

Service Manual

Color Television



Main Manual (NA8ML)



Panasonic

Models	Chassis
CT-32SX31E	BP371
CT-32SX31UE	BP371
CT-32SX31CE	BP371
CT-36SX31E	BP372
CT-36SX31UE	BP372
CT-36SX31CE	BP372

This Service manual is issued as a service guide for the models of the **NA8ML** family listed above. Included in this manual are a set of schematic, block diagrams, functional descriptions, alignment procedures, disassembly procedures and a complete parts list.

WARNING! This Service Manual is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. **Products powered by electricity should be serviced or repaired only by experienced professional technicians.** Any attempt to service or repair the product or products dealt with in this Service Manual by anyone else could result in serious injury or death."

The service technician is required to read and follow the "**Safety Precautions**" and "**Important Safety Notice**" in this Main Manual.

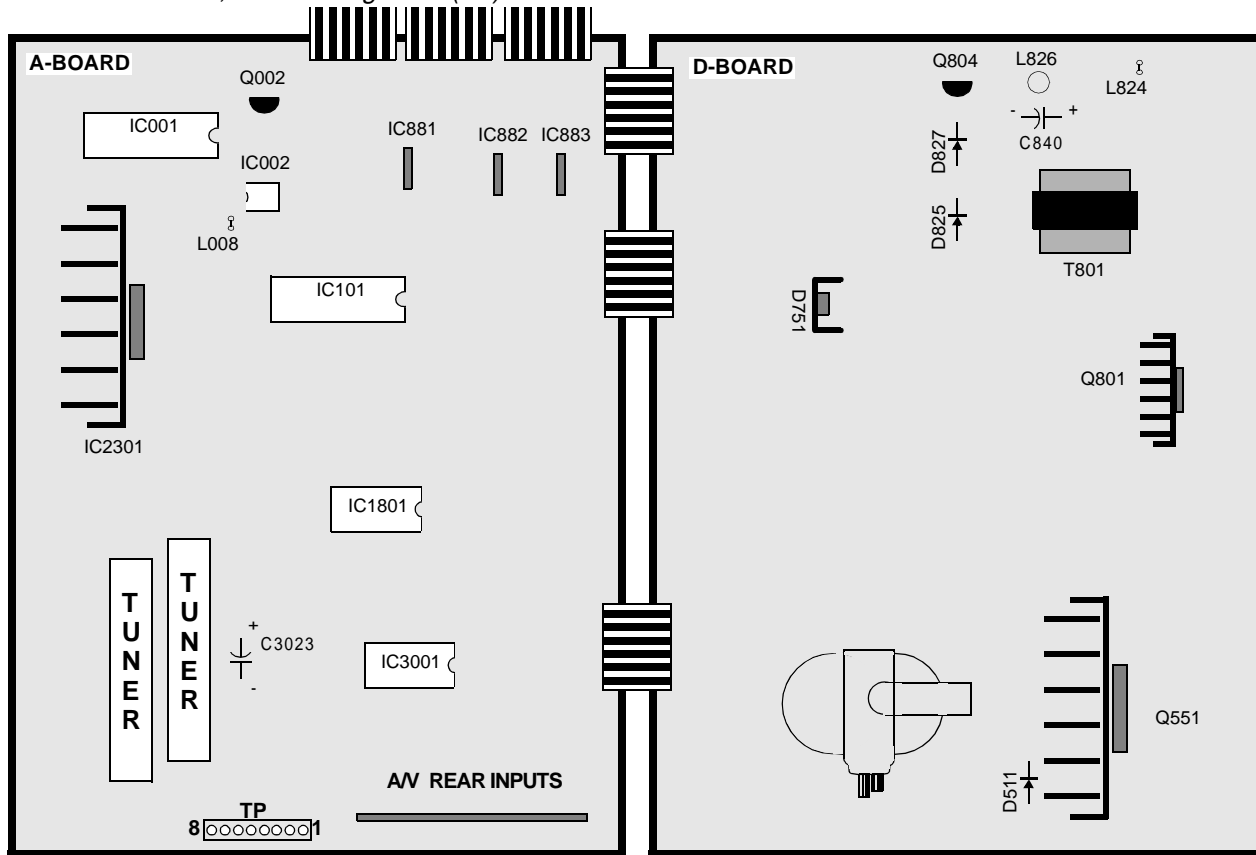
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Chassis Service Adjustment Procedures

All service adjustments are factory preset and should not require adjustment unless controls and/or associated components are replaced.

Note: Connect the (-) lead of the voltmeter to the appropriate ground. Use heat sink when the HOT ground symbol (∇) is used. Otherwise, use COLD ground (∇) — Tuner shield.



MOMENTARILY CONNECT A JUMPER FOR ENTERING SERVICE MODE (TP8 to COLD GND)

140.0V B+ Voltage Confirmation

1. Set the **Bright** and the **Picture** to Minimum by using the Picture Menu.
2. Connect the DVM between **TPP17** (+ side) and cold ground (∇).
3. Confirm that B+ voltage is **140.0V \pm 1.5V**. This voltage supplies B+ to the Horizontal Output & Flyback circuits.

Source Voltage Chart

120V AC line input. Set the **Bright** and the **Picture** to Minimum by using the Picture Menu. Use cold ground (∇) for the (-) lead of the DVM.

LOCATION (D-Board)	VOLTAGE
TPD7 (by D511) 220V	220.0V \pm 9.0V
LOCATION (A-Board)	VOLTAGE
TPA6 (by IC883) MAIN 12V	12.0V \pm 0.5V
TPA7 (by IC3001) MAIN 9V	9.0V \pm 0.5V
TPA8 (by L008) MAIN 5V	5.0V \pm 0.3V
TPA16 (by Q002) STBY 3.3V	3.3V \pm 0.2V
TPA18 (by C3023) BTL 30V	32.0V \pm 2.0V

LOCATION (D-Board)	VOLTAGE
TPP17 (by D825) +B2	140.0V \pm 1.5V
TPP25 (by D827) 9V	9.0V \pm 1.5V
TPP19 (by Q804) 15V	15.0V \pm 2.0V
TPP20 (by C840) 15V (VER.)	15.0V \pm 1.5V
TPP21 (by L826) -15V (VER.)	-15.0V \pm 1.5V
TPP22 (by L824) SOUND	32.5V \pm 2.0V

Adjust Picture Menu for normalized video adjustments.

High Voltage Check

1. Select an active TV channel and confirm that horizontal is in sync.
2. Adjust Brightness and Picture using Picture Icon menu so video just disappears.
3. Confirm B+ 140.0V is within limit.
4. Using a high voltage meter confirm that the High Voltage is **31.0kV \pm 1.0kV**.

Serviceman Mode (Electronic Controls)

This Receiver has electronic technology using the I²C Bus Concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performed by using "On Screen Display Menu". (The **Serviceman Adjustment Mode**.)

Note: It is suggested that the technician reads all the way through and understand the following procedure for Entering/Exiting the **Serviceman Adjustment Mode**; then proceed with the instructions working with the Receiver. When becoming familiar with the procedure, the Flow Chart for Serviceman Mode may be used as a quick guide.

Quick Entry to Serviceman Mode:

At times when minor adjustments need to be done to the electronic controls, the method of Entering the serviceman Mode without removal of the cabinet back is as follows using the Remote Control:

1. Select SET-UP icon and select CABLE mode.
2. Select TIMER icon and set SLEEP time for 30 Min.
3. Press ACTION button 3 times to exit menus.
4. Tune to the Channel 124.
5. Adjust VOLUME to minimum (0).
6. Press the VOL ◀ button (decrease) on Receiver. Red "CHK" appears in upper corner.

To toggle between Aging and Serviceman modes:

While the "CHK" is displayed on the left top corner of the CRT, pressing the Action and the Volume Up buttons on the Receiver simultaneously will toggle between the modes. Red "CHK" for Serviceman and yellow "CHK" for Aging.

7. Press the Power Button on the Remote Control to select one of the Serviceman Adjustment Modes.
 - 1) **B**= Serviceman VCJ SUB-DATA ADJUSTMENT.
 - 2) **C**= Serviceman VCJ CUT-OFF ADJUSTMENT.
 - 3) **D**= Serviceman GEOMETRY ADJUSTMENT.
 - 4) **M**= Serviceman MTS ADJUSTMENTS.
 - 5) **P**= Serviceman PIP ADJUSTMENT.
 - 6) **S**= Serviceman S OPTION ADJUSTMENTS.
 - 7) **X** = Serviceman X OPTION ADJUSTMENT.
 - 8) **E** = Serviceman E OPTION ADJUSTMENTS
 - 9) "CHK" = Normal operation of CHANNEL ▲▼ and VOLUME ◀▶.

Note: Only the applicable settings for the Receiver serviced will be available (See a in Fig. 20).

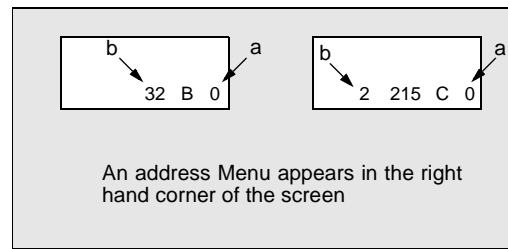


Figure 20. Serviceman Mode Menu Adjustments.

Exiting the Serviceman Mode:

Press the **Action** and the **Power** buttons on the **Receiver** simultaneously for at least 2 seconds.

THE RECEIVER EXITS SERVICEMAN MODE.

The Receiver momentarily shuts off; then comes back on tuned to channel 3 with a preset level of sound. Any programmed channels, channels caption data and some others user defined settings will be erased.

IMPORTANT NOTE:
Always Exit the Serviceman Mode Following Adjustments.

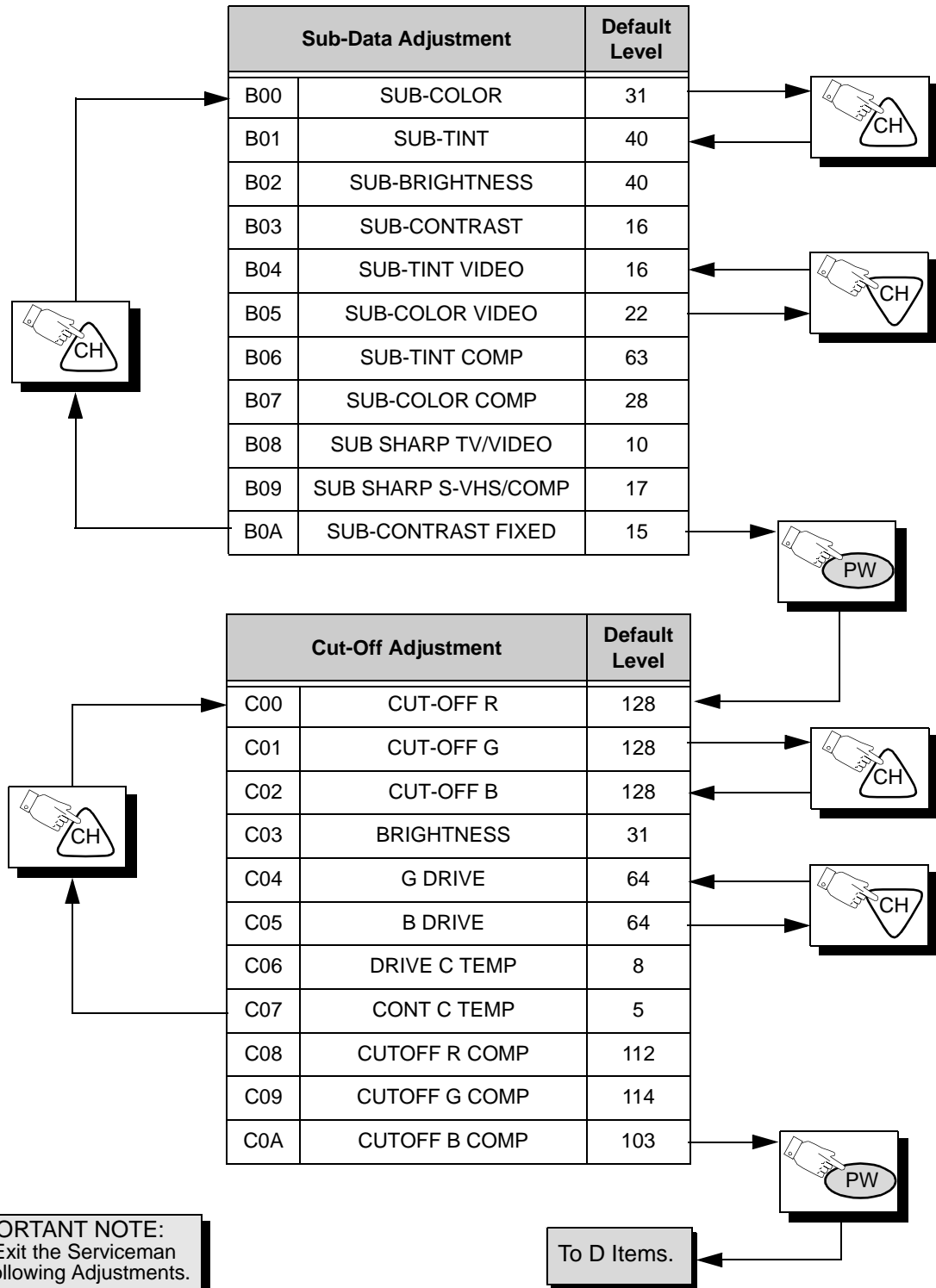
Press the **Power Button** on the **Remote Control** to select the Serviceman Adjustment .

For Adjustments:

1. Press **Channel Up/Down** on the **Remote Control** to select one of the available Service Adjustments (**a** in Fig. 20).

Note: Write Down the original value set (**b** in Fig. 20) for each address before modifying anything. It is easy to erroneously adjust the wrong item.

2. Press **Volume Up/Down** on the **Remote Control** to adjust the level of the selected Service Adjustment (**b** in Fig. 20).



IMPORTANT NOTE:
Always Exit the Serviceman Mode Following Adjustments.

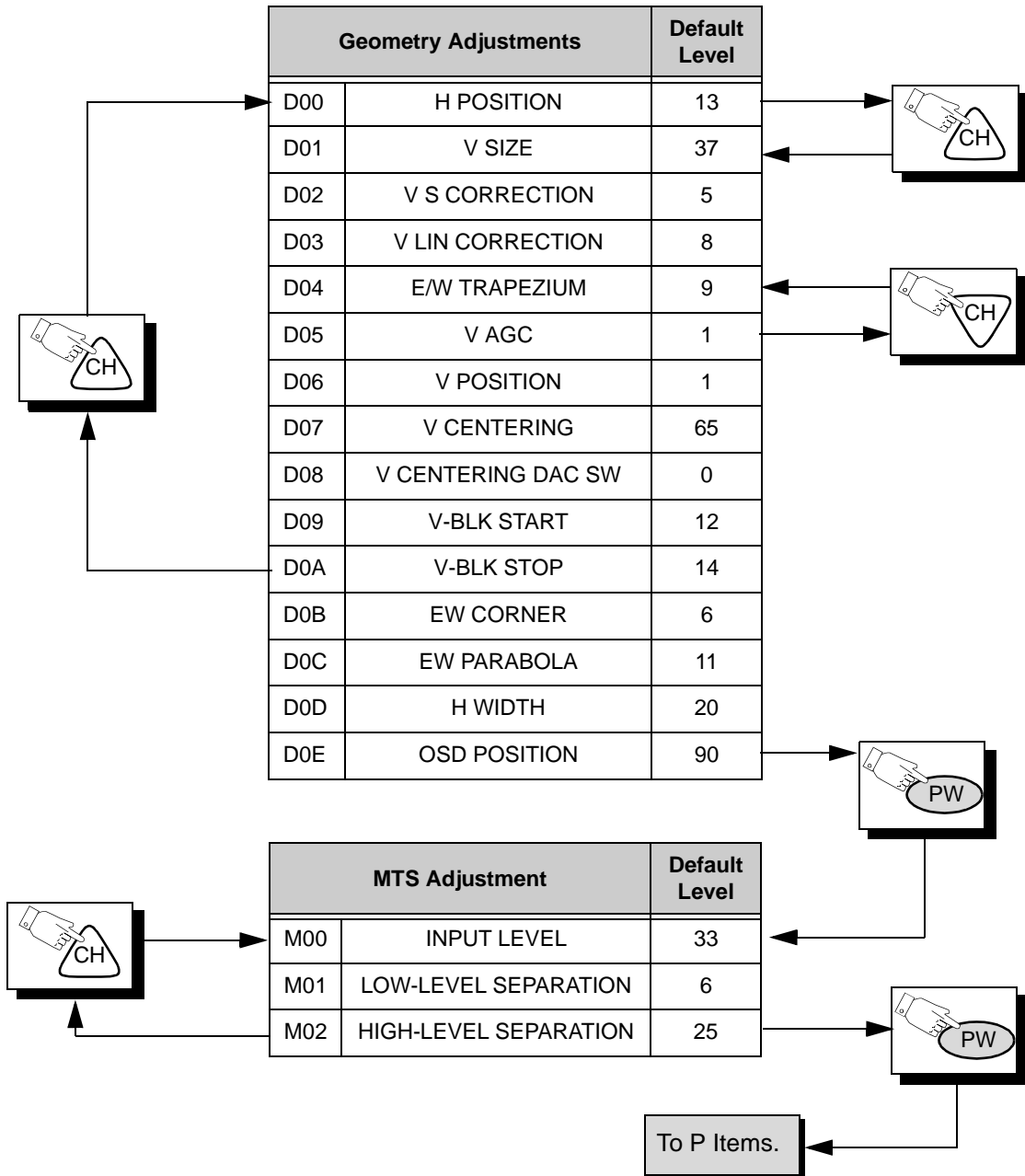
Press the Power Button on the Remote Control to select the Serviceman Adjustment

For Adjustments:

1. Press Channel Up/Down on the Remote Control to select one of the available Service Adjustments (a in Fig. 20).

Note: Write Down the original value set (b in Fig. 20) for each address before modifying anything. It is easy to erroneously adjust the wrong item.

2. Press Volume Up/Down on the Remote Control to adjust the level of the selected Service Adjustment (b in Fig. 20).



Note: Some adjustment modes may not be available in some formats.

IMPORTANT NOTE: Always Exit the Serviceman Mode Following Adjustments.

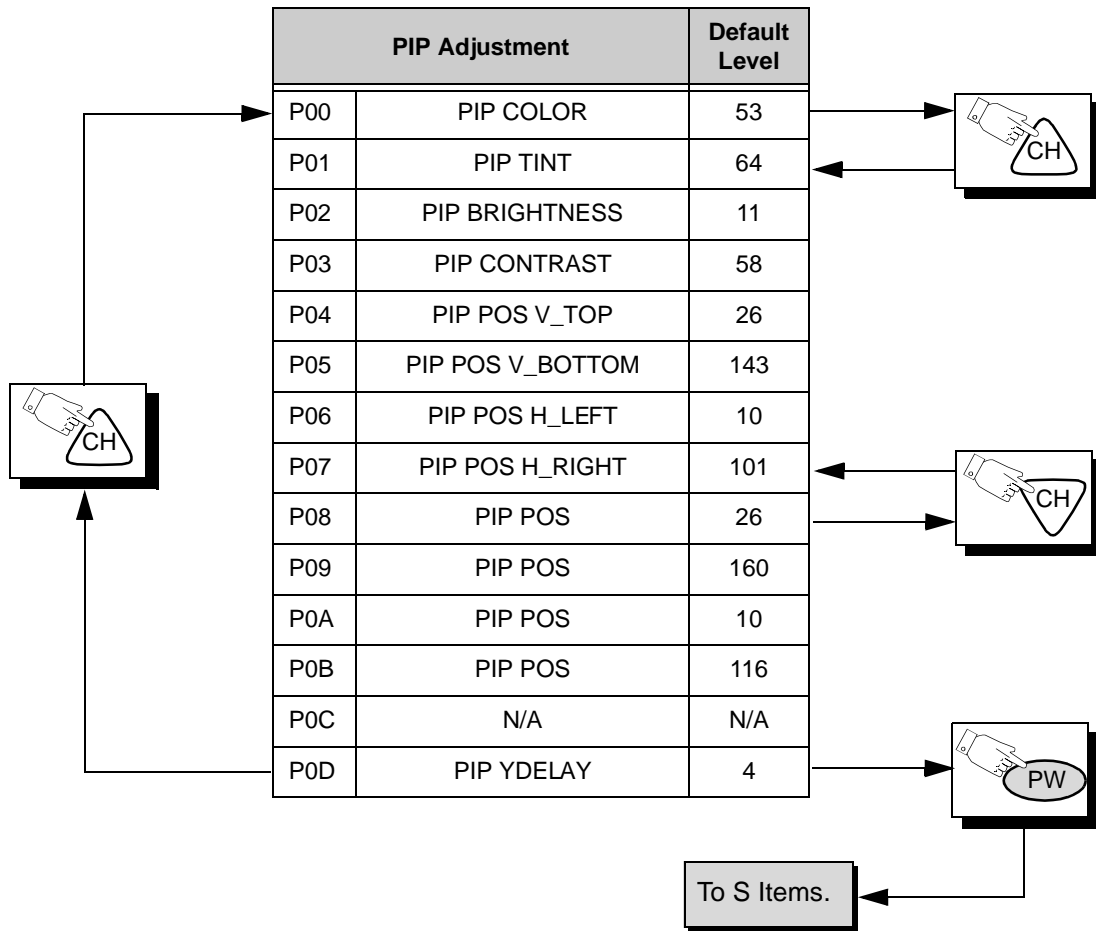
Press the Power Button on the Remote Control to select the Serviceman Adjustment

For Adjustments:

1. **Press Channel Up/Down** on the **Remote Control** to select one of the available Service Adjustments (**a** in Fig. 20).

