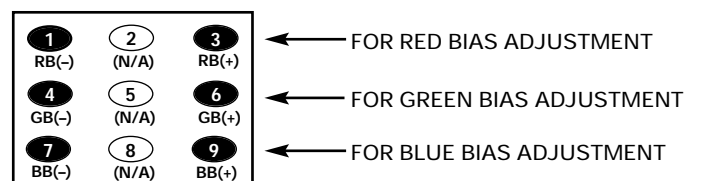


Figure 3.

SERVICE ADJUSTMENTS (Continued)

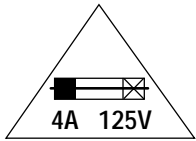
ANTENNA CONNECTIONS

This receiver is designed for UHF/VHF reception. A 75 ohm terminal is provided for UHF and VHF receptions. When connecting a CATV antenna system, connect the 75 ohm coaxial cable directly to the 75 ohm terminal. For 300 ohm VHF antenna, use an adapter (not included with the TV set).

CIRCUIT PROTECTION

Fuse F601 (4A) is included in the AC line. This fuse must be replaced with the proper fuse (see Parts List).

CAUTION



FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE 4A, 125V FUSE.

ATTENTION : POUR MAINTENIR LA PROTECTION CONTRE LES RISQUES D'INCENDIE UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE 4A, 125V.

+B VOLTAGE CHECK

Connect Voltmeter + lead to TJ1 130V and – lead to ground (TE7). Connect receiver to AC 120V line. Tune receiver to an active channel. Reset the picture controls to the AUTO level. Voltage must measure between +128.0V and +132.0V. If the voltage is out of this range, the power circuit must be checked. No +B adjustment is provided on this chassis.

HORIZONTAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the horizontal center of TV screen. If picture is not centered horizontally, perform steps 3 ~ 6.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 3 HP (Horizontal Phase) with ▲ or ▼ key.
6. Adjust the data with + or – key for horizontal center. To turn off the Service Menu display, press the MENU key.

VERTICAL SIZE ADJUSTMENT

1. Tune receiver to an active channel.
2. Check the vertical size of the picture. If the vertical size is too large or small, perform steps 3 ~ 6.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 4 VS (Vertical Size) with ▲ or ▼ key.
6. Adjust the data with + or – key for full scan. To turn off the Service Menu display, press the MENU key.

VERTICAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the center of TV screen. If picture center is too low, change resistor R513 (3.9K ohm, 1/6W) to a 470 ohm, 1W. If picture center is too high, add resistor R512 (470 ohm, 1W).

GRAYSCALE ADJUSTMENT

1. Set the picture controls to the Auto levels (use MENU key and ▲ or ▼ key or RESET key).
2. Turn off the receiver and disconnect the AC power cord (120V AC line).
3. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
4. Select NO. 15 RB (Red Bias), NO. 16 GB (Green Bias), and NO. 17 BB (Blue Bias) with ▲ or ▼ key and set each data to 0 with + or – key.
5. Select NO. 18 RD (Red Drive) and NO. 20 BD (Blue Drive) with ▲ or ▼ key and set each data to 40 with + or – key.
6. Set NO. 19 GD (Green Drive Reduction) data to 08, NO. 47 SB (Sub Brightness) data to 20, NO. 48 SCO (Sub Color) data to 07, NO. 49 STI (Sub Tint) to 14, and NO. 50 SSH (Sub Sharpness) data to 0C with ▲ or ▼, and + or – keys.
7. Turn Screen Control (T402) to minimum (fully counter-clockwise).
8. Select the Service Menu NO. 56 (Bias Adjustments) with ▲ or ▼ key.
9. Advance Screen Control (T402) clockwise to obtain just visible one color line. If line does not appear, place this control to maximum (fully clockwise).
10. Raise each Bias Level with 3, 6, and 9 keys to obtain just visible white line. (See Figure 4.)

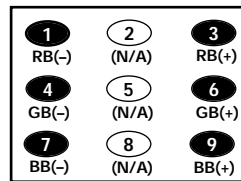


Figure 4. Remote Control Number keys' functions in Service Menu NO. 56

11. Select the Service Menu NO. 55 DRV (Drive Adjustments) with ▲ or ▼ key.
12. Adjust Red and Blue Drive Levels alternately with 1, 3, 7, or 9 key to produce normal black and white picture in highlight areas. (See Figure 5.)

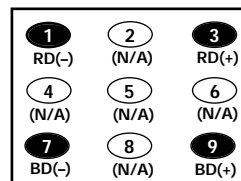


Figure 5. Remote Control Number keys' functions in Service Menu NO. 55 DRV

13. Check for proper grayscale at all brightness levels. To turn off the Service Menu display, press the MENU key.

Note: If Grayscale Adjustment is made after picture tube replacement, check Brightness Level Adjustment.

FOCUS ADJUSTMENT

Adjust focus control (T402) for well defined scanning lines.

VCO ADJUSTMENT

Note: VCO must be adjusted after IC101 (Signal Processor), IC802 (EEPROM) or T151 (VCO Coil) is replaced.

1. Tune receiver to an active channel.
2. Set the picture controls to the Auto level.
3. Connect digital voltmeter + lead to pin 58 of IC101 and – lead to ground (TE 7).
4. Confirm a reading of 3.6 ± 0.2 VDC.
5. If voltage is out of specifications adjust T151 for 3.6 ± 0.2 VDC.

RF AGC ADJUSTMENT

1. Tune receiver to strongest VHF station in your area.
2. Set contrast and brightness controls for maximum.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 42 RAD (RF AGC Delay) with ▲ or ▼ key.
6. Adjust the data with + or – key in the direction which causes snow to appear; then in the opposite direction until the snow just disappears.
7. To turn off the Service Menu display, press the MENU key.

BRIGHTNESS LEVEL ADJUSTMENT

Note: Grayscale, RF-AGC, Video Level, and High Voltage Check must be adjusted before attempting Brightness Level Adjustment.

1. Connect a color-bar generator to the antenna terminals.
2. Switch the generator to the crosshatch pattern.
3. Reset the picture controls to the Auto levels.
4. Connect voltmeter (high impedance) + lead to terminal TP51 and – lead to terminal TP50 on main board. Set voltmeter for 1.5V ~ 3V range.
5. Turn off the receiver and disconnect the AC power cord (120V AC line).
6. While pressing the MENU key, reconnect the AC power cord. The Service Menu display will now appear.
7. Select NO. 47 SB (Sub Brightness) with ▲ or ▼ key.
8. Adjust the data with + or – key for 820 mVDC.
9. Press the MENU key to turn off the Service Menu display.
10. Check brightness level on every active channel, readjust (repeat steps 5 ~ 9), if necessary.

Note: Do not set to excessive brightness level, otherwise the contrast level will be suppressed.

HIGH VOLTAGE HOLD-DOWN TEST

Every time the receiver is serviced, the HIGH VOLTAGE HOLD-DOWN circuit must be tested for proper operation by following these steps:

1. Connect receiver to 120V AC line. Tune receiver to active channel. Reset the picture controls to the Auto levels.
2. Check that the voltage measured between TP7 and TE7 (ground side) is within 16.5 VDC to 21 VDC. If the voltage is out of this range, the Hold-Down Circuit must be checked.
3. Connect a DC Voltage supply to TP7 and TE7 through a 100 ohm 1/4W resistor. Adjust the DC voltage to 23 VDC. The receiver should shutdown, losing raster and sound. Then the receiver should turn off automatically. This reaction indicates that the Hold-Down circuit is functioning properly. If the receiver does not shutdown, a malfunction is indicated and its cause **must** be found and corrected.
4. To obtain picture again, remove the DC Supply and wait a few minutes. Now turn on the receiver.

HIGH VOLTAGE CHECK

Note: +B (+130V) Voltage Check and Grayscale Adjustment must be completed before attempting High Voltage Check.

1. Connect high voltage voltmeter – lead to ground, and connect + lead to anode of picture tube.
2. Tune receiver to an active channel and confirm TV is operating properly.
3. Eliminate the beam current by adjusting the contrast and brightness controls to minimum.
4. Confirm high voltage is within 28.0 KV and 30.0 KV. If reading is not within range, check horizontal circuit.

No high voltage adjustment is provided on this chassis.

SERVICE ADJUSTMENTS (Continued)

VIDEO LEVEL

1. Connect color-bar generator to antenna terminals.
2. Switch the generator to a white field (100 IRE).
3. Set the picture controls to the Auto levels.
4. Connect oscilloscope + lead to terminal TP16 and – lead to ground.
5. Turn off the receiver and disconnect the AC power cord (AC 120V line).
6. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
7. Select NO. 46 VL (Video Level) with the ▲ or ▼ key.
8. Adjust the data with the + or – key for an oscilloscope reading of 1.0 ± 0.1 VP-P at TP16.
9. Press the MENU key to turn off the Service Menu display and disconnect oscilloscope from chassis.

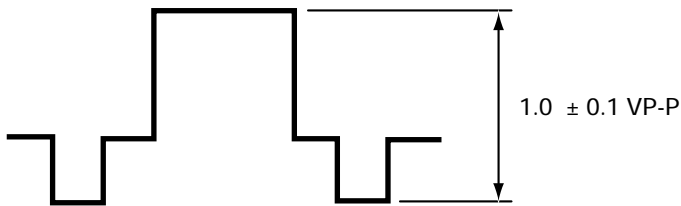


Figure 6.

SOUND ADJUSTMENT

1. Connect a color-bar generator to the antenna terminals with audio signal of 1KHz at 100% modulation.
2. Set the picture controls to the Auto levels.
3. Connect oscilloscope + lead to TP21 (pin 75 of IC101 or C132) and – lead to ground.
4. Turn off the receiver and disconnect the AC power cord (AC 120V line).
5. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
6. Select NO. 45 FL (FM Level) with the ▲ or ▼ key.
7. Adjust the data with the + or – key for an oscilloscope reading of $0.72 \pm 10\%$ VP-P at TP21.
8. Press the MENU key to turn off the Service Menu display and disconnect the oscilloscope from the chassis.

