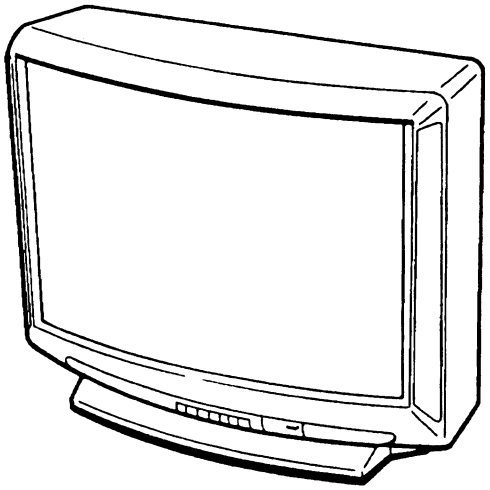
KV-27V10/27V15

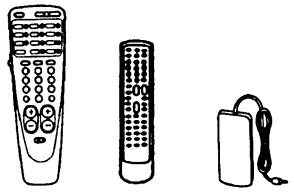
RM-Y117 RM-Y121/RM-CM101

KV-29V10C/29V10M/32V15

RM-Y117 RM-Y117 RM-Y121
RM-CM101

SERVICE MANUAL





RM-Y121 RM-Y117 RM-CM101

US Model

KV-27V10 Chassis No. SCC-F84Q-A
KV-27V15 Chassis No. SCC-F84R-A
KV-32V15 Chassis No. SCC-F84S-A

Canadian Model

KV-27V10 Chassis No. SCC-F85L-A
KV-27V15 Chassis No. SCC-F85M-A
KV-32V15 Chassis No. SCC-F85N-A

WP Model

KV-29V10C Chassis No. SCC-G49A-A

E Model

KV-29V10M Chassis No. SCC-F89H-A

AA-1 CHASSIS

MODELS OF THE SAME SERIES	
KV-27V10/27V15 KV-29V10C/29V10M/32V15	KV-27S10/27S15/29RS10 KV-29RS15/32S10/32S15
KV-27V55/29V55M	KV-2970RS/2970M/2975M

SPECIFICATIONS

Television system: American TV standards
Channel coverage: VHF: 2-13
UHF: 14-69
CABLE TV: 1-125
Picture tube: Hi-Black™ Trinitron® tube
(KV-27V10/27V15/29V10C/29V10M)
27-inch picture measured diagonally
29-inch picture measured diagonally
(KV-32V15)
32-inch picture measured diagonally

Antenna: 75-ohm external antenna terminal for VHF/UHF

- Continued on next page -

MICROFILM

TRINITRON® COLOR TV

SONY®

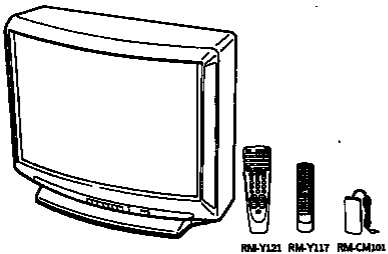
KV-27V10/27V15

RM-Y117 RM-Y121/RM-CM101

KV-29V10C/29V10M/32V15

RM-Y117 RM-Y117 RM-Y121
RM-CM101

SERVICE MANUAL



RM-Y121 RM-Y117 RM-CM101

US Model

KV-27V10 Chassis No. SCC-F84Q-A
KV-27V15 Chassis No. SCC-F84R-A
KV-32V15 Chassis No. SCC-F84S-A

Canadian Model

KV-27V10 Chassis No. SCC-F85L-A
KV-27V15 Chassis No. SCC-F85M-A
KV-32V15 Chassis No. SCC-F85N-A

WP Model

KV-29V10C Chassis No. SCC-G49A-A

E Model

KV-29V10M Chassis No. SCC-F89H-A

AA-1 CHASSIS

MODELS OF THE SAME SERIES	
KV-27V10/27V15 KV-29V10C/29V10M/32V15	KV-27S10/27S15/29RS10 KV-29RS15/32S10/32S15
KV-27V55/29V55M	KV-2970RS/2970M/2975M

