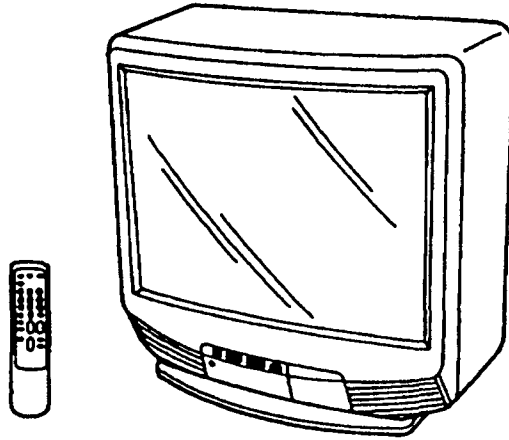


KV-20S11

RM-Y116

SERVICE MANUAL

US Model
Chassis No. SCC-G92D-A



BA-2 CHASSIS

MODELS OF THE SAME SERIES	
KV-20S11	KV-13M10/MT1300/14R10/1460R
KV-20M10/20S10/MT2000/ST2050 KV-21R10/21RS10/2180R/2190RS	

SPECIFICATIONS

Television system	American TV standards
Channel coverage	VHF: 2-13 UHF: 14-69 CATV: 1-125
Antenna	75-ohm external antenna terminal for VHF/UHF
Picture tube	Trinitron® tube
Power requirements	120 V, 60 Hz
Screen size	20 in.
Inputs	1 video, 1 audio
Speaker output	2 W + 2 W
Power consumption	100 W when in use 4 W in standby
Dimensions (W/H/D)	471.2 mm (205/8 × 183/4 × 185/8 in)
Mass	21.8 kg (48 lb 10 oz)
Supplied accessories	Size AA batteries (2) Remote commander RM-Y116 (1), Dipole antenna (1), Antenna connector (1)

Design and specifications are subject to change without notice.



TRINITRON® COLOR TV

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

- 1 Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges
- 2 Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors
- 3 Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators
- 4 Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair Point them out to the customer and recommend their replacement
- 5 Look for parts which, though functioning, show obvious signs of deterioration Point them out to the customer and recommend their replacement.
- 6 Check the line cord for cracks and abrasion Recommend the replacement of any such line cord to the customer.
- 7 Check the condition of the monopole antenna (if any) Make sure the end is not broken off, and has the plastic cap on it Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement
- 8 Check the B+ and HV to see they are at the values specified Make sure your instruments are accurate, be suspicious of your HV meter if sets always have low HV
- 9 Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage Check leakage as described below

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microamperes).

Leakage current can be measured by any one of three methods

- 1 A commercial leakage tester, such as the Simpson 229 or RCA WT-540A Follow the manufacturers' instructions to use these instruments
- 2 A battery-operated AC milliammeter The Data Precision 245 digital multimeter is suitable for this job
- 3 Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable (See Fig A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential (See Fig B)

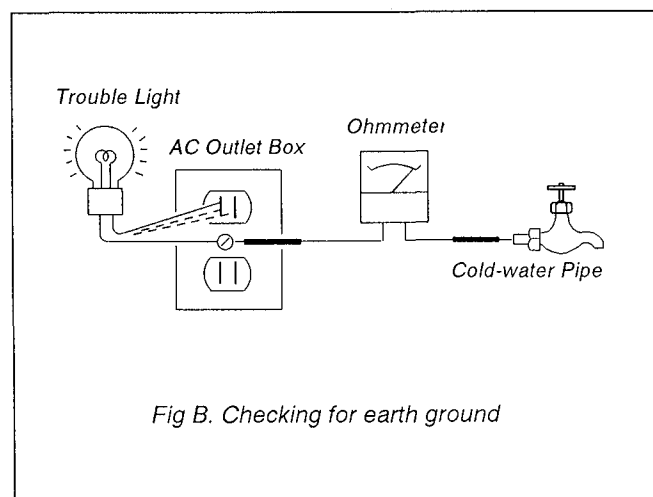
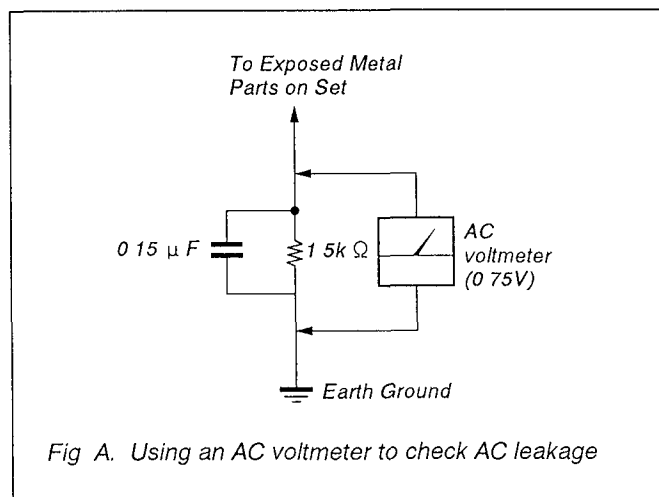


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(CAUTION)

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING!!

**AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS
 THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.**

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK Δ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED

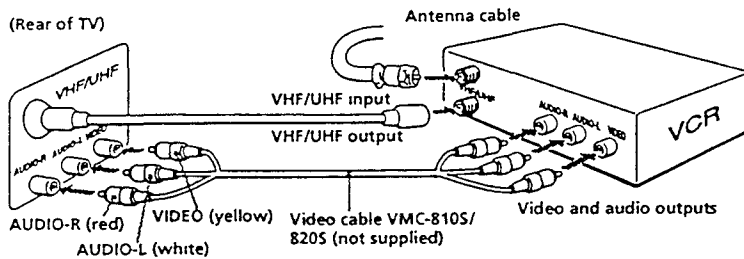
SECTION 1 GENERAL

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

Connections

Connecting to a VCR

To connect the VCR to the TV, first check the model number of the TV and select the appropriate connection diagram below. For details on connection, see the instruction manual of the VCR. Before making the connection, disconnect the AC power cords of equipment being used.



To watch video tapes

Press the TV/VIDEO button until "VIDEO" appears on the screen.

Setting cable TV on or off

If the TV is connected to a cable TV system, then the factory setting CABLE ON is correct. If the TV is not connected, set CABLE to OFF.

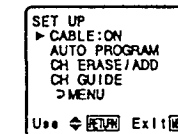
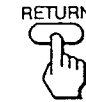
Note

If more than 90 seconds elapse after you press a button, the menu disappears automatically.

- 1 Press MENU.
The main menu appears.



- 2 Press $\Delta+$ or $\nabla-$ on the remote commander to move the cursor (\blacktriangleright) on the screen to SET UP. To select that function, press RETURN.
The SET UP menu appears.

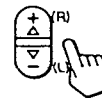


Note

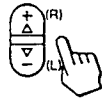
If CABLE appears in black, the TV is set to video input and CABLE cannot be selected. Press TV/VIDEO so that a channel number appears.

- 3 Set CABLE to ON or OFF.

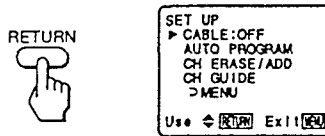
(1) If the cursor is not beside CABLE, press $\Delta+$ or $\nabla-$ to move the cursor and press RETURN.



(2) Press $\Delta+$ or $\nabla-$, to select ON or OFF.



(3) Press RETURN.



4 Press MENU to return to the original screen.



Presetting channels

TV channels can be preset easily: first store all the receivable channels automatically, following the procedure below. Next, erase unwanted channels or add additional channels. Preset channels during the day rather than late at night, when some channels may not be broadcasting.

1 Press MENU.

2 Press $\Delta+$ or $\nabla-$ on the remote commander to move the cursor (\blacktriangleright) on the screen to SET UP and press RETURN.
The SET UP menu appears.



Note

If AUTO PROGRAM appears in black, the TV is set to video input and AUTO PROGRAM cannot be selected. Press TV/VIDEO so that a channel number appears.

3 Select AUTO PROGRAM.

(1) Press $\Delta+$ or $\nabla-$ to move the cursor (\blacktriangleright) to AUTO PROGRAM.



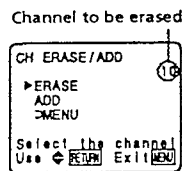
(2) Press RETURN.



"AUTO PROGRAM" appears on the screen and the TV starts scanning and presetting channels automatically. When all the receivable channels are stored, "AUTO PROGRAM" disappears and the lowest numbered channel is displayed.

Erasing or adding channels

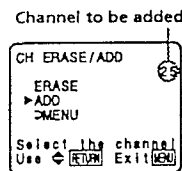
- 1 Press MENU.
- 2 Press $\Delta+$ or $\nabla-$ to select SET UP and press RETURN.
- 3 Press $\Delta+$ or $\nabla-$ to select CH ERASE/ADD and press RETURN.
- 4 To erase an unwanted channel:
 - (1) Press CH +/- to select the channel you want to erase.
 - (2) Make sure the cursor (\blacktriangleright) is beside ERASE.



- (3) Press RETURN.
The indication “-” appears beside the channel number, showing that the channel is erased from the preset memory.

To add a channel that you want:

- (1) Press 0-9 buttons to select the channel you want to add and press ENTER.
- (2) Press $\Delta+$ or $\nabla-$ to select ADD.



- (3) Press RETURN.
The indication “+” appears beside the channel number, showing that the channel is added to the preset memory.

- 5 To erase and/or add other channels, repeat step 4.
- 6 When finished, press MENU.

Note

If you erase or add a VHF or UHF channel, the cable TV channel with the same number is also erased or added, and vice versa.

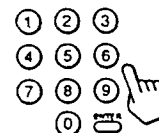
Functions

Note

If “VIDEO” appears on the screen, press TV/VIDEO so that a channel number appears.

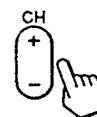
Selecting a channel directly

Press the 0-9 buttons to select a channel. Or press ENTER after entering the channel for immediate selection.



To scan through channels

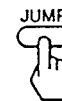
Press CH +/- until the channel you want appears.



Switching quickly between two channels

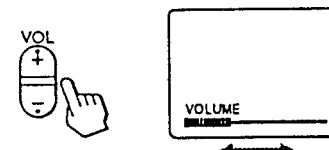
Press JUMP.

The channel you watched previously appears. Pressing JUMP again switches back to the previous channel.



Adjusting the volume

Press VOL +/- to adjust the volume.



Muting the sound

Press MUTING.
"MUTING" appears on the screen.



To restore the sound, press MUTING again, or press VOL +.

Displaying on-screen information

Use this feature to check your channels and MTS mode.
Press DISPLAY.



To cancel the display, press DISPLAY again.

Setting the Sleep Timer

The TV stays on for the length of time specified and then shuts off automatically.

Press SLEEP repeatedly until the time (minutes) wanted appears. Each time you press SLEEP, the time changes as follows: 30 → 60 → 90 → OFF.



To cancel the Sleep Timer, press SLEEP repeatedly until "SLEEP OFF" appears, or turn the TV off.

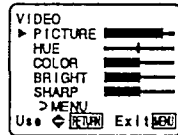
Note

If DISPLAY or MUTING is pressed with Caption Vision selected, the channel or muting display will disappear after a few seconds.

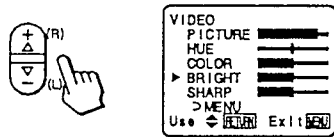
Adjusting the picture

When watching TV programs, the quality of the picture can be adjusted to suit your taste.

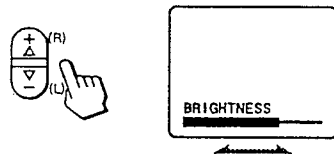
- 1 Press MENU.
- 2 Make sure the cursor (▶) is beside VIDEO and press RETURN.



- 3 Select the item to adjust. See following chart for details on results of adjustments. For example:
To adjust brightness, press Δ+ or ▽- to select BRIGHT and press RETURN.



- 4 Adjust the selected item:
(1) Press Δ+ or ▽- to adjust the item.



- (2) Press RETURN.
The new setting appears in the VIDEO menu.

- 5 To adjust other items, repeat steps 3 and 4 above.

Description of adjustable items

Item	Adjustment	
	Press Δ+ to	Press ▽- to
PICTURE	Increase picture contrast for vivid color	Decrease picture contrast for soft color
HUE	Make skin tones become greenish	Make skin tones become purplish
COLOR	Increase color intensity	Decrease color intensity
BRIGHT	Brighten the picture	Darken the picture
SHARP	Sharpen the picture	Soften the picture

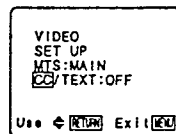
To restore the factory settings

Press RESET while the VIDEO menu is displayed. All the settings except PICTURE are restored to factory settings.

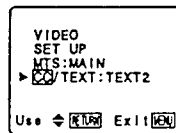
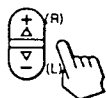
Displaying Caption Vision

Some programs are broadcast with Caption Vision. To display Caption Vision, select either CC1, CC2, TEXT1, or TEXT2 from the menu. CC1 or CC2 shows you a caption, that is a printed version of the dialog or sound effects of a program. (The mode should be set to CC1 for most programs.) TEXT1 or TEXT2 shows you text, that is information presented using half of the screen. It is not usually related to the program.

- 1 Press MENU.
- 2 Press Δ+ or ∇- to select **CC** /TEXT and press RETURN.



- 3 Press Δ+ or ∇- to select the caption type and press RETURN.



Notes

- Captions disappear for a few seconds when you press the DISPLAY or MUTING button.
- Captions may appear with a white box or other errors instead of a certain word. Poor reception of TV programs can also cause errors in captions.

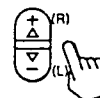
Specifying stereo or bilingual programs (MTS)

The Multichannel TV Sound (MTS) feature allows you to enjoy stereo sound (MAIN) or Second Audio Programs (SAP) at your choice. The initial setting is stereo sound (MAIN).

- 1 Press MENU.
- 2 Make sure the cursor (▶) is beside MTS and press RETURN.



- 3 Press Δ+ or ∇- to select MAIN, SAP, or MONO and press RETURN.



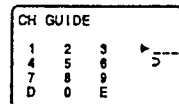
MTS mode	Sound source
MAIN	Listen to stereo sound.
SAP	Listen to bilingual programs. The sound of non-SAP programs will be muted when SAP is selected.
MONO	Reduce noise during stereo broadcasts.

Customizing the channel number buttons

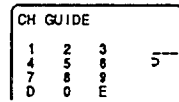
Up to 12 channels can be assigned to a specific channel number. This feature allows the easy selection of your favorite channels using the on-screen menu. For example, channel number button 2 can be assigned to channel 124.

Assigning a channel number button to a favorite channel

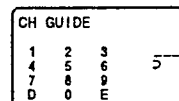
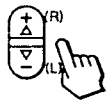
- 1 Press MENU.
- 2 Press $\Delta+$ or $\nabla-$ to select SET UP and press RETURN.
- 3 Press $\Delta+$ or $\nabla-$ to select CH GUIDE and press RETURN.



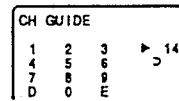
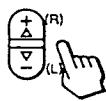
- 4 Press RETURN again.



- 5 Press $\Delta+$ or $\nabla-$ to select a customized channel number (chosen number will appear in red) and press RETURN. Numbers 0-9 and DISPLAY and ENTER are available for use as a customized channel number. DISPLAY and ENTER are shown as D and E respectively on the screen. The channel number button selected will be the one you press to call up your favorite channel.



- 6 Press $\Delta+$ or $\nabla-$ to select the channel and press RETURN.



- 7 Repeat steps 5 and 6 to set other channels.

To cancel a setting

Select the channel you want to cancel in step 5, then press RESET.

Using the customized channel number buttons

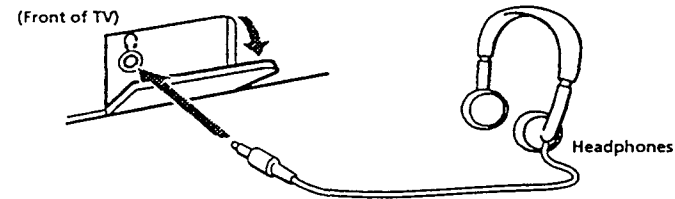
- 1 Press CH GUIDE.
The CHANNEL GUIDE menu appears showing channel number buttons and the corresponding channels.
- 2 Press a channel number button, DISPLAY or ENTER on the commander to select the channel you want.

To cancel the CHANNEL GUIDE menu

Press CH GUIDE while the CHANNEL GUIDE menu is displayed.

Listening with headphones

Plug the headphones into the headphones jack.