Note: Write Down the original value set (**b** in Fig. 20) for each address before modifying anything. It is easy to erroneously adjust the wrong item.

2. **Press Volume Up/Down** on the **Remote Control** to adjust the level of the selected Service Adjustment (**b** in Fig. 20).



Note: Some adjustment modes may not be available in some formats.

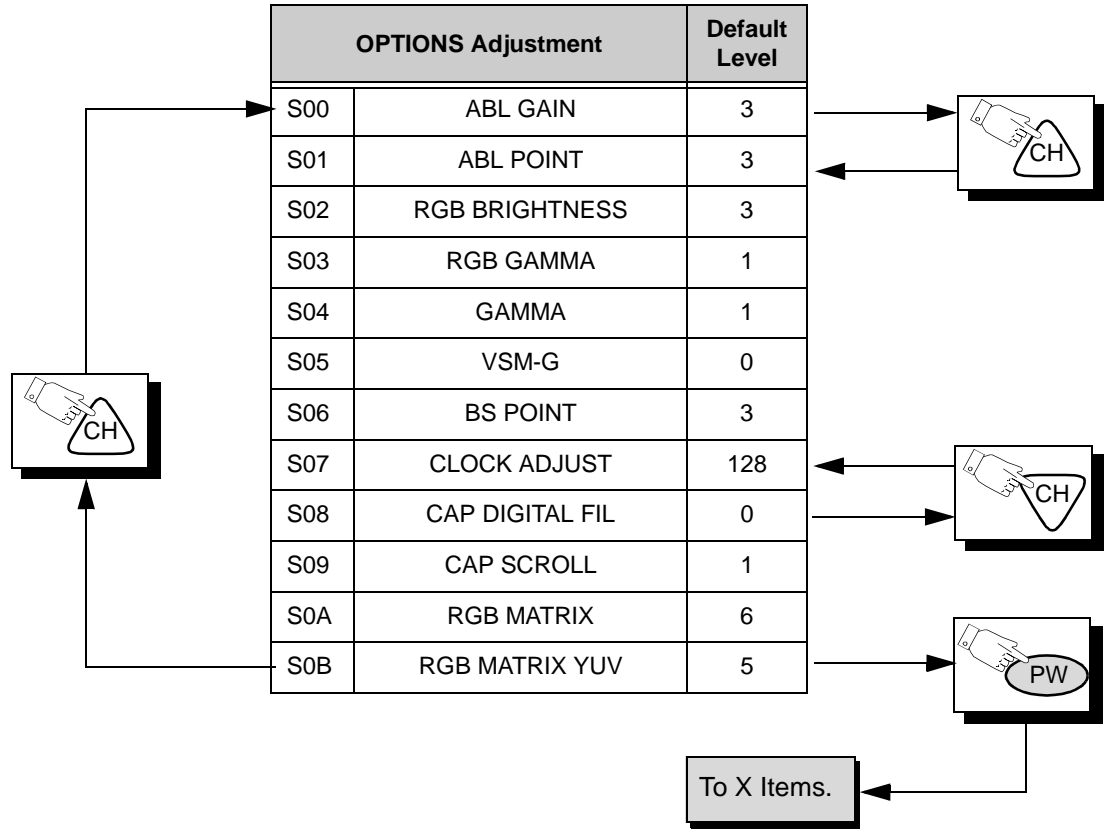
Press the Power Button on the Remote Control to select the Serviceman Adjustment

For Adjustments:

1. Press Channel Up/Down on the Remote Control to select one of the available Service Adjustments (a in Fig. 20).

Note: Write Down the original value set (b in Fig. 20) for each address before modifying anything. It is easy to erroneously adjust the wrong item.

2. Press Volume Up/Down on the Remote Control to adjust the level of the selected Service Adjustment (b in Fig. 20).



IMPORTANT NOTE:
Always Exit the Serviceman Mode Following Adjustments.

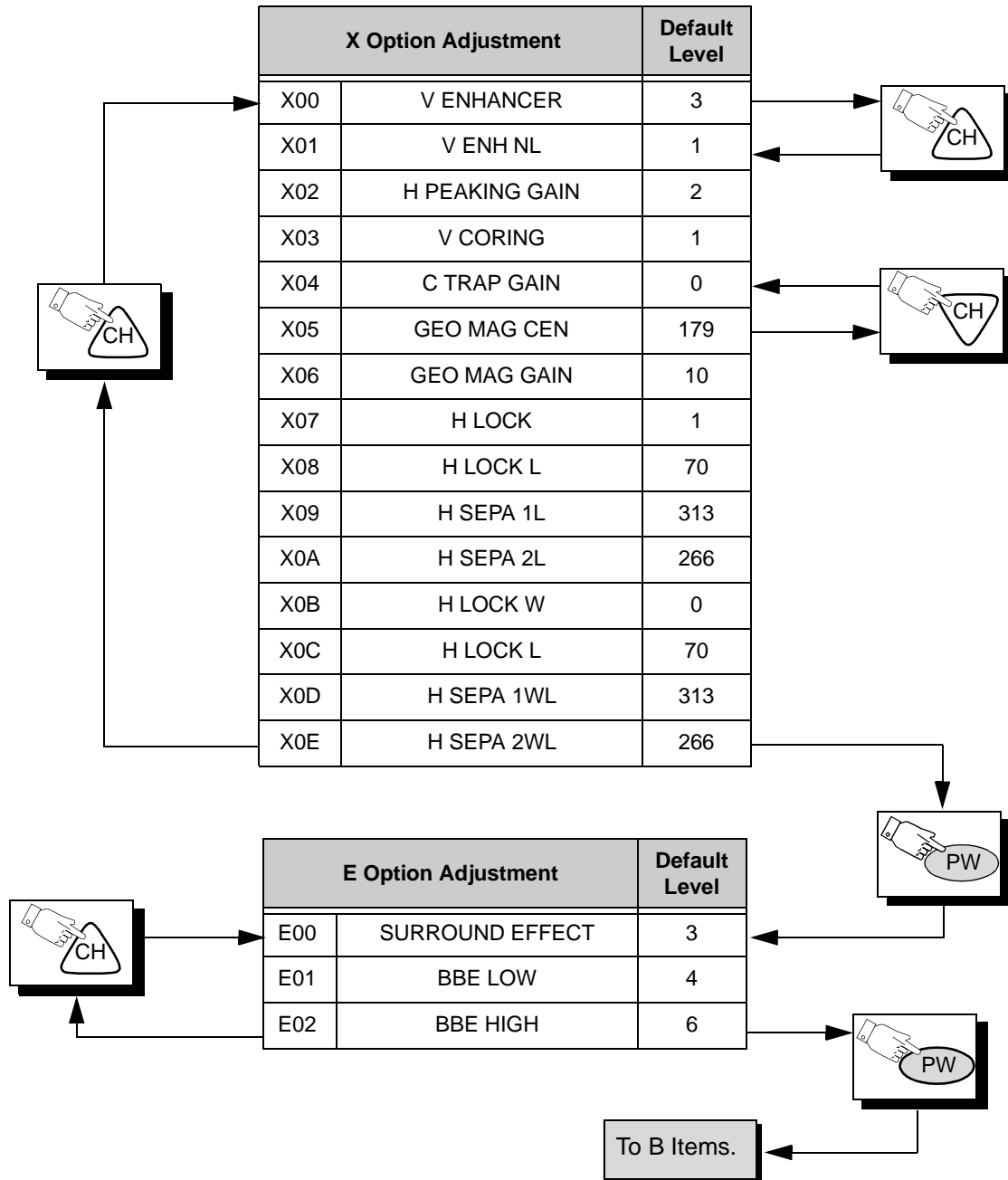
Press the Power Button on the Remote Control to select the Serviceman Adjustment

For Adjustments:

1. Press Channel Up/Down on the Remote Control to select one of the available Service Adjustments (a in Fig. 20).

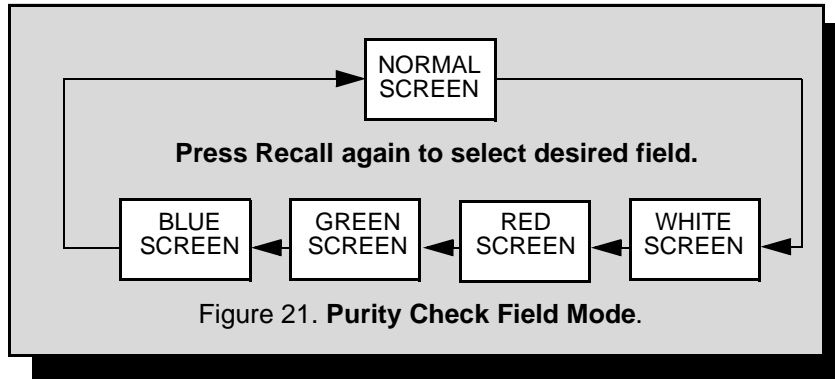
Note: Write Down the original value set (b in Fig. 20) for each address before modifying anything. It is easy to erroneously adjust the wrong item.

2. Press Volume Up/Down on the Remote Control to adjust the level of the selected Service Adjustment (b in Fig. 20).



To Check Purity:

Press the **Recall** Button on the **Remote Control** when in Serviceman Mode (red “CHK” is displayed) to enter the Purity Field Check Mode.



Helpful Hints

Entering Serviceman Mode (Back-Open Method)

1. While the Receiver is ON or Pugged and operating in Normal Mode, momentarily short test point **FA1** (TP8) to Cold Ground (\rightarrow) **FA2** (TP3) A-Board.

The Receiver enters the Aging Mode.

Yellow letters “CHK” appear in the upper left corner of the CRT.
(The Volume Up/Down will adjust rapidly).

2. Simultaneously press the **Action** and the **Volume Up** buttons on the **Receiver** Control Panel.

The Receiver enters the Serviceman Mode.

The letter in “CHK” turn red.
(The Volume Up/Down will adjust normally).
(All customer controls are set to nominal level).

IMPORTANT NOTE:
Always Exit the Serviceman
Mode Following Adjustments.

Instructional Flow Chart for Serviceman Mode

IMPORTANT NOTE:
Always Exit the Serviceman Mode Following Adjustments.

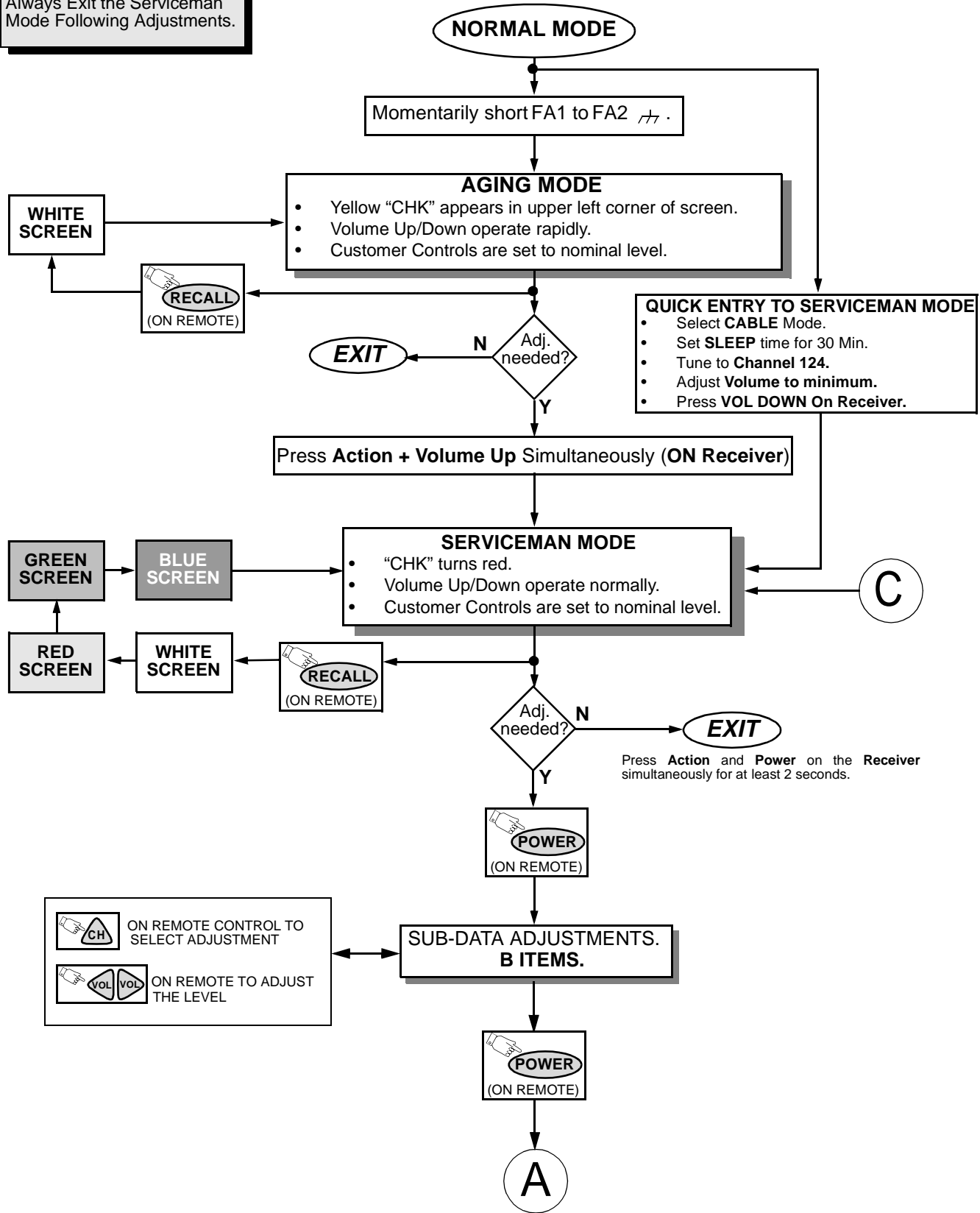


Figure 22. Flow Chart for Serviceman Mode.

Instructional Flow Chart for Serviceman Mode - Continued

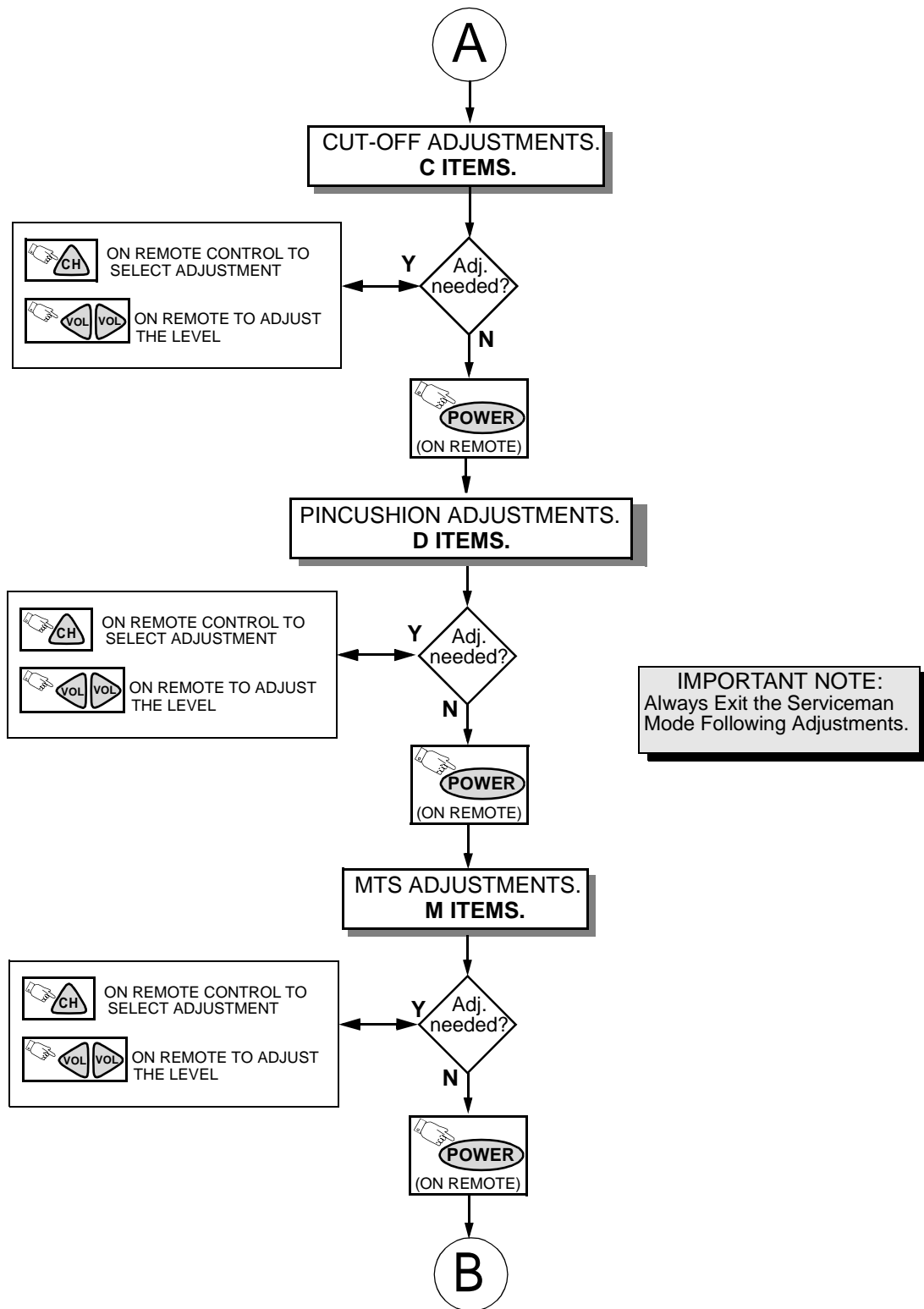
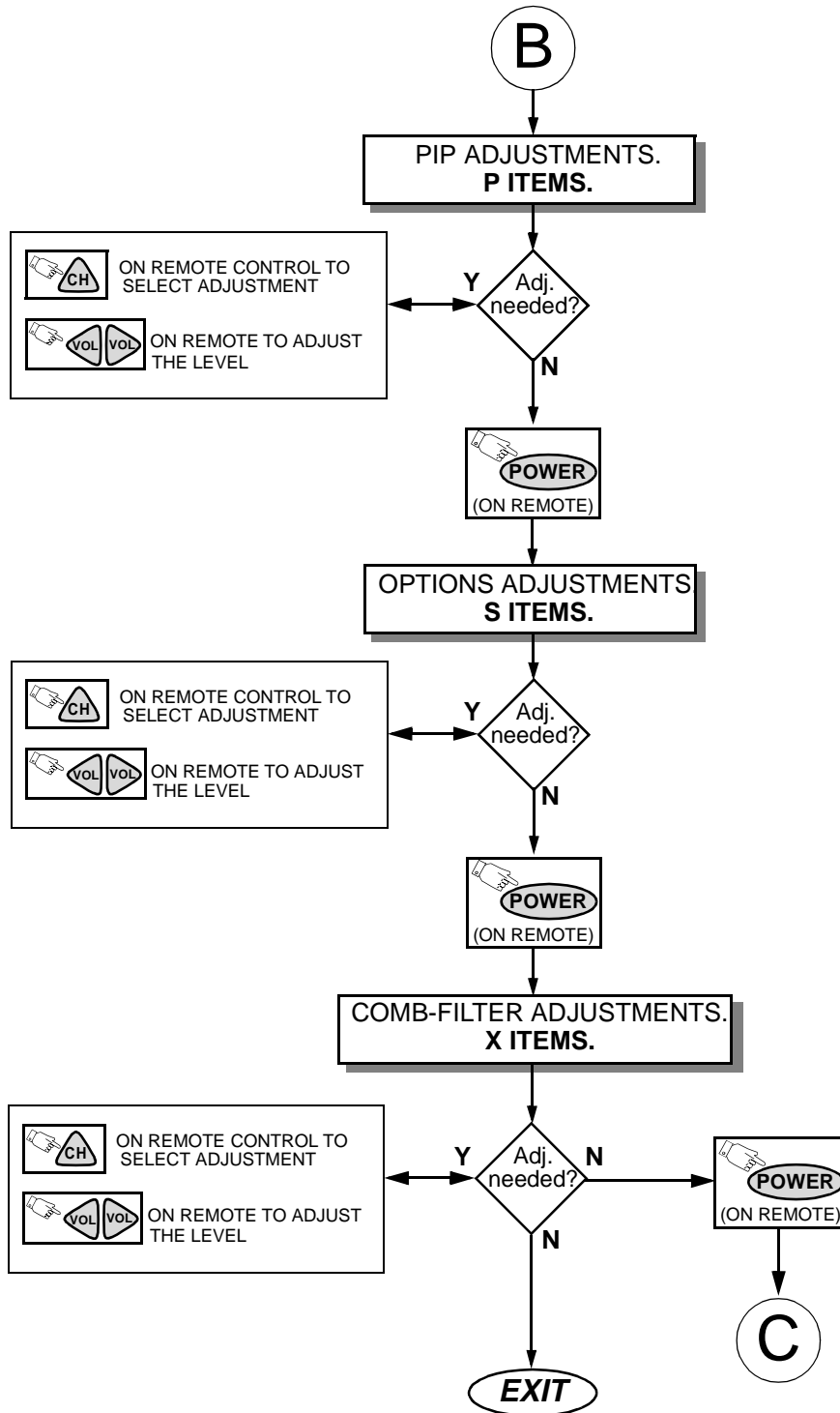


Figure 23. Flow Chart for Serviceman Mode (cont).

