

KV-27XBR37/27XBR37M/32XBR37

RM-Y122/MDR-IF310

SERVICE MANUAL

US Model

KV-27XBR37

Chassis No. SCC-F84T-A

KV-32XBR37

Chassis No. SCC-F84U-A

Canadian Model

KV-27XBR37

Chassis No. SCC-F85P-A

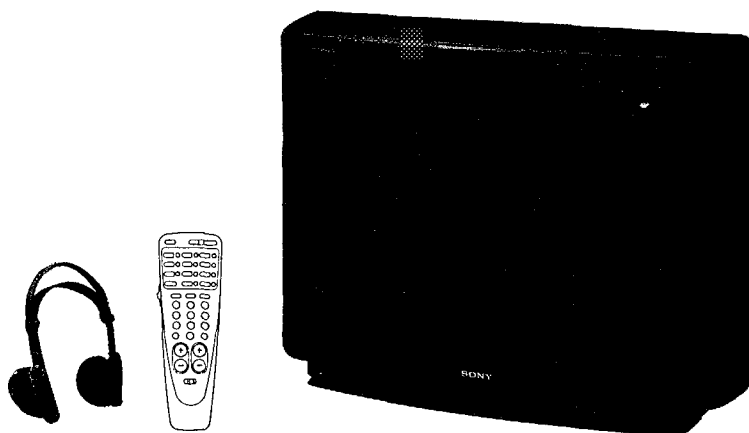
KV-32XBR37

Chassis No. SCC-F85Q-A

E Model

KV-27XBR37M

Chassis No. SCC-F89J-A



AA-1 CHASSIS

MODELS OF THE SAME SERIES

KV-27XBR37/27XBR37M/32XBR37	KV-27V10/27V15/29V10C/29V10M/32V15
KV-27S10/27S15/29RS10 KV-29RS15/32S10/32S15	KV-27TS29/27TS32/27TS36 KV-32TS36/32TS46

SPECIFICATIONS

Television system	American TV standards	Input	VIDEO and S VIDEO
Channel coverage	VHF: 2-13		S VIDEO IN
	UHF: 14-69		Y: 1 Vp-p, 75-ohms unbalanced, sync negative
	CABLE TV: 1-125		C: 0.286 Vp-p (Burst signal), 75-ohms
Picture tube	Hi-Black™ Trinitron® tube		Video: 1 Vp-p, 75-ohms
	27-inch picture measured diagonally		unbalanced, sync negative
	(KV-27XBR37/27XBR37M)		Audio: 500 mVrms
	32-inch picture measured diagonally		(100% modulation)
	(KV-32XBR37)		Impedance: 47 kilo-ohms
Antenna	75-ohm external antenna terminal		
	for VHF/UHF		

- Continued on next page -



996580201



TRINITRON® COLOR TV
SONY®

Output

AUDIO OUT :

More than 900 mVrms at the
maximum volume setting (variable)
More than 500 mVrms (fix)
Impedances : 5 kilo-ohms

MONITOR OUT :

Video (phono jack) : 1 Vp-p, 75 ohm
unbalanced, syncnegative
Audio (phono jack) : 500 m Vrms
(100 % modulation) Impedance
10 kilo-ohms

Speaker output 15W×2 7.5 ohm

Center speaker 16 W (NOR), 16 ohm
30 W (MAX)

Power requirements 120 V AC, 60Hz

Power consumption

KV-27XBR37	180 W
KV-27XBR37M	180 W
KV-32XBR37	190 W

standby mode 6 W

Dimensions/Weight

	Dimensions (w/h/d)	Weight
KV-27XBR37 /27XBR37M	756×577.8×519.5 mm (29.8×22.7×20.5 inches)	48.8 kg (107.4 lbs)
KV-32XBR37	870×663×754.8 mm (34.3×26.1×22.6 inches)	74.45 kg (163.8 lbs)

Supplied accessories

Remote Commander RM-Y122
size AA (R6) battery

Optional accessories

Cordless headphone system MDR-IF310
U/V mixer EAC-66
Connecting cable
VMC-810S/820S, VMC-720M,
YC-15V/30V, RK-74A

Design and specifications are subject to change without notice.

(CAUTION)

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

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY
SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF
LIVE CHASSIS.

THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO
THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK Δ ON THE
SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS
LIST ARE CRITICAL 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.

(ATTENTION)

APRES AVOIR DECONNECTE LE CAP DE L'ANODE,
COURTCIRCUITER L'ANODE DU TUBE CATHODIQUE ET
CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE
L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE
TUBE CATHODIQUE OU AU BLINDAGE DU TUBE
CATHODIQUE.

ATTENTION!!

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION
PROVENANT D'UN CHÂSSIS SOUS TENSION, UN
TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ
LORS DE TOUT DÉPANNAGE.

LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT
RACCORDÉ À L'ALIMENTATION SECTEUR.

**ATTENTION AUX COMPOSANTS RELATIFS À LA
SÉCURITÉ!!**

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR
UNE MAPQUE Δ SUR LES SCHEMAS DE PRINCIPE, LES
VUES EXPLOSÉES ET LES LISTES DE PIÈCES CONT D'UNE
IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU
FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES
COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST
INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES
SUPPLÉMENTS PUBLIÉS PAR SONY. LES REGLAGES DE
CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA
SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS
LE PRÉSENT MANUEL. SUIVRE CES PROCEDURES LORS
DE CHAQUE REMPLACEMENT DE COMPOSANTS
CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT
EST SUSPECTÉ.

SAFETY CHECK-OUT

(US model only)

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

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

LEAKAGE TEST

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

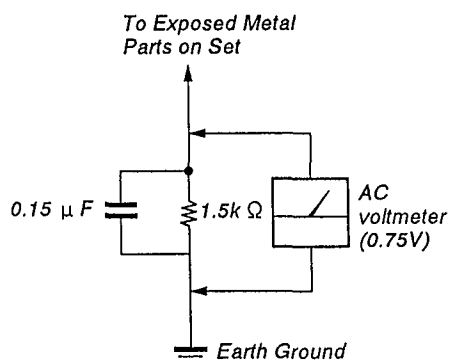


Fig. A. Using an AC voltmeter to check AC leakage.

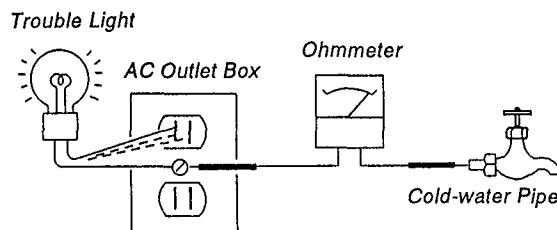


Fig B. Checking for earth ground.

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SECTION 1 GENERAL

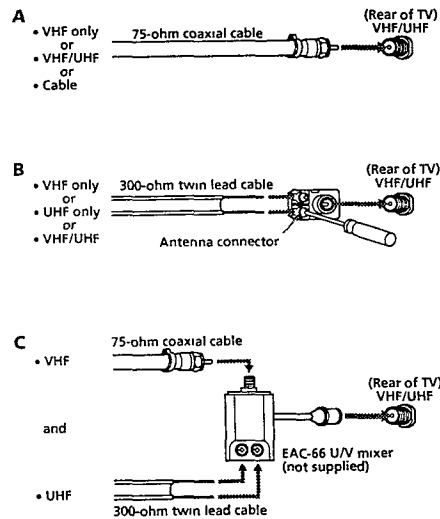
The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

Step 1: Connections

Either an indoor antenna or outdoor antenna should be used with your TV, we recommend that you connect an outdoor antenna or a cable TV system to get better picture quality.

How to connect different types of cables

The illustrations below show the examples of connecting different types of cables to the TV directly.

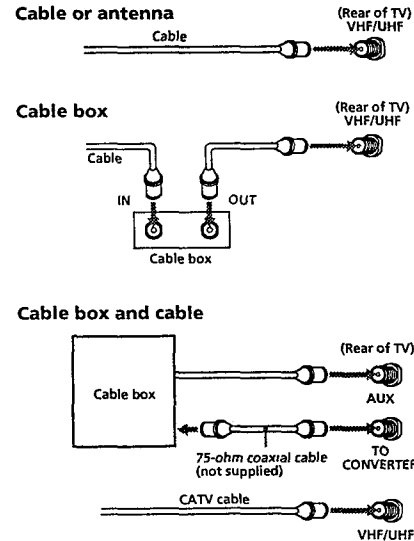


Notes

- Most VHF/UHF combination antennas have a signal splitter. Remove the splitter before attaching the appropriate connector.
- If a U/V mixer is used, snow and noise may appear in the picture when viewing cable TV channels over 37 (W +1).

Connecting an antenna/cable TV system without a VCR

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



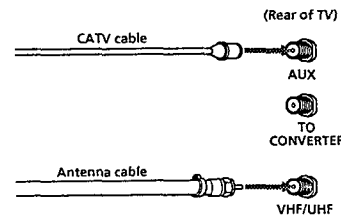
Pay cable TV systems use scrambled or encoded signals requiring the cable box* in addition to the normal cable connection.

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

Note

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

Cable and antenna



Note

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

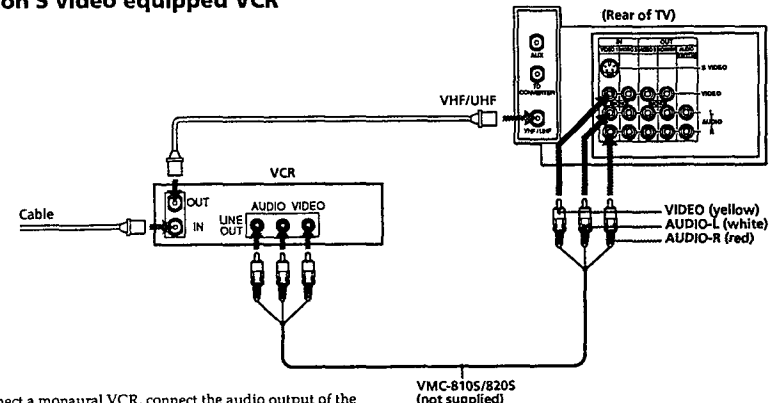
Connecting an antenna/cable TV system with a VCR

To connect your VCR to the TV, first check the model number of your TV and select the corresponding connection. For details on connection, see the instruction manual of your VCR. Before making connection, disconnect the AC power cords of the equipment to be connected.

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 simultaneously by using the PIP feature.

Without a cable box To a non S video equipped VCR

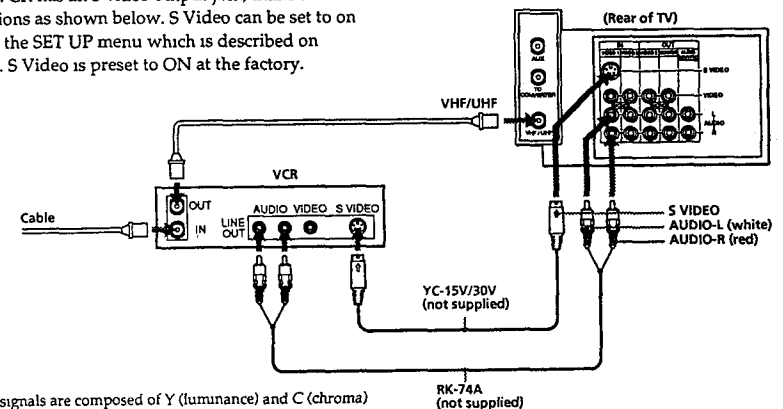


Note

- To connect a monaural VCR, connect the audio output of the VCR to AUDIO-L (mono) of VIDEO 1 IN on the TV.

To an S video equipped VCR

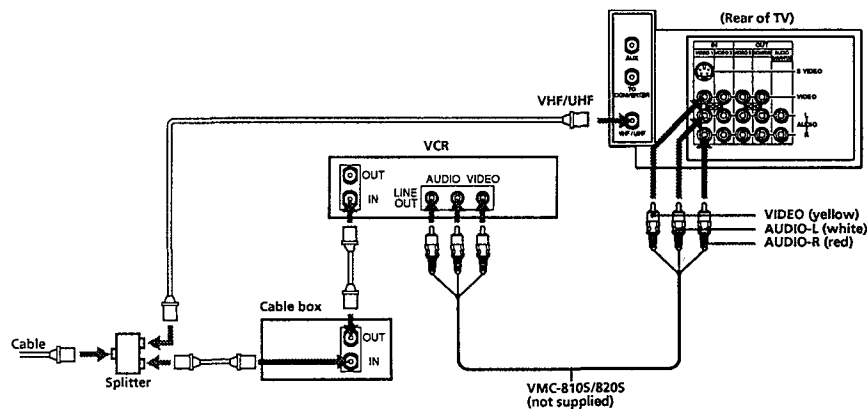
If your VCR has an S video output jack, make the connections as shown below. S Video can be set to on or off in the SET UP menu which is described on page 12. S Video is preset to ON at the factory.



Note

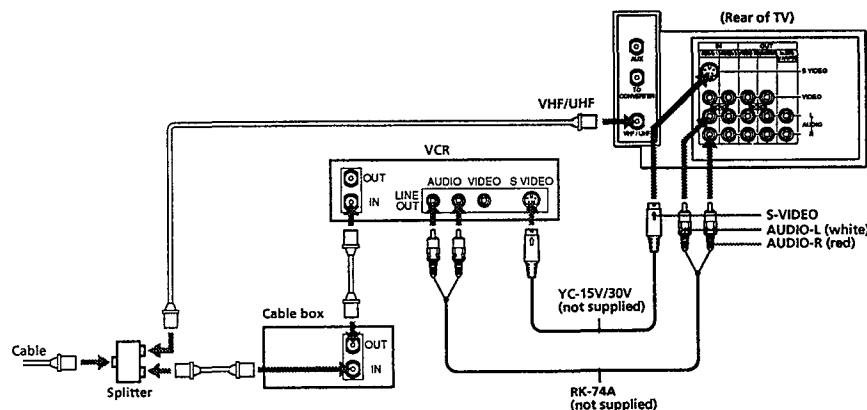
- Video signals are composed of Y (luminance) and C (chroma) signals. The S connection sends the two signals separately preventing degradation, and gives better picture quality compared to conventional connection.

**With a cable box
To a non S video equipped VCR**



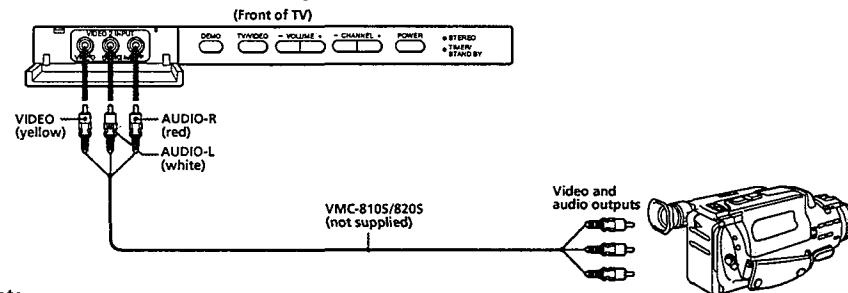
- Note**
- To connect a monaural VCR, connect the audio output of the VCR to AUDIO-L (mono) of VIDEO 1 IN on the TV.

To an S video equipped VCR with a cable box



Connecting a camcorder

This connection is convenient for viewing a tape played by a camcorder.

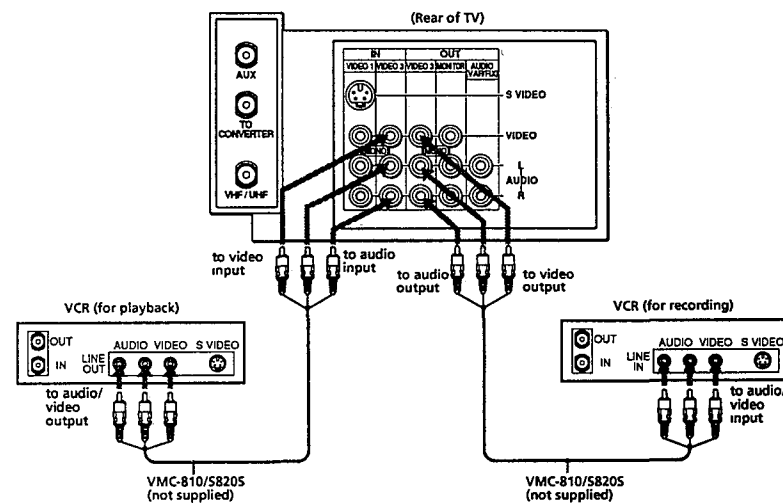


- Note**
- To connect a monaural camcorder, connect the audio output of the VCR to AUDIO-L (mono) of VIDEO 2 INPUT on the TV.

Connecting two VCRs for tape editing using VIDEO 3 IN and OUT

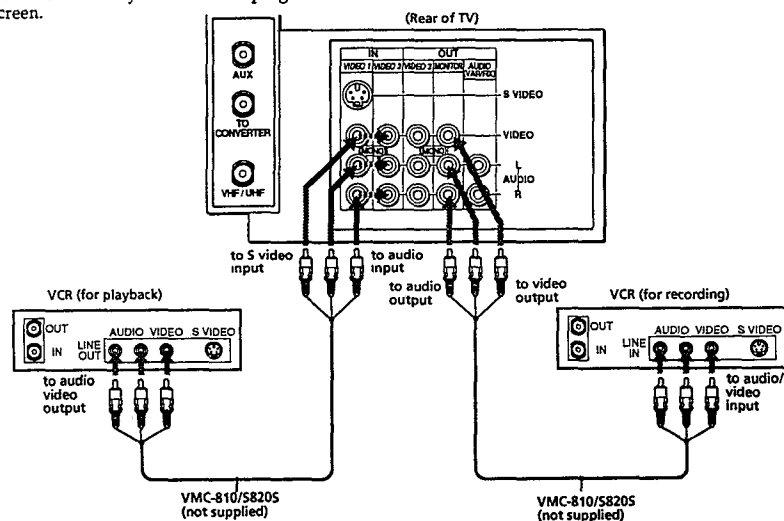
Watching a different image while recording

If you connect the VCR for playback to the VIDEO 3 IN jacks and the VCR for recording to the VIDEO 3 OUT jacks, the material from the playback VCR will be recorded on the recording VCR. Please note that VIDEO 3 OUT can only output material from VIDEO 3 IN. During the above recording process you can view video sources from either antenna, cable, VIDEO 2 IN or VIDEO 1 IN jacks as well.