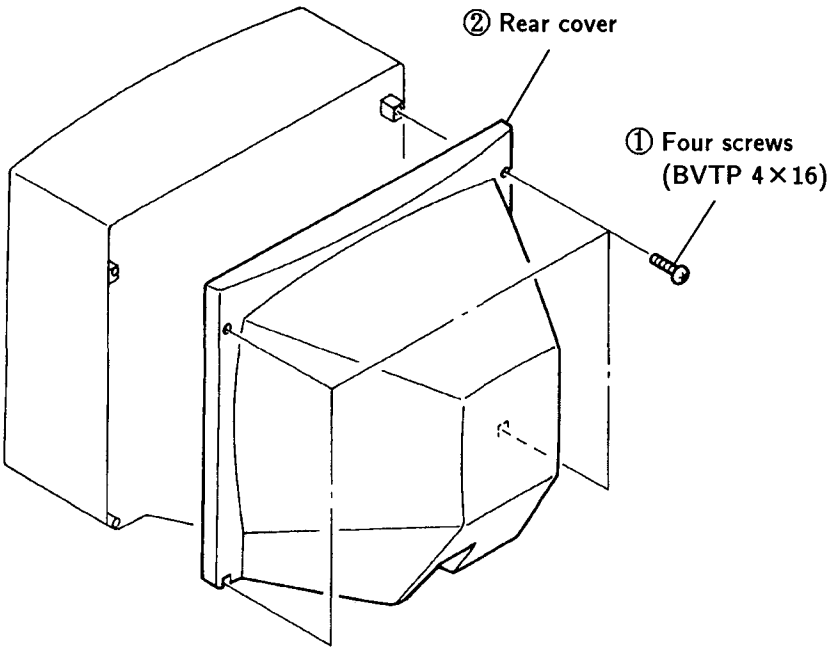


Notes

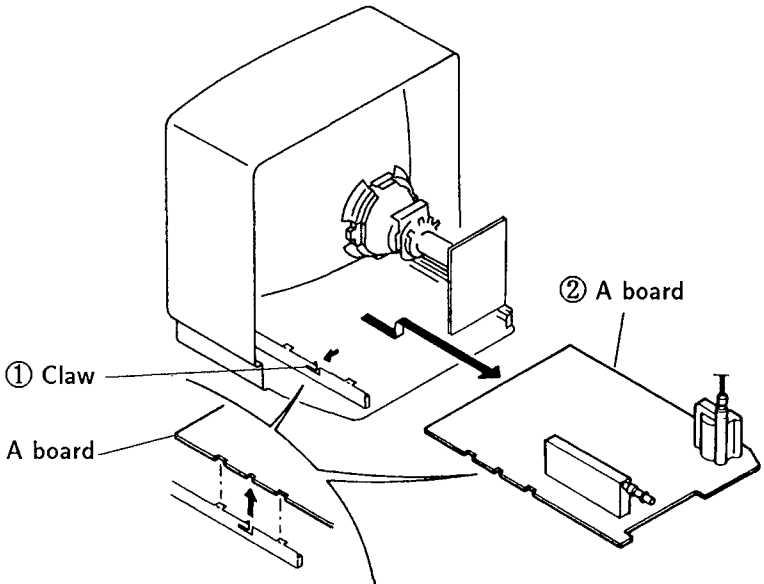
- To prevent hearing damage due to sudden or prolonged excessive volume, do not raise the headphones volume too high while listening.
- Using the headphones jack will turn off the sound to TV speakers.
- If your TV is a monaural TV, the monaural sound will be heard from both headphones.

SECTION 2 DISASSEMBLY

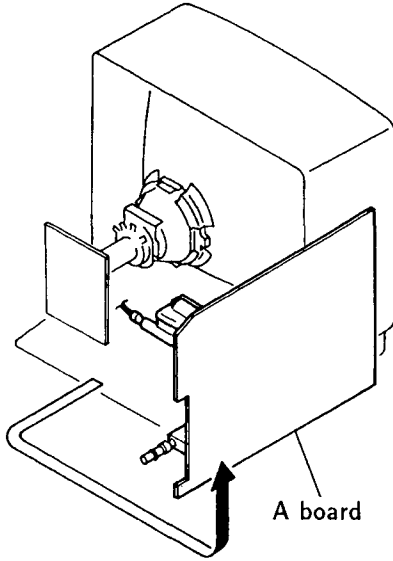
2-1. REAR COVER REMOVAL



2-2. A BOARD REMOVAL



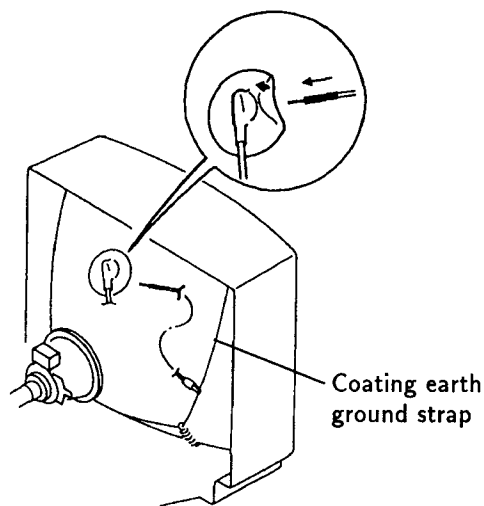
2-3. SERVICE POSITION



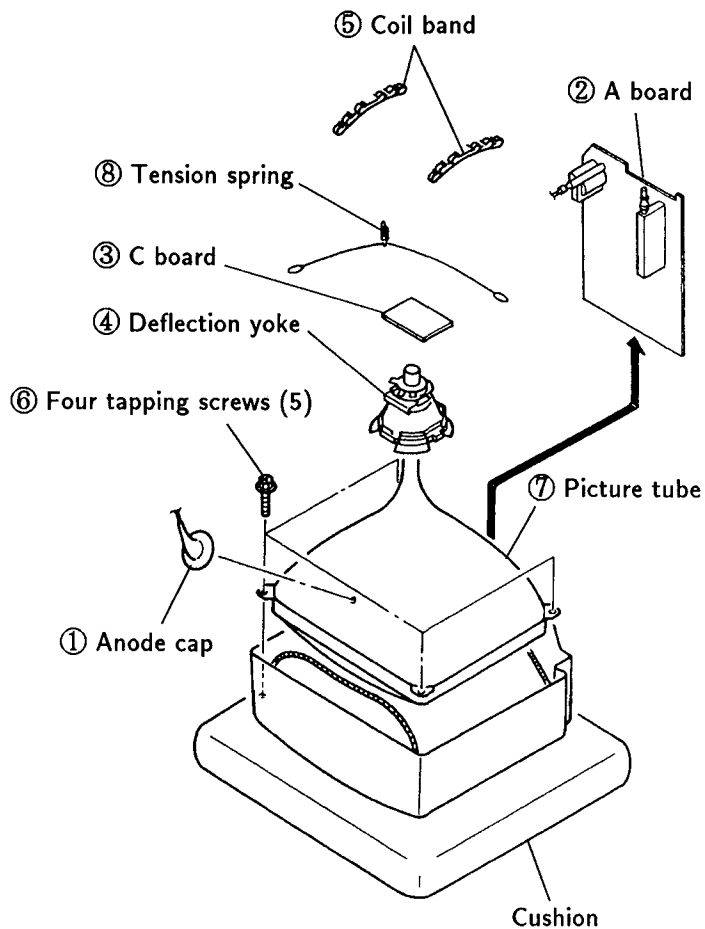
WARNING: Before removing anode cap

H. V. remains in the CRT even after the power is disconnected.

To avoid electrical shock, before attempting to remove the anode cap, discharge CRT : Short between anode and CRT coating earth ground strap.



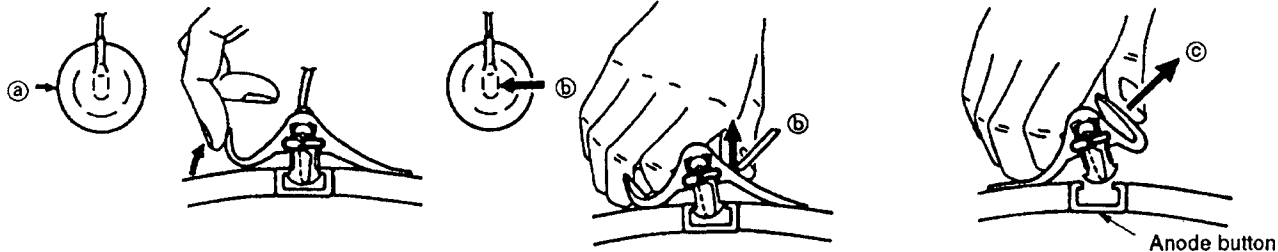
2-4. PICTURE TUBE REMOVAL.



• REMOVAL OF ANODE-CAP

NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon painted on the CRT, after removing the anode.

• REMOVING PROCEDURES



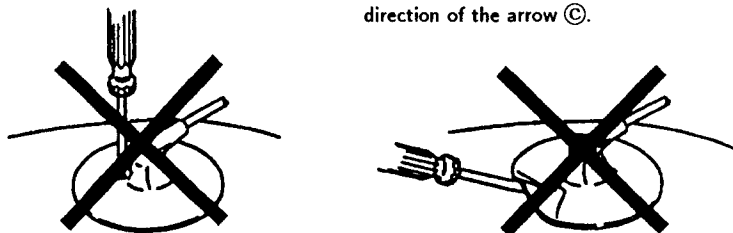
① Turn up one side of the rubber cap in the direction indicated by the arrow ①.

② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ②.

③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ③.

• HOW TO HANDLE AN ANODE-CAP

- ① Don't hurt the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.



SECTION 3 SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

The controls and switch should be set as follows unless otherwise noted :

PICTURE control	normal
BRIGHTNESS control	normal

Preparation:

- Feed in the white pattern signal.
- Before starting, degauss the entire screen.

3-1. BEAM LANDING

1. Input a raster signal with the pattern generator.
2. Loosen the deflection yoke mounting screw, and set the purity control to the center as shown in Fig.2
3. Turn the raster signal of the pattern generator to green.
4. Move the deflection yoke backward, and adjust with the purity control so that green is in the center and red and blue are at the sides evenly. (Fig.3)
5. Move the deflection yoke forward, and adjust so that the entire screen becomes green. (Fig.1)
6. Switch over the raster signal to red and blue and confirm the condition.
7. When the position of the deflection yoke is determined, tighten it with the deflection yoke mounting screw.
8. When landing at the corner is not right, adjust by using the disk magnets. (Fig.4)

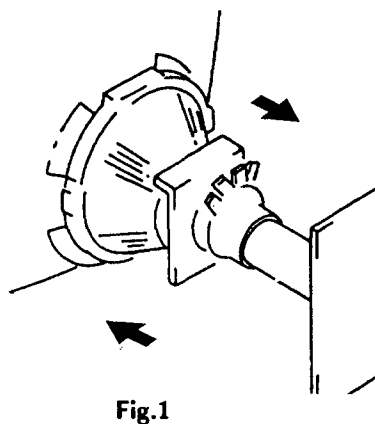


Fig.1

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G 2) and White Balance

Note: Test Equipment Required.

1. Color bar Pattern Generator
2. Degausser
3. DC Power Supply
4. Digital multimeter

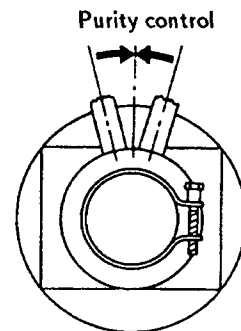


Fig.2

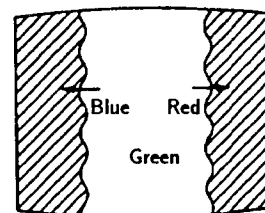


Fig.3

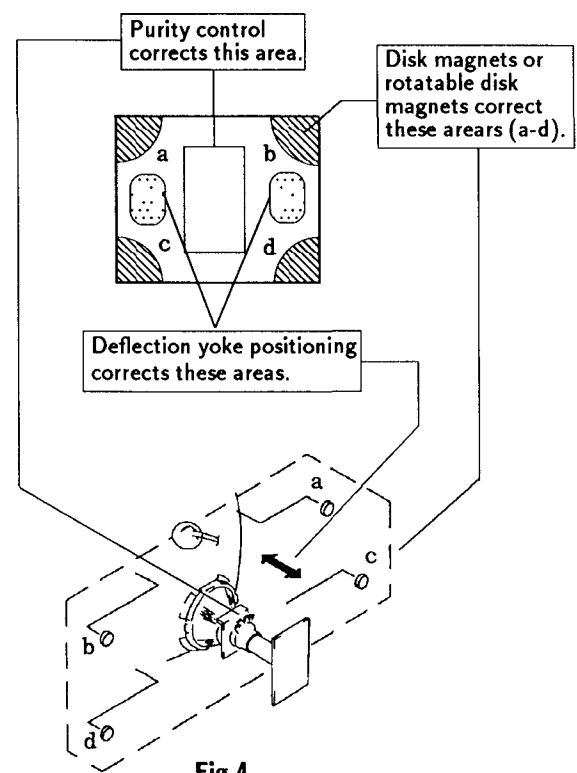


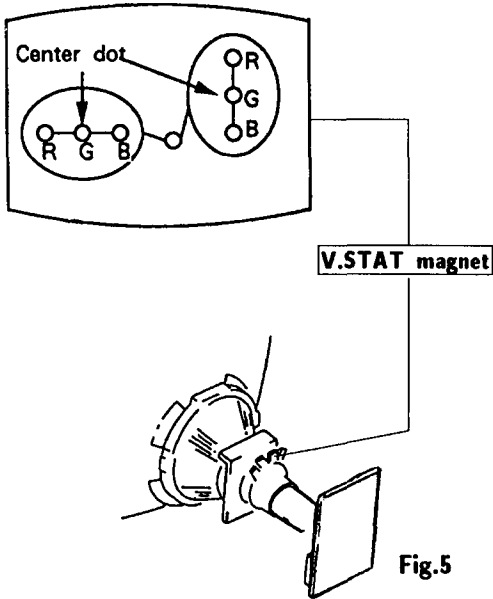
Fig.4

3-2. CONVERGENCE

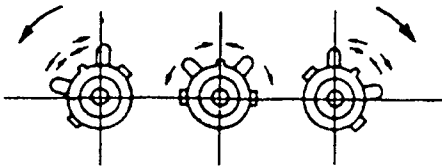
Preparation:

- Before starting, perform FOCUS, V.LIN and V.SIZE adjustments.
- Set BRIGHTNESS control to minimum.
- Feed in dot pattern.

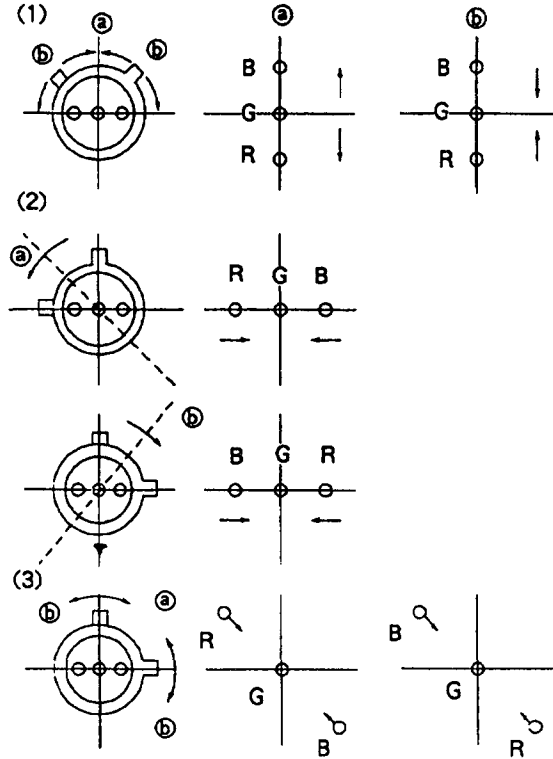
(1) Vertical Static Convergence



1. Adjust V. STAT magnet to converge red, green and blue dots in the center of the screen. (Vertical movement)
- Tilt the V.STAT magnet and adjust static convergence to open or close the V.STAT magnet.



2. When the V.STAT magnet are moved in the direction of the (a) and (b), red, green and blue dots move as shown below.



- If the blue dot does not converge with red and green dots, perform following steps.
- Move BMC magnet (a) to correct insufficient H.static convergence.
- Rotate BMC magnet (b) to correct insufficient V.static convergence.
- In either case, repeat Beam Landing Adjustment.

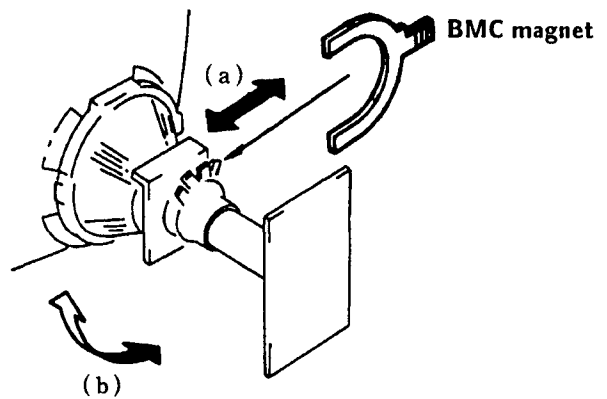


Fig.6

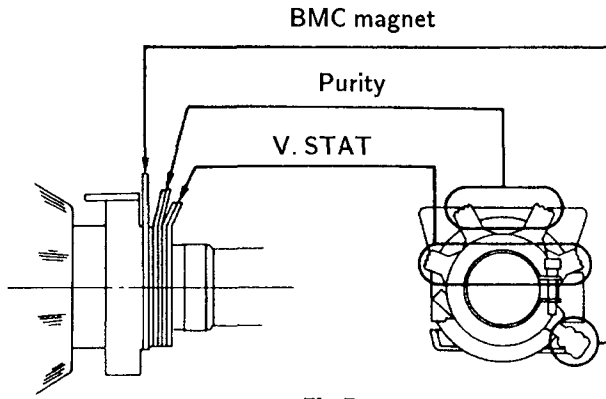


Fig.7

(2) Dynamic Convergence Adjustment

Preparation:

- Before starting perform Horizontal and Vertical static convergence adjustment.
- 1. Slightly loosen deflection yoke screw.
- 2. Remove deflection yoke spacers.
- 3. Move the deflection yoke for best convergence as shown below.
- 4. Tighten the deflection yoke screw.
- 5. Install the deflection yoke spacers.