Instructional Flow Chart for Serviceman Mode - Continued



Press Action and Power on the Receiver simultaneously for at least 2 seconds.

Figure 24. Flow Chart for Serviceman Mode (cont).

Note: Some adjustments modes may not be available in some models depending on available options.

IMPORTANT NOTE:
Always Exit the Serviceman Mode Following Adjustments.

Service Adjustments (Electronic Controls)

Sub-Contrast Adjustment

Serviceman DAC Adjustment (B02, B03)

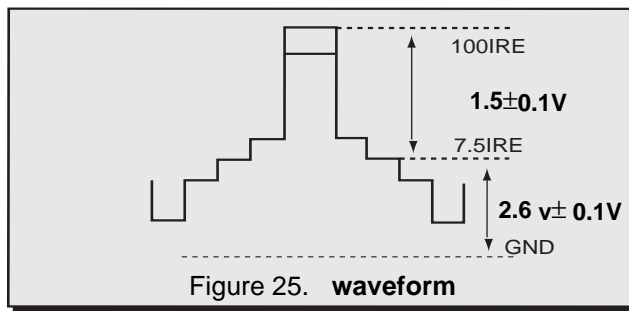
This adjustment is factory set. **Do not adjust** unless repairs are made to associated circuit, the CRT Board or when the CRT is replaced.

Preparation:

1. Apply a Black-White pattern.
2. Set the picture settings to normal and color to minimum.
3. RGB GAMMA (S03) DAC from 1 to 0
4. Connect the oscilloscope to TP47R.
5. Connect a jumper from TPD2 to cold ground (↯).

Procedure:

1. In the Serviceman Mode, select DAC B2 for Sub-Brightness to obtain $2.6 \pm 0.1V$ between 7.5IRE and GND level at TP47R (See Fig. 25)
2. In the Serviceman Mode, select DAC B03 for Sub-Contrast to obtain $1.5 \pm 0.1V$ between 7.5IRE and 100IRE level at TP47G
3. Remove short jumper and set RGB GAMMA (S03) DAC to 1.
4. Set the picture settings to normal.



Sub-Brightness (B02)

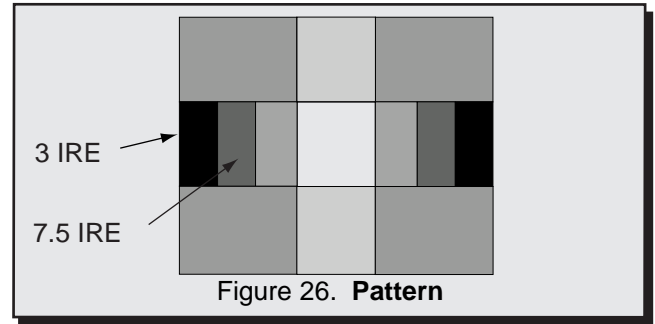
Adjustment of this control is important for setting proper operation of customer brightness and picture controls. **Do not adjust** the SCREEN VR after the Sub-Brightness is set.

Preparation:

1. Normalize picture settings.
2. Switch COLOR TEMPERATURE to NORMAL.

Procedure:

1. Apply a black white cross pattern.
2. In the Serviceman Mode for making electronic adjustments, select the DAC adjustment (B02) and adjust data so that 7.5IRE part is the same light output as the 3IRE part (See Fig. 26).



Tint/Color Adjustment

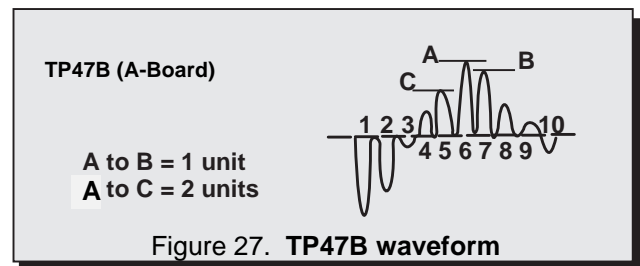
Serviceman DAC Adjustment (B01) (B00)

Preparation:

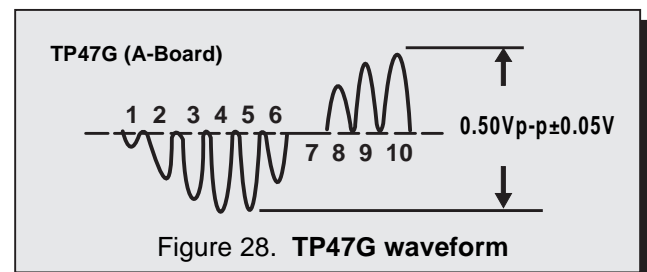
1. Apply a rainbow color bar signal.
2. Preset the following controls:
 - Brightness Min.
 - Color Center.
 - Tint Center.
 - Picture Max.
 - Sharpness Min.
3. Set RGB GAMMA (S03) DAC to 0
4. Connect the oscilloscope to TP47B (A-Board).
5. Connect a jumper from TPD2 to GND (↯).

Procedure:

1. In the Serviceman Mode for making electronic adjustments, select (B01) DAC Sub-Tint Adjustment. Adjust until the waveform measured is as the one shown in Fig. 27.



2. Connect the oscilloscope to TP47G or TP35 (L-Board) and cold GND.
3. Select DAC Sub-Color Adjustment (B00) and adjust for peak to peak amplitude to be $0.50V_{p-p} \pm 0.05V$ as shown in Fig. 28.

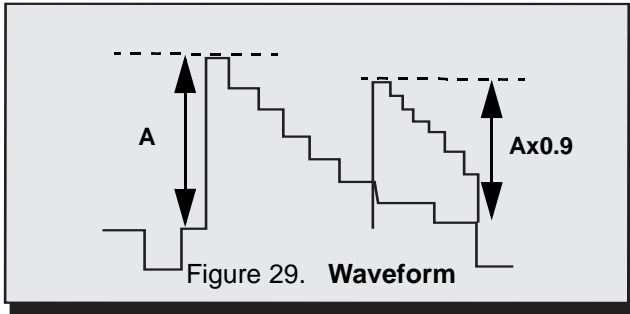


4. Remove short jumper and set RGB GAMMA (S03) DAC to 1.

PIP Sub-Contrast Adjustment (P03)

Procedure:

1. Connect the oscilloscope to TPY1.
2. Apply a color bar signal in main and PIP (PIP on).
3. In the Serviceman Mode for making electronic adjustments, select the DAC adjustment (P03) for PIP Sub-Subcontrast so that child (PIP) level is 90% of parent (MAIN) signal (See Fig. 29)



Color Temperature Adjustment (B/W Tracking)

Serviceman DAC Adjust. (C00) (C01) (C02) (C04) (C05) Minor Touch-Up Method

OBSERVE low and high brightness areas of a B/W picture for proper tracking. Adjust only as required for “good gray scale and warm highlights”.

1. LOW LIGHT areas – In Serviceman Mode for making electronic adjustments, select Cutoff (C00) RED, (C01) GRN, (C02) BLU and adjust the picture for gray.
2. HIGH LIGHT areas – In Serviceman Mode for making electronic adjustments, select Drive (C04) GRN, (C05) BLU and adjust the picture for warm whites.

Complete Adjustment

Preparation:

1. Turn the Receiver “ON” and allow 10 minutes warm up at high brightness.
2. Apply a color bar signal with color “OFF”.
3. Turn the SCREEN control (part of FBT T551) fully counterclockwise.

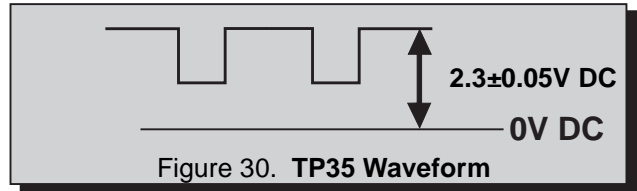
Procedure:

Preset the following Serviceman DACs for best results:

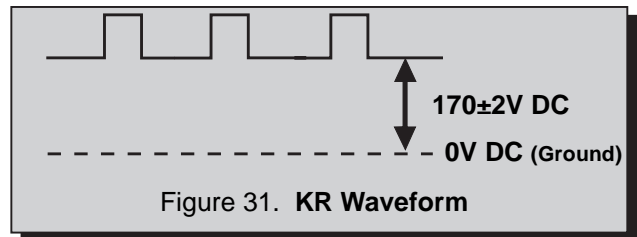
- C0..... 128
- C1..... 128
- C2..... 128
- C4..... 64
- C5..... 64

1. Connect the oscilloscope to TP37 (L-Board).
2. In Serviceman Mode for making electronic adjustment, select the Sub-Bright DAC (B02).
3. Press the R-Tune key on the remote.

4. Observe the oscilloscope waveform at Horizontal rate and adjust the Serviceman Mode Sub-Bright DAC (B02) level until a scanning period of **2.3±0.05V** above DC ground is measured, as indicated in Fig. 30.



5. Press the R-Tune key on the remote.
6. Connect the scope to RED Cathode (KR) on the CRT-Board.
7. In the Serviceman Mode for making electronic adjustments, select the RED CUTOFF DAC (C00).
8. Press the R-Tune key on the remote.
9. View scope trace at Horizontal rate and adjust the Serviceman Mode DAC (C00) level until a scanning period of **170±2V** above DC ground is measured, as indicated in Fig. 31.
10. Press the R-Tune key on the remote.
11. Write the same C00 data to C01 and C02.
12. Press the R-Tune key on the remote.
13. Turn the Screen Control (part of FBT) slowly clockwise until a slightly color horizontal line appears.
14. Adjust DAC C01 and C02 until the horizontal line becomes white.
15. Press the R-Tune key on the Remote



16. In the Serviceman Mode for making electronic adjustments select the DAC DRIVE adjustments (C04) GRN, (C05) BLUE and adjust for warm white in a white color bar pattern.
17. Apply a monoscope pattern and check for a good picture.
18. EXIT the Serviceman Mode.

Service Adjustments (Electronic Controls, cont.)

Horizontal Centering (D00)

This Adjustment helps to center the picture horizontally

Preparation:

Connect a monoscope pattern signal.

Procedure:

1. In the Serviceman Mode for making electronic adjustments. Select the Horizontal Centering Adjustment DAC (D00) and adjust until the center of the monoscope pattern is centered on CRT.
2. EXIT the Serviceman Adjustment Mode.

E-W PCC Adjustment (D0C)

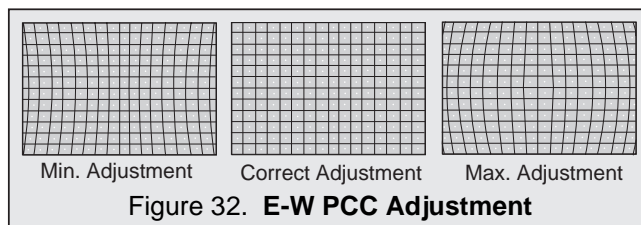
This adjustmet helps to correct left and right sides of picture.

Preparation:

1. Apply a Crosshatch pattern
2. Normalize the Picture Icon Video adjustments.

Procedure:

1. Adjust "D0C" DATA so that the 1st line and 3rd line make a good balance (See Fig. 32).



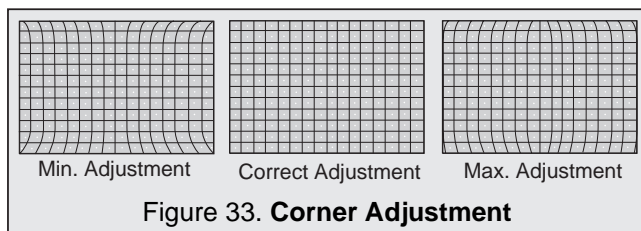
Corner PCC Adjustment (D0B)

Preparation:

1. Apply a Crosshatch pattern
2. Normalize the Picture Icon Video adjustments.

Procedure:

1. To adjust upper and lower linearity.
2. Adjust "D0B" to straighten upper and lower lines (See Fig. 33)



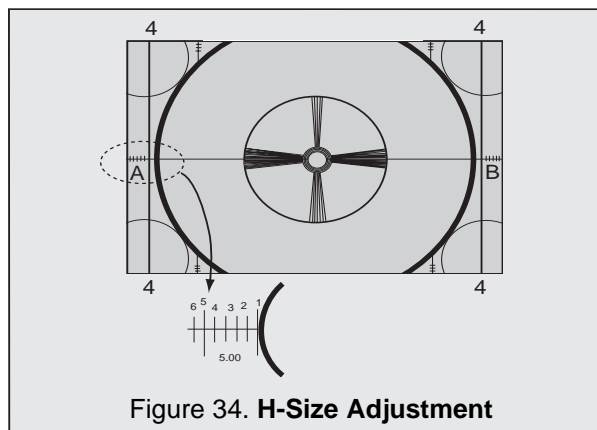
H-Size Adjustment (D0D)

Preparation:

1. Apply a Monoscope pattern

Procedure:

1. Adjust "D0D" DATA so that width "A" and "B" becomes 5.00 ± 0.40 (when using factory pattern) (See Fig. 34).



Note: When using a different pattern, correlate with factory pattern.

V-Size and V-Position Adjustment (D01 & D06)

Preparation:

1. Apply a Crosshatch pattern.

Procedure:

1. Apply a monoscope pattern.
2. Enter Serviceman Mode
3. Adjust (D06) to center the picture to the marks on the CRT.
4. Adjust (D01) to make circle of monoscope pattern a round circle.

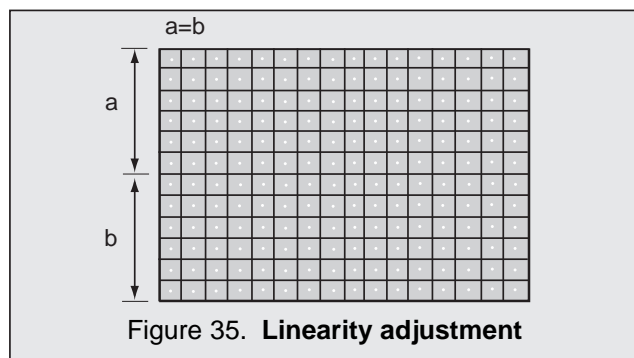
V-Linearity Adjustment (D03)

Preparation:

1. Apply a Crosshatch pattern

Procedure:

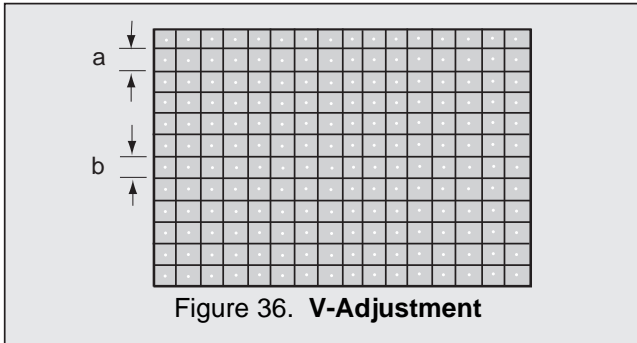
1. Enter Serviceman Mode, Adjust linearity data "D03" so that interval of "a" is same as "b" ($a=b$). (See Fig. 35)



V-Correction Adjustment (D02)

Preparation:

1. Apply a Crosshatch pattern.
2. Adjust (D01) so that V-Size is regular size.
3. If $b-a < -1.5\text{mm}$ (in top and bottom), increase (D02) by one step and adjust (D01) so that V-Size is regular; repeat steps until $b-a \leq 1.5\text{mm}$
4. If $b-a > 1.5\text{mm}$ (in top and bottom), decrease (D02) by one step and adjust (D01) so that V-Size is regular; repeat steps until $b-a \leq 1.5\text{mm}$.



MTS Circuit Adjustments

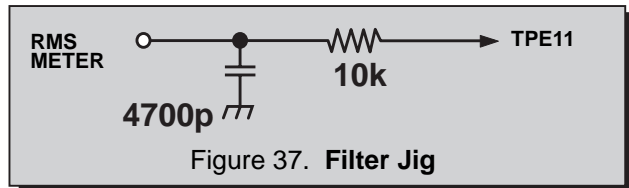
The MTS Circuit Adjustments require two steps:

1. Input Level Adjustment.
2. Stereo Separation Adjustment.

Input Level Adjustment (M00)

Preparation:

1. Connect an RMS meter with filter jig as shown in Fig. 37.



2. Connect an RF signal generator to the RF antenna input.

Procedure:

1. Apply the following signal from the RF signal generator:
Video: 100 IRE flat field, 30% modulation.
Audio: 300Hz, 100% modulation, monaural ($70 \pm 5\text{dB}$, 75Ω OPEN, P/S 10dB).
2. Adjust the MTS Input Level Adjustment (M0) until the voltage measured is $106 \pm 6.0\text{mV rms}$.

Stereo Separation Adjustment (M01 & M02)

Preparation:

1. Connect an RF signal generator to the RF antenna input.
2. Connect oscilloscope to TPE10.

Procedure:

1. Select Stereo Mode in Audio menu
2. Apply the following signal from the RF signal generator:
Video: 100 IRE flat field, 30% modulation.
Audio: 300Hz, 100% modulation, stereo (left only) ($70 \pm 5\text{dB}$, 75Ω OPEN, P/S 10dB).
3. Adjust the MTS Low-Level Separation Adjustment (M01) until the amplitude displayed on the scope is minimum.
4. Apply the following signal from the RF signal generator:
Video: 100 IRE flat field, 30% modulation.
Audio: 3KHz, 100% modulation, stereo (left only) ($70 \pm 5\text{dB}$, 75Ω OPEN, P/S 10dB).
5. Adjust the MTS High-Level Separation Adjustment (M02) until the amplitude displayed on the scope is minimum.
6. Repeat above steps 2 through 5 until the amplitude is minimum for both signals.

Service Adjustments (Electronic Controls, cont.)

Clock Adjustment (S07)

Preparation:

Connect the frequency counter to TPS1 (IC001 pin-13) and cold ground (\nearrow).