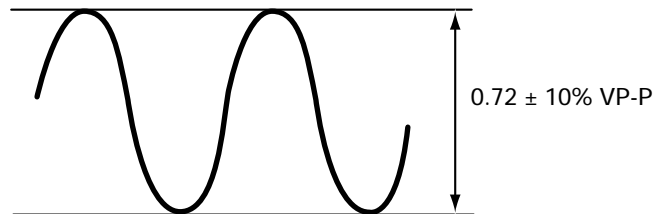


Figure 7.

SERVICE HINTS

POWER FAILURE DETECTOR

This unit is equipped with a Power Failure Detector function included in the CPU which checks for an abnormal condition in the chassis power supplies, including the power supply derived from the Horizontal Output Transformer.

If, while the power is on, a failure is caused by any of the following that results in a low voltage supply, the CPU will turn the unit off in 1.5 seconds to prevent unnecessary damage:

- Failure within the power supply circuits.
- A short circuit in the load side from the supply.
- Stoppage of the Horizontal Output Oscillator caused by the X-Radiation protection Hold-Down Circuit.

If, while the power is off, the power is switched on and any of these failures remains uncorrected, the CPU will shut off the power within 3 seconds.

Check the following if the unit is turned off by the power failure detector.

1. Disconnect the AC power cord (120V AC line) for at least 10 seconds.
2. Connect a DC Voltmeter to the following TEST POINTS.

TJ6	5V
D429 Cathode	9.4V
D802 Cathode	15.0V

3. Press the Power key and check for the proper voltage supplies.
4. If any of these voltages is low, the power failure detector should turn the unit off within 3 seconds.
5. Check all circuits listed above.

Note: This unit is equipped with a Power Surge Protection feature included in the CPU. If power failure occurs three times within 15 minutes, the CPU will automatically stop functioning to help prevent secondary damage. (TV will not turn on by pressing the power key.) To reset the operating programs within the CPU, disconnect the AC power cord for at least 10 seconds.

PURITY AND CONVERGENCE ADJUSTMENTS

CAUTION: The Purity and Convergence adjustments have been made at the factory. Readjustments should be made only after the picture tube or deflection yoke is replaced. Follow the steps below for necessary readjustments.

PURITY ADJUSTMENTS

1. When replacing picture tube or deflection yoke, mount deflection yoke and purity and convergence magnets assembly properly. See Figure 1. Position the picture tube facing east or west. Demagnetize the picture tube and receiver using an external degaussing coil. Set receiver to Service Menu NO. 56 (no vertical sweep) while degaussing.
2. Place the yoke on tube neck fully forward against glass.
3. Place the CPM on the tube neck aligning the center of the purity magnet tabs over center of Focus Gap (G3 & G4). See Figure 2.
4. Connect a color-bar generator to the antenna terminal. Switch the generator to a white field. Move yoke backward on the neck until a uniform white field is obtained.
5. Allow 30 minutes warm up on a blank white field (high intensity grayscale).
Note: If white field cannot be obtained check Grayscale Adjustments on page 6.
6. Reset the picture controls to the Auto levels. Select a green raster, either with the signal generator or by adjusting the bias controls. If a signal generator is used for this step skip to Step 11. If the bias controls will be used go to step 7.
7. Adjust Service Menu NO. 15 RB (Red Bias), NO. 16 GB (Green Bias), and NO. 17 BB (Blue Bias) data each to 0.
8. Select Service Menu NO. 56 (no vertical sweep).
9. Adjust the Screen Control counterclockwise until the horizontal scan line is no longer visible.
10. Select Service Menu NO. 16 GB (Green Bias) and increase the data to produce a green raster. If retrace lines appear reduce screen control slightly.
11. Pull yoke back on tube neck to obtain three-color raster (blue, green and red).
12. Adjust the angle between the two purity magnet tabs to center the vertical green belt in the picture tube. Do not rotate tabs. See Figure 3.
13. Slowly slide the deflection yoke forward until a uniform green screen is obtained.
14. Check the purity of the red and blue screens for uniformity. Turn off other colors to check (use bias controls or use generator). If necessary, readjust the yoke position until all screens are pure.
15. If bias controls and screen control were used to set purity reset Grayscale and Bright Level. Refer to Grayscale Adjustment on page 6 and Brightness Level Adjustment on page 7.
16. Confirm that the yoke is not tilted. Tighten the yoke mounting screw. Adjust convergence next.

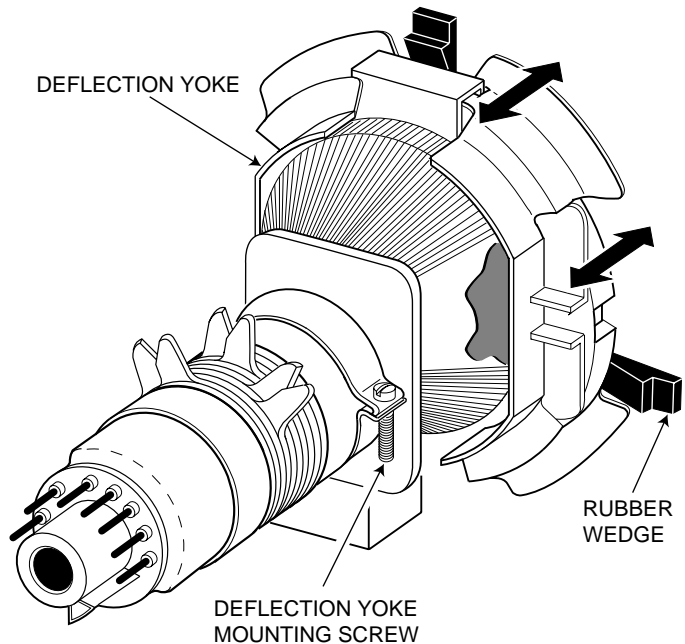


Figure 1. Deflection Yoke Movement

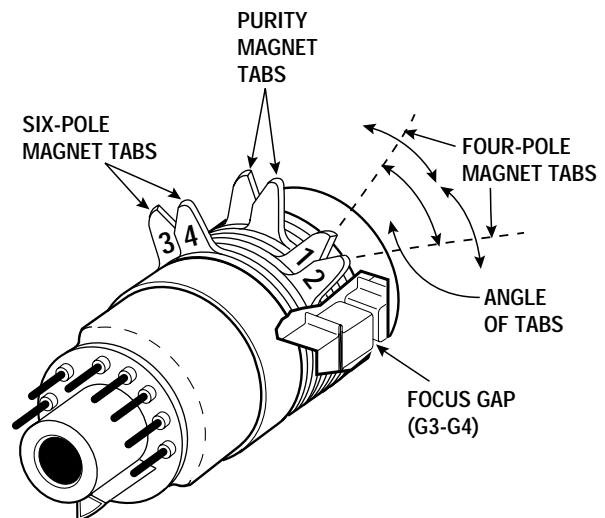


Figure 2. Purity and Convergence Magnets

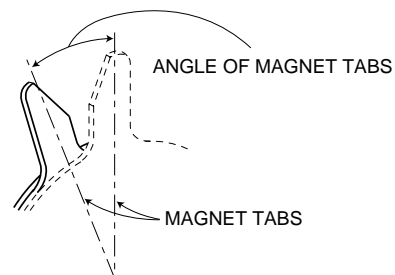


Figure 3. Adjusting Magnet

CONVERGENCE ADJUSTMENT

CENTER CONVERGENCE ADJUSTMENT

1. Connect a crosshatch generator to antenna terminals.
2. Set Contrast to low level to eliminate blooming. Reduce Brightness level to obtain black background if necessary.
3. Adjust the angle between the four-pole magnet tabs 1 and 2 (Figure 2), and superimpose the red and blue vertical lines in the center area of the picture screen. See Figure 4.
4. Keeping the tabs at the same angle, rotate them together to superimpose the blue and red horizontal lines in the center area of the picture screen. See Figure 4.
5. Adjust the six-pole magnet tabs 3 and 4 so the converged red/blue line is superimposed on the green line. This is the same procedure used in steps 3 and 4. See Figure 5.

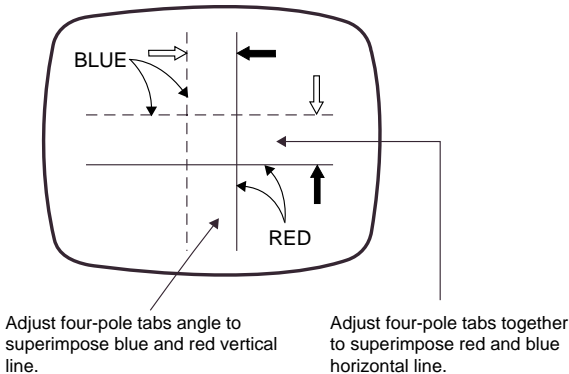


Figure 4. Blue and Red Line Movement

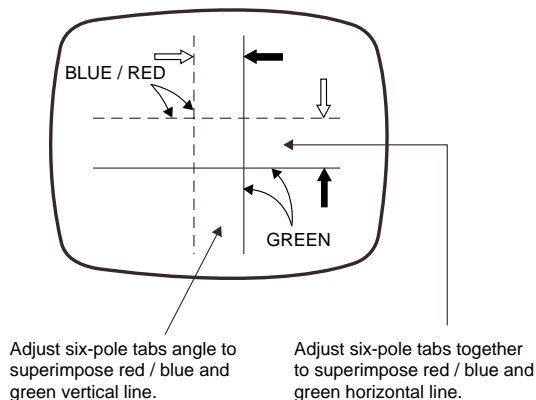


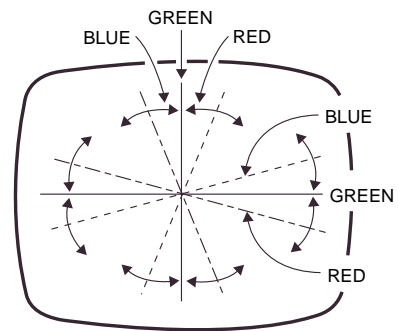
Figure 5. Blue/Red and Green Line Movement