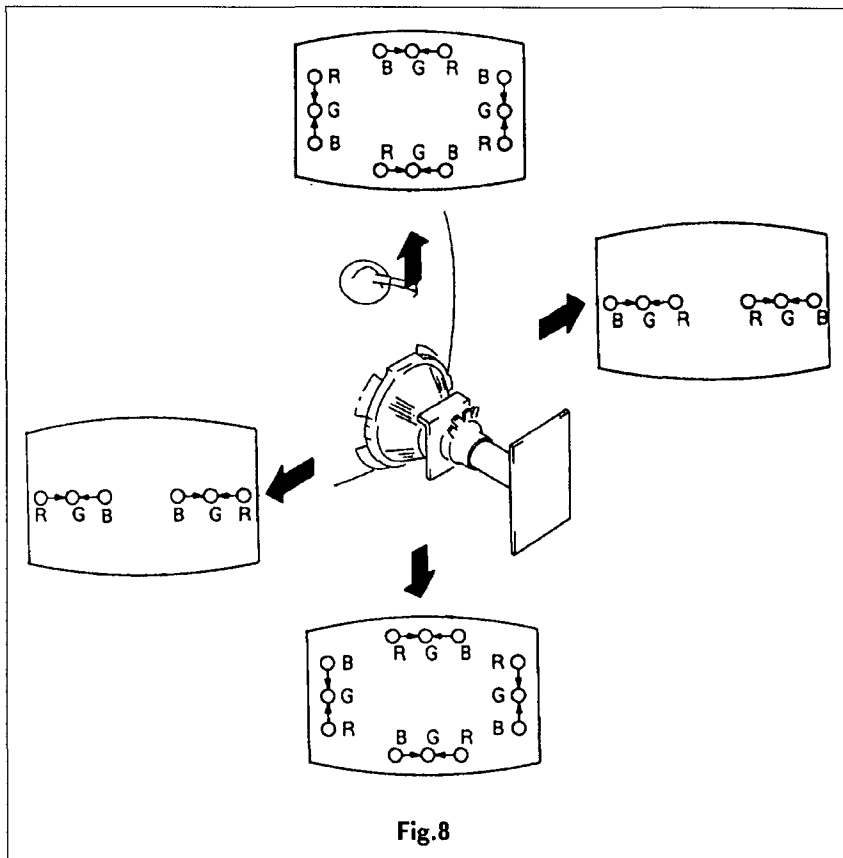


Fig.8

(3) Screen-corner Convergence

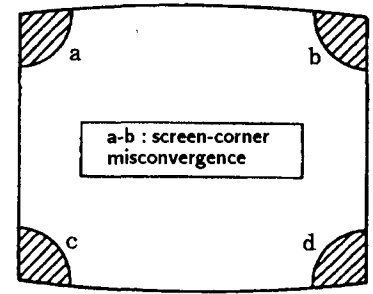
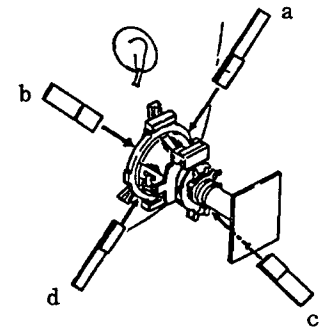


Fig.9



Affix a Permalloy ass'y corresponding to the misconverged areas



Permalloy assembly

3-3. FOCUS

Adjust FOCUS control for best picture.

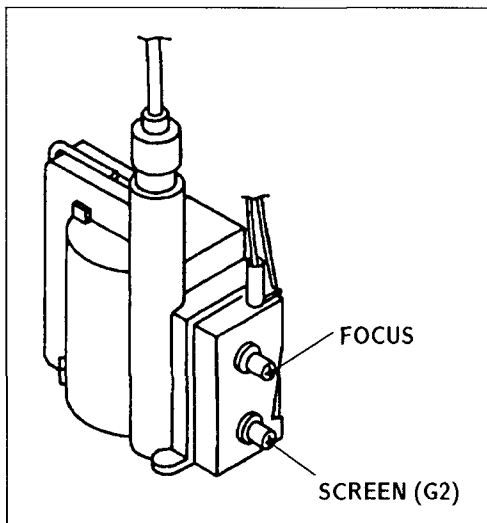


Fig.10

3-4. SCREEN (G 2)

1. Input a dots pattern.
2. Set the PIC, BRT controls at minimum and COLOR control at normal.
3. Adjust S BRT, G CUT, B CUT in service mode so that voltages on the red, green and blue cathodes are 170V dc with an oscilloscope as shown in Fig.11.
4. Observe the screen and adjust SCREEN (G2)VR to obtain the faintly visible background of dot signal.

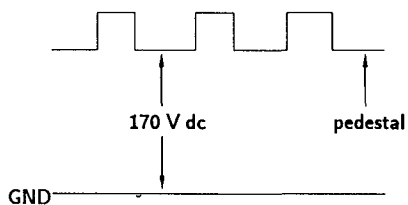


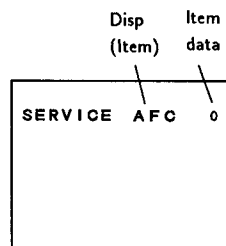
Fig.11

3-5. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

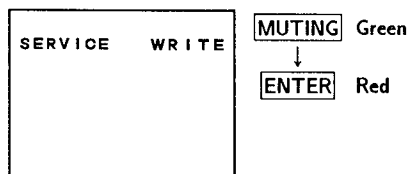
1. Standby mode.(Power off)
2. **DISPLAY** → **5** → **VOL (+)** → **POWER** on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN



3. The CRT displays the item Being adjusted.
4. Press **1** or **4** on the Remote Commander to select the item.
5. Press **3** or **6** on the Remote Commander to change the data.
6. Press **MUTING** then **ENTER** to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



7. Turn set off and on to exit.

3-6. WHITE BALANCE ADJUSTMENTS

1. Input an entire white signal.
2. Set to service adjustment mode.
3. Set the PICTURE and BRIGHT to minimum.
4. Adjust with SBRT if necessary.
5. Select G CUT and B CUT with **1** and **4**.
6. Adjust with **3** and **6** for the best white balance.
7. Set the PICTURE and BRIGHT to maximum.
8. Select GAMP and BAMP with **1** and **4**.
9. Adjust with **3** and **6** for the best white balance.
10. Write into the memory by pressing **MUTING** then **ENTER**.

SECTION 4 SAFETY RELATED ADJUSTMENT

A BOARD

☒ R525 CONFIRMATION METHOD (HV HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with ☒ on the schematic diagram).

IC502, IC601, Q554, Q555, D505, D506, D507, D510, DY, C511, C513, C528, C531, R511, R519, R520, R523, R525, R527, R557, R558, R559, R560, R617, R618, T504 (FBT)

1. Preparation before confirmation

- 1) Turn the POWER switch ON, and receive entirely white signal and set the PICTURE and BRIGHT controls to maximum.
- 2) Confirm that the voltage of the check terminal of TP85 is more than 90VDC when the set is operating normally with 120.0 ± 2.0 VAC supply.

2. Hold-down operation confirmation

- 1) Connect the currentmeter between the 7th pin of FBT (T504) and the land of it with connect polarity.
- 2) Receive White Signal and adjust the ABL current to follows with the PICTURE and the BRIGHT controls.
 $1440 \pm 100 \mu\text{A}$
- 3) Confirm the voltage of A board TP-91 is 115.0 ± 0.5 VDC.
- 4) Connect the Digital Voltmeter and DC power Supply via 1SS 119 to TP-85.
- 5) Increase the DC power voltage gradually until the Picture just blanks out.
- 6) Read the digital voltmeter indication.
- 7) Turn DC power Source off immediatery.

STANDARD

Less or equal to 134.0 VDC

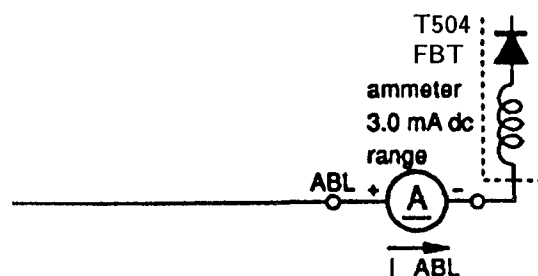
- 8) Receive Dot Signal and adjust the ABL current to follows, with the PIX and the BRT controls.
 $140+100/-50 \mu\text{A}$
- 9) Repeat steps from (3) to (7).

STANDARD

Less or equal to 134.0 VDC

3. Hold-down readjustment

When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R525 (a component marked with ☒).

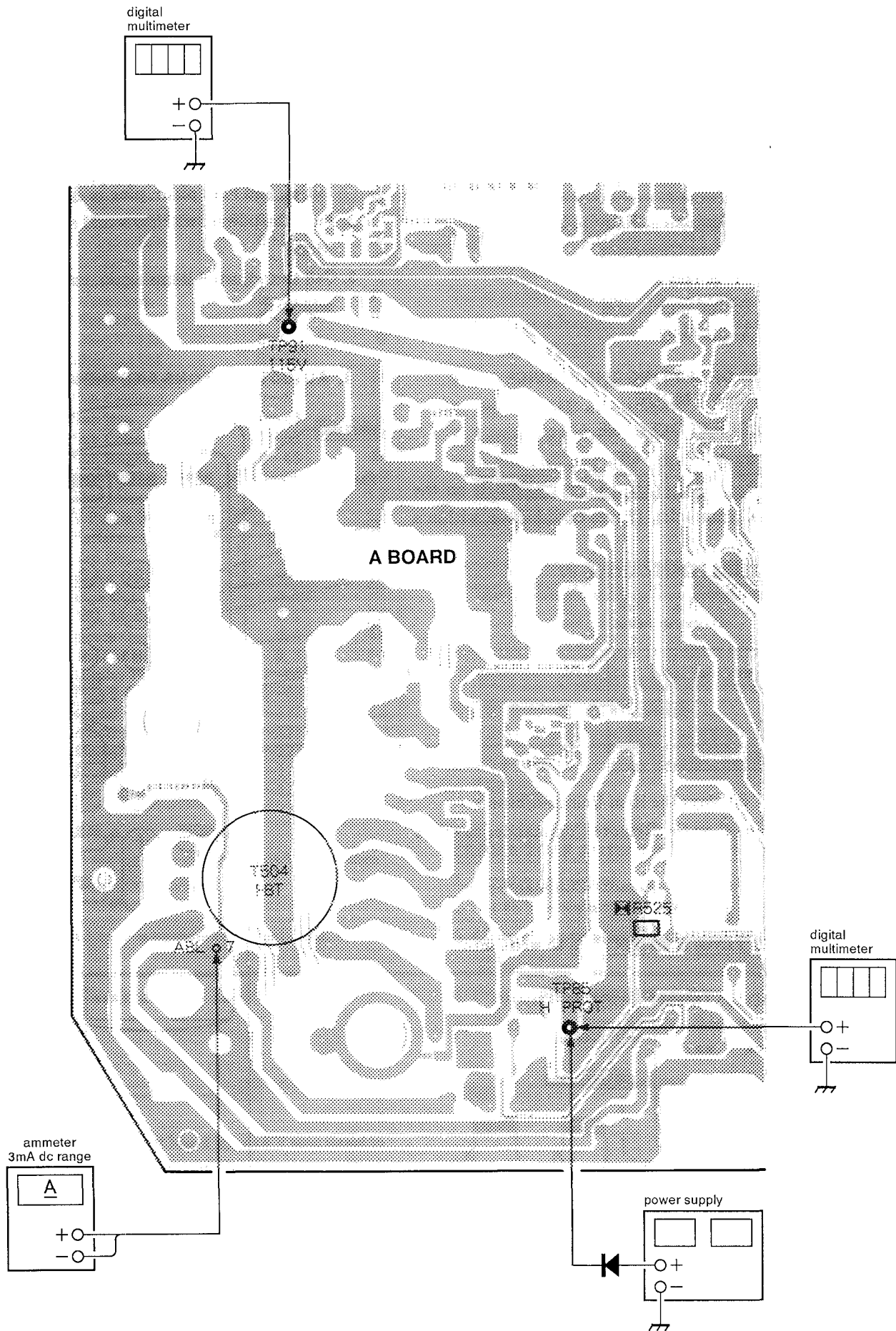


B+ VOLTAGE CONFIRMATION AND ADJUSTMENT

The following adjustments should always be performed when replacing the following components. (marked with ☒ on the schematic diagram).

IC101, IC601, Q609, R030, R617, R618, R629, R630, R636, R637, R638

- 1) Supply $130 \pm 3\%$ AC to with variable autotrans-former.
- 2) Input an entirely monoscope signal.
- 3) Set the PICTURE control and the BRIGHT controls in to initial reset.
- 4) Set to Service adjustment Mode.
- 5) Select PADJ with 1 and 4.
- 6) Adjust with 6 for the 63 level.
- 7) Confirm the voltage of A BOARD TP-91 is less than 123.0V DC.
- 8) If step 7) is not satisfied, replace the components repeat above steps.
- 9) Supply 120 ± 2.0 VAC to with variable auto trans former.
- 10) Adjust with 3 and 6 for the 115 ± 0.5 V DC.
- 11) Write into the memory by pressing MUTING then ENTER.



SECTION 5 CIRCUIT ADJUSTMENTS

5-1. ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER

Use of Remote Commander (RM-Y116) can be performed circuit adjustments about this model.

NOTE : Test Equipment Required.

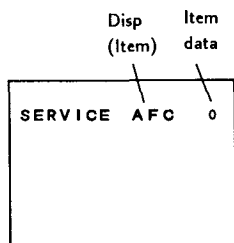
1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio OSC

1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

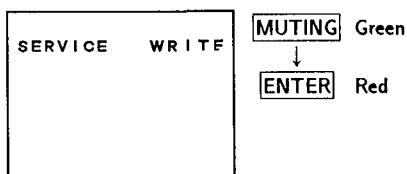
1. Standby mode. (Power off)
2. **DISPLAY** → **5** → **VOL (+)** → **POWER** on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN

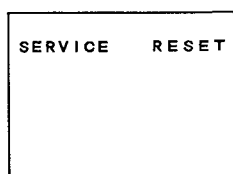


3. The CRT displays the item Being adjusted.
4. Press **1** or **4** on the Remote Commander to select the item.
5. Press **3** or **6** on the Remote Commander to change the data.
6. Press **MUTING** then **ENTER** to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



7. Press **8** then **ENTER** on the Remote Commander to initialize.



Carry out step 7) when adjusting IDs 0 to 4 and when replacing and adjusting IC102.

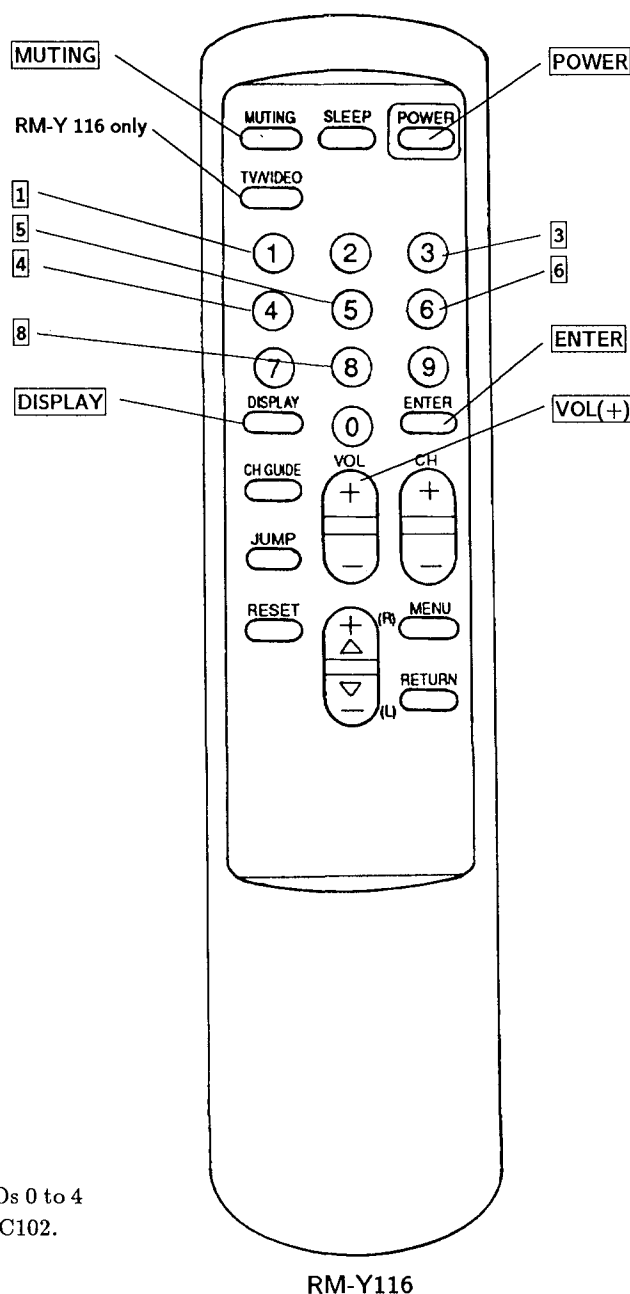
Factory original setting

8. Turn set off and on to exit.

2. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, pull out the plug from AC outlet, and next place, plug in AC outlet again.
2. Turn the power switch ON and set to Service Mode.
3. Call the adjusted items again, confirm they were adjusted.

