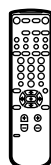
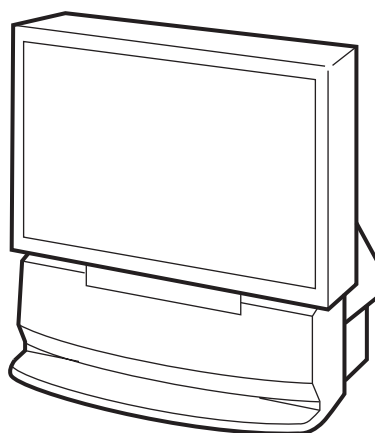


SERVICE MANUAL RA-2A CHASSIS

<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>	<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>
KP-48S65R	RM-Y136A	US	SCC-N65J-A				



RM-Y136A



KP-48S65R



* Please file according to model size.

SPECIFICATIONS

Projection system	3 picture tubes, 3 lenses, horizontal in-line system
Picture tube	7 inch high-brightness monochrome tubes (6.3 raster size), with optical coupling and liquid cooling system
Projection lenses	High performance, large-diameter hybrid lens F1.1
Screen size	48 inches (measured diagonally)

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
Inputs/output	<p>VIDEO IN 1</p> <p>VIDEO IN 2 (VIDEO 2 INPUT)</p> <p>S VIDEO (4-pin mini DIN):</p> <p>Y: 1 Vp-p, 75-ohms unbalanced, sync negative</p> <p>C: 0.286 Vp-p (Burst signal) 75 ohms</p> <p>VIDEO (phono jack): 1 Vp-p, 75-ohms unbalanced, sync negative</p> <p>AUDIO (phono jacks): 500 mVrms (100% modulation) Impedance : 47 kilohms</p> <p>VIDEO IN 3</p> <p>VIDEO (phono jacks): 1 Vp-p, 75-ohms unbalanced, sync negative</p> <p>AUDIO (phono jacks): 500 mVrms (100% modulation) Impedance: 47 kilohms</p> <p>MONITOR OUT</p> <p>VIDEO (phono jack): 1 Vp-p, 75-ohms unbalanced, sync negative</p> <p>AUDIO (phono jacks): 500 mVrms (100% modulation), Impedance: 10 kilohms</p> <p>AUDIO OUT (phono jacks): 900 mVrms (100% modulation) Impedance: 5 kilohms</p>

Speaker	Full range speaker 100 mm (3.9 inches) diameter
Speaker output	15 W x 2
Power requirement	120 V AC, 60 Hz
Power consumption	165 W
	Standby mode: 3 W
Dimensions	1,106 x 1,337 x 571 mm (W/H/D) (43 ⁵ / ₈ x 52 ⁵ / ₈ x 22 ¹ / ₂ inches)
Mass	67 kg (147 lbs 11 oz)
Supplied accessories	Remote control RM-Y136A (1) Size AA (R6) battery (2)
Optional accessories	U/V mixer EAC-66 Connecting cables RK-74A, RK-G34, VMC-810S/820S, YC-15V/30V High-contrast protective screen SCN-48X2

Design and specifications are subject to change without notice.

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, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords 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)

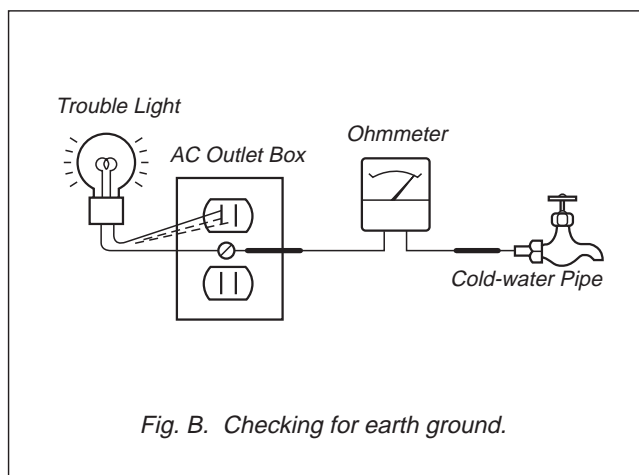
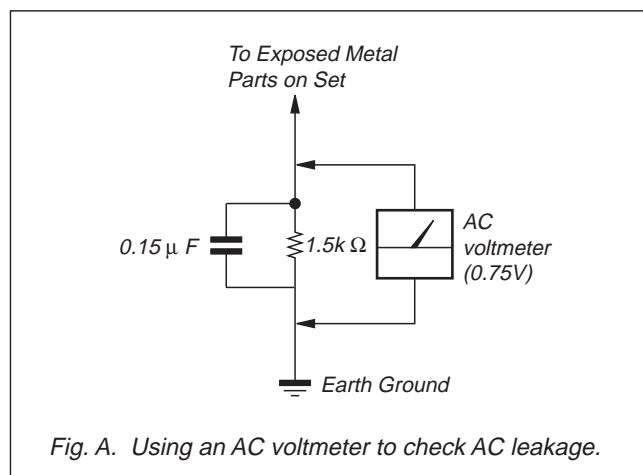


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(CAUTION)

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 \triangle ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO 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 TO 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 partial abstracts from the Operating Instructions Manual. The page numbers of the Operating Instruction Manual remain as in the manual.(part.no : 3-862-541-41)

Welcome!

Thank you for purchasing the Sony Color Rear Video Projection TV. Here are some of the features you will enjoy with your projection TV:

- On-screen menus that let you set the picture quality, sound, and other settings.
- Two tuner Picture-in-Picture (PIP) that allows you to watch another TV channel, video or cable image as a window picture.
- Surround system that simulates the sound quality of a concert hall or movie theater.
- SAVA SPEAKER option of the AUDIO menu that lets you take advantage of the Sony SAVA series speaker system's surround sound and super woofer mode when you connect it to the projection TV.

About this manual

Instructions in this manual are based on use of the remote control. You can also use the controls on the projection TV if they have the same name as those on the remote control.

Precautions

This projection TV operates on extremely high voltage. To prevent fire or electric shock, please follow the precautions below.

Safety

- Operate the projection TV only on 120 V AC.
- One blade of the plug is wider than the other for safety purposes and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Should any liquid or solid object fall into the cabinet, unplug the projection TV and have it checked by qualified personnel before operating it further.
- Unplug the projection TV from the wall outlet if you are not going to use it for several days or more. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

For details concerning safety precautions, see the supplied leaflet "IMPORTANT SAFEGUARDS."

Note on cleaning

Clean the cabinet of the projection TV with a dry soft cloth. To remove dust from the screen, wipe it gently with a soft cloth using vertical strokes only. Stubborn stains may be removed with a cloth slightly dampened with solution of mild soap and warm water. Never use strong solvents such as thinner or benzine for cleaning. If the picture becomes dark after using the projection TV for a long period of time, it may be necessary to clean the inside of the projection TV. Consult qualified service personnel.

Installing

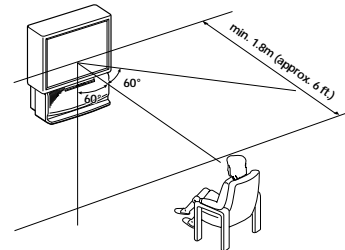
- To prevent internal heat build-up, do not block the ventilation openings.
- Do not install the projection TV in a hot or humid place, or in a place subject to excessive dust or mechanical vibration.
- Avoid operating the projection TV at temperatures below 5°C (41°F).
- If the projection TV is transported directly from a cold to a warm location, or if the room temperature has changed suddenly, the picture may be blurred or show poor color. This is because moisture has condensed on the mirror or lenses inside. If this happens, let the moisture evaporate before using the projection TV.
- To obtain the best picture, do not expose the screen to direct illumination or direct sunlight. It is recommended to use spot lighting directed down from the ceiling or to cover the windows that face the screen with opaque drapery. It is desirable to install the projection TV in a room where the floor and walls are not of reflecting material. If necessary, cover them with dark carpeting or wall paper.

Getting Started

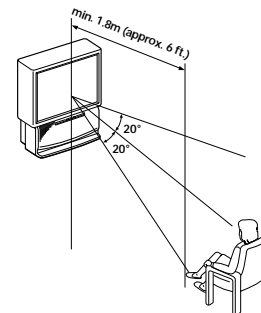
Step 1: Installing the projection TV

For the best picture quality, install the projection TV within the areas shown below.

Optimum viewing area (Horizontal)

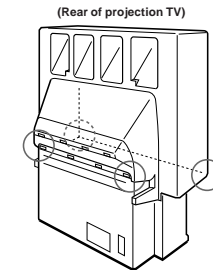


Optimum viewing area (Vertical)



Carrying your projection TV

Be sure to grasp the areas indicated when carrying the projection TV, and to use more than two people.



Preparing for your projection TV

Before you use your projection TV, adjust convergence. For the procedure, see "Step 4: Setting up the projection TV automatically (AUTO SET UP)" on page 14.

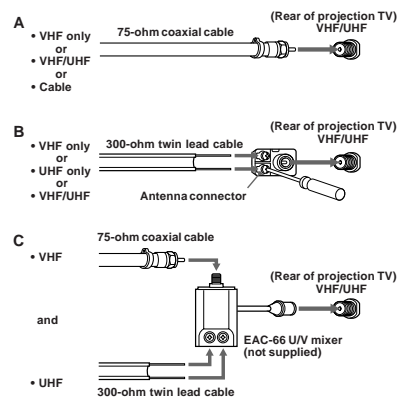
EN

Step 2: Hookup

Although you can use either an indoor or outdoor antenna with your projection TV, we recommend that you connect an outdoor antenna or a cable TV system to get better picture quality.

Connecting an antenna

Connect your antenna cable to the VHF/UHF antenna terminal. If you cannot connect your antenna cable directly to the terminal, follow one of the instructions below depending on your cable type.

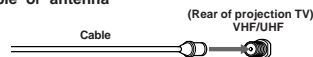


Notes

- Most VHF/UHF combination antennas have a signal splitter. Remove the splitter before attaching the appropriate connector.
- If you use the U/V mixer, snow and noise may appear in the picture when viewing cable TV channels over 37.

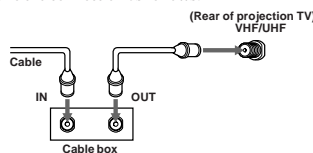
Connecting an antenna/cable TV system without a VCR

To cable or antenna

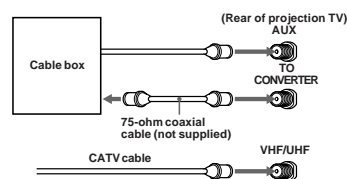


To cable box

If your cable company requires you to connect a cable box, make the connection as follows:



To cable box and cable



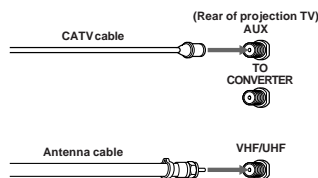
Pay cable TV systems use scrambled or encoded signals requiring a cable box* in addition to the normal cable connection.

* The cable box will be supplied by the cable company.

Note

- You cannot watch the signal through an AUX connector as a window picture.

To cable and antenna



Note

- Do not connect anything to the TO CONVERTER connector in this case.

Connecting an antenna/cable TV system with a VCR

For details on connection, see your VCR instruction manual.

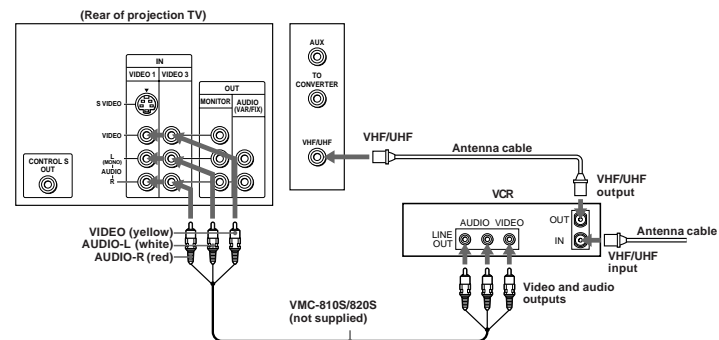
Before making the connection, disconnect the AC power cords of the equipment to be connected.

To a conventional VCR

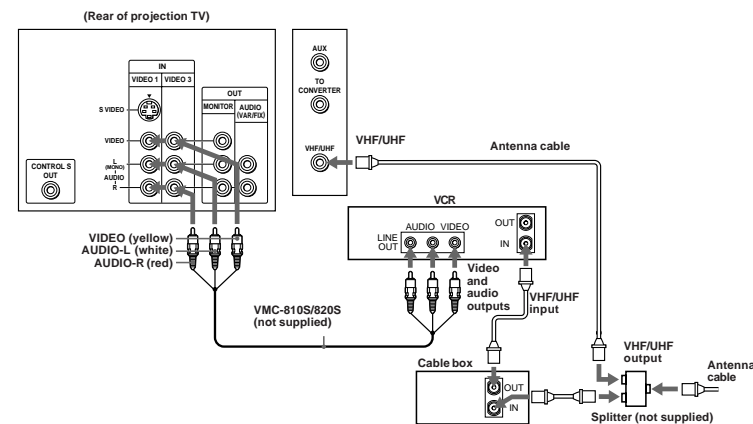
Notes

- To connect a monaural VCR, connect the audio output of the VCR to AUDIO-L (MONO) of VIDEO 1/2/3 IN on the projection TV.

Without a cable box



With a cable box



After making these connections, you will be able to do the following:

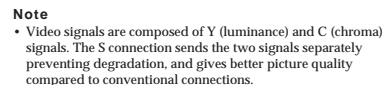
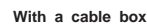
- View the playback of video tapes
- Record one TV program while viewing another program
- Watch two TV programs at once using PIP

EN

- 7 -

Whenever you connect the cable to the S VIDEO input connector, the projection TV automatically receives S video signals.

Without a cable box



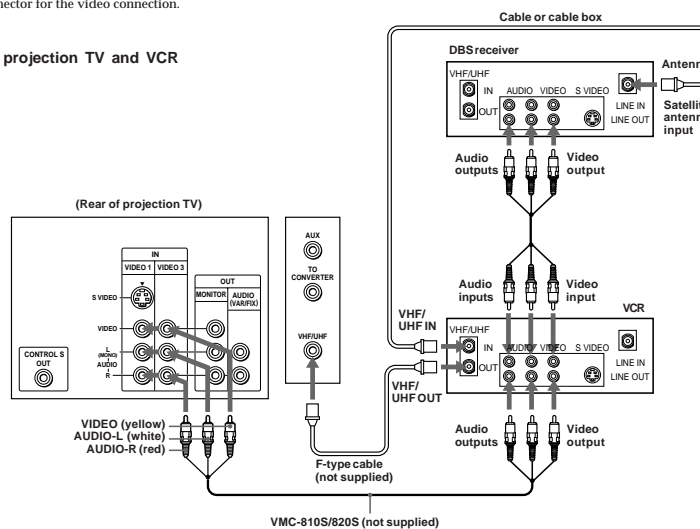
Connecting a DBS receiver

For details on connection, see the instruction manual of the DBS (Digital Broadcasting Satellites) receiver.

To a projection TV

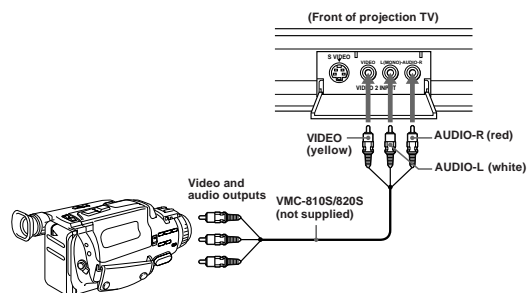


To a projection TV and VCR



Connecting a camcorder

Use this connection to view a camcorder picture.

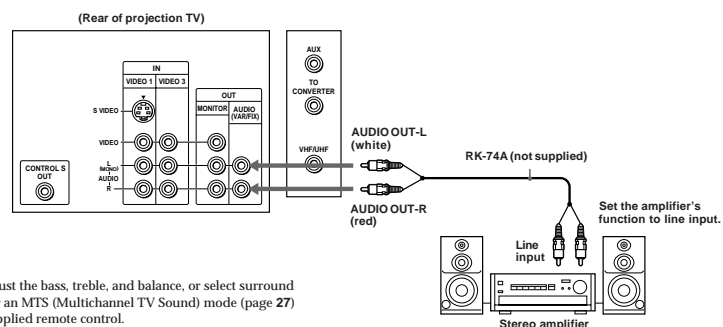


Note

- To connect a monaural camcorder, connect the audio output of the camcorder to AUDIO-L (MONO) of VIDEO 2 INPUT on the projection TV.

Connecting an audio system

When connecting audio equipment, see page 28 for more information.

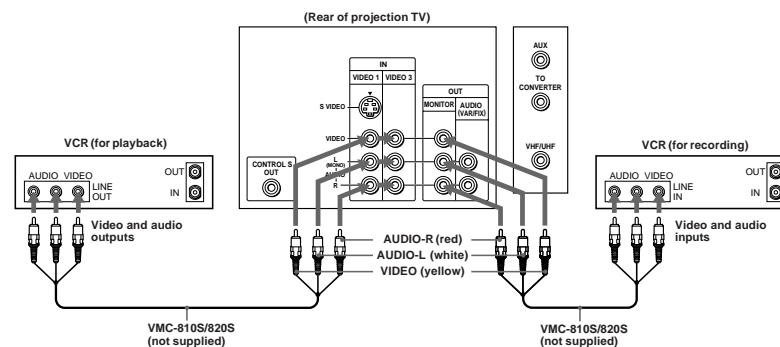


Note

- You can adjust the bass, treble, and balance, or select surround (page 26) or an MTS (Multichannel TV Sound) mode (page 27) with the supplied remote control.

Connecting two VCRs for tape editing using MONITOR OUT

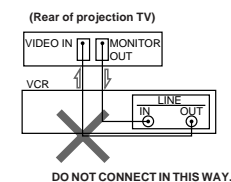
You can record input images displayed on the screen. This type of connection should be used only when you connect from the line input of one VCR, and from the line output of a second VCR.



Notes


- Do not change the input signal while editing through MONITOR OUT, or the output signal will also change.
- You can use the S video jack to connect a VCR for playback and the composite video connector to connect a VCR for recording.

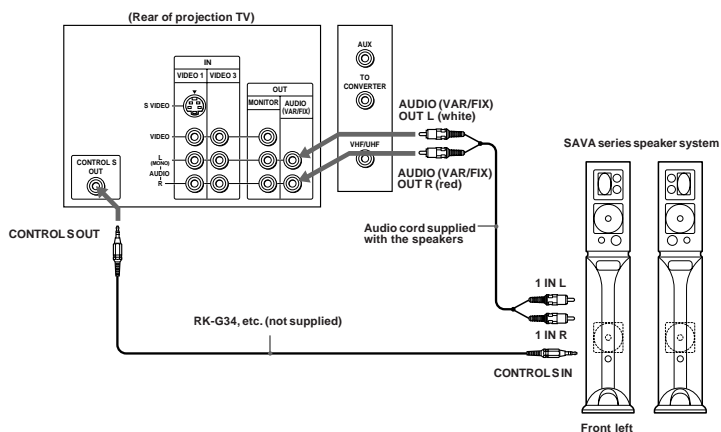
- When connecting a single VCR to the projection TV, do not connect the MONITOR OUT to the VCR's line input, while at the same time connecting from the projection TV's VIDEO IN connectors to the VCR's line output, as shown below.



Connecting a Sony SAVA series speaker system

If you have a Sony SAVA series speaker system, connect your speakers to the AUDIO (VAR/FIX) OUT jacks on the rear of the projection TV with the audio cable supplied with the speakers. You can take advantage of the speakers' Dolby Pro Logic* surround system and super woofer mode, and control them with the supplied remote control. When connecting a Sony SAVA series speaker system, see page 27 for more information.

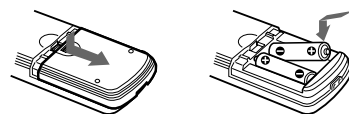
* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under Canadian patent number 1,037,877. "Dolby," the double-D symbol  and "Pro Logic" are trademarks of Dolby Laboratories Licensing Corporation.



Step 3: Setting up the remote control

Inserting batteries

Insert two size AA (R6) batteries (supplied) by matching the + and - on the battery to the diagram inside the battery compartment.



Notes

- Under normal conditions, batteries will last up to six months. If the remote control does not operate properly or the indicators of the buttons on the remote control do not light up, the batteries may be worn out. When replacing batteries, replace both of them with new ones.
- Do not mix old batteries with new ones or mix different types of batteries together.
- If the electrolyte inside the battery should leak, wipe the contaminated area of the battery compartment with a cloth and replace the old batteries with new ones. To prevent the electrolyte from leaking, remove the batteries when you don't plan to use the remote control for a long period of time.
- Do not handle the remote control roughly. Do not drop it, step on it, or let it get wet.
- Do not place the remote control in direct sunlight, near a heater, or where the humidity is high.

Getting to know buttons on the remote control

Names of buttons on the remote control are indicated in different colors to represent the available functions.

Button color

Transparent TV/VCR/DBS/Cable box function buttons. Press the appropriate function button first to change the remote control's function.