OUTER AREA CONVERGENCE ADJUSTMENT

The outer area convergence is performed by positioning of the yoke as follows:

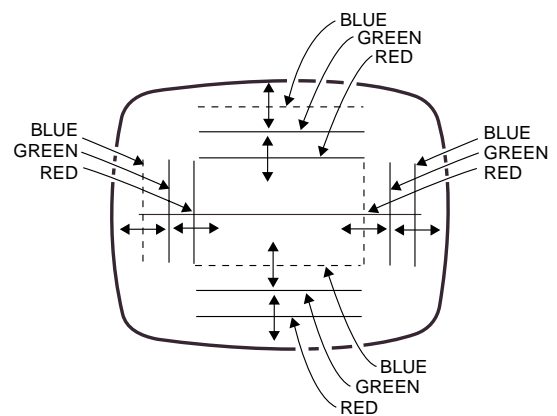
1. Move the top of the yoke toward or away from the picture tube. This movement will affect the vertical lines at the top and bottom and the horizontal lines at the sides. See Figure 6.
2. Check that splits at 12 o'clock and 6 o'clock positions are minimized, adjust yoke for best compromise. Secure with wedge at 12 o'clock position. See Figure 1.
3. Move the side of the yoke toward or away from the picture tube to converge the horizontal lines at the top and bottom and the vertical lines at the sides. See Figure 7.
4. Check that splits at 12 o'clock and 6 o'clock are minimized, adjust yoke for best compromise. Secure yoke position with the side wedges. See Figure 1.

Note: When re-using the rubber wedges, apply a small amount of silicone rubber adhesive or hot melt to each of the wedges.



Line movement when adjusting top of yoke in and out.

Figure 6. Top of Yoke Movement



Line movement when adjusting side of yoke in and out.

Figure 7. Side of Yoke Movement

MECHANICAL DISASSEMBLIES

CABINET BACK REMOVAL

1. Refer to Figure 1, remove 7 screws.
2. Pull off cabinet back and remove.

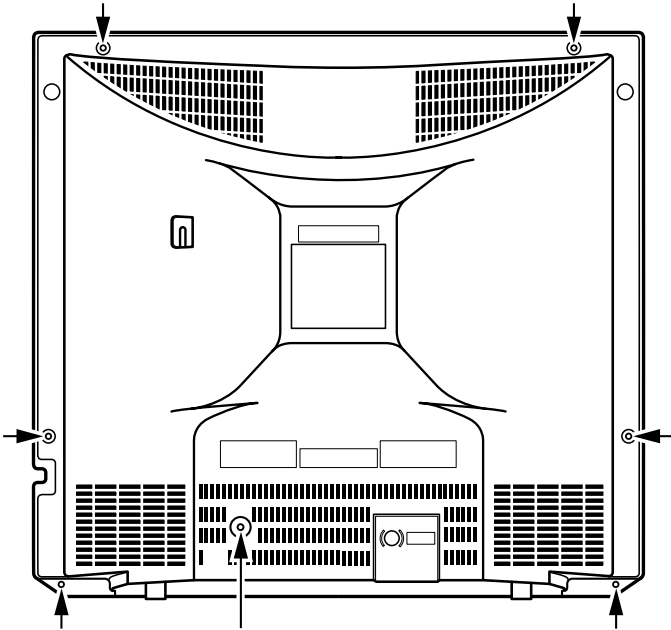


Figure 1. Cabinet Back Removal

CHASSIS REMOVAL

1. Remove cabinet back.
2. Discharge the picture tube anode (2nd anode lead) to the dag coating (picture tube grounding lead).
3. Disconnect degaussing coil socket (KD), picture tube socket, deflection yoke connector (KX), speaker connector (KSP), picture tube ground leads, and 2nd anode lead.
4. Remove chassis completely by sliding it straight back.

PICTURE TUBE REMOVAL

CAUTION: Do not disturb the deflection yoke or magnet assembly on the picture tube neck. Care must be taken to keep these assemblies intact, unless picture tube is being replaced. Discharge the picture tube to the coating before handling the tube.

1. Remove chassis, referring to Chassis Removal instructions.
2. Place cabinet's front face down on a soft surface.
3. Remove the screw on each corner of the picture tube and GENTLY lift the picture tube out of the cabinet.
4. Install a replacement picture tube in reverse order. Properly install the degaussing coil and picture tube grounding lead on the picture tube. See Figure 2.

Note: If Picture Tube is being replaced, mount the Degaussing Coil properly on the tube. See Figure 2.

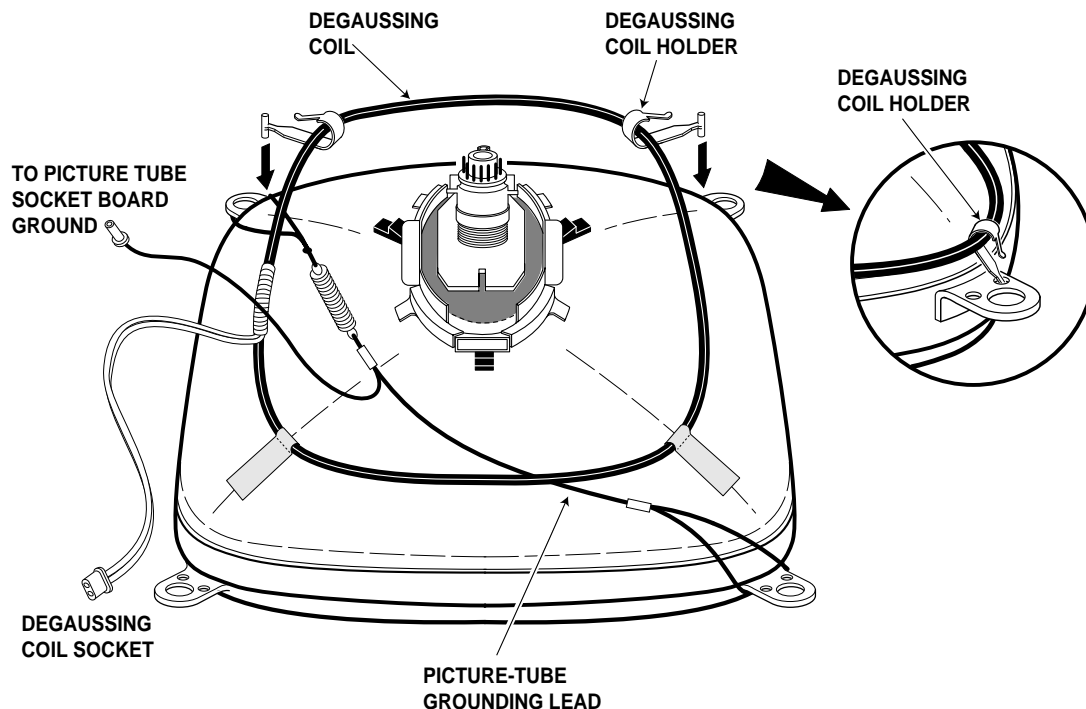


Figure 2. Picture Tube Removal

CHASSIS ELECTRICAL PARTS LIST

CAUTION: To Protect against electrical shock and for continued product safety, refer to SAFETY PRECAUTIONS, X-RADIATION PRECAUTIONS, HIGH VOLTAGE HOLD-DOWN TEST, and PRODUCT SAFETY NOTICE on Page 2.

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A REPLACEMENT IS MADE IN ANY AREA OF A RECEIVER. COMPONENTS INDICATED BY A STAR (★) IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM DESIGNATE COMPONENTS IN WHICH SAFETY CAN BE OF SPECIAL SIGNIFICANCE. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS DESIGNATED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT DESIGNATED BY A STAR. NO DEVIATIONS FROM RESISTANCE, WATTAGE, AND VOLTAGE RATINGS MAY BE MADE FOR REPLACEMENT ITEMS DESIGNATED BY A STAR.

Notes: Parts having Location Number are located on the following boards.

Numbers under 700 SeriesOn the Main Board.

Numbers 700 SeriesOn the Picture Tube Socket Board.

Numbers 800 SeriesOn the Main Board

Numbers 900 SeriesOut of Board.

Numbers 1000 SeriesOn the Main Board

Numbers 1900 seriesOn the Main Board

Note: Schematic part location numbers may not always match with the part descriptions.

The part descriptions are correct and should be used.