3. ADJUST BUTTONS AND INDICATOR



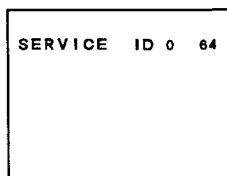
4. AN ITEM OF ADJUSTMENTS

No.	Disp.	Item	Data range	Ave. data
1	AFC	AFC Loop Gain	0~3	* 0
2	HFRE	H. Frequency	0~127	78
3	VFRE	V. Frequency	0~31	15
4	VPOS	V. Center	0~31	20
5	VSIZ	V. Size	0~63	31
6	VLIN	V. Linearity	0~15	8
7	VSCO	V. Correction	0~15	6
8	HPOS	H. Center	0~15	6
9	VCOM	V. Compensation	0~7	* 2
10	GAMP	Green Amp	0~31	21
11	BAMP	Blue Amp	0~31	16
12	GCUT	Green Cut Off	0~15	6
13	BCUT	Blue Cut Off	0~15	7
14	CROM	Chroma Trap	0~63	26
15	SPIX	Sub Contrast	0~63	32
16	SHUE	Sub Hue	0~63	25
17	SCOL	Sub Color	0~63	30
18	SBRT	Sub Bright	0~63	34
19	SVOL	Sub Volume	0~15	* 0
20	SHAP	Sharpness	0~15	* 7
21	VSMO	V Pull in Range	0, 1	* 0
22	REF	Refference line	0~3	* 2
23	ROFF	Red Out	0, 1	—
24	GOFF	Green Out	0, 1	—
25	BOFF	Blue Out	0, 1	—
26	ABLM	ABL Mode	0, 1	* 0
27	NOTC	Notch On/Off	0, 1	—
28	DRGB	OSD intensity	0, 1	* 0
29	DISP	Display Position	0~63	4
30	PADJ	Plus B Adjust	0~63	43
31	ID-0	Model ID	0~127	** 64
32	ID-1	Model ID	0~127	** 9
33	ID-2	Model ID	0~127	** 64
34	ID-3	Model ID	0~127	** 1
35	ID-4	Model ID	0~127	** 16

* : Set-up value

** : Please adjust the function values as shown below when IC102 on A board was replaced.

Note : No. from 1 to 35 is to show adjusment order.



Note : IC101 of the A circuit board inputs a V sync signal to pin ⑤, and is always in operation. If on V sync signal is input to pin ⑤, there will be a waiting period of 2-4 seconds, and the power is shut off. When entering the service mode, the above function is cancelled and operation is possible.

5-2. A BOARD ADJUSTMENTS

RF AGC ADJUSTMENT (IF BLOCK VR)

1. Input a color-bar signal.
2. Adjust AGC VR of TU 101 so that snow noise and cross-modulation disappear from the picture.
3. Confirm them at every channel.

H.FREQUENCY ADJUSTMENT (HFRE)

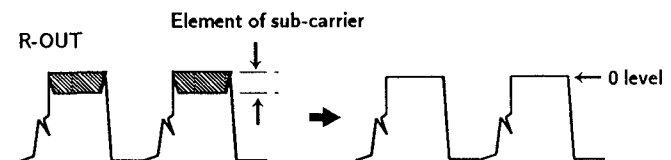
1. Input a color-bar signal.
2. Set to Service adjustment Mode.
3. Connect a frequency counter to base of Q 550 (TP-86 H.DRIVE).
4. Call the item of AFC, set to 3 level (free run).
5. Select HFRE with **[1]** and **[4]**.
6. Adjust with **[3]** and **[6]** for the 15734 ± 60 Hz.
7. Call the item of AFC again, adjust the level "0".
8. Write into the memory by pressing **[MUTING]** then **[ENTER]**.

V.FREQUENCY ADJUSTMENT (VFRE)

1. Select video 1 with no connecting the signal.
2. Set to Service adjustment Mode.
3. Connect the frequency counter across connector VDY (+) (CN501) connector and ground.
4. Select VFRE with **[1]** and **[4]**.
5. Adjust with **[3]** and **[6]** for the 55 ± 0.5 Hz.
6. Write the memory by pressing **[MUTING]** then **[ENTER]**.

CROMA TRAP ADJUSTMENT (CROM)

1. Input a red signal
2. Set to Service adjustment Mode.
3. Connect an oscilloscope CN703 Pin ① (R OUT) of C board ground.
4. Select CROM with **[1]** and **[4]**.
5. Adjust with **[3]** and **[6]** for the 0 level.



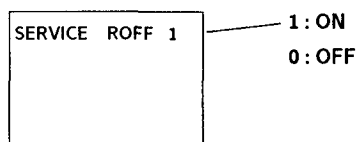
6. Write the memory by pressing **[MUTING]** then **[ENTER]**.

SUB CONTRAST ADJUSTMENT (SPIX)

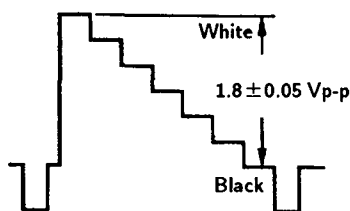
1. Input a color-bar signal.
2. Set to Service adjustment Mode.
3. Set the conditions as follows.

PICTURE MAX
 COLOR MIN
 BRIGHT MIN

R OFF ON (1)
 G OFF OFF (0)
 B OFF OFF (0)



4. Connect an oscilloscope to CN703 Pin① (R OUT) of C board and ground.
5. Select SPIX with **1** and **4**.
6. Adjust with **3** and **6** for the 1.8 ± 0.05 Vp-p.

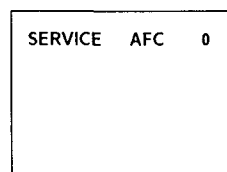


7. Write the memory by pressing **MUTING** then **ENTER**.
8. Return the following back to normal after adjustment.

PICTURE MAX
 BRIGHT CENTER
 COLOR CENTER
 R OFF ON
 G OFF ON
 B OFF ON

DISPLAY POSITION ADJUSTMENT (DISP)

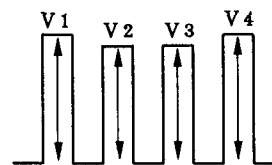
1. Input a color-bar signal.
2. Set to service adjustment Mode.
3. Select DISP with **1** and **4**.
4. Adjust with **3** and **6** for the bar center.
5. Write the memory by pressing **MUTING** then **ENTER**.
6. Check if the text is displayed on the screen.

**SUB BRIGHT ADJUSTMENT (SBRT)**

1. Input a cross-hatch signal.
2. Set to service adjustment mode.
3. Set the PICTURE and BRIGHT to minimum.
4. Select SBRT with **1** and **4**.
5. Adjust with **3** and **6** for obtain a faintly visible cross-hatch.
6. Write into the memory by pressing **MUTING** then **ENTER**.

SUB HUE, SUB COLOR ADJUSTMENT (SHUE, SCOL)

1. Input a color-bar signal.
2. Set to service adjustment Mode.
3. Connect an oscilloscope to CN703 Pin③ (B OUT) of C board.
4. Select SHUE and SCOL with **1** and **4**.
5. Adjust with **3** and **6** for the $V1=V4$ (SCOR) and $V2=V3$ (SHUE).



6. Write into the memory by pressing **MUTING** then **ENTER**.

V.SIZE ADJUSTMENT (VSIZ)

1. Input a cross-hatch signal.
2. Set to service adjustment Mode.
3. Select VSIZ with **1** and **4**.
4. Adjust with **3** and **6** for the best vertical size.
5. Write into the memory by pressing **MUTING** then **ENTER** .

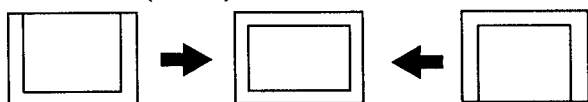
V. SIZE (VSIZ)



V.CENTER ADJUSTMENT (VPOS)

1. Input a cross-hatch signal.
2. Set to service adjustment Mode.
3. Select VPOS with **1** and **4**.
4. Adjust with **3** and **6** for the best vertical center.
5. Write into the memory by pressing **MUTING** then **ENTER** .

V. CENTER (VPOS)

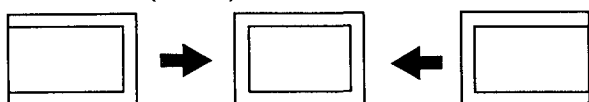


H.CENTER ADJUSTMENT (H POS)

Note: Perform this adjustment after H.FREQUENCY ADJUSTMENT (HFRE) .

1. Input a cross-hatch signal.
2. Set the Service adjustment mode.
3. Select HPOS with **1** and **4** .
4. Adjust with **3** and **6** to the best horizontal center.
5. Write into the memory by pressing **MUTING** then **ENTER** .

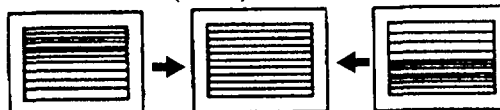
H. CENTER (HPOS)



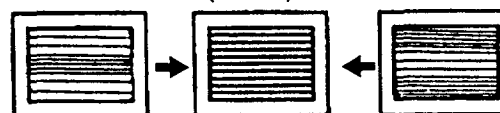
V LINEARITY (VLIN) AND V CORRECTION (VSCO) ADJUSTMENTS

1. Input a cross-hatch signal.
2. Set to Service adjustment Mode.
3. Select VLIN and VSCO with **1** and **4**.
4. Adjust with **3** and **6** for the best picture.
5. Write the memory by Pressing **MUTING** then **ENTER** .

V LINEARITY (VLIN)



V CORRECTION (VSCO)

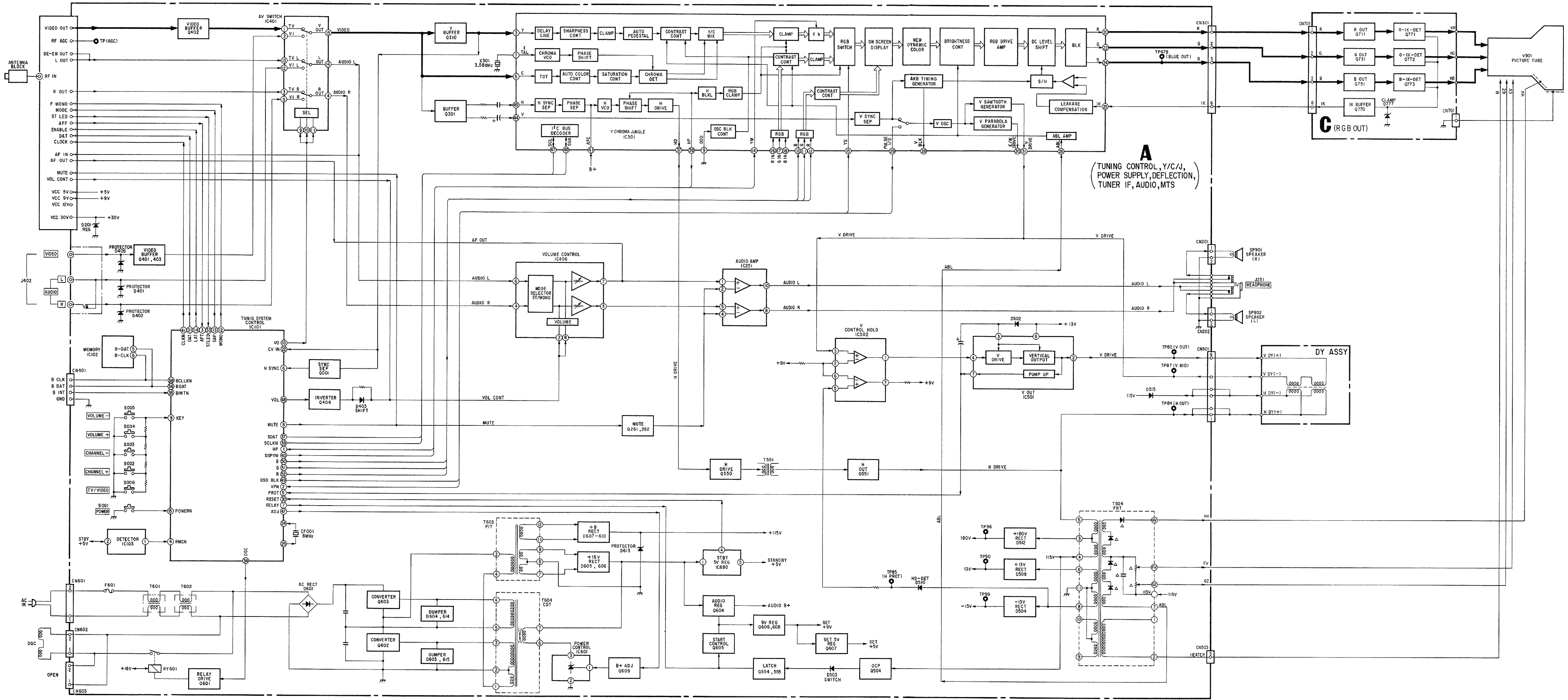


6-1. BLOCK DIAGRAM

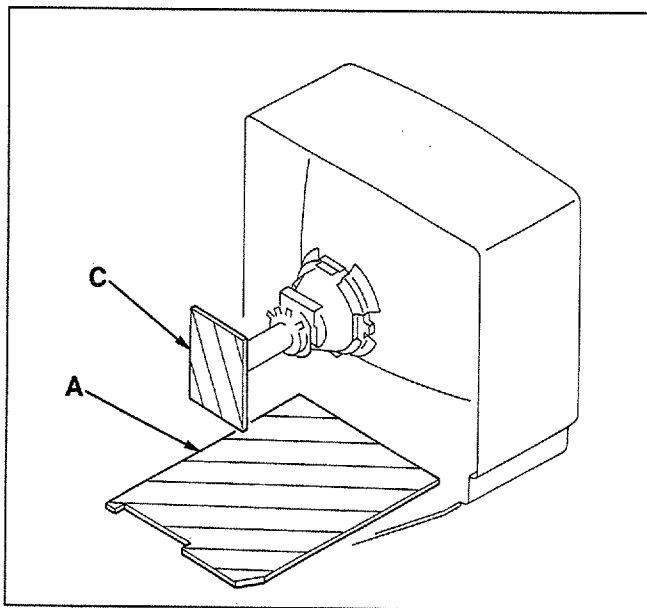
SECTION 6
DIAGRAMS

KV-20S11
RM-Y116

KV-20S11
RM-Y116



6-2. CIRCUIT BOARDS LOCATION



6-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

- Note:
- All capacitors are in μF unless otherwise noted. μF : μF 50V or less are not indicated except for electrolytics and tantalums.
 - All electrolytics are in 50V unless otherwise specified.
 - Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch: 5mm
Rating electrical power: $\frac{1}{4}\text{W}$

- All resistors are in ohms. $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$.
- \square : nonflammable resistor.
- Δ : internal component.
- \square : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by \square in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by \square , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by \square and repeat the adjustment until the specified value is achieved. (Refer to R525 adjustment on Page 18, 19.)
- When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (▣)	Adjustment (☒)
IC502, IC601, Q554, Q555, D505, D506, D507, D510, DY, C511, C513, C528, C531, R511, R519, R520, R523, R525, R527, R557, R558, R559, R560, R617, R618, T504 (FBT)	HV HOLD-DOWN (R525)
IC101, IC601, Q609, R030, R617, R618, R629, R630, R636, R637, R638	B+VOLTAGE CONFIRMATION

- All voltages are in V.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10M Ω digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
- Circled numbers are waveform references.
- \square : B+ line.
- \rightarrow : signal path.

Reference information

RESISTOR	: FN METAL FILM
	: RC SOLID
	: FPRD NONFLAMMABLE CARBON
	: FUSE NONFLAMMABLE FUSIBLE
	: RW NONFLAMMABLE WIREWOUND
	: RS NONFLAMMABLE METAL OXIDE
	: RB NONFLAMMABLE CEMENT
	: * ADJUSTMENT RESISTOR
COIL	: LF-8L MICRO INDUCTOR
CAPACITOR	: TA TANTALUM
	: PS STYROL
	: PP POLYPROPYLENE
	: PT MYLAR
	: MPS METALIZED POLYESTER
	: MPP METALIZED POLYPROPYLENE
	: ALB BIPOLAR
	: ALT HIGH TEMPERATURE
	: ALR HIGH RIPPLE

Note: The symbol \square display is on the component slide.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

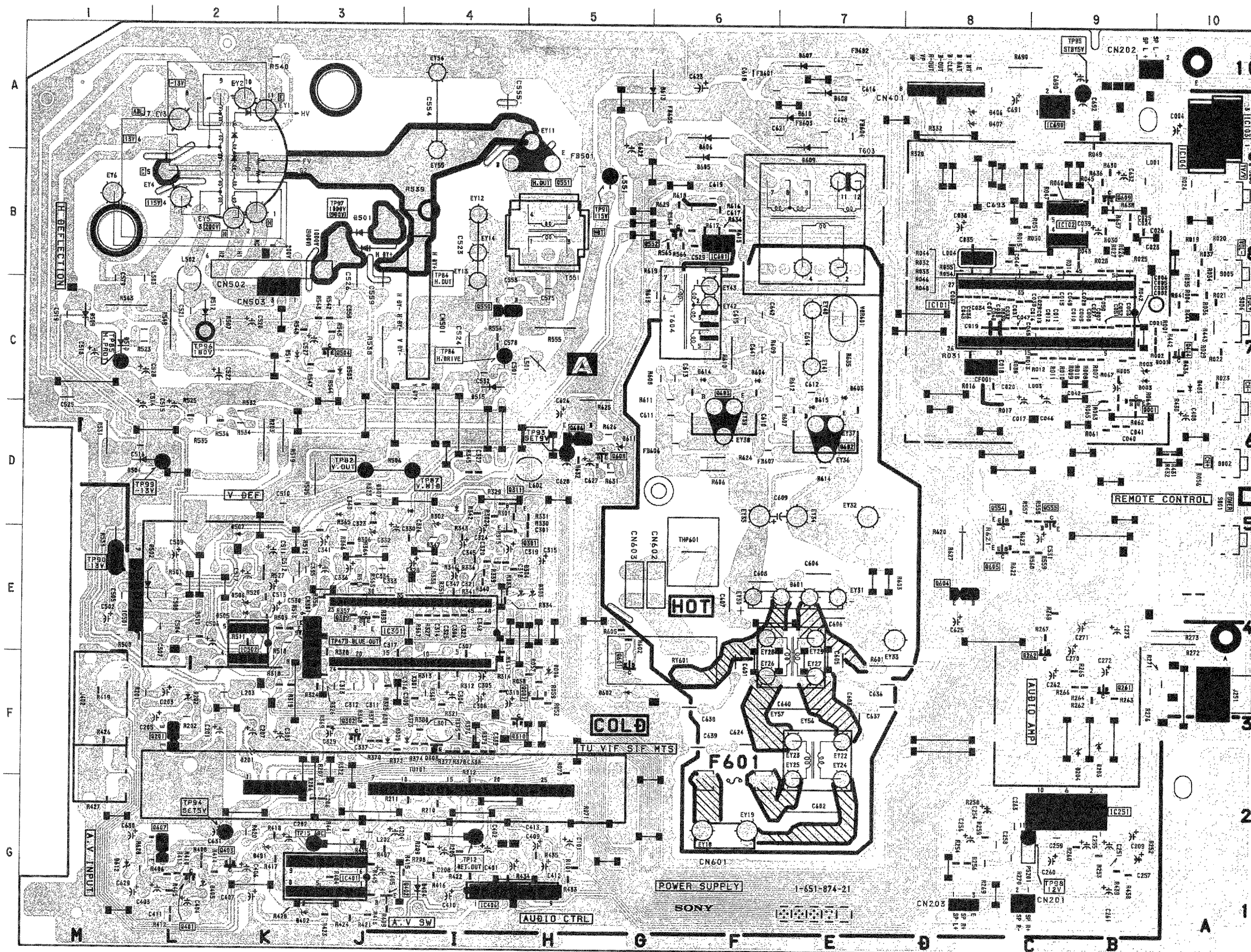
The symbol \square indicate fast operating fuse. Replace only with fuse of same rating as made.