SPECIFICATIONS

Television system: American TV standards
Channel coverage: VHF: 2-13
UHF: 14-69
CABLE TV: 1-125
Picture tube: Hi-Black™ Trinitron® tube
(KV-27V10/27V15/29V10C/29V10M)
27-inch picture measured diagonally
29-inch picture measured diagonally
(KV-32V15)
32-inch picture measured diagonally

Antenna: 75-ohm external antenna terminal for VHF/UHF

- Continued on next page -

TRINITRON® COLOR TV

SONY®

MICROFILM

Input — VIDEO and S VIDEO
S VIDEO IN
Y: 1 Vp-p, 75-ohms unbalanced, sync negative
C: 0.286 Vp-p (Burst signal), 75-ohms
Video : 1 Vp-p, 75-ohms unbalanced, sync negative
Audio : 500 mVrms (100% modulation)
Impedance: 47 kilo-ohms

Output — AUDIO OUT :
More than 408 mVrms at the maximum volume setting (variable)
More than 408 mVrms (fix)
Impedances : 5 kilo-ohms
(KV-27S15/29RS15/32S15)

Speaker output — 5W×2

Power requirements — 120 V AC, 60Hz

Power consumption

Model number	When in use	In standby mode
KV-27V10	165 W	6 W
KV-27V15	170 W	6.5 W
KV-29V10C	160 W	9 W
KV-29V10M	165 W	6 W
KV-32V15	205 W	6.5 W

Dimensions/Weight

	Dimensions (w/h/d)	Weight
KV-27V10	664×572×513 mm ($26_{1/4}\times23_{5/8}\times20_{1/4}$ inches)	42.9 kg (94 lbs)
KV-27V15	664×572×513 mm ($26_{1/4}\times23_{5/8}\times20_{1/4}$ inches)	43 kg (94 lbs 13 oz)
KV-29V10C	664×572×513 mm ($26_{1/4}\times23_{5/8}\times20_{1/4}$ inches)	42.9 kg (94 lbs)
KV-29V10M	664×572×513 mm ($26_{1/4}\times23_{5/8}\times20_{1/4}$ inches)	42.9 kg (94 lbs)
KV-32V15	801×664×603 mm ($31_{5/8}\times26_{1/4}\times23_{3/4}$ inches)	70 kg (154 lbs 2 oz)

Supplied accessories — (KV-27V10/29V10C/29V10M)
Remote Commander RM-Y117 (1) with 2 size AA (R6) batteries
(KV-27V15/32V15)
Remote Commander RM-Y121 (1) with 1 size AA (R6) battery
RM-CM101

Optional accessories — 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 ⚠ 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 CHASSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISE LORS DE TOUT DEPANNAGE.
LE CHASSIS DE CE RECEPTEUR EST DIRECTEMENT RACCORDE A L ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS ALA SECURITE!!

LES COMPOSANTS IDENTIFIES PAR UNE TRAME ET PAR UNE MAPQUE ⚠ SUR LES SCHEMAS DE PRINCIPE, LES VUES EXPLOSEES ET LES LISTES DE PIECES CONT D'UNE IMPORTANCE CRITIQUE POUR LA SECURITE DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMERO DE PIECE EST INDIQUE DANS LE PRESENT MANUEL OU DANS DES SUPPLEMENTS PUBLIES PAR SONY. LES REGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SECURITE DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRESENT MANUEL. SUIVRE CES PROCEDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTE.

Input — VIDEO and S VIDEO
S VIDEO IN
Y: 1 Vp-p, 75-ohms unbalanced, sync negative
C: 0.286 Vp-p (Burst signal), 75-ohms
Video : 1 Vp-p, 75-ohms unbalanced, sync negative
Audio : 500 mVrms (100% modulation)
Impedance 47 kilo-ohms

Output — AUDIO OUT :
More than 408 mVrms at the maximum volume setting (variable)
More than 408 mVrms (fix)
Impedances : 5 kilo-ohms
(KV-27S15/29RS15/32S15)

Speaker output — 5W×2

Power requirements — 120 V AC, 60Hz

Power consumption

Model number	When in use	In standby mode
KV-27V10	165 W	6 W
KV-27V15	170 W	6.5 W
KV-29V10C	160 W	9 W
KV-29V10M	165 W	6 W
KV-32V15	205 W	6.5 W