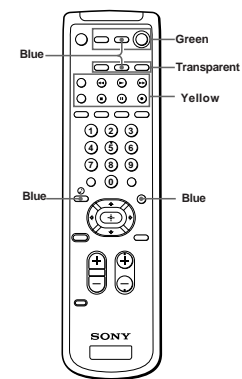
Green Buttons relevant to power operations.

Label color

White TV/VCR/DBS/Cable box operation buttons.

Yellow PIP operation buttons.

Blue DBS operation buttons.



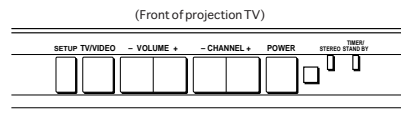
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Step 4: Setting up the projection TV automatically

(AUTO SET UP)

You can set up your projection TV easily by using the AUTO SET UP feature. It presets all the receivable channels, adjusts the convergence and changes the on-screen menu language. To set up the projection TV manually, see "Adjusting convergence" (page 16), "Setting cable TV on or off" (page 17), "Presetting channels" (page 18) and "Changing the menu language" (page 18).

If the projection TV is set to a video input, you cannot perform AUTO SET UP. Press TV/VIDEO so that a channel number appears.



Before you start using AUTO SET UP, be sure to connect the antenna or cable to the projection TV (see page 6).

1 Press POWER to turn the projection TV on.



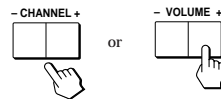
2 Press SETUP on the front of the projection TV.

AUTO SET UP screen appears.



3 Press CHANNEL +/- or VOLUME + to select the on-screen menu language.

If you prefer Spanish or French to English, you can change the on-screen menu language.

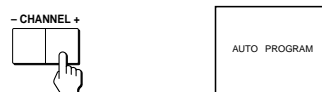


All of the menus will be set to the factory preset condition in the selected language.

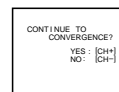
4 Press VOLUME - to start AUTO SET UP.



5 Press CHANNEL + to preset channels.



"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 following menu appears. If the projection TV receives cable TV channels, CABLE is set to ON automatically.

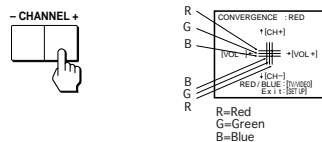


To exit AUTO PROGRAM
Press any button.

6 Adjust convergence.

(1) Press CHANNEL +.

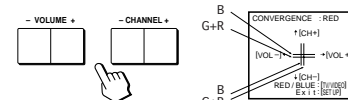
The CONVERGENCE adjustment screen appears.



(2) Press TV/VIDEO to select RED or BLUE.



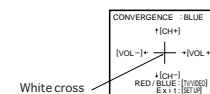
(3) Using CHANNEL +/- or VOLUME +/-, move the line until it converges with the center green line.



To move horizontal line up/down, press CHANNEL +/-.

To move vertical line right/left, press VOLUME +/-.

(4) Repeat steps (2) and (3) to adjust the other lines until all three lines converge and are seen as a white cross.



Note

- Using the AUX connector, press TV (black button) first and make sure that "AUX" is displayed beside the channel number on the screen. Then follow the steps 2 to 6 above to perform AUTO SET UP.

To preview the main functions (DEMO)

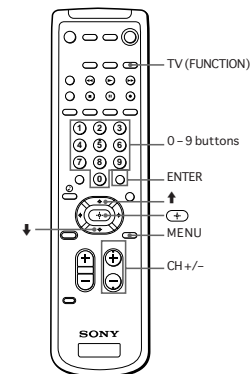
Press TV/VIDEO on the projection TV in step 4. The functions and menus are displayed one by one.

To exit DEMO

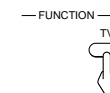
Press any button.

Erasing or adding channels

After AUTO SET UP, you can erase unnecessary channels or add the channels you want. Preset channels during the day rather than late at night, when some channels may not be broadcasting.



1 Press TV (FUNCTION).



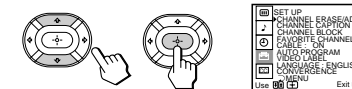
2 Press MENU.

The main menu appears.



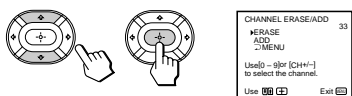
3 Press + or - to select, and press ENTER.

The SET UP menu appears.



- 4 Press **+** or **-** to select CHANNEL ERASE/ADD, and press **ENTER**.

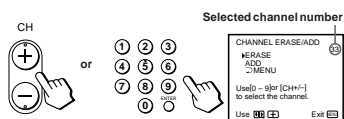
The CHANNEL ERASE/ADD menu appears.



5 Erase and/or add channels:

To erase an unwanted channel

- (1) Make sure the cursor (▶) is beside ERASE.
- (2) Press CH +/- or the 0 - 9 buttons to select the channel you want to erase, and press ENTER.



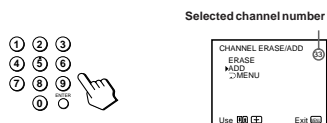
- (3) Press **ENTER**.

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 **+** or **-** to move the cursor (▶) to ADD.
- (2) Press the 0 - 9 buttons to select the channel you want to add, and press ENTER.



- (3) Press **ENTER**.

The "+" indication appears beside the channel number, showing that the channel is added to the preset memory.



- 6 To erase and/or add other channels, repeat step 5.

7 Press MENU to return to the original screen.



Notes

- 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.
- Erasing and adding channels is also available for the AUX input.

Adjusting convergence (CONVERGENCE)

The projection tube image appears on the screen in three layers (red, green and blue). If they do not converge, the color is poor and the picture blurs. To correct this, adjust convergence.

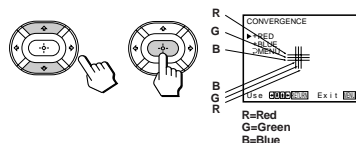
You do not have to do this procedure if you perform AUTO SET UP (page 14). Do this procedure only when you want to adjust it manually.

1 Press MENU.

2 Press **+** or **-** to select **CONVERGENCE**, and press **ENTER**.

3 Press **+** or **-** to select **CONVERGENCE**, and press **ENTER**.

The CONVERGENCE adjustment screen appears.



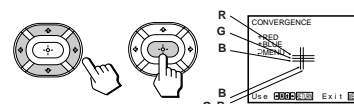
- 4 Press **+**, **-**, **+**, or **-** to move the cursor (▶) to the symbol showing the line you want to adjust, and press **ENTER**.



+RED : Red vertical and horizontal line (left/right/up/down adjustment)

+BLUE : Blue vertical and horizontal line (left/right/up/down adjustment)

- 5 Press **+**, **-**, **+**, or **-** to move the line until it converges with the center green line, and press **ENTER**.



To move	Press
Up	↑
Down	↓
Right	→
Left	←

- 6 Repeat steps 4 and 5 to adjust the other lines until all three lines converge and are seen as a white cross.

7 Press MENU to return to the original screen.

Setting cable TV on or off

If you have connected the projection TV to a cable TV system, set CABLE to ON (the factory setting). If not, set CABLE to OFF.

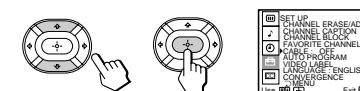
You do not have to do this procedure if you perform AUTO SET UP (page 14). Do this procedure only when you want to set it manually.

1 Press MENU.

2 Press **+** or **-** to select **CABLE**, and press **ENTER**.

3 Set CABLE to ON or OFF:

- (1) Press **+** or **-** to move the cursor (▶) to CABLE, and press **ENTER**.
- (2) Press **+** or **-** to select ON or OFF, and press **ENTER**.



4 Press MENU to return to the original screen.

Note

- If CABLE appears in gray, the projection TV is set to a video input and you cannot select CABLE. Press TV (black button) so that a channel number appears.

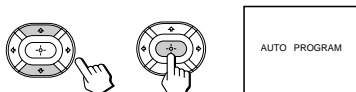
Presetting channels

You can preset TV channels easily by using the AUTO PROGRAM feature. You do not have to do this procedure if you perform AUTO SET UP (page 14). Do this procedure only when you want to set it manually.

1 Press **MENU**.

2 Press **↑** or **↓** to select **⚙**, and press **⏏**.

3 Press **↑** or **↓** to select **AUTO PROGRAM**, and press **⏏**.



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

4 Press **MENU** to return to the original screen.

To exit **AUTO PROGRAM**
Press any button.

Notes

- If the **AUTO PROGRAM** menu appears in gray, the projection TV is set to a video input and you cannot select **AUTO PROGRAM**. Press **ANT** button so that a channel number appears.

- Presetting channels is also available for the **AUX** input.

Changing the menu language

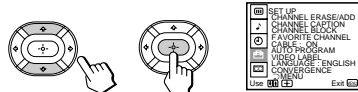
If you prefer Spanish or French to English, you can change the menu language.

You do not have to do this procedure if you select the language during **AUTO SET UP** (page 14). Do this procedure only when you want to set it manually.

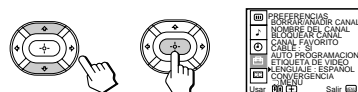
1 Press **MENU**.

2 Press **↑** or **↓** to select **⚙**, and press **⏏**.

3 Press **↑** or **↓** to select **LANGUAGE**, and press **⏏**.



4 Press **↑** or **↓** to select your favorite language, "**ENGLISH**", "**ESPAÑOL**," or "**FRANÇAIS**" and press **⏏**.



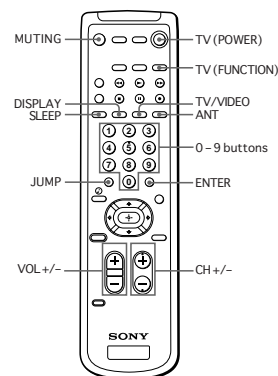
5 Press **MENU** to return to the original screen.

Note

- Certain parts of the Spanish or French menus remain in English.

Operations

Watching the TV



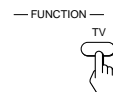
1 Press **TV (POWER)** to turn on the projection TV.

The **TIMER/STANDBY** indicator flashes until the picture appears.



If "**VIDEO**" appears on the screen, press **ANT** so that a channel number appears.

2 Press **TV (FUNCTION)**.



Once you press **TV (FUNCTION)**, the projection TV function is set unless another function button is pressed.

3 Select the channel you want:

To select a channel directly

Press the 0 - 9 buttons, and press **ENTER**.

For example, to select channel 10, press 1, 0 and **ENTER**.



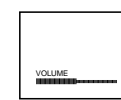
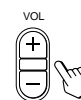
To scan through channels

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



The channel can also be selected without pressing **ENTER**.

4 Press **VOL +/-** to adjust the volume.



Switching quickly between two channels

You can use the **JUMP** button to switch or "jump" back and forth between two channels.

Press **JUMP**.



Pressing **JUMP** again switches the channel back to the one you selected last.

Note

- You cannot jump to channels you scanned through using the **CH +/-** buttons.

Muting the sound

Press **MUTING**.

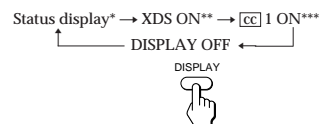
"**MUTING**" appears on the screen.



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

Displaying on-screen information

Press **DISPLAY** repeatedly until the desired display appears.
Each time you press **DISPLAY**, the display changes as follows:



- * Channel number, the current time, channel caption (if set), and MTS mode (if SAP is selected) are displayed. SAP indication disappears after three seconds.
- ** Some programs are broadcast with XDS (Extended Data Service) which shows a network name, program name, program type, program length, call letters, and time of the show. When you select XDS with the **DISPLAY** button, this information will be displayed on the screen if the broadcaster offers this service.
- *** Some programs are broadcast with Caption Vision. When you select Caption Vision with the **DISPLAY** button, Caption Vision will be displayed on the screen if the broadcaster offers this service. (See page 34 for selecting Caption Vision.)

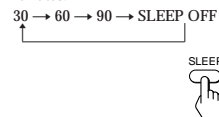
To cancel the display, press **DISPLAY** repeatedly until "DISPLAY OFF" appears. "DISPLAY OFF" goes off after three seconds.

Setting the Sleep Timer

The projection TV stays on for the length of time you specify and then shuts off automatically.

Press **SLEEP** repeatedly until the time (minutes) you want appears.

Each time you press **SLEEP**, the time changes as follows:

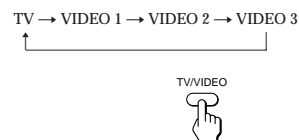


To cancel the Sleep Timer, press **SLEEP** repeatedly until "SLEEP OFF" appears, or turn off the projection TV.

20-EN Operations

Watching a video input picture

Press **TV/VIDEO** repeatedly until the desired video input appears.
Each time you press **TV/VIDEO**, the display changes as follows:



To return to the TV picture, press **ANT** so that a channel number appears.

Changing the VHF/UHF input to the AUX input

Press **ANT**.

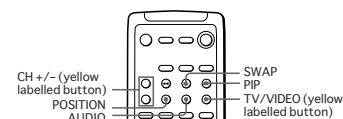
"AUX" appears beside the channel number.



Pressing **ANT** again switches back to the VHF/UHF input.

Watching two programs at one time — PIP

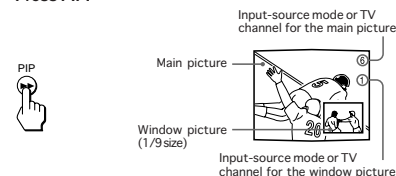
The Picture-in-Picture (PIP) feature allows you to watch both the main picture and a window picture simultaneously.



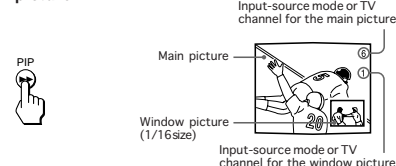
Use the yellow labelled buttons for PIP operations.

Displaying a window picture

Press **PIP**.



Press **PIP** again to display a smaller window picture.



To remove the window picture, press **PIP** again.

Note

- The window picture may be affected by the condition of the main picture.

Changing the window picture input mode

Press **TV/VIDEO** (yellow labelled button) to select the input mode.

Each time you press **TV/VIDEO** (yellow labelled button), "TV", "VIDEO 1", "VIDEO 2", and "VIDEO 3" appear in sequence.



A window picture will appear in the same input mode as the last time you used PIP.

Note

- If you connect your VCR without a cable box, your PIP input source is a VCR. If you connect your VCR with a cable box, your PIP input source is a VCR or cable box.

Listening to the sound of the window picture

EN

Press **AUDIO**.

The display appears next to the PIP channel number for a few seconds, indicating that the window picture sound is being received.

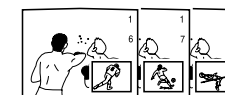
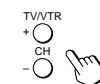


The sound of the window picture is received.

To restore the main picture sound, press **AUDIO** again. The display moves to the main picture channel number.

Changing TV channels in the window picture

Press **CH +/-** (yellow labelled button).

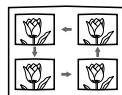


Operations 21-EN

Changing the position of the window picture

Press POSITION.

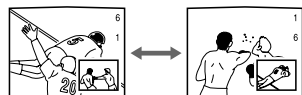
Each time you press POSITION, the window picture will move counterclockwise on the screen.



Swapping the main and window pictures

Press SWAP.

Each time you press SWAP, the images and sound from the main and window pictures switch places with another.

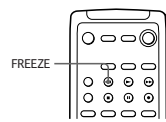


Note

- The channels being received through the AUX connector cannot be displayed as a window picture.

Freezing the picture (FREEZE)

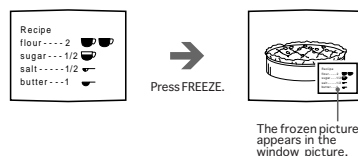
The FREEZE feature is useful when you want to write down an information such as a recipe from a cooking program, a displayed address, or a phone number. The frozen picture changes as follows depending on whether the PIP function is used or not.



Press FREEZE.



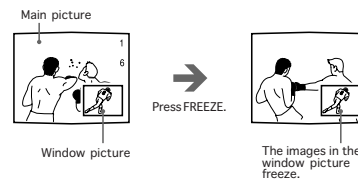
When the PIP function is not being used



The frozen picture appears in the window picture.

To remove the frozen window picture, press FREEZE again.

When the PIP function is being used

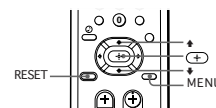


The images in the window picture freeze.

To cancel the frozen window picture, press FREEZE again.

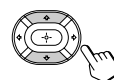
Adjusting the picture (VIDEO)

When watching TV programs, you can adjust the picture to suit your taste. You can adjust the picture of video input(s) as well.



1 Press MENU.

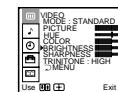
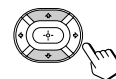
2 Press ▲ or ▼ to select (III), and press (+).



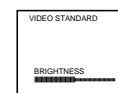
3 Select the item you want to adjust.

For example:

(1) To adjust the brightness, press ▲ or ▼ to move the cursor (►) to BRIGHTNESS.

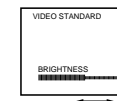
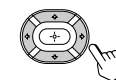


(2) Press (+).



4 Adjust the selected item:

(1) Press ▲, ▼, ◀, ▶, or ⬅ to adjust the item.



(2) Press (+).

The new setting appears in the VIDEO menu.



For details on each item, see "Description of adjustable items" below.

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

6 Press MENU to return to the original screen.

EN

Description of adjustable items

Item	Press ▲ or ▼ to	Press ▲ or ▼ to
PICTURE	Decrease picture contrast and give soft color.	Increase picture contrast and give vivid color.
HUE	Make picture tones become purplish.	Make picture tones become greenish.
COLOR	Decrease color intensity.	Increase color intensity.
BRIGHTNESS	Darken the picture.	Brighten the picture.
SHARPNESS	Soften the picture.	Sharpen the picture.

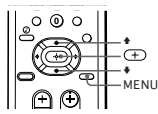
To restore the factory settings

Press RESET after displaying and selecting the VIDEO menu.

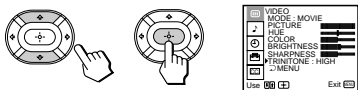
All of the settings are restored to the factory settings.

Adjusting the color temperature (TRINITONE)

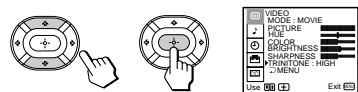
The TRINITONE feature controls the color temperature, permitting white balance preference adjustment without affecting skin tones.



- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select \blacksquare and press \rightarrow .
- 3 Press \uparrow or \downarrow to select TRINITONE and press \rightarrow .



- 4 Press \uparrow or \downarrow to select NTSC STD, MEDIUM, or HIGH and press \rightarrow .

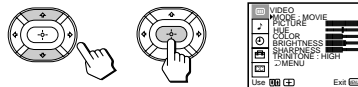


Choose	To
HIGH	a cool (bluish) white.
MEDIUM	a neutral white.
NTSC STD	a warm (reddish) white.

Selecting the video mode (VIDEO)

The video mode feature allows you to choose three different modes of picture settings. Choose the one that best suits the type of program that you want to watch.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select \blacksquare , and press \rightarrow .
- 3 Press \uparrow or \downarrow to select MODE, and press \rightarrow .
- 4 Press \uparrow or \downarrow to select STANDARD, MOVIE, or SPORTS mode, and press \rightarrow .



Choose	To
STANDARD	Receive a standard picture.
MOVIE	Receive a finely detailed picture.
SPORTS	Receive a vivid, bright picture.

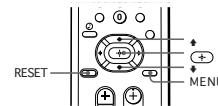
- 5 Press MENU to return to the original screen.

Note

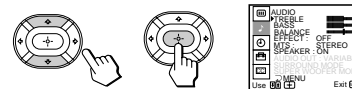
- The settings for these modes can be adjusted in the VIDEO menu.

Adjusting the sound (AUDIO)

You can adjust the quality of the TV sound to suit your taste. You can adjust the sound of the video input(s) as well.



- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select \blacksquare , and press \rightarrow .



- 3 Select the item you want to adjust.

For example:

- (1) To adjust bass, press \uparrow or \downarrow to move the cursor (►) to BASS.



- (2) Press \rightarrow .



- 4 Adjust the selected item:

- (1) Press \uparrow , \downarrow , \leftarrow , or \rightarrow to adjust the item.



- (2) Press \rightarrow .

The new setting appears in the AUDIO menu.



For details on each item, see "Description of adjustable items" below.

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

- 6 Press MENU to return to the original screen.

EN

Description of adjustable items

Item	Press \uparrow or \downarrow to	Press \leftarrow or \rightarrow to
TREBLE	Decrease the treble response.	Increase the treble response.
BASS	Decrease the bass response.	Increase the bass response.
BALANCE	Emphasize the left speaker's volume.	Emphasize the right speaker's volume.

To restore the factory settings

Press RESET after displaying and selecting the AUDIO menu.

All of the settings are restored to the factory settings.

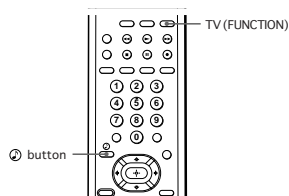
Note

- When SPEAKER (page 27) is OFF and AUDIO OUT (page 28) is in the FIXED condition, the volume, TREBLE, BASS, and BALANCE cannot be adjusted.