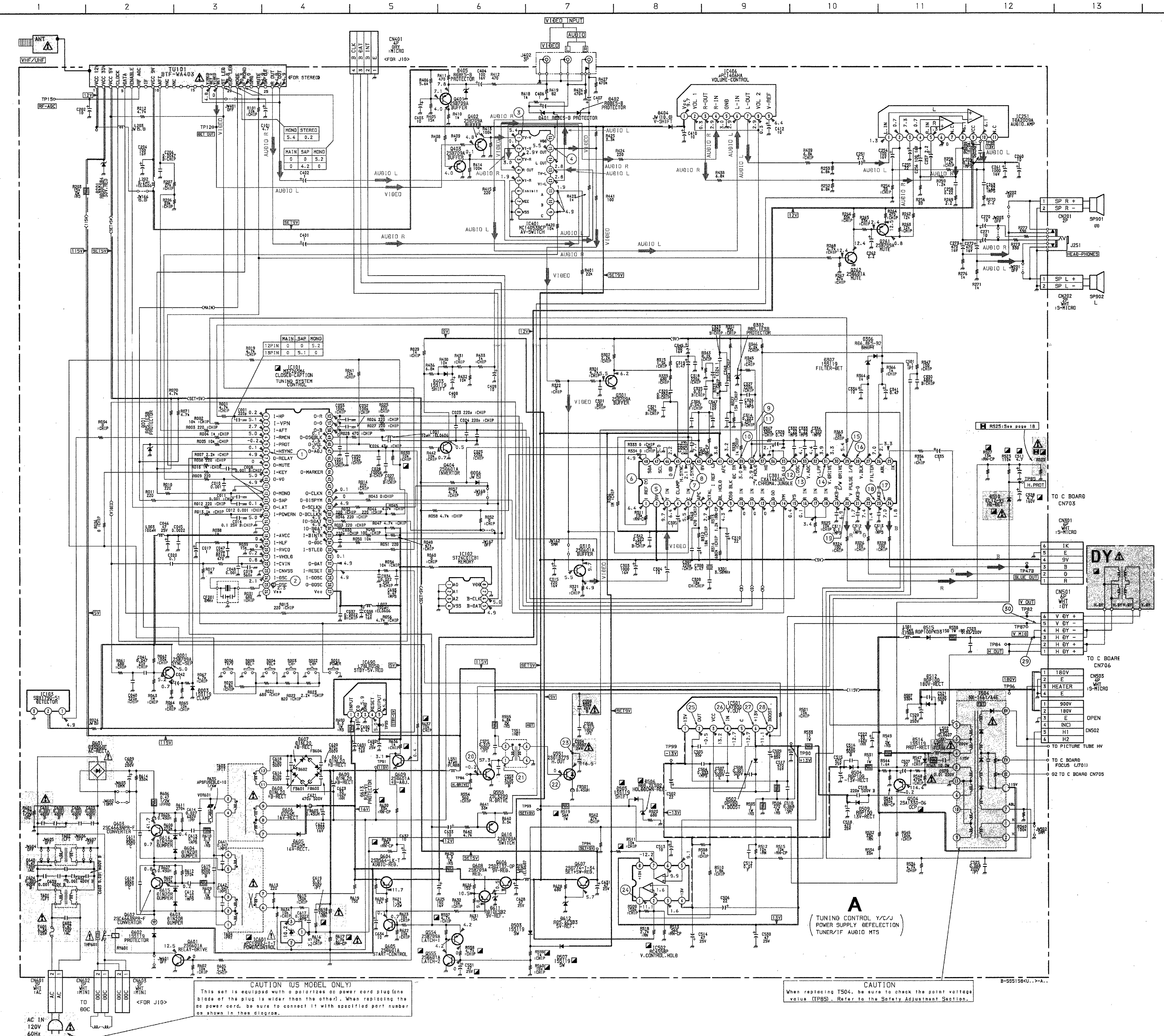
[A BOARD]

IC	DIODE
IC101	C-8
IC102	B-9
IC103	A-10
IC251	G-9
IC301	E-3
IC401	G-3
IC406	G-4
IC501	E-1
IC502	E-2
IC601	B-6
IC690	A-9
TRANSISTOR	
Q001	C-9
Q261	F-9
Q262	E-9
Q301	D-4
Q310	F-4
Q401	G-2
Q402	G-3
Q403	G-2
Q404	C-10
Q504	C-3
Q550	C-4
Q551	A-5
Q554	D-8
Q555	D-9
Q601	F-5
Q602	D-7
Q603	C-6
Q604	E-8
Q605	E-8
Q606	D-5
Q607	G-2
Q608	D-5
Q609	B-9
Q610	
DIODE	
D001	C-9
D003	C-9
D201	F-2
D302	D-4
D306	E-3
D307	D-3
D401	G-2
D402	G-3
D403	C-10
D405	G-2
D502	E-2
D503	C-3
D504	D-1
D505	E-2
D506	E-2
D507	E-2
D509	C-1
D510	C-1
D512	C-2
D514	C-3
D515	C-4
D601	E-7
D602	F-5
D603	C-7
D604	C-6
D605	A-6
D606	A-6
D607	A-7
D608	A-7
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D610	A-7
D611	D-5
D612	G-1
D613	A-5
D614	C-6
D615	C-7

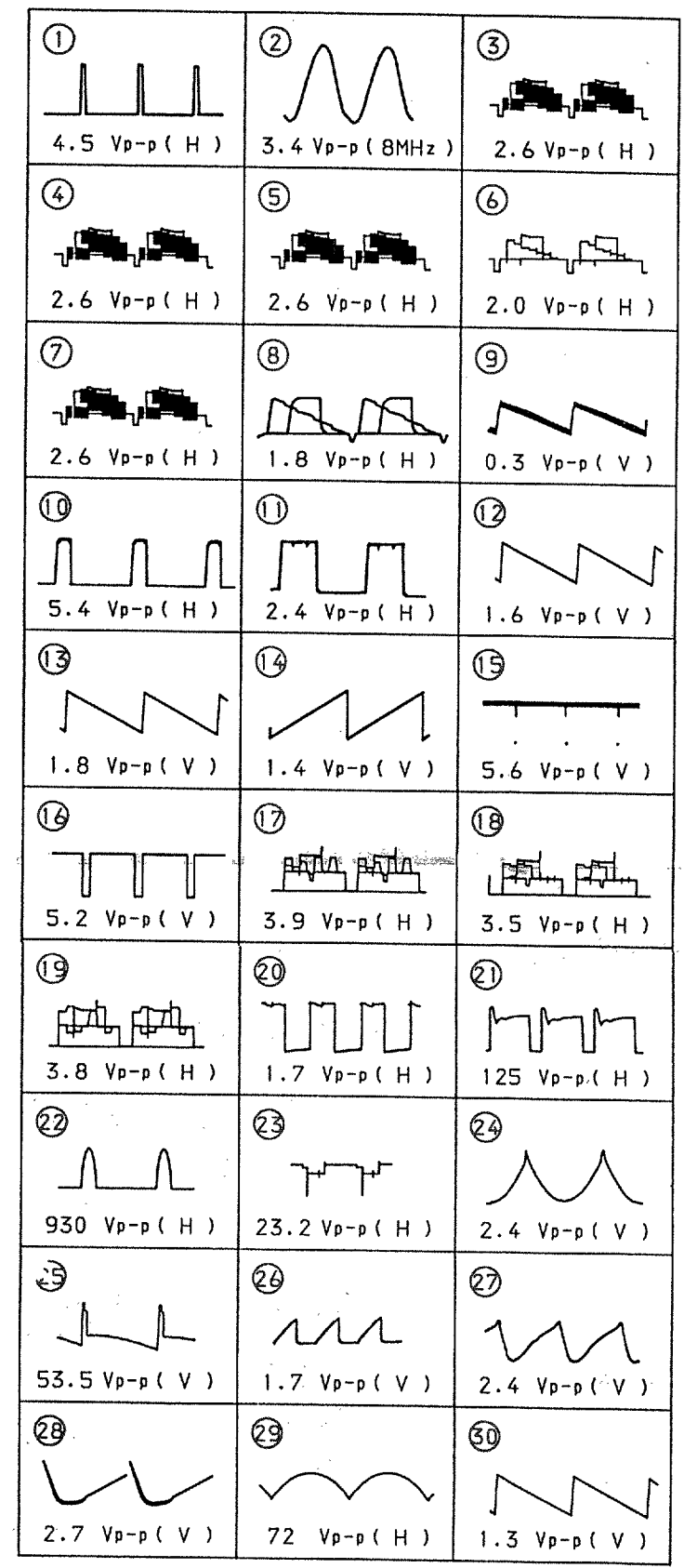
A TUNING CONTROL, Y/C/J, POWER SUPPLY, DEFECTION, TUNER/IF, AUDIO MTS

- A BOARD -

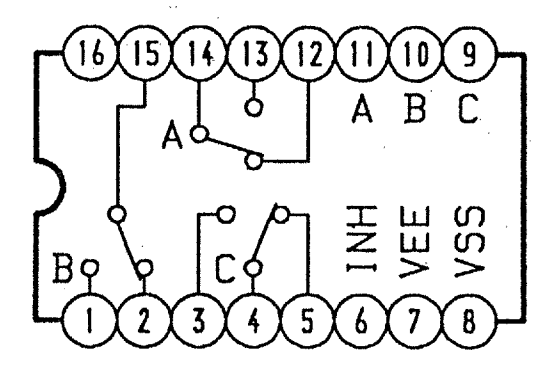




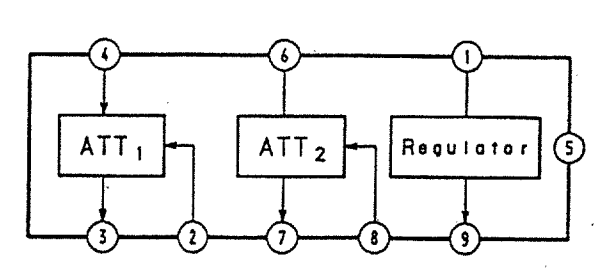
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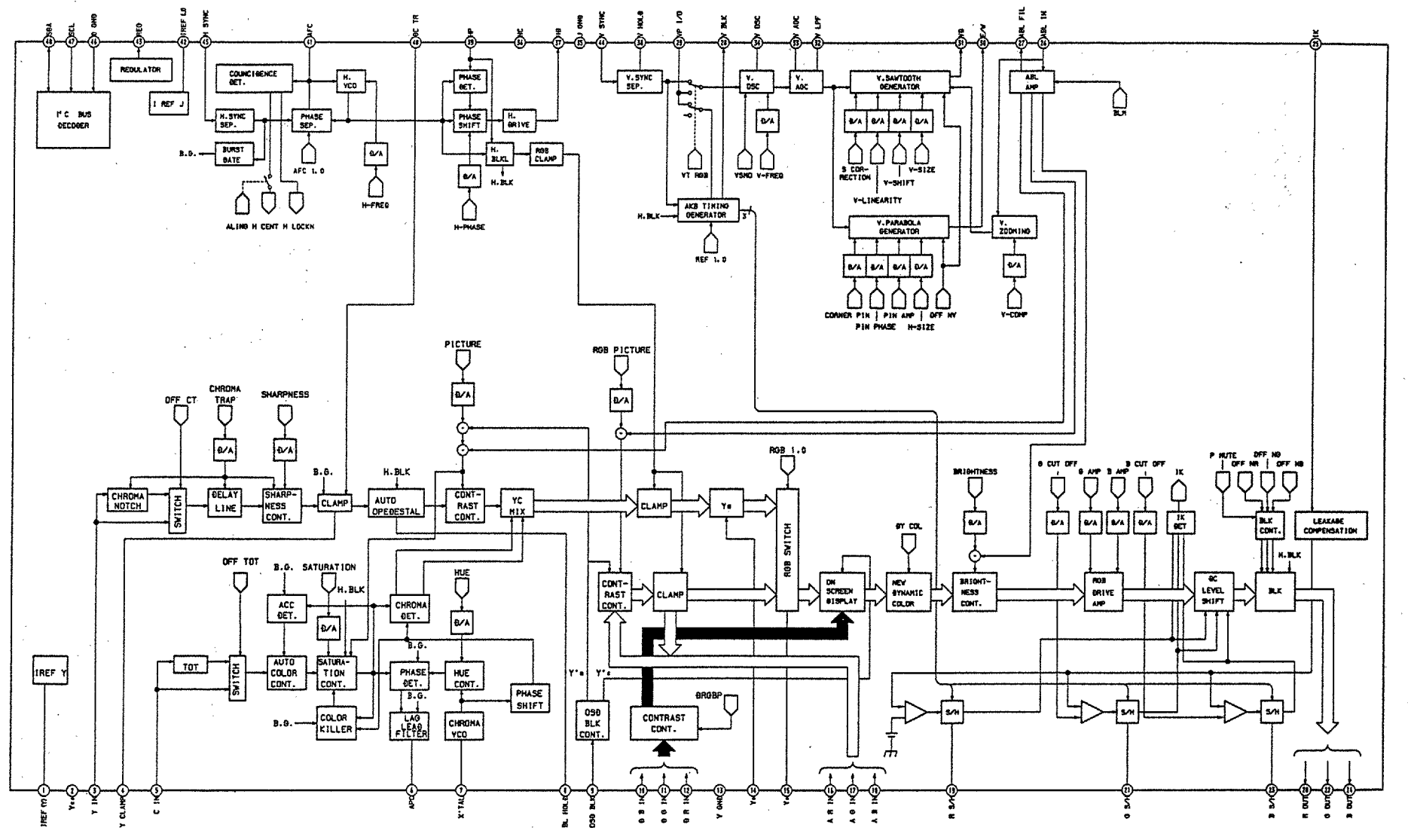
A BOARD IC401 MC14053BCP