Note: *Frequency Counter probe capacitance should be 8pF or less.*

Procedure:

1. Measure TPS1 (IC001 pin 13) for the frequency of the waveform and record the reading.

Note: *Pin 13 measurement must have at least four digits of resolution following the decimal point. Example: 000.0000*

2. Place the Receiver into Serviceman Mode for making electronic adjustment, select the Clock Adjustment DAC (S07).

3. Calculate and set S07 based on the following formula:

$$S07 = 128 + \{873.90625 - pin13[Hz]\}968$$

Figure 38. **Set Turned ON**

$$S07 = 128 + \{218.47656 - pin13[Hz]\}3873$$

Figure 39. **Set Turned OFF**

Note: *Pin 13 measurement will not change regardless of the value stored in S07.*

Service Adjustments (Mechanical Controls)

Focus (part of T551)

This adjustment is to make the picture clear

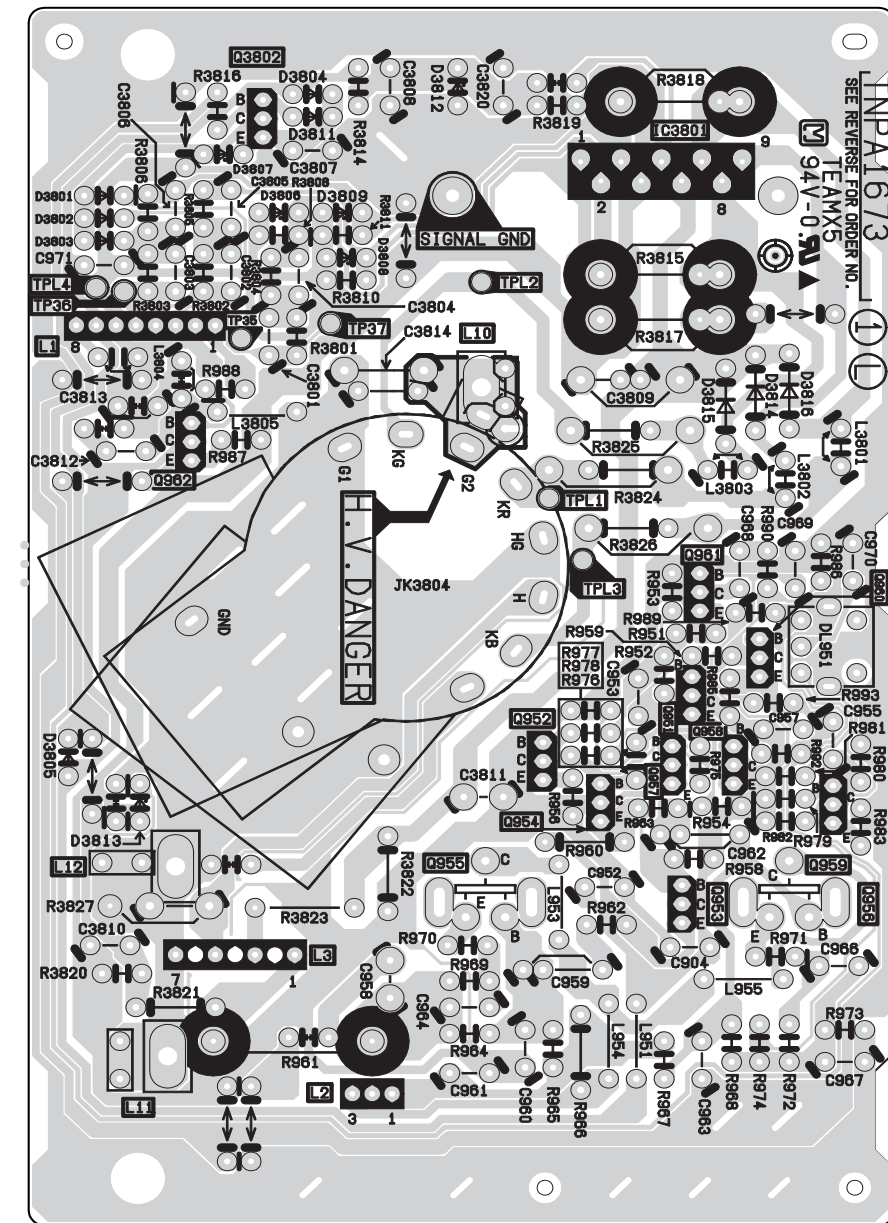
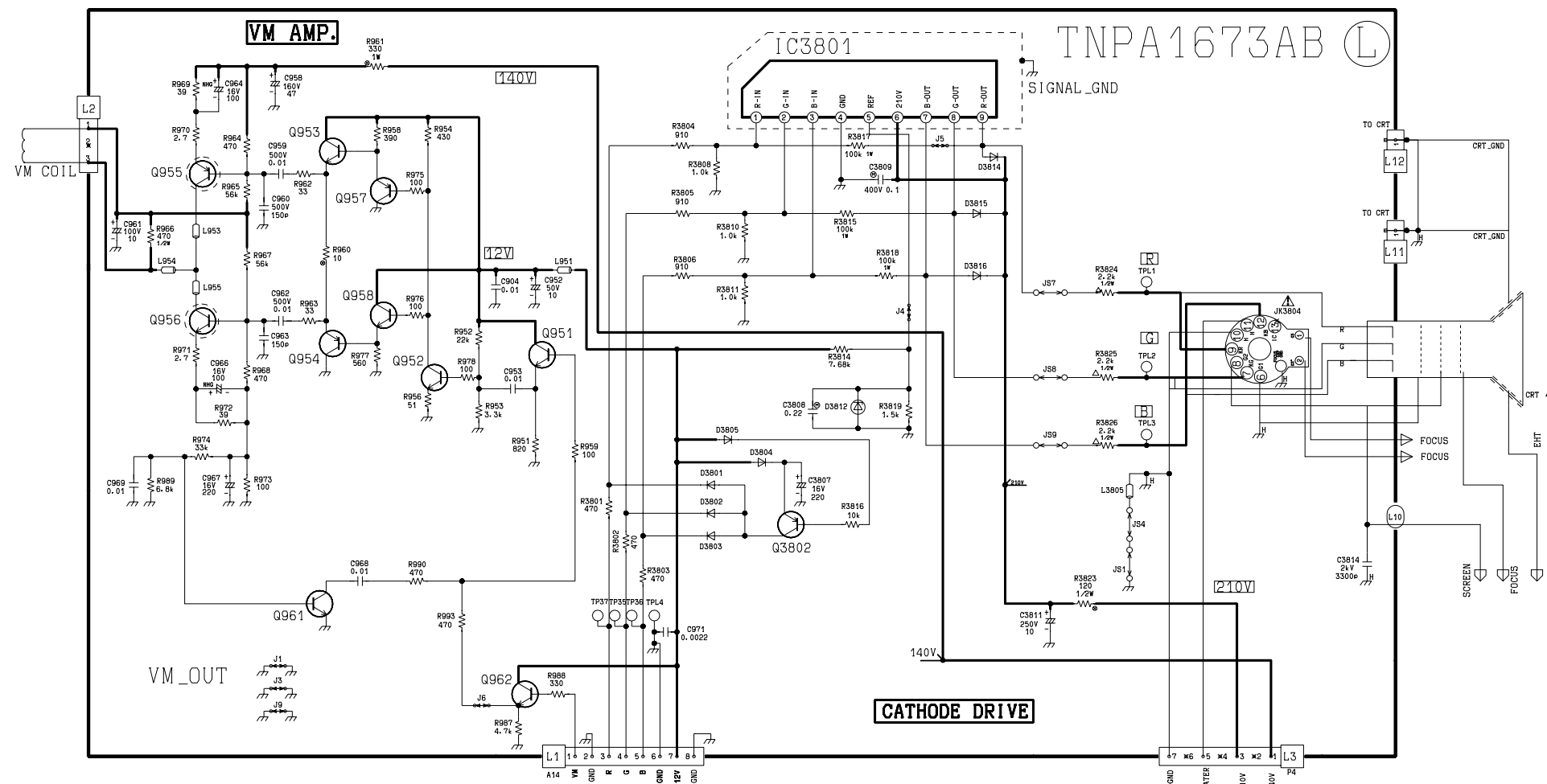
Preparation:

Connect a Signal generator and select a dot pattern.

Procedure:

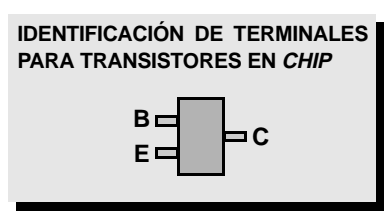
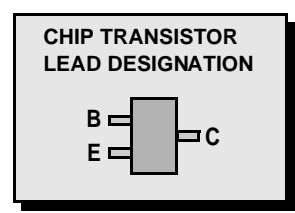
Adjust the FOCUS controls to obtain the sharpest and clearest dot pattern.

- a. Adjust VF1 to minimize width on vertical lines on corners.
- b. Adjust VF2 to minimize width on horizontal lines on corners.



L-Board Voltages - Voltajes Placa-L

	Q3802	Q951	Q952	Q953	IC3801			
B	0.00	5.40	1.40	6.60	1	1.90		
C	0.00	11.90	6.00	11.90	2	1.90		
E	0.00	4.80	0.70	4.60	3	1.90		
					4	0.00		
					5	1.90		
					6	217.30		
					7	137.40		
					8	143.40		
					9	140.00		
	Q954	Q955	Q956	Q957				
B	5.30	137.70	0.90	0.00				
C	0.00	70.20	70.20	0.00				
E	5.90	138.2	0.40	6.60				
	Q958	Q961	Q962					
B	5.90	0.10	6.10					
C	11.90	0.10	11.90					
E	5.30	0.00	5.40					



Schematic Notes

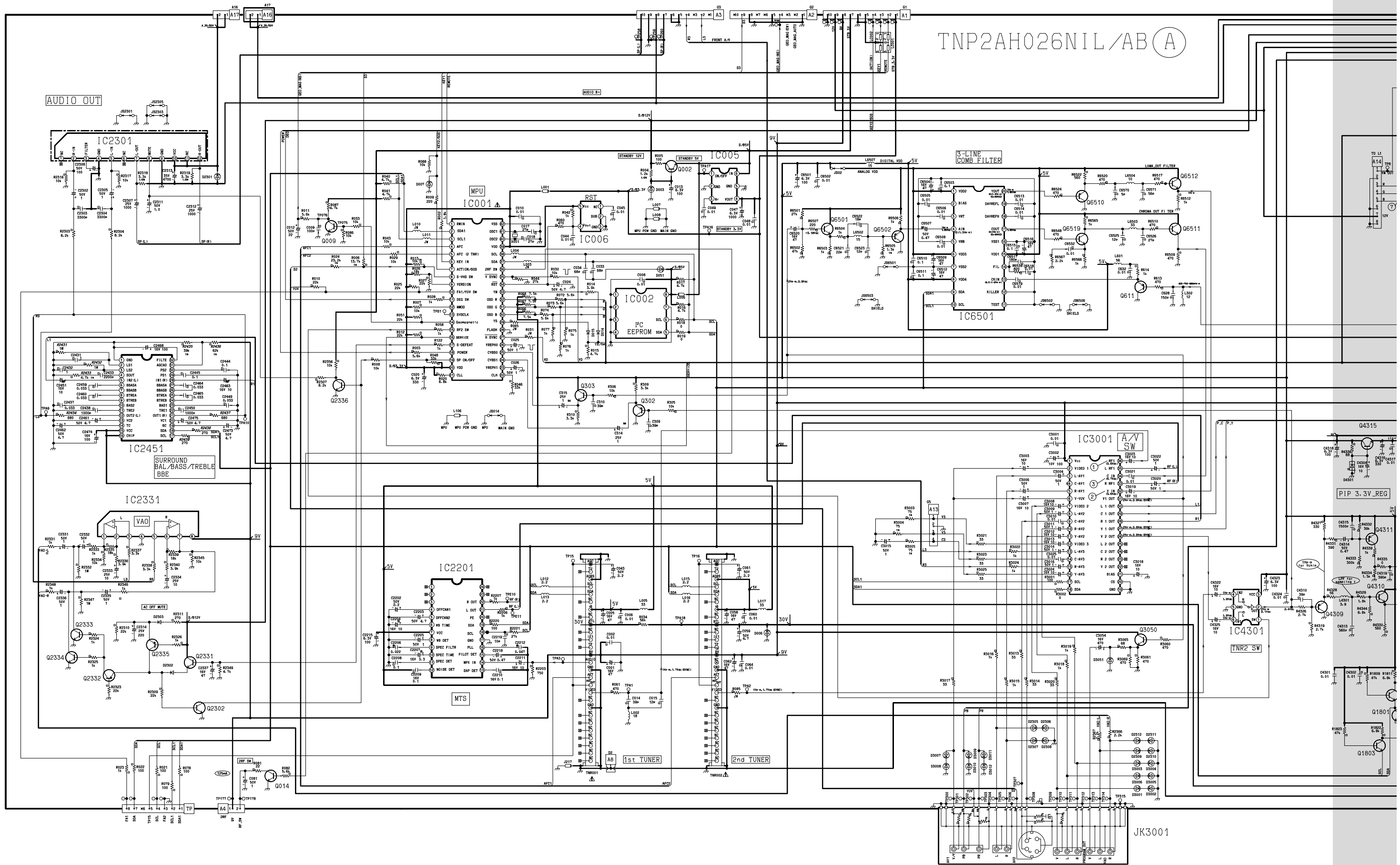
- Resistors are carbon 1/4W unless noted otherwise.
- Capacitors are ceramic 50V unless noted otherwise.
- Coil value notes is inductance in μ H.
- Test point indicated by \uparrow Test point but no pin \downarrow .
- Components indicated with \triangle are critical parts and replacement should be made with manufacture specified replacement parts only.
- (BOLD LINE)** indicates the route of B+ supply.
- The schematic diagrams are current at the time of printing and are subject to change without notice.
- Ground symbol \downarrow indicates **HOT GROUND CONNECTION**; \uparrow indicates COLD GROUND.

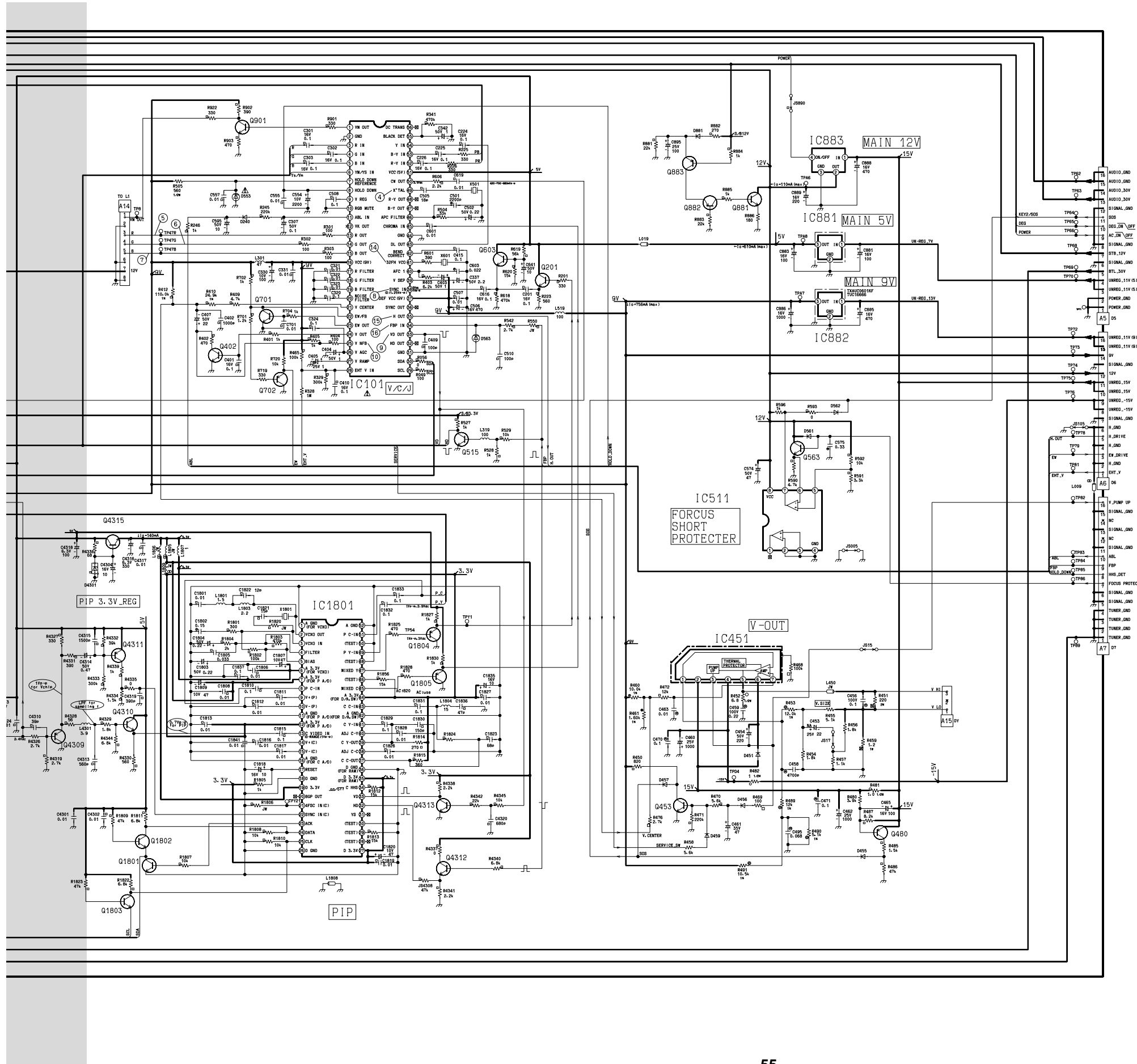
NOTE: All other component symbols are used for engineering design purposes.

Notas de los Diagramas

- Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
- Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
- El valor indicado de las Bobinas es la inductancia expresada en μ H.
- Los puntos de prueba en la terminal de algún componente son indicados por \uparrow Los puntos de prueba fuera de los componentes se indican con \downarrow .
- Los componentes señalados con el símbolo \triangle son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
- (LINEA GRUESA)** indica las líneas de alimentación de los Voltajes B+.
- Los diagramas eléctricos están sujetos a cambio sin previo aviso.
- El símbolo \downarrow indica que es una conexión a Tierra Caliente y el símbolo \uparrow indica conexión a Tierra Fría.

NOTA: Los demas símbolos de componentes incluidos son usados con fines de diseño.





IMPORTANT SAFETY NOTICE
 THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A Δ IN THE SCHEMATIC.

Medición de Voltajes

- Medición de voltaje:
 - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
 - Los ajustes de los Menus Picture y Audio se normalizan. En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE. El nivel de Volumen se minimiza. De los modos TV y Video, seleccionar el modo TV. Seleccionar modo Estereo del Audio.
- Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
- Las fuentes de voltajes son nominales.
- El símbolo Δ indica el tipo de tierra que se utiliza en la conexión del medidor.

PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

Voltage Measurements

- Voltage measurement:
 - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
 - All Picture and Audio adjustments are set to Normalize. TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode. Volume - Min. TV/Video SW - TV position. Audio Mode - Stereo.
- Voltage readings are nominal and may vary $\pm 10\%$ on active devices. Some voltage reading will vary with signal strength and picture content.
- Supply voltages are nominal.
- Ground symbol Δ indicates ground lead connection of meter. Incorrect ground connection will result in erroneous readings.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

NOTA DE SEGURIDAD
 LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARTES REEMPLAZADAS DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO Δ .

IC001 table with 2 columns of pin numbers and voltage values.

IC002 table with 8 rows of pin numbers and voltage values.

IC006 table with 5 rows of pin numbers and voltage values.

IC005 table with 6 rows of pin numbers and voltage values.

IC101 table with 2 columns of pin numbers and voltage values.

IC1801 table with 2 columns of pin numbers and voltage values.

IC2201 table with 24 rows of pin numbers and voltage values.

IC2301 table with 12 rows of pin numbers and voltage values.

IC2331 table with 8 rows of pin numbers and voltage values.

IC2451 table with 16 rows of pin numbers and voltage values.

IC3001 table with 18 rows of pin numbers and voltage values.

IC4301 table with 6 rows of pin numbers and voltage values.

IC511 table with 8 rows of pin numbers and voltage values.

IC451 table with 7 rows of pin numbers and voltage values.

IC6501 table with 20 rows of pin numbers and voltage values.

IC881 table with 3 rows of pin numbers and voltage values.

IC882 table with 3 rows of pin numbers and voltage values.

IC883 table with 4 rows of pin numbers and voltage values.

Q002, Q009, Q014, Q1801, Q1802 table with 5 columns of diode part numbers and voltage values.

Q1803, Q1804, Q1805, Q201, Q2331 table with 5 columns of diode part numbers and voltage values.

Q2332, Q2333, Q2334, Q2335, Q2336 table with 5 columns of diode part numbers and voltage values.

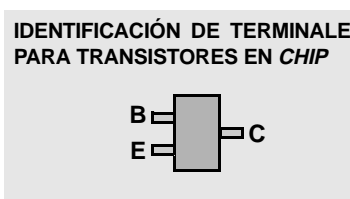
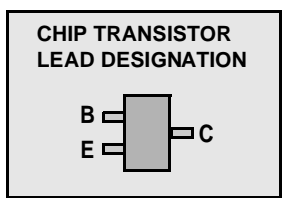
Q303, Q3050, Q402, Q4309, Q4310 table with 5 columns of diode part numbers and voltage values.

Q4311, Q4312, Q4313, Q4315, Q453 table with 5 columns of diode part numbers and voltage values.

Q480, Q515, Q563, Q6501, Q6502 table with 5 columns of diode part numbers and voltage values.

Q6510, Q6511, Q6512, Q6519, Q701 table with 5 columns of diode part numbers and voltage values.

Q702, Q901 table with 2 columns of diode part numbers and voltage values.