Connecting two VCRs for tape editing using MONITOR OUT

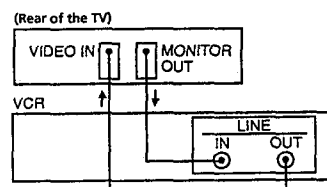
MONITOR OUT allows you to record a program that is on the screen.



The above type of connection should only be used when you connect from the line input of one VCR, and from the line output of a second VCR.

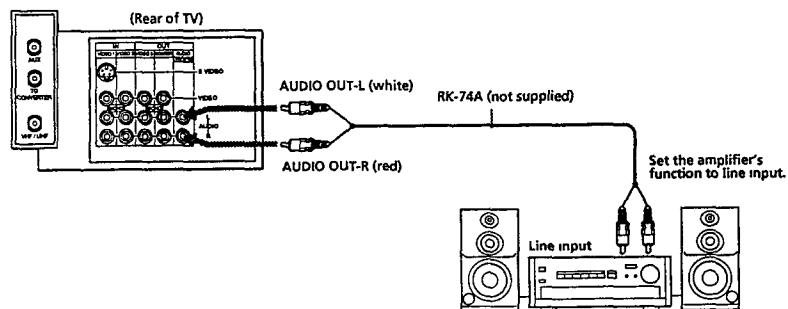
Notes

- Do not change the input signal while editing through MONITOR OUT, or the output signal will also change.
- When connecting a single VCR to the TV, do not connect the MONITOR OUT jacks at the rear of the TV to the VCR's line input, while at the same time connecting from the TV's VIDEO IN jacks to the VCR's line output, as shown above.
- You can use the S video jack to connect a VCR for playback and the composite video jack to connect a VCR for recording.



Connecting an audio system

When connecting an audio equipment, see page 21 and 22 for more information.

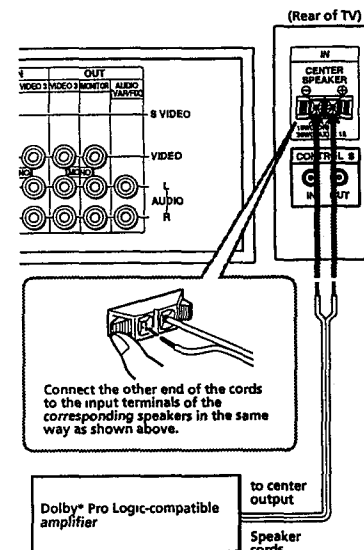


Using the TV speakers as center speakers

This feature allows you to enjoy the benefits of Dolby Pro Logic by using the speakers of the TV as the center speaker. To utilize this system you must have an amplifier that is Dolby Pro Logic compatible. Connect the speaker wires from the amplifier's center channel output terminals to the TV's Center Speaker In terminals. Both right and left terminals must be connected to receive an audio signal. After making the above connections select "SPEAKER : CENTER" from the AUDIO menu (page 19). The left and right audio channels can be heard through your audio system speakers. Please note that in this set up the volume can only be adjusted by your amplifier.

Notes

- Always match the speaker cord and terminal colors when making the connections.
- Unplug the TV when making the connections. If the exposed speaker cord wires touch while the TV is plugged in, the TV may short-circuit and be damaged.
- Do not pull on the speaker cords.
- Always turn off the amplifier power before connecting to CENTER SPEAKER IN.
- Always match the speaker cord and terminal colors when making the connection.

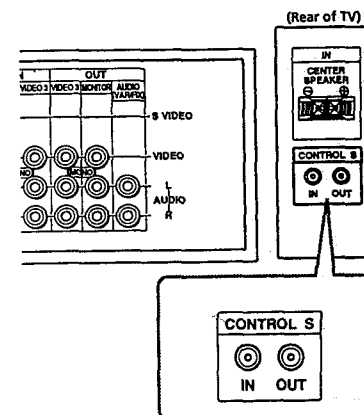


* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under one or more of the following patents; U.S. numbers 3,632,886, 3,746,792 and 3,959,590. "Dolby" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

Connecting other Sony equipment with CONTROL S jack

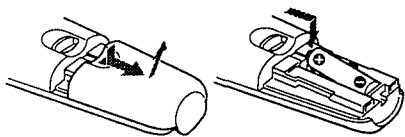
This feature allows you to control your TV and other SONY components with one remote commander. You can either control the TV with a remote commander from a SONY component or control the SONY component with the TV's remote commander. The connections for the above options are described below.

- To control other Sony equipment with the TV's remote commander, connect the input of the equipment to CONTROL S OUT jack on the TV.
- To control the TV with the remote commander of other Sony equipment, connect the output of the equipment to CONTROL S IN jack on the TV.



Step 2: Setting up the remote commander

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



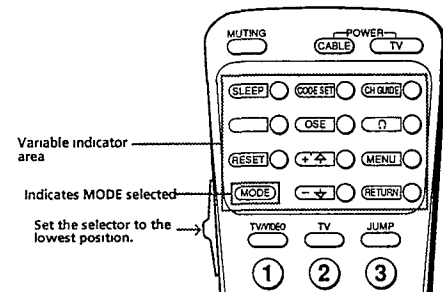
Notes

- With normal use, the battery should last for approximately six months
- If you do not use the remote commander for an extended period of time, remove the battery to avoid possible damage from battery leakage.
- Do not handle the remote commander roughly. Do not drop it, step on it or let it get wet
- Do not place the remote commander in direct sunlight, near a heater, or where the humidity is high.

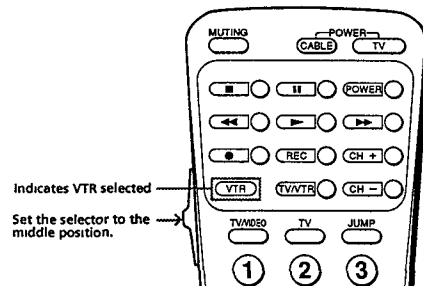
Using the remote commander

This remote commander has three different operation modes which are selected by sliding a switch on the upper left side of the remote commander. The three operation modes are (1) for normal TV viewing, (2) for operating video equipment, and (3) for using the PIP feature. The functions that are necessary for each of the operations appear in the button windows as the switch is moved up and down.

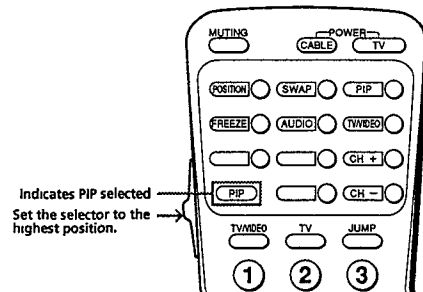
For normal TV viewing



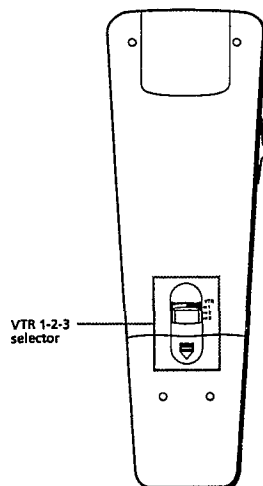
For operating video equipment



For using the Picture-in-Picture feature

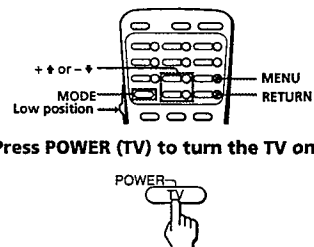


Rear of the remote commander



Step 3: Setting cable TV on or off

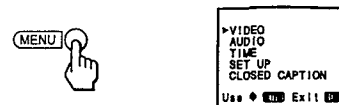
This setting allows you to view either broadcast or cable signals. The factory setting for cable TV is ON, which means that you are viewing cable TV. Therefore, if you do not desire to view cable TV you must turn it off as shown below.



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

2 Press MENU.

The main menu appears.



3 Press + + or - - to move the cursor (▶) to SET UP and press RETURN.

The SET UP menu appears.



If you are in one of the video modes, the CABLE lettering will be black on the menu. To display the CABLE lettering you must press TV on the remote commander until a channel number appears on the screen.

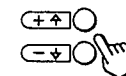
4 Set CABLE to ON or OFF:

(1) Make sure the cursor (▶) is beside CABLE and press RETURN.

If the cursor is not beside CABLE, press + + or - - to move the cursor and press RETURN.



(2) Press + + or - - to select ON or OFF and,



(3) press RETURN.



5 Press MENU to return to the normal screen.



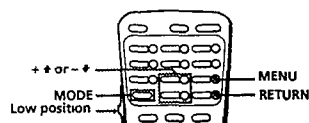
About the DEMO feature

Press DEMO button on the front panel.

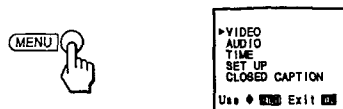
The functions and menus are displayed one by one.

Step 4: Presetting channels

This AUTO PROGRAM feature is used to easily preset TV channels. By deleting and adding channels you can custom tailor the channels received. Preset channels during the day rather than late at night, since some channels go off the air during this time and will not be preset.



1 Press MENU.



2 Press + or - to move the cursor (P) to SET UP and press RETURN.



3 Press + or - to move the cursor (P) to AUTO PROGRAM and press RETURN.



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

4 Press MENU to return to the original screen.

Note

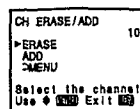
- If you are in one of the video modes, the AUTO PROGRAM lettering will be black on the menu. To display the AUTO PROGRAM lettering you must press the TV/VIDEO or TV button until a channel number appears.
- In case of using the AUX connector, AUTO PROGRAM is also available for the AUX input. Press the TV button on the remote commander first and make sure that "AUX" is displayed beside the channel number on the screen. Then follow steps 1 to 3 above.

Erasing or adding channels

1 Press MENU.

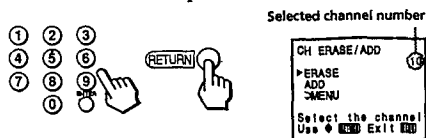
2 Press + or - to move the cursor (P) to SET UP and press RETURN.

3 Press + or - to move the cursor (P) to CH ERASE/ADD and press RETURN.



4 Erase and/or add the channel you want:

- To erase an unwanted channel**
- Make sure the cursor (P) is beside ERASE.
 - Press CH +/- to select the channel you want to erase and, press RETURN.

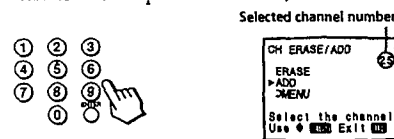


The indication "-" appears beside the channel number, showing that the channel is erased from the preset memory.

(continued)

To add a desired channel

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



(3) Press RETURN.

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

5 To erase and/or add other channels, repeat step 4.

6 When you finish, press MENU.

Note

- If you erase or add a VHF or UHF channel, the cable TV channel with the same number is also erased or added, and vice versa.
- Erasing and adding channels are also available for the AUX input

Setting S video on or off

You can change the S VIDEO menu to ON or OFF.

1 Press TV/VIDEO to select VIDEO 1.



2 Press MENU.

3 Press + or - to move the cursor (P) to SET UP and press RETURN.

4 Press + or - to move the cursor (P) to S VIDEO and press RETURN.



5 Press + or - to select ON or OFF and press RETURN.

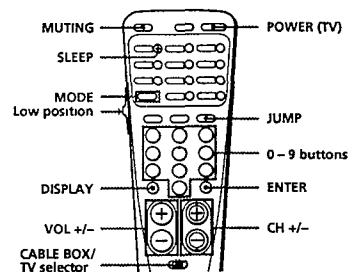


6 Press MENU to return to the original screen.

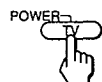
Notes

- If S VIDEO appears in black on the menu, press the TV/VIDEO button until VIDEO 1 is selected.
- If you set S VIDEO to ON, the TV automatically receives S video signals whenever a VCR with S video is connected.

Watching the TV



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

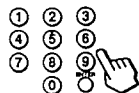


If "VIDEO" appears on the screen, press the TV/VIDEO or TV button until a channel number appears on the screen.

2 Select the desired channel:

To select a channel directly

Press the 0-9 buttons and then press ENTER.



To scan through channels

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



3 Press VOL +/- to adjust the volume.



Note

- Set the CABLE BOX/TV selector to TV.

Switching quickly between two channels

Press JUMP.

The channel you watched previously appears.



Pressing JUMP again returns you to the original channel.

Muting the sound

Press MUTING.

There is no audio and "MUTING" appears on the screen.



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

Displaying on-screen information

Use this feature to display the channel number, the current time (if set), channel caption (if set), headphone (if set), and MTS mode (if SAP is selected). Headphones and SAP indications will disappear after 4 seconds.

Press DISPLAY.



To cancel the display, press DISPLAY again.

(continued)

Setting the Sleep Timer

The 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: 30 → 60 → 90 → OFF.



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

Changing the VHF/UHF input to the AUX input

Press TV.

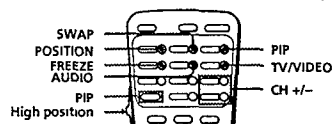
"AUX" appears beside the channel number.



Pressing TV again switches back to the previous input.

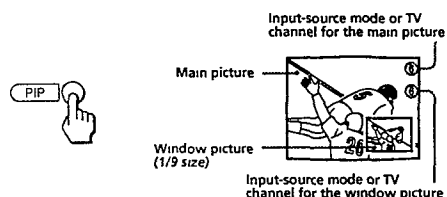
Watching two programs at the same time — PIP

The Picture in Picture (PIP) feature allows you to watch two channels at the same time by displaying a 1/9 size or 1/16 size window picture within the main picture.

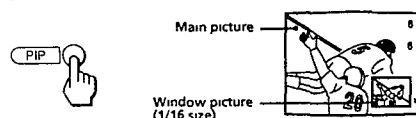


Displaying a window picture

Press PIP.



Press PIP again to display a smaller window picture.



Each time you press PIP, the size of the window picture changes as follows: 1/9 size → 1/16 size → OFF.

To remove the window picture, press PIP repeatedly until the window picture disappears.

Notes

- If the main picture is not receiving an image, the window picture may be in black and white
- The window picture may be affected by the condition of the main picture
- You can listen to the window picture's sound through the AUDIO OUT (VAR/FIX) jacks

Changing the window picture input mode

Press TV/VIDEO in the PIP control area to select the input mode.

Each time you press TV/VIDEO, "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.

Listening to the sound of the window picture

Press AUDIO.

The Δ display appears for a few seconds, indicating that the window picture sound is being received.



To restore the main picture sound, press AUDIO again.

Changing TV channels in the window picture

Press CH +/- in the PIP control area.



(continued)

Changing the position of the window picture

Press POSITION.

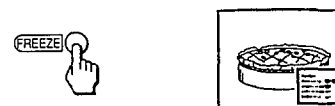
Each time you press POSITION, the window picture will move counterclockwise on the screen.



Freezing the window picture

This feature is useful when you want to write down a recipe from a cooking program, a displayed address or a phone number and so on

Press FREEZE.

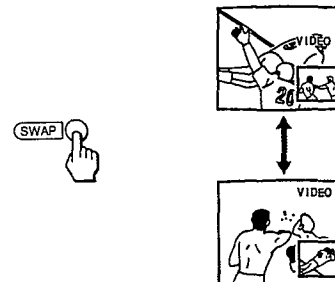


To restore the normal screen, press FREEZE again.

Swapping the main and window pictures

Press SWAP.

Each time you press SWAP, the images and sound with each other of the main and window pictures switch places.

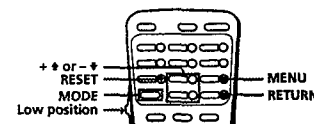


Note

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

Adjusting the picture (VIDEO)

You can adjust the picture quality of TV programs to your preferences by following the instructions below. These adjustments can also be made for your video input programs. The TV program settings and video program settings are stored separately.



1 Press MENU.

2 Make sure the cursor (▶) is beside VIDEO and press RETURN.



3 Select the item you want to adjust. For example:

(1) To adjust brightness, press + or - to select BRIGHT and,

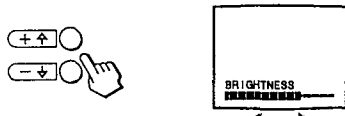


(2) press RETURN.



4 Adjust the selected item:

(1) Press + or - to adjust the item and,



(2) press RETURN.

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.

Description of adjustable items

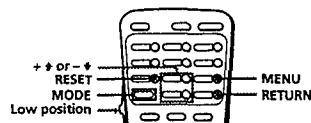
Item	Press + to	Press - to
PICTURE	Increase picture contrast for vivid color	Decrease picture contrast for soft color
HUE	Make skin tones become greenish	Make skin tones become purplish
COLOR	Increase color intensity	Decrease color intensity
BRIGHT	Brighten the picture	Darken the picture
SHARP	Sharpen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

To restore the factory settings

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

Adjusting the sound (AUDIO)

You can adjust the audio quality of the TV programs to your preferences by following the instructions below. These adjustments can also be made for your video input programs. The TV program settings and video program setting are stored separately.



1 Press MENU.

2 Press + or - to select AUDIO and press RETURN.



3 Select the item you want to adjust.

For example:

(1) To adjust bass, press + or - to select BASS and,



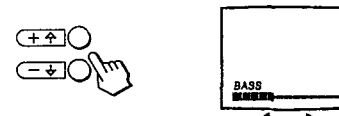
(2) press RETURN.



(continued)

4 Adjust the selected item:

(1) Press + or - to adjust the item and,



(2) press RETURN.

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 above.

Description of adjustable items

Item	Press + to	Press - to
TREBLE	Increase the treble response	Decrease the treble response
BASS	Increase the bass response	Decrease the bass response
BALANCE	Emphasize the right speaker's volume	Emphasize the left speaker's volume

To restore the factory settings

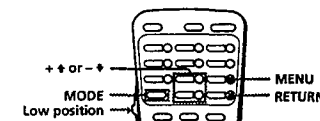
Press RESET while the AUDIO menu is displayed.

Note

- When SPEAKER (page 20) is CENTER and AUDIO OUT (page 21) is in FIXED condition, the sound is set to mid-level and it cannot be adjusted.

Listening to surround sound (SURROUND)

SURROUND feature simulates sound reproduction with the atmosphere of a movie theater or a concert hall. Surround sound is only works with for stereo programs.