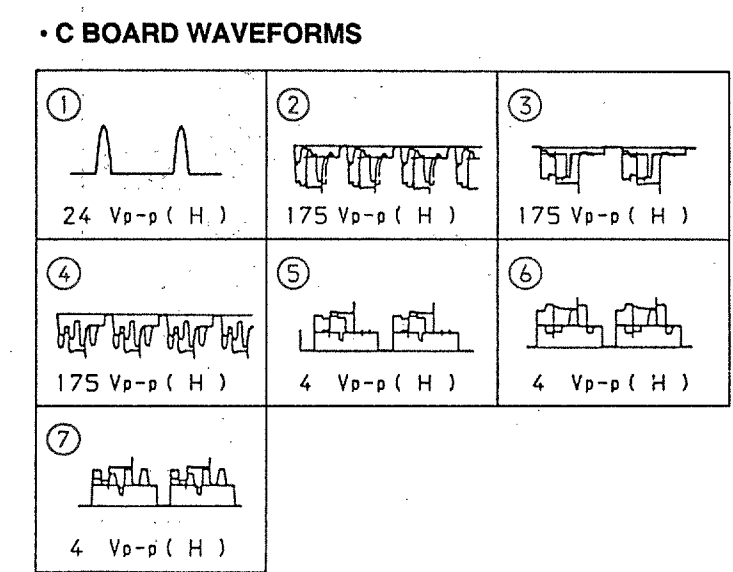
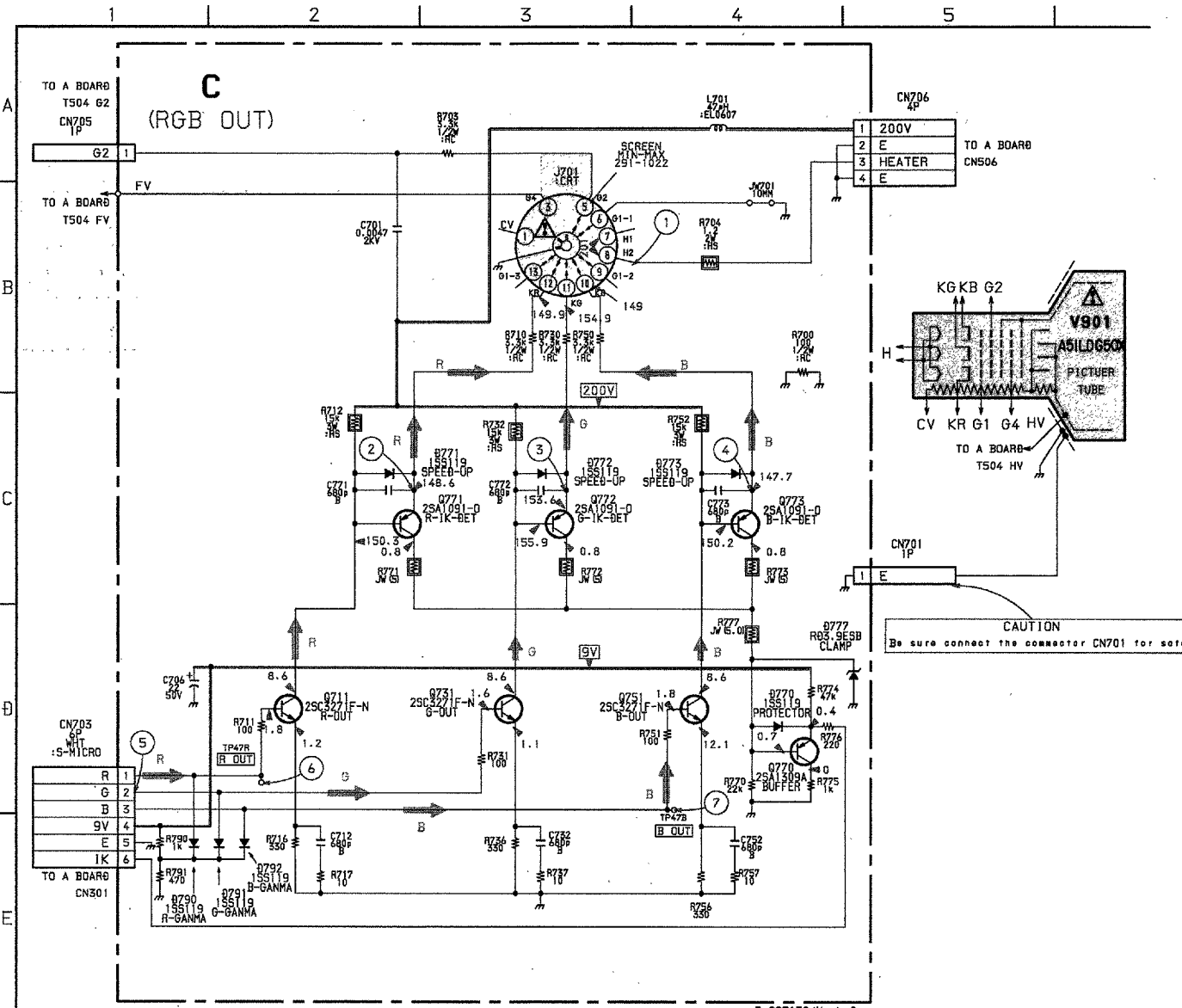
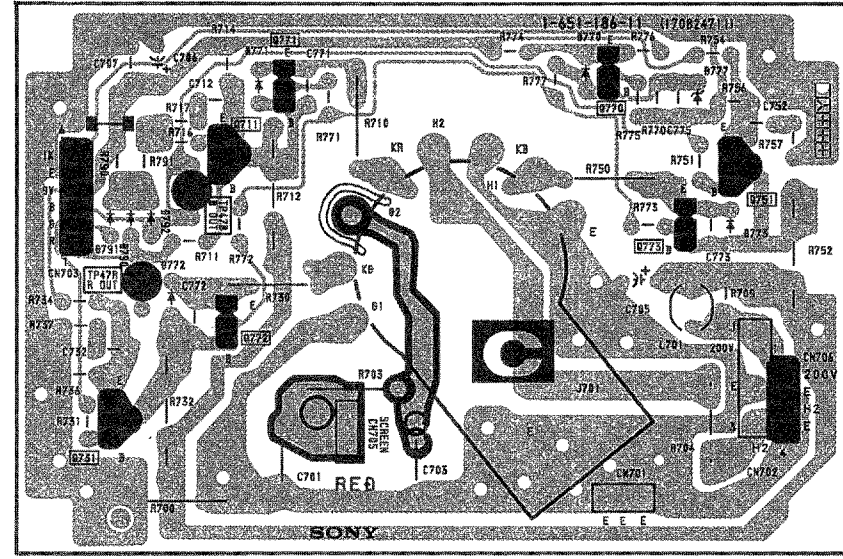


A BOARD IC406 μPC1406HA



A BOARD IC301 CXA1465AS





6-4. SEMICONDUCTONS

<p>CXA1485AS</p> <p>LA7830</p> <p>L78LR05D-MA</p> <p>MC14053BCP μPD4053BC</p> <p>M37285M4-SV4812</p> <p>RC4558P ST24C01CB1 μPC4558C μPC4558P</p> <p>2SA1162-G 2SA1330-O6 2SB709A-QRS-TX 2SD601A-Q</p>	<p>SBX1790-11 SBX1790-51</p> <p>TDA2009A</p> <p>μPC1093J</p> <p>μPC1406HA</p> <p>2SA1091-0</p>	<p>2SA1175-HFE 2SA1309A</p> <p>2SB564 2SB773-34 2SC3209LK 2SD774-34</p> <p>2SC2611 2SC4722TE4N</p> <p>2SC4663NPR-F</p> <p>2SD1877S-SONY-CA</p>	<p>2SD2137-OP</p> <p>D1N20R RD1.0ESB2 RD1.9ESB2 RD3.0ESB2 RD3.9ESB2 RD5.1ESB1 RD5.9ESB3 RD6.8ESB2 RD8.2ESB2 1SS119 1SS119TD</p> <p>2SC2611 2SC4722TE4N</p> <p>D1N20 EL1Z GP08D RGF10GPKG3</p> <p>D2S4MF D2S4MTA1</p>	<p>D3SB60F</p> <p>GP08DPKG3</p> <p>R2M</p>
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SECTION 7 EXPLODED VIEW

NOTE:

- Items with on part number and on description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

7-1. CHASSIS

- : BVTP 3x12 7-685-648-79
- : BVTP 4x16 7-685-683-79

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4031-920-3	CABINET ASSY (WITH BEZEL ASSY)	2	13	Δ 8-409-707-51	COIL, DEMAGNETIZATION	
2	4-044-734-11	DOOR, CONTROL		14	* 4-363-319-11	BAND, DEGAUSSING COIL	
3	4-044-877-01	FILTER, REMOTE		15	4-044-723-21	COVER, REAR	
4	1-504-607-11	SPEAKER (9X5CM)		16	* A-1297-262-A	A BOARD, COMPLETE	
5	4-044-879-11	BUTTON, MULTI		17	Δ 8-598-938-00	TRANSFORMER ASSY, FEEDBACK (NX-1661Z/ME)	
6	Δ 8-736-768-05	PICTURE TUBE (AS1LDG50X)		18	Δ 8-598-266-00	TUNER, BIF. MA402	
7	4-041-267-01	SCREW (5)		19	1-766-374-11	PLUG, P-PIN	
8	Δ 8-461-440-11	DEFLECTION YOKE Y21NKA(YTM)		20	Δ 1-765-486-11	COND. POWER (WITH CONNECTOR) 10.0A/125V	
9	1-452-277-00	MAGNET, BNC		21	4-308-870-00	CLIP, LEAD WIRE	
10	4-041-361-01	SPACER, DY		22	1-452-032-00	MAGNET, DISK; 10 MM φ	
11	* A-1331-336-A	C BOARD, COMPLETE		23	1-452-094-00	MAGNET, ROTATABLE DISK; 15 MM φ	
12	* 4-375-394-01	SPRING, TENSION		24	X-4308-815-0	PERMALLOY ASSY, CONVERGENCE	

SECTION 8 ELECTRICAL PARTS LIST

NOTE:

- The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All resistors are in ohms.
- F: nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS: MF: μF, PF: μμF, MMH: mH, UH: μH
COILS: ●: μF, PF: μμF, MMH: mH, UH: μH

The components identified by Δ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
*A-1297-262-A A BOARD, COMPLETE							

4-382-854-11 SCREW (M3X10), P, SW (+)							
<CAPACITOR>							
C001	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C303	1-126-952-11	ELECT 1000MF	20% 16V
C008	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C304	1-126-964-11	ELECT 10MF	20% 50V
C010	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C305	1-126-903-11	ELECT 1MF	20% 50V
C011	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C306	1-163-035-00	CERAMIC CHIP 0.047MF	5% 50V
C012	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C307	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C014	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V	C308	1-124-902-00	ELECT 0.47MF	20% 50V
C017	1-124-903-11	ELECT 1MF	20% 50V	C309	1-163-099-00	CERAMIC CHIP 18PF	5% 50V
C019	1-163-135-00	CERAMIC CHIP 560PF	5% 50V	C310	1-126-253-11	ELECT 22MF	20% 50V
C020	1-137-399-11	FILM 0.1MF	5% 50V	C311	1-137-399-11	FILM 0.1MF	5% 50V
C023	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C312	1-137-399-11	FILM 0.1MF	5% 50V
C024	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C313	1-137-399-11	FILM 0.1MF	5% 50V
C025	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C314	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C026	1-163-109-00	CERAMIC CHIP 47PF	5% 50V	C315	1-126-934-11	ELECT 20MF	20% 16V
C027	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C318	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C028	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C319	1-124-902-00	ELECT 0.47MF	20% 50V
C030	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C320	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V
C034	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V	C321	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C037	1-164-161-11	CERAMIC CHIP 0.0022MF	10% 50V	C322	1-163-011-11	CERAMIC CHIP 0.0015MF	10% 50V
C038	1-126-935-11	ELECT 470F	20% 16V	C323	1-163-007-11	CERAMIC CHIP 680PF	10% 50V
C040	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C324	1-124-903-11	ELECT 1MF	20% 50V
C041	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	C325	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V
C042	1-124-903-11	ELECT 1MF	20% 50V	C326	1-137-370-11	FILM 0.01MF	5% 50V
C045	1-164-161-11	CERAMIC CHIP 0.0022MF	10% 50V	C327	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C046	1-164-161-11	CERAMIC CHIP 0.0022MF	10% 50V	C328	1-124-902-00	ELECT 0.47MF	20% 50V
C047	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C330	1-163-007-11	CERAMIC CHIP 680PF	10% 50V
C048	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C332	1-136-169-00	FILM 0.22MF	5% 50V
C050	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C333	1-136-169-00	FILM 0.22MF	5% 50V
C051	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C334	1-137-372-11	FILM 0.022MF	10% 25V
C052	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C335	1-124-903-11	ELECT 1MF	20% 50V
C053	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C336	1-126-964-11	ELECT 10MF	20% 50V
C101	1-124-927-11	ELECT 4.7MF	20% 50V	C341	1-124-902-00	ELECT 0.47MF	20% 50V
C202	1-126-964-11	ELECT 10MF	20% 50V	C342	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C204	1-126-933-11	ELECT 100MF	20% 16V	C345	1-126-933-11	ELECT 100MF	20% 16V
C206	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	C347	1-126-933-11	ELECT 100MF	20% 16V
C251	1-124-925-11	ELECT 2.2MF	20% 50V	C348	1-163-129-00	CERAMIC CHIP 330PF	5% 50V
C254	1-126-933-11	ELECT 100MF	20% 16V	C401	1-124-903-11	ELECT 1MF	20% 50V
C255	1-126-233-11	ELECT 22MF	20% 50V	C402	1-124-903-11	ELECT 1MF	20% 50V
C256	1-126-933-11	ELECT 100MF	20% 16V	C403	1-126-964-11	ELECT 10MF	20% 50V
C257	1-124-925-11	ELECT 2.2MF	20% 50V	C404	1-126-933-11	ELECT 100MF	20% 16V
C258	1-136-169-00	FILM 0.22MF	5% 50V	C406	1-124-903-11	ELECT 1MF	20% 50V
C259	1-136-173-00	FILM 0.47MF	5% 50V	C407	1-124-903-11	ELECT 1MF	20% 50V
C260	1-126-964-11	ELECT 10MF	20% 50V	C408	1-126-964-11	ELECT 10MF	20% 50V
C261	1-126-952-11	ELECT 1000MF	20% 16V	C409	1-126-964-11	ELECT 10MF	20% 50V
C262	1-124-925-11	ELECT 2.2MF	20% 50V	C410	1-126-964-11	ELECT 10MF	20% 50V
C263	1-136-169-00	FILM 0.22MF	5% 50V	C412	1-126-964-11	ELECT 10MF	20% 50V

SECTION 7 EXPLODED VIEW

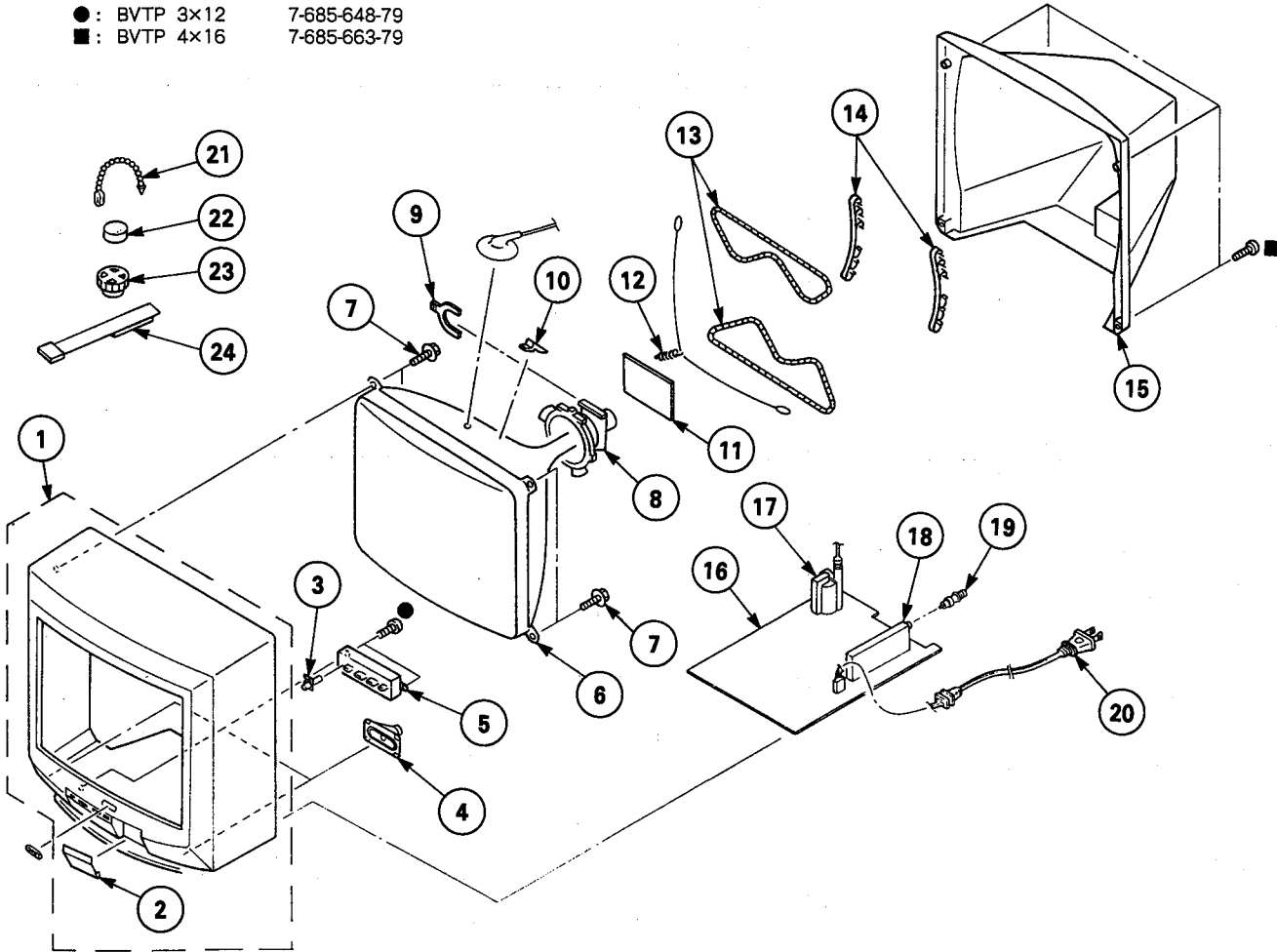
NOTE :

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- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

7-1. CHASSIS

- : BVTP 3x12 7-685-648-79
- : BVTP 4x16 7-685-663-79



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4031-920-3	CABINET ASSY (WITH BEZEL ASSY)		2	13	Δ 1-409-707-51	COIL, DEMAGNETIZATION
2	4-044-734-11	DOOR, CONTROL		14	*4-369-319-11	BAND, DEGAUSSING COIL	
3	4-044-877-01	FILTER, REMOTE		15	4-044-723-21	COVER, REAR	
4	1-504-607-11	SPEAKER (9X5CM)		16	*A-1297-262-A	A BOARD, COMPLETE	
5	4-044-879-11	BUTTON, MULTI		17	Δ 8-598-938-00	TRANSFORMER ASSY, FLYBACK (NX-166L/A4E)	
6	Δ 8-738-768-05	PICTURE TUBE (A51LDG50X)		18	Δ 8-598-269-00	TUNER BTF-WA403	
7	4-041-267-01	SCREW (5), TAPPING		19	1-766-374-11	PLUG, F-PIN	
8	Δ 8-451-440-11	DEFLECTION YOKE Y21NXA(VTM)		20	Δ 1-765-486-11	CORD, POWER (WITH CONNECTOR) 10.0A/125V	
9	1-452-277-00	MAGNET, BMC		21	4-308-870-00	CLIP, LEAD WIRE	
10	4-041-361-01	SPACER, DY		22	1-452-032-00	MAGNET, DISK; 10 MM ϕ	
11	*A-1331-336-A	C BOARD, COMPLETE		23	1-452-094-00	MAGNET, ROTATABLE DISK; 15 MM ϕ	
12	*4-375-394-01	SPRING, TENSION		24	X-4308-815-0	PERMALLOY ASSY, CONVERGENCE	

A

SECTION 8 ELECTRICAL PARTS LIST

NOTE :

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

When indicating parts by reference number, please include the board name.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS COILS