Using audio effect (SURROUND)

The audio effect (SURROUND) feature simulates sound reproduction with the atmosphere of a movie theater or a concert hall. Audio effect is only effective for stereo programs.

Using the TV (FUNCTION) button

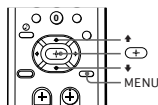


- 1 Press TV (FUNCTION).
 - 2 Press 2.
- Each time you press the 2 button, the display changes as follows:

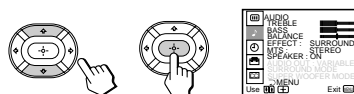
SURROUND → SURROUND OFF



Using the menu to set audio effect



- 1 Press MENU.
- 2 Press ▲ or ▼ to select 2, and press (+).
- 3 Press ▲ or ▼ to select EFFECT, and press (+).



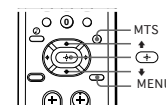
- 4 Press ▲ or ▼ to select the audio effect mode, and press (+).



- 5 Press MENU to return to the original screen.

Selecting stereo or bilingual programs (MTS)

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



Press MTS repeatedly to select STEREO, SAP, or MONO.

STEREO → SAP → MONO

Choose	To
STEREO	Listen to stereo sound. The STEREO indicator on the projection TV lights up when a stereo broadcast is received.
SAP	Listen to bilingual programs. There is no sound when the SAP signal is not broadcasting.
MONO	Listen to monaural sound. Reduce noise during stereo broadcasts.

Note

- Stereo and SAP sounds are subject to program sources.

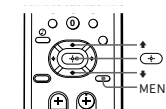
To set MTS using the menu

- 1 Press MENU.
- 2 Press ▲ or ▼ to select 2, and press (+).
- 3 Press ▲ or ▼ to select MTS, and press (+).
- 4 Press ▲ or ▼ to select STEREO, SAP, or MONO.
- 5 Press MENU to return to the original screen.

Setting the speaker switch (SPEAKER)

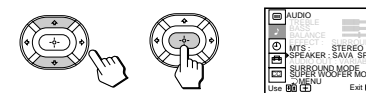
You may switch off the projection TV speakers when, for example, you want to listen to the sound through a stereo system.

If you connect the Sony SAVA series speaker system to the AUDIO (VAR/FIX) OUT connectors, you can take advantage of the speakers' surround sound and super woofer mode. After making the connections (page 12), set SPEAKER to SAVA SPEAKER, then adjust SURROUND MODE or SUPER WOOFER MODE.



EN

- 1 Press MENU.
- 2 Press ▲ or ▼ to select 2, and press (+).
- 3 Press ▲ or ▼ to select SPEAKER, and press (+).
- 4 Press ▲ or ▼ to select ON, OFF, or SAVA SP, and press (+).



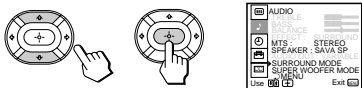
- 5 Press MENU to return to the original screen.

Choose	To
ON	Listen to the sound from the projection TV.
OFF	Turn off the projection TV speaker sound and listen to the projection TV's sound solely through the audio system speakers.
SAVA SP	Turn off the projection TV speaker sound and listen to the projection TV's sound through the Sony SAVA series speaker system. You can adjust volume, muting, surround modes, and super woofer mode with the remote control supplied with the projection TV.

To select surround sound or super woofer mode of the SAVA speaker system

After setting SPEAKER to SAVA SP, follow the procedure below.

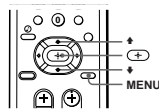
Press **↑** or **↓** to select **SURROUND MODE** or **SUPER WOOFER MODE**, and press **↵**.
For details on each option, refer to the operating instructions of the speaker system.



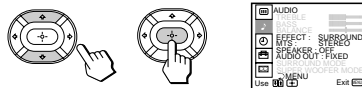
- Note**
- This feature is only for Sony SAVA speaker system with an operation capability for KP-41T65, KP-46C65, KP-48S65, KP-53S65, and KP-61S65.

Setting audio out (AUDIO OUT)

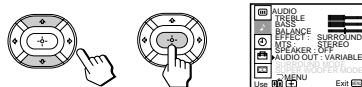
You can change AUDIO OUT to VARIABLE or FIXED when SPEAKER is set to OFF.
AUDIO OUT is variable when SPEAKER is set to ON.



- Press **MENU**.
- Press **↑** or **↓** to select **↓**, and press **↵**.
- Press **↑** or **↓** to select **AUDIO OUT**, and press **↵**.



- Press **↑** or **↓** to select **VARIABLE** or **FIXED**, and press **↵**.



VARIABLE: Sound output varied according to the projection TV settings. You can adjust the volume, bass, treble, and balance.

FIXED: Sound output is always fixed to a certain level. The volume, bass, treble, and balance are also fixed to the factory settings.

- Press **MENU** to return to the original screen.

- Note**
- If AUDIO OUT appears in gray, set SPEAKER to OFF.

Setting daylight saving time (DAYLIGHT SAVING)

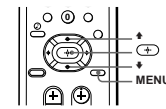
If your area uses daylight saving time, change DAYLIGHT SAVING setting depending on the season, before setting the current time.

Daylight saving start

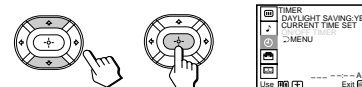
- After the first Sunday in April, set DAYLIGHT SAVING to YES. Current time setting (right column) automatically moves one hour ahead.

Daylight saving end

- After the last Sunday in October, set DAYLIGHT SAVING to NO. Current time setting automatically moves one hour back.



- Press **MENU**.
- Press **↑** or **↓** to select **↓**, and press **↵**.
- Press **↑** or **↓** to select **DAYLIGHT SAVING**, and press **↵**.



- Press **↑** or **↓** to select **YES** or **NO**, and press **↵**.

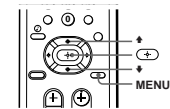


Choose	To
YES	Set for daylight saving start.
NO	Set for daylight saving end.

- Press **MENU** to return to the original screen.

Setting the clock (CURRENT TIME SET)

Setting the clock enables you to turn the projection TV on and off with the timer. Make sure to set daylight saving time first.



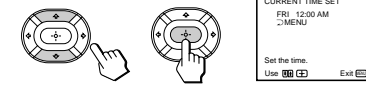
- Press **MENU**.
- Press **↑** or **↓** to select **↓**, and press **↵**.
- Press **↑** or **↓** to select **CURRENT TIME SET**, and press **↵**.



- Make sure the cursor (▶) is to the left of "--:-- AM," and press **↵**.



- Set the current day of the week and time.
(1) Press **↑** or **↓** to set the day of the week, and press **↵**.



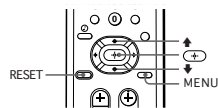
- Set the hour and minutes in the same way as in step (1). When you press **↵** after setting the minutes, the clock starts.



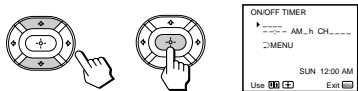
- Press **MENU** to return to the original screen.

Setting the timer to turn the projection TV on and off (ON/OFF TIMER)

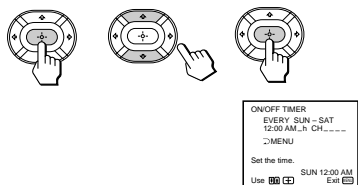
You can set the projection TV to turn on and off at the times you specify. Make sure the clock is set correctly. If it is not, set the clock first (page 29).



- 1 Press **MENU**.
- 2 Press **▲** or **▼** to select **ON/OFF TIMER**, and press **➤**.
- 3 Press **▲** or **▼** to select **ON/OFF TIMER**, and press **➤**.
- 4 Press **➤** and enter the **ON/OFF TIMER** setting.
(1) Press **▲** or **▼** to set the day(s), and press **➤**.



Each time you press **▲** or **▼**, the days cycle as follows:
EVERY SUN-SAT → EVERY MON-FRI → SUNDAY → ... → SATURDAY → EVERY SUNDAY → ... → EVERY SATURDAY

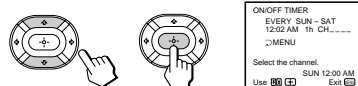


- (2) Press **▲** or **▼** to set the time (hour then minutes) that you want to turn on the projection TV, and press **➤**.

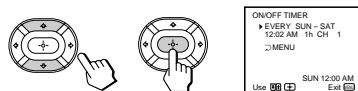


- (3) Press **▲** or **▼** to set the time duration, and press **➤**.

Each time you press **▲**, the time duration increases by one hour up to a maximum of six hours.



- (4) Press **▲** or **▼** to select the channel, and press **➤**.



The **TIMER** indicator on the projection TV lights up.

- 5 To set the other program, press **➤**, and repeat step 4.
- 6 Press **MENU** to return to the original screen.

One minute before the projection TV turns off, the message "TV will turn off soon." is displayed on the screen.

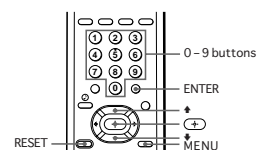
To cancel the timer
In step 3 or 4, press **RESET**.

Note

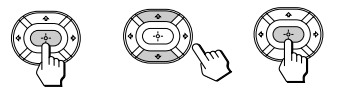
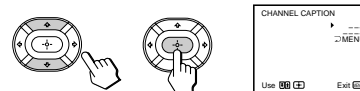
- If you unplug the projection TV or a power interruption occurs, the ON/OFF TIMER setting will be erased. Reset the current time, then set the timer.

Customizing the channel names (CHANNEL CAPTION)

You can add a caption for up to 12 channels. This feature allows you to easily identify which channel you are watching. You can make your own caption.



- 1 Press **MENU**.
- 2 Press **▲** or **▼** to select **CHANNEL CAPTION**, and press **➤**.
- 3 Press **▲** or **▼** to select **CHANNEL CAPTION**, and press **➤**.
- 4 Press **➤** and press **▲** or **▼** to select the channel that you want to caption, and press **➤**.

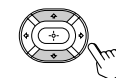


- 5 Enter the letters (up to four) to caption the channel:

- (1) Press **▲** or **▼** to select the first letter.

Each time you press **▲** or **▼**, the letter changes as follows:

0..9 → A..Z → * → / → _ (blank space)



- (2) Press **➤**.



- (3) Repeat steps (1) and (2) to select the remaining letters, and press **➤**.

- 6 Repeat steps 4 and 5 to caption other channels.

- 7 Press **MENU** to return to the original screen.

After you customize the channel, the channel caption appears green.

To erase a caption
In step 5, press **RESET**.

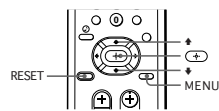
Notes


- If the CHANNEL CAPTION menu appears in gray, the projection TV is set to a video input, and you cannot select CHANNEL CAPTION. Press TV (black button) so that a channel number appears.
- If more than 90 seconds elapse after you press a button, the menu disappears automatically.
- The channel caption feature is not available for the AUX input.

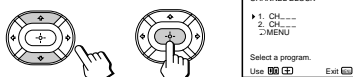
EN

Blocking out a channel (CHANNEL BLOCK)

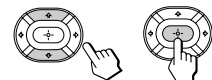
The channel block feature allows you to prevent children from watching unsuitable programs. You can block out two channels.



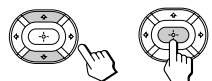
- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , and press \rightarrow .
- 3 Press \uparrow or \downarrow to select CHANNEL BLOCK, and press \rightarrow .



- 4 Press \uparrow or \downarrow to select program 1 or 2, and press \rightarrow .



- 5 Press \uparrow or \downarrow to select the channel which you want to block out, and press \rightarrow .



- 6 Press MENU to return to the original screen. When you select the blocked channel, the message "BLOCKED" appears on the screen.



To cancel a CHANNEL BLOCK setting
In step 4 or 5, press RESET.

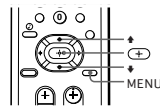
Note


- Once you use CHANNEL BLOCK, Caption Vision and XDS of the blocked channel and the selected channel output from MONITOR OUT are also blocked out.

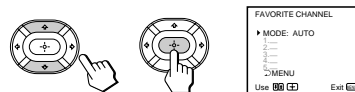
Setting your favorite channels (FAVORITE CHANNEL)

The favorite channel feature allows your projection TV to memorize your favorite channels easily. If you set to AUTO, the last five channels you selected with the 0 - 9 buttons are automatically set as your favorite channels. If you want to input your own selection of channels, set to MANUAL.

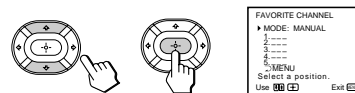
Setting your favorite channels



- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , and press \rightarrow .
- 3 Press \uparrow or \downarrow to select FAVORITE CHANNEL, and press \rightarrow .



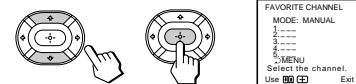
- 4 Press \rightarrow and press \uparrow or \downarrow to select AUTO or MANUAL, and press \rightarrow .



If you select AUTO, skip steps 5 and 6.
The last five channels you selected with the 0 - 9 buttons are automatically set as your favorite channels.

If you select MANUAL, the favorite channel numbers become white, indicating that favorite channels can be entered.

- 5 Press \uparrow or \downarrow to select a favorite channel number, and press \rightarrow .



- 6 Press \uparrow or \downarrow to select the channel that you want to set as your favorite channel, and press \rightarrow .

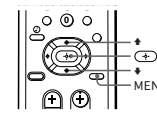


- 7 Press MENU to return to the original screen.

Notes

- If the FAVORITE CHANNEL menu appears in gray, the projection TV is set to a video input and you cannot select FAVORITE CHANNEL.
- If more than 90 seconds elapse after you press another button, the menu disappears automatically.
- The favorite channel feature is not available for the AUX input.

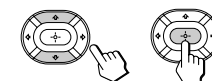
Selecting your favorite channel



- 1 Press \rightarrow .
The FAVORITE CHANNEL menu appears.



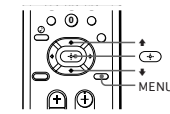
- 2 Press \uparrow or \downarrow to select the favorite channel you want to watch, and press \rightarrow .
The selected channel appears on the screen.




To cancel the FAVORITE CHANNEL menu
Press \uparrow or \downarrow to select "Exit," and press \rightarrow .

Setting video labels (VIDEO LABEL)

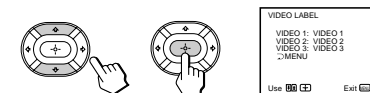
The video label feature allows you to label each input mode so that you can easily identify the connected equipment. For example, you can label VIDEO 1 as VHS.



- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , and press \rightarrow .
- 3 Press \uparrow or \downarrow to select VIDEO LABEL, and press \rightarrow .



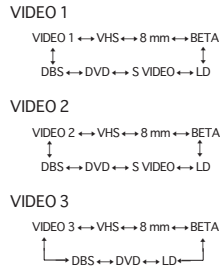
- 4 Press \uparrow or \downarrow to select the input mode you want to label, and press \rightarrow .



- 5 Press \uparrow or \downarrow to select the label, and press \rightarrow .



Each time you press \blacktriangle or \blacktriangledown , the label changes as follows:

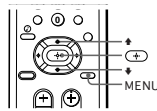


6 Repeat steps 4 and 5 to label other input modes.

- Note**
- If more than 90 seconds elapse before you press another button, the menu disappears automatically.

Setting Caption Vision (CAPTION VISION)

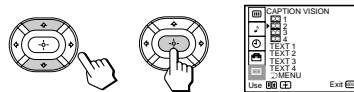
Some programs are broadcast with Caption Vision. To display Caption Vision, select either CC1, CC2, CC3, CC4, TEXT1, TEXT2, TEXT3, or TEXT4 from the menu. CC1, CC2, CC3, or CC4 shows you on-screen version of the dialogue or sound effects of a program. (The mode should be set to CC1 for most programs.) TEXT1, TEXT2, TEXT3, or TEXT4 shows you on-screen information presented using either half or the whole screen. It is not usually related to the program.



- 1 Press **MENU**.
- 2 Press \blacktriangle or \blacktriangledown to select **CC1**, and press **ENTER**.



- 3 Press \blacktriangle or \blacktriangledown to select the caption type, and press **ENTER**.



- 4 Press **MENU** to return to the original screen.

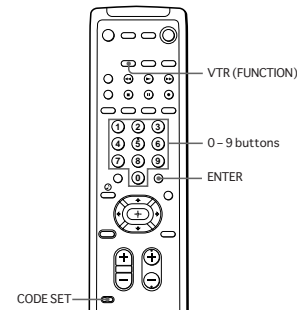
To display Caption Vision
Press **DISPLAY**. (See page 20 for details.)

- Notes**
- Poor reception of TV programs can cause errors in Caption Vision and XDS.
Captions may appear with a white box or other errors instead of a certain word.
 - XDS, Caption Vision, and the status display cannot be used at the same time.
 - For details on XDS, see page 20.

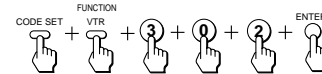
Operating video equipment

You can use the supplied remote control to operate Sony or non-Sony video equipment that has an infrared remote sensor. For this operation, set the manufacturer's code number.

Setting the manufacturer's code



Press the **CODE SET**, **VTR (FUNCTION)**, and **0-9** buttons to enter the manufacturer's code number (see the chart on page 35-36), then press **ENTER**.
For example, to operate a Sony 8 mm VCR, press **CODE SET**, **VTR (FUNCTION)**, **3**, **0**, **2**, and **ENTER**.



VCR manufacturer code numbers

Manufacturer	Code number
Sony	301, 302, 303
Aiwa	338
Audio Dynamic	314, 337
Bell & Howell (M. Wards)	330, 343
Brocsonic	319
Canon	309, 308
Citizen	332
Craig	315, 302, 332
Curtis Mathis	304, 338, 309
Daewoo	341, 312, 309
DBX	314, 336, 337
Dimensia	304
Emerson	319, 320, 316, 317, 318
Fisher	330, 334, 335, 333
Funai	338
General Electric	329, 304, 309
Goldstar	332
Hitachi	306, 304, 305
Instant Replay	309, 308
JC Penny	309, 305, 304, 330, 314, 336, 337
JVC	314, 336, 337
Kenwood	314, 336, 332, 337
LXI (Sears)	332, 305, 333, 334, 330, 335
Magnavox	308, 309
Marantz	314, 336, 337
Marta	332
Memorex	309, 335
Minolta	305, 304
Mitsubishi/MGA	323, 324, 325, 326
Multitech	325, 338, 321
NEC	314, 336, 337
Olympic	309, 308
Panasonic	308, 309, 306, 307
Pentax	305, 304
Philco	308, 309
Philips	308, 309
Pioneer	308
Quasar	308, 309
RCA/PROSCAN	304, 305, 308, 309, 311, 312, 313
Realistic	309, 330, 328, 335, 324, 338
Sansui	314
Singer	315
Samsung	322, 313, 321
Sanyo	330, 335
Scott	312, 313, 321, 335, 323, 324, 325, 326
Sharp	327, 328
Shintom	315
Signature 2000 (M. Wards)	338, 327
Sylvania	308, 309, 338
Symphonic	338
Tashiro	332
Tatung	314, 336, 337
Teac	314, 336, 338, 337
Technics	309, 308
Toshiba	312, 311
Wards	327, 328, 335, 331, 332
Yamaha	330, 314, 336, 337
Zenith	331

EN

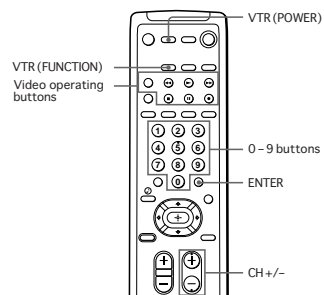
MDP manufacturer code numbers

Manufacturer	Code number
Sony	701
Kenwood	707
Magnavox	703
Marantz	702
Mitsubishi	702
Panasonic	704
Philips	703
Pioneer	702
RCA	702
Sanyo	706
Sharp	705
Yamaha	703

Notes

- If more than one code number is listed, try entering them one by one, until you come to the correct code for your equipment.
- In some rare cases, you may not be able to operate your non-Sony video equipment with the supplied remote control. This is because your equipment may use a code that is not included with this remote control. In this case, please use the equipment's own remote control unit.
- The code numbers for Sony equipment are assigned at the factory as follows:
VHS VCR 301 (preset code for the supplied remote control)
8 mm VCR 302
Beta, ED Beta VCRs 303
- Whenever you remove the batteries — to replace them, for example — if too much time is taken, the code number may revert to the factory setting and must be reset.

Operating video equipment



Use the video operating buttons on the remote control to operate the video equipment. Press VTR (FUNCTION) before operating the video equipment.

Operating a VCR	Buttons on the remote control
To turn on or off	Press VTR (POWER).
To select a channel directly	Press the 0 - 9 buttons.
To change channels	Press CH +/-.
To record	Press ► while pressing ●. First release ►, then release ●.
To play	Press ►.
To stop	Press ■.
To fast forward	Press ►►.
To rewind the tape	Press ◄◄.
To pause	Press II.
	To resume normal playback, press again.
To search the picture forward or backward	Press ►► or ◄◄ during playback. To resume normal playback, release the button.
To change input mode	Press TV/VTR.