1 Press MENU.

2 Press + or - to select AUDIO and press RETURN.

3 Press + or - to select SURROUND and press RETURN.

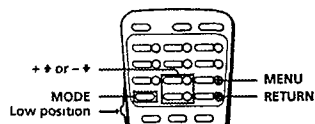


4 Press + or - to select ON and press RETURN.



Selecting stereo or bilingual programs (MTS)

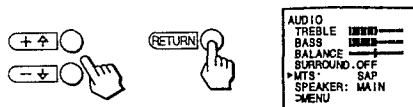
The Multichannel TV Sound (MTS) feature gives you the choice to enjoy stereo sound or Second Audio Programs (SAP) when available. The factory setting is stereo sound (MAIN).



- 1 Press **MENU**.
- 2 Press **+** or **-** to select **AUDIO** and press **RETURN**.
- 3 Press **+** or **-** to select **MTS** and press **RETURN**.



- 4 Press **+** or **-** to select **MAIN**, **SAP**, or **MONO** and press **RETURN**.



Choose	To
MAIN	Listen to stereo sound. The STEREO indicator on the TV lights up while a stereo broadcast is received.
SAP	Listen to bilingual programs. The sound of non-SAP programs will be muted when SAP is selected.
MONO	Reduce noise during stereo broadcasts.

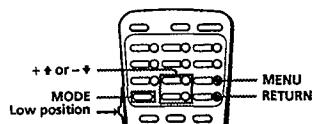
Note

- Stereo and SAP sounds are subject to program sources. Refer to your local TV program listings.

Setting the speakers (SPEAKER)

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

If you use the TV speakers as center speakers and connect a Dolby Pro Logic-compatible amplifier to CENTER SPEAKER IN, after making the connections display the mode set menu and set **SPEAKER** to "CENTER."



- 1 Press **MENU**.
- 2 Press **+** or **-** to select **AUDIO** and press **RETURN**.
- 3 Press **+** or **-** to select **SPEAKER** and press **RETURN**.
- 4 Press **+** or **-** to select **MAIN** and press **RETURN**.
- 5 Press **+** or **-** to select **MAIN** or **CENTER**.

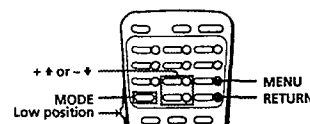


If you select **CENTER** and press **RETURN**, **AUDIO OUT** menu appears. To set audio out menu, press **RETURN** and see "Setting audio out" (page 22) for setting. To turn the speakers off, change **SPEAKER** from **MAIN** to **CENTER** in the **AUDIO** menu.

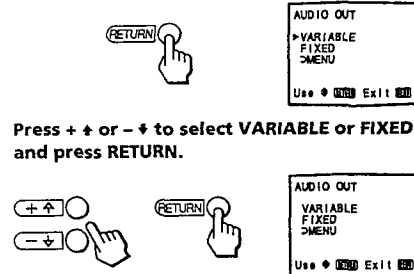
Setting audio out (AUDIO OUT)

This setting allows you to select either a fixed or variable audio output. Fixed audio output means that you cannot adjust the volume and sound characteristics through your TV set. Variable output means that you can adjust the volume, bass, treble and balance through your TV set.

If **SPEAKER** is **CENTER** audio out can either be fixed or variable, however, if the **SPEAKER** is **MAIN**, audio out is variable.



- 1 Follow steps 1-5 in "Setting the speakers" on page 20 to set the speakers to **CENTER** and press **RETURN**.
- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.



- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.



- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

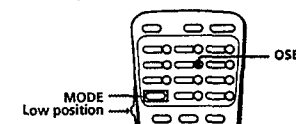
- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

- 2 Press **+** or **-** to select **VARIABLE** or **FIXED** and press **RETURN**.

Listening to orchestra seat effect sound—OSE

Orchestra Seat Effect* (OSE) feature restores the harmonic balance of the sound to dramatically improve the overall reproduction of programs. It gives the sound more clarity, depth, and definition, making the sound more dynamic.



- 1 Press **OSE**. "ORCHESTRA SEAT BBE: LOW" appears on the screen.



- 2 Press **OSE** again. "ORCHESTRA SEAT BBE: HIGH" appears.



- 3 Press **OSE** again. To turn off the OSE.



Use a **LOW** setting for News programs and **HIGH** setting for MUSIC, SPORTS, VIDEO GAME and a MOVIE.

For the best sound quality, we recommend that **AUDIO** to be set at factory setting when **OSE** is set to **ON**.

* Orchestra Seat™ Sound Effect* (OSE) feature restores the harmonic balance of the sound to dramatically improve the overall reproduction of programs. Orchestra Seat™ Sound Effect is using BBE technology under licence from BBE sound Inc.

Note

- OSE will take effect on audio out.

Listening with the cordless headphones (HEADPHONES)

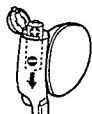
Setting up the headphones

Install the supplied batteries into the headphones:

- (1) Open the battery compartment lids at the ends of both earpads.



- (2) Insert a size AA (R6) battery into each compartment with correct polarity and close the lids.



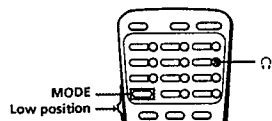
Battery life

When used continuously, the batteries will last.

- up to 120 hours with size AA (R6) alkaline batteries
- up to 60 hours with size AA (R6) manganese batteries.

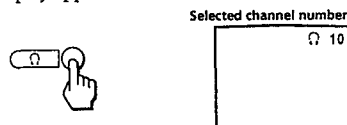
Replace both batteries with new ones when the power indicator darkens and the sound deteriorates

Using the headphones

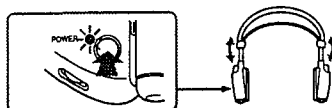


1 Press HEADPHONES.

The Ω display appears for about three seconds.



2 Press POWER on the headphones.



3 Adjust the headphones volume.

You can adjust the right and left volume independently.



To turn off the headphones

Press POWER on the headphones, then press HEADPHONES.



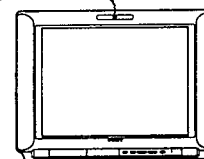
- If you want to only listen to the sound from the cordless headphones, turn down the TV speaker volume or press MUTING.

(continued)

To get better sound

- Do not cover the infrared emitter on the TV.
- Do not cover the infrared transmitter.

Cordless headphones infrared transmitter



To turn off the sound from the TV's speaker

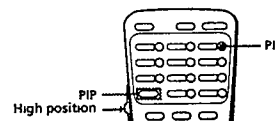
Press VOL - until the sound disappears, or set SPEAKER to center (see "Setting the speakers" on the previous page 20).

Notes

- The sound characteristics heard through the headphones cannot be modified in the same manner as the sound characteristics heard through the TV's speakers. Treble, bass, balance, settings are fixed: Surround, BBE, and muting features are not available.
- After you have finished listening with the headphones it is recommended that you turn the headphones power off before pressing Headphones. Otherwise noise will be heard through the headphones.
- To prevent hearing damage due to sudden or prolonged excessive volume, do not raise the headphones volume too high while listening

Listening to sound from a window picture (PIP)

Follow these instructions to select the audio source that you want to receive through the cordless headphones (main or window picture). If you want to listen to sound from the window picture, make sure that the sound from the window picture is being received.

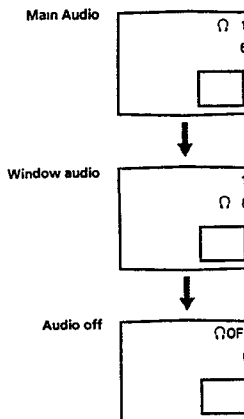


1 Press PIP to display a window picture.



2 Press HEADPHONES.

Each time you press HEADPHONES, the audio source changes to main picture, window picture and "OFF" in sequence. The Ω display appears with the input mode.

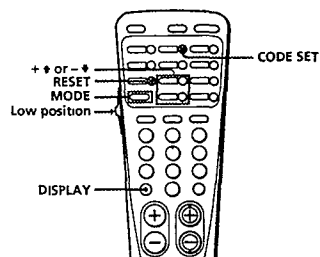


Notes

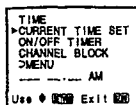
- If you turn the PIP function off, the sound from the cordless headphones changes to the main picture sound.
- If you turn off the TV, the next time you turn on the TV the headphones are off.

Setting the clock (CURRENT TIME SET)

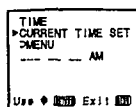
Setting the clock enables you to turn the TV on and off with the timer, or to block a TV channel from being watched at a certain time.



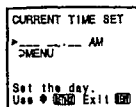
- 1 Press MENU.
- 2 Press + or - to select TIME and press RETURN.



- 3 Make sure the cursor (▶) is beside CURRENT TIME SET and press RETURN.

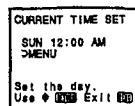


- 4 Press RETURN again.

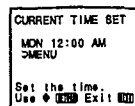


5 Set the day:

- (1) Press + or - to set the day and,

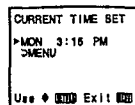


- (2) press RETURN.



6 Set the time, hour (AM or PM) and minutes as you did the day.

When you press RETURN to set the minutes, the clock starts.

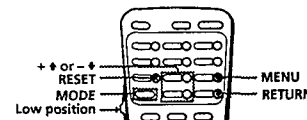


If you make a mistake while setting the time Press RESET while the CURRENT TIME SET menu is displayed, then start again from step 4.

To check the time Press DISPLAY.

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

You can set the TV to turn on for your favorite TV program and turn off after it is over. Make sure the clock is set correctly. If it is not, set the clock first (see page 24).



- 1 Press MENU.
- 2 Press + or - to select TIME and press RETURN.
- 3 Press + or - to select ON/OFF TIMER and press RETURN.



- 4 Make sure the cursor (▶) is beside "EVERY SUN • SAT" and press RETURN.



- 5 Press + or - to select the days you want and press RETURN.

Each time you press + or -, the days cycle as shown in "Setting the day."



- 6 Press + or - to set the start time and press RETURN.



- 7 Press + or - to set the length of the program (1 to 6 hours) and press RETURN. For example, to have the TV turn off after 3 hours, set the duration to "3."



- 8 Press + or - to set the channel that you want to watch and press RETURN. When you press RETURN, the timer is set and the TIMER indicator on the front of the TV lights up.



When the time you set comes, the TV will turn on. (If the TV is already turned on, the TV screen changes to the channel you set.) Before the timer goes off, the message "TV will turn off" appears for one minute and then the TV turns off.

Setting the day

Each time you press +, the days cycle as shown below. If you press -, the days cycle in reverse order.



To change the timer setting

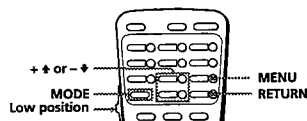
Set the new day and time following the procedure on the previous page. The previous setting is erased.

To cancel the timer

Press RESET while the ON/OFF TIMER menu is displayed. The TIMER indicator on the front of the TV goes out.

Blocking out a channel (CHANNEL BLOCK)

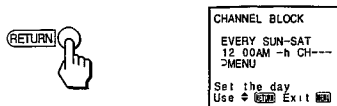
You can lockout a channel that you don't want your children to watch. Make sure the clock is set correctly. If it is not, set the clock first



- 1 Press **MENU**.
- 2 Press **+** or **-** to select **TIME** and press **RETURN**.
- 3 Press **+** or **-** to select **CHANNEL BLOCK** and press **RETURN**.



- 4 Make sure the cursor (▸) is beside **"EVERY SUN • SAT"** and press **RETURN**.



- 5 Press **+** or **-** to select the days you want to block the channel and press **RETURN**. Each time you press **+** or **-**, the days cycle as shown in "Setting the day" on the previous page.



- 6 Set the time that you want to start blocking the channel as you did the day.



- 7 Press **+** or **-** to set the length of the program (1 to 6 hours) and press **RETURN**. For example, to block a channel for 2 hours, set the duration to "2."



- 8 Press **+** or **-** to set the channel that you want to block and press **RETURN**. When you press **RETURN**, the Channel Block setting is complete.



If you select the blocked channel during the time you set, the message "BLOCKED" appears.

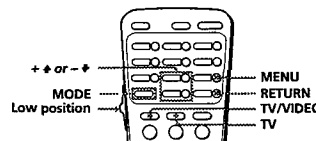
To cancel the Channel Block

Press **RESET** while the **CHANNEL BLOCK** menu is displayed.

Customizing the channel number buttons (CH CAPTION/GUIDE)

You can choose up to 12 channels, caption each channel, and assign a specific channel number button to each channel. This feature allows you to select your favorite channels easily by name. For example, you can name channel 20 "ESPN," and assign the channel number 4 button to it.

Setting captions to favorite channels



- 1 Press **TV/VIDEO** or **TV** to select **TV mode**.
- 2 Press **MENU**.
- 3 Press **+** or **-** to select **SET UP** and press **RETURN**.
- 4 Press **+** or **-** to select **CH CAPTION/GUIDE** and press **RETURN**.



- 5 Press **RETURN** again.



- 6 Press **+** or **-** to select a channel guide number button and press **RETURN**.

Each time you press **+** or **-**, the channel positions change to red in turns. The channel number button you select will be the one you press to call up your favorite channel.



- 7 Press **+** or **-** to select the channel that you want to caption and press **RETURN**.

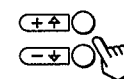


- 8 Enter the letters (up to four) to caption the channel:

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

Each time you press **+** or **-**, the letter changes as shown below and,

0→1→...→9→A→B→...→Z→<→>→(blank space)



(2) press **RETURN**.



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



- 9 Repeat step 5 to 7 to caption other channels.

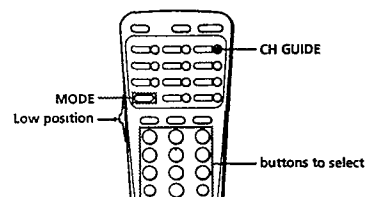
To erase a caption

Press **RESET** after step 5.

Notes

- If the CH CAPTION/GUIDE menu appears in black, the TV is set to a video input and you cannot select CH CAPTION/GUIDE.
- If more than 90 seconds elapse after you press a button, the menu disappears automatically.
- The channel caption/guide feature is not available for the AUX input.

Selecting a captioned channel



1 Press CH GUIDE.

The CHANNEL GUIDE menu appears showing channel captions and the corresponding channel number buttons.

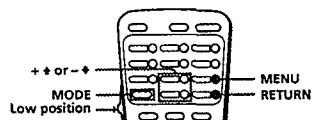


2 Press a channel number button, the DISP or ENT button to select the channel you want.

To cancel the CHANNEL GUIDE menu
Press CH GUIDE again.

Setting video labels (VIDEO LABEL)

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



1 Press MENU.

2 Press + or - to select SET UP and press RETURN.



3 Press + or - to select VIDEO LABEL and press RETURN.

4 Press + or - to select the input mode you want to label and press RETURN.

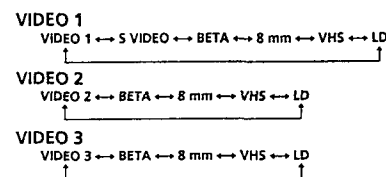


(continued)

5 Press + or - to select the label and press RETURN.



Each time you press + or -, the label changes as shown below.



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

Note

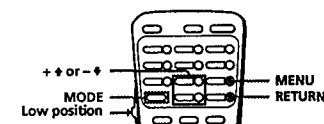
- If more than 90 seconds elapse after you press a button, the menu disappears automatically.

Displaying Closed Caption (CLOSED CAPTION)

■ KV-27XBR37/32XBR37 only

Some programs are broadcast with Closed Caption. To display Closed Caption, select either CC1, CC2, TEXT1, or TEXT2 from the menu.

CC1 or CC2 shows you a caption, that is a printed version of the dialog or sound effects of a program. (The mode should be set to CC1 for most programs.) TEXT1 or TEXT2 shows you text, that is information presented using half to full of the screen. It is not usually related to the program.



1 Press MENU.

2 Press + or - to select CLOSED CAPTION and press RETURN.



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



Note

- Captions may appear with a white box or another error instead of a certain word. Poor reception of TV programs can also cause errors in Closed Caption.

Operating video equipment

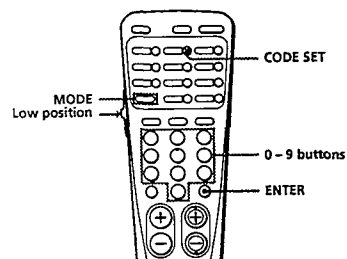
You can operate video equipment that has an infrared remote sensor with the supplied remote commander. To operate it, set the manufacturer's code number.

Setting the manufacture's code

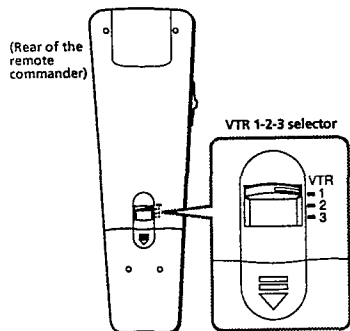
The following Sony video equipment is assigned to each position of the selector at its factory preset:

VTR 1 Beta, ED Beta VCR
VTR 2 8 mm VCR
VTR 3 VHS VCR

You can change the settings of each position.



1 Set the VTR 1-2-3 selector to the position you want to set the code.



2 While pressing CODE SET, press 0 - 9 to enter the manufacturer's code number (see the chart in the column). For example, to operate a Sony 8 mm VCR, press 0, 2 and ENTER.



Note

- To use another manufacturer's equipment besides a Sony VCR, set the selector to a position not being used for your Sony video equipment.

VCR manufacturer code numbers

Manufacturer	Code number
SONY	01, 02, 03
CANON	05
EMERSON	22, 30, 33
FISHER	10, 11, 12, 15
FUNAI	29
GENERAL ELECTRIC	05, 08
GOLDSTAR	25
HITACHI	07, 08, 36
JVC	16, 35
MAGNAVOX	05, 06, 09
DAEWOO	18, 19, 26, 27
MULTITECH	29
NEC	16, 23, 31
PANASONIC	05, 06
PHILCO	05, 06
PHILIPS	05, 06, 09
QUASAR	05, 06
RCA	07, 08
SAMSUNG	24, 32
SANYO	11, 15
SCOTT	21
SHARP	13, 14
SHINTOM	34
SYLVANIA	05, 06, 09
SYMPHONIC	29
TEKNIKA	28, 29
TOSHIBA	20, 21
TOTE VISION	25
ZENITH	17

MDP manufacturer code numbers

Manufacturer	Code number
SONY	04
KENWOOD	58
MAGNAVOX	52
MARANZ	54
DAEWOO	51
PANASONIC	55
PHILIPS	52
PIONEER	51
RCA	51
SANYO	57
SHARP	56
YAMAHA	53

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 this remote commander. This is because your equipment may use a code that is not provided with this remote commander. In this case, please use the equipment's own remote control unit.