• MF : μ F, PF : μ PF • MMH : mH, UH : μ H

RESISTORS

- All resistors are in ohms.
- F : nonflammable

- The components identified by \boxtimes in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
*A-1297-262-A		A BOARD, COMPLETE *****					
	4-382-854-11	SCREW (M3X10), P, SW (+)					
<CAPACITOR>							
C001	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C270	1-126-964-11	ELECT 10MF	20% 50V
C008	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C271	1-126-964-11	ELECT 10MF	20% 50V
C010	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C272	1-126-935-11	ELECT 470MF	20% 16V
C011	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C273	1-126-935-11	ELECT 470MF	20% 16V
C012	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C301	1-163-113-00	CERAMIC CHIP 68PF	5% 50V
C014	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V	C303	1-126-952-11	ELECT 1000MF	20% 16V
C017	1-124-903-11	ELECT 1MF	20% 50V	C304	1-126-964-11	ELECT 10MF	20% 50V
C019	1-163-135-00	CERAMIC CHIP 560PF	5% 50V	C305	1-124-903-11	ELECT 1MF	20% 50V
C020	1-137-399-11	FILM 0.1MF	5% 50V	C306	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C023	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C307	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C024	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C308	1-124-902-00	ELECT 0.47MF	20% 50V
C025	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C309	1-163-099-00	CERAMIC CHIP 18PF	5% 50V
C026	1-163-109-00	CERAMIC CHIP 47PF	5% 50V	C310	1-126-233-11	ELECT 22MF	20% 50V
C027	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C311	1-137-399-11	FILM 0.1MF	5% 50V
C028	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C312	1-137-399-11	FILM 0.1MF	5% 50V
C030	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C313	1-137-399-11	FILM 0.1MF	5% 50V
C034	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V	C314	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C037	1-164-161-11	CERAMIC CHIP 0.0022MF	10% 50V	C315	1-126-934-11	ELECT 220MF	20% 16V
C038	1-126-935-11	ELECT 470MF	20% 16V	C318	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C040	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C319	1-124-902-00	ELECT 0.47MF	20% 50V
C041	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	C320	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V
C042	1-124-903-11	ELECT 1MF	20% 50V	C321	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C045	1-164-161-11	CERAMIC CHIP 0.0022MF	10% 50V	C322	1-163-011-11	CERAMIC CHIP 0.0015MF	10% 50V
C046	1-104-664-11	ELECT 47MF	20% 25V	C323	1-163-007-11	CERAMIC CHIP 680PF	10% 50V
C047	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	C324	1-124-903-11	ELECT 1MF	20% 50V
C048	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C325	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V
C050	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C326	1-137-370-11	FILM 0.01MF	5% 50V
C051	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C327	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C052	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C328	1-124-902-00	ELECT 0.47MF	20% 50V
C053	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C330	1-163-007-11	CERAMIC CHIP 680PF	10% 50V
C101	1-124-927-11	ELECT 4.7MF	20% 50V	C332	1-136-169-00	FILM 0.22MF	5% 50V
C202	1-126-964-11	ELECT 10MF	20% 50V	C333	1-136-169-00	FILM 0.22MF	5% 50V
C204	1-126-933-11	ELECT 100MF	20% 16V	C334	1-137-372-11	FILM 0.022MF	5% 50V
C206	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	C335	1-124-903-11	ELECT 1MF	20% 50V
C251	1-124-925-11	ELECT 2.2MF	20% 50V	C336	1-126-964-11	ELECT 10MF	20% 50V
C254	1-126-933-11	ELECT 100MF	20% 16V	C341	1-124-902-00	ELECT 0.47MF	20% 50V
C255	1-126-233-11	ELECT 22MF	20% 50V	C342	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C256	1-126-933-11	ELECT 100MF	20% 16V	C345	1-126-933-11	ELECT 100MF	20% 16V
C257	1-124-925-11	ELECT 2.2MF	20% 50V	C347	1-126-933-11	ELECT 100MF	20% 16V
C258	1-136-169-00	FILM 0.22MF	5% 50V	C348	1-163-129-00	CERAMIC CHIP 330PF	5% 50V
C259	1-136-173-00	FILM 0.47MF	5% 50V	C401	1-124-903-11	ELECT 1MF	20% 50V
C260	1-126-964-11	ELECT 10MF	20% 50V	C402	1-124-903-11	ELECT 1MF	20% 50V
C261	1-126-952-11	ELECT 1000MF	20% 16V	C403	1-126-964-11	ELECT 10MF	20% 50V
C262	1-124-925-11	ELECT 2.2MF	20% 50V	C404	1-126-933-11	ELECT 100MF	20% 16V
C263	1-136-169-00	FILM 0.22MF	5% 50V	C406	1-124-903-11	ELECT 1MF	20% 50V
				C407	1-124-903-11	ELECT 1MF	20% 50V
				C408	1-126-964-11	ELECT 10MF	20% 50V
				C409	1-126-964-11	ELECT 10MF	20% 50V
				C410	1-126-964-11	ELECT 10MF	20% 50V
				C412	1-126-964-11	ELECT 10MF	20% 50V

C

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK
Q751	8-729-326-11	TRANSISTOR 2SC2611	
Q770	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q771	8-729-200-17	TRANSISTOR 2SA1091-0	
Q772	8-729-200-17	TRANSISTOR 2SA1091-0	
Q773	8-729-200-17	TRANSISTOR 2SA1091-0	

<RESISTOR>

R700	1-260-087-11	CARBON	100	5%	1/2W	
R703	1-260-105-11	CARBON	3.3K	5%	1/2W	
R704	1-216-370-11	METAL OXIDE	1.2	5%	2W	F
R710	1-260-105-11	CARBON	3.3K	5%	1/2W	
R711	1-247-807-31	CARBON	100	5%	1/4W	
R712	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R716	1-249-411-11	CARBON	330	5%	1/4W	
R717	1-249-393-11	CARBON	10	5%	1/4W	
R730	1-260-105-11	CARBON	3.3K	5%	1/2W	
R731	1-247-807-31	CARBON	100	5%	1/4W	
R732	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R736	1-249-411-11	CARBON	330	5%	1/4W	
R737	1-249-393-11	CARBON	10	5%	1/4W	
R750	1-260-105-11	CARBON	3.3K	5%	1/2W	
R751	1-247-807-31	CARBON	100	5%	1/4W	
R752	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R756	1-249-411-11	CARBON	330	5%	1/4W	
R757	1-249-393-11	CARBON	10	5%	1/4W	
R770	1-249-433-11	CARBON	22K	5%	1/4W	
R774	1-249-437-11	CARBON	47K	5%	1/4W	
R775	1-249-417-11	CARBON	1K	5%	1/4W	
R776	1-249-409-11	CARBON	220	5%	1/4W	
R790	1-249-417-11	CARBON	1K	5%	1/4W	
R791	1-249-413-11	CARBON	470	5%	1/4W	

MISCELLANEOUS

Δ 1-409-707-51	COIL, DEMAGNETIZATION
1-452-277-00	MAGNET, BMC
1-504-607-11	SPEAKER (9X5CM)
Δ 1-765-486-11	CORD, POWER (WITH CONNECTOR) 10.0A/125V
1-766-374-11	PLUG, F-PIN

Δ 8-451-440-11	DEFLECTION YOKE Y21NXA(VTM)
V901 Δ 8-738-768-05	PICTURE TUBE (A51LDG50X)

ACCESSORIES AND PACKING MATERIALS

1-417-182-11	CONVERTER
1-501-730-11	ANTENNA, TELESCOPIC
3-758-850-21	MANUAL, INSTRUCTION
*4-041-254-01	BAG, PROTECTION
*4-044-875-01	CUSHION (UPPER) (ASSY)
*4-044-876-01	CUSHION (LOWER) (ASSY)
*4-044-878-01	INDIVIDUAL CARTON

REMOTE COMMANDER

1-466-966-41	REMOTE COMMANDER (RM-Y116)
9-903-826-11	COVER, BATTERY (FOR RM-Y116)

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

A

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C501	1-137-399-11	FILM	0.1MF 5% 50V	C641	1-137-374-11	FILM	0.047MF 5% 50V
C502	1-126-233-11	ELECT	22MF 20% 50V	C642	1-137-374-11	FILM	0.047MF 5% 50V
C504	1-130-489-00	FILM	0.033MF 5% 50V	C690	1-124-902-00	ELECT	0.47MF 20% 50V
C505	1-164-058-11	CERAMIC	33PF 5% 50V	C691	1-126-935-11	ELECT	470MF 20% 16V
C506	1-126-233-11	ELECT	22MF 20% 50V	C692	1-104-664-11	ELECT	47MF 20% 25V
C507	1-102-038-00	CERAMIC	0.001MF 500V	C693	1-136-173-00	FILM	0.47MF 5% 50V
C508	1-102-038-00	CERAMIC	0.001MF 500V			<FILTER>	
C509	1-126-948-11	ELECT	100MF 20% 35V	CF001	1-579-952-21	VIBRATOR, CERAMIC	
C510	1-108-702-11	MYLAR	0.068MF 10% 100V			<CONNECTOR>	
C511	1-124-927-11	ELECT	4.7MF 20% 50V	CN201	1-564-505-11	PLUG, CONNECTOR 2P	
C512	1-164-096-11	CERAMIC	0.01MF 50V	CN202	1-564-505-11	PLUG, CONNECTOR 2P	
C513	1-126-964-11	ELECT	10MF 20% 50V	CN301	*1-564-509-11	PLUG, CONNECTOR 6P	
C514	1-104-664-11	ELECT	47MF 20% 25V	CN401	*1-560-124-00	PLUG, CONNECTOR (2.5MM) 4P	
C515	1-126-941-11	ELECT	470MF 20% 25V	C501	*1-580-798-11	CONNECTOR PIN (DY) 6P	
C516	1-102-244-00	CERAMIC	220PF 10% 500V	CN503	*1-564-507-11	PLUG, CONNECTOR 4P	
C517	1-126-935-11	ELECT	470MF 20% 16V	CN601	*1-580-843-11	PIN, CONNECTOR (POWER)	
C518	1-126-941-11	ELECT	470MF 20% 25V	CN602	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
C519	1-102-244-00	CERAMIC	220PF 10% 500V	CN603	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
C520	1-107-652-11	ELECT	10MF 20% 250V			<DIODE>	
C521	1-102-244-00	CERAMIC	220PF 10% 500V	D001	8-719-109-84	DIODE RD5.1ESB1	
C522	1-123-024-21	ELECT	33MF 160V	D003	8-719-911-19	DIODE 1SS119	
C523	1-136-105-00	FILM	0.33MF 5% 200V	D201	8-719-110-72	DIODE RD30ESB2	
C525	1-106-387-00	MYLAR	0.068MF 10% 200V	D302	8-719-109-84	DIODE RD5.1ESB1	
C527	1-126-233-11	ELECT	22MF 20% 50V	D306	8-719-109-97	DIODE RD6.8ESB2	
C528	1-107-635-11	ELECT	4.7MF 20% 160V	D307	8-719-911-19	DIODE 1SS119	
C530	1-104-664-11	ELECT	47MF 20% 25V	D401	8-719-110-36	DIODE RD13ESB2	
C531	1-104-664-11	ELECT	47MF 20% 25V	D402	8-719-110-36	DIODE RD13ESB2	
C553	1-102-228-00	CERAMIC	470PF 10% 500V	D403	8-719-911-19	DIODE 1SS119	
C554	1-109-883-11	FILM	0.0057MF 3% 2KV	D405	8-719-110-36	DIODE RD13ESB2	
C558	1-106-371-00	MYLAR	0.015MF 10% 100V	D502	8-719-908-03	DIODE GP08D	
C559	1-162-115-91	CERAMIC	330PF 10% 2KV	D503	8-719-911-19	DIODE 1SS119	
C575	1-106-371-00	MYLAR	0.015MF 10% 200V	D504	8-719-302-43	DIODE EL1Z	
C579	1-108-421-81	MYLAR	0.01MF 10% 200V	D505	8-719-911-19	DIODE 1SS119	
C601	1-161-741-71	CERAMIC	1000PF 10% 400V	D506	8-719-110-08	DIODE RD8.2ESB2	
C602	1-136-311-51	FILM	0.47MF 20% 125V	D507	8-719-911-19	DIODE 1SS119	
C603	1-161-741-71	CERAMIC	1000PF 10% 400V	D509	8-719-302-43	DIODE EL1Z	
C605	1-161-741-71	CERAMIC	1000PF 10% 400V	D510	8-719-302-43	DIODE EL1Z	
C609	1-104-759-11	ELECT	470MF 20% 200V	D512	8-719-302-43	DIODE EL1Z	
C610	1-164-625-11	CERAMIC	680PF 10% 500V	D514	8-719-911-19	DIODE 1SS119	
C611	1-164-625-11	CERAMIC	680PF 10% 500V	D515	8-719-302-43	DIODE EL1Z	
C612	1-136-169-00	FILM	0.22MF 5% 50V	D601	8-719-510-51	DIODE B3SB60F	
C613	1-136-169-00	FILM	0.22MF 5% 50V	D602	8-719-911-19	DIODE 1SS119	
C614	1-129-719-00	FILM	0.027MF 10% 630V	D603	8-719-510-48	DIODE D1N20R	
C615	1-164-625-11	CERAMIC	680PF 10% 500V	D604	8-719-510-48	DIODE D1N20R	
C616	1-165-127-11	CERAMIC	470PF 10% 500V	D605	8-719-022-97	DIODE D2S4MF	
C617	1-137-366-11	FILM	0.0022MF 5% 50V	D606	8-719-022-97	DIODE D2S4MF	
C618	1-165-127-11	CERAMIC	470PF 10% 500V	D607	8-719-510-26	DIODE D1N120	
C619	1-106-367-00	MYLAR	0.01MF 10% 200V	D608	8-719-510-26	DIODE D1N120	
C620	1-165-127-11	CERAMIC	470PF 10% 500V	D609	8-719-510-26	DIODE D1N120	
C621	1-165-127-11	CERAMIC	470PF 10% 500V	D610	8-719-510-26	DIODE D1N120	
C622	1-126-952-11	ELECT	1000MF 20% 16V	D611	8-719-110-17	DIODE RD10ESB2	
C623	1-123-024-21	ELECT	33MF 160V	D612	8-719-109-90	DIODE RD5.6ESB3	
C624	1-161-741-71	CERAMIC	1000PF 10% 400V	D613	8-719-303-49	DIODE R2M	
C625	1-126-933-11	ELECT	100MF 20% 16V	D614	8-719-510-48	DIODE D1N20R	
C628	1-104-664-11	ELECT	47MF 20% 25V	D615	8-719-510-48	DIODE D1N20R	
C631	1-104-664-11	ELECT	47MF 20% 25V				
C632	1-126-964-11	ELECT	10MF 20% 50V				
C633	1-126-964-11	ELECT	10MF 20% 50V				
C634	1-126-964-11	ELECT	10MF 20% 50V				
C636	1-161-741-71	CERAMIC	1000PF 10% 400V				
C637	1-161-741-71	CERAMIC	1000PF 10% 400V				
C638	1-161-741-71	CERAMIC	1000PF 10% 400V				
C639	1-161-741-71	CERAMIC	1000PF 10% 400V				
C640	1-136-311-51	FILM	0.47MF 20% 125V				