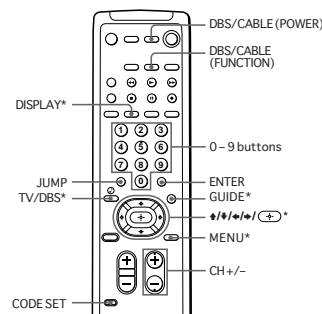
Operating an MDP	Buttons on the remote control
To turn on or off	Press VTR (POWER).
To play	Press ►.
To stop	Press ■.
To pause	Press II.
	To resume normal playback, press again.
To search the picture forward or backward	Keep pressing ►► or ◄◄ during playback. To resume normal playback, release the button.
To search the chapter forward and backward	Press CH +/-.

Note

- If the video equipment does not have a certain function, the corresponding button on this remote control will not operate.

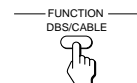
Operating a cable box or DBS receiver

You can program the supplied remote control to operate a cable box or DBS receiver. Follow the procedures below to set the manufacturer's code number in the remote control.

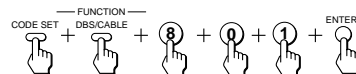


* The TV/DBS, GUIDE, DISPLAY, +/-, and MENU buttons can be used only with a DBS receiver.

1 Turn off the equipment you want to set up, and press DBS/CABLE (FUNCTION).



2 Press the CODE SET, DBS/CABLE (FUNCTION), and 0 - 9 buttons to enter the manufacturer's code number (see the chart on the right column), then press ENTER. For example, to program your remote control to operate a Sony DBS receiver, press CODE SET, DBS/CABLE (FUNCTION), 8, 0, 1, and ENTER.



3 Press DBS/CABLE (POWER) to turn on the cable box or DBS receiver.



4 Use the cable box/DBS control buttons to check if the code number works.

For example, to operate a cable box or DBS receiver, you can use the DBS/CABLE (POWER), JUMP, CH +/-, 0 - 9 and ENTER buttons.

Note

- If the cable box or DBS receiver does not have a certain function, the corresponding button on this remote control will not operate.

To operate the projection TV

Press TV (FUNCTION). Then use the projection TV control buttons to control the projection TV.

For more details on operating the cable box or DBS receiver

Refer to the operating instructions that come with the equipment.

EN

If the remote control doesn't work

- First, try repeating the setup procedures using the other codes listed for your equipment.

Manufacturer code numbers (cable box)

Manufacturer	Code number
Hamlin/Regal	222, 223, 224, 225, 226
Jerrold/G. I.	201, 202, 203, 204, 205, 206, 207, 208, 218
Oak	227, 228, 229
Panasonic	219, 220, 221
Pioneer	214, 215
Scientific Atlanta	209, 210, 211
Tocom	216, 217
Zenith	212, 213

Manufacturer code numbers (DBS receiver)

Manufacturer	Code number
Sony	801 (preset code for the supplied remote control)
RCA	802

Notes

- If more than one code number is listed, try entering them one by one until you come to the correct code for your equipment.
- If you enter a new code number, the code number you previously entered at that setting is erased.
- In some rare cases, your equipment may use a code that is not provided with this remote control and you may not be able to operate your equipment with the supplied remote control. In this case, use the equipment's own remote control unit.
- Whenever you remove the batteries — to replace them, for example — if too much time is taken, the code numbers may revert to the factory setting and must be reset.

Troubleshooting

If the problem persists after trying the methods below, contact your nearest Sony dealer.

No picture (screen not lit), no sound

- ➔ Make sure the power cord is connected securely.
- ➔ Operate with the buttons on the projection TV.
- ➔ Insert the batteries in the remote control with the correct polarity.
- ➔ Replace the batteries with new ones if they are weak.
- ➔ Check to see if the TV/VIDEO setting is correct: when watching TV, set to TV, and when watching video tapes, set to VIDEO1, 2, or 3.
- ➔ Try another channel. It could be station trouble.
- ➔ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 14)

Poor or no picture (screen lit), good sound

- ➔ Adjust PICTURE in the VIDEO menu. (page 23)
- ➔ Adjust BRIGHTNESS in the VIDEO menu. (page 23)
- ➔ Adjust convergence. (page 16)
- ➔ Check antenna/cable connections. (page 6)
- ➔ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 14)
- ➔ Remove objects from the front of the projection TV.

Good picture, no sound

- ➔ Press MUTE so that "MUTING" disappears from the screen. (page 19)
- ➔ Check the MTS setting in the AUDIO menu. (page 27)
- ➔ Make sure SPEAKER is set to ON in the AUDIO menu. (page 27)
- ➔ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 14)

No color

- ➔ Adjust the COLOR in the VIDEO menu. (page 23)
- ➔ Confirm that black and white program is not being broadcast.
- ➔ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 14)

Only snow and noise appear on the screen

- ➔ Check the CABLE setting in the SET UP menu. (page 17)
- ➔ Check the antenna/cable connections. (page 6)
- ➔ Make sure the channel is broadcasting programs.
- ➔ Press ANT to change the input mode. (page 20)

Dotted lines or stripes

- ➔ Adjust the antenna.
- ➔ Move the projection TV away from noise sources such as cars, neon signs, and hair-dryers.

Double images or ghosts

- ➔ Use a highly directional outdoor antenna or a cable (when the problem is caused by reflections from nearby mountains or tall buildings).

Cannot operate menu

- ➔ If the item you want to choose appears in gray, you cannot select it. Press TV/VIDEO correctly.
- ➔ Check the CABLE setting in the SET UP menu. (page 17)

Cannot receive upper channels (UHF) when using an antenna

- ➔ Make sure CABLE is OFF in the SET UP menu. (page 17)
- ➔ Use AUTO PROGRAM to add receivable channels that are not presently in projection TV memory. (pages 14, 18)

Cannot receive any channels when using cable TV

- ➔ Make sure CABLE is ON in the SET UP menu. (page 17)
- ➔ Use AUTO PROGRAM to add receivable channels that are not presently in projection TV memory. (pages 14, 18)

Remote control does not operate

- ➔ Batteries could be weak. Replace the batteries. (page 13)
- ➔ Make sure the projection TV's power cord is connected securely to the wall outlet.
- ➔ Press TV (FUNCTION) when operating your projection TV.
- ➔ Are fluorescent lights too close to the projection TV? Move them at least 3-4 feet away from the projection TV.

Cannot gain enough volume when using a cable box

- ➔ Increase the volume at the cable box. Then press TV (FUNCTION) and adjust the projection TV's volume.

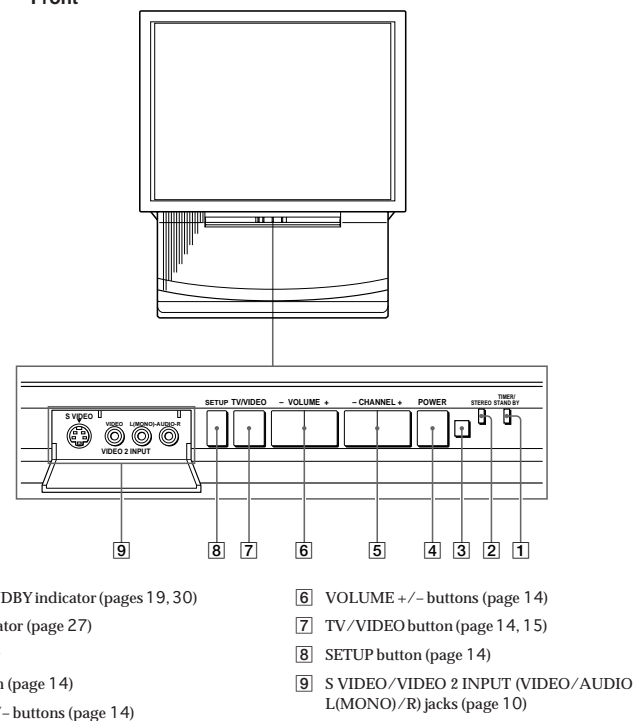
The projection TV needs to be cleaned

- ➔ Clean the projection TV with a soft dry cloth. Never use strong solvents such as thinner or benzene, which might damage the finish of the cabinet.

Index to parts and controls

This section briefly describes the buttons and controls on the projection TV and on the Remote control. For more information, refer to the pages next to each description.

Projection TV — Front



1 TIMER/STANDBY indicator (pages 19, 30)

2 STEREO indicator (page 27)

3 Remote sensor

4 POWER switch (page 14)

5 CHANNEL +/- buttons (page 14)

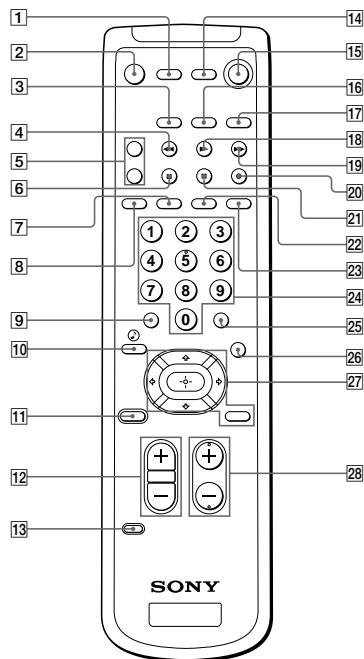
6 VOLUME +/- buttons (page 14)

7 TV/VIDEO button (page 14, 15)

8 SETUP button (page 14)

9 S VIDEO/VIDEO 2 INPUT (VIDEO/AUDIO L(MONO)/R) jacks (page 10)

Remote control

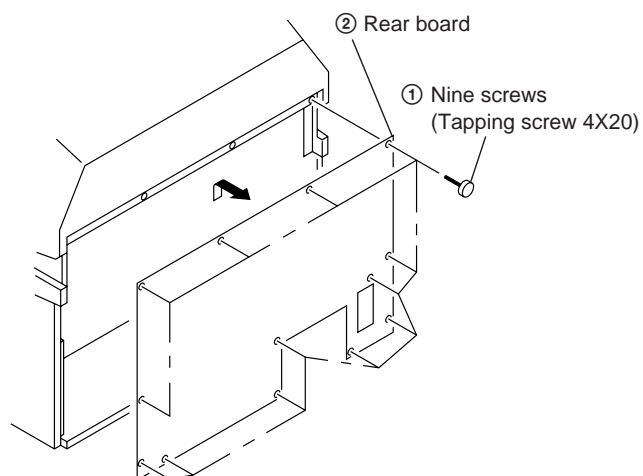


EN

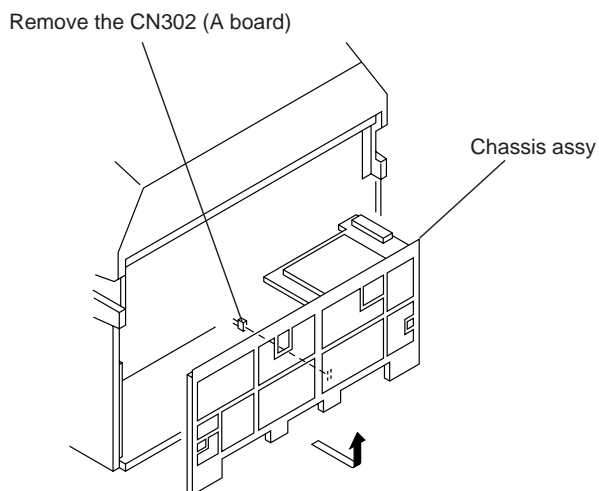
- | | |
|--|---|
| 1 VTR (POWER) switch (page 36) | 17 TV (FUNCTION) button (pages 15, 19) |
| 2 MUTING button (page 19) | 18 SWAP button (page 22) |
| 3 VTR (FUNCTION) button (page 35) | 19 PIP button (page 21) |
| 4 FREEZE button (page 22) | 20 TV/VIDEO button (yellow labelled button) (page 21) |
| 5 TV/VTR CH +/- buttons (Yellow labelled button) (page 21) | 21 AUDIO button (page 21) |
| 6 POSITION button (page 22) | 22 TV/VIDEO button (page 20) |
| 7 DISPLAY button (page 20) | 23 ANT button (page 20) |
| 8 SLEEP button (page 20) | 24 0 - 9 buttons (page 16) |
| 9 JUMP button (page 19) | 25 ENTER button (page 16) |
| 10 TV/DBS button (page 26, 37) | 26 MTS/GUIDE button (page 27, 37) |
| 11 RESET button (page 23) | 27 Menu operation buttons (page 15) |
| 12 VOL (volume) +/- buttons (page 19) | MENU button |
| 13 CODE SET button (page 35) | ▲/◆/▼/◆/ buttons |
| 14 DBS/CABLE (POWER) switch (page 37) | ⏏ button |
| 15 TV (POWER) switch (page 19) | 28 CH (channel) +/- buttons (pages 16, 19) |
| 16 DBS/CABLE (FUNCTION) button (page 37) | |

SECTION 2 DISASSEMBLY

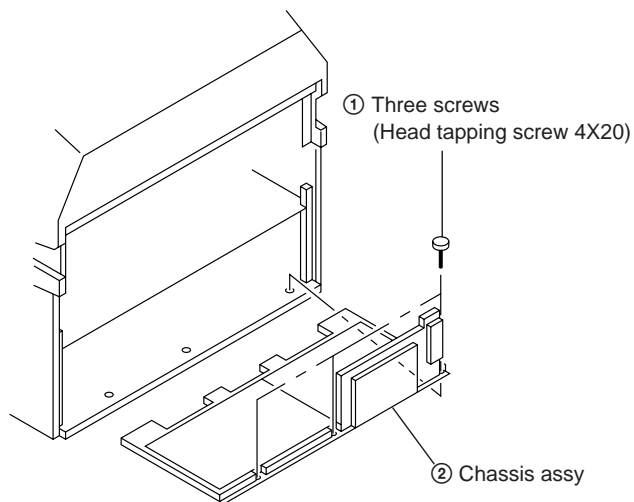
2-1. REAR BOARD REMOVAL



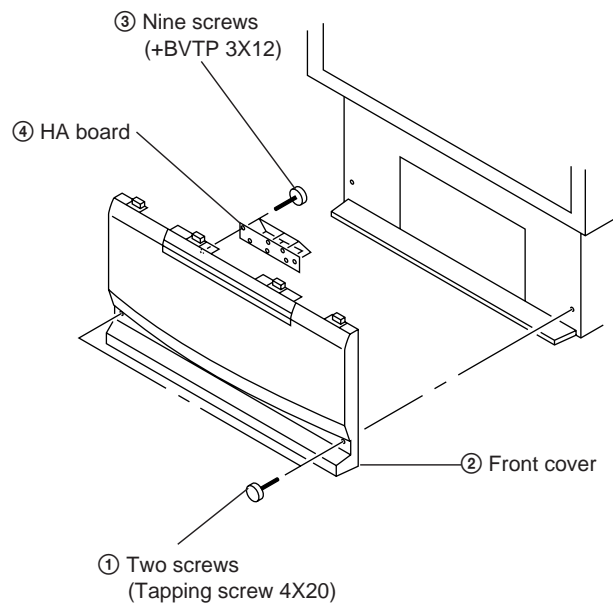
2-3. SERVICE POSITION



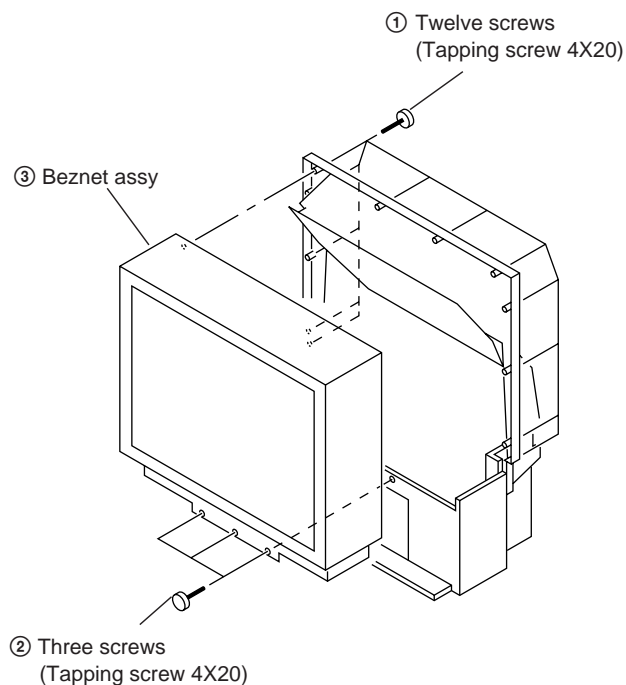
2-2. CHASSIS ASSY REMOVAL



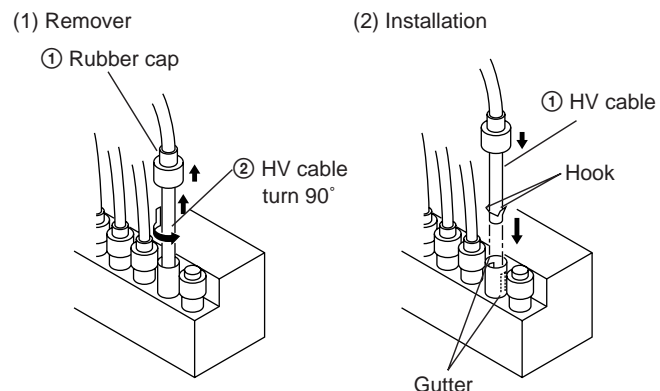
2-4. HA BOARD REMOVAL



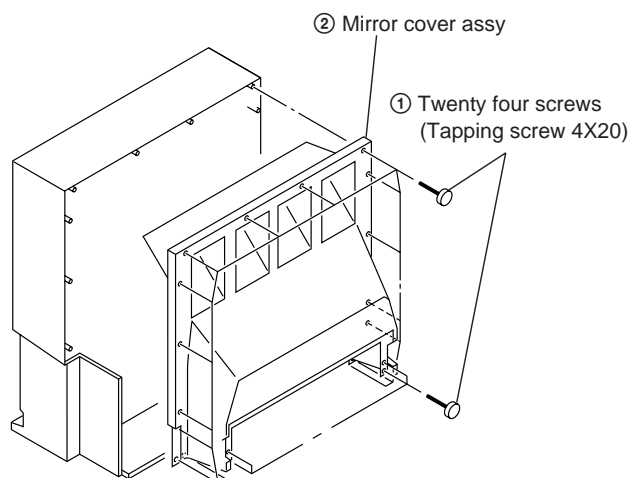
2-5. BEZNET ASSY REMOVAL



2-7. HIGH-VOLTAGE CABLE INSTALLATION AND REMOVAL

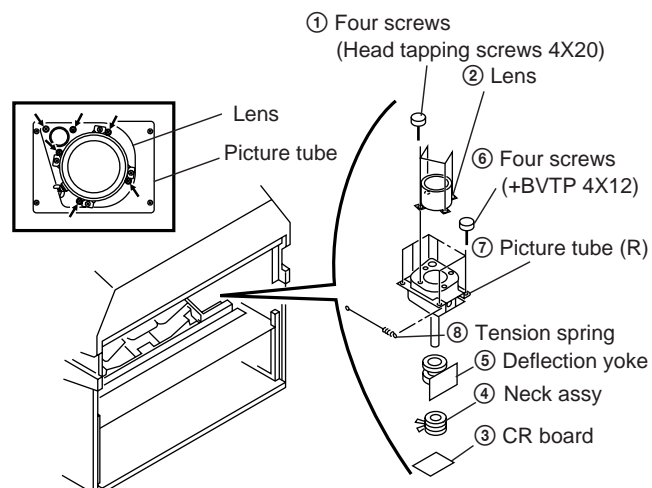


2-6. MIRROR COVER ASSY REMOVAL



2-8. PICTURE TUBE REMOVAL

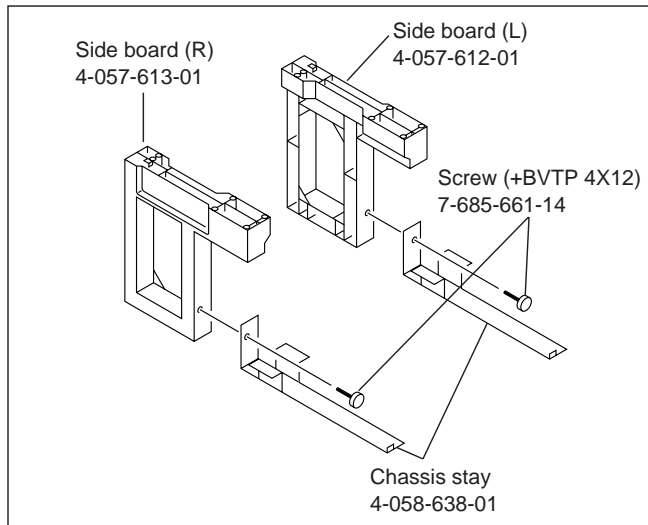
CAUTION: Removing the arrow-marked screws is strictly inhibited.
If removed, it may cause liquid spill.



2-9. SERVICE STAY ASSY HOW TO USE AND CARRY BACK SERVICE STAY ASSY.