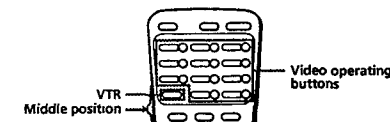
The code numbers for Sony equipment are assigned at the factory as follows:

Beta, ED Beta VCR 01
8 mm VCR 02
VHS VCR 03 (preset code for this remote commander)

Caution

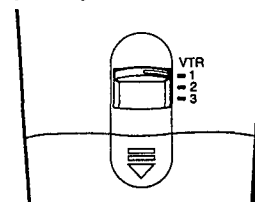
When you remove the battery from the remote commander, the code may revert to the factory setting. Reset the code each time you replace the battery, if necessary.

Operating video equipment



1 Set the VTR 1-2-3 selector according to the video equipment you want to operate.

(Rear of remote commander)



Use the video operating buttons on the remote commander to operate the video equipment.

Operating a VCR	Buttons on the remote commander
To turn on or off	Press POWER
To change channels	Press CH +/-
To record	Press ● and REC simultaneously
To play	Press ►
To stop	Press ■
To fast forward	Press ►►
To rewind the tape	Press ◄◄
To pause	Press ||
To search the picture forward and backward	Press ►► or ◄◄ during playback

Operating a laser-disc player	Buttons on the remote commander
To play	Press ►
To stop	Press ■
To pause	Press || To resume normal playback, press again.
To search the picture forward and backward	Keep pressing ►► or ◄◄ during playback To resume normal playback, release the button.
To search the chapter	Press CH +/-

Note

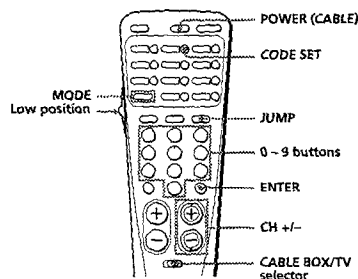
- If the video equipment does not have a certain function, the corresponding button on this remote commander will not operate.

Operating a cable box

Setting the manufacturer's code

Follow these instructions to set the manufacturer's code which will enable you to operate a connected cable box with the pre-programmed remote commander.

For example, you can set the remote commander to operate a connected Zenith cable box as follows:



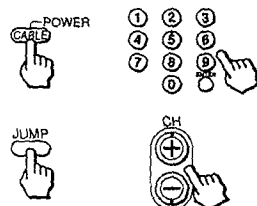
1 Set the CABLE BOX/TV selector to CABLE BOX.



2 While pressing CODE SET, press 6 and 8 (Zenith's code number—see chart on right) and ENTER.



4 Use POWER(CABLE) and the TV control buttons (0 - 9, ENTER, JUMP and CH +/-) to operate the cable converter box.



To operate the TV

Set the CABLE BOX/TV selector to TV. Then use the TV control buttons to control the TV

For more details on operating the cable box

Refer to the operating instructions that come with the cable box.

Manufactures and code numbers (cable box)

Manufacturer	Code number
JERROLD	60, 61, 62, 63, 64, 65, 73
PIONEER	69, 70
SCIENTIFIC ATLANTA	66, 67
TOCOM	71, 72
ZENITH	68

Notes

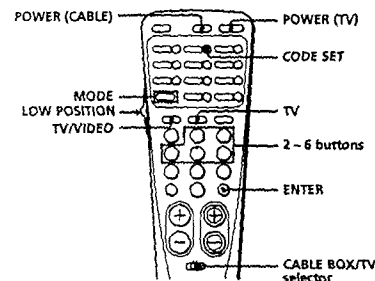
- If more than one code number is listed, try entering them one by one until you come up with the correct code for your equipment.
- If you enter a new code number, the code number you previously entered at that setting is erased.
- In some cases, your equipment may use a code that is not provided with this remote commander and you may not be able to operate your cable box with the supplied remote commander. In this case, use the equipment's own remote control unit.
- When you remove a battery from the remote commander, the code may be erased. Reset the code each time you replace the battery, if necessary.
- The JUMP button may not work or cause another function in some cable boxes.

Auto CH set up function

This remote commander have the function sets up cable box TV input mode automatically whenever you turn TV (or cable box) on. You can add this function to this remote commander if necessary. You need to set the manufacture's code setting before you make this setting (page 32).

If you take the TV's power from the cable box's switched outlet, you have the cable box power is turned ON. You can set the TV power turned ON.

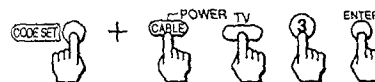
For example, if you have the cable box power is turned ON, it is possible to automatically change the channel 3.



1 Set the CABLE BOX/TV selector to CABLE BOX.

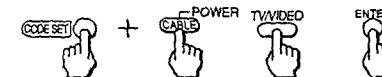


2 While pressing CODE SET, press POWER (CABLE), TV, 3 and ENTER.



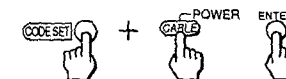
If you are viewing VIDEO 1 for cable TV, you can set as follows:

While pressing CODE SET, press POWER (CABLE), TV/VIDEO and ENTER.



To reset the cable box output channel setting

While pressing CODE SET, press POWER (CABLE) and ENTER.

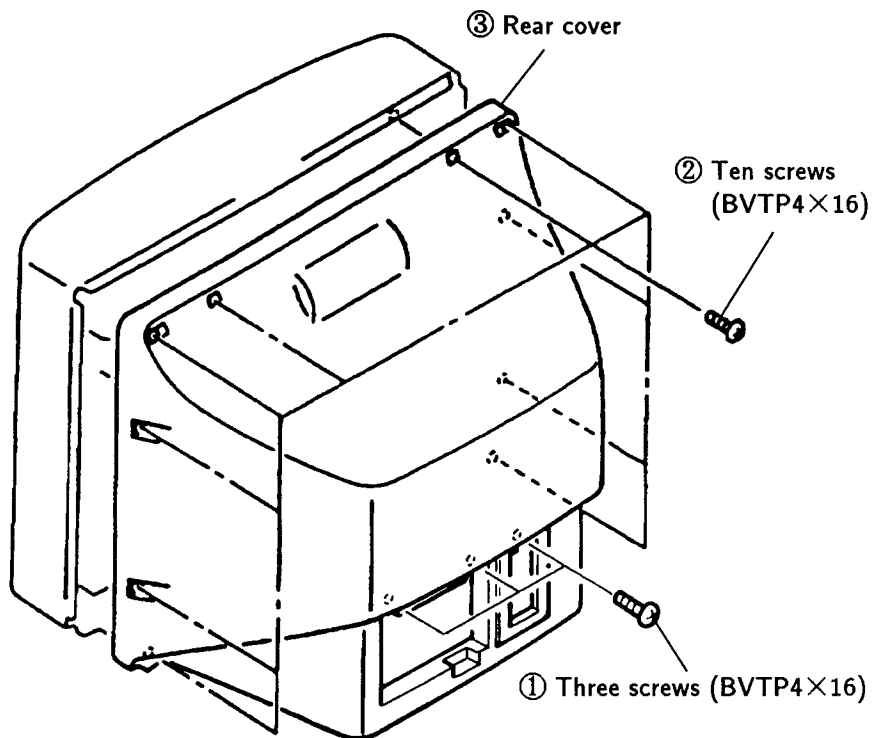


Notes

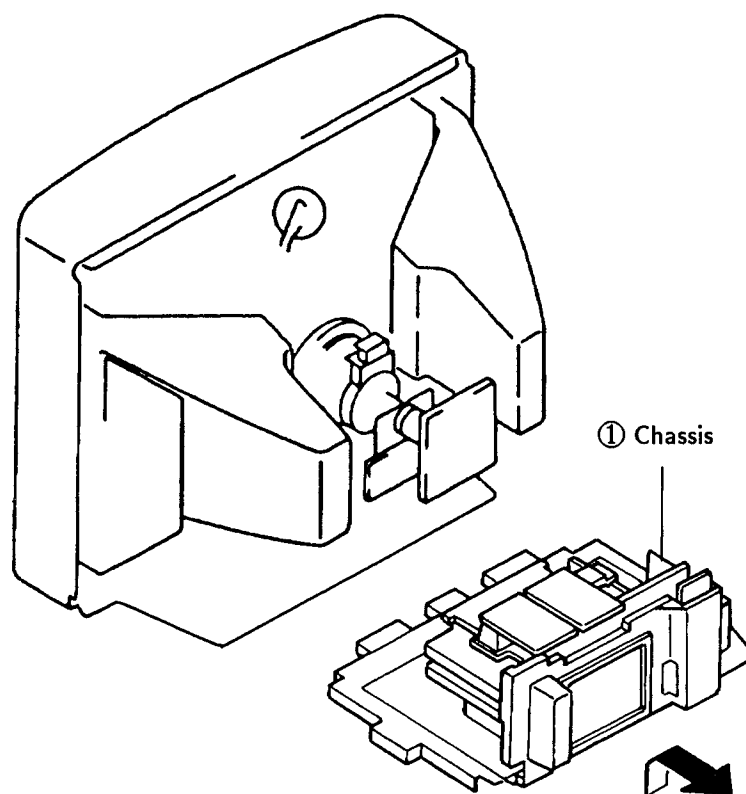
- In some cases, your cable box may use a code that is not provided with this remote commander and you may not be able to operate your cable box with the supplied remote commander. In this case, use the equipment's own remote control unit.
- When you remove the battery from the remote commander, the code may be erased. Reset the procedure each time you replace the battery, if necessary.

SECTION 2 DISASSEMBLY

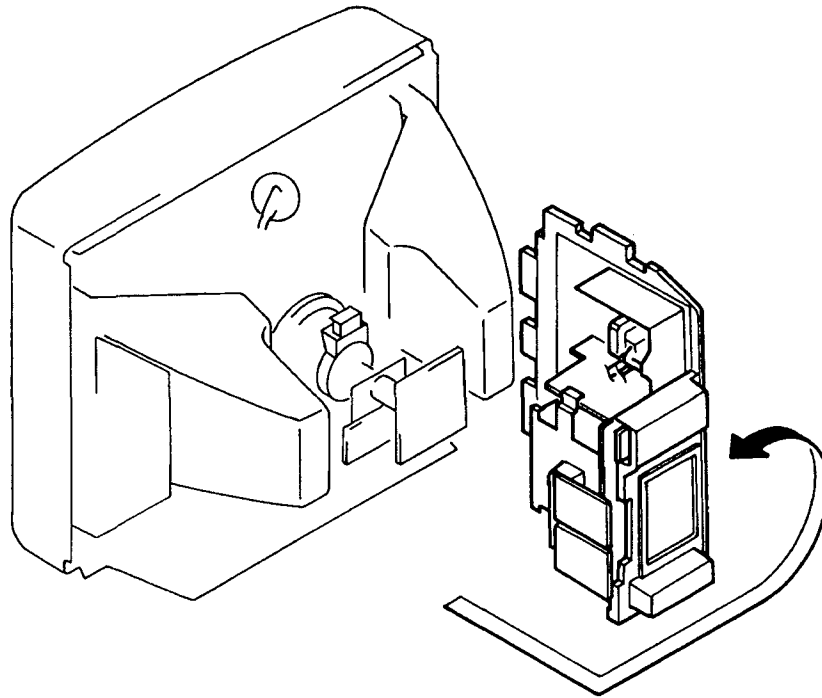
2-1. REAR COVER REMOVAL



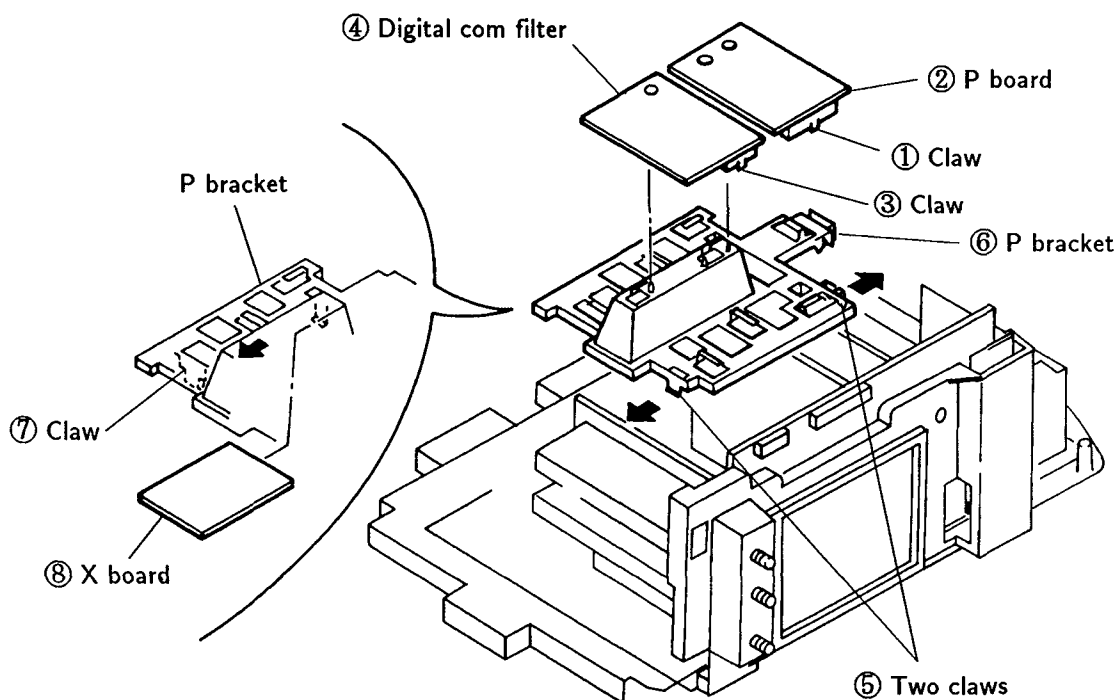
2-2. CHASSIS ASSY REMOVAL



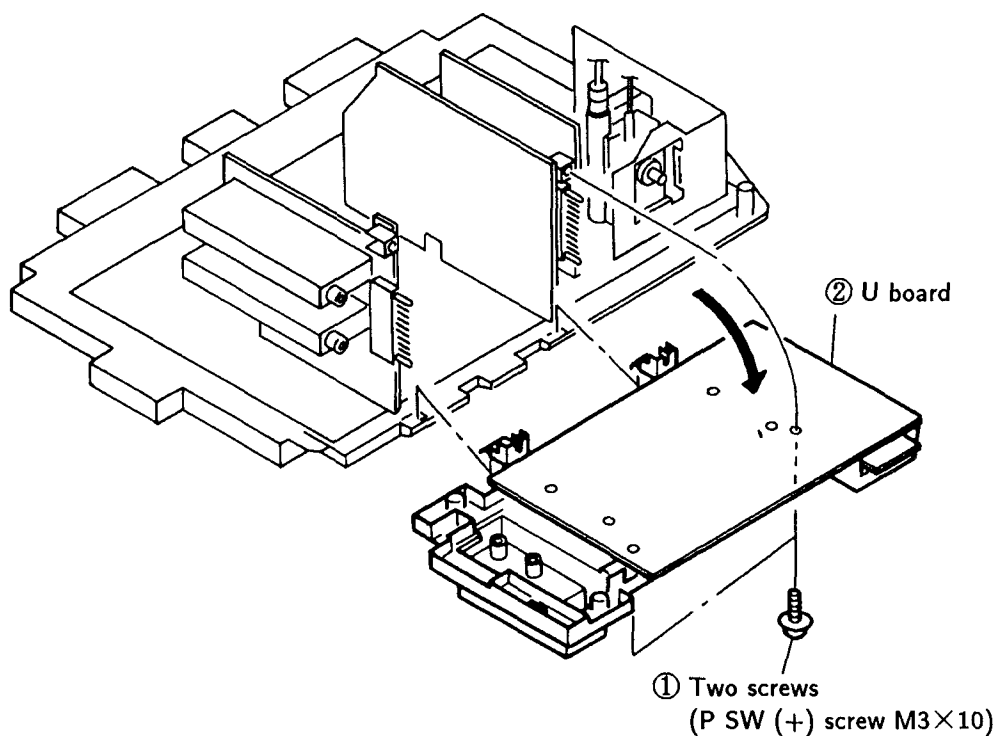
2-3. SERVICE POSITION



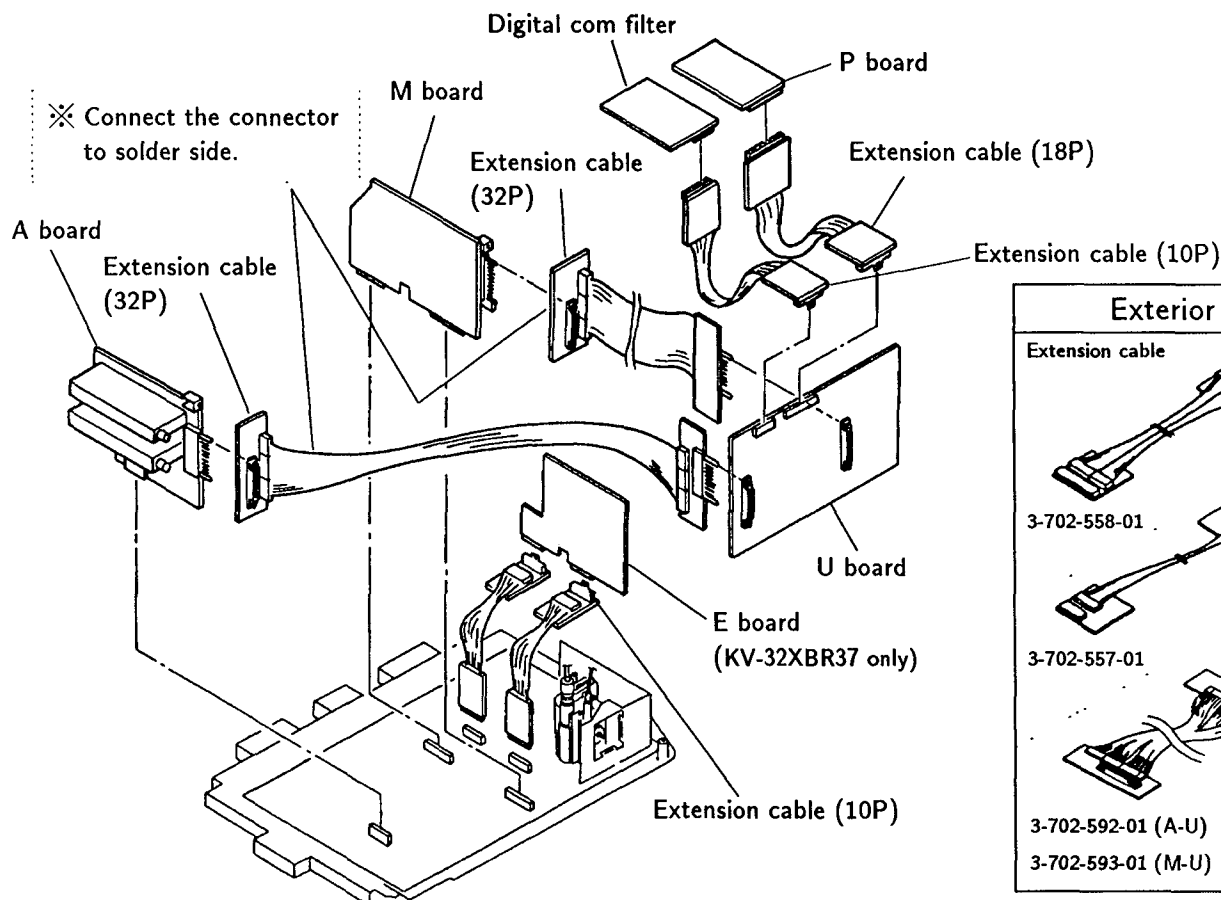
2-4. P, DIGITAL COM FILTER AND X BOARDS REMOVAL