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A

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
<FUSE>							
F601	1-533-223-11	FUSE 6.3A/125V		Q551	8-729-810-49	TRANSISTOR 2SD1877S-SONY-CA	
	1-533-223-11	HOLDER, FUSE; F601		Q554	8-729-216-22	TRANSISTOR 2SA1162-G	
<FERRITE BEAD>							
FB501	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH		Q602	8-729-025-77	TRANSISTOR 2SC4663NPR-F	
FB601	1-412-911-11	INDUCTOR, FERRITE BEAD		Q603	8-729-025-77	TRANSISTOR 2SC4663NPR-F	
FB602	1-412-911-11	INDUCTOR, FERRITE BEAD		Q604	8-729-140-93	TRANSISTOR 2SB733-34	
FB603	1-412-911-11	INDUCTOR, FERRITE BEAD		Q605	8-729-422-27	TRANSISTOR 2SD601A-Q	
FB604	1-412-911-11	INDUCTOR, FERRITE BEAD		Q606	8-729-423-99	TRANSISTOR 2SD2137-0P	
FB605	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH		Q607	8-729-140-96	TRANSISTOR 2SD774-34	
FB606	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH		Q608	8-729-216-22	TRANSISTOR 2SA1162-G	
FB607	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH		Q609	8-729-422-27	TRANSISTOR 2SD601A-Q	
				Q610	8-729-216-22	TRANSISTOR 2SA1162-G	
<IC>				<RESISTOR>			
IC101	8-759-299-01	IC M37265M4-SV4812		R001	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
IC102	8-759-280-75	IC ST24C01CB1		R002	1-216-073-00	METAL GLAZE 10K 5%	1/10W
IC103	8-741-790-11	IC SBX1790-11		R003	1-216-033-00	METAL GLAZE 220 5%	1/10W
IC251	8-759-980-43	IC TDA2009A		R004	1-216-049-00	METAL GLAZE 1K 5%	1/10W
IC301	8-752-059-67	IC CXA1465AS		R005	1-216-073-00	METAL GLAZE 10K 5%	1/10W
IC401	8-759-140-53	IC UPD4053BC		R007	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
IC406	8-759-145-27	IC UPC1406HA		R008	1-216-033-00	METAL GLAZE 220 5%	1/10W
IC501	8-759-801-98	IC LA7830		R009	1-216-033-00	METAL GLAZE 220 5%	1/10W
IC502	8-759-145-58	IC UPC4558BC		R010	1-216-033-00	METAL GLAZE 220 5%	1/10W
IC601	8-759-396-31	IC CPC10933-1-T		R011	1-216-033-00	METAL GLAZE 220 5%	1/10W
IC690	8-759-805-37	IC L78LRO5D-MA		R012	1-216-033-00	METAL GLAZE 220 5%	1/10W
<JACK>				R013	1-216-081-00	METAL GLAZE 22K 5%	1/10W
J251	1-568-267-21	JACK		R014	1-216-033-00	METAL GLAZE 220 5%	1/10W
J402	1-695-586-11	JACK BLOCK, PIN (L TYPE) 3P		R015	1-216-033-00	METAL GLAZE 220 5%	1/10W
<COIL>				R016	1-216-041-00	METAL GLAZE 470 5%	1/10W
L001	1-408-603-31	INDUCTOR 10UH		R017	1-216-121-00	METAL GLAZE 1M 5%	1/10W
L002	1-408-615-31	INDUCTOR 100UH		R018	1-216-049-00	METAL GLAZE 1K 5%	1/10W
L003	1-408-615-31	INDUCTOR 100UH		R019	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
L202	1-408-602-31	INDUCTOR 8.2UH		R020	1-216-069-00	METAL GLAZE 6.8K 5%	1/10W
L501	1-412-553-11	INDUCTOR 3.3MMH		R021	1-216-045-00	METAL GLAZE 680 5%	1/10W
L502	1-410-669-31	INDUCTOR 33UH		R022	1-216-047-00	METAL GLAZE 820 5%	1/10W
L503	1-412-531-61	INDUCTOR 33UH		R023	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
L551	1-412-533-21	INDUCTOR 47UH		R025	1-216-033-00	METAL GLAZE 220 5%	1/10W
L602	1-410-670-31	INDUCTOR 39UH		R026	1-216-033-00	METAL GLAZE 220 5%	1/10W
<IC LINK>				R027	1-216-033-00	METAL GLAZE 220 5%	1/10W
PS201	1-532-637-91	LINK, IC 1.0A		R028	1-216-041-00	METAL GLAZE 470 5%	1/10W
<TRANSISTOR>				R029	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q001	8-729-216-22	TRANSISTOR 2SA1162-G		R030	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q261	8-729-216-22	TRANSISTOR 2SA1162-G		R031	1-216-045-00	METAL GLAZE 680 5%	1/10W
Q262	8-729-422-27	TRANSISTOR 2SD601A-Q		R032	1-216-033-00	METAL GLAZE 220 5%	1/10W
Q301	8-729-216-22	TRANSISTOR 2SA1162-G		R033	1-216-033-00	METAL GLAZE 220 5%	1/10W
Q310	8-729-422-27	TRANSISTOR 2SD601A-Q		R034	1-216-295-00	CONDUCTOR, CHIP	
Q401	8-729-216-22	TRANSISTOR 2SA1162-G		R036	1-216-295-00	CONDUCTOR, CHIP	
Q402	8-729-216-22	TRANSISTOR 2SA1162-G		R038	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q403	8-729-216-22	TRANSISTOR 2SA1162-G		R039	1-216-077-00	METAL GLAZE 15K 5%	1/10W
Q404	8-729-422-27	TRANSISTOR 2SD601A-Q		R041	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q504	8-729-105-08	TRANSISTOR 2SA1330-06		R043	1-216-295-00	CONDUCTOR, CHIP	
Q550	8-729-140-96	TRANSISTOR 2SD774-34		R044	1-216-033-00	METAL GLAZE 220 5%	1/10W
				R045	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
				R046	1-216-033-00	METAL GLAZE 220 5%	1/10W
				R047	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
				R048	1-216-025-00	METAL GLAZE 100 5%	1/10W
				R049	1-216-089-00	METAL GLAZE 47K 5%	1/10W
				R050	1-216-073-00	METAL GLAZE 10K 5%	1/10W
				R051	1-216-033-00	METAL GLAZE 220 5%	1/10W
				R052	1-216-295-00	CONDUCTOR, CHIP	
				R054	1-216-073-00	METAL GLAZE 10K 5%	1/10W
				R056	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified

• The components identified by \boxtimes in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R057	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R364	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R058	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R366	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R060	1-216-295-00	CONDCTOR, CHIP		R367	1-216-109-00	METAL GLAZE	330K 5% 1/10W
R061	1-216-045-00	METAL GLAZE	680 5% 1/10W	R401	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R062	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R405	1-216-077-00	METAL GLAZE	15K 5% 1/10W
R063	1-216-121-00	METAL GLAZE	1M 5% 1/10W	R406	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W
R064	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R408	1-216-295-00	CONDCTOR, CHIP	
R065	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R409	1-216-295-00	CONDCTOR, CHIP	
R067	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R410	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R070	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R411	1-216-041-00	METAL GLAZE	470 5% 1/10W
R071	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R412	1-216-041-00	METAL GLAZE	470 5% 1/10W
R101	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R413	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R203	1-215-899-11	METAL OXIDE	15K 5% 2W F	R414	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R206	1-216-689-11	METAL GLAZE	39K 5% 1/10W	R415	1-216-033-00	METAL GLAZE	220 5% 1/10W
R207	1-216-083-00	METAL GLAZE	27K 5% 1/10W	R418	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R212	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R419	1-216-023-00	METAL GLAZE	82 5% 1/10W
R252	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W	R420	1-249-429-11	CARBON	10K 5% 1/4W
R253	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W	R423	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R254	1-216-015-00	METAL GLAZE	39 5% 1/10W	R424	1-216-033-00	METAL GLAZE	220 5% 1/10W
R256	1-216-015-00	METAL GLAZE	39 5% 1/10W	R425	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R258	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W	R426	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R259	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W	R427	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R262	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R430	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R263	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R431	1-216-295-00	CONDCTOR, CHIP	
R264	1-216-041-00	METAL GLAZE	470 5% 1/10W	R432	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R265	1-216-085-00	METAL GLAZE	33K 5% 1/10W	R433	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R266	1-216-085-00	METAL GLAZE	33K 5% 1/10W	R436	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R267	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R438	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R268	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R439	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R269	1-249-385-11	CARBON	2.2 5% 1/4W	R441	1-216-025-00	METAL GLAZE	100 5% 1/10W
R270	1-249-385-11	CARBON	2.2 5% 1/4W	R442	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R271	1-249-417-11	CARBON	1K 5% 1/4W	R501	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R272	1-249-411-11	CARBON	330 5% 1/4W	R505	1-216-349-00	METAL OXIDE	1 5% 1W F
R273	1-249-411-11	CARBON	330 5% 1/4W	R506	1-216-429-00	METAL OXIDE	270 5% 1W F
R276	1-249-417-11	CARBON	1K 5% 1/4W	R507	1-247-891-00	CARBON	330K 5% 1/4W
R301	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R508	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R302	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R509	1-216-101-00	METAL GLAZE	150K 5% 1/10W
R311	1-216-678-11	METAL CHIP	13K 0.50% 1/10W	R510	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W
R312	1-216-079-00	METAL GLAZE	18K 5% 1/10W	R511	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R313	1-208-784-11	METAL CHIP	1.2K 0.50% 1/10W	R512	1-215-445-00	METAL	10K 1% 1/4W
R314	1-216-117-00	METAL GLAZE	680K 5% 1/10W	R513	1-216-645-11	METAL CHIP	560 0.50% 1/10W
R315	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W	R515	1-216-675-11	METAL CHIP	10K 0.50% 1/10W
R321	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R518	1-215-431-00	METAL	2.7K 1% 1/4W
R322	1-216-295-00	CONDCTOR, CHIP		R519	1-216-443-11	METAL OXIDE	56K 5% 1W F
R323	1-216-121-00	METAL GLAZE	1M 5% 1/10W	R520	1-216-647-11	METAL CHIP	680 0.50% 1/10W
R324	1-216-025-00	METAL GLAZE	100 5% 1/10W	R523	1-215-470-00	METAL	110K 1% 1/4W
R325	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R525	1-216-678-11	METAL CHIP	13K 0.50% 1/10W
R326	1-216-025-00	METAL GLAZE	100 5% 1/10W	R527	1-216-678-11	METAL CHIP	13K 0.50% 1/10W
R327	1-216-077-00	METAL GLAZE	15K 5% 1/10W	R531	1-216-349-00	METAL OXIDE	1 5% 1W F
R328	1-216-025-00	METAL GLAZE	100 5% 1/10W	R532	1-215-457-00	METAL	33K 1% 1/4W
R333	1-216-295-00	CONDCTOR, CHIP		R533	1-216-421-11	METAL OXIDE	12 5% 1W F
R334	1-216-295-00	CONDCTOR, CHIP		R534	1-215-457-00	METAL	33K 1% 1/4W
R336	1-216-121-00	METAL GLAZE	1M 5% 1/10W	R536	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W
R338	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R538	1-215-864-00	METAL OXIDE	150 5% 1W F
R339	1-216-045-00	METAL GLAZE	680 5% 1/10W	R540	1-249-441-11	CARBON	100K 5% 1/4W
R341	1-216-687-11	METAL CHIP	33K 0.50% 1/10W	R542	1-216-083-00	METAL GLAZE	27K 5% 1/10W
R343	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W	R543	1-218-764-11	METAL CHIP	330K 0.50% 1/10W
R345	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R544	1-216-656-11	METAL CHIP	1.6K 0.50% 1/10W
R346	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R545	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R347	1-216-025-00	METAL GLAZE	100 5% 1/10W	R547	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R351	1-216-085-00	METAL GLAZE	33K 5% 1/10W	R548	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R356	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R549	1-216-369-00	METAL OXIDE	1 5% 2W F
R360	1-216-041-00	METAL GLAZE	470 5% 1/10W	R554	1-216-043-00	METAL GLAZE	560 5% 1/10W
R363	1-216-073-00	METAL GLAZE	10K 5% 1/10W				

The components identified by shading and mark Δ are critical for safety
Replace only with part number specified.

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R555	1-215-897-11	METAL OXIDE	6.8K 5% 2W F	T504	1-423-908-31	TRANSFORMER, CONVERTER (P&T)	
R557	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W			<THERMISTOR>	
R558	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R559	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R560	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R563	1-215-880-71	METAL OXIDE	10 5% 2W F	T566GL	1-810-597-21	THERMISTOR, POSITIVE	
R601	1-282-892-91	SOLID	4.7K 20% 1/2W			<TUNER>	
R602	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R605	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R606	1-260-288-11	CARBON	0.47 5% 1/2W	TU101A	8-598-269-03	TUNER RTF-84403	
R607	1-247-889-00	CARBON	270K 5% 1/4W			<VARISTOR>	
R608	1-247-889-00	CARBON	270K 5% 1/4W				
R609	1-216-355-11	METAL OXIDE	3.3 5% 1W F	VDR601	1-810-551-21	VARISTOR	
R610	1-216-355-11	METAL OXIDE	3.3 5% 1W F				
R611	1-247-889-00	CARBON	270K 5% 1/4W			<CRYSTAL>	
R612	1-247-889-00	CARBON	270K 5% 1/4W				
R613	1-249-409-11	CARBON	220 5% 1/4W	X301	1-760-190-41	VIBRATOR, CRYSTAL	
R614	1-247-891-00	CARBON	330K 5% 1/4W				
R615	1-216-101-00	METAL GLAZE	150K 5% 1/10W				
R616	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R617	1-216-661-91	METAL CHIP	2.7K 0.50% 1/10W				
R618	1-235-471-91	METAL	120K 1% 1/4W			*A-1331-336-A C BOARD, COMPLETE	
R619	1-247-811-31	CARBON	150 5% 1/4W				
R620	1-249-430-11	CARBON	12K 5% 1/4W			<CAPACITOR>	
R621	1-260-099-11	CARBON	1K 5% 1/2W				
R622	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C701	1-162-114-00	CERAMIC	0.0047MF 2KV
R623	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C706	1-126-233-11	ELECT	22MF 20% 50V
R625	1-216-355-11	METAL OXIDE	3.3 5% 1W F	C712	1-164-083-11	CERAMIC	680PF 10% 50V
R626	1-247-811-31	CARBON	150 5% 1/4W	C732	1-164-083-11	CERAMIC	680PF 10% 50V
R628	1-249-415-11	CARBON	680 5% 1/4W	C752	1-164-083-11	CERAMIC	680PF 10% 50V
R629	1-216-687-11	METAL CHIP	33K 0.50% 1/10W	C771	1-164-083-11	CERAMIC	680PF 10% 50V
R630	1-216-687-11	METAL CHIP	33K 0.50% 1/10W	C772	1-164-083-11	CERAMIC	680PF 10% 50V
R631	1-249-431-11	CARBON	15K 5% 1/4W	C773	1-164-083-11	CERAMIC	680PF 10% 50V
R632	1-216-073-00	METAL GLAZE	10K 5% 1/10W			<CONNECTOR>	
R634	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R635	1-212-857-00	FUSIBLE	10 5% 1/4W F	CN701	1-695-915-11	TAB (CONTACT)	
R636	1-216-049-00	METAL GLAZE	1K 5% 1/10W	CN703	*1-564-509-11	PLUG, CONNECTOR 6P	
R637	1-216-073-00	METAL GLAZE	10K 5% 1/10W	CN705	1-695-915-11	TAB (CONTACT)	
R640	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	CN706	*1-564-507-11	PLUG, CONNECTOR 4P	
R641	1-216-085-00	METAL GLAZE	33K 5% 1/10W			<DIODE>	
R642	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	D770	8-719-911-19	DIODE 1SS119	
R690	1-216-355-11	METAL OXIDE	3.3 5% 1W F	D771	8-719-911-19	DIODE 1SS119	
		<RELAY>		D772	8-719-911-19	DIODE 1SS119	
R601A	1-755-218-31	RELAY		D773	8-719-911-19	DIODE 1SS119	
		<SWITCH>		D777	8-719-109-72	DIODE RD3.9E5B2	
S001	1-692-431-21	SWITCH, TACTILE		D790	8-719-911-19	DIODE 1SS119	
S002	1-692-431-21	SWITCH, TACTILE		D791	8-719-911-19	DIODE 1SS119	
S003	1-692-431-21	SWITCH, TACTILE		D792	8-719-911-19	DIODE 1SS119	
S004	1-692-431-21	SWITCH, TACTILE				<JACK>	
S005	1-692-431-21	SWITCH, TACTILE					
S006	1-692-431-21	SWITCH, TACTILE		J701	1-251-182-11	SOCKET, PICTURE TUBE	
		<TRANSFORMER>				<COIL>	
T504	1-598-938-08	TRANSFORMER ASSY. FEYRACK (KX-1661/A48)		L701	1-410-671-31	INDUCTOR	47UH
T551	1-437-195-11	TRANSFORMER, HORIZONTAL DRIVE				<TRANSISTOR>	
T601	1-423-895-11	TRANSFORMER, LINE FILTER (LFT)					
T602	1-423-895-11	TRANSFORMER, LINE FILTER (LFT)		Q711	8-729-326-11	TRANSISTOR 2SC2611	
T603	1-428-819-11	TRANSFORMER, CONVERTER (P&T)		Q731	8-729-326-11	TRANSISTOR 2SC2611	

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REF.NO.	PART NO.	DESCRIPTION	REMARK
Q751	8-729-326-11	TRANSISTOR 2SC2611	
Q770	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q771	8-729-200-17	TRANSISTOR 2SA1091-0	
Q772	8-729-200-17	TRANSISTOR 2SA1091-0	
Q773	8-729-200-17	TRANSISTOR 2SA1091-0	
<RESISTOR>			
R700	1-260-087-11	CARBON 100 5%	1/2W
R703	1-260-105-11	CARBON 3.3K 5%	1/2W
R704	1-216-370-11	METAL OXIDE 1.2 5%	2W F
R710	1-260-105-11	CARBON 3.3K 5%	1/2W
R711	1-247-807-31	CARBON 100 5%	1/4W
R712	1-215-924-00	METAL OXIDE 15K 5%	3W F
R716	1-249-411-11	CARBON 330 5%	1/4W
R717	1-249-393-11	CARBON 10 5%	1/4W
R730	1-260-105-11	CARBON 3.3K 5%	1/2W
R731	1-247-807-31	CARBON 100 5%	1/4W
R732	1-215-924-00	METAL OXIDE 15K 5%	3W F
R736	1-249-411-11	CARBON 330 5%	1/4W
R737	1-249-393-11	CARBON 10 5%	1/4W
R750	1-260-105-11	CARBON 3.3K 5%	1/2W
R751	1-247-807-31	CARBON 100 5%	1/4W
R752	1-215-924-00	METAL OXIDE 15K 5%	3W F
R756	1-249-411-11	CARBON 330 5%	1/4W
R757	1-249-393-11	CARBON 10 5%	1/4W
R770	1-249-433-11	CARBON 22K 5%	1/4W
R774	1-249-437-11	CARBON 47K 5%	1/4W
R775	1-249-417-11	CARBON 1K 5%	1/4W
R776	1-249-409-11	CARBON 220 5%	1/4W
R790	1-249-417-11	CARBON 1K 5%	1/4W
R791	1-249-413-11	CARBON 470 5%	1/4W

MISCELLANEOUS			

Δ	1-809-707-51	COIL, DEMAGNETIZATION	
	1-452-277-00	MAGNET, BMC	
	1-504-607-11	SPEAKER (9X5CM)	
Δ	1-766-486-11	CORD, POWER (WITH CONNECTOR) 10.0A/125V	
	1-766-374-11	PLUG, P-PIN	
Δ	8-451-440-11	REFLECTION YOKE (21XX)(VTM)	
Y901	8-738-768-05	PICTURE TUBE (45L0650X)	

ACCESSORIES AND PACKING MATERIALS			

	1-417-182-11	CONVERTER	
	1-501-730-11	ANTENNA, TELESCOPIC	
	3-758-850-21	MANUAL, INSTRUCTION	
*	4-041-254-01	BAG, PROTECTION	
*	4-044-875-01	CUSHION (UPPER) (ASSY)	
*	4-044-876-01	CUSHION (LOWER) (ASSY)	
*	4-044-878-01	INDIVIDUAL CARTON	
REMOTE COMMANDER			
	1-466-966-41	REMOTE COMMANDER (RM-Y116)	
	9-903-826-11	COVER, BATTERY (FOR RM-Y116)	