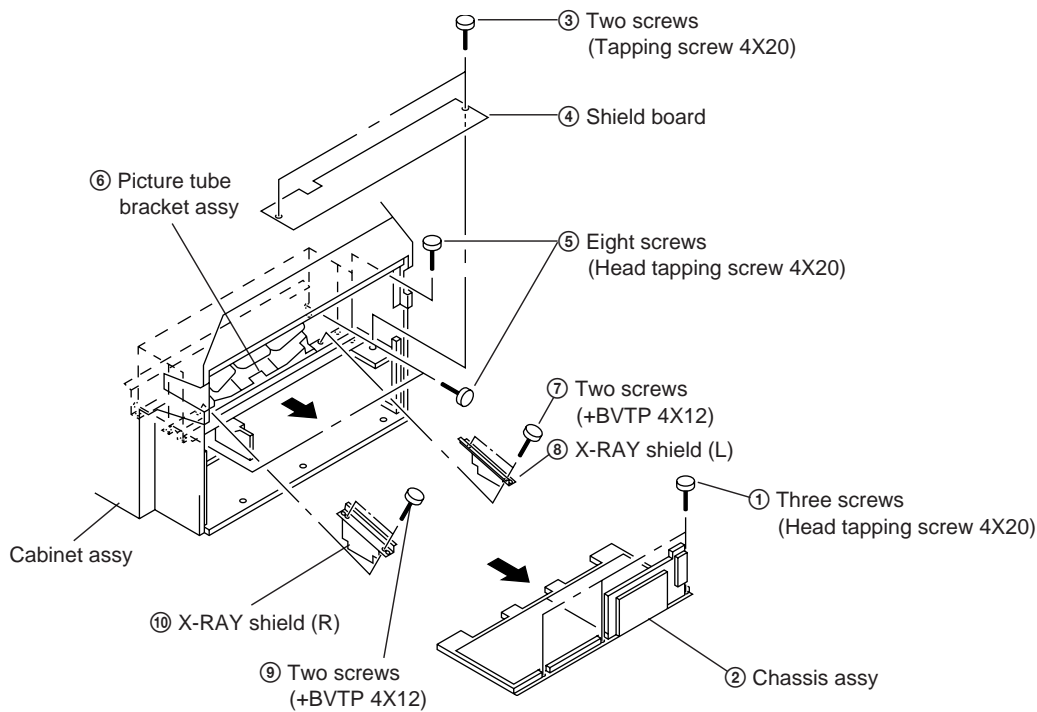
SERVICE STAY ASSY

X-3702-036-1



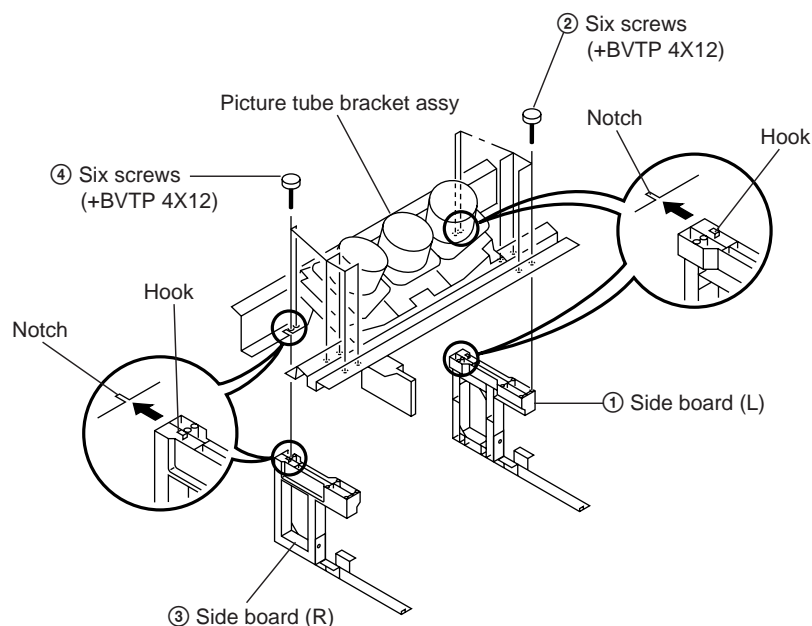
(1) PICTURE TUBE BRACKET ASSY REMOVAL

- Disassemble HA board and speaker cord.
- Disassemble all the harness from purse lock.



- 1) Remove ① three screws (head tapping screw 4X20) and pull out ② chassis assy from cabinet assy.
- 2) Remove ③ two screws (tapping screw 4X20) and remove ④ shield board.
- 3) Remove ⑤ eight screws (head tapping screw 4X20) and release ⑥ picture tube bracket assy from cabinet assy.
- 4) Remove ⑦ two screws (+BVTP 4X12) and remove ⑧ X-RAY shield (L).
- 5) Remove ⑨ two screws (+BVTP 4X12) and remove ⑩ X-RAY shield (R).

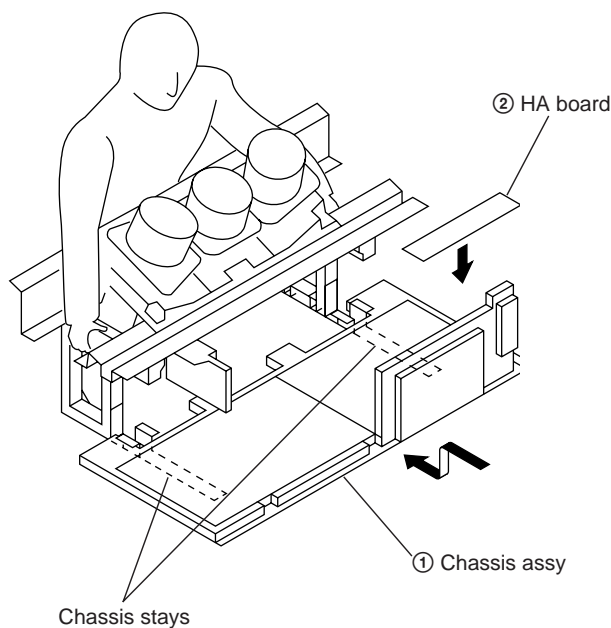
(2) SETTING OF SERVICE STAY ASSY.



- 1) Remove CR board from picture tube.
- 2) Lift up picture tube bracket assy and fit the hook of ① side board (L) to the notch on the assy. Then fix then with ② six screws (+BVTP 4X12).
- 3) Lift up picture tube bracket assy and fit the hook of ③ side board (R) to the notch on the assy. Then fix then with ④ six screws (+BVTP 4X12).

Note : Always be sure to remove the picture tube before trying to set the sideboards (R L).
The CR board may be damaged if left in position while setting the sideboards and it may be impossible to set the sideboards correctly.

(3) INSTALL A CHASSIS ASSY AND CARRY THE PICTURE TUBE BRACKET



- 1) Put ① chassis assy on chassis stays.
- 2) Put ② HA board on ① chassis assy
- 3) Put your hands to side board (L) and (R).
- 4) You can carry the chassis assy in this condition.

Note : Make sure that the CR board has been removed before installing the chassis assy.

SECTION 3

SET-UP ADJUSTMENTS

3-1. SCREEN VOLTAGE ADJUSTMENT (ROUGH ALIGNMENT)

1. Receive the Monoscope signal.
2. Set 50% BRIGHTNESS and minimum PICTURE.
3. Turn the red VR on the FOCUS block all the way to the left and then gradually turn it to the right until the point where you can see the retrace line.
4. Next gradually turn it to the left to the position where the retrace line disappears.

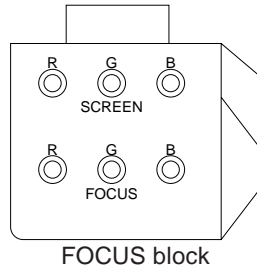


Fig. 3-1

3-2. FOCUS LENS ADJUSTMENT

1. Loose the lens screw.
2. Set in service mode.
3. Use VP on the service mode menu to shown only the green color.
4. Press the Commander Menu button and select FEATURES and CONVERGENCE to display the test signal (crosshatch) on the screen.
5. Rotate the green lens and align with the optimal focus point from the test signal.
6. Use RG-RH from the service mode menu to set to green and red.
7. Output the test signal and rotate the red lens to obtain the optimum focus at the point where the red and green spots overlap.
8. Use RG-BH from the service mode menu to set to red and blue.
9. Output the test signal and rotate the blue lens to obtain the optimum focus at the point where the blue and red spots overlap.
10. Tighten the lens screw.

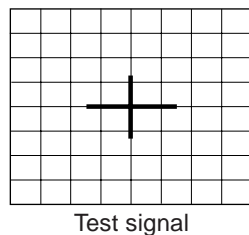


Fig. 3-2

3-3. SCREEN (G2) ADJUSTMENT

1. Select VIDEO mode without signals.
2. Connect an oscilloscope to the TP701(KR), TP731(KG) and TP761(KB) of CR board, CG board and CB board.
3. Adjust R, G and B screen voltage to 170 – 173V with screen VR on the focusblock.
4. After adjusting the screen VR on the focus block confirm that the retrace lines are not visible. If retrace lines are visible reduce the setting of the screen VR until the retrace lines are not visible.

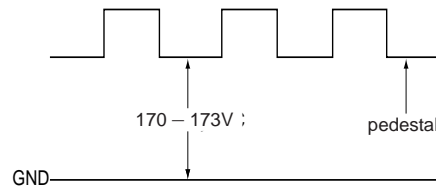


Fig. 3-3

3-4. FOCUS VR ADJUSTMENT

1. Set in service mode.
2. Use VP on the service mode menu to shown only the green color.
3. Press the Commander Menu button (convergence) and output the test signal (crosshatch).
4. Rotate the green VR on the FOCUS block and align to obtain the optimal focus point.
5. Use RG-RH from the service mode menu to set to green and red.
6. Output the test signal and rotate the red VR to obtain the optimum focus at the point where the red and green spots overlap.
7. Use RG-BH from the service mode menu to set to red and blue.
8. Output the test signal and rotate the blue VR aligning to obtain the optimum focus at the point where the blue and green spots overlap.

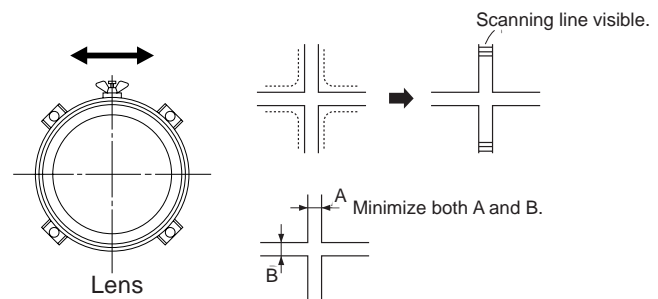


Fig. 3-4

Fig. 3-5

3-5. DEFLECTION YOKE TILT ADJUSTMENT

1. Set to receive the Monoscope signal.
2. Set in service mode.
3. Use VP on the service mode menu to show only the green color.
4. Loosen the deflection yoke set screw and align the tilt of the Deflection Yoke so that the bars at the center of the monoscope pattern are horizontal.
5. After aligning the deflection yoke, fasten it securely to the funnel-shaped portion (neck) of the CRT.
6. The tilt of the deflection yoke for red is aligned with RG-RH on the service mode menu, and the tilt on the deflection yoke for blue is aligned with RG-BH on the service menu, is aligned the same as was done for green.

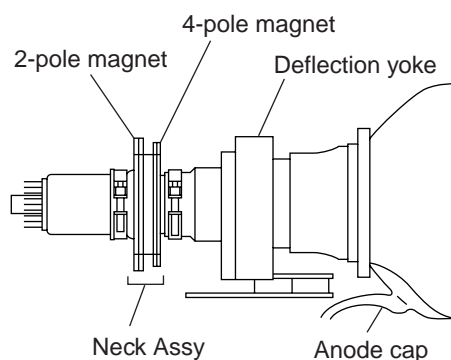


Fig. 3-6

3-6. 2-POLE MAGNET ADJUSTMENT

1. Disconnect CN1431 on Z board.
2. Power on.
3. Set to receive dot hatch signal.
4. Place caps on the red and blue lenses so that only the green color is shown.
5. Turn the green VR on the focus block to the left and set to underfocus to enlarge the spot.
6. Adjust the 2-pole magnet so that the spot is centered inside of the flare portion and the width of the flare on the left side and right side is equal.
7. Turn the green VR on the focus block to the right and adjust for best focus.
8. Perform the same adjustment for red.
9. Power off
10. Connect CN1431.

Use the center dot

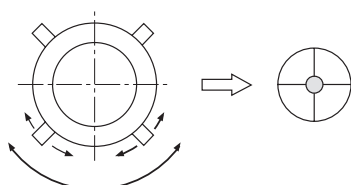


Fig. 3-7

3-7. 4-POLE MAGNET ADJUSTMENT

1. Disconnect CN1431 on Z board.
2. Power on.
3. Set to receive the dot signal.
4. Place caps on the red and blue lenses so that only the green color is shown.
5. Turn the green VR on the focus block to the right and set to overfocus to enlarge the spot.
6. Adjust the 4-pole magnet so that the spot becomes a perfect circle.
7. Turn the green VR on the focus block to the left and adjust for best focus.
8. Perform the same adjustment for red and blue. For red adjust the spot to a circle. For blue adjust the spot so that the spot height is 1.5 times higher than the spot width ($x : y = 1 : 1.5$).
9. Power off
10. Connect CN1431.

Use the center dot

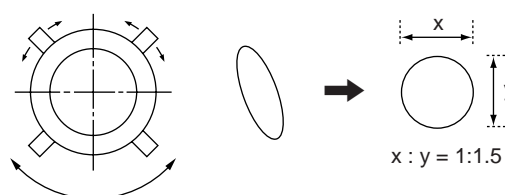


Fig. 3-8

3-8. DEFOCUS ADJUSTMENT (Blue)

1. Receive the dot hatch signal
2. Adjust the blue FOCUS knob clockwise until the right dot becomes oval.
3. Check flare with high luminance dot hatch signal to make sure that the blue flare is minimal Reduce defocus if blue flare is excessive.
4. Defocus adjustment is for blue only.

[Focus adjustment point]

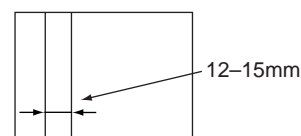


Fig. 3-9

3-9. ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER



By using Remote Commander (RM-Y136A), all circuit adjustments can be made.

NOTE : Test Equipment Required.

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

1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

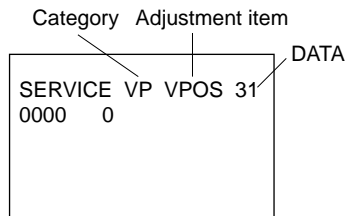
SERVICE MODE PROCEDURE

1. Standby mode. (Power off)
2. **DISPLAY** → **5** → **VOL (+)** → **TV POWER**
(**+** → **5** →  → )

on the Remote Commander.

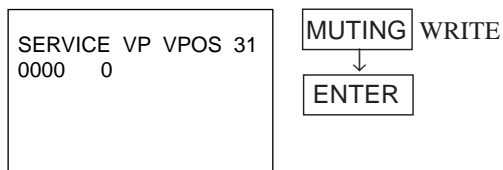
(Press each button within a second.)

SERVICE MODE ADJUSTMENT



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 **2** or **5** on the Remote Commander to select the category.
7. If you want to recover the latest values press **0** then **ENTER** to read the memory.
8. Press **MUTING** then **ENTER** to write into memory.

SERVICE MODE ADJUSTMENT

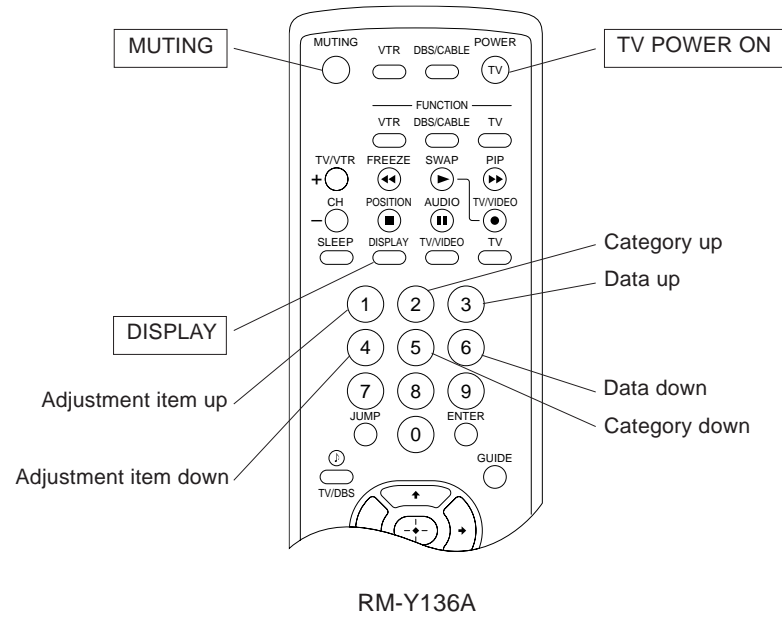


9. Press **8** then **ENTER** on the Remote Commander to initialize or turn set off and on to exit.

2. MEMORY WRITE CONFIRMATION METHOD

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

3. ADJUST BUTTONS AND INDICATOR



4. SERVICE MODE LIST

VP				
Category	Adjustment item	Standard data	Data range	Note
VP	VPOS	-	0-63	V SHIFT
	VSIZ	-	0-63	V SIZE
	VCOM	0	0-3	HV-COMP-V
	VLIN	7	0-15	V LIN
	VSCO	7	0-15	S CORRECTION
	HPOS	7	0-15	H SHIFT
	HSIZ	-	0-63	H SIZE
	PAMP	-	0-63	PIN AMP
	UPIN	7	0-15	UPPER CORNER PIN
	LPIN	7	0-15	LOWER CORNER PIN
	PPHA	7	0-15	H TRAPEZOID
	AFC	2	0-3	AFC LOOP GAIN
	VBOW	7	0-15	V BOW
	VANG	7	0-15	V ANGLE
	REF	3	0-3	AKB REFERENCE
	GDRV	-	0-63	GREEN DRIVE
	BDRV	-	0-63	BLUE DRIVE
	GCUT	-	0-15	GREEN CUT OFF
	BCUT	-	0-15	BLUE CUT OFF
	SCON	-	0-15	SUB CONTRAST
	SHUE	-	0-15	SUB HUE
	SCOL	-	0-15	SUB COLOR
	SBRT	-	0-63	SUB BRIGHTNESS
	SSHP	7	0-15	SUB SHARPNESS
	GMMA	0	0-3	GAMMA LEVEL
	CDM2	0	0,1	COUNT DOWN MODE 2
	DPIX	1	0,1	DYNAMIC PICTURE
	Y-DC	1	0,1	DC TRANSMISSION RATIO
	ABLM	1	0,1	ABL MODE
	AXIS	0	0,1	R-Y, G-Y AXIS
	NOTC	0	0,1	C TRAP
	CROM	7	0-15	C TRAP F0
	TOT	0	0,1	C TOT FILTER
	PREL	3	0-3	PRE/OVER LEVEL
	SHPF	2	0-3	SHARPNESS F0
	RON	-	0,1	RED ON/OFF
	GON	-	0,1	GREEN ON/OFF
	BON	-	0,1	BLUE ON/OFF
	DCOL	-	0,1	DYNAMIC COLOR
	CDMD	0	0,1	V COUNT DOWN
	LBLK	13	0-15	H BLK WIDTH LEFT SIDE
	RBLK	13	0-15	H BLK WIDTH RIGHT SIDE

AP

Category	Adjustment item	Standard data		Data range	Note
		4IT	V		
AP	SVOL	0	0	0-15	SUB VOLUME
	SBAL	7	7	0-15	SUB BLANCE
	SBAS	9	7	0-15	SUB BASS
	STRE	6	7	0-15	SUB TREBLE

RG

Category	Adjustment item	Standard data	Data range	Note
RG-GH	GH CENT	-	-127-+127	GREEN H SENT
	GH SKEW	-	-127-+127	GREEN H SKEW
	GH BOW	-	-127-+127	GREEN H BOW
	GH 4BOW	-	-127-+127	GREEN H 4TH BOW
	GH SIZE	-	-127-+127	GREEN H SIZE
	GH LIN	-	-127-+127	GREEN H LINEARITY
	GH MSIZ	-	-127-+127	GREEN H MID SIZE
	GH MLIN	-	-127-+127	GREEN H MID LINEARITY
	GH KEY	-	-127-+127	GREEN H KEY
	GH SSKW	-	-127-+127	GREEN H SUB SKEW
	GH MPIN	-	-127-+127	GREEN H MID PIN
	GH PIN	-	-127-+127	GREEN H PIN
	GH SBOW	-	-127-+127	GREEN H SUB BOW
	GH MBOW	-	-127-+127	GREEN H MID BOW
	GH 4PIN	-	-127-+127	GREEN H 4TH PIN
	GH 4SBO	-	-127-+127	GREEN H 4TH SUB BOW
RG-GV	GV CENT	-	-127-+127	GREEN V CENT
	GV SKEW	-	-127-+127	GREEN V SKEW
	GV BOW	-	-127-+127	GREEN V BOW
	GV SIZE	-	-127-+127	GREEN V SIZE
	GV LIN	-	-127-+127	GREEN V LINEARITY
	GV MSIZ	-	-127-+127	GREEN V MID SIZE
	GV MKEY	-	-127-+127	GREEN V MID KEY
	GV KEY	-	-127-+127	GREEN V KEY
	GV SSKW	-	-127-+127	GREEN V SUB SKEW
	GV MPIN	-	-127-+127	GREEN V MID PIN
	GV PIN	-	-127-+127	GREEN V PIN
	GV SBOW	-	-127-+127	GREEN V SUB BOW
	GV WAVE	-	-127-+127	GREEN V WAVE
	GV 4PIN	-	-127-+127	GREEN V 4TH PIN
RG-RH	RH CENT	-	-95-+96	RED H CENT
	RH SKEW	-	-127-+127	RED H SKEW
	RH BOW	-	-127-+127	RED H BOW