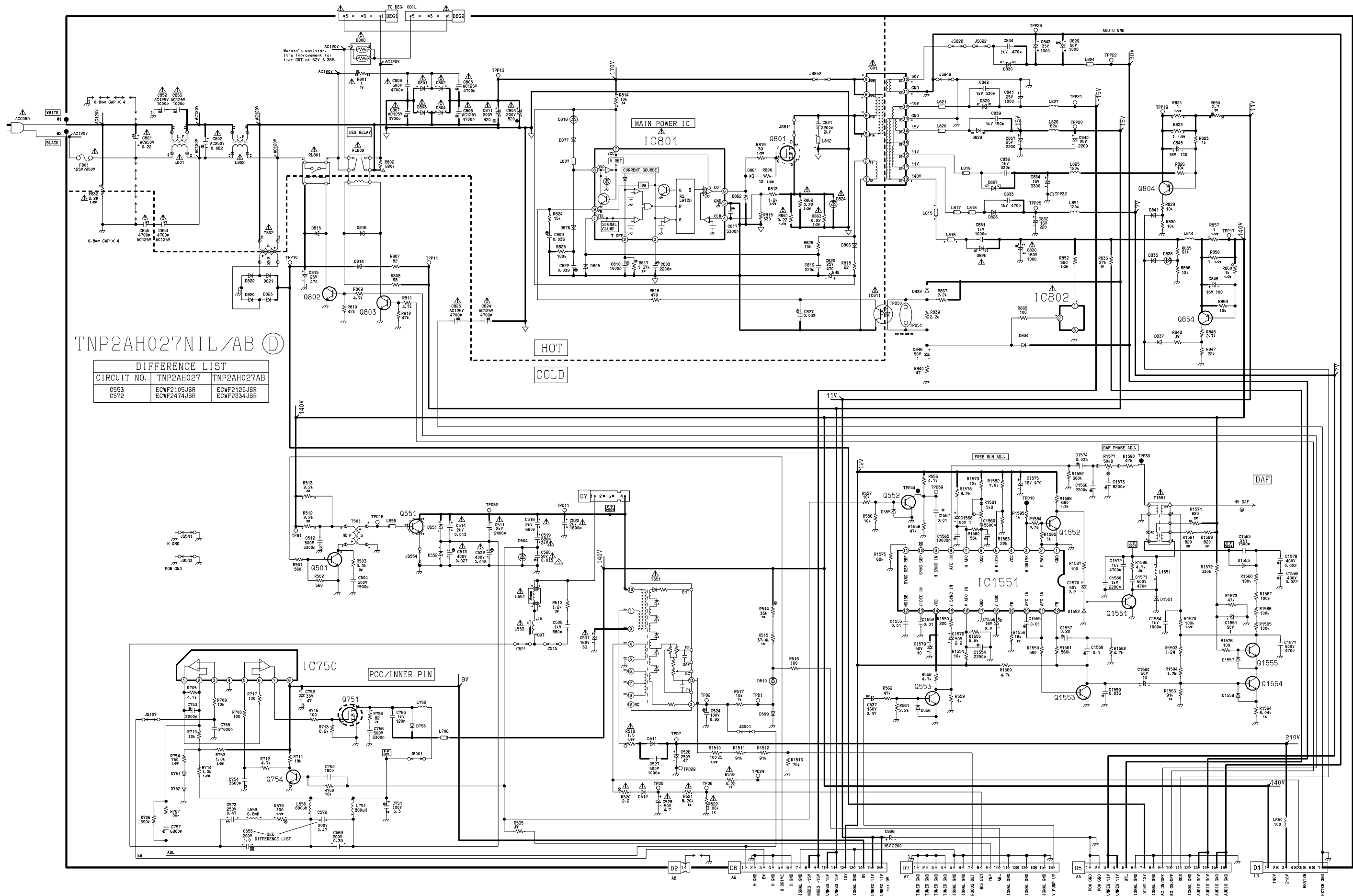


Note: Obtained voltages with a digital multimeter.

Nota: La medición de los voltajes se hizo con un Voltímetro Digital .

Voltage Measurements section containing instructions for AC input, ground connections, and caution about ground lead connection.

Medición de Voltajes section containing instructions for measuring input voltage, antenna connection, and menu settings.

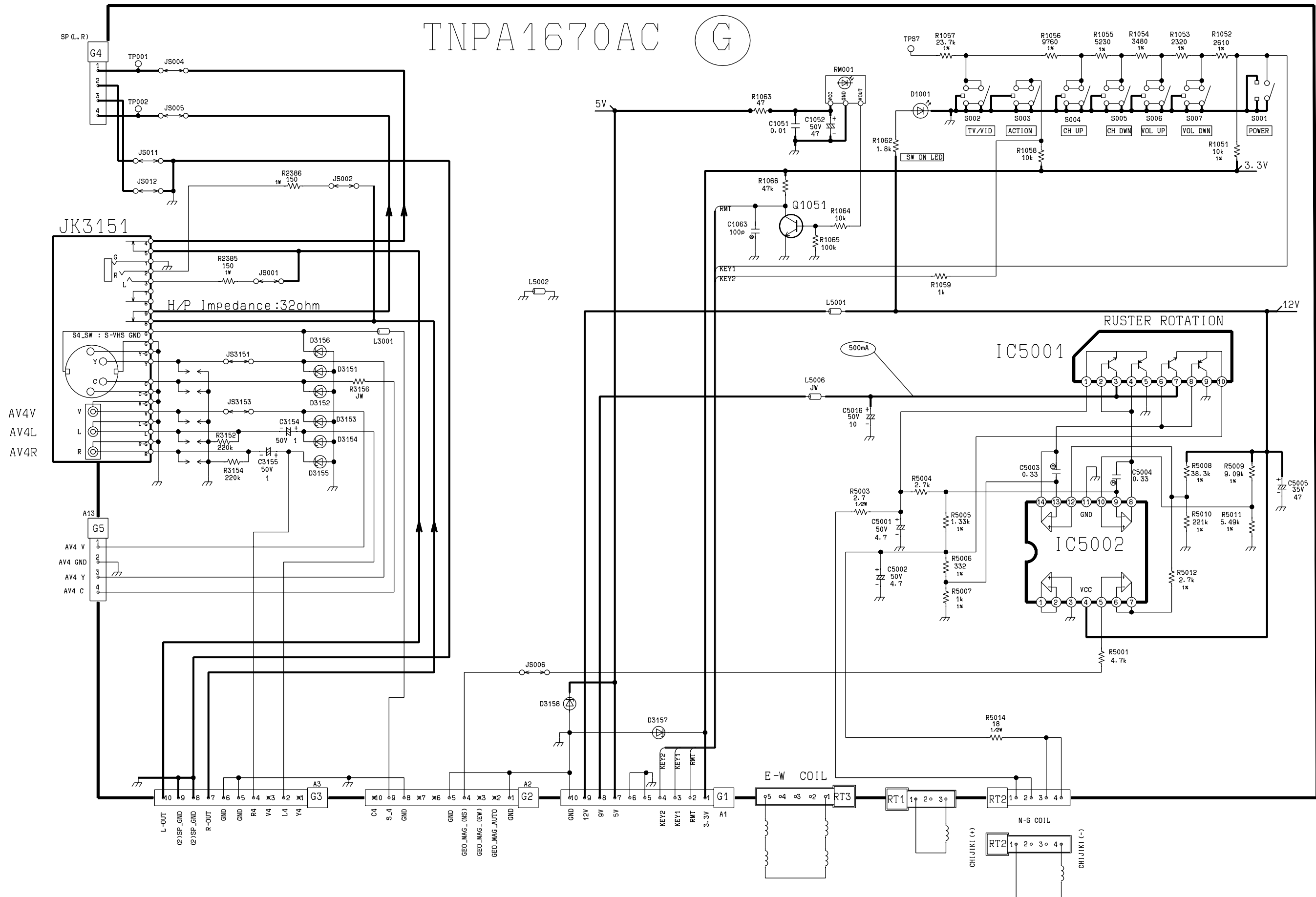


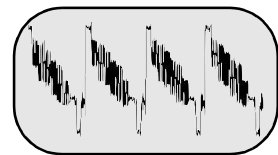
TNP2AH027NIL/AB (D)

DIFFERENCE LIST

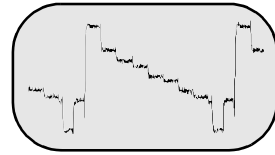
CIRCUIT NO.	TNP2AH027	TNP2AH027AB
C553	ECWF2105JSR	ECWF2125JSR
C572	ECWF2474JSR	ECWF2354JSR

HOT
COLD





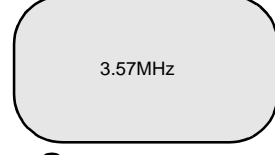
① 1.00V p-p
IC3001 PIN 36
(Main Video)



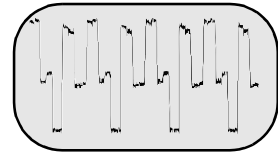
② 1.11V p-p
IC3001 PIN 32
Y_IN



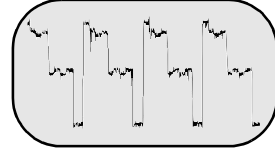
③ 5.36V p-p
IC3001 PIN 34
C_IN



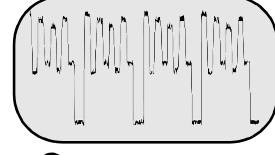
④ 3.57MHz
XTAL
IC101 PIN 49



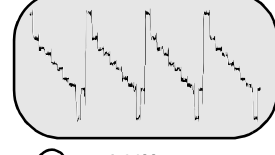
⑤ 3.48V p-p
IC101 PIN 13
(R_OUT)



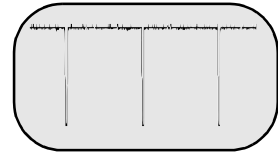
⑥ 3.44V p-p
IC101 PIN 14
(G_OUT)



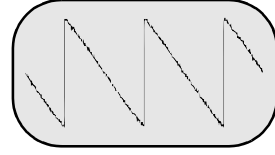
⑦ 3.40V p-p
IC101 PIN 15
(B_BLUE)



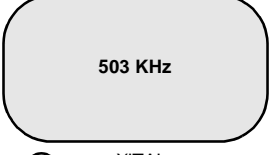
⑧ 1.06V p-p
IC101 PIN 38
(MIXED_C)



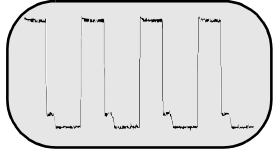
⑨ 4.24V p-p
IC101 PIN 33
(VD_OUT)



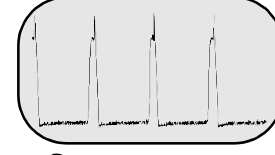
⑩ 1.56V p-p
IC101 PIN 25
(V_NFB)



⑭ 503 KHz
XTAL
IC101 PIN 41



⑮ 2.64V p-p
IC101 PIN 35
(H_OUT)



⑯ 7.84V p-p
IC101 PIN 34
(FBP_IN)

Medición de Formas de Onda

- Un símbolo como indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
 - Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EIA, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
 - Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo.
 - Las formas de onda de Video y Color fueron tomadas con un osciloscopio de banda alta y con una punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.
 - El símbolo de tierra que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.
- PRECAUCION:** Si no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

Waveform Measurements

- indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
 - Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
 - Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to "MIN".
 - All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
 - Ground symbol shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.
- CAUTION:** Incorrect ground connection of the test equipment will result in erroneous readings.

NOTA DE SEGURIDAD

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Schematic Notes

- Resistors are carbon 1/4W unless noted otherwise.
 - Capacitors are ceramic 50V unless noted otherwise.
 - Coil value notes is inductance in μ H.
 - Test point indicated by Test point but no pin .
 - Components indicated with are critical parts and replacement should be made with manufacture specified replacement parts only.
 - (BOLD LINE) indicates the route of B+ supply.
 - The schematic diagrams are current at the time of printing and are subject to change without notice.
 - Ground symbol indicates **HOT GROUND CONNECTION**; indicates COLD GROUND.
- Note: All other component symbols are used for engineering design purposes.**

Notas de los Diagramas

- Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
 - Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
 - El valor indicado de las Bobinas es la inductancia expresada en μ H.
 - Los puntos de prueba en la terminal de algún componente son indicados por Los puntos de prueba fuera de los componentes se indican con .
 - Los componentes señalados con el símbolo son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
 - (LINEA GRUESA) indica las líneas de alimentación de los Voltajes B+.
 - Los diagramas eléctricos están sujetos a cambio sin previo aviso.
 - El símbolo indica que es una conexión a **Tierra Caliente** y el símbolo indica conexión a **Tierra Fría**.
- NOTA:** Los demás símbolos de componentes incluidos son usados con fines de diseño.

PARTS LIST ABBREVIATIONS GUIDE

RESISTOR			
TYPE		TOLERANCE	
C	Carbon	F	± 1%
F	Fuse	J	± 5%
M	Metal Oxide	K	± 10%
S	Solid	M	± 20%
W	Wire Wound	G	± 2%

RES, C 270-J-1/4

CAPACITOR			
TYPE		TOLERANCE	
C	Ceramic	C	± 0.25pF
E	Electrolytic	D	± 0.5pF
P	Polyester	F	± 1pF
S	Styrol	J	± 5%
T	Tantalum	K	± 10%
		L	± 15%
		M	± 20%
		P	+10% -0%
		Z	+80% -20%

CAP, P .068UF-K-50V

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
CAPACITORS		
C001	ECA1CM470B	CAP,E 47UF/16V
C002	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C005	ECA1CM470B	CAP,E 47UF/16V
C006	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C008	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C009	TCJ2VC1H101J	CAP,C 100PF-J-50V
C010	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C012	ECA1HM220B	CAP,E 22UF-50V
C013	ECA0JM101B	CAP,E 100UF-6.3V
C014	TCJ2VC1H390J	CAP,C 39PF-J-50V
C015	TCJ2VC1H120J	CAP,C 12PF-J-50V
C017	TCJ2VC1H270J	CAP,C 27PF-J-50V
C018	TCJ2VC1H270J	CAP,C 27PF-J-50V
C020	ECA0JM331B	CAP,E 330UF-6.3V
C024	ECA1HM4R7B	CAP,E 4.7UF-50V
C025	ECA1HM010B	CAP,E 1UF-50V
C026	ECA1HM010B	CAP,E 1UF-50V
C033	TCJ2VC1H680J	CAP,C 68PF-J-50V
C034	TCJ2VC1H680J	CAP,C 68PF-J-50V
C043	ECA1HM2R2B	CAP,E 2.2UF-50V
C044	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C045	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C047	ECA0JM102B	CAP,E 1000UF-6.3V
C048	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C049	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C058	ECA1CM470B	CAP,E 47UF/16V
C059	ECA1HM4R7B	CAP,E 4.7UF-50V
C060	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C061	ECA1HM2R2B	CAP,E 2.2UF-50V
C062	ECA1CM470B	CAP,E 47UF/16V
C064	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C081	ECA1HM010B	CAP,E 1UF-50V
C201	TCJ2VB1C104K	CAP,C .1UF-K-16V
C224	TCJ2VB1C104K	CAP,C .1UF-K-16V
C225	TCJ2VB1C104K	CAP,C .1UF-K-16V
C226	TCJ2VB1C104K	CAP,C .1UF-K-16V
C301	TCJ2VB1C104K	CAP,C .1UF-K-16V
C302	TCJ2VB1C104K	CAP,C .1UF-K-16V
C303	TCJ2VB1C104K	CAP,C .1UF-K-16V
C307	ECA1HM0R1B	CAP,E 0.1UF/50V
C309	TCJ2VC1H390J	CAP,C 39PF-J-50V
C310	TCJ2VC1H390J	CAP,C 39PF-J-50V
C314	EEANA1E1R0B	CAP,E 1.0UF-25V
C315	EEANA1E1R0B	CAP,E 1.0UF-25V
C320	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C321	TCJ2VB1H103K	CAP,C .01UF-K-50V
C322	TCJ2VB1H103K	CAP,C .01UF-K-50V
C323	TCJ2VB1H103K	CAP,C .01UF-K-50V
C324	ECJ2VF1H104Z	CAP,C .1UF-Z-50V

REF NO.	PART NO.	DESCRIPTION
C330	ECA1AM101B	CAP,E 100UF-10V
C331	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C337	ECA1HM2R2B	CAP,E 2.2UF-50V
C342	ECA1HM010B	CAP,E 1UF-50V
C401	TCJ2VB1C104K	CAP,C .1UF-K-16V
C402	TCJ2VB1H102K	CAP,C .001UF-K-50V
C403	ECA1HM010B	CAP,E 1UF-50V
C404	ECA1HM010B	CAP,E 1UF-50V
C405	ECSF1EE105VB	CAP,E 1.0UF-25V
C407	ECA1HM220B	CAP,E 22UF-50V
C409	TCJ2VC1H101J	CAP,C 100PF-J-50V
C410	TCJ2VB1C104K	CAP,C .1UF-K-16V
C415	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C453	EEUNA1E220B	CAP,E 22UF-25V
C454	ECA1HHG221B	CAP,E 220UF-50V
C456	ECQB1104JF3	CAP,P .10UF-J-100V
C458	ECQB1H472JM3	CAP,P 4700PF-J-50V
C459	ECQB1224KF3	CAP,P .22UF-K-100V
C460	ECA1EM102E	CAP,E 1000UF-25V
C462	ECA1EM102E	CAP,E 1000UF-25V
C463	ECQB1H103JM3	CAP,P .01UF-J-50V
C465	ECA1CM101B	CAP,E 100UF/16V
C470	ECQB1H104JM3	CAP,P .1UF-J-50V
C471	ECQB1H104JM3	CAP,P .1UF-J-50V
C495	ECQB1H683JM3	CAP,P .063UF-J-50V
C501	ECQB1H222JM3	CAP,P 2200PF-J-50V
C502	ECA1HMR22B	CAP,E .22UF-50V
C504	ECKR2H152KB5	CAP,C .0015UF-K-500V
C505	TCJ2VC1H180J	CAP,C 18PF-J-50V
C506	ECA1CM471B	CAP,E 470UF-16V
C507	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C508	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C509	ECKR3A681KBP	CAP,C 680PF-K-1KV
C510	TCJ2VC1H101J	CAP,C 100PF-J-50V
C511	ECWH20242JVY	CAP,P 2400PF-J-2KV
C512	ECKR2H332KB5	CAP,C 3300PF-K-550V
C513	ECQF4273JZH	CAP,P .027UF-J-400V
C514	ECWH20133JVB	CAP,P 13000PF-J-2KV
C518	ECKW3D681KBR	CAP,C 680PF-K-2KV
C519	ECKW3D681KBR	CAP,C 680PF-K-2KV
C520	ECQB1H153JM3	CAP,P .015UF-J-50V
C522	ECWH20182JVY	CAP,P 1800PF-J-2KV
C524	ECQB1224JF3	CAP,P .22UF-J-100V
C526	ECA2EM470E	CAP,E 47UF-250V
C527	ECKR2H102KB5	CAP,C 1000PF-K-500V
C528	ECA1HM4R7B	CAP,E 4.7UF-50V
C531	ECA160V33UE	CAP,E 33UF/160V
C532	ECQF4183JZH	CAP,P .018UF-J-400V
C537	ECEA2CNR47SB	CAP,E .47UF-160V
C553	ECWF2105JSR	CAP,P .1UF-J-200V CT-36SX31E/CE/UE

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
C553	ECWF2125JSR	CAP,M .21UF-J-200V <i>CT-32SX31E/UE/CE</i>
C554	ECA1AM222E	CAP,E 2200UF-10V
C555	TCJ2VB1H103K	CAP,C .01UF-K-50V
C557	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C569	ECWF2394JSR	CAP,M .39UF-J-200V
C572	ECWF2334JSR	CAP,M .33UF-J-200V <i>CT-32SX31E/UE/CE</i>
C572	ECWF2474JSR	CAP,P .47UF-J-200V <i>CT-36SX31E/UE/CE</i>
C573	ECQE2474KFB	CAP,P .47UF-K-200V
C574	ECA1HM470B	CAP,E 47UF-50V
C575	ECQV1H334JL3	CAP,P .33UF-J-50V
C595	ECA1HM100B	CAP,E 10UF/50V
C601	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C603	ECQB1H223JM3	CAP,P .022UF-J-50V
C616	TCJ2VB1C104K	CAP,C .1UF-K-16V
C619	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C628	TCJ2VC1H151J	CAP,C 150PF-J-50V
C632	TCJ2VB1H103K	CAP,C .01UF-K-50V
C641	ECA1HM100B	CAP,E 10UF/50V
C701	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C750	TACCW181T50V	CAP,C 180PF/50V
C751	ECQE1335KFB	CAP,P 3.3UF-K-100V
C752	ECA1VM470B	CAP,E 47UF/35V
C753	ECQB1H222JM3	CAP,P 2200PF-J-50V
C754	TACCW332T50V	CAP,C .0033UF/50V
C755	ECQB1H273JM3	CAP,M .27UF-J-50V
C756	ECKR2H332KB5	CAP,C 3300PF-K-550V
C757	ECQB1H682JM3	CAP,P 6800PF-J-50V
C763	ECKR3A121KBP	CAP,C 120PF-K-1KV
C801	ECQU2A224MVA	CAP,P .22UF-M-250VAC
C802	ECQU2A823MNB	CAP,P .082UF-M-250VAC
C803	ECQB1H222JM3	CAP,P 2200PF-J-50V
C804	EC0S2DA821DB	CAP,E 820UF-200V
C805	ECKW2H472PU7	CAP,C 4700PF-P-500V
C806	ECKW2H472PU7	CAP,C 4700PF-P-500V
C807	ECKW2H472PU7	CAP,C 4700PF-P-500V
C808	ECKW2H472PU7	CAP,C 4700PF-P-500V
C809	ECQB1H333JM3	CAP,P .033UF-J-50V
C810	ECQB1H102JM3	CAP,P 1000PF-J-50V
C811	EC0S2DA821DB	CAP,E 820UF-200V
C815	ECA1EM471B	CAP,E 470UF-25V
C817	ECQB1H332JM3	CAP,P 3300PF-J-50V
C819	TACCQ221T50V	CAP,C 220PF/50V
C820	ECA1EHG471B	CAP,E 470UF-25V
C821	ECKW3D222KBP	CAP,C 2200UF-K-2KVDC
C822	ECQB1H393JM3	CAP,P .039UF-J-50V
C826	ECA1CM222E	CAP,E 2200UF-16V
C827	ECQB1H333JM3	CAP,P .033UF-J-50V
C829	ECA1HHG102E	CAP,E 1000UF-50V