Dimensions/Weight

	Dimensions (w/h/d)	Weight
KV-27V10	664×572×513 mm (26 1/4×22 5/8×20 1/4 inches)	42.9 kg (94 lbs)
KV-27V15	664×572×513 mm (26 1/4×22 5/8×20 1/4 inches)	43 kg (94 lbs 13 oz)
KV-29V10C	664×572×513 mm (26 1/4×22 5/8×20 1/4 inches)	42.9 kg (94 lbs)
KV-29V10M	664×572×513 mm (26 1/4×22 5/8×20 1/4 inches)	42.9 kg (94 lbs)
KV-32V15	801×664×603 mm (31 5/8×26 1/4×23 3/4 inches)	70 kg (154 lbs 2 oz)

Supplied accessories — (KV-27V10/29V10C/29V10M)
Remote Commander RM-Y117 (1)
with 2 size AA (R6) batteries
(KV-27V15/32V15)
Remote Commander RM-Y121 (1)
with 1 size AA (R6) battery
RM-CM101

Optional accessories — 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.

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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)

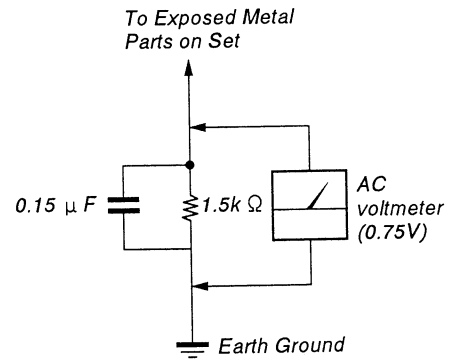

Fig. A. Using an AC voltmeter to check AC leakage.

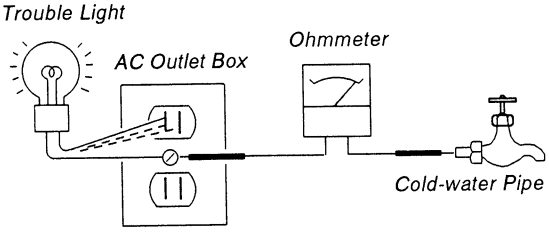

Fig B. Checking for earth ground.

SAFETY CHECK-OUT
(US model only)

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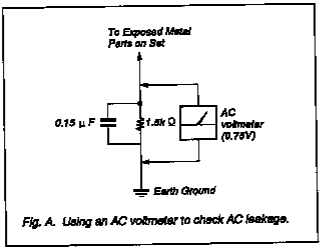

Fig. A. Using an AC voltmeter to check AC leakage.

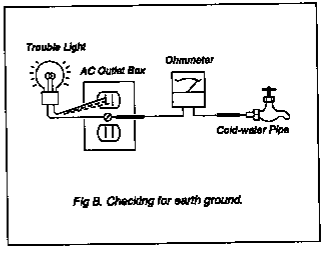

Fig B. Checking for earth ground.

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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 remein as in the manual.

- KV-27V10/29V10C/29V10M

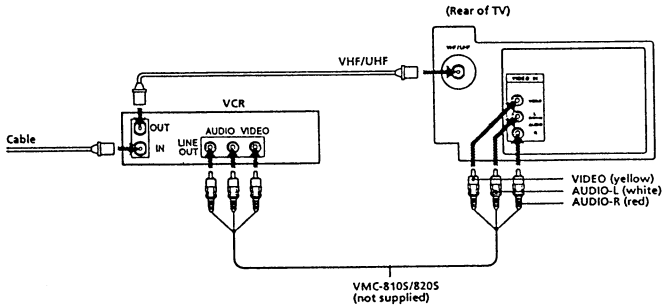
Step 1: Hookup

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

Without a cable box

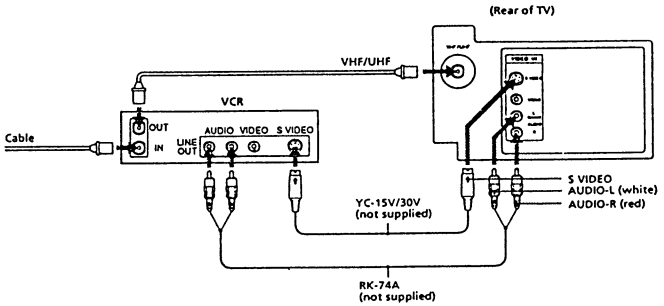


Note
- To connect a monaural VCR, connect the audio output of the VCR to AUDIO-L (mono) of VIDEO 1 IN on the TV.