Category	Adjustment item	Standard data	Data range	Note
	RH 4BOW	-	-127-+127	RED H 4TH BOW
	RH SIZE	-	-127-+127	RED H SIZE
	RH LIN	-	-127-+127	RED H LINEARITY
	RH MSIZ	-	-127-+127	RED H MID SIZE
	RH MLIN	-	-127-+127	RED H MID LINEARITY
	RH KEY	-	-127-+127	RED H KEY
	RH SSKW	-	-127-+127	RED H SUB SKEW
	RH MPIN	-	-127-+127	RED H MID PIN
	RH PIN	-	-127-+127	RED H PIN
	RH SBOW	-	-127-+127	RED H SUB BOW
	RH MBOW	-	-127-+127	RED H MID BOW
	RH 4PIN	-	-127-+127	RED H 4TH PIN
	RH 4SBO	-	-127-+127	RED H 4TH SUB BOW
RG-RV	RV CENT	-	-95-+96	RED V CEVT
	RV SKEW	-	-127-+127	RED V SKEW
	RV BOW	-	-127-+127	RED V BOW
	RV SIZE	-	-127-+127	RED V SIZE
	RV LIN	-	-127-+127	RED V LINEARITY
	RV MSIZ	-	-127-+127	RED V MID SIZE
	RV MKEY	-	-127-+127	RED V MID KEY
	RV KEY	-	-127-+127	RED V KEY
	RV SSKW	-	-127-+127	RED V SUB SKEW
	RV MPIN	-	-127-+127	RED V MID PIN
	RV PIN	-	-127-+127	RED V PIN
	RV SBOW	-	-127-+127	RED V SUB BOW
	RV WAVE	-	-127-+127	RED V WAVE
	RV 4PIN	-	-127-+127	RED V 4TH PIN
	RV WING	-	-31-+32	RED V WING
RG-BH	BH CENT	-	-95-+96	BLUE H CENT
	BH SKEW	-	-127-+127	BLUE H SKEW
	BH BOW	-	-127-+127	BLUE H BOW
	BH 4BOW	-	-127-+127	BLUE H 4TH BOW
	BH SIZE	-	-127-+127	BLUE H SIZE
	BH LIN	-	-127-+127	BLUE H LINEARITY
	BH MSIZ	-	-127-+127	BLUE H MID SIZE
	BH MLIN	-	-127-+127	BLUE H MID LINEARITY
	BH KEY	-	-127-+127	BLUE H KEY
	BH SSKW	-	-127-+127	BLUE H SUB SKEW
	BH MPIN	-	-127-+127	BLUE H MID PIN
	BH PIN	-	-127-+127	BLUE H PIN
	BH SBOW	-	-127-+127	BLUE H SUB BOW
	BH MBOW	-	-127-+127	BLUE H MID BOW

Category	Adjustment item	Standard data	Data range	Note
	BH 4PIN	-	-127-+127	BLUE H 4TH PIN
	BH 4SBO	-	-127-+127	BLUE H 4TH SUB BOW
RG-BV	BV CENT	-	-95-+96	BLUE V CENT
	BV SKEW	-	-127-+127	BLUE V SKEW
	BV BOW	-	-127-+127	BLUE V BOW
	BV SIZE	-	-127-+127	BLUE V SIZE
	BV LIN	-	-127-+127	BLUE V LINEARITY
	BV MSIZ	-	-127-+127	BLUE V MID SIZE
	BV MKEY	-	-127-+127	BLUE V MID KEY
	BV KEY	-	-127-+127	BLUE V KEY
	BV SSKW	-	-127-+127	BLUE V SUB SKEW
	BV MPIN	-	-127-+127	BLUE V MID PIN
	BV PIN	-	-127-+127	BLUE V PIN
	BV SBOW	-	-127-+127	BLUE V SUB BOW
	BV WAVE	-	-127-+127	BLUE V WAVE
	BV 4PIN	-	-127-+127	BLUE V 4TH PIN
	BV WING	-	-31-+32	BLUE V WING

CC

Category	Adjustment item	Standard data	Data range	Note
CC	CRIH	9	0-15	CRI COUNT HIGH
	CRIL	2	0-15	CRI COUNT LOW
	CFLD	5	0-15	FIXED FIELD COUNT
	CCDI	3	0-7	NO CCD INT COMPARE
	CRIP	4	0-7	CRI & PARITY ERROR
	CRIT	2	0-3	CRI TIME CONSTANT
	CSB1	3	0-3	SYNC SLICE BIAS 1
	CSB2	4	0-7	SYNC SLICE BIAS 2
	CCBD	4	0-15	C SYNC BACKPORCH DET
	CCFD	7	0-15	C SYNC FRONTPORCH DET
	CREP	142	0-255	CRI SIGNAL END POSITION
	CSEP	186	0-255	START BIT END POSITION
	CRBD	8	0-15	CRI BACKPORCH DET
	CRFD	9	0-15	CRI FRONTPORCH DET
	CSSD	3	0-15	STROBE WINDOW ST DLY
	CSED	9	0-15	STROBE WINDOW ED DLY
	CSBS	12	0-31	START BIT THRESHOLD
	CDSD	8	0-31	DATA START DELAY
	CCDS	9	0-31	CAPTION DT THRESHOLD
	CHMK	42	0-63	H SYNC MASK WIDTH
	CHSY	136	0-255	H SYNC VCO COUNT

OP

Category	Adjustment item	Standard data	Data range	Note
OP	DISP	-	0-63	OSD POSITION
	PDPS	-	0-255	FAV/IDX CH POSITION
	PDPO	-	0-7	CH POSITION (OFF SET)

ID

Category	Adjustment item	Standard data	Data range	Note
ID	ID0	25	0-255	MODEL ID#0
	ID1	55	0-255	MODEL ID#1
	ID2	31	0-255	MODEL ID#2
	ID3	1	0-255	MODEL ID#3
	ID4	155	0-255	MODEL ID#4
	ID5	177	0-255	MODEL ID#5
	ID6	198	0-255	MODEL ID#6
	ID7	66	0-255	MODEL ID#7

PS

Category	Adjustment item	Standard data	Data range	Note
PS	PIPH	-	0-127	PIP H POSITION
	PIPV	-	0-63	PIP V POSITION
	PMVD	26	0-31	PIP V PULSE DELAY(M)
	PIVD	22	0-31	PIP V PULSE DELAY(I)
	PCON	-	0-15	PIP CONTRAST(I)
	FRMY	7	0-15	PIP FRAME Y LEVEL
	IPER	0	0-15	PIP PEDESTAL R-Y(I)
	IPEB	0	0-15	PIP PEDESTAL B-Y(I)
	IHUE	-	0-15	PIP SUB HUE
	ICOL	-	0-15	PIP SUB COLOR
	PHDL	1	0-15	PIP H PULSE DELAY
	PYSD	1	0-15	PIP SELECT DELAY
	PYDL	0	0-7	PIP Y DELAY
	PCPS	0	0,1	PIP CLP
	PCPF	0	0,1	PIP CLP CYCLES
	PSEL	0	0,1	PIP SELDOWN
	PPLL	0	0-3	PIP PLL
	CHRI	0	0,1	PIP INPUT POLARITY
	CHRO	0	0,1	PIP OUTPUT POLARITY

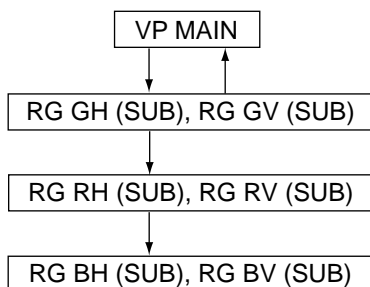
IC

Category	Adjustment item	Standard data	Data range	Note
IC	SSCN	6	0-15	P&P SUB SUB CONTRAST
	SSHU	-	0-15	P&P SUB SUB HUE
	SSCL	-	0-15	P&P SUB SUB COLOR
	SUPD	-	0-15	P&P SUB U OFFSET
	SVPD	-	0-15	P&P SUB V OFFSET
	SDLY	0	0-3	P&P SUB Y DELAY
	SBGR	3	0-3	P&P SUB SCP CONTROL(1)
	SBGF	3	0-3	P&P SUB SCP CONTROL(2)
	PAFC	2	0-3	PIP AFC LOOP GAIN
	PTOT	0	0,1	PIP CHROMA TOT FILTER
	PYDR	10	0-31	PIP Y DRIVE
	PYDC	3	0-7	PIP DC TRAN
	PSHP	1	0,1	PIP SHARPNESS F0
	PDPI	0	0,1	PIP DYNAMIC PICTURE
	PSYS	0	0-3	PIP COLOR SYSTEM
	PXTL	0	0-3	PIP X' TAL
	PLOP	0	0-3	PIP COLOR LOOP

3-10. CONVERGENCE ADJUSTMENT

- When replacing the deflection yoke, always perform “DEFLECTION YOKE TILT ADJUSTMENT” before adjusting the convergence.

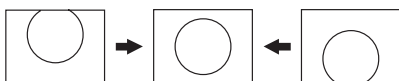
Adjustment procedure



[GREEN REGISTRATION ADJUSTMENT]

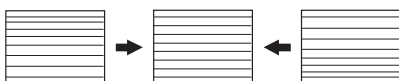
• V-SHIFT adjustment

VP VPOS



• V-LINEARITY adjustment

VP VLIN



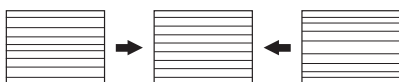
• V-SIZE, V-CORRECTION adjustment

While tracking, adjust so that the lattice intervals for VSIZ and VSCO are equal.

VP VSIZ

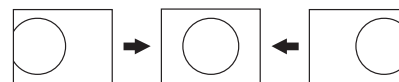


VP VSCO



• H-SHIFT adjustment

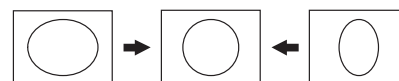
VP HPOS



• H-SIZE adjustment

Finely adjust with SUB MSIZ.

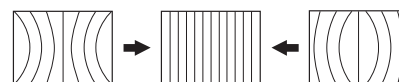
VP HSIZ



• PIN-AMP adjustment

Finely adjust with SUB MPIN.

VP PAMP



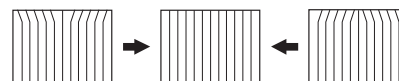
• UPPER/LOWER-CORNER PIN adjustment

Correct the screens top and bottom bow line.

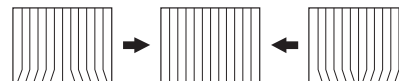
However, if this adjustment is overdone, distortion may occur with the PIN-AMP adjustment that can not be re-adjusted.

Note : The PIN-AMP adjusts the overall screen from top to bottom, but the UPPER/LOWER-CORNER PIN adjustments have large movement in the top and bottom sections, so be careful.

VP UPIN



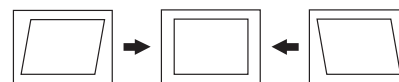
VP LPIN



• V-ANGLE, V-BOW adjustment

Correct the tilt and bow of the vertical line at the center of the screen.

VP VANG

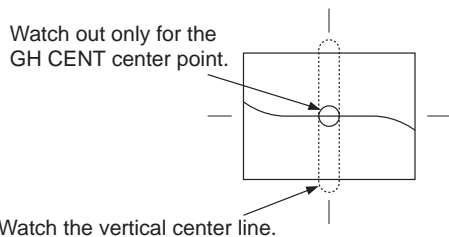


VP VBOW

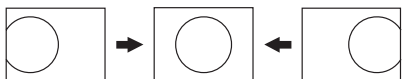


[GREEN SUB ADJUSTMENT]
SCREEN CENTER SECTION GREEN VERTICAL LINE
ADJUSTMENT

1. Finely adjust with GH CENT, GH BOW, GH SKEW.
Adjust by watching out for the GH CENT screen center section.
2. GH 4TH BOW adjustment
Correct the corner distortion that could not be adjusted away with the GH 4BOW adjustment.



GH CENT



GH BOW



GH SKEW

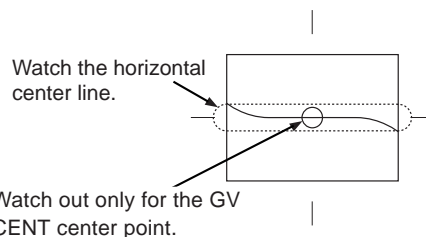


GH 4BOW

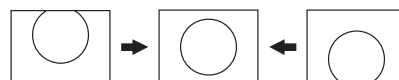


SCREEN CENTER SECTION GREEN HORIZONTAL LINE
ADJUSTMENT

1. Finely adjust the center position of the vertical line at the center of the screen with GV CENT.
2. Correct the tilt and bow of the horizontal line at the center of the screen with GV SKEW and GV BOW.



GV CENT



GV SKEW

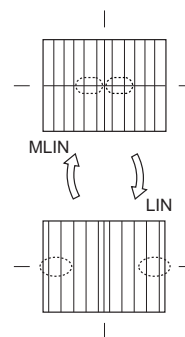


GV BOW



GREEN SIZE AND LINEARITY ADJUSTMENT

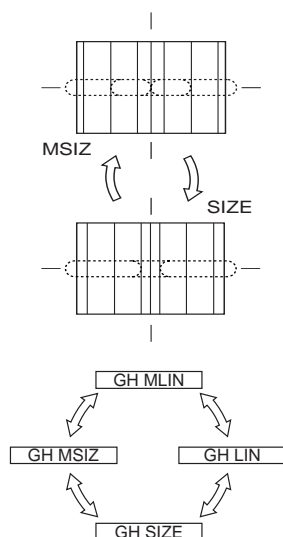
1. Balance the sizes at both sides of the center section of the screen with GH MLIN.
2. Balance the sizes on both end sections of the screen with GH LIN.
3. While tracking, adjust with GH MLIN and GH LIN so that the sizes of the horizontal line at the center of the screen are symmetrical left and right.



GREEN HORIZONTAL SIZE ADJUSTMENT

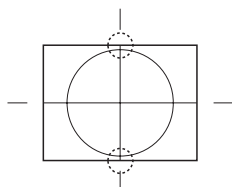
1. Adjust with GH MSIZE so that the sizes of both ends and of both sides of the center section of the screen are equal.
2. Adjust with GH SIZE so that the horizontal sizes of both ends and of both sides of the center section of the screen are equal.
3. While tracking, adjust with GH MSIZ and GH SIZE so that the lattice intervals for the horizontal line section of the center section of the screen are equal and so that the horizontal size is the prescribed value.
4. If M LIN is changed when the GH MSIZ and GH SIZE adjustment is complete, adjust again while tracking.

- With just the H SIZE adjustment in MAIN, if there is no need to adjust GH SIZE in SUB this can save power.



GREEN VERTICAL LINEARITY ADJUSTMENT

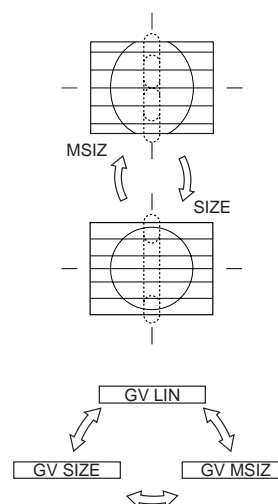
1. Adjust GV LIN so that the vertical lines at the top and bottom of the screen are symmetrical.



GREEN VERTICAL SIZE ADJUSTMENT

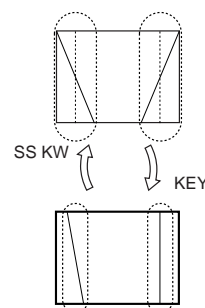
1. Adjust with GV MSIZE so that the sizes for the top and bottom sections of the screen and for both sides of the center section of the screen are equal.
2. Set the vertical size to the prescribed value with GV SIZE.
3. Adjust GV MSIZ and GV SIZE watching the vertical line at the center section of the screen.
4. While tracking, adjust with GV MSIZ and GV SIZE so that the lattice intervals for the vertical line section of the center section of the screen are equal and so that the vertical size is the regulation value.
5. If GV LIN is out of place when the GV MSIZ and GV SIZE adjustment is complete, adjust again while tracking.

- If there is no need to adjust GV SIZE in SUB with just the V SIZE adjustment in MAIN, this can save power.



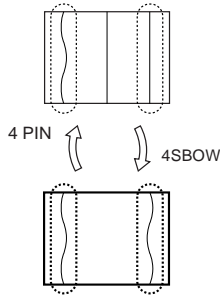
GREEN HORIZONTAL TRAPEZOIDAL DISTORTION ADJUSTMENT

1. Adjust with GH SSKW so that the tilt of the vertical lines at both ends of the screen is symmetrical left and right.
2. Adjust with GH KEY so that there is no tilt in the vertical lines at both ends of the screen.
3. If there is a tilt on either the left or right after the GH KEY adjustment, adjust while tracking.



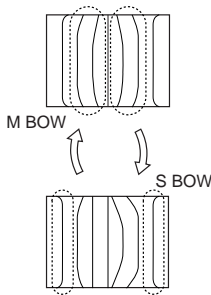
GREEN HORIZONTAL QUATERNARY ADJUSTMENT

1. Correct the quaternary distortion with GH 4PIN.
2. While balancing, correct the quaternary distortion of both end sections of the screen with GH 4SBOW.
3. While tracking, adjust with GH 4PIN and GH 4SBOW.



GREEN HORIZONTAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT

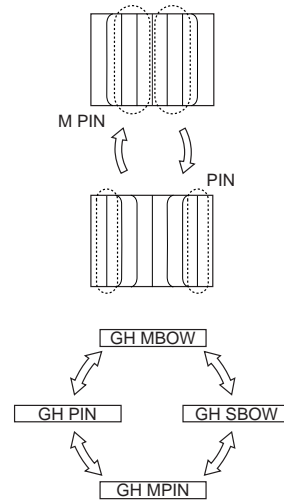
1. Adjust with GH MBOW so that the pin asymmetry at both sides of the center section of screen is symmetrical.
2. Adjust with GH SBOW so that the bow at both end sections of the screen is symmetrical left and right.
3. While tracking, adjust with GH MBOW and GH SBOW so that the bow of vertical lines on the entire screen is symmetrical left and right.



GREEN HORIZONTAL SYMMETRICAL PIN DISTORTION ADJUSTMENT

1. Adjust the pin distortion at both sides of the center section of the screen with GH MPIN.
2. Adjust the pin distortion at both end sections of the screen with GH PIN.
3. While tracking, adjust with GH MPIN and GH PIN so that the PIN of vertical lines on the entire screen have no bowing.
4. If there is asymmetrical pin distortion after the GH MPIN and GH PIN adjustments, adjust with GH MBOW and GH SBOW while tracking.

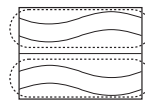
- With just the PIN AMP adjustment in MAIN, if there is no need to adjust GV PIN in SUB, this can save power.



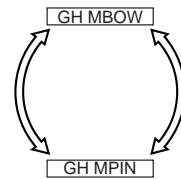
GREEN VERTICAL WAVE (TERTIARY DISTORTION) ADJUSTMENT

1. Take the screen top and bottom horizontal lines with GV WAVE and find the secondary and quaternary waveform.
2. There is KEY distortion after the GV WAVE adjustment, so adjust with GV WAVE and GV KEY while tracking.

GV WAVE



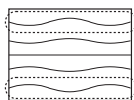
GV KEY



GREEN VERTICAL QUATERNARY DISTORTION ADJUSTMENT

1. Correct the quaternary distortion of the horizontal lines at the top and bottom sections of the screen with GV 4PIN.
- 1) Since there is no 4SBOW for vertical correction, there will be a slight imbalance, but adjust to eliminate the distortion from the horizontal line at either the top or the bottom of the screen.
- 2) In many cases, the horizontal lines at the top and bottom sections of the screen are not straight lines after the adjustment. As long as the secondary distortion is mild enough that it can be corrected with the PIN adjustment, this is OK.

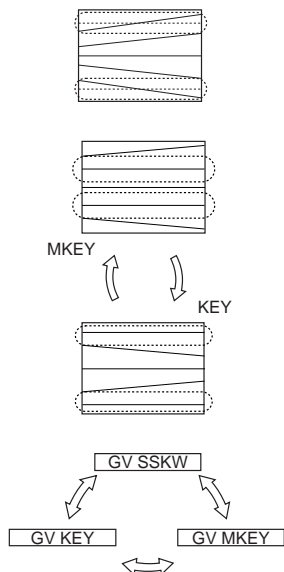
GV 4PIN



GREEN VERTICAL TRAPEZOIDAL DISTORTION ADJUSTMENT

1. Adjust with GV SSKW so that the tilt of the horizontal lines at the top and bottom sections of the screen is symmetrical about the center position horizontal line.
2. Adjust with GV MKEY so that there is no tilt for the line sections at both sides of the horizontal lines at the center section of the stream.
3. Adjust with GV KEY so that there is no tilt for the horizontal lines at the top and bottom sections of the screen.
4. While tracking, adjust with GV MKEY and GV KEY so that there is no tilt for the horizontal lines on the entire screen.
5. If the tilt is unbalanced after the GV MKEY and GV KEY adjustment, adjust again with GV SSKW.