REF NO.	PART NO.	DESCRIPTION
C830	EC0S2CA102CB	CAP,E 1000UF-160V
C831	ECKR3A102KBP	CAP,C 1000PF-K-1KV
C832	ECA1CM221B	CAP,E 220UF-16V
C833	ECKR3A471KBP	CAP,C 470PF-K-1KV
C834	ECA1CM332E	CAP,E 3300UF-16V
C836	ECKR3A331KBP	CAP,C 330PF-K-1KVDC
C837	ECA1EM222E	CAP,E 2200UF-25V
C839	ECKR3A151KBP	CAP,C 150PF-K-1KV
C840	ECA1EM222E	CAP,E 2200UF-25V
C841	ECA1EM102E	CAP,E 1000UF-25V
C842	ECKR3A331KBP	CAP,C 330PF-K-1KVDC
C843	ECA1VM102E	CAP,E 1000UF-35V
C844	ECKR3A471KBP	CAP,C 470PF-K-1KV
C845	ECA1CM101B	CAP,E 100UF/16V
C846	ECA1HM101B	CAP,E 1UF-50V
C848	ECA1CM101B	CAP,E 100UF/16V
C852	ECKCNB102MB	CAP,C 1000PF-M-250V
C853	ECKCNB102MB	CAP,C 1000PF-M-250V
C854	ECKCNB472ME	CAP,C 4700PF-M-250V
C855	ECKCNB472ME	CAP,C 4700PF-M-250V
C881	ECA1CM101B	CAP,E 100UF/16V
C883	ECA1CM101B	CAP,E 100UF/16V
C885	ECA1CM471B	CAP,E 470UF-16V
C886	ECA1CM102B	CAP,E 1000UF/16V
C888	ECA1CM471B	CAP,E 470UF-16V
C889	ECA1CM221B	CAP,E 220UF-16V
C895	ECA1EM101B	CAP,E 100UF-25V
C904	ECKR1H103ZF5	CAP,C .01UF-Z-50V
C952	ECA1HM100B	CAP,E 10UF/50V
C953	ECKR1H103ZF5	CAP,C .01UF-Z-50V
C958	ECA2CM470E	CAP,E 47UF-160V
C959	ECKW2H103KB5	CAP,C .01UF-K-500V
C960	ECCR2H151J5	CAP,C 150-500V
C961	ECA2AM100B	CAP,E 10UF-100V
C962	ECKW2H103KB5	CAP,C .01UF-K-500V
C963	ECCR1H151J5	CAP DISC 150-5-50V
C964	ECA1CHG101B	CAP,E 100UF-16V
C966	ECA1CHG101B	CAP,E 100UF-16V
C967	ECA1CM221B	CAP,E 220UF-16V
C968	ECKR1H103ZF5	CAP,C .01UF-Z-50V
C969	ECKR1H103ZF5	CAP,C .01UF-Z-50V
C971	ECKR1H222KB5	CAP,C 2200PF-K-50V
C1051	TACCX103T50V	CAP,C .01UF/50V
C1052	ECA1HM470B	CAP,E 47UF-50V
C1063	ECCR1H101JC5	CAP,C 100PF-J-50V
C1552	ECKR1H103ZF5	CAP,C .01UF-Z-50V
C1553	ECKR1H103ZF5	CAP,C .01UF-Z-50V
C1554	ECQB1H222JM3	CAP,P 2200PF-J-50V
C1555	ECQB1H103JM3	CAP,P .01UF-J-50V
C1556	ECSF1CE225VB	CAP,E 2.2UF-16V
C1557	ECQV1H224JL3	CAP,P .22UF-J-50V

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
C1558	ECQB1H104JM3	CAP,P .1UF-J-50V
C1559	ECQB1H333JM3	CAP,P .033UF-J-50V
C1560	ECA1HM100B	CAP,E 10UF/50V
C1561	ECA1HM010B	CAP,E 1UF-50V
C1562	ECQM4223KZW	CAP,P .022UF-K-400V
C1563	ECKW3D152KBR	CAP,C 1500PF-K-2KV
C1564	ECKR3A102KBP	CAP,C 1000PF-K-1KV
C1565	ECQB1H103JM3	CAP,P .01UF-J-50V
C1566	ECQB1H222JM3	CAP,P 2200PF-J-50V
C1567	ECQB1H103JM3	CAP,P .01UF-J-50V
C1568	ECA1HM010B	CAP,E 1UF-50V
C1569	ECQK1562JZ3	CAP,P .0056UF-J-100V
C1570	ECA1HM2R2B	CAP,E 2.2UF-50V
C1571	ECKR2H471KB5	CAP,C 470PF-K-500W
C1572	ECKW3A472KBP	CAP,C 4700PF-K-1KV
C1573	ECQB1H822JM3	CAP,P 8200PF-J-50V
C1574	ECQB1H333JM3	CAP,P .033UF-J-50V
C1575	ECA1CM471B	CAP,E 470UF-16V
C1576	ECA1HM2R2B	CAP,E 2.2UF-50V
C1577	ECKR2H471KB5	CAP,C 470PF-K-500W
C1578	ECQM4223KZW	CAP,P .022UF-K-400V
C1579	ECA1HM100B	CAP,E 10UF/50V
C1580	ECKW3A222KBP	CAP,C 2200PF-K-1KV
C1801	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1802	ECQV1H154JL3	CAP,P.15UF-J-50V
C1803	ECA1HMR22B	CAP,E .22UF-50V
C1804	ECA1HMR22B	CAP,E .22UF-50V
C1805	ECJ2VF1H333Z	CAP,C .033UF-Z-50V
C1806	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1807	ECA1AM470B	CAP,E 47UF-10V
C1808	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1809	ECA1AM470B	CAP,E 47UF-10V
C1810	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C1811	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1812	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1813	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1815	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C1816	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1817	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1818	ECA1CM100B	CAP,E 10UF-16V
C1819	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1820	ECA1AM470B	CAP,E 47UF-10V
C1821	TCJ2VC1H150J	CAP,C 15PF-J-50V
C1822	TCJ2VC1H120J	CAP,C 12PF-J-50V
C1823	TCJ2VC1H680J	CAP,C 68PF-J-50V
C1826	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1827	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1828	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C1829	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C1830	TCJ2VC1H151J	CAP,C 150PF-J-50V
C1831	ECJ2VF1H104Z	CAP,C .1UF-Z-50V

REF NO.	PART NO.	DESCRIPTION
C1832	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C1833	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C1835	ECA1CM100B	CAP,E 10UF-16V
C1836	TCJ2VC1H470J	CAP,C 47PF-J-50V
C1837	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C1841	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C2202	ECA1HM2R2B	CAP,E 2.2UF-50V
C2203	ECA1HM4R7B	CAP,E 4.7UF-50V
C2204	AP106K016CAE	CAP,T 10UF/16V
C2205	ECA1HM010B	CAP,E 1UF-50V
C2206	ECQB1H223JM3	CAP,P .022UF-J-50V
C2207	AP335K016CAE	CAP,T 3.3UF/16V
C2208	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2209	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2210	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2211	ECA1CM100B	CAP,E 10UF-16V
C2212	ECQB1H473JM3	CAP,P .047UF-J-50V
C2215	ECA0JM101B	CAP,E 100UF-6.3V
C2218	ECA1HMR47B	CAP,E .47UF-50V
C2219	TCJ2VC1H100D	CAP,C 10PF-D-50V
C2302	ECA1HM010B	CAP,E 1UF-50V
C2303	TCJ2VB1H332K	CAP,C .0033UF-K-50V
C2304	TCJ2VB1H332K	CAP,C .0033UF-K-50V
C2305	ECA1HM010B	CAP,E 1UF-50V
C2307	ECA1EM102E	CAP,E 1000UF-25V
C2308	ECA1HM101B	CAP,E 100UF-50V
C2311	ECA1HM010B	CAP,E 1UF-50V
C2312	ECA1EM102E	CAP,E 1000UF-25V
C2313	ECA1VM472E	CAP,E 4700UF-35V
C2314	ECA1EM221B	CAP,E 220UF-25V
C2331	ECA1HM010B	CAP,E 1UF-50V
C2332	ECA1HM010B	CAP,E 1UF-50V
C2333	ECA1EM100B	CAP,E 10UF-25V
C2334	ECA1EM100B	CAP,E 10UF-25V
C2335	ECA1HM010B	CAP,E 1UF-50V
C2336	ECA1HM010B	CAP,E 1UF-50V
C2337	ECA1CM470B	CAP,E 47UF/16V
C2431	TCJ2VF1C105Z	CAP,C 1.0UF-Z-16V
C2432	TCJ2VF1C105Z	CAP,C 1.0UF-Z-16V
C2433	TCJ2VC1H222J	CAP,C .0022UF-J-50V
C2437	TCJ2VB1H333K	CAP,C .033UF-K-50V
C2438	TCJ2VB1H102K	CAP,C .001UF-K-50V
C2444	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2445	TCJ2VB1C104K	CAP,C .1UF-K-16V
C2449	TCJ2VB1H333K	CAP,C .033UF-K-50V
C2450	TCJ2VB1H102K	CAP,C .001UF-K-50V
C2451	ECEA1CN100UB	CAP,E 10UF-16V
C2459	TCJ2VB1H333K	CAP,C .033UF-K-50V
C2460	TCJ2VB1H333K	CAP,C .033UF-K-50V
C2461	ECA1HM4R7B	CAP,E 4.7UF-50V
C2462	ECA1HM4R7B	CAP,E 4.7UF-50V

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION	REF NO.	PART NO.	DESCRIPTION
C2463	ECEA1CN100UB	CAP,E 10UF-16V	C4322	ECA1CM100B	CAP,E 10UF-16V
C2464	TCJ2VB1H333K	CAP,C .033UF-K-50V	C4323	ECA0JM101B	CAP,E 100UF-6.3V
C2465	TCJ2VB1H333K	CAP,C .033UF-K-50V	C4324	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C2468	ECA1CM101B	CAP,E 100UF/16V	C4325	ECA1CM100B	CAP,E 10UF-16V
C2473	ECA1HM4R7B	CAP,E 4.7UF-50V	C5001	ECA1HM4R7B	CAP,E 4.7UF-50V
C2474	ECA1CM101B	CAP,E 100UF/16V	C5002	ECA1HM4R7B	CAP,E 4.7UF-50V
C2475	ECA1HM4R7B	CAP,E 4.7UF-50V	C5003	ECQV1H334JL3	CAP,P .33UF-J-50V
C3001	TCJ2VF1H103Z	CAP,C .01UF-Z-50V	C5004	ECQV1H334JL3	CAP,P .33UF-J-50V
C3002	ECA1AM101B	CAP,E 100UF-10V	C5005	ECA1VM470B	CAP,E 47UF/35V
C3003	ECA1CM100B	CAP,E 10UF-16V	C5016	ECA1HM100B	CAP,E 10UF/50V
C3004	ECA1HM010B	CAP,E 1UF-50V	C6501	ECA0JM101B	CAP,E 100UF-6.3V
C3006	ECA1HM010B	CAP,E 1UF-50V	C6502	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3007	ECA1CM100B	CAP,E 10UF-16V	C6503	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C3008	ECA1CM100B	CAP,E 10UF-16V	C6504	ECA1CM470B	CAP,E 47UF/16V
C3009	ECA1HM010B	CAP,E 1UF-50V	C6505	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3010	TCJ2VF1H103Z	CAP,C .01UF-Z-50V	C6506	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3011	ECA1HM010B	CAP,E 1UF-50V	C6507	ECEA1HNR47UB	CAP,E .47UF-50V
C3012	ECA1CM100B	CAP,E 10UF-16V	C6508	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3013	ECA1CM100B	CAP,E 10UF-16V	C6509	ECA1CM470B	CAP,E 47UF/16V
C3014	ECA1HM010B	CAP,E 1UF-50V	C6510	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C3015	ECA1HM010B	CAP,E 1UF-50V	C6511	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C3016	ECA1HM010B	CAP,E 1UF-50V	C6512	ECA1CM470B	CAP,E 47UF/16V
C3018	ECA1CM100B	CAP,E 10UF-16V	C6513	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3019	ECA1CM100B	CAP,E 10UF-16V	C6514	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3020	ECA1HM010B	CAP,E 1UF-50V	C6515	ECJ2VF1H104Z	CAP,C .1UF-Z-50V
C3021	TCJ2VF1H103Z	CAP,C .01UF-Z-50V	C6516	ECA1CM470B	CAP,E 47UF/16V
C3022	ECA1HM010B	CAP,E 1UF-50V	C6517	TCJ2VC1H181J	CAP,C 180PF-J-50V
C3023	ECA1CM100B	CAP,E 10UF-16V	C6518	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3024	ECA1CM100B	CAP,E 10UF-16V	C6519	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3025	TCJ2VF1H103Z	CAP,C .01UF-Z-50V	C6520	ECA1CM470B	CAP,E 47UF/16V
C3054	ECA1CM471B	CAP,E 470UF-16V	C6521	TCJ2VC1H220J	CAP,C 22PF-J-50V
C3154	ECA1HM010B	CAP,E 1UF-50V	C6522	TCJ2VC1H180J	CAP,C 18PF-J-50V
C3155	ECA1HM010B	CAP,E 1UF-50V	C6523	TCJ2VC1H120J	CAP,C 12PF-J-50V
C3807	ECA1CM221B	CAP,E 220UF-16V	C6525	TCJ2VC1H120J	CAP,C 12PF-J-50V
C3808	ECQV1H224JL3	CAP,P .22UF-J-50V	C6526	TCJ2VC1H270J	CAP,C 27PF-J-50V
C3809	ECQM4104KZB	CAP,P .10UF-K-400V	C6532	TCJ2VF1H103Z	CAP,C .01UF-Z-50V
C3811	ECA2EM100B	CAP,E 10UF/250V	C6570	TCJ2VC1H050D	CAP,C 5PF-D-50V
C3814	ECKC3D332KBN	CAP,C 3300PF-K-2KV	C6571	TCJ2VC1H560J	CAP,C 56PF-J-50V
C4301	ECKR1H103ZF5	CAP,C .01UF-Z-50V	DIODES		
C4302	TCJ2VF1H103Z	CAP,C .01UF-Z-50V	D003	MA4056MTA	DIODE
C4304	ECA1CM100B	CAP,E 10UF-16V	D006	MA4300HTA	DIODE
C4310	TCJ2VC1H390J	CAP,C 39PF-J-50V	D007	MA4030HTA	DIODE
C4313	TCJ2VC1H561J	CAP,C 560PF-J-50V	D014	MA165TA5VT	DIODE, SWITCHING
C4314	ECA1HMR47B	CAP,E .47UF-50V	D015	MA700ATA	DIODE
C4315	TCJ2VB1H152K	CAP,C .0015UF-K-50V	D051	MA4062MTA	DIODE, ZENER
C4316	ECA0JM331B	CAP,E 330UF-6.3V	D240	MA165TA5VT	DIODE, SWITCHING
C4317	TCJ2VF1H103Z	CAP,C .01UF-Z-50V	D451	ERA15-02V3	DIODE
C4318	ECA0JM101B	CAP,E 100UF-6.3V	D455	MA165TA5VT	DIODE, SWITCHING
C4319	TCJ2VC1H391J	CAP,C 390PF-J-50V	D504	MA4300LTA	DIODE
C4320	TCJ2VB1H681K	CAP,C 680PF-K-50V	D509	MA165TA5VT	DIODE, SWITCHING

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
D510	MA4082MTA	DIODE
D511	D1NL40V70	DIODE
D512	D1NL40V70	DIODE
D551	ERD07-15E	DIODE
D552	RU3NLFA1	DIODE
D553	MA4062LTVTA	DIODE, ZENER
D555	MA165TA5VT	DIODE, SWITCHING
D556	MA165TA5VT	DIODE, SWITCHING
D561	MA165TA5VT	DIODE, SWITCHING
D562	MA165TA5VT	DIODE, SWITCHING
D563	MA4062MTA	DIODE, ZENER
D753	AU01ZV0	DIODE
D801	RM10BLFA1	DIODE
D802	RM10BLFA1	DIODE
D803	RM10BLFA1	DIODE
D804	RM10BLFA1	DIODE
D805	MA700ATA	DIODE
D806	AU01ZV0	DIODE
D808	D4DDF1R50001	DIODE
D814	MA178TA5	DIODE
D815	MA165TA5VT	DIODE, SWITCHING
D816	MA165TA5VT	DIODE, SWITCHING
D818	MA4200MTA	DIODE
D820	ERA15-01V3	DIODE, RECTIFIER
D821	ERA15-01V3	DIODE, RECTIFIER
D822	ERA15-01V3	DIODE, RECTIFIER
D823	ERA15-01V3	DIODE, RECTIFIER
D824	TMPG10G3	DIODE
D825	RU30ALFS1	DIODE, RECTIFIER
D826	AU02ZV0	DIODE
D827	RU3YX-MV1	DIODE, RECTIFIER
D828	S2L20UP1518	DIODE
D829	S2L20UP1518	DIODE
D830	RU3YX-MV1	DIODE, RECTIFIER
D832	MA165TA5VT	DIODE, SWITCHING
D834	AU02ZV0	DIODE
D835	MA165TA5VT	DIODE, SWITCHING
D836	MA4180MTA	DIODE
D837	MA165TA5VT	DIODE, SWITCHING
D841	MA165TA5VT	DIODE, SWITCHING
D861	TVSA81004V3	DIODE
D862	TVSA81004V3	DIODE
D876	MA165TA5VT	DIODE, SWITCHING
D877	MA165TA5VT	DIODE, SWITCHING
D881	MA165TA5VT	DIODE, SWITCHING
D1001	LN81RPHCF3	DIODE
D1551	ERA22-06V3	DIODE
D1552	MA165TA5VT	DIODE, SWITCHING
D1553	RP1HLFA5	DIODE
D1557	MA165TA5VT	DIODE, SWITCHING

REF NO.	PART NO.	DESCRIPTION
D1558	MA165TA5VT	DIODE, SWITCHING
D2301	MA4360HTA	DIODE, ZENER
D2302	MA165TA5VT	DIODE, SWITCHING
D2303	MA165TA5VT	DIODE, SWITCHING
D2305	MA4110MTA	DIODE, ZENER
D2306	MA4110MTA	DIODE, ZENER
D2307	MA4110MTA	DIODE, ZENER
D2308	MA4110MTA	DIODE, ZENER
D2309	MA4110MTA	DIODE, ZENER
D2310	MA4110MTA	DIODE, ZENER
D2311	MA4110MTA	DIODE, ZENER
D2312	MA4110MTA	DIODE, ZENER
D3001	MA4110MTA	DIODE, ZENER
D3002	MA4110MTA	DIODE, ZENER
D3003	MA4110MTA	DIODE, ZENER
D3004	MA4110MTA	DIODE, ZENER
D3005	MA4110MTA	DIODE, ZENER
D3006	MA4110MTA	DIODE, ZENER
D3007	MA4110MTA	DIODE, ZENER
D3008	MA4110MTA	DIODE, ZENER
D3009	MA4110MTA	DIODE, ZENER
D3010	MA4110MTA	DIODE, ZENER
D3011	MA4110MTA	DIODE, ZENER
D3012	MA4110MTA	DIODE, ZENER
D3051	MA4110MTA	DIODE, ZENER
D3151	MA4140MTA	DIODE
D3152	MA4140MTA	DIODE
D3153	MA4140MTA	DIODE
D3154	MA4140MTA	DIODE
D3155	MA4140MTA	DIODE
D3156	MA4140MTA	DIODE
D3157	MA4062MTA	DIODE, ZENER
D3158	MA4075MTA	DIODE
D3801	MA165TA5VT	DIODE, SWITCHING
D3802	MA165TA5VT	DIODE, SWITCHING
D3803	MA165TA5VT	DIODE, SWITCHING
D3804	MA165TA5VT	DIODE, SWITCHING
D3812	MA4150MTA	DIODE
D3814	ERA22-04V1	DIODE, RECEIVER
D3815	ERA22-04V1	DIODE, RECEIVER
D3816	ERA22-04V1	DIODE, RECEIVER
D4301	MA3036HTX	DIODE
FUSES		
F801	XBA2A00101	FUSE 6.3A 125V
INTEGRATED CIRCUITS		
IC001	MN101C46FTF1	MPU
IC002	TVR2AJ099	EEPROM
IC005	PQ1R33	STANDBY
IC006	PST9128NR	RST
IC101	TA1310BN	VIC/J