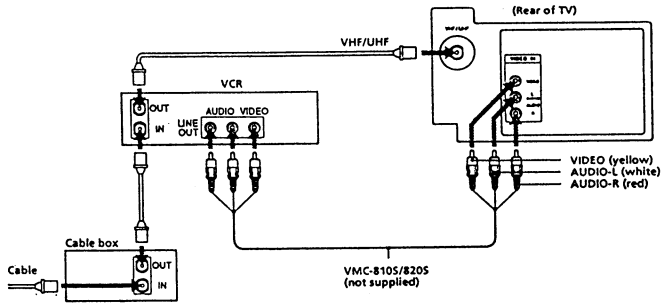
To an S video equipped VCR without a cable box

■ ***KV-27V10/29V10C/29V10M/32S10 only***

If your VCR has an S video output jack, hook up as follows and then set S VIDEO to ON on your TV (page 12). (It is set to ON at the factory.)

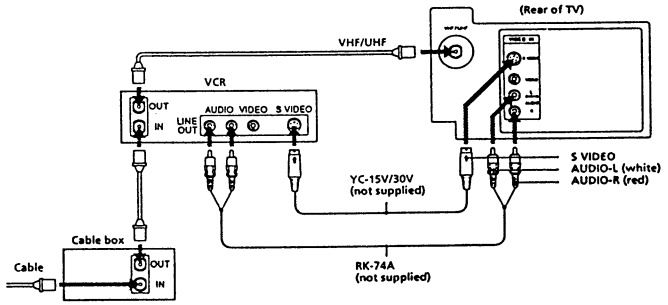


With a cable box



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



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.

● KV-27V10/29V10C/29V10M

Step 1: Hookup

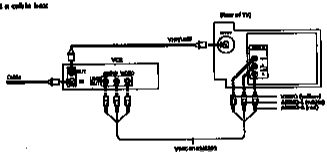
Connecting an antenna/cable TV system with a VCR

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

Without a cable box



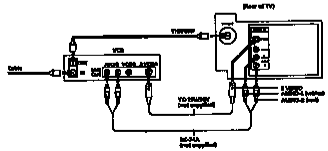
Note

- 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 without a cable box

■ KV-27V10/29V10C/29V10M/32V10 only

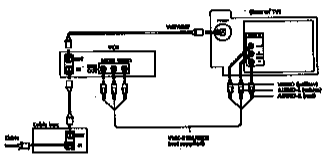
If your VCR has an S video output jack, hook up as follows and then set S VIDEO to ON on your TV (page 12). (It is set to ON at the factory.)



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.

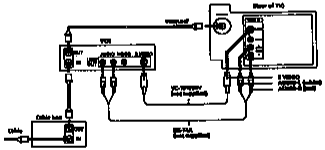
With a cable box



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



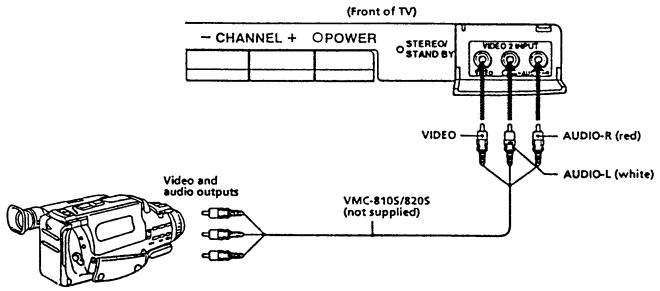
Note

- 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.

Connecting a camcorder

■ *KV-27V10/29V10C/29V10M only*

This connection is convenient for viewing a camcorder.