Schematic Location	Part No.	Description
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CAPACITORS

NOTES:

Read description of the Capacitor as follows:

(Example)

CERAMIC	100P	K	50V	Rated Voltage
				Tolerance Symbols:
				<u>less than 10PF</u>
				A . .Not specified
				B . . $\pm 0.1PF$ C . . $\pm 0.25PF$
				D . . $\pm 0.5PF$ F . . $\pm 1PF$
				G . . $\pm 2PF$ R . . $\pm 0.25 - 0PF$
				S . . $+0 - 0.25PF$ E . . $+0 - 1PF$
				<u>more than 10PF</u>
				A . .Not specified
				B . . $\pm 0.1\%$ C . . $\pm 0.25\%$
				D . . $\pm 0.5\%$ F . . $\pm 1\%$
				G . . $\pm 2\%$ H . . $\pm 3\%$
				J . . $\pm 5\%$ K . . $\pm 10\%$
				L . . $\pm 15\%$ M . . $\pm 20\%$
				N . . $\pm 30\%$ P . . $\pm 100 - 0\%$
				Q . . $\pm 30 - 10\%$ T . . $\pm 50 - 10\%$
				U . . $\pm 75 - 10\%$ V . . $\pm 20 - 10\%$
				W . . $\pm 100 - 10\%$ X . . $\pm 40 - 20\%$
				Y . . $\pm 150 - 10\%$ Z . . $\pm 80 - 20\%$
				Rated Value: P...Pico Farad U...Micro Farad
				Material:
				CERAMICCeramic
				MT-PAPERMetalized Paper
				POLYESTERPolyester
				MT-POLYESTMetalized Polyester
				POLYPROPolypropylene
				MT-POLYPROMetalized Polypropylene
				COMPO-FILMComposite Film
				MT-COMPOMetalized Composite
				STYRENEStyrene
				TA-SOLIDTantalum Solid
				AL-SOLIDAluminum Solid
				ELECTElectrolytic
				NP-ELECTNon-Polarized Electrolytic
				OS-SOLIDAluminum Solid with Organic Semiconductive Electrolytic

Schematic Location	Part No.	Description
C001	403 049 0008	ELECT 1U M 50V
C003	403 235 5701	CERAMIC 5600P K 50V
C004	403 224 6148	CERAMIC 0.01U K 50V
C008	403 043 6006	ELECT 330U M 16V
C011	403 043 0202	ELECT 220U M 16V
C101	403 038 6301	ELECT 220U M 6.3V
C103	403 224 6108	CERAMIC 0.01U K 50V
C106	403 050 6600	ELECT 3.3U M 50V
C131	403 049 0008	ELECT 1U M 50V
C132	403 224 6108	CERAMIC 0.01U K 50V
C133	403 224 6108	CERAMIC 0.01U K 50V
C134	403 224 5705	CERAMIC 1000P K 50V
C136	401 150 6001	MT-GLAZE 0.000 ZA 1/10W
C137	403 364 7508	CERAMIC 10P J 50V
C141	403 224 6108	CERAMIC 0.01U K 50V
C142	403 343 4603	CERAMIC 0.022U K 50V
C143	403 224 6108	CERAMIC 0.01U K 50V
C146	403 224 6108	CERAMIC 0.01U K 50V
C147	403 038 1603	ELECT 100U M 6.3V
C151	404 084 8707	ELECT 0.47U M 50V
	403 048 6308	ELECT 0.47U M 50V
C153	404 084 8707	ELECT 0.47U M 50V
	403 048 6308	ELECT 0.47U M 50V
C161	403 357 9601	CERAMIC 0.1U Z 50V
C211	403 051 0607	ELECT 4.7U M 50V
C212	403 049 9803	ELECT 2.2U M 50V
C221	403 224 6108	CERAMIC 0.01U K 50V
C252	404 086 6602	POLYESTER 0.047U K 63V
	403 062 0504	POLYESTER 0.047U K 50V
	403 312 2203	POLYESTER 0.047U K 50V
C253	404 084 8707	ELECT 0.47U M 50V
	403 048 6308	ELECT 0.47U M 50V
C256	403 049 0008	ELECT 1U M 50V
C257	403 224 6108	CERAMIC 0.01U K 50V
C258	403 043 9106	ELECT 47U M 16V
C272	403 050 6600	ELECT 3.3U M 50V
C284	403 044 1703	ELECT 470U M 16V
C285	403 224 6108	CERAMIC 0.01U K 50V

Schematic Location	Part No.	Description
C401	403 042 2405	ELECT 100U M 16V
C402	403 224 6108	CERAMIC 0.01U K 50V
C403	403 063 0206	POLYESTER 6800P K 50V
	403 312 2807	POLYESTER 6800P K 50V
C404	403 235 0607	CERAMIC 100P J 50V
C405	403 086 2607	NP-ELECT 1U M 50V
C406	403 076 3607	CERAMIC 470P K 500V
C407	403 075 9204	CERAMIC 1500P K 500V
C408	403 055 0504	ELECT 1U M 160V
★ C411	404 079 1607	MT-POLYPRO 0.012U H 1.5K
	403 343 7703	MT-POLYPRO 0.012U H 1.5KV
★ C416	404 081 2807	MT-POLYPRO 0.33U M 200V
	403 346 7225	MT-POLYPRO 0.33U J 250V
	403 372 7002	MT-POLYPRO 0.33U J 250V
★ C417	404 081 2401	MT-POLYPRO 0.22U M 200V
	404 085 5507	MT-POLYPRO 0.22U J 250V
	403 346 6921	MT-POLYPRO 0.22U J 250V
	403 372 6609	MT-POLYPRO 0.22U J 250V
C421	403 038 6301	ELECT 220U M 6.3V
C426	403 224 6108	CERAMIC 0.01U K 50V
C441	403 224 6108	CERAMIC 0.01U K 50V
C473	404 084 5706	MT-POLYEST 0.47UJ 63V
	403 166 7706	MT-POLYEST 0.47U J 63V
	403 067 7805	MT-COMPO 0.47U J 50V
C482	403 115 0802	ELECT 22U M 100V
C483	404 069 2102	ELECT 47U M 160V
C484	403 051 0607	ELECT 4.7U M 50V
C487	403 052 8503	ELECT 1000U M 35V
C491	403 041 8804	ELECT 10U M 16V
C493	404 056 5307	NP-ELECT 2.2U M 100V
C496	403 044 1703	ELECT 470U M 16V
C497	403 038 1603	ELECT 100U M 6.3V
C501	403 049 4204	ELECT 10U M 50V
C502	403 053 2104	ELECT 220U M 35V
C503	403 204 1802	ELECT 3.3U K 50V
C504	403 045 9807	ELECT 2200U M 25V
C505	404 084 5706	MT-POLYEST 0.47UJ 63V
	403 166 7706	MT-POLYEST 0.47U J 63V
	403 067 7805	MT-COMPO 0.47U J 50V
C506	403 062 5301	POLYESTER 5600P K 50V
	403 312 2401	POLYESTER 5600P K 50V
C508	403 028 1705	CERAMIC 56P J 50V
C509	404 084 5706	MT-POLYEST 0.47UJ 63V
	403 166 7706	MT-POLYEST 0.47U J 63V
	403 067 7805	MT-COMPO 0.47U J 50V
★ C511	403 141 5802	POLYESTER 0.15U J 50V
	403 058 5407	POLYESTER 0.15U K 50V
C516	403 051 0607	ELECT 4.7U M 50V
★ C601	404 071 2404	MT-POLYEST 0.22U M 250V
	404 066 2204	MT-POLYEST 0.22U M 275V
★ C602	403 075 7111	CERAMIC 1000P K 500V
★ C604	403 075 7111	CERAMIC 1000P K 500V
★ C606	404 073 5304	CERAMIC 470P K 250V
	404 088 3500	CERAMIC 470P M 250V
	404 088 3609	CERAMIC 470P M 250V
★ C608	403 222 1907	CERAMIC 2200P K 1K
	403 263 6305	CERAMIC 2200P K 1K
	403 232 0204	CERAMIC 2200P K 1K
C609	404 075 5005	ELECT 470U M 200V
C612	403 057 3107	POLYESTER 0.1U K 50V
	403 311 8909	POLYESTER 0.1U K 50V

Schematic Location	Part No.	Description
C613	403 061 9805	POLYESTER 0.047U J 50V
	403 312 2104	POLYESTER 0.047U J 50V
C614	403 056 9704	POLYESTER 0.01U J 50V
	403 311 8602	POLYESTER 0.01U J 50V
★ C624	403 266 4902	CERAMIC 1200P K 1K
	403 262 2308	CERAMIC 1200P K 1K
★ C625	403 266 4902	CERAMIC 1200P K 1K
	403 262 2308	CERAMIC 1200P K 1K
C626	403 042 4805	ELECT 1000U M 16V
C628	404 073 9005	ELECT 220U M 160V
C629	403 043 0202	ELECT 220U M 16V
★ C631	404 073 5304	CERAMIC 470P K 250V
	404 088 3500	CERAMIC 470P M 250V
	404 088 3609	CERAMIC 470P M 250V
★ C632	404 088 2909	CERAMIC 1000P M 250V
	404 088 7102	CERAMIC 1000P M 250V
★ C633	404 088 2909	CERAMIC 1000P M 250V
	404 088 7102	CERAMIC 1000P M 250V
C634	403 043 9106	ELECT 47U M 16V
C683	403 042 7707	ELECT 22U M 16V
C693	403 049 0008	ELECT 1U M 50V
C701	403 235 5305	CERAMIC 1200P K 50V
C711	403 224 5715	CERAMIC 1000P K 50V
C721	403 224 5705	CERAMIC 1000P K 50V
★ C742	403 077 2807	CERAMIC 1000P Z 2K
C801	403 224 6108	CERAMIC 0.01U K 50V
C805	403 039 3507	ELECT 470U M 6.3V
C806	403 039 3507	ELECT 470U M 6.3V
C807	403 234 9809	CERAMIC 18P J 50V
C808	403 234 9809	CERAMIC 18P J 50V
C811	403 235 0607	CERAMIC 100P J 50V
C812	403 235 0607	CERAMIC 100P J 50V
C822	403 041 8804	ELECT 10U M 16V
C831	403 049 0008	ELECT 1U M 50V
C834	403 224 6108	CERAMIC 0.01U K 50V
C841	403 224 6108	CERAMIC 0.01U K 50V
C842	403 224 6108	CERAMIC 0.01U K 50V
C843	403 224 6108	CERAMIC 0.01U K 50V
C862	403 224 6108	CERAMIC 0.01U K 50V
C891	403 086 2607	NP-ELECT 1U M 50V
C892	403 224 5705	CERAMIC 1000P K 50V
C894	403 323 3602	CERAMIC 0.047U K 50V
C896	403 049 9803	ELECT 2.2U M 50V
C1001	403 041 8804	ELECT 10U M 16V
C1002	403 046 9905	ELECT 4.7U M 25V
C1902	403 038 1603	ELECT 100U M 6.3V