GV SSKW



GREEN VERTICAL ASYMMETRICAL PIN DISTORTION (SECONDARY DISTORTION) ADJUSTMENT

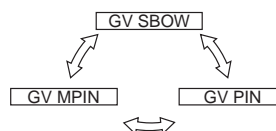
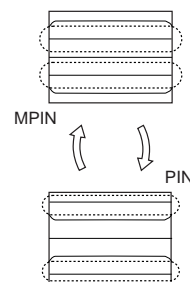
1. Correct the asymmetrical pin distortion at the top and bottom sections of the screen with GV SBOW.

GV SBOW



GREEN VERTICAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT

1. Adjust the pin distortion for both side sections and the center of the screen with GV MPIN.
2. Adjust with GV PIN so that the horizontal lines at the top and bottom sections of the screen are straight lines.
3. Adjust with GV MPIN and GV PIN so that there is no curve in the horizontal lines on the entire screen.
4. After the adjustments in Items 1-3, adjust the tracking with GV SBOW, GV MPIN, and GV PIN.



GREEN AND RED REGISTRATION ADJUSTMENT (RRH, RRV)

1. Receive a cross-hatch signal.
2. Adjust so that the red lines lay on the green lines.
Adjust with the same procedure as the GREEN SUB adjustment.

Notes: 1. The main correction is not carried out during red registration adjustment.
2. Beware. The green adjustment items can be changed by mistake.
3. Unlike for green, adjust within the range -127 ~ +128.

GREEN AND BLUE REGISTRATION ADJUSTMENT (RBH, RBV)

1. Receive a cross-hatch signal.
2. Adjust so that the blue and green lines are on top of each other.

Notes : 1. The main correction is not carried out during RED registration adjustment.
2. Beware. The GREEN and RED adjustment items can be changed by mistake.

3-11. AGC ADJUSTMENT

1. Receive an off-air signal.
2. Adjust the AGC VR (TU 1001) so that there is no snow noise and cross-modulation.

3-12. WHITE BALANCE ADJUSTMENT


1. Receive the monoscope pattern signal and adjust the picture quality with the menu.
2. Adjust service mode SBRT so that the signal 10 IRE section barely glows.
3. Receive the all-white pattern signal.
4. Adjust the white balance with service mode GCUT and BCUT.
5. Adjust service mode SBRT so that the signal 100 IRE section barely glows.
6. Adjust the white balance with service mode GAMP and BAMP.
7. Repeatedly adjust the white balance for the minimum and maximum picture settings.



SECTION 4

SAFETY RELATED ADJUSTMENTS

[G BOARD]

4-1. HV REGULATION CIRCUIT CHECK AND ADJUSTMENT

When replacing the following components marked with  on the schematic diagram always check HV regulation, and if necessary re-adjust.

- : C514
- : C514, C515, C516
IC651
T502, T503, T504 (FBT)
D.Y

OPERATION CHECK

1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block. (Fig.4-1)
2. Power on the set.
3. Receive the dot signal. (PICTURE and BRIGHTNESS to minimum)
4. Check that the HV static voltmeter is reading $31.00 \pm 1.0 \text{ kVdc}$.

HV Regulation adjustment

1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block.
2. Power on the set.
3. Receive the dot signal. (PICTURE and BRIGHTNESS to minimum)
4. If anode voltage is 32kV or higher, replace C514 of 390PF/2kV with that of 680PF/2kV, and check if the voltage is within the standard range.
5. If anode voltage is 30kV or lower, replace C514 of 390PF/2kV with that of 100PF/2kV, and check if the voltage is within the standard range. (Fig.4-2)

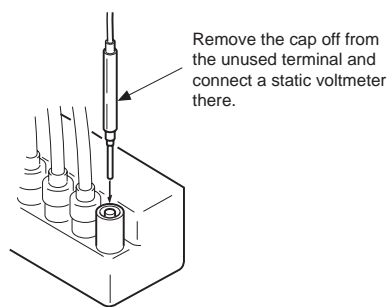


Fig. 4-1

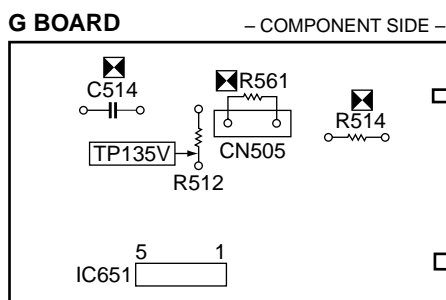





Fig. 4-2

4-2. HV HOLD DOWN CIRCUIT OPERATION CHECK AND ADJUSTMENT

When replacing the following components marked with  on the schematic diagram always check hold-down voltage and if necessary re-adjust.

- : R514, R561
- : C507, C513
D501, D504, D507
IC301, IC501, IC651
R502, R514, R516, R517, R539, R560, R561
T502, T503, T504 (FBT)
D.Y

OPERATION CHECK

1. Remove CN651 connector.
2. Short-circuit across TP-PROT (R692) and ground.
3. Connect a HV static voltmeter to the unconnected plug of the high-voltage block.
4. Connect a 220k variable resistor, across pin ③ and pin ⑤ of IC651 set to maximum value.
5. Power on the set.
6. Receive the dot signal. (PICTURE and BRIGHTNESS to minimum)
7. Gradually lower the value of the variable resistor and check that the hold-down circuit operates at a static voltmeter reading of $33.5 \pm 1.0 \text{ kVdc}$ when the raster disappears.

HV HOLD-DOWN ADJUSTMENT

1. Repeat steps ① ~ ⑦ as above.
2. If hold down voltage is 34.5kV or higher, remove R514, mount a resistor (390kΩ, 1/4W : RN) onto R561 instead, and check again if the hold-down voltage is within the standard range.
3. If hold down voltage is 32.5kV or lower, mount a resistor (220kΩ, 1/4W : RN) onto R561 and check again if the hold-down voltage is within the standard range. (Fig.4-2)

NOTE : Please finish the adjustment as soon as possible

4-3. +B MAX VOLTAGE CONFIRMATION

The following adjustments should always be performed when replacing IC651.

1. Supply 130VAC to with variable autotransformer.
2. Input a dot signal.
3. Set the PICTURE control and the BRIGHTNESS controls to minimum.
4. Confirm the voltage of G BOARD TP135V is less than 137.0Vdc.
5. If step 4 is not satisfied, replace IC651 and repeat above steps. (Fig.4-2)

4-4. +B OVP CONFIRMATION

1. Remove CN651 connector.
2. Connect a voltmeter to TP135V, and TP (PROT) and ground.
3. Connect a 220k Ω variable resistor, across pin ③ and pin ⑤ of IC651 set to maximum value.
4. Supply 120VAC to variable autotransformer.
5. Set PICTURE and the BRIGHTNESS controls to minimum.
6. Gradually turn the 220k Ω variable resistor, and check if OVP works properly when the voltage of TP135V is between 139.0 ~ 151.5V. **(Fig.4-2)**

SECTION 5

CIRCUIT ADJUSTMENTS

5-1. RF AGC

1. Input a color-bar signal.
2. Adjust AGC VR of TU1101 so that no snow noise, and crossmodulation disappear from the picture.
3. Verify picture quality on each channel.

5-2. BER DISPLAY ADJUSTMENT (DISP)

1. Receive the cross-hatch signal.
2. Set to Service mode.
3. Select “ DISP ”, and adjust so that the blank spaces on the both sides of picture bar become equal.
4. Write the data into memory.

MUTING → ENTER

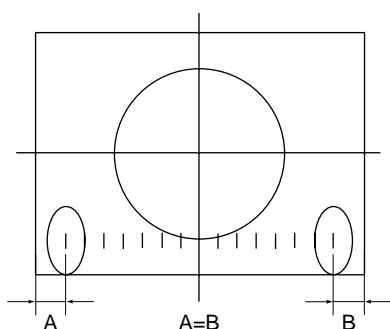


Fig. 5-1

5-3. SUB CONTRAST ADJUSTMENT (SCON)

1. Receive the color-bar signal.
2. PICTURE : maximum
COLOR : minimum
BRIGHTNESS : maximum
RON---1 GON---0 BON---0
3. Set to service mode.
4. Connect an oscilloscope between pin ⑥ of CN004 connector (A board) and ground.
5. Select “ SCON ”, and adjust so that the wave form level is $1.65 \pm 0.1V_{p-p}$.
6. Write the data into memory.

MUTING → ENTER

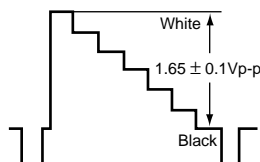


Fig. 5-2

5-4. SUB-HUE AND SUB-COLOR ADJUSTMENT (SHUE, SCOL)

1. Receive the color-bar signal.
2. PICTURE : maximum
COLOR : minimum
BRIGHTNESS : minimum
3. Set to service mode.
4. Connect an oscilloscope between pin ⑦ of CN004 connector (A board) and ground.
5. Select “ SHUE ” and “ SCOL ”, and adjust them to have $VB1 = VB4$ and $VB2 = VB3$ in the wave form levels.
6. Raise SCOL data 1 steps higher.
7. Write the data into memory.

MUTING → ENTER

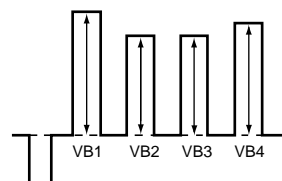
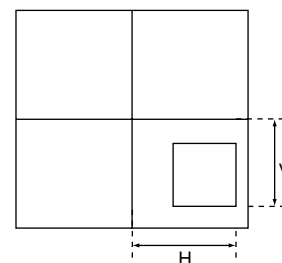


Fig. 5-3

5-5. P IN P POSITION ADJUSTMENT (PIPH, PIPV)

1. Receive the monoscope signal.
2. Set to P IN P mode, and to Service mode.
3. Check the SUB PICTURE position.
4. Select “ PIPH ” and “ PIPV ” and adjust H/V position to the center level.
5. Write the data into memory.

MUTING → ENTER



H : $7.00 \pm 0.25sq$
V : $5.25 \pm 0.25sq$

Fig. 5-4

5-6. P IN P SUB CONTRAST ADJUSTMENT (PCON)

1. Receive the color-bar signal.
2. PICTURE : maximum
COLOR : minimum
BRIGHTNESS : minimum
3. Set to service mode.
4. Connect an oscilloscope between ⑨ pin of CN303 connector (A board) and ground.
5. Select “PCON” and adjust so that wave form level is $1.4 \pm_{0.05}^{0.00}$ Vp-p.
6. Write the data into memory.

MUTING → **ENTER**

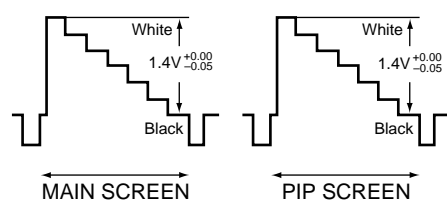


Fig. 5-5

5-7. P IN P SUB HUE, SUB COLOR ADJUSTMENT (SSHU, SSCL)

1. Receive the color-bar signal.
2. PICTURE : maximum
COLOR : center
BRIGHTNESS : center
TRINITONE : medium
3. Set to service mode.
4. Connect an oscilloscope between pin ⑦ of CN004 connector (A board) and ground.
5. Select “SSHU” and “SSCL”, adjust them to have $VB1 = VB4$ and $VB2 = VB3$ in the wave form levels.
6. Write the data into memory.

MUTING → **ENTER**

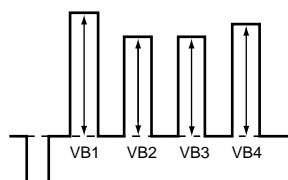
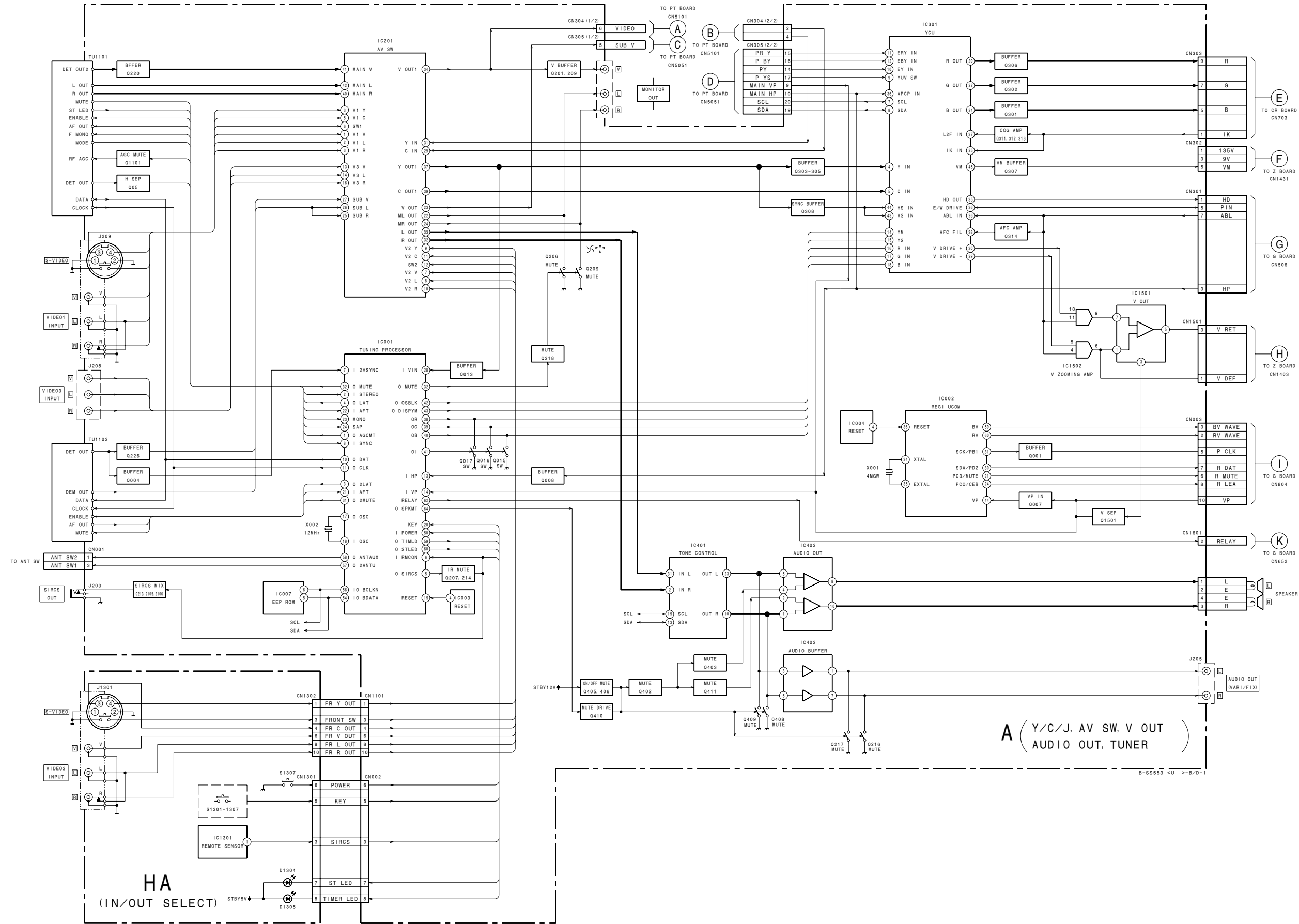


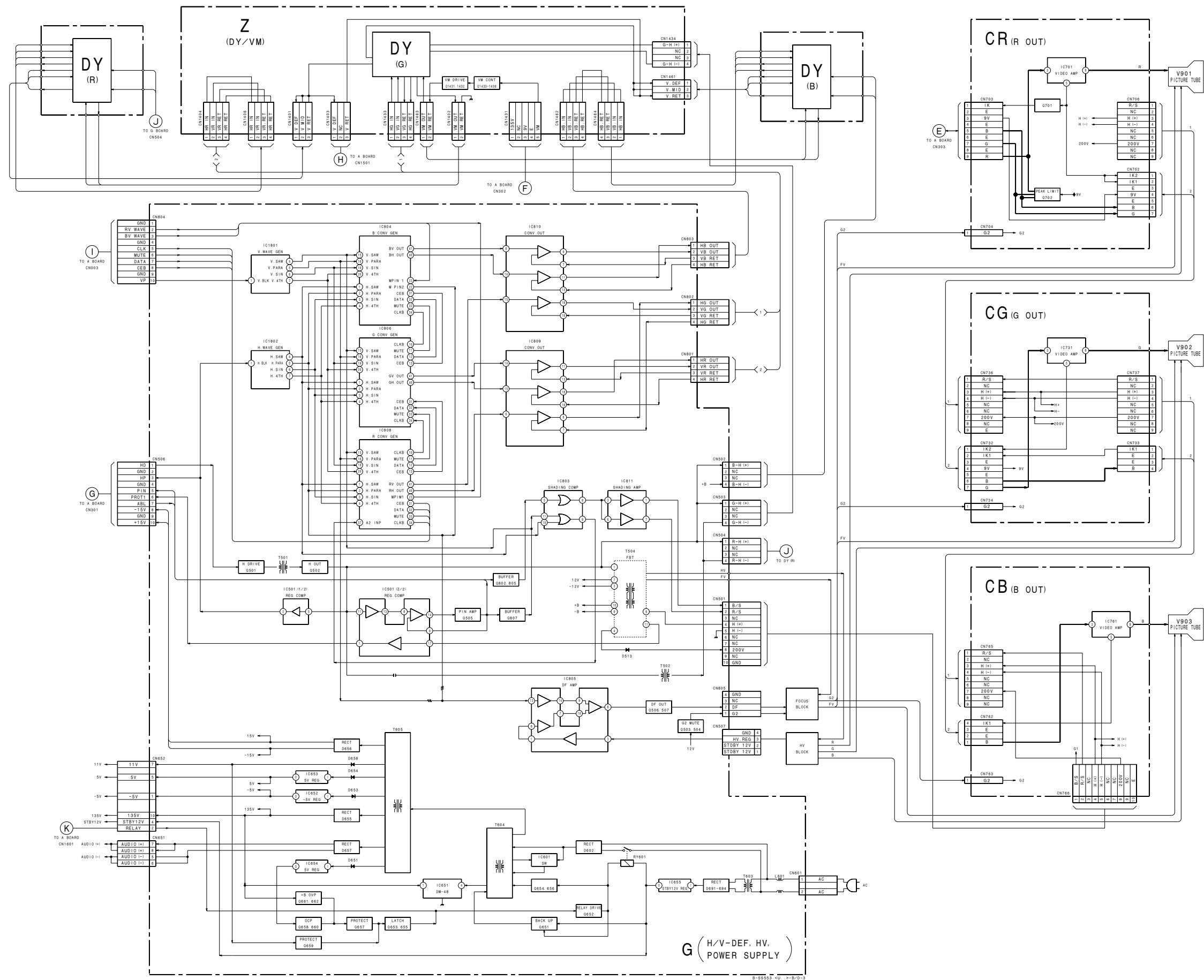
Fig. 5-6

SECTION 6 DIAGRAMS

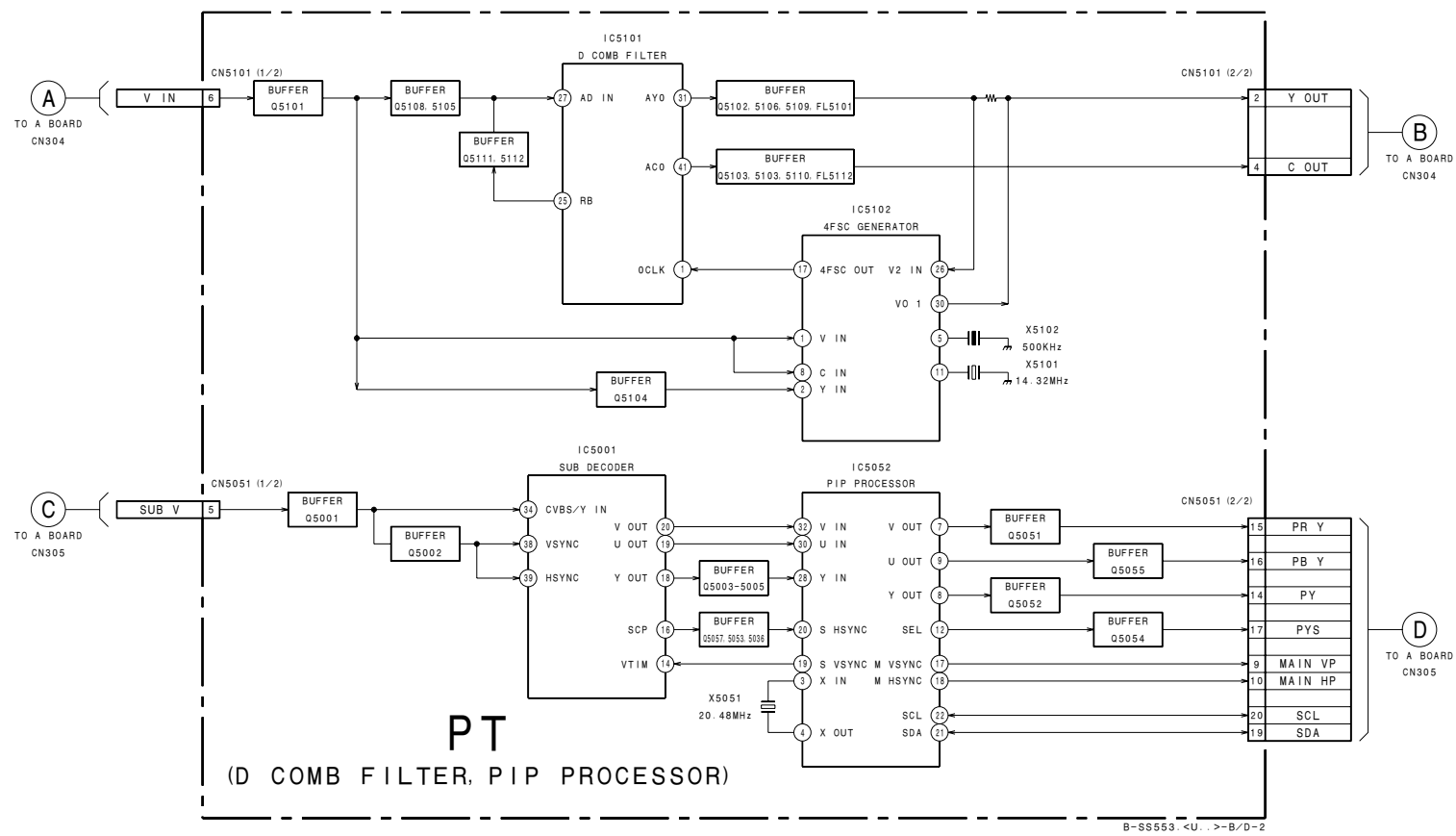
6-1. BLOCK DIAGRAM (1)