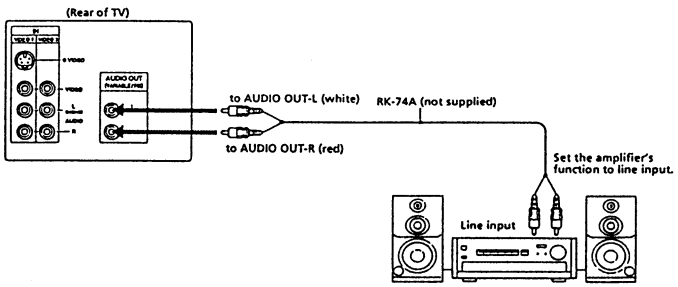
Note

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

Connecting an audio system

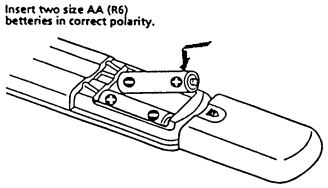
■ *KV-27V10/29V10C/29V10M only*

When connecting audio equipment, see page 17 and 18 for more information.

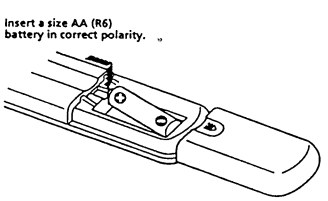


Step 2: Setting up the remote commander

■ *KV-27S10/29RS10C/32S10*
RM-Y116 remote commander



■ *KV-27V10/29V10C/29V10M*
RM-Y117 remote commander



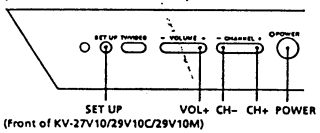
Notes

- 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 locations where it is direct sunlight, near a heater, or where the humidity is high.

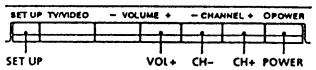
Step 3: Setting up the TV automatically (AUTO SET UP)

You can set up your TV easily by using AUTO SET UP feature. It presets all the receivable channels. To set up the TV manually, see "Setting cable TV on or off" and "Presetting channels" (page 11).
If the TV is set to a video input, you cannot execute AUTO SET UP. Press TV/VIDEO so that a channel number appears.

(Front of KV-27S10/29RS10/32S10)

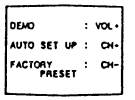


(Front of KV-27V10/29V10C/29V10M)

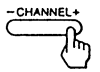


1 Press POWER to turn the TV on.

2 Press SET UP on the front of the TV.
The menu appears.



3 Press CH +.

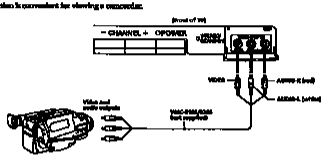


"AUTO PROGRAM" appears on the screen and the TV starts scanning and presetting channels automatically. When all the receivable channels are stored, "AUTO PROGRAM" disappears and the lowest numbered channel is displayed. If the TV receives cable TV channels, CATV is set to ON automatically.

Connecting a camcorder

■ KV-27V16/27V16C/27V16M only

This connection is convenient for viewing a camcorder.

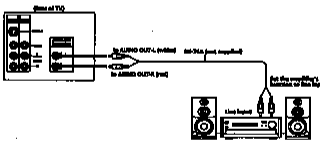


Note
- To connect a monaural camcorder, connect the audio output of the VCR to AUDIO-L (mono) of VIDEO-2 INPUT on the TV.

Connecting an audio system

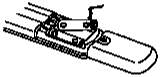
■ KV-27V16/27V16C/27V16M only

When connecting audio equipment, see page 17 and 18 for more information.

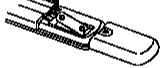


Step 2: Setting up the remote commander

■ KV-27V16/27V16C/27V16
RM-Y116 remote commander



■ KV-27V16/27V16C/27V16M
RM-Y117 remote commander

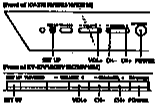


Notes
- With normal use, the battery should last for approximately six months.
- If you do not use the remote commander for an extended period of time, remove the battery to avoid possible damage from battery leakage.
- Do not handle the remote commander roughly. Do not drop it, step on it or let it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

Step 3: Setting up the TV automatically

(AUTO SET UP)

You can set up your TV easily by using AUTO SET UP feature. It protects all the receivable channels. To set up the TV manually, see "Setting cable TV on or off" and "Presetting channels" (page 11).
If the TV is set to a video input, you cannot execute AUTO SET UP. Press TV/VIDEO so that a channel number appears.