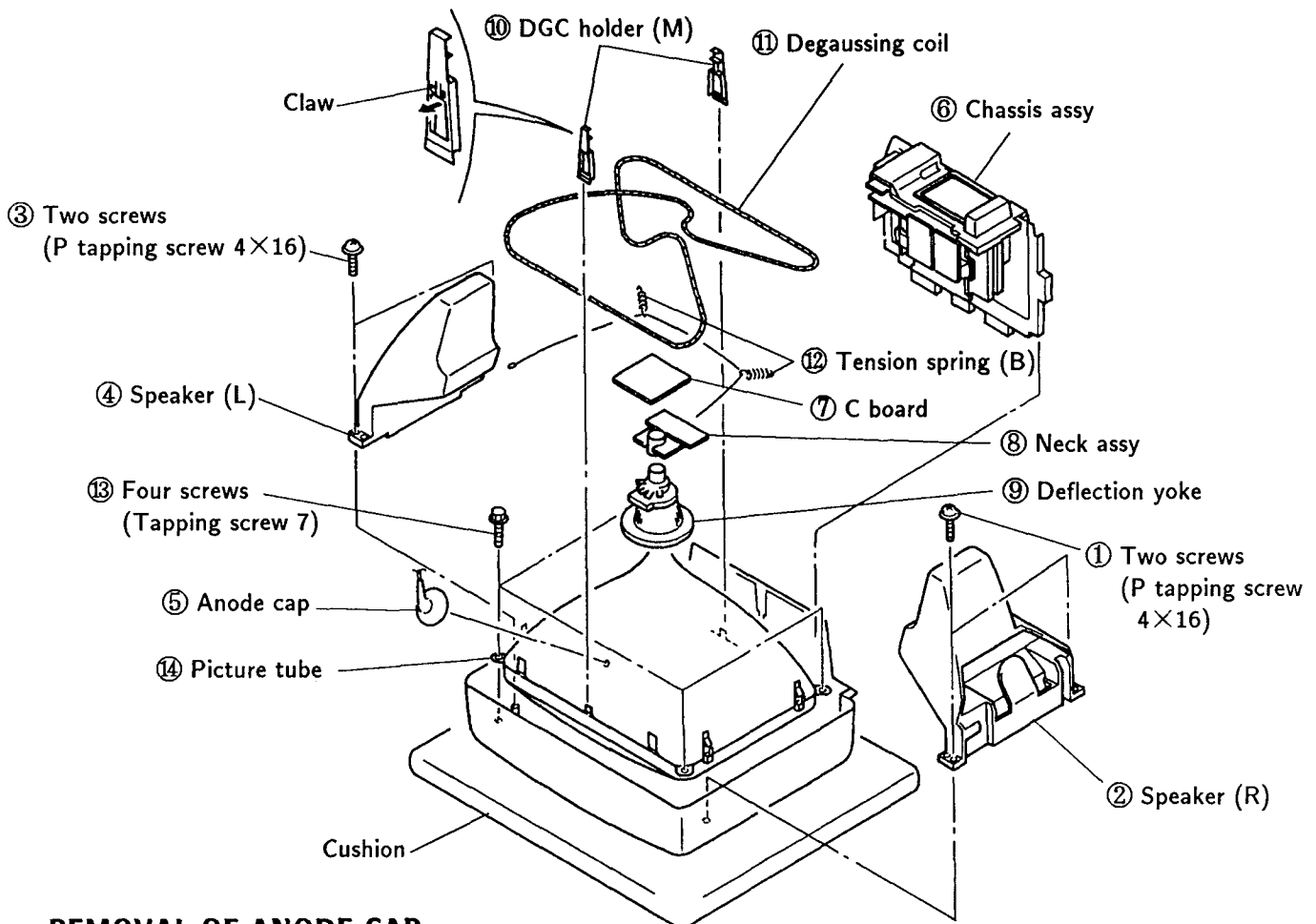
2-5. UA BOARD REMOVAL



2-6. EXTENSION CABLE



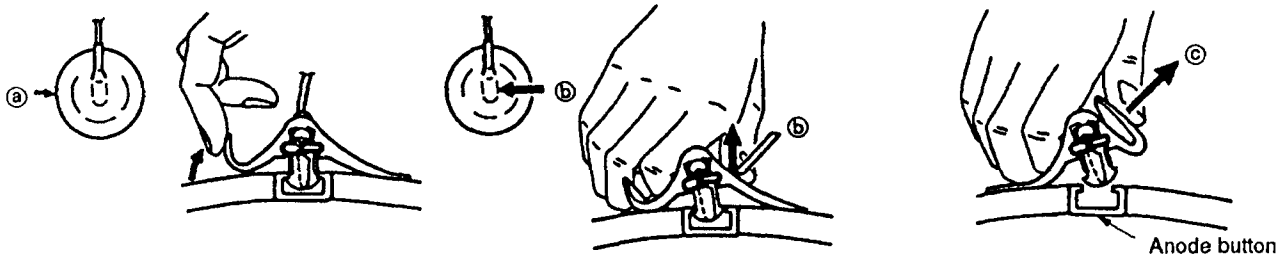
2-7. PICTURE TUBE REMOVAL (1) (KV-27XBR37/27XBR37M only)



• REMOVAL OF ANODE-CAP

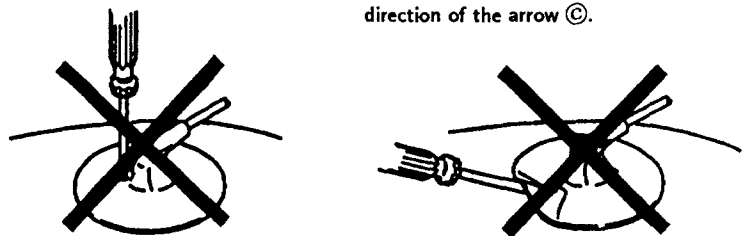
NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon painted on the CRT, after removing the anode.

• REMOVING PROCEDURES

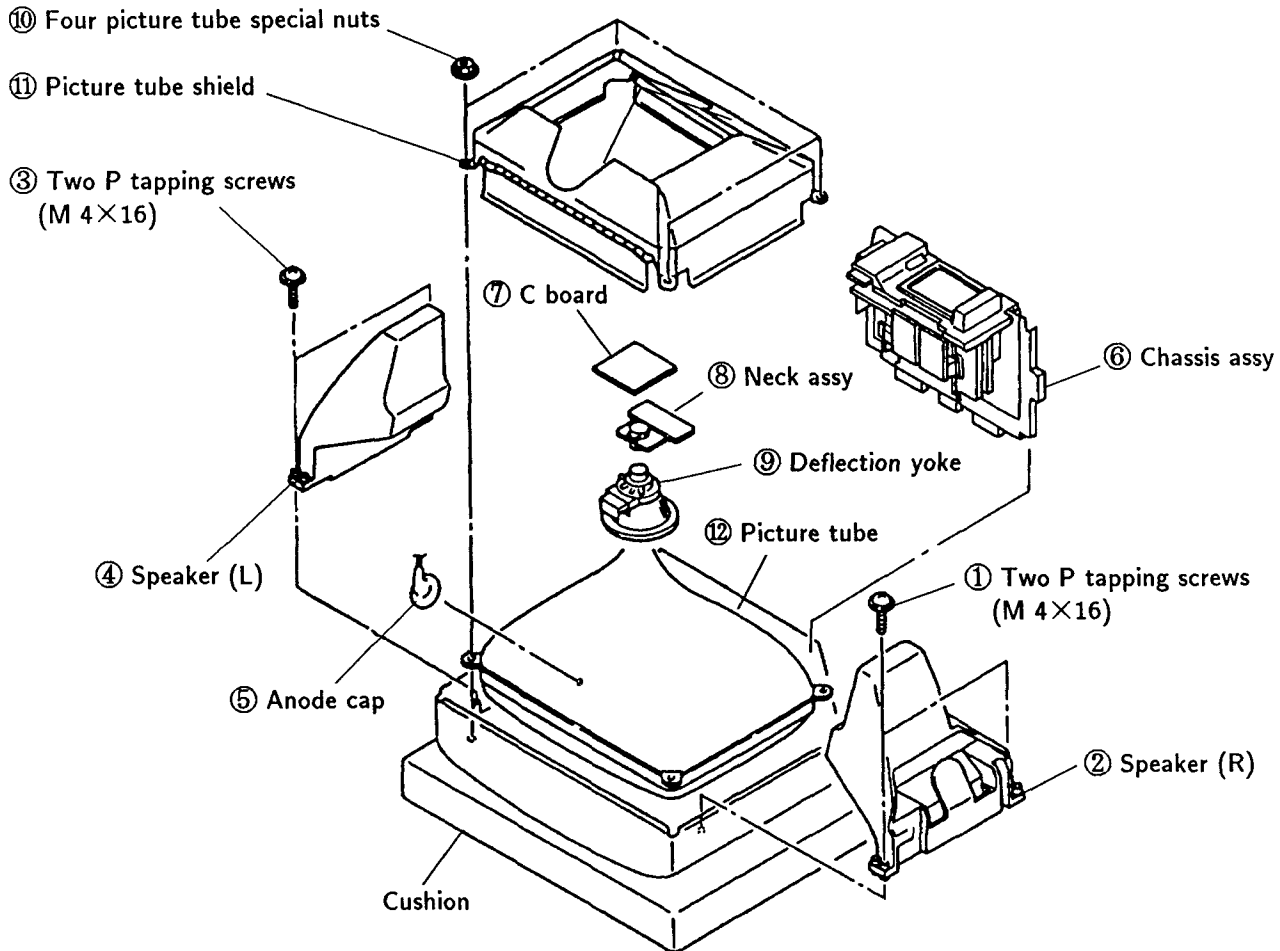


• HOW TO HANDLE AN ANODE-CAP

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



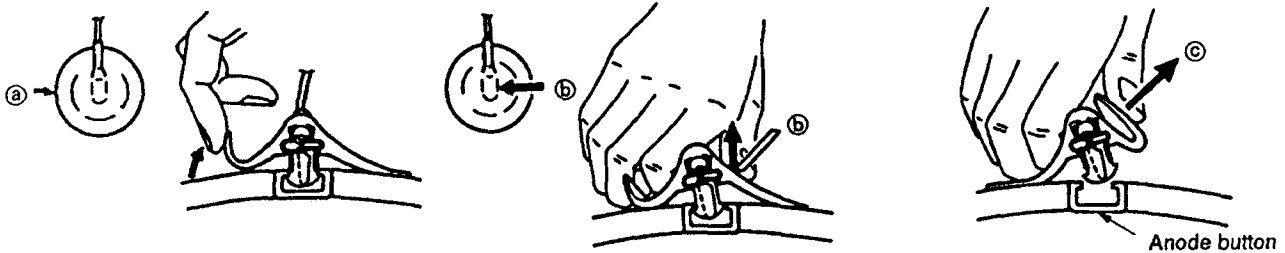
2-8. PICTURE TUBE REMOVAL (2) (KV-32XBR37 only)



• REMOVAL OF ANODE-CAP

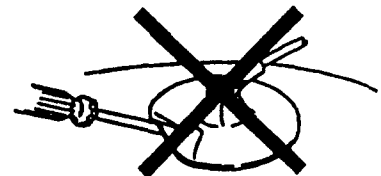
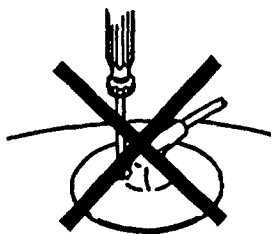
NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon painted on the CRT, after removing the anode.

• REMOVING PROCEDURES



• HOW TO HANDLE AN ANODE-CAP

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



SECTION 3

SET-UP ADJUSTMENTS

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

Controls and switch should be set as follows unless otherwise noted :

PICTURE control RESET
BRIGHTNESS control CENTER

Preparations :

- In order to reduce the influence of geomagnetism on the set's picture tube face it east or west.
- Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input the white signal with the pattern generator.
Contrast } normal
Brightness }
2. Position neck ass'y as shown in Fig 3-2.
3. Set the pattern generator raster signal to red.
4. Move the deflection yoke to the rear and adjust with the purity control so that the red is at the center and the blue and the green take up equally sized areas on each side.
(See Figures 3-1 through 3-3.)
5. Move the deflection yoke forward and adjust so that entire screen is red. (See Figure 3-1.)
6. Switch the raster signal to blue, then to green and verify the condition.
7. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
8. If the beam does not land correctly in all the corners, use a magnet to adjust it.
(See Figure 3-4.)

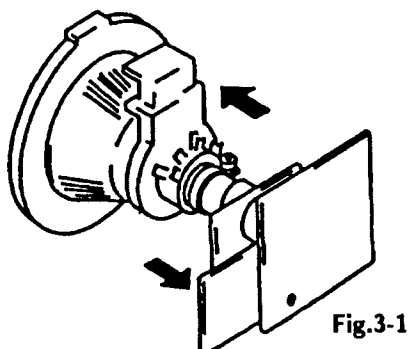


Fig.3-1

Perform the adjustments in order as follows :

1. Beam Landing
2. Convergence
3. Focus
4. White Balance

Note : Test Equipment Required.

1. Color-bar/Pattern Generator
2. Degausser
3. Oscilloscope

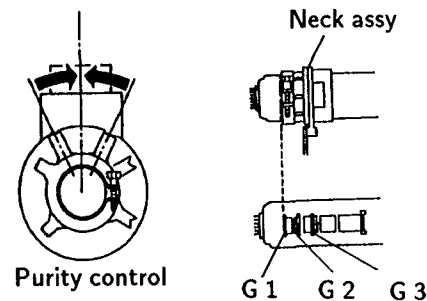


Fig.3-2

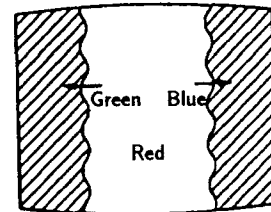


Fig.3-3

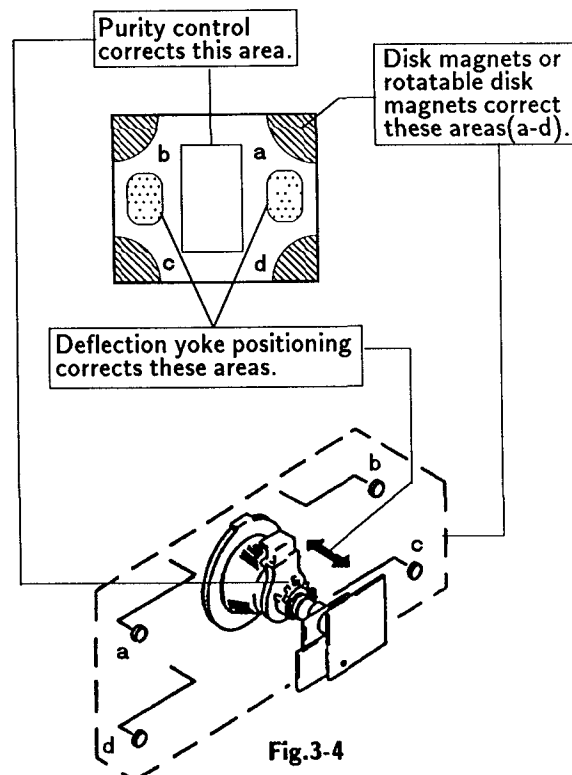


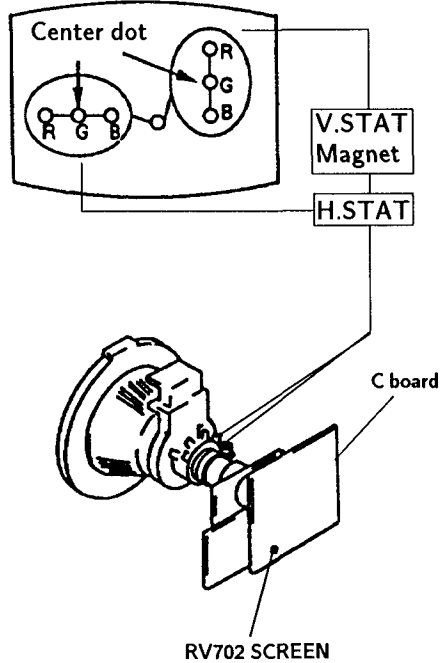
Fig.3-4

3-2. CONVERGENCE

Preparation :

- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide dot pattern.

(1) Horizontal and Vertical Static Convergence



1. V. STAT Adjustment

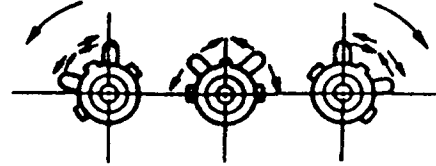
Turn the V. STAT tabs to left or right so that the vertical red, green and blue dots converge in the center of the screen.