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
IC451	LA78045	V-OUT
IC511	AN6914S-E1	FORCUS SHORT PROTECTOR
IC750	NJM4565L	PCC
IC801	AN8029	MAIN POWER
IC802	SE139NLF4	ERROR AMP
IC811	PC123FY2	OPTOCOUPLER
IC881	AN7805LB	MAIN 5V
IC882	AN7809LB	MAIN 9V
IC883	PQ12RD1B	MAIN 12V
IC1551	AN5422K	FREE RUN ADJ.
IC1801	M65617SP	PIP
IC2201	AN5849S-E1V	MTS
IC2301	AN5277	AUDIO OUT
IC2331	NJM4565L	VAO
IC2451	BH3868CFS-E2	SURROUND
IC3001	M52790SP	A/V SWITCH
IC3801	TDA6103Q-N3	RGB DRIVER
IC4301	MM1502XNRE	TNR2 SW
IC5001	PUB4301	RASTER ROTATION
IC5002	AN6564	OP-AMP
IC6501	TC90A49P	COMB FILTER
RM001	PNA4601M04TV	IR-REMOTE SENSOR
COILS		
J43	EXCELDR35V	FERRITE BEAD CT-32SX31E/CE/UE, CT-36SX31E
J217	EXCELSA26T	FERRITE BEAD
LC001	EXCEMT471BTS	EMI FILTER
LC002	EXCEMT471BTS	EMI FILTER
L001	EXCELSA35T	FERRITE BEAD
L002	ELESN180JA	COIL, PEAKING 18UH
L005	ELESN330JA	COIL, PEAKING 33UH
L006	EXCELSA24T	FERRITE BEAD
L007	EXCELSA26T	FERRITE BEAD
L008	EXCELSA39V	FERRITE BEAD
L009	EXCELSA26T	FERRITE BEAD
L012	TLTABT2R2K	COIL, PEAKING 2.2UH
L013	TLTABT2R2K	COIL, PEAKING 2.2UH
L015	TLTABT2R2K	COIL, PEAKING 2.2UH
L016	TLTABT2R2K	COIL, PEAKING 2.2UH
L017	ELESN330JA	COIL, PEAKING 33UH
L019	EXCELSA26T	FERRITE BEAD CT-36SX31E/UE
L020	EXCELSA26T	FERRITE BEAD CT-36SX31E/UE
L106	EXCELSA39V	FERRITE BEAD
L301	TLTABT470K	COIL, PEAKING 47UH
L302	ELESN120JA	COIL, PEAKING 12UH
L319	TLTABT101K	COIL, PEAKING
L519	ELESN101JA	COIL, PEAKING 100UH
L551	TYPL05511HN	COIL CT-32SX31E/CE/UE
L551	ELH5L7714	COIL CT-36SX31E/CE/UE
L553	ELHKL8077B	COIL
L555	EXCELSA35T	FERRITE BEAD

REF NO.	PART NO.	DESCRIPTION
L556	ELC18B801E	COIL
L559	TLUADNB682K	COIL
L601	TLTABT560K	COIL
L706	EXCELSA26T	FERRITE BEAD
L751	ELC18B801E	COIL
L752	TALFP15B103K	LINE FILTER
L801	ELF24V037A	LINE FILTER
L802	ELF24V037A	LINE FILTER
L807	TSKA064-1	FERRITE BEAD
L812	EXCELSA26B	FERRITE BEAD
L814	TALL08T101KA	LINE FILTER
L815	EXCELSA39E	FERRITE BEAD
L816	EXCELSA39E	FERRITE BEAD
L817	EXCELDR35V	FERRITE BEAD
L818	EXCELDR35V	FERRITE BEAD
L819	EXCELSA24T	FERRITE BEAD
L820	EXCELSA24T	FERRITE BEAD
L821	EXCELDR35V	FERRITE BEAD
L824	EXCELDR35V	FERRITE BEAD
L825	TLUADTB121K	COIL
L826	TLUADTB820K	COIL
L827	TALL08T470KA	LINE FILTER
L850	ELESN101JA	COIL, PEAKING 100UH
L851	TLUADTB121K	COIL
L951	EXCELSA24T	FERRITE BEAD
L953	EXCELSA24T	FERRITE BEAD
L954	EXCELSA24T	FERRITE BEAD
L955	EXCELSA24T	FERRITE BEAD
L1551	TALL13T682JB	LINE FILTER
L1801	ELESN1R5KA	COIL, PEAKING 1.5UH
L1803	ELESN2R2KA	COIL, PEAKING 2.2UH
L1804	ELESN150JA	COIL, PEAKING 15UH
L1807	ELESN1R0JA	COIL, PEAKING 1.0UH
L1808	EXCELDR25V	FERRITE BEAD
L3001	EXCELSA35T	FERRITE BEAD
L3805	EXCELSA24T	FERRITE BEAD
L4301	ELESN3R9KA	COIL, PEAKING 3.9UH
L5001	EXCELSA35T	FERRITE BEAD
L5002	EXCELDR35V	FERRITE BEAD
L6502	ELESN150JA	COIL, PEAKING 15UH
L6503	ELESN330JA	COIL, PEAKING 33UH
L6504	ELESN100JA	COIL, PEAKING 10UH
L6507	ELESN150JA	COIL, PEAKING 15UH
TRANSISTORS		
Q002	2SC1685QRSTA	TRANSISTOR
Q009	2SD601ARTX	TRANSISTOR
Q014	2SD601ARTX	TRANSISTOR
Q201	2SD601ARTX	TRANSISTOR
Q302	2SB709ARTX	TRANSISTOR
Q303	2SD601ARTX	TRANSISTOR

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
Q402	2SD601ARTX	TRANSISTOR
Q480	2SA1309ATA	TRANSISTOR
Q501	2SC3941RTA	TRANSISTOR
Q515	2SD601ARTX	TRANSISTOR
Q551	2SC5517000LK	TRANSISTOR
Q552	2SC1685QRSTA	TRANSISTOR
Q553	2SC1685QRSTA	TRANSISTOR
Q563	2SC3941RTA	TRANSISTOR
Q603	2SD601ARTX	TRANSISTOR
Q611	2SB709ARTX	TRANSISTOR
Q701	2SD601ARTX	TRANSISTOR
Q702	2SA1309ATA	TRANSISTOR
Q751	2SK2146LB	TRANSISTOR
Q754	2SC1685QRSTA	TRANSISTOR
Q801	2SK2917LB	TRANSISTOR
Q802	2SC1685QRSTA	TRANSISTOR
Q803	2SC1685QRSTA	TRANSISTOR
Q804	2SA564AQRSTA	TRANSISTOR
Q854	2SA19610QAHW	TRANSISTOR
Q881	2SC1685QRSTA	TRANSISTOR
Q882	2SB709ARTX	TRANSISTOR
Q883	2SB709ARTX	TRANSISTOR
Q901	2SD601ARTX	TRANSISTOR
Q951	2SC1685QRSTA	TRANSISTOR
Q952	2SC1685QRSTA	TRANSISTOR
Q953	2SC1741ASTP	TRANSISTOR
Q954	2SB1030ATA	TRANSISTOR
Q955	2SB1569AF51E	TRANSISTOR
Q956	2SD2400AF51E	TRANSISTOR
Q957	2SA564AQRSTA	TRANSISTOR
Q958	2SC1685QRSTA	TRANSISTOR
Q961	2SC1685QRSTA	TRANSISTOR
Q962	2SC1685QRSTA	TRANSISTOR
Q1051	2SC1685QRSTA	TRANSISTOR
Q1551	2SC3425RLMAT	TRANSISTOR
Q1552	2SC1685QRSTA	TRANSISTOR
Q1553	2SC1685QRSTA	TRANSISTOR
Q1554	2SC1685QRSTA	TRANSISTOR
Q1555	2SC5460LB	TRANSISTOR
Q1801	2SD601ARTX	TRANSISTOR
Q1802	2SD601ARTX	TRANSISTOR
Q1803	2SD601ARTX	TRANSISTOR
Q1804	2SB709ARTX	TRANSISTOR
Q1805	2SB709ARTX	TRANSISTOR
Q2302	2SD601ARTX	TRANSISTOR
Q2331	2SD601ARTX	TRANSISTOR
Q2332	2SB709ARTX	TRANSISTOR
Q2333	2SD601ARTX	TRANSISTOR
Q2334	2SD601ARTX	TRANSISTOR
Q2335	2SB709ARTX	TRANSISTOR

REF NO.	PART NO.	DESCRIPTION
Q2336	2SD601ARTX	TRANSISTOR
Q3050	2SD601ARTX	TRANSISTOR
Q3802	2SA564AQRSTA	TRANSISTOR
Q4309	2SB709ARTX	TRANSISTOR
Q4310	2SD601ARTX	TRANSISTOR
Q4311	2SB709ARTX	TRANSISTOR
Q4312	2SD601ARTX	TRANSISTOR
Q4313	2SD601ARTX	TRANSISTOR
Q4315	2SC3940AQRSTA	TRANSISTOR
Q6501	2SD601ARTX	TRANSISTOR
Q6502	2SB709ARTX	TRANSISTOR
Q6510	2SB709ARTX	TRANSISTOR
Q6511	2SD601ARTX	TRANSISTOR
Q6512	2SD601ARTX	TRANSISTOR
Q6519	2SD601ARTX	TRANSISTOR
RELAYS		
RL801	TSEH8007	RELAY
RL802	TSE10814	RELAY
RESISTORS		
R002	ERJ6GEYJ182V	RES,M 1.8K-J-1/10W
R003	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W
R004	ERDS1TJ122T	RES,C 1.2K-J-1/2W
R005	ERDS2TJ101T	RES,C 100-J-1/4W
R006	ERJ6ENF1372V	RES,M 13.7K-F-1/10W
R007	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R008	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R009	ERJ6GEYJ221V	RES,M 220-J-1/10W
R010	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R011	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W
R013	ERJ6ENF1002V	RES,M 10K-F-1/10W
R014	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W
R015	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R016	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R017	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R020	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R021	ERJ6GEYJ101V	RES,M 100-J-1/10W
R022	ERJ6GEYJ101V	RES,M 100-J-1/10W
R023	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R024	ERJ6ENF2322V	RES,M 23.2K-F-1/10W
R025	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R026	ERJ6GEYJ183V	RES,M 18K-J-1/10W
R027	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R028	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R029	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R030	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R033	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R034	ERJ6GEYJ563V	RES,M 56K-J-1/10W
R040	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R041	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R042	ERJ6GEYJ102V	RES,M 1K-J-1/10W

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION	REF NO.	PART NO.	DESCRIPTION
R043	ERJ6GEYJ103V	RES,M 10K-J-1/10W	R451	ERG2FJ221H	RES,M 220-J-2W
R044	ERJ6GEYJ273V	RES,M 27K-J-1/10W	R452	ERDS1FJ6R8T	RES,C 6.8-J-1/2W
R046	ERJ6GEYJ333V	RES,M 33K-J-1/10W	R453	ER0S2TKF1202	RES,M 12K-F-1/4W
R048	ERJ6GEYJ333V	RES,M 33K-J-1/10W	R454	ERDS2TJ182T	RES,C 1.8K-J-1/4W
R049	ERJ6GEYJ101V	RES,M 100-J-1/10W	R455	ERDS2TJ512T	RES,C 5.1K-J-1/4W
R051	ERJ6GEYJ223V	RES,M 22K-J-1/10W	R456	ERDS2TJ182T	RES,C 1.8K-J-1/4W
R058	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R457	ERDS2TJ112T	RES,C 1.1K-J-1/4W
R060	ERJ6GEYJ471V	RES,M 470-J-1/10W	R459	ERX1SJ1R2P	RES,M 1.2-J-1W
R061	ERJ6GEYJ471V	RES,M 470-J-1/10W	R460	ER0S2TKF1002	RES,M 10K-F-1/4
R066	ERJ6GEYJ752V	RES,M 7.5K-J-1/10W	R461	ER0S2TKF1601	RES,M 1.6K-F-1/4
R067	ERJ6GEYJ752V	RES,M 7.5K-J-1/10W	R465	ERJ6GEYJ104V	RES,M 100K-J-1/10W
R068	ERJ6GEYJ752V	RES,M 7.5K-J-1/10W	R468	ERJ6GEYJ104V	RES,M 100K-J-1/10W
R072	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W	R472	ERJ6GEYJ123V	RES,M 12K-J-1/10W
R073	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W	R476	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W
R074	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W	R480	ERDS2TJ392T	RES,C 3.9K-J-1/4W
R075	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R481	ERDS1FJ1R0T	RES,C 1.0-J-1/2W
R076	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R482	ERDS1FJ1R0T	RES,C 1.0-J-1/2W
R077	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R485	ERJ6GEYJ152V	RES,M 1.5K-J-1/10W
R078	ERJ6GEYJ101V	RES,M 100-J-1/10W	R486	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R079	ERJ6GEYJ101V	RES,M 100-J-1/10W	R487	ERJ6GEYJ822V	RES,M 8.2K-J-1/10W
R081	ERJ6GEYJ220V	RES,M 22-J-1/10W	R489	ER0S2TKF1202	RES,M 12K-F-1/4W
R082	ERJ6GEYJ562V	RES,M 5.6K-J-1/10W	R490	ER0S2TKF5101	RES,M 5.1K-F-1/4W
R086	ERJ6GEYJ103V	RES,M 10K-J-1/10W	R491	ER0S2TKF1052	RES,M 10.5K-F-1/4W
R087	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	R501	ERDS2TJ561T	RES,C 560-J-1/4W
R088	ERDS2TJ103T	RES,C 10K-J-1/4W	R502	ERDS2TJ561T	RES,C 560-J-1/4W
R122	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R503	ERG3FJ332H	RES,M 2.3K-J-3W
R201	ERJ6GEYJ331V	RES,M 330-J-1/10W	R504	ERJ6GEYJ333V	RES,M 33K-J-1/10W
R223	ERJ6GEYJ561V	RES,M 560-J-1/10W	R505	ERDS1TJ561T	RES,C 560-J-1/2W
R225	ERDS2TJ331T	RES,C 330-J-1/4W	R510	ERG2FJ122H	RES,M 12K-J-2W
R226	ERDS2TJ331T	RES,C 330-J-1/4W	R512	ERG3FJ222H	RES,M 2200-J-3W
R245	ERJ6GEYJ224V	RES,M 220K-J-1/10W	R513	ERG3FJ222H	RES,M 2200-J-3W
R246	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R514	ER0S2TKF3302	RES,M 33K-F-1/4W
R301	ERJ6GEYJ101V	RES,M 100-J-1/10W	R515	ER0S2TKF3742	RES,M 37.4K-F-1/4W
R302	ERJ6GEYJ101V	RES,M 100-J-1/10W	R516	ERDS2TJ101T	RES,C 100-J-1/4W
R303	ERJ6GEYJ101V	RES,M 100-J-1/10W	R517	ERG1SJ103P	RES,M 10K-J-1W
R305	ERJ6GEYJ103V	RES,M 10K-J-1/10W	R518	ERDS1FJ1R5T	RES,C 1.5-J-1/2W
R306	ERJ6GEYJ103V	RES,M 10K-J-1/10W	R519	ERQ1CKPR22S	RES,F .22-K-1W
R309	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	R520	ERQ14AJ2R2E	RES,F 2.2-J-1/4W
R310	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W	R521	ER0S2TKF8201	RES,M 8.2K-F-1/4W
R328	ERDS2TJ105T	RES,C 1M-J-1/4W	R522	ER0S2TKF3001	RES,M 3K-F-1/4W
R329	ERJ6GEYJ304V	RES,M 300K-J-1/10W	R527	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R341	ERJ6GEYJ474V	RES,M 470K-J-1/10W	R528	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R401	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R529	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R402	ERJ6GEYJ471V	RES,M 470-J-1/10W	R542	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W
R403	ERJ6GEYJ622V	RES,M 6.2K-J-1/10W	R555	ERDS2TJ472T	RES,C 4.7K-J-1/4
R404	ERJ6GEYJ101V	RES,M 100-J-1/10W	R556	ERDS2TJ103T	RES,C 10K-J-1/4W
R405	ERJ6GEYJ102V	RES,M 1K-J-1/10W	R557	ERDS2TJ103T	RES,C 10K-J-1/4W
R409	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W	R558	ERDS2TJ472T	RES,C 4.7K-J-1/4
R410	ERJ6ENF2492V	RES,M 24.9K-F-1/10W	R559	ERDS2TJ102T	RES,C 1K-J-1/4W
R412	ERJ6ENF1103V	RES,M 110K-F-1/10W	R561	ERDS2TJ222T	RES,C 2.2K-J-1/4W

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
R562	ERDS2TJ473T	RES,C 47K-J-1/4W
R576	ERQ12AJ101P	RES,F 100-J-1/2W
R590	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R591	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W
R592	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R596	ERDS2TJ102T	RES,C 1K-J-1/4W
R601	ERJ6GEYJ391V	RES,M 390-J-1/10W
R606	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R613	ERJ6GEYJ471V	RES,M 470-J-1/10W
R614	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R618	ERJ6GEYJ474V	RES,M 470K-J-1/10W
R619	ERJ6GEYJ563V	RES,M 56K-J-1/10W
R620	ERJ6GEYJ153V	RES,M 15K-J-1/10W
R701	ERJ6GEYJ122V	RES,M 1.2K-J-1/10W
R702	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R704	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R705	ERDS2TJ472T	RES,C 4.7K-J-1/4
R706	ERDS2TJ394T	RES,C 390K-J-1/4W
R707	ERDS2TJ393T	RES,C 39K-J-1/4W
R708	ERDS2TJ101T	RES,C 100-J-1/4W
R709	ERDS2TJ103T	RES,C 10K-J-1/4W
R710	ERDS2TJ103T	RES,C 10K-J-1/4W
R711	ERDS2TJ183T	RES,C 18K-J-1/4W
R712	ERDS2TJ472T	RES,C 4.7K-J-1/4
R713	ERDS2TJ822T	RES,C 8.2K-J-1/4W
R714	ERDS1FJ102T	RES,C 1K-J-1/2W
R716	ERDS2TJ101T	RES,C 100-J-1/4W
R717	ERDS2TJ101T	RES,C 100-J-1/4W
R719	ERDS2TJ331T	RES,C 330-J-1/4W
R720	ERDS2TJ103T	RES,C 10K-J-1/4W
R752	ERDS2TJ103T	RES,C 10K-J-1/4W
R753	ERDS1FJ102T	RES,C 1K-J-1/2W
R754	ERDS1TJ751T	RES,C 750-J-1/2W
R756	ERG2FJ820H	RES,M 82-J-2W
R801	ERF7ZK1R0	RES,W 1.0-K-7W
R802	ERC14GK824D	RES,C 820K-K-1/4W
R807	ERDS2TJ820T	RES,C 82-J-1/4W
R808	ERDS2TJ680T	RES,C 68-J-1/4W
R809	ERDS2TJ472T	RES,C 4.7K-J-1/4
R810	ERDS2TJ473T	RES,C 47K-J-1/4W
R811	ERDS2TJ472T	RES,C 4.7K-J-1/4
R812	ERDS2TJ473T	RES,C 47K-J-1/4W
R813	ERDS1FJ122T	RES,C 1.2K-J-1/2
R814	ERG3FJ103H	RES,M 10K-J-3W
R815	ERDS2TJ331T	RES,C 330-J-1/4W
R816	ERDS2TJ471T	RES,C 470-J-1/4W
R817	ER0S2TKF1371	RES,M 1370-F-1/4W
R818	ERDS2TJ220T	RES,C 22-J-1/4W
R819	ERDS1FJ390T	RES,C 39-J-1/2W
R820	ERDS1FJ120T	RES,C 12-J-1/2W

REF NO.	PART NO.	DESCRIPTION
R821	ERX12SJ1R0P	RES,M 1.0-J-1/2W
R822	ERX12SJ1R0P	RES,M 1.0-J-1/2W
R823	ERDS2TJ102T	RES,C 1K-J-1/4W
R824	ERDS2TJ153T	RES,C 15K-J-1/4W
R825	ERDS2TJ104T	RES,C 100K-J-1/4W
R826	ERDS2TJ103T	RES,C 10K-J-1/4W
R828	ERDS2TJ103T	RES,C 10K-J-1/4W
R829	ERDS2TJ103T	RES,C 10K-J-1/4W
R830	ERDS2TJ103T	RES,C 10K-J-1/4W
R832	ERD75TAJ825	RES,C 8.2MEG-J-3/4W
R835	ERDS2TJ101T	RES,C 100-J-1/4W
R836	ERG1SJ273P	RES,M 27K-J-1W
R837	ERDS2TJ222T	RES,C 2.2K-J-1/4W
R839	ERDS2TJ222T	RES,C 2.2K-J-1/4W
R840	ERDS2TJ470T	RES,C 47-J-1/4W
R846	ERDS2TJ272T	RES,C 2.7K-J-1/4W
R847	ERDS2TJ223T	RES,C 22K-J-1/4W
R850	ERX3FJ2R7	RES,M 2.7-J-3W
R852	ERDS1FJ391T	RES,C 390-J-1/2W
R855	ERDS2TJ913T	RES,C 91K-J-1/4W
R856	ERDS2TJ123T	RES,C 12K-J-1/4W
R857	ERDS1FJ1R0T	RES,C 1.0-J-1/2W
R858	ERDS1FJ1R0T	RES,C 1.0-J-1/2W
R859	ERDS2TJ103T	RES,C 10K-J-1/4W
R860	ERDS1FJ102T	RES,C 1K-J-1/2W
R861	ERX12SJR22P	RES,M .22-J-1/2W
R862	ERX12SJR22P	RES,M .22-J-1/2W
R863	ERX12SJR22P	RES,M .22-J-1/2W
R881	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R882	ERJ6GEYJ271V	RES,M 270-J-1/10W
R883	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R884	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R885	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R886	ERDS2TJ181T	RES,C 180-J-1/4W
R901	ERJ6GEYJ331V	RES,M 330-J-1/10W
R902	ERJ6GEYJ391V	RES,M 390-J-1/10W
R903	ERJ6GEYJ471V	RES,M 470-J-1/10W
R922	ERJ6GEYJ331V	RES,M 330-J-1/10W
R951	ERDS2TJ821T	RES,C 820-J-1/4W
R952	ERDS2TJ223T	RES,C 22K-J-1/4W
R953	ERDS2TJ332T	RES,C 3.3K-J-1/4W
R954	ERDS2TJ431T	RES,C 430-J-1/4W
R956	ERDS2TJ510T	RES,C 51-J-1/4W
R958	ERDS2TJ391T	RES,C 390-J-1/4W
R959	ERDS2TJ101T	RES,C 100-J-1/4W
R960	ERQ14AJ100P	RES,F 10-J-1/4W
R961	ERQ1CJP331S	RES,F 330-J-1W
R962	ERDS2TJ330T	RES,C 33-J-1/4W
R963	ERDS2TJ330T	RES,C 33-J-1/4W
R964	ERDS2TJ471T	RES,C 470-J-1/4W