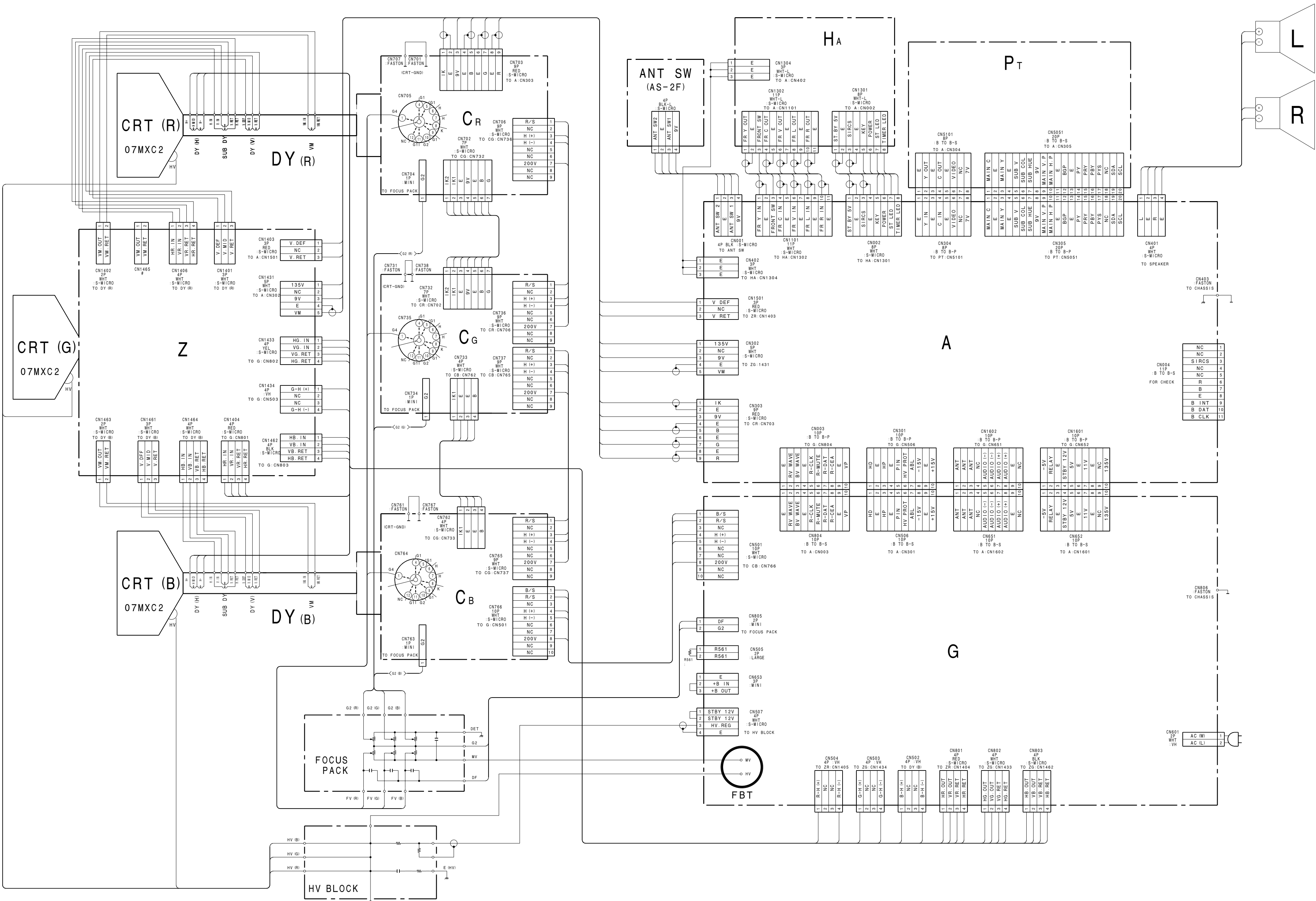
BLOCK DIAGRAM (2)



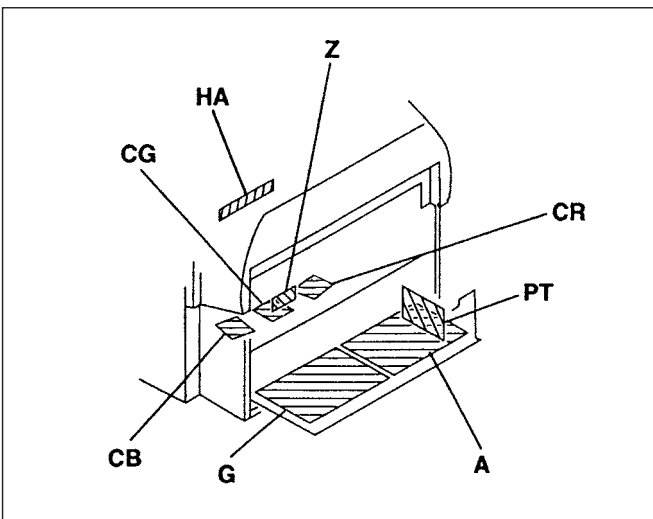
BLOCK DIAGRAM (3)



6-2. FRAME SCHEMATIC DIAGRAM



6-3. CIRCUIT BOARDS LOCATION



6-4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note:
• Capacitors without voltage indication are all 50V.
• All resistors are in ohms.
• Indication of resistance, which does not have one for rating electrical power, is as follows:
Pitch: 5mm
Rating electrical power: 1/4 W

- : nonflammable resistor.
- : fusible resistor.
- : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-chassis.
- The components identified by in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
- When replacing components identified by , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by and repeat the adjustment until the specified value is achieved. (Refer to R514, R561 and C514 adjustment on Page xx - xx.)
- When replacing the part in below table, be sure to perform the related adjustment.

Part replaced ()	Adjustment ()
C514, C515, C516, IC651, T502, T503, T504, DY	HV Reagurator (C514)
C507, C513, D501, D504, D507, IC301, IC501, IC651, R502, R514, R516, R517, R539, R560, R561, T502, T503, T504, DY	HV HOLD-DOWN (R514, R561)

- As to the voltage value shown by the semiconductors on the Schematic Diagram, see the another list.
- Readings are taken with a color-bar signal input.
- Readings are taken with a 10M Ω digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- *: Measurement impossibility.
- Circled numbers are waveform references.
- --- : B+ bus.
- - - - : B- bus.
- : signal path.(RF)

Reference information
RESISTOR : RN METAL FILM
: RC SOLID
: FFRD NONFLAMMABLE CARBON
: FRDSE NONFLAMMABLE FUSIBLE
: RW NONFLAMMABLE WIREWOUND
: RS NONFLAMMABLE METAL OXIDE
: RB NONFLAMMABLE CEMENT
: * ADJUSTMENT RESISTOR
COIL : LF-BL 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 display is on the component side.

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

The symbol indicate fast operating fuse. Replace only with fuse of same rating as maked.

Note: Les composants identifiés par un trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Le symbole indique une fusible a action rapide. Doit etre remplacée par une fusible de meme valeur, comme maque.

Terminal name of semiconductors in silk screen printed circuit (*)

Device	Printed symbol	Terminal name	Circuit
① Transistor		Collector Base Emitter	
② Transistor		Collector Base Emitter	
③ Diode		Cathode Anode	
④ Diode		Cathode Anode (NC)	
⑤ Diode		Cathode Anode (NC)	
⑥ Diode		Common Anode Cathode	
⑦ Diode		Common Anode Cathode	
⑧ Diode		Common Anode Anode	
⑨ Diode		Common Anode Anode	
⑩ Diode		Common Cathode Cathode	
⑪ Diode		Common Cathode Cathode	
⑫ Diode		Anode Cathode Anode Cathode	
⑬ Transistor (FET)		Drain Gate Source	
⑭ Transistor (FET)		Drain Gate Source	
⑮ Transistor (FET)		Source Drain Gate	
⑯ Discrete semiconductor			

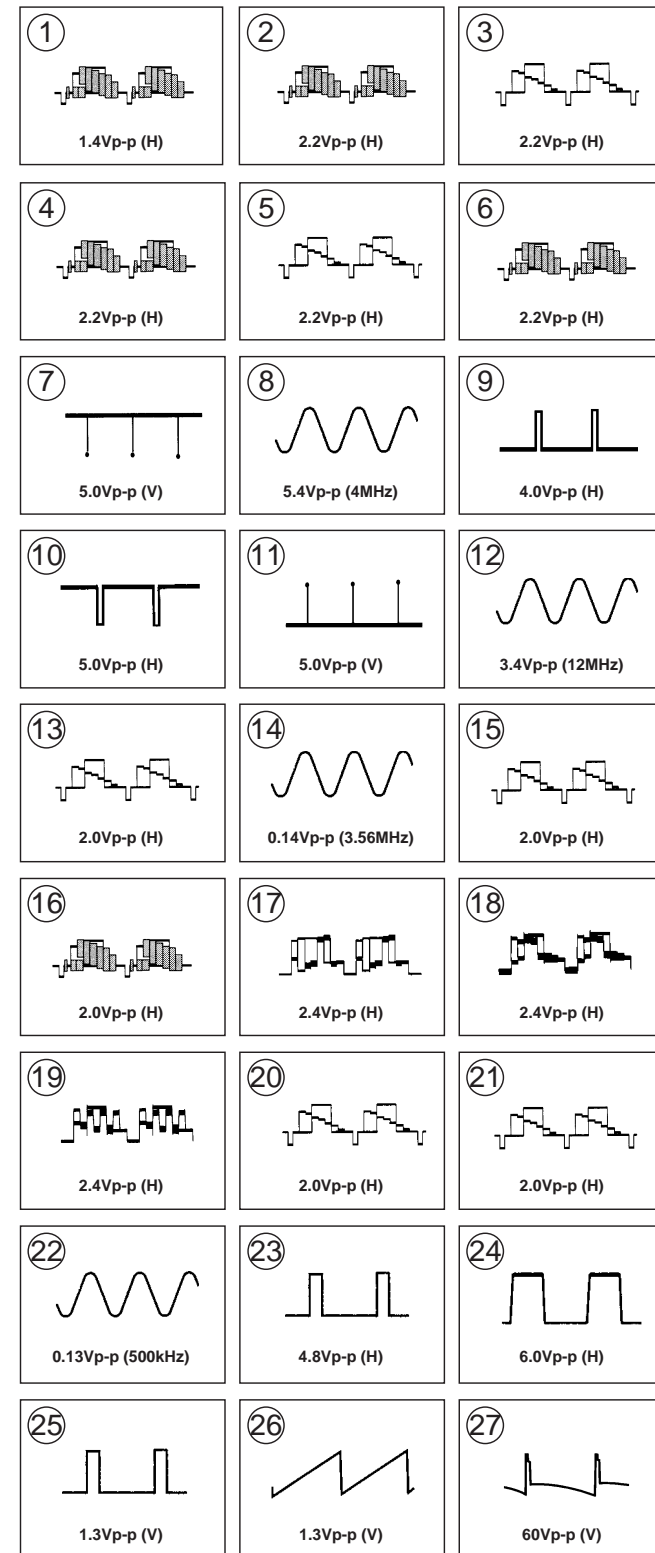
(Chip semiconductors that are not actually used are included.)

A BOARD IC VOLTAGE LIST

REF.	Pin NO.	VOL.	REF.	Pin NO.	VOL.	REF.	Pin NO.	VOL.	REF.	Pin NO.	VOL.	REF.	Pin NO.	VOL.
IC001	①	0	IC001	⑩	4.7	IC201	①	4.2	IC401	①	0	IC402	①	0
	②	0		⑪	4.9		②	0		②	0		②	0
	③	0		⑫	0		③	4.2		③	0		③	4.4
	④	0		⑬	3.7		④	4.8		④	5.0		④	4.9
	⑤	4.8		⑭	0		⑤	4.7		⑤	5.0		⑤	4.4
	⑥	0		⑮	4.1		⑥	4.7		⑥	6.7		⑥	4.4
	⑦	0		⑯	0		⑦	4.8		⑦	4.2		⑦	4.4
	⑧	0		⑰	4.4		⑧	4.8		⑧	4.2		⑧	4.4
	⑨	0		⑱	4.9		⑨	4.7		⑨	4.2		⑨	4.4
	⑩	4.3		⑲	0		⑩	4.8		⑩	4.1		⑩	5.1
IC002	⑪	1.8	IC002	⑲	0	IC003	⑪	4.2	IC004	⑪	4.2	IC005	⑪	4.4
	⑫	0		⑳	4.9		⑫	4.2		⑫	4.2		⑫	4.4
	⑬	4.9		㉑	GND		⑬	GND		⑬	GND		⑬	4.4
	⑭	2.4		㉒	GND		⑭	GND		⑭	GND		⑭	4.4
	⑮	2.1		㉓	GND		⑮	GND		⑮	GND		⑮	4.4
	⑯	4.9		㉔	GND		⑯	GND		⑯	GND		⑯	4.4
	⑰	2.3		㉕	GND		⑰	GND		⑰	GND		⑰	4.4
	⑱	2.4		㉖	GND		⑱	GND		⑱	GND		⑱	4.4
	㉑	0		㉗	GND		㉑	GND		㉑	GND		㉑	4.4
	㉒	0		㉘	GND		㉒	GND		㉒	GND		㉒	4.4
IC003	⑲	0	IC003	㉙	4.8	IC004	⑲	4.2	IC005	⑲	4.2	IC006	⑲	4.4
	⑳	0		㉚	4.8		⑳	4.2		⑳	4.2		⑳	4.4
	㉑	0		㉛	2.2		㉑	4.2		㉑	4.2		㉑	4.4
	㉒	0		㉜	4.9		㉒	4.2		㉒	4.2		㉒	4.4
	㉓	0		㉝	2.2		㉓	4.2		㉓	4.2		㉓	4.4
	㉔	0		㉞	GND		㉔	4.2		㉔	4.2		㉔	4.4
	㉕	0		㉟	GND		㉕	4.2		㉕	4.2		㉕	4.4
	㉖	0		㊱	GND		㉖	4.2		㉖	4.2		㉖	4.4
	㉗	0		㊲	GND		㉗	4.2		㉗	4.2		㉗	4.4
	㉘	0		㊳	GND		㉘	4.2		㉘	4.2		㉘	4.4
	㉙	0		㊴	GND		㉙	4.2		㉙	4.2		㉙	4.4
IC004	⑲	0	IC004	㊵	4.8	IC005	⑲	4.2	IC006	⑲	4.2	IC007	⑲	4.4
	⑳	0		㊶	4.8		⑳	4.2		⑳	4.2		⑳	4.4
	㉑	0		㊷	2.2		㉑	4.2		㉑	4.2		㉑	4.4
	㉒	0		㊸	4.9		㉒	4.2		㉒	4.2		㉒	4.4
	㉓	0		㊹	2.2		㉓	4.2		㉓	4.2		㉓	4.4
	㉔	0		㊺	GND		㉔	4.2		㉔	4.2		㉔	4.4
	㉕	0		㊻	GND		㉕	4.2		㉕	4.2		㉕	4.4
	㉖	0		㊼	GND		㉖	4.2		㉖	4.2		㉖	4.4
	㉗	0		㊽	GND		㉗	4.2		㉗	4.2		㉗	4.4
	㉘	0		㊾	GND		㉘	4.2		㉘	4.2		㉘	4.4
	㉙	0		㊿	GND		㉙	4.2		㉙	4.2		㉙	4.4
IC005	⑲	0	IC005	㊿	4.8	IC006	⑲	4.2	IC007	⑲	4.2	IC008	⑲	4.4
	⑳	0		㊿	4.8		⑳	4.2		㉑	4.2		㉑	4.4
	㉑	0		㊿	2.2		㉑	4.2		㉒	4.2		㉒	4.4
	㉒	0		㊿	4.9		㉒	4.2		㉓	4.2		㉓	4.4
	㉓	0		㊿	2.2		㉓	4.2		㉔	4.2		㉔	4.4
	㉔	0		㊿	GND		㉔	4.2		㉕	4.2		㉕	4.4
	㉕	0		㊿	GND		㉕	4.2		㉖	4.2		㉖	4.4
	㉖	0		㊿	GND		㉖	4.2		㉗	4.2		㉗	4.4
	㉗	0		㊿	GND		㉗	4.2		㉘	4.2		㉘	4.4
	㉘	0		㊿	GND		㉘	4.2		㉙	4.2		㉙	4.4
	㉙	0		㊿	GND		㉙	4.2		㉚	4.2		㉚	4.4

All voltages are in V.
Pin number which are not described are not used.

A BOARD WAVEFORMS



A BOARD TRANSISTOR VOLTAGE LIST

REF.	VOL.	REF.	VOL.	REF.	VOL.
Q001	B 0	Q213	B 4.9	Q312	B 5.7
	C GND		C 0		C 9.8
	E 4.8		E 5.0		E 5.3
Q002	E 2.0	Q214	B 0	Q313	B 4.8
	C GND		C 4.9		C 7.7
	B 3.8		B 0		B 1.5
Q003	E 3.8	Q216	E GND	Q314	E GND
	C GND		C 0		C 4.5
	B 5.4		B 0		B 3.6
Q004	E 4.9	Q217	E GND	Q402	E GND
	C 1.0		C 0		B 13.2
	B 4.9		B 0		E 26.3
Q005	E 4.9	Q218	B 0	Q403	C 26.2
	C 0.7		C 8.9		B 11.8
	B 8.8		B 5.1		C -1.3
Q006	E 8.9	Q219	E 4.5	Q405	B 11.9
	C 0		C 8.2		B 11.8
	B 0.1		E 4.1		C -1.3
Q007	C 4.8	Q220	C 9.0	Q406	B 3.6
	B 0.1		B 5.1		C 0
	E GND		E 4.4		B 13.2
Q008	E GND	Q226	C 8.4	Q408	E GND
	C 4.3		C 8.4		C 0
	B 0		B 0.9		B 3.6
Q009	E 5.3	Q301	E 1.5	Q409	E GND
	C 4.8		C GND		C 0
	B 4.3		B 0.9		B 3.6
Q013	E 3.7	Q302	E 1.5	Q410	E GND
	C 5.0		C GND		C 4.9
	B -0.2		B 4.4		B 13.2
Q015	E GND	Q303	E 3.8	Q411	E 26.3
	C 0		C 8.8		C 26.2
	B -0.2		B 2.9		B 0
Q016	E GND	Q304	E 3.5	Q1101	E GND
	C 0		C 8.4		C 0
	B -0.2		B 6.6		B 4.5
Q017	E GND	Q305	E 5.9	Q1501	E 0.1
	C 0		C 8.2		C 14.4
	B 1.5		B 0.9		B 0.6
Q021	E 0.8	Q306	E 1.6	Q2105	E GND
	C 4.5		C GND		C 0
	B 0		B 5.0		B 0
Q026	E GND	Q307	E 4.3	Q2106	E 0
	C 0		C 8.8		C 5.0
	B 0		B 4.5		B 0
Q027	E GND	Q308	E 5.1	Q2107	E GND
	C 5.3		C GND		C 0
	B 0		B 4.2		B 0
Q029	E GND	Q311	E 5.1	Q2108	E GND
	C 0		C 8.8		C 0
	B 0		B 4.5		B 0

All voltages are in V.

Schematic diagram
A board →