2. H. STAT Adjustment

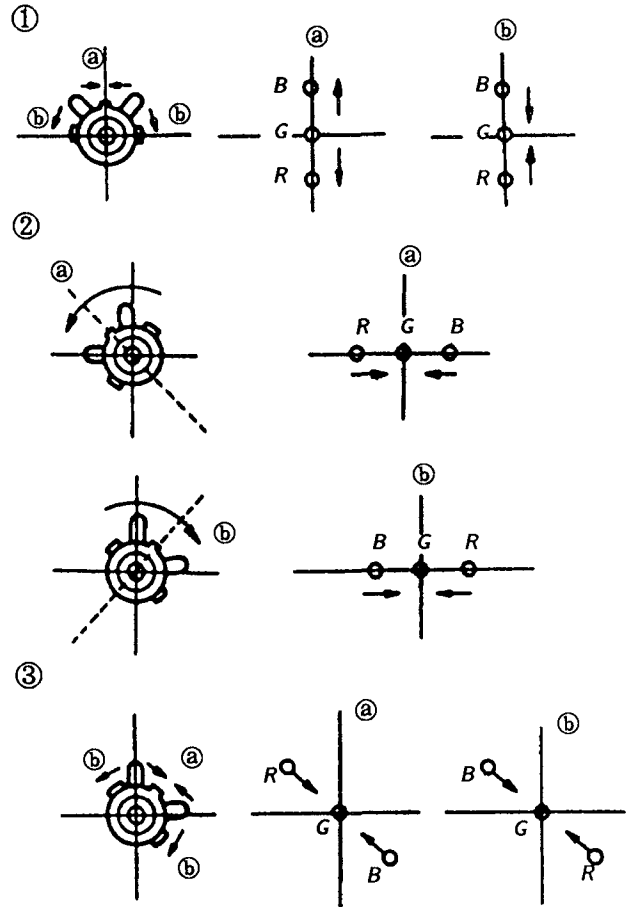
Simultaneously turn the 2 V. STAT tabs in the same direction so that the horizontal red, green and blue dots converge in the center of the screen.

Note : Do not move the purity tab during adjustment with the V. STAT tab. If the purity tab is moved, the convergence condition will change, and possibly lead to misadjustment of a different yoke.

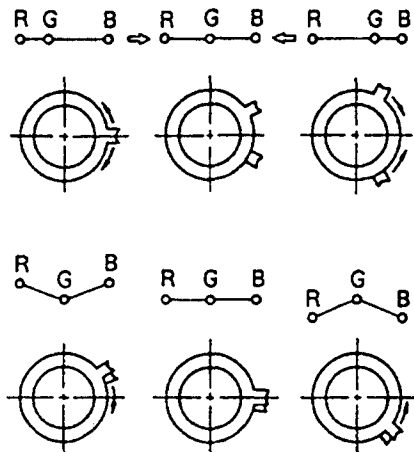
- Tilt the V. STAT tabs and adjust the static convergence by turning the V. STAT tabs to the left or right.



- The V. STAT tabs are moved in the direction of the (a) and (b) arrows and the red, green and blue points move as shown below.



● Operation of BMC (Hexapole) Magnet



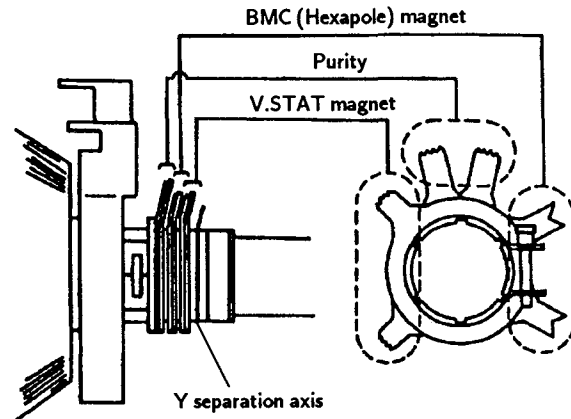
- The respective dot positions resulting from moving each magnet interact, so be sure to perform adjustment while tracking.
Use the V.STAT tabs to adjust the red, green, and blue dots so they coincide at the center of screen (by moving the dots in the horizontal direction).

(2) Dynamic Convergence Adjustment

Preparations :

- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.

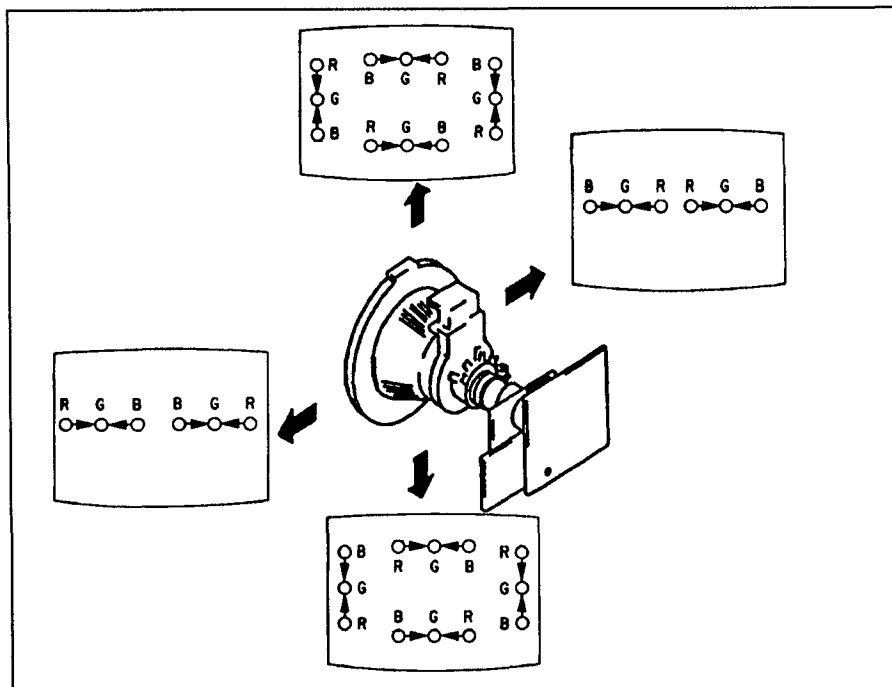
1. Slightly loosen the deflection yoke screws.
2. Remove the deflection yoke spacer.



• Y separation axis correction magnet adjustment

1. Receive the cross-hatch signal, and adjust [PIX] to "MIN" and [BRT] to "standard".
2. Adjust the deflection yoke to the upright condition when it hits the CRT.
3. Adjust so that the Y separation axis correction magnet on the neck assembly is symmetrical at the top and bottom (open state).
4. Return the deflection yoke to its original position.

3. Move the deflection yoke as shown in the figure below and optimize the convergence.
4. Tighten the deflection yoke screws.
5. Install the defelection yoke spacer.

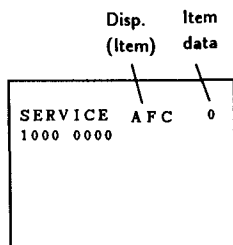


(3) Dynamic Convergence Circuit Adjustment

SERVICE MODE PROCEDURE

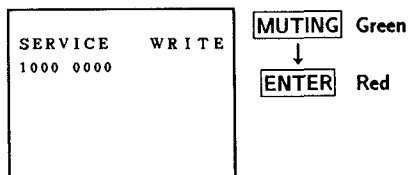
1. Standby mode.(Power off)
2. **DISPLAY** → **5** → **VOL (+)** → **POWER** on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN

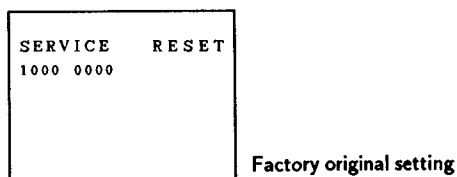


3. The CRT displays the item Being adjusted.
4. Press **1** or **4** on the Remote Commander to select the item.
5. Press **3** or **6** on the Remote Commander to change the data.
6. Press **MUTING** then **ENTER** to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



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



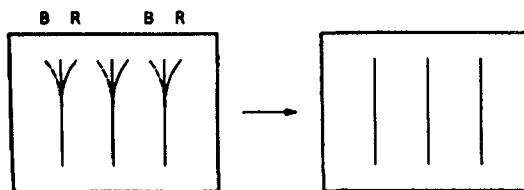
8. Turn set off and on to exit.

- Set to Service Mode.
- Input a cross-hatch signal.
- Press **1** and **4** select an item of adjustments.
- Adjust **3** and **6** to the best picture.

No.	Disp.	Item	Ave.Data
41	UYBO	Upper Y-Bow	31
42	LYBO	Lower Y-Bow	25
43	HAMP	H. Amp	33
44	HTIL	H. Tilt	33
45	UCBO	Upper C-Bow	38
46	UTIL	Upper Tilt	40
47	LCBO	Lower C-Bow	41
48	LTIL	Lower Tilt	46
49	DCSH	DC Shift	37

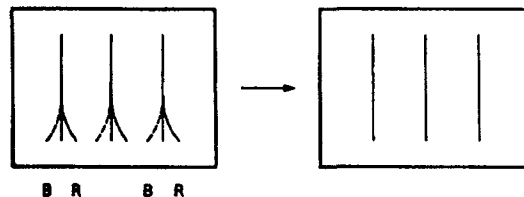
U. YBOW

Select UYBO with **1** and **4**



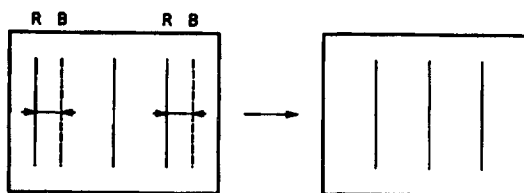
L. YBOW

Select LYBO with **1** and **4**



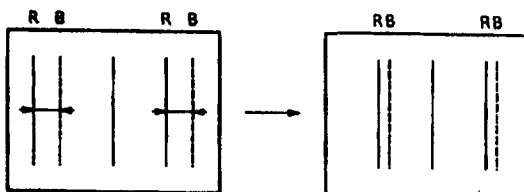
H. AMP

Select HAMP with **1** and **4**



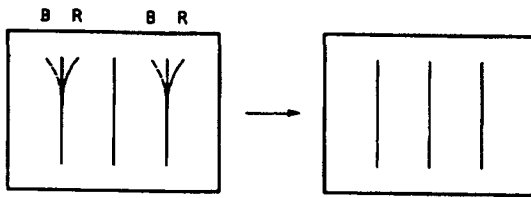
H. TILT

Select HTILT with **1** and **4**



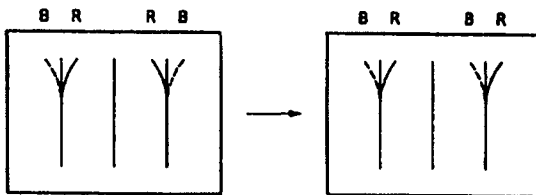
U. CBOW

Select UCBO with 1 and 4



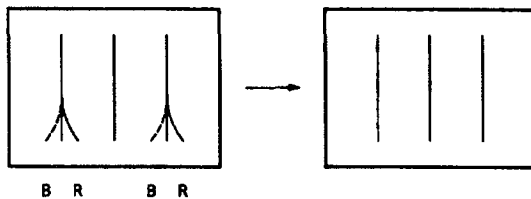
U. TILT

Select UTIL with 1 and 4



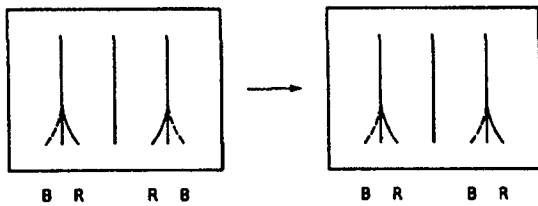
L. CBOW

Select LCBO with 1 and 4



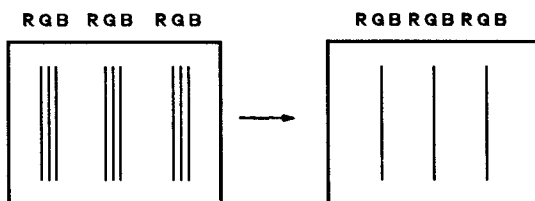
L. TILT

Select L. TIL with 1 and 4

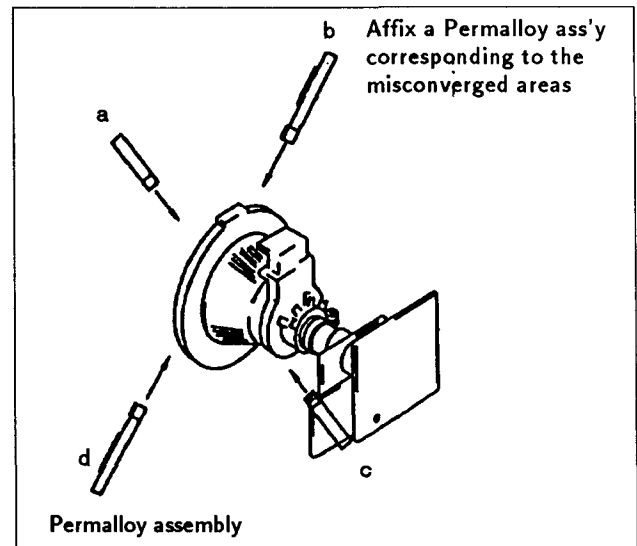
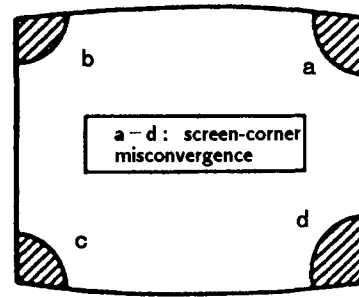


DCSH

Select L. TIL with 1 and 4

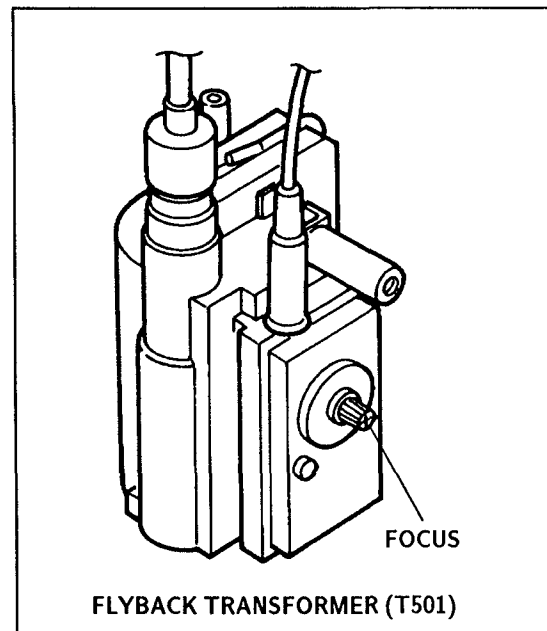


(4) Screen-corner Convergence



3-3. FOCUS ADJUSTMENT

Adjust FOCUS control on the flyback transformer for a best focus.



3-4. G2 (SCREEN) AND WHITE BALANCE ADJUSTMENTS

1. G 2 (SCREEN) ADJUSTMENT (RV 702)

1. Set the PICTURE and BRIGHTNESS to normal.
2. Apply DC voltage of 170 V to the cathodes of R,G and B from DC stabilized power source.
3. While watching the picture, adjust the G2 control (RV 702) to the just the retrace line disappears.

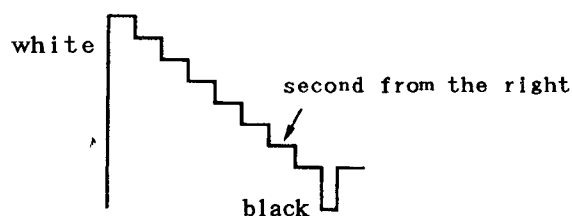
2. WHITE BALANCE ADJUSTMENTS

No.	Disp.	Item	Ave. Data
14	GAMP	Green Amp	20
15	BAMP	Blue Amp	17
16	GCUT	Green Cut-off	7
17	BCUT	Blue Cut-off	8
22	SBRT	Sub Bright	35

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

3. SUB BRIGHT ADJUSTMENT

1. Set to service mode.
2. Input a staircase signal of black and white from the pattern generator.
3. BRIGHTNESS ... RESET
PICTURE minimum
4. Select SBRT with **[1]** and **[4]** , and adjust SUB BRIGHT level with **[3]** and **[6]** so that the stripe second from the right is dimly lit.



SECTION 4

SAFETY RELATED ADJUSTMENTS

☒ R511 CONFIRMATION METHOD (HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

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

PM501, R338, R511, R632, R645, R650

①

1. Preparation before confirmation

- 1) Remove R635 on the D board and connect a variable resistor (RV1: about $4.7k\Omega$ - $10k\Omega$) between pin ① of IC601 and B+ line.
- 2) Supply $130 \pm 2.0V$ AC to with variable auto-transformer.

2. Hold-down operation confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to $1760 \pm 50\mu A$ with PICTURE and BRIGHT etc controls.
- 2) Increase B+ line voltage gradually by adjusting the resistor of RV1. Confirm that the minimum voltage is less than 142.5V DC (27 inch) 140.0V DC (32 inch) whereby the raster disappears during operation of hold-down circuit.
NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.
- 3) Turn the POWER switch ON, and receive dot signals and adjust ABL current to $160 \pm 50\mu A$ with PICTURE and BRIGHT etc controls.
- 4) Increase B+ line voltage gradually by adjusting the resistor of RV1. Confirm that the minimum voltage is less than 145.0V DC (27 inch), 143.5V DC (32 inch) whereby the raster disappears during operation of hold-down circuit.
NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

3. Hold-down readjustment

When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R511 (a component marked with ☒).

☒ R524 CONFIRMATION METHOD (HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

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

IC601, PM501, D504, C598, R338, R509, R524, R632, R635, R645, T501

②

1. Preparation before confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and set the PICTURE and BRIGHT controls to maximum.
- 2) Confirm that voltage of the check terminal of TP-85 (D BOARD) is more than 114.0V DC (27 inch) 122.3V DC (32inch) when the set is operating normally with $120.0 \pm 2.0V$ AC supply.