DIODES

D001	408 047 4706	ZENER DIODE MTZJ15B (15V)
D101	407 100 0204	ZENER DIODE MTZJ36A (36V)
	407 056 2307	ZENER DIODE RD36EB1 (36V)
	408 046 1508	ZENER DIODE MTZJ36A (36V)
D351	407 063 8606	ZENER DIODE MTZJ5.1A (5.1V)
	407 056 8002	ZENER DIODE RD5.1EB2 (5.1V)
★ D421	407 158 1307	ZENER DIODE HZ11B2L (11V)
★ D422	407 158 1307	ZENER DIODE HZ11B2L (11V)
D428	407 099 7109	ZENER DIODE MTZJ15C (15V)
	407 054 5904	ZENER DIODE RD15EB3 (15V)
D429	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473

Schematic Location	Part No.	Description
D481	407 124 6404	DIODE ERA18-04
	407 007 6606	DIODE ES1
	407 124 5506	DIODE RMPG06G
D482	407 011 4407	DIODE TVR1G
D483	407 124 6404	DIODE ERA18-04
	407 007 6606	DIODE ES1
	407 124 5506	DIODE RMPG06G
D486	407 099 6102	ZENER DIODE MTZJ10B (10V)
	407 054 0008	ZENER DIODE RD10EB2 (10V)
	408 041 0407	ZENER DIODE MTZJ10B (10V)
D487	407 005 8602	DIODE ERA15-02
	407 088 6502	DIODE MPG06D
	407 011 3004	DIODE S5277B
	408 009 9404	DIODE 1N4002ID
D490	407 063 8903	ZENER DIODE MTZJ5.6C (5.6V)
	407 057 0104	ZENER DIODE RD5.6EB3 (5.6V)
	408 044 3108	ZENER DIODE MTZJ5.6C (5.6V)
D491	407 005 8602	DIODE ERA15-02
	407 088 6502	DIODE MPG06D
	407 011 3004	DIODE S5277B
D492	407 006 4108	DIODE ERB44-04
	407 007 7603	DIODE EU2
D501	407 005 8602	DIODE ERA15-02
	407 088 6502	DIODE MPG06D
	407 011 3004	DIODE S5277B
	408 009 9404	DIODE 1N4002ID
D502	407 118 2207	ZENER DIODE 1Z75 (75V)
★ D601	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D602	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D603	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
★ D604	407 005 7605	DIODE EM2B
	408 008 8606	DIODE GP15G
	407 013 3200	DIODE 1S1887A
D611	407 007 9904	DIODE GMA01
	407 012 4406	DIODE 1SS133
★ D612	407 147 5705	PHOTO COUPLE ON3131S
	407 104 2402	PHOTO COUPLE PC817C
	407 106 6101	PHOTO COUPLE PC817D
	407 175 9904	PHOTO COUPLE TLP621-1-BL
D613	407 063 9702	ZENER DIODE MTZJ9.1C (9.1V)
D614	407 006 0100	DIODE ERA91-02
★ D624	407 106 2806	DIODE RU3YX
★ D625	407 211 5808	DIODE FE201-6L43
	407 129 7000	DIODE RU4AM LF-L1
D627	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D629	407 099 7208	ZENER DIODE MTZJ16A (16V)
	407 054 7007	ZENER DIODE RD16EB1 (16V)
D680	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D683	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473

Schematic Location	Part No.	Description
D693	407 099 5501	ZENER DIODE MTZJ6.2C (6.2V)
	407 057 2801	ZENER DIODE RD6.2EB3 (6.2V)
D801	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D802	408 008 2406	DIODE 1N4148
	407 013 4306	DIODE 1S2076A
	407 013 7109	DIODE 1S2473
D831	407 222 5903	ZD UDZS-TE-173.6B (3.5V)
D834	407 099 7000	ZENER DIODE MTZJ15B (15V)
	407 099 7109	ZENER DIODE MTZJ15C (15V)
	407 054 5805	ZENER DIODE RD15EB2 (15V)
	407 054 5904	ZENER DIODE RD15EB3 (15V)
D836	407 149 0807	DIODE 1SS355 TE-17
D843	407 149 0807	DIODE 1SS355 TE-17

INTEGRATED CIRCUITS

IC001	409 275 7903	IC LA4525
★ IC101	409 491 4809	IC LA76834NM-TBM
★ IC501	409 453 5905	IC LA78041
★ IC601	409 172 8102	IC SE130NH
IC681	409 241 8309	IC TA78L05S
	409 066 7303	IC UPC78L05J
IC801	410 416 7409	IC LC8634**V-****-TLM
IC802	409 495 6908	IC CAT24WC02P
	409 440 8902	IC M24C02-BN6
	409 376 1503	IC ST24C02B6
	409 497 0706	IC S524C20D21-DCB0
	409 333 3700	IC 24LC02B/P

COILS

J001	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
J101	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
★ LF601	645 052 6862	LINE FILTER
	645 012 0589	LINE FILTER
L146	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L164	645 003 9713	INDUCTOR, 15U K
	645 016 2657	INDUCTOR, 15U K
L256	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L401	645 036 4198	INDUCTOR, 1.0U, FILTER
L404	645 003 9676	INDUCTOR, 100U K
	645 016 2565	INDUCTOR, 100U K
L602	645 005 0763	CORE, PIPE
L611	610 078 5946	PIPE CORE
L612	610 078 5946	PIPE CORE
L623	610 078 6820	PIPE CORE
L625	610 078 5946	PIPE CORE
	652 000 1725	CORE, PIPE
L801	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
L811	645 006 2490	INDUCTOR, 1U K
	645 016 2411	INDUCTOR, 1U K
L812	645 006 2490	INDUCTOR, 1U K
	645 016 2411	INDUCTOR, 1U K

Schematic Location	Part No.	Description
L821	645 008 2894	INDUCTOR, 5.6U K
	645 016 3104	INDUCTOR, 5.6U K
★ L901	645 044 9147	ASSY, COIL, DEGAUSSING
★ L902	610 003 4846	DEFLECTION YOKE
	610 003 4853	DEFLECTION YOKE
TRANSISTORS		
Q401	405 029 7106	TR 2SC2271-D
	405 013 6207	TR 2SC2271-D-CTV
	405 029 7205	TR 2SC2271-E
	405 013 6306	TR 2SC2271-E-CTV
★ Q402	405 153 0202	TR 2SD2578-YB
Q486	405 023 5009	TR 2SD400-E-MP
	405 023 5306	TR 2SD400-F-MP
Q490	405 023 5009	TR 2SD400-E-MP
	405 023 5306	TR 2SD400-F-MP
★ Q601	405 166 7601	TR 2SK2872
Q611	405 013 6801	TR 2SC2274-E
	405 013 7006	TR 2SC2274-F
Q612	405 006 6504	TR 2SA984-E
	405 006 6702	TR 2SA984-F
Q613	405 013 6801	TR 2SC2274-E
	405 013 7006	TR 2SC2274-F
Q627	405 089 0000	TR 2SA1707-S
	405 089 0109	TR 2SA1707-T
	405 009 6907	TR 2SB985-S
	405 009 7003	TR 2SB985-T
Q635	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q681	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA
Q693	405 011 8401	TR 2SC1740S-Q
	405 011 8500	TR 2SC1740S-R
	405 011 8609	TR 2SC1740S-S
	405 012 2002	TR 2SC1815-GR
	405 012 2101	TR 2SC1815-O
	405 012 2309	TR 2SC1815-Y
	405 157 0505	TR 2SC536NF-NPA
	405 151 8705	TR 2SC536NG-NPA
	405 020 7501	TR 2SC945A-PA
	405 020 7709	TR 2SC945A-QA
	405 020 7907	TR 2SC945A-RA

Schematic Location	Part No.	Description
Q695	405 001 7605	TR 2SA1015-Y(SAN)
	405 004 3208	TR 2SA564A-R(CU)
	405 004 4809	TR 2SA608-F-CTV-NP
Q701	406 000 3605	TR 2SC3620(LB-SAN-1)
	405 066 4304	TR 2SC2621-C-RA
	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
Q711	406 000 3605	TR 2SC3620(LB-SAN-1)
	405 066 4304	TR 2SC2621-C-RA
	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
Q721	406 000 3605	TR 2SC3620(LB-SAN-1)
	405 066 4304	TR 2SC2621-C-RA
	405 041 6507	TR 2SC2621-D-RA
	405 041 6705	TR 2SC2621-E-RA
	405 066 9903	TR 2SC2688(1)-K
	405 067 0008	TR 2SC2688(1)-L
	405 067 0107	TR 2SC2688(1)-M
Q831	405 134 5925	TR 2SA1037AK T146 R
	405 147 2205	TR 2SA1037AK T146 S
	405 002 0308	TR 2SA1037K-T-96-R
	405 002 0407	TR 2SA1037K-T-96-S
	405 002 6726	TR 2SA1179-M6
	405 002 6924	TR 2SA1179-M7-TB
	405 163 1503	TR 2SA1179N-M6-TB
	405 163 2708	TR 2SA1179N-M7-TB

RESISTORS

NOTES:

Read description of the Resistor as follows:

(Example)

CARBON

4.7K

J

A

1/4W

Rated Wattage

Performance Symbols:

A..General B...Non-flammable

Z...Low noise

Other...Temperature coefficient

Tolerance Symbols:

A...0.05% B...0.1% C...0.25%

D...0.5% F...1% G...2%

J...5% K...10% M...20%

P...+5 -15%

Rated Value, ohms:

K...1,000 M...1,000,000

Material:

CARBONCarbon

MT-FILMMetal Film

OXIDE-MTOxide Metal Film

SOLIDComposition

MT-GLAZEMetal Glaze

WIRE WOUND . . .Wire Wound

CERAMIC RES . . .Ceramic

FUSIBLE RES . . .Fusible

Schematic Location	Part No.	Description	
R001	401 027 8602	CARBON	8.2K JA 1/6W
R003	401 162 2800	MT-GLAZE	1.8K JA 1/10W
★ R106	401 061 4400	OXIDE-MT	33K JA 1W
R131	401 256 6004	MT-GLAZE	27K JA 1/10W
R132	401 024 6700	CARBON	100 JA 1/6W
R133	401 255 6401	MT-GLAZE	3K JA 1/10W
R142	401 026 4605	CARBON	33K JA 1/6W
R143	401 150 6209	MT-GLAZE	1K JA 1/10W
R151	401 152 3206	MT-GLAZE	330 JA 1/10W
R161	401 150 5806	MT-GLAZE	100K JA 1/10W
R162	401 150 5806	MT-GLAZE	100K JA 1/10W
R163	401 255 8702	MT-GLAZE	22 JA 1/10W
R164	401 150 6209	MT-GLAZE	1K JA 1/10W
R165	401 162 2701	MT-GLAZE	180 JA 1/10W
R166	401 256 7506	MT-GLAZE	390 JA 1/10W
R211	401 256 7100	MT-GLAZE	680K JA 1/10W
R212	401 256 7100	MT-GLAZE	680K JA 1/10W
R251	401 162 3005	MT-GLAZE	22K JA 1/10W
R252	401 162 3005	MT-GLAZE	22K JA 1/10W
R272	401 027 5502	CARBON	6.8K JA 1/6W
R273	401 150 5905	MT-GLAZE	10K JA 1/10W
R276	401 256 0408	MT-GLAZE	12K JA 1/10W
R281	401 150 5905	MT-GLAZE	10K JA 1/10W
R284	401 256 5601	MT-GLAZE	47 JA 1/10W
R286	401 162 2701	MT-GLAZE	180 JA 1/10W
R287	401 162 2701	MT-GLAZE	180 JA 1/10W
R288	401 162 2701	MT-GLAZE	180 JA 1/10W
R301	401 150 5905	MT-GLAZE	10K JA 1/10W
R353	401 024 7400	CARBON	10K JA 1/6W
R400	401 024 6700	CARBON	100 JA 1/6W
★ R401	401 012 4503	CARBON	100 JA 1/4W
★ R402	401 013 4205	CARBON	120 JA 1/4W
R404	401 025 7409	CARBON	220 JA 1/6W
R405	401 162 4101	MT-GLAZE	5.6K JA 1/10W
R406	401 023 2802	CARBON	8.2K JA 1/4W
★ R407	401 069 3702	OXIDE-MT	6.8K JA 2W
★ R411	402 080 3702	OXIDE-MT	6.8 JB 7W
R416	401 026 3707	CARBON	33 JA 1/6W
★ R421	401 053 1202	MT-FILM	2.2K FA 1/6W
★ R422	401 052 6802	MT-FILM	10K FA 1/6W
★ R423	401 053 2605	MT-FILM	3.3K FA 1/6W
R426	401 027 5205	CARBON	680 JA 1/6W
R428	401 025 1902	CARBON	15K JA 1/6W
R441	401 150 6209	MT-GLAZE	1K JA 1/10W
R442	401 150 5905	MT-GLAZE	10K JA 1/10W
R443	401 150 5905	MT-GLAZE	10K JA 1/10W
R444	401 150 5905	MT-GLAZE	10K JA 1/10W
R449	401 265 1700	MT-GLAZE	4.7K FA 1/10W
★ R481	401 010 2600	CARBON	47 JB 1/2W
★ R482	401 011 9004	CARBON	1 JB 1/4W
★ R483	401 006 7701	CARBON	1 JB 1/2W
★ R484	401 061 0006	OXIDE-MT	3.3 JA 1W
R485	401 256 7209	MT-GLAZE	18K JA 1/10W
★ R486	401 063 4606	OXIDE-MT	8.2 JA 1W
R487	401 026 6609	CARBON	390 JA 1/6W
★ R488	401 065 9609	OXIDE-MT	18 JA 2W
★ R489	401 066 5204	OXIDE-MT	22 JA 2W
R490	401 026 6609	CARBON	390 JA 1/6W
R491	401 024 7004	CARBON	1K JA 1/6W
R492	401 156 8504	MT-FILM	33K FA 1/6W
R493	401 019 4001	CARBON	390K JA 1/4W
R494	401 019 4001	CARBON	390K JA 1/4W

Schematic Location	Part No.	Description	
★ R495	401 008 3800	CARBON	2.2 JB 1/2W
★ R496	401 061 1706	OXIDE-MT	33 JA 1W
★ R497	401 066 3002	OXIDE-MT	2.2 JA 2W
★ R499	401 059 1602	OXIDE-MT	15 JA 1W
R503	401 026 7002	CARBON	3.9K JA 1/6W
R504	401 024 7400	CARBON	10K JA 1/6W
R505	401 006 8104	CARBON	1.2 JA 1/2W
R506	401 027 8305	CARBON	820 JA 1/6W
R507	401 006 7602	CARBON	1 JA 1/2W
R508	401 025 8208	CARBON	22K JA 1/6W
R509	401 027 5502	CARBON	6.8K JA 1/6W
★ R511	401 065 2808	OXIDE-MT	120 JA 2W
R517	401 025 4606	CARBON	18K JA 1/6W
R518	401 025 4606	CARBON	18K JA 1/6W
★ R601	402 083 6106	WIRE WOUND	1 KA 7W
★ R602	402 000 1603	SOLID	3.3M MA 1/2W
	402 088 1502	RESISTER	3.3M JA 1/2W
R603	401 007 2903	CARBON	1M JA 1/2W
★ R604	401 066 3002	OXIDE-MT	2.2 JA 2W
R606	401 019 9600	CARBON	47 JA 1/4W
R607	401 016 1508	CARBON	22 JA 1/4W
R608	401 162 3807	MT-GLAZE	470K JA 1/10W
R609	401 162 3005	MT-GLAZE	22K JA 1/10W
R611	401 027 0309	CARBON	47K JA 1/6W
★ R612	402 001 8502	FUSIBLE RES	10 J- 1/2W
★ R613	401 100 7706	OXIDE-MT	0.22 JA 2W
R614	401 020 0801	CARBON	470 JA 1/4W
R616	401 150 5905	MT-GLAZE	10K JA 1/10W
★ R617	402 001 8106	FUSIBLE RES	680 J- 1/4W
R618	401 012 5708	CARBON	1K JA 1/4W
R619	401 162 3005	MT-GLAZE	22K JA 1/10W
R627	401 150 5905	MT-GLAZE	10K JA 1/10W
R628	401 013 5301	CARBON	1.2K JA 1/4W
R629	401 150 6209	MT-GLAZE	1K JA 1/10W
★ R630	401 060 5002	OXIDE-MT	22K JA 1W
R631	401 022 3107	CARBON	6.8K JA 1/4W
R632	401 150 6209	MT-GLAZE	1K JA 1/10W
R634	401 256 6301	MT-GLAZE	47K JA 1/10W
R683	401 025 7805	CARBON	2.2K JA 1/6W
R686	401 016 1508	CARBON	22 JA 1/4W
R691	401 150 5905	MT-GLAZE	10K JA 1/10W
R692	401 256 6608	MT-GLAZE	68K JA 1/10W
R693	401 256 5106	MT-GLAZE	560K JA 1/10W
R694	401 024 7400	CARBON	10K JA 1/6W
R695	401 162 3005	MT-GLAZE	22K JA 1/10W
R701	401 025 3807	CARBON	180 JA 1/6W
R703	401 256 6905	MT-GLAZE	680 JA 1/10W
R704	401 255 9006	MT-GLAZE	82 JA 1/10W
R706	401 009 1508	CARBON	2.7K JA 1/2W
★ R707	401 065 4604	OXIDE-MT	12K JA 2W
R711	401 025 3807	CARBON	180 JA 1/6W
R713	401 256 6905	MT-GLAZE	680 JA 1/10W
R714	401 255 9006	MT-GLAZE	82 JA 1/10W
R716	401 009 1508	CARBON	2.7K JA 1/2W
★ R717	401 065 4604	OXIDE-MT	12K JA 2W
R721	401 025 3807	CARBON	180 JA 1/6W
R723	401 027 5205	CARBON	680 JA 1/6W
R724	401 255 9006	MT-GLAZE	82 JA 1/10W
R726	401 009 1508	CARBON	2.7K JA 1/2W
★ R727	401 065 4604	OXIDE-MT	12K JA 2W
R801	401 256 5809	MT-GLAZE	270K JA 1/10W