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION	REF NO.	PART NO.	DESCRIPTION
R965	ERDS2TJ563T	RES,C 56K-J-1/4W	R1567	ERDS2TJ104T	RES,C 100K-J-1/4W
R966	ERDS1FJ471P	RES,C 470-J-1/2W	R1568	ERDS2TJ104T	RES,C 100K-J-1/4W
R967	ERDS2TJ563T	RES,C 56K-J-1/4W	R1570	ERC12GK104D	RES,C 100K-K-1/2W
R968	ERDS2TJ471T	RES,C 470-J-1/4W	R1571	ERQ2RJW821E	RES,F 820-J-2W
R969	ERDS2TJ390T	RES,C 39-J-1/2W	R1572	ERDS2TJ334T	RES,C 330K-J-1/4W
R970	ERDS2TJ2R7T	RES,C 2.7-J-1/4W	R1573	ERDS2TJ473T	RES,C 47K-J-1/4W
R971	ERDS2TJ2R7T	RES,C 2.7-J-1/4W	R1575	ERDS2TJ683T	RES,C 68K-J-1/4W
R972	ERDS2TJ390T	RES,C 39-J-1/2W	R1576	ERDS2TJ101T	RES,C 100-J-1/4W
R973	ERDS2TJ101T	RES,C 100-J-1/4W	R1577	EVMEGSA00B54	RESISTOR, VARIABLE
R974	ERDS2TJ333T	RES,C 33K-J-1/4W	R1578	ERDS2TJ822T	RES,C 8.2K-J-1/4W
R975	ERDS2TJ101T	RES,C 100-J-1/4W	R1579	ERDS2TJ123T	RES,C 12K-J-1/4W
R976	ERDS2TJ101T	RES,C 100-J-1/4W	R1580	ERDS2TJ563T	RES,C 56K-J-1/4W
R977	ERDS2TJ561T	RES,C 560-J-1/4W	R1581	EVMEGSA00B53	RESISTOR, VARIABLE
R978	ERDS2TJ101T	RES,C 100-J-1/4W	R1582	ERDS2TJ752T	RES,C 7.5K-J-1/4W
R987	ERDS2TJ472T	RES,C 4.7K-J-1/4	R1583	ERDS2TJ223T	RES,C 22K-J-1/4W
R988	ERDS2TJ331T	RES,C 330-J-1/4W	R1584	ERDS2TJ222T	RES,C 2.2K-J-1/4W
R989	ERDS2TJ682T	RES,C 6.8K-J-1/4W	R1585	ERDS2TJ102T	RES,C 1K-J-1/4W
R990	ERDS2TJ471T	RES,C 470-J-1/4W	R1586	ERDS1TJ681T	RES,C 680-J-1/2W
R993	ERDS2TJ471T	RES,C 470-J-1/4W	R1587	ERDS2TJ101T	RES,C 100-J-1/4W
R1051	ER0S2TKF1002	RES,M 10K-F-1/4	R1588	ERG2FJ472H	RES,M 4.7K-J-2W
R1052	ER0S2TKF2611	RES,M 2.6K-F-1/4W	R1589	ERG3FJ821H	RES,M 820-J-3W
R1053	ER0S2TKF2321	RES,M 2.32K-F-1/4W	R1590	ERDS2TJ223T	RES,C 22K-J-1/4W
R1054	ER0S2TKF3481	RES,M 3.48K-F-1/4W	R1591	ERG3FJ821H	RES,M 820-J-3W
R1055	ER0S2TKF5231	RES,M 5.2K-F-1/4W	R1592	ERDS2TJ684T	RES,C 680K-J-1/4W
R1056	ER0S2TKF9761	RES,M 9.76-F-1/4W	R1593	ERDS2TJ125T	RES,C 1.2M-J-1/4W
R1057	ER0S2TKF2372	RES,M 23.7K-F-1/4W	R1594	ERDS2TJ125T	RES,C 1.2M-J-1/4W
R1058	ERDS2TJ103T	RES,C 10K-J-1/4W	R1595	ERDS2TJ102T	RES,C 1K-J-1/4W
R1059	ERDS2TJ102T	RES,C 1K-J-1/4W	R1801	ERJ6GEYJ301V	RES,M 300-J-1/10W
R1062	ERDS2TJ182T	RES,C 1.8K-J-1/4W	R1802	ERJ6GEYJ104V	RES,M 100K-J-1/10W
R1063	ERDS2TJ470T	RES,C 47-J-1/4W	R1803	ERJ6GEYJ474V	RES,M 470K-J-1/10W
R1064	ERDS2TJ103T	RES,C 10K-J-1/4W	R1804	ERJ6GEYJ202V	RES,M 2K-J-1/10W
R1065	ERDS2TJ104T	RES,C 100K-J-1/4W	R1805	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R1066	ERDS2TJ473T	RES,C 47K-J-1/4W	R1807	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R1510	ERC12GK101D	RES,C 100-K-1/2W	R1808	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R1511	ERDS2TJ913T	RES,C 91K-J-1/4W	R1809	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R1512	ERDS2TJ913T	RES,C 91K-J-1/4W	R1810	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R1513	ERDS2TJ753T	RES,C 75K-J-1/4W	R1811	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R1550	ERDS2TJ221T	RES,C 220-J-1/4W	R1812	ERJ6GEYJ153V	RES,M 15K-J-1/10W
R1554	ERDS2TJ103T	RES,C 10K-J-1/4W	R1813	ERJ6GEYJ153V	RES,M 15K-J-1/10W
R1555	ERDS2TJ822T	RES,C 8.2K-J-1/4W	R1814	ERJ6GEYJ271V	RES,M 270-J-1/10W
R1556	ER0S2TKF1802	RES,M 18K-F-1/4W	R1815	ERJ6GEYJ361V	RES,M 360-J-1/10W
R1558	ERDS2TJ473T	RES,C 47K-J-1/4W	R1822	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R1559	ERDS2TJ561T	RES,C 560-J-1/4W	R1823	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R1560	ERDS2TJ472T	RES,C 4.7K-J-1/4	R1825	ERJ6GEYJ471V	RES,M 470-J-1/10W
R1561	ERDS2TJ564T	RES,C 560K-J-1/4W	R1827	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R1562	ERDS2TJ472T	RES,C 4.7K-J-1/4	R1828	ERJ6GEYJ471V	RES,M 470-J-1/10W
R1563	ER0S2TKF9102	RES,M 91K-F-1/4W	R1830	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R1564	ER0S2TKF6041	RES,M 6.04-F-1/4W	R1856	ERJ6GEYJ153V	RES,M 15K-J-1/10W
R1565	ERDS2TJ104T	RES,C 100K-J-1/4W	R2203	ERJ6GEYJ751V	RES,M 750-J-1/10W
R1566	ERDS2TJ104T	RES,C 100K-J-1/4W	R2206	ERJ6GEYJ102V	RES,M 1K-J-1/10W

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
R2207	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2220	ERJ6GEYJ101V	RES,M 100-J-1/10W
R2221	ERJ6GEYJ273V	RES,M 27K-J-1/10W
R2303	ERJ6GEYJ822V	RES,M 8.2K-J-1/10W
R2304	ERJ6GEYJ822V	RES,M 8.2K-J-1/10W
R2307	ERJ6GEYJ822V	RES,M 8.2K-J-1/10W
R2309	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R2310	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R2311	ERJ6GEYJ271V	RES,M 270-J-1/10W
R2316	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R2317	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R2318	ERDS1TJ332T	RES,C 3.3K-J-1/2W
R2319	ERDS1TJ332T	RES,C 3.3K-J-1/2W
R2323	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R2324	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2325	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2326	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2331	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2332	ERJ6GEYJ105V	RES,M 1M-J-1/10W
R2333	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2334	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R2335	ERJ6GEYJ183V	RES,M 18K-J-1/10W
R2336	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W
R2337	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W
R2338	ERJ6GEYJ332V	RES,M 3.3K-J-1/10W
R2339	ERJ6GEYJ183V	RES,M 18K-J-1/10W
R2340	ERJ6GEYJ392V	RES,M 3.9K-J-1/10W
R2345	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R2346	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2347	ERJ6GEYJ105V	RES,M 1M-J-1/10W
R2348	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R2349	ERJ6GEYJ472V	RES,M 4.7K-J-1/10W
R2356	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R2366	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R2367	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R2385	ERG1SJ151P	RES,M 150-J-1W
R2386	ERG1SJ151P	RES,M 150-J-1W
R2431	ERJ6GEYJ105V	RES,M 1M-J-1/10W
R2432	ERJ6GEYJ105V	RES,M 1M-J-1/10W
R2433	ERJ6ENF4701V	RES,M 4.7K-F-1/10W
R2434	ERJ6GEYJ681V	RES,M 680-J-1/10W
R2435	ERJ6ENF3902V	RES,M 39K-F-1/10W
R2436	ERJ6ENF6202V	RES,M 62K-F-1/10W
R2437	ERJ6GEYJ681V	RES,M 680-J-1/10W
R2438	ERJ6GEYJ271V	RES,M 270-J-1/10W
R2439	ERJ6GEYJ271V	RES,M 270-J-1/10W
R3001	ERJ6GEYJ101V	RES,M 100-J-1/10W
R3003	ERJ6ENF75R0V	RES,M 75.0-F-1/10W
R3004	ERJ6ENF75R0V	RES,M 75.0-F-1/10W
R3005	ERJ6ENF75R0V	RES,M 75.0-F-1/10W

REF NO.	PART NO.	DESCRIPTION
R3013	ERJ6GEYJ330V	RES,M 33-J-1/10W
R3014	ERJ6GEYJ330V	RES,M 33-J-1/10W
R3015	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R3016	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R3017	ERJ6GEYJ330V	RES,M 33-J-1/10W
R3018	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R3019	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R3020	ERJ6GEYJ330V	RES,M 33-J-1/10W
R3021	ERJ6GEYJ330V	RES,M 33-J-1/10W
R3022	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R3023	ERJ6GEYJ330V	RES,M 33-J-1/10W
R3024	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R3025	ERJ6GEYJ330V	RES,M 33-J-1/10W
R3060	ERJ6GEYJ471V	RES,M 470-J-1/10W
R3061	ERJ6GEYJ471V	RES,M 470-J-1/10W
R3065	ERJ6GEYJ680V	RES,M 68-J-1/10W
R3069	ERJ6GEYJ471V	RES,M 470-J-1/10W
R3152	ERDS2TJ224T	RES,C 220K-J-1/4W
R3154	ERDS2TJ224T	RES,C 220K-J-1/4W
R3801	ERDS2TJ471T	RES,C 470-J-1/4W
R3802	ERDS2TJ471T	RES,C 470-J-1/4W
R3803	ERDS2TJ471T	RES,C 470-J-1/4W
R3804	ER0S2TKF9100	RES,M 910-F-1/4W
R3805	ER0S2TKF9100	RES,M 910-F-1/4W
R3806	ER0S2TKF9100	RES,M 910-F-1/4W
R3808	ER0S2TKF1001	RES,M 1K-F-1/4W
R3810	ER0S2TKF1001	RES,M 1K-F-1/4W
R3811	ER0S2TKF1001	RES,M 1K-F-1/4W
R3814	ER0S2TKF7681	RES,M 7.68K-F-1/4W
R3815	ERG1SJ104P	RES,M 100K-J-1W
R3816	ERDS2TJ103T	RES,C 10K-J-1/4W
R3817	ERG1SJ104P	RES,M 100K-J-1W
R3818	ERG1SJ104P	RES,M 100K-J-1W
R3819	ER0S2TKF1501	RES,M 1.5K-F-1/4W
R3823	ERQ12AJ121P	RES,F 120-J-1/2W
R3824	ERC12GK222V	RES,C 2200-K-1/2W
R3825	ERC12GK222V	RES,C 2200-K-1/2W
R3826	ERC12GK222V	RES,C 2200-K-1/2W
R4319	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W <i>CT-36SX31E/CE/UE</i>
R4319	ERJ6GEYJ272V	RES,M 2.7K-J-1/10W <i>CT-32SX31E/CE/UE</i>
R4326	ERDS2TJ272T	RES,C 2.7K-J-1/4W
R4327	ERJ6GEYJ331V	RES,M 330-J-1/10W
R4328	ERJ6GEYJ560V	RES,M 56-J-1/10W
R4329	ERJ6GEYJ182V	RES,M 1.8K-J-1/10W
R4330	ERJ6GEYJ561V	RES,M 560-J-1/10W
R4331	ERJ6GEYJ391V	RES,M 390-J-1/10W
R4332	ERJ6GEYJ393V	RES,M 39K-J-1/10W
R4333	ERJ6GEYJ304V	RES,M 300K-J-1/10W
R4334	ERJ6GEYJ152V	RES,M 1.5K-J-1/10W

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
R4336	ERJ6GEYJ680V	RES,M 68-J-1/10W
R4338	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R4339	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R4340	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R4341	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
R4342	ERJ6GEYJ223V	RES,M 22K-J-1/10W
R4344	ERJ6GEYJ682V	RES,M 6.8K-J-1/10W
R4345	ERJ6GEYJ103V	RES,M 10K-J-1/10W
R5001	ERDS2TJ472T	RES,C 4.7K-J-1/4
R5003	ERX12SJ2R7P	RES,M 2.7-J-1/2W
R5004	ERDS2TJ272T	RES,C 2.7K-J-1/4W
R5005	ER0S2TKF1331	RES,M 1.33-F-1/4W
R5006	ER0S2TKF3320	RES,M 332-F-1/4W
R5007	ER0S2TKF1001	RES,M 1K-F-1/4W
R5008	ER0S2TKF3832	RES,M 38.3K-F-1/4W
R5009	ER0S2TKF9091	RES,M 9.09K-F-1/4W
R5010	ER0S2TKF2213	RES,M .221-F-1/4
R5011	ER0S2TKF5491	RES,M 5.49K-F-1/4W
R5012	ER0S2TKF2701	RES,M 2.7K-F-1/4W
R5014	ERDS1FJ180T	RES,C 18-J-1/2W
R6501	ERJ6GEYJ273V	RES,M 27K-J-1/10W
R6502	ERJ6GEYJ473V	RES,M 47K-J-1/10W
R6503	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R6504	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R6505	ERJ6ENF1301V	RES,M 1.3K-F-1/10W
R6506	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R6507	ERJ6GEYJ221V	RES,M 220-J-1/10W
R6509	ERJ6GEYJ471V	RES,M 470-J-1/10W
R6510	ERJ6GEYJ471V	RES,M 470-J-1/10W
R6512	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R6517	ERJ6GEYJ471V	RES,M 470-J-1/10W
R6520	ERJ6GEYJ471V	RES,M 470-J-1/10W
R6522	ERJ6GEYJ561V	RES,M 560-J-1/10W
R6524	ERJ6GEYJ471V	RES,M 470-J-1/10W
R6538	ERJ6GEYJ821V	RES,M 820-J-1/10W
R6548	ERJ6GEYJ471V	RES,M 470-J-1/10W
R6565	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R6566	ERJ6GEYJ102V	RES,M 1K-J-1/10W
R6567	ERJ6GEYJ222V	RES,M 2.2K-J-1/10W
SWITCHES		
S001	EVQPF106K	SWITCH
S002	EVQPBD05R	SWITCH
S003	EVQPBD05R	SWITCH
S004	EVQPBD05R	SWITCH
S005	EVQPBD05R	SWITCH
S006	EVQPBD05R	SWITCH
S007	EVQPBD05R	SWITCH
TRANSFORMERS		
T501	ETH19Y70AY	TRANSFORMER, HORIZONTAL DRIVER
T551	KFT5AA369F	TRANSFORMER, FLYBACK
T801	ETS44KA165AG	TRANSFORMER

REF NO.	PART NO.	DESCRIPTION
T802	TLP16297	TRANSFORMER, POWER SUPPLY
T1551	ETF18L32B	TRANSFORMER (FTB)
CRISTALS/FILTERS		
X001	TSSA092	CRYSTAL OSCILLATOR
X501	TSS2AA001	CRYSTAL, 3.58MHZ
X601	TAFC5B503F30	CRYSTAL
X1801	TSSA092	CRYSTAL OSCILLATOR
OTHERS		
TNR001	ENG36613G	TUNER
TNR002	ENG36603G	TUNER
M001	EUR511500	XMTR, REMOTE CONTROL
M002	UR51EC975A	BATTERY COVER, REMOTE CON
M003	A90LSW195X	CRT 36 CT-36SX31E/CE/UE
M004	M80LSW195X	CRT 32 CT-32SX31E/CE/UE
M005	TJSC01800	CRT SOCKET
M006	0FMK014ZZ	CONVERGENCE CORRECTOR STRIP
DY	TLY2AA017	YOKE, DEFLECTION CT-36SX31E/CE/UE
DY	TLY2AA018	DELECTION YOKE CT-32SX31E/CE/UE
DEG	TSP2AA015	COIL, DEGAUSSING 36 CT-36SX31E/CE/UE
DEG	TSP2AA016-1	COIL, DEGAUSSING 32 CT-32SX31E/CE/UE
M007	TXFYA010EEW	ASSY, DAG GROUND CT-32SX31E/CE/UE
M008	EAGG1218M2	DOME, SPEAKER
M009	ENPE630	SPLITTER, RF
M010	TBM2AA0024	BADGE, PANASONIC
M011	TEK6940	DOOR CATCH
M012	TKP2AA0391	IR PANEL
M013	TQB2AA7060	REMOTE GUIDE
M014	TKP2AA0403S	ASSY, FRONT DOOR
M015	TMW2A97121	STRAIN RELIEF: AC LINE CORD
M016	TSX2AA0111	AC LINE CORD
M017	TQB2AA0372	MANUAL, OWNERS CT-32SX31E/UE CT-36SX31E/UE
M018	TQB2AA0402	MANUAL, OWNERS CT-32SX31CE CT-36SX31CE
M019	TSP2AF003	COIL, GEOMAGNETIC CT-36SX31E/CE/UE
M020	TSP2AF004	COIL, GEOMAGNETIC CT-32SX31E/CE/UE
M021	TXANV07ESER	REPAIR KIT (FRONT PANELS) Right panel(1),Left panel(1) CT-32SX31E/CE/UE
M022	TXANV08ESER	REPAIR KIT (FRONT PANELS) Right panel(1),Left panel(1) CT-36SX31E/CE/UE
M023	TXFBX01ESER	ASSY, POWER BUTTON Plastic Button & Spring

REPLACEMENT PARTS LIST

Model: CT-32SX31E/UE/CE & CT-36SX31E/UE/CE.

Important Safety Notice: Components printed in **BOLD TYPE** have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

REF NO.	PART NO.	DESCRIPTION
M024	TXFKU19ESER	ASSY, CABINET BACK Rubber sheet(1), Double Insul. Label(1), Cover Cabt.Back(1), Felt(1), Label X-ray Warning Frnt.(1), Label, CRTreplacement(1) <i>CT-32SX31E/CE/UE</i>
M025	TXFKU20ESER	ASSY, CABINET BACK Rubber sheet(1), Double Insul.Label(1), Cover Cabt.Back(1), Felt(1), Label X-ray Warning Frnt.(1), Label, CRTreplacement(1) <i>CT-36SX31E/CE/UE</i>
M026	TXFKY29ESER	ASSY, CABINET FRONT Rubber Sheet(1), Badge panasonic(1), Overlay(1), Pin gt(1), Ir Panel(1), Cab. Front(1), Felt Roll (8mm x 46m) or (12mm x 46m). <i>CT-32SX31E/CE/UE</i>
M027	TXFKY30ESER	ASSY, CABINET FRONT Rubber Sheet(1), Badge panasonic(1), Overlay(1), Pin gt(1), Ir Panel(1), Cab. Front(1), Felt Roll (8mm x 46m) or (12mm x 46m) <i>CT-36SX31E/CE/UE</i>
M028	TXFSPB01BSER	ASSY, SPEAKER BRACKET Sponge(2), Sleeve(2), Frame, chassis(1), Instr.Sheet spkr.Brkts.(1). <i>CT-36SX31E/CE/UE</i>
M029	TXFSPB02BSER	ASSY, SPEAKER BRACKET Speaker horn(1), Sponge(2), sleeve(2), Instr.Sheet spkr.Brkts.(1). <i>CT-32SX31E/CE/UE</i>
JK3001	TJB2AA0361	TERMINAL, REAR A/V
JK3151	TJBA187	JACK, A/V OUTPUT
M030	TQB2AA7078	V-CHIP