2. Hold-down operation confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to $1760 \pm 50\mu A$ with PICTURE and BRIGHT etc controls .
- 2) Apply DC voltage of over 130.0V DC gradually to the check terminal of TP-85 (D BOARD) via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 137.5V DC (27inch) 143.5V DC (32inch) whereby the raster disappears during operation of hold-down circuit.

NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

- 3) Turn the POWER switch ON, and receive dot signals and adjust ABL current to $160 \pm 50\mu A$ with PICTURE and BRIGHT etc controls .
- 4) Apply DC voltage of over 130.0V gradually to the check terminal of TP-85 (D BOARD) via 1 T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 138.0V DC (27inch) 144.1V DC (32inch) whereby the raster disappears during operation of hold-down circuit.

NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

3. Hold-down readjustment

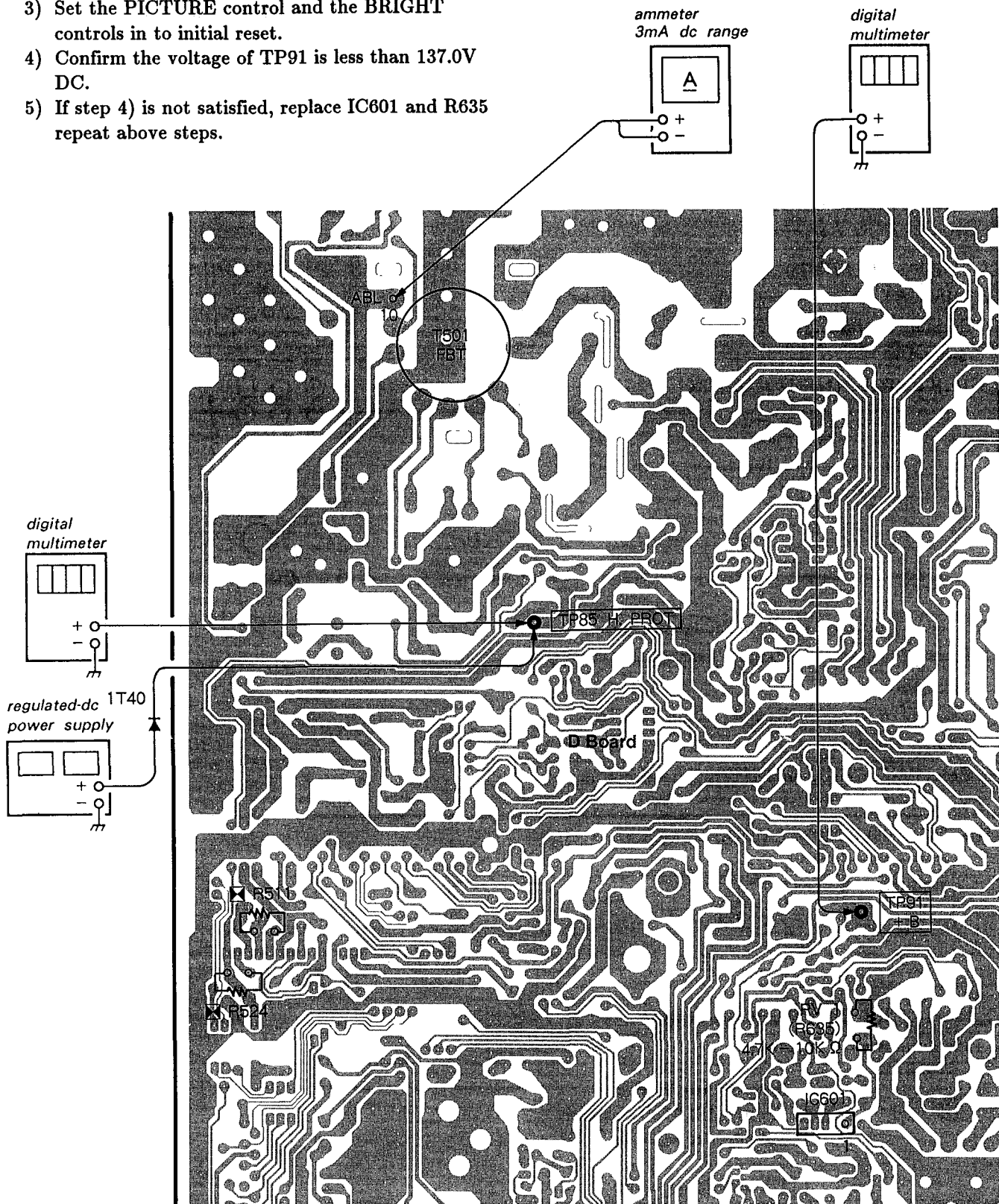
When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R524 (a component marked with ☒).

B+ VOLTAGE CONFIRMATION

The following adjustments should always be performed when replacing IC601 and R635.

- 1) Supply $130 \pm 2\%$ V AC to with variable autotransformer.
- 2) Receive entirely monoscope signal.
- 3) Set the PICTURE control and the BRIGHT controls in to initial reset.
- 4) Confirm the voltage of TP91 is less than 137.0V DC.
- 5) If step 4) is not satisfied, replace IC601 and R635 repeat above steps.

* Use a digital multimeter whose input impedance over $100\text{ M}\Omega$ when confirming the voltage of the protector terminal of TP85.



SECTION 5

CIRCUIT ADJUSTMENTS

5-1. ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER

Use of Remote Commander can be performed circuit adjustments about this model.

NOTE : Test Equipment Required.

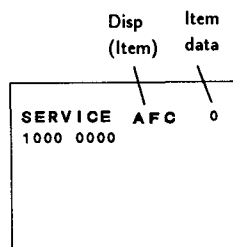
1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio OSC

1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

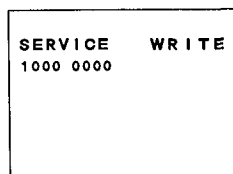
1. Standby mode.(Power off)
2. **DISPLAY** → **5** → **VOL (+)** → **POWER** on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN



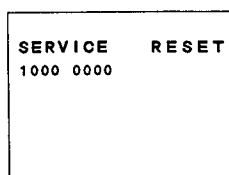
3. The CRT displays the item Being adjusted.
4. Press **1** or **4** on the Remote Commander to select the item.
5. Press **3** or **6** on the Remote Commander to change the data.
6. Press **MUTING** then **ENTER** to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



MUTING Green
↓
ENTER Red

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



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

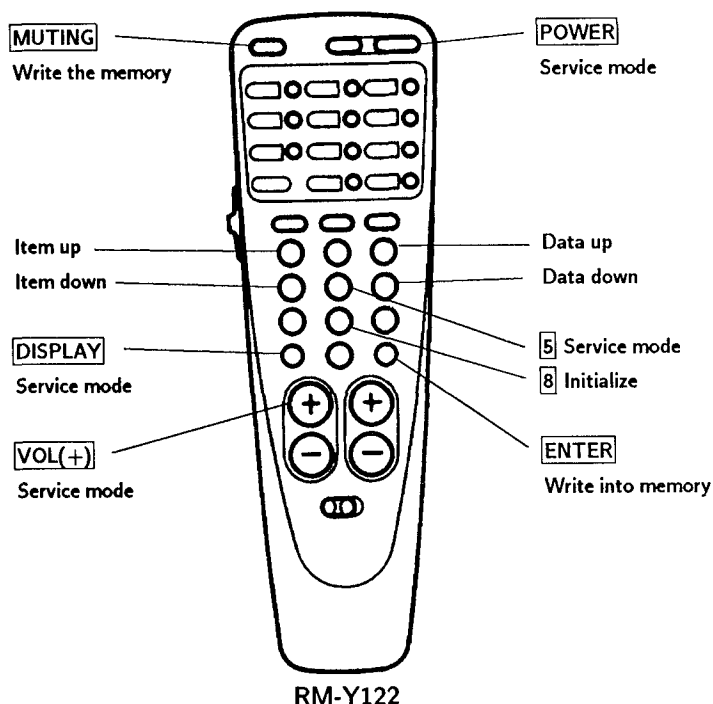
Factory original setting

8. Turn set off and on to exit.

2. MEMORY WRITE CONFIRMATION METHOD

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

3. ADJUST BUTTONS AND INDICATOR



4. AN ITEM OF ADJUSTMENTS

No.	Disp	Item	Data range	Ave. data (27 inch)	Ave. data (32 inch)
1	AFC	AFC Loop Gain	0~3	* 0	* 0
2	HFRE	H. Frequency	0~127	70	70
3	VFRE	V. Frequency	0~31	14	14
4	VPOS	V. Center	0~31	17	17
5	VSIZ	V. Size	0~63	28	28
6	VLIN	V. Linearity	0~15	8	8
7	VSCO	V. Correction	0~15	6	6
8	HPOS	H. Center	0~15	6	6
9	HSIZ	H. Size	0~31	31	31
10	PAMP	Pin Amp	0~31	24	24
11	CPIN	Corner Pin	0~7	3	3
12	PPHA	Pin Phase	0~15	6	6
13	VCOM	V Compensation	0~7	* 2	* 2
14	GAMP	Green Amp	0~31	20	20
15	BAMP	Blue Amp	0~31	17	17
16	GCUT	Green Cut Off	0~15	7	7
17	BCUT	Blue Cut Off	0~15	8	8
18	CROM	Chroma Trap	0~63	* 28	* 28
19	SPIX	Sub Contrast	0~63	20	20
20	SHUE	Sub Hue	0~63	33	33
21	SCOL	Sub Color	0~63	32	32
22	SBRT	Sub Bright	0~63	35	35
23	RGBP	RGB Picture	0~63	* 30	* 10
24	SHAP	Sharpness	0~15	* 10	* 7
25	VSMO	V Pull in Range	0, 1	* 0	* 0
26	REF	Reference line	0~3	* 2	* 2
27	ROFF	Red Out	0, 1	1	1
28	GOFF	Green Out	0, 1	1	1
29	BOFF	Blue Out	0, 1	1	1
30	ABLM	ABL Mode	0, 1	* 0	* 0
31	NOTC	Notch On/Off	0, 1	* 1	* 1
32	DRGB	OSD intensity	0, 1	* 0	* 0
33	DISP	Display Position	0~63	40	40
34	SVOL	Sub Volume	0~15	* 0	* 0
35	SBAL	Sub Balance	0~15	7	7
36	BASS	Sub Bass	0~15	* 7	* 7
37	TRE	Sub Treble	0~15	* 7	* 7
38	BBEL	BBE LOW	0~15	* 10	* 10
39	BBEH	BBE HIGH	0~15	* 5	* 5
40	BBES	BBE S OFF SET	0~7	* 0	* 0
41	UYBO	Upper Y. Bow	0~63	31	31
42	LYBO	Lower Y. Bow	0~63	25	25
43	HAMP	H. Amp	0~63	33	33
44	HTIL	H. Tilt	0~63	33	33
45	UCBO	Upper C. Bow	0~63	38	38
46	UTIL	Upper Tilt	0~63	40	40
47	LCBO	Lower C. Bow	0~63	41	41
48	LTIL	Lower Tilt	0~63	46	46
49	DCSH	DC. Shift	0~63	37	37
50	PHPO	PinP H Position	0~127	76	76
51	PHUE	PinP Hue	0~127	* 0	* 0
52	ID-0	Model ID	0~127	by Model	by Model
53	ID-1	Model ID	0~127	by Model	by Model
54	ID-2	Model ID	0~127	by Model	by Model
55	ID-3	Model ID	0~127	by Model	by Model
56	ID-4	Model ID	0~127	by Model	by Model

* : Set-up value

Note : No. from 1 to 56 is to show adjustment order.

SERVICE	ID 0	64
1000	0000	1000 000

Please adjust the function values as shown below when IC 102 on M board was replaced

KV-27XBR37/27XBR37M/32XBR37

No.	Disp	Disp	Data
51	ID-0	1 1 1 1 0 0 0	120
52	ID-1	1 1 1 1 1 1 1	127
53	ID-2	1 0 1 1 0 0 0	88
54	ID-3	0 1 0 0 1 0 0	36
55	ID-4	0 0 1 1 1 0 0	28

5-2. M BOARD ADJUSTMENTS

H.FREQUENCY ADJUSTMENT (HFRE)

1. Input a color-bar signal.
2. Set to Service adjustment Mode.
3. Connect a frequency counter to CN131 Pin⑬ (H. DRIVE) connector and ground.
4. Call the item of AFC, set to 3 level (free run).
5. Select HFRE with **[1]** and **[4]**.
6. Adjust with **[3]** and **[6]** for the $15734 \pm 60\text{Hz}$.
7. Call the item of AFC again, adjust the level "0".
8. Write into the memory by pressing **[MUTING]** then **[ENTER]**.

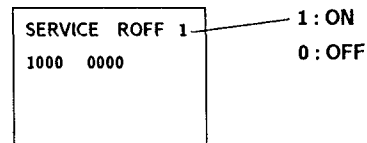
V.FREQUENCY ADJUSTMENT (VFRE)

1. Select video 1 with no connecting the signal.
2. Set to Service adjustment Mode.
3. Connect the frequency counter across connector CN131 Pin⑦ (V. DRIVE) connector and ground.
4. Select VFRE with **[1]** and **[4]**.
5. Adjust with **[3]** and **[6]** for the $56 \pm 0.5\text{Hz}$.
6. Write the memory by pressing **[MUTING]** then **[ENTER]**.

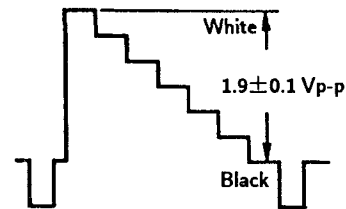
SUB CONTRAST ADJUSTMENT (SPIX)

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

PICTURE	.....	MAX
COLOR	.....	MIN
BRIGHT	.....	CENTER
R OFF	.....	ON (1)
G OFF	.....	OFF (0)
B OFF	.....	OFF (0)



4. Connect an oscilloscope to CN703 Pin① (R OUT) of C board and ground.
5. Select SPIX with **[1]** and **[4]**.
6. Adjust with **[3]** and **[6]** for the $1.9 \pm 0.1\text{Vp-p}$.

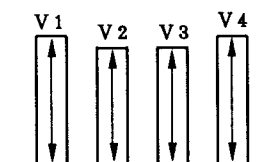


7. Write the memory by pressing **[MUTING]** then **[ENTER]**.
8. Return the following back to normal after adjustment.

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

SUB HUE, SUB COLOR ADJUSTMENT (SHUE, SCOL)

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



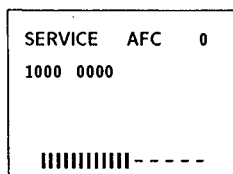
6. Increase the data of SCOL by 3 steps.
7. Write into the memory by pressing **[MUTING]** then **[ENTER]**.

SUB BARANCE ADJUSTMENT (SBAL)

1. Input a stereo signal.
2. Set to service adjustment mode.
3. Select SBAL with **[1]** and **[4]**.
4. Adjust with **[3]** and **[6]** for the best sound balance
5. Write into the memory by pressing **[MUTING]** then **[ENTER]**.

DISPLAY POSITION ADJUSTMENT (DISP)

1. Input a color-bar signal.
2. Set to service adjustment Mode.
3. Select DISP with **[1]** and **[4]**.
4. Adjust with **[3]** and **[6]** for the bar center.
5. Write the memory by pressing **[MUTING]** then **[ENTER]**.

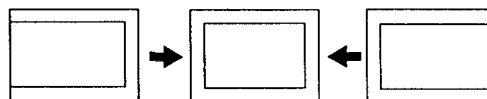


H.CENTER ADJUSTMENT (H POS)

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

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

H. CENTER (HPOS)



H.SIZE ADJUSTMENT (HSIZ)

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

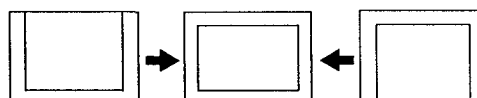
H. SIZE (HSIZ)



V.CENTER ADJUSTMENT (VPOS)

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

V. CENTER (VPOS)



V.SIZE ADJUSTMENT (VSIZ)

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

V. SIZE (VSIZ)



V LINEARITY(VLIN), VS CORRECTION(VSCO), PIN AMP(PAMP), CORNER PIN(CPIN), AND PIN PHASE(PPHA) ADJUSTMENTS

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

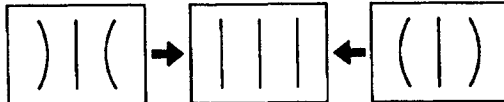
V LINEARITY (VLIN)



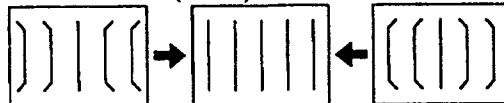
VS CORRECTION (VSCO)



PIN AMP (PAMP)



CORNER PIN (CPIN)



PIN PHASE (PPHA)



5-3. P BOARD ADJUSTMENTS

P IN P H. POSITION (PHPO)

1. Input a color-bar signal
2. Set to Service adjustment Mode.
3. Select PHPO with **[1]** and **[4]**.
4. Adjust with **[3]** and **[6]** for the best balanced cent position at 4 corner P in P display position.
5. Write the memory by pressing **MUTING** then **ENTER**.