Schematic Location	Part No.	Description
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R803	401 255 6500	MT-GLAZE 100 JA 1/10W
R804	401 255 6500	MT-GLAZE 100 JA 1/10W
R806	401 162 3708	MT-GLAZE 4.7K JA 1/10W
R807	401 150 5905	MT-GLAZE 10K JA 1/10W
R808	401 150 5905	MT-GLAZE 10K JA 1/10W
R809	401 162 3708	MT-GLAZE 4.7K JA 1/10W
R823	401 024 6700	CARBON 100 JA 1/6W
R829	401 024 6700	CARBON 100 JA 1/6W
R831	401 150 5905	MT-GLAZE 10K JA 1/10W
R832	401 150 5905	MT-GLAZE 10K JA 1/10W
R833	401 152 3206	MT-GLAZE 330 JA 1/10W
R834	401 150 5806	MT-GLAZE 100K JA 1/10W
R837	401 024 7400	CARBON 10K JA 1/6W
R842	401 256 0309	MT-GLAZE 820 JA 1/10W
R843	401 256 0309	MT-GLAZE 820 JA 1/10W
R844	401 256 0309	MT-GLAZE 820 JA 1/10W
R846	401 150 6209	MT-GLAZE 1K JA 1/10W
R847	401 162 4101	MT-GLAZE 5.6K JA 1/10W
R848	401 162 4101	MT-GLAZE 5.6K JA 1/10W
R849	401 027 2600	CARBON 5.6K JA 1/6W
R851	401 256 5908	MT-GLAZE 2.7K JA 1/10W
R852	401 256 1702	MT-GLAZE 33K JA 1/10W
R856	401 024 6700	CARBON 100 JA 1/6W
R857	401 024 6700	CARBON 100 JA 1/6W
R862	401 255 6500	MT-GLAZE 100 JA 1/10W
R863	401 150 6001	MT-GLAZE 0.000 ZA 1/10W
R864	401 256 0200	MT-GLAZE 120K JA 1/10W
R865	401 024 7004	CARBON 1K JA 1/6W
R881	401 024 6700	CARBON 100 JA 1/6W
R882	401 024 6700	CARBON 100 JA 1/6W
R883	401 024 6700	CARBON 100 JA 1/6W
R884	401 024 6700	CARBON 100 JA 1/6W
R886	401 150 5905	MT-GLAZE 10K JA 1/10W
R892	401 162 2909	MT-GLAZE 220 JA 1/10W
R893	401 255 6500	MT-GLAZE 100 JA 1/10W
R894	401 255 6005	MT-GLAZE 1M JA 1/10W
R897	401 026 9600	CARBON 470 JA 1/6W
R898	401 162 3609	MT-GLAZE 470 JA 1/10W
R899	401 162 3807	MT-GLAZE 470K JA 1/10W
R1001	401 255 9501	MT-GLAZE 220K JA 1/10W
R1002	401 256 2709	MT-GLAZE 75 JA 1/10W
R1003	401 255 6500	MT-GLAZE 100 JA 1/10W
R1901	401 150 5905	MT-GLAZE 10K JA 1/10W
R1902	401 150 6209	MT-GLAZE 1K JA 1/10W
R1903	401 162 2800	MT-GLAZE 1.8K JA 1/10W
R1904	401 150 6100	MT-GLAZE 2.2K JA 1/10W
R1905	401 256 7605	MT-GLAZE 3.9K JA 1/10W
R1906	401 162 4101	MT-GLAZE 5.6K JA 1/10W
R1907	401 256 0408	MT-GLAZE 12K JA 1/10W
R1909	401 255 6500	MT-GLAZE 100 JA 1/10W

SWITCHS

SW1901	645 006 9673	SWITCH, PUSH (POWER)
SW1902	645 006 9673	SWITCH, PUSH (VOL +)
SW1903	645 006 9673	SWITCH, PUSH (VOL -)
SW1904	645 006 9673	SWITCH, PUSH CH ▲
SW1905	645 006 9673	SWITCH, PUSH CH ▼
SW1906	645 006 9673	SWITCH, PUSH (MENU)

Schematic Location	Part No.	Description
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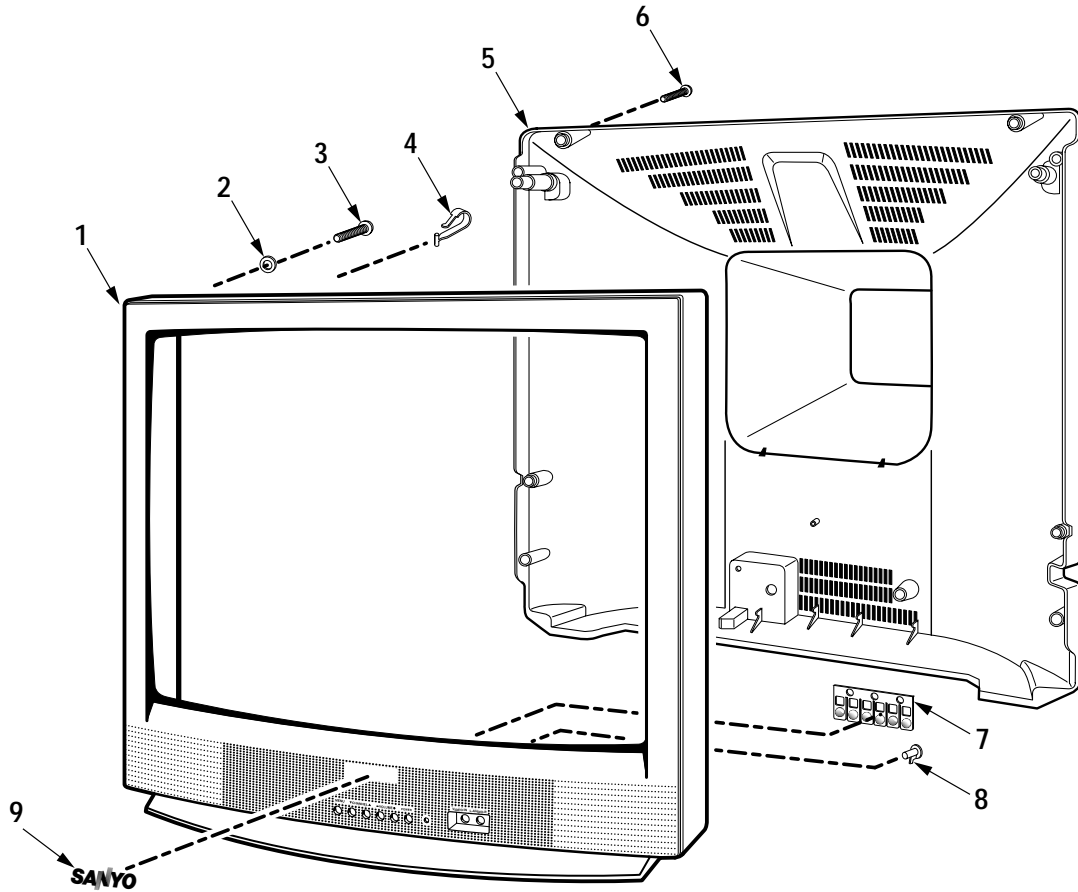
TRANSFORMERS

T151	645 049 3775	TRANS, OSC 45.75MHZ
T401	610 000 7901	DRIVE TRANS
	610 000 7918	DRIVE TRANS
	645 047 2015	TRANS, DRIVE
	652 000 1442	TRANS, DRIVE
★ T402	645 045 8521	TRANS, FLYBACK
★ T601	645 051 4951	TRANS, POWER, PULSE

CRYSTAL/FILTERS

X141A	421 008 9008	SAW F TSF5235P
X161	610 015 3059	TRAP, CERAMIC 4.5MHZ
	645 041 1618	TRAP CERAMIC 4.5MHZ
X251	610 204 4195	CRYSTAL OSCILLATOR
	610 245 9746	CRYSTAL OSCILLATOR
	610 012 0655	CRYSTAL OSCILLATOR
	652 000 1695	OSC, CRYSTAL 3.579545MH,
X801	645 004 1938	OSC, CRYSTAL 32.768KHZ
	645 004 1945	OSC, CRYSTAL 32.768KHZ
A100	610 295 5644	ASSY, PWB, MAIN G7KAM
★ A101	645 053 7936	TUNER, U/V
A700	610 295 5651	ASSY, PWB, SOCKET G7KAM
A1901	645 041 1519	UNIT, REMOCON RECEIVER
	645 044 0519	UNIT, REMOCON RECEIVER
★ F601	423 018 8101	FUSE 125V 4A
	423 007 1601	FUSE 125V 4A
	423 007 1809	FUSE 125V 4A
F601A	645 000 5077	HOLDER, FUSE
	645 016 0479	HOLDER, FUSE
F601B	645 000 5077	HOLDER, FUSE
	645 016 0479	HOLDER, FUSE
★ K701	645 025 6103	SOCKET, CRT 8P
K1001	645 040 5952	JACK, RCA-2
★ PS601	408 046 5209	TH PTDA1BF3R0Q100
★ Q901	414 009 1300	CRT A63AHC26X
Q901A1	610 117 0154	DY SPACER-D4AK
	610 117 7924	DY SPACER
Q901A2	610 117 0154	DY SPACER-D4AK
	610 117 7924	DY SPACER
Q901A3	610 117 0154	DY SPACER-D4AK
	610 117 7924	DY SPACER
Q901C	610 217 7794	CG PURITY MAGNET
★ RL601	645 000 4155	RELAY
	645 011 2713	RELAY
	645 024 7828	RELAY
	645 015 8629	RELAY
	645 024 7767	RELAY
SP901	645 028 0870	SPEAKER, 8
★ W601	645 030 5283	CORD, POWER - 2.0MK
★ W902	610 277 0421	ASSY, WIRE GND CONNECTOR
	610 293 1648	ASSY, WIRE GND CONNECTOR
	610 287 6604	ASSY, WIRE GND CONNECTOR
	610 293 1655	ASSY, WIRE GND CONNECTOR

CABINET PARTS LIST



CABINET PARTS LIST

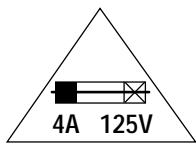
KEY NO.	PARTS NO.	DESCRIPTION
1	610 295 7488	CABINET FRONT ASSY
	OR 610 295 7495	CABINET FRONT ASSY
2	610 268 9624	SPECIAL WASHER-8X1.6
3	412 053 3905	CRT MTG (4 USED) M6/35
4	610 102 7151	DC HOLDER (2 USED)
5	610 295 7518	CABINET BACK
	OR 610 295 7525	CABINET BACK
6	412 036 1805	SCREW 4X14 (7 USED)
	OR 411 078 1101	SCREW 4X14 (7 USED)
7	610 295 7464	BUTTON UNIT
8	610 267 0851	CAP RC
9	610 293 2560	SANYO BADGE

ACCESSORY PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
	610 297 8889	OWNER'S MANUAL
	645 051 8539	RC TRANSMITTER
OR	645 051 8485	RC TRANSMITTER
	610 290 1221	RC BATTERY COVER
OR	610 290 1283	RC BATTERT COVER

MAIN BOARD PARTS SIDE



CAUTION  4A 125V	FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE 4A, 125V FUSE. ATTENTION : POUR MAINTENIR LA PROTECTION CONTRE LES RISQUES D' INCENDIE UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE 4A, 125V.
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**MAIN BOARD COMPONENTS AND TEST POINTS
GRID LOCATIONS**