MEMO

SECTION 6
DIAGRAMS

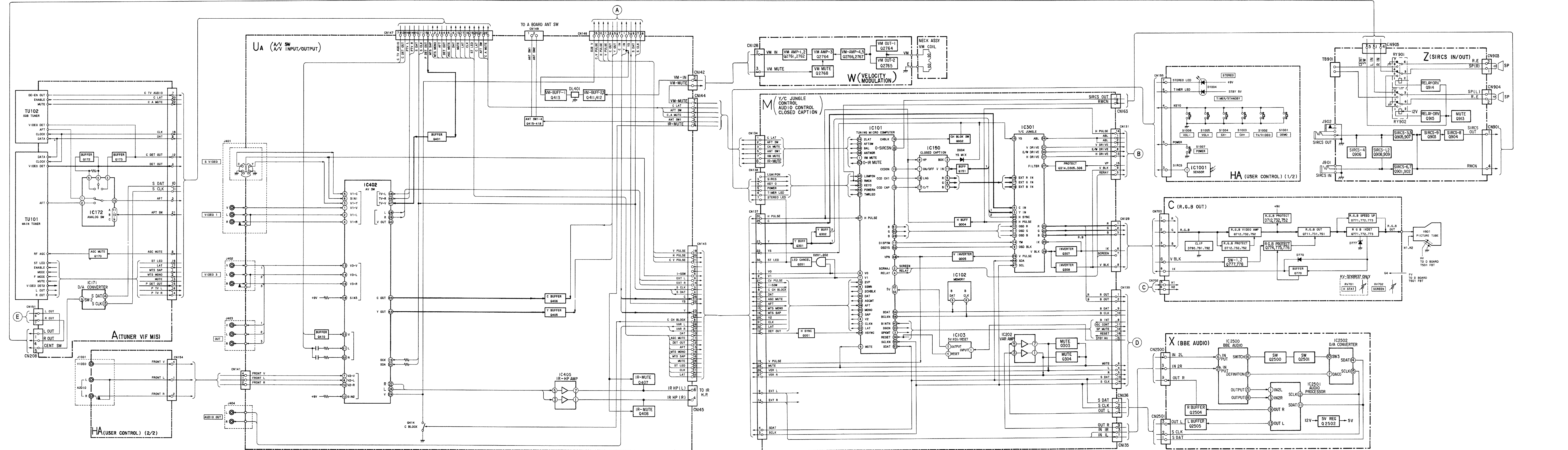
KV-27XBR37/27XBR37M/32XBR37
RM-Y122/MDR-IF310

KV-27XBR37/27XBR37M/32XBR37
RM-Y122/MDR-IF310

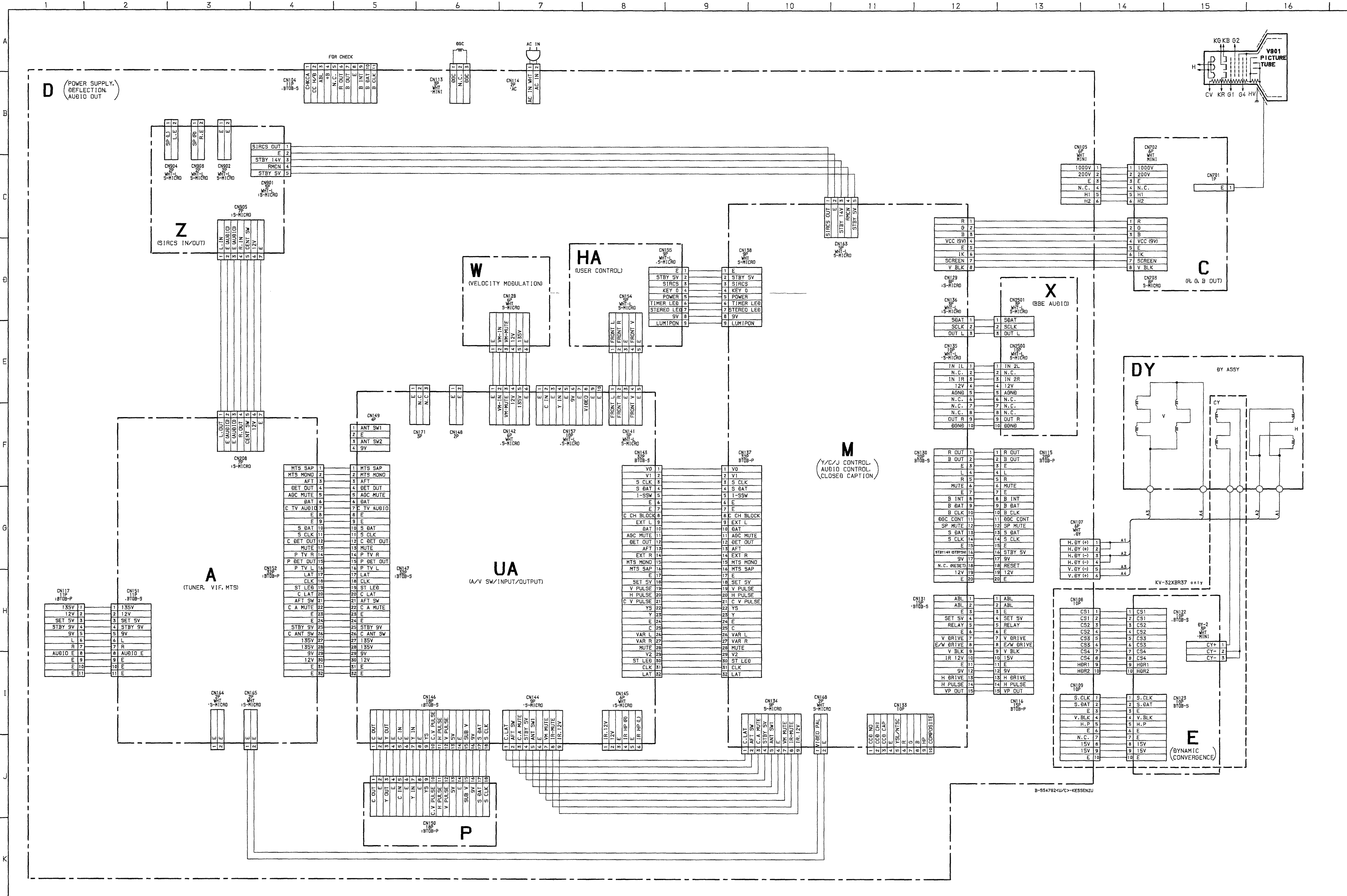
KV-27XBR37/27XBR37M/32XBR37
RM-Y122/MDR-IF310

KV-27XBR37/27XBR37M/32XBR37
RM-Y122/MDR-IF310

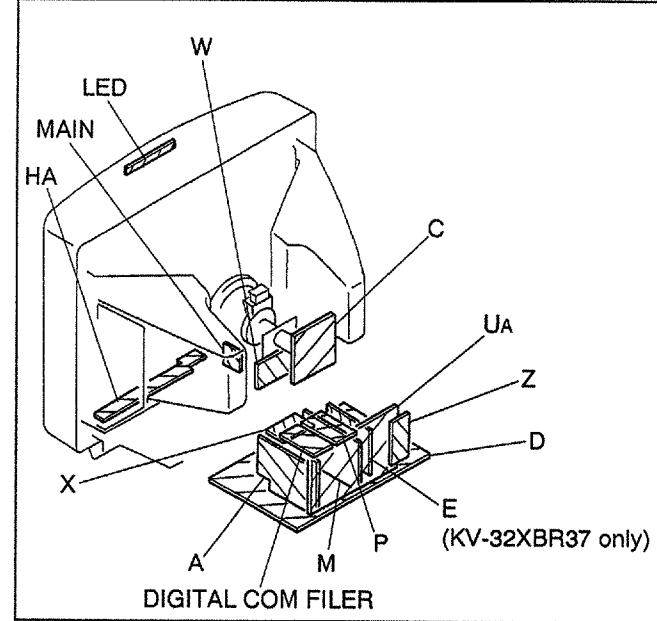
KV-27XBR37/27XBR37M/32XBR37
RM-Y122/MDR-IF310







6-4. CIRCUIT BOARDS LOCATION



6-5. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

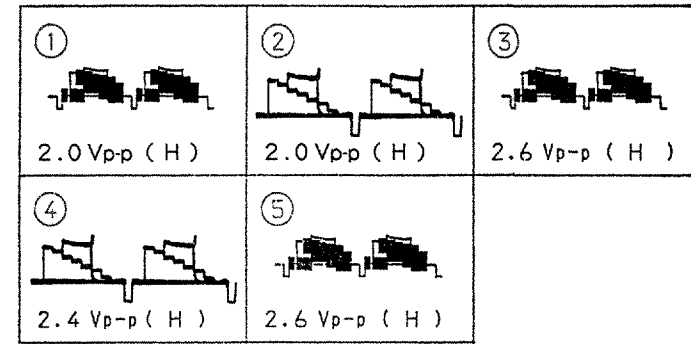
- Note:**
- All capacitors are in μF unless otherwise noted.
 - pF : μF 50V or less are not indicated except for electrolytic and tantalums.
 - All electrolytics are in 50V unless otherwise specified.
 - Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch: 5 mm
Rating electrical power 1/4W

- Chips resistors are 1/10W.
- All resistors are in ohms.
- $\text{k}\Omega=1000\Omega$, $\text{M}\Omega=1000\text{K}\Omega$
- $\square$: nonflammable resistor.
- $\square$: fusible resistor.
- Δ : internal component.
- $\square$: panel designation, and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- $\perp$: earth-ground. (cool)
- --- : earth-chassis. (hot)
- The components identified by $\square$ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
- Should replacement be required, replace only with the value originally used.

- When replacing components identified by $\square$, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by $\square$ and repeat the adjustment until the specified value is achieved. (Refer to R511 and R524 on Page 31, 32.)
- When replacing the part in below table be sure to perform the related adjustment.

UA BOARD WAVEFORMS



Part replaced ($\square$)	Adjustment ($\square$)
PM501, R511, R632, R645, R650, R338	D BOARD M BOARD HOLD-DOWN (R511)
IC601, PM501, D504, C598, R509, R524, R632, R635, R645, T501, R338	D BOARD M BOARD HOLD-DOWN (R524)

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

Reference Information

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

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

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

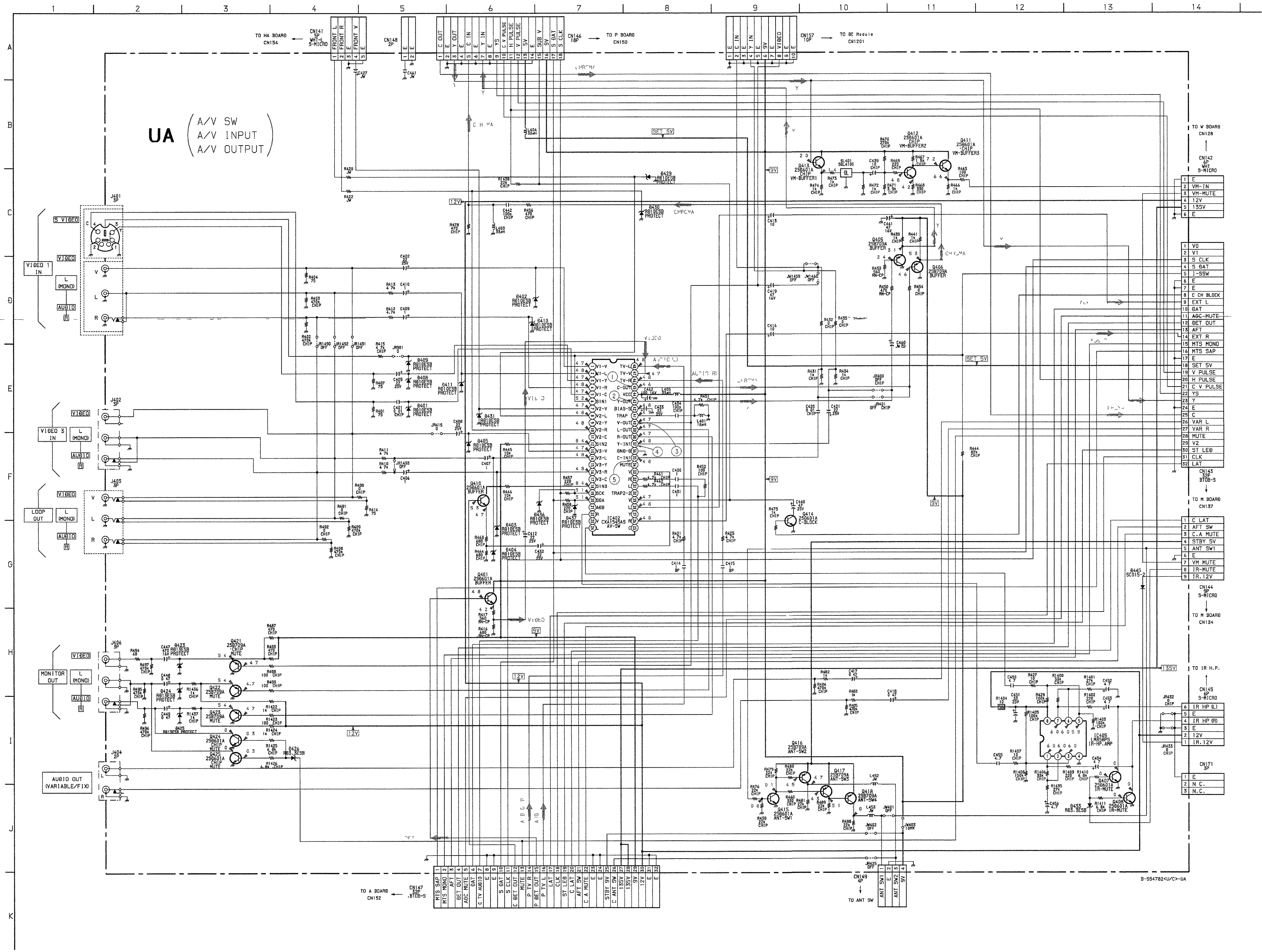
The symbol $\square$ indicate fast operating fuse. Replace only with fuse of same rating as marked.

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

Le symbole $\square$ Indique une fusible à action rapide. Doit être remplacée par une fusible de même valeur, comme marqué.

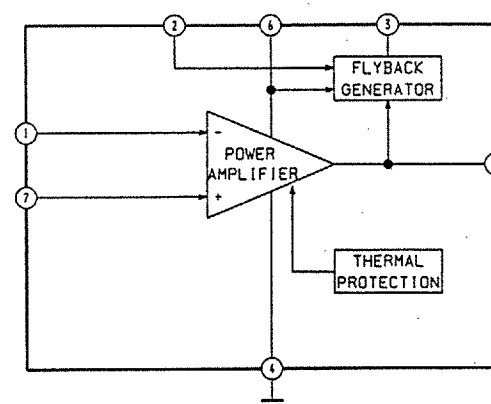
Schematic diagram

UA board

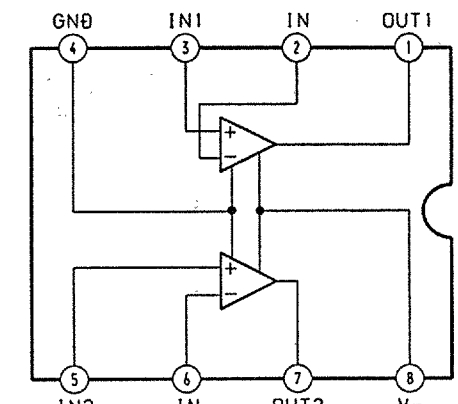


B-554782C/VC-UA

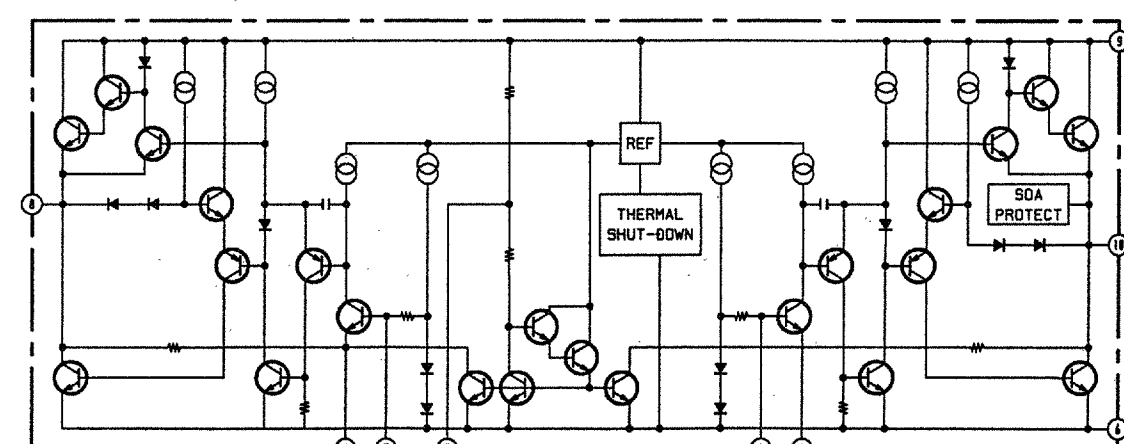
• D Board IC501 TDA8172



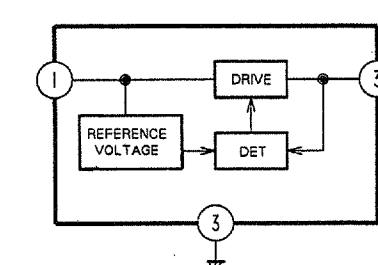
• D Board IC504 μ PC393C



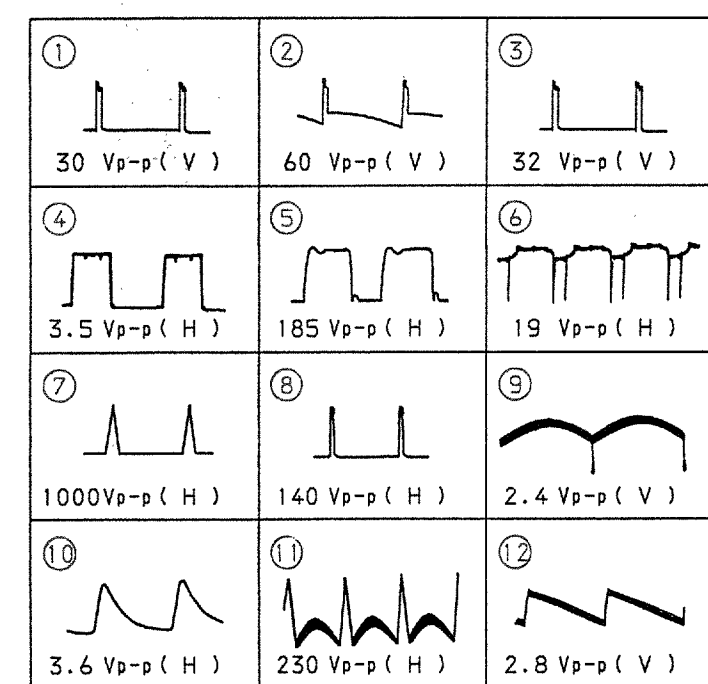
• D Board IC2200 TDA2009A



• D Board IC610 μ PC78L05J



• D BOARD WAVEFORMS



— D board —
* MARK

Ref	LOCATION	KV-27XBR37/ 27XBR37M	KV-32XBR37
C508	D - 15	0.0022/630V	—
PM501	G - 8	PM-38	PM-39
R525	D - 15	47/2W	—
R536	G - 16	—	4.7/1/4W

— NOT MOUNT