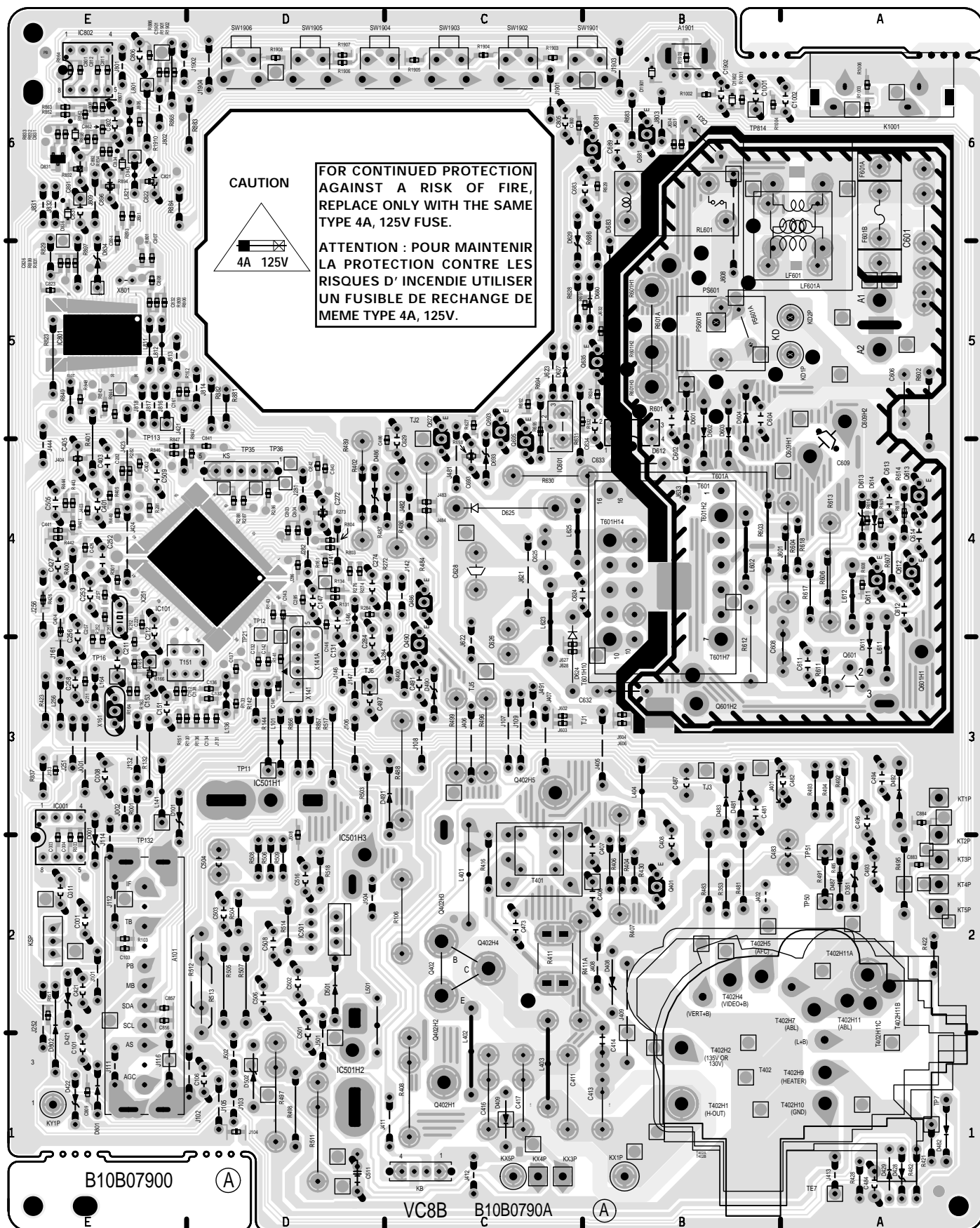
Part	Loc.	Part	Loc.
D429	A1	Q627	C4
D612	B4	Q635	B5
D802	E2	Q681	B6
IC001	E2	Q693	C4
IC101	D4	Q695	C4
IC501	D2	Q831	E6
IC601	C5	R512	E2
IC681	B6	R513	E2
IC801	E5	TE7	A1
IC802	E6	TP7	A1
Q401	B2	TJ1	B3
Q402	C2	TJ6	D3
Q486	C4	TP16	E3
Q490	C3	TP21	D3
Q601	A3	TP50	A2
Q611	A4	TP51	A2
Q612	A4	T151	E3
Q613	A4		

PIC TUBE SOCKET BOARD COMPONENTS

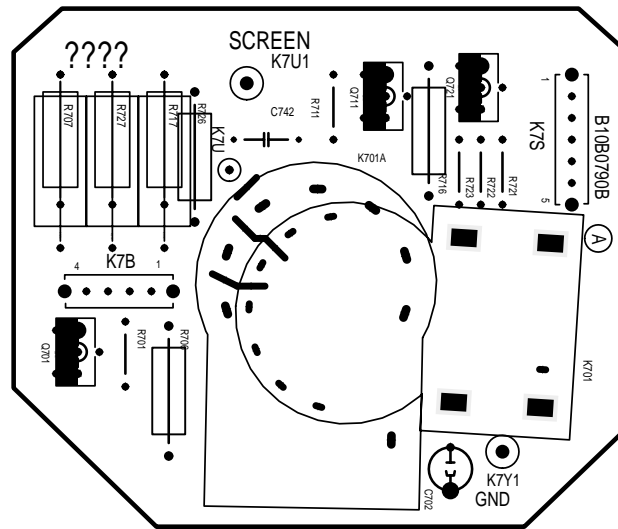
Part	Loc.
Q701	N/A
Q711	N/A
Q721	N/A

COMPONENT AND TESTPOINT LOCATIONS (Cont.)

MAIN BOARD FOIL SIDE



PICTURE TUBE SOCKET BOARD




For parts or service contact
SANYO Fisher Service Corporation
21605 Plummer Street
Chatsworth, CA 91311 (U.S.A.)
300 Applewood Crescent,
Concord, Ontario L4K 5C7 (CANADA)

April / 2002 / 2000 SMC

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SCHEMATIC DIAGRAMS

NOTES ON SCHEMATIC DIAGRAMS

1. All resistance values in ohms K=1,000 M=1,000,000.
2. Unless otherwise noted on schematic, all capacitor values less than 1 are expressed in μF (Micro Farad), and the values more than 1 are in pF.
3. Unless otherwise noted on schematic, voltage reading taken with VOM from point indicated to chassis ground. Voltage reading taken using color-bar signal VHF channel 5, all controls at normal. Line voltage at 120 volts. Some voltages may vary with signal strength.
4. Waveforms were taken with color-bar signal and controls adjusted for normal picture. Waveforms marked with an * may vary with signal strength.
5. The Symbol  indicates a fusible resistor, which protects the circuit from possible short circuits.

SERVICE NOTES:

1. When replacing parts on circuit boards, clamp the lead wires to terminals before soldering.
2. When replacing high wattage resistors on circuit board, keep the resistor body 10 mm (3/8) from circuit board.
3. Keep wires away from high voltage and high temperature components.

PRODUCT SAFETY NOTICE

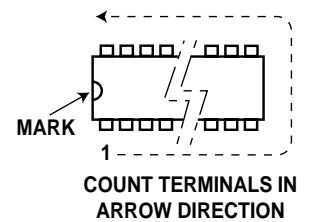
THE COMPONENTS DESIGNATED BY A STAR (*) ON THIS SCHEMATIC DIAGRAM DESIGNATE COMPONENTS WHOSE VALUES ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A STAR NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

X-RADIATION WARNING NOTE

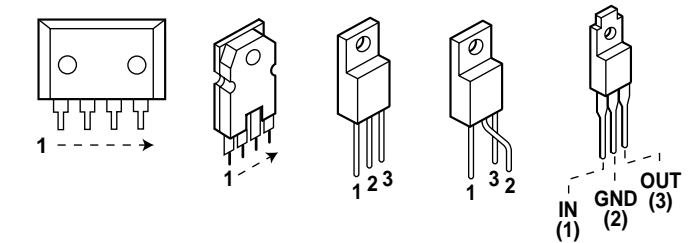
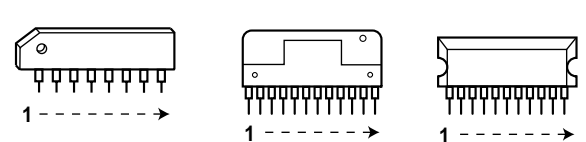
THIS TV CONTAINS CRITICAL PARTS TO PROTECT AGAINST X-RADIATION. NOMINAL 2ND ANODE VOLTAGE IS 29.0KV AT ZERO BEAM CURRENT AT 120 VOLTS AC LINE, AND MUST NOT EXCEED 29.0KV UNDER ANY OPERATING CONDITION. SEE HIGH VOLTAGE CHECK ON PAGE 7.

INTEGRATED CIRCUITS

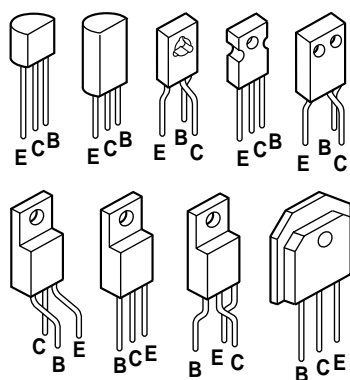
TOP VIEW



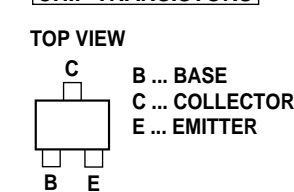
SIDE VIEW



TRANSISTORS



CHIP TRANSISTORS



CHIP RESISTORS