1 Press POWER to turn the TV on.

2 Press SET UP on the front of the TV.
The menu appears.

3 Press CH +.

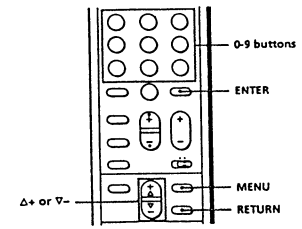
"AUTO PROGRAM" appears on the screen and the TV starts scanning and presetting channels automatically. When all the receivable channels are stored, "AUTO PROGRAM" disappears and the lowest numbered channel is displayed. If the TV receives cable TV channels, CATV is set to ON automatically.

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

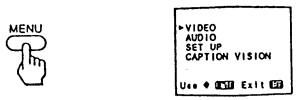
DEMO: To browse the main functions.
Press VOL+ in step3. The functions and menus a displayed one by one.
FACTORY PRESET: To restore the factory settings when you are confused about the TV settings.
Press CH– in step3. The settings of picture and sound are restored to the factory setting.

Erasing or adding channels

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



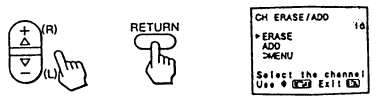
1 Press MENU.
The main menu appears.



2 Press Δ+ or ∇– to select SET UP and press RETURN.
The SET UP menu appears.

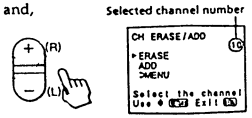
3 Press Δ+ or ∇– to select CH SET UP and press RETURN.
The CH SET UP menu appears.

4 Press Δ+ or ∇– to select CH ERASE/ADD and press RETURN.
The CH ERASE/ADD menu appears.



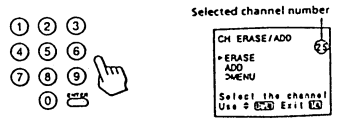
5 Erase and/or add the channel you want:

To erase an unwanted channel
(1) Make sure the cursor (▸) is beside ERASE.
(2) Press CH +/– to select the channel you want to erase and,



(3) press RETURN.
The indication "–" appears beside the channel number, showing that the channel is erased from the preset memory.

To add a channel that you want
(1) Press Δ+ or ∇– to select ADD.
(2) 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.

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

7 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.

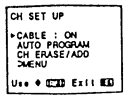
Setting cable TV on or off

If you have connected the TV to a cable TV system, set CABLE to ON, the factory setting. If not, set CABLE to OFF.
You do not have to do this procedure if you execute AUTO SET UP (page 9). Do this procedure only when you want to set it manually.

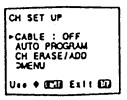
1 Press MENU.

2 Press Δ+ or ∇– to move the cursor (▸) to SET UP and press RETURN.

3 Press Δ+ or ∇– to move the cursor (▸) to CH SET UP and press RETURN.



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 Δ+ or ∇– to move the cursor and press RETURN.
(2) Press Δ+ or ∇– to select ON or OFF and,
(3) press RETURN.



5 Press MENU to return to the original screen.

Note
- If CH SET UP menu appears in black, the TV is set to a video input and you cannot select CABLE. Press TV/VIDEO so that a channel number appears.

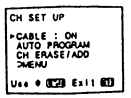
Presetting channels

You can preset TV channels easily by AUTO PROGRAM feature.
You do not have to do this procedure if you execute AUTO SET UP (page 9). Do this produre only when you want to set it manually.

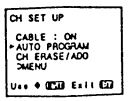
1 Press MENU.

2 Press Δ+ or ∇– to move the cursor (▸) to SET UP and press RETURN.

3 Press Δ+ or ∇– to move the cursor (▸) to CH SET UP and press RETURN.



4 Press Δ+ or ∇– to move the cursor (▸) 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.

5 Press MENU to return to the original screen.

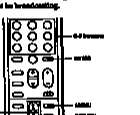
Note
- If the CH SET UP menu appears in black, the TV is set to a video input and you cannot select AUTO PROGRAM. Press TV/VIDEO or TV so that a channel number appears.

Note
- If more than 60 seconds elapse after you press a button, the menu disappears automatically.

DISMISS: To browse the main functions.
Press VCR or in step 5. The functions and menus a displayed one by one.
FACTORY PRESET: To restore the factory settings
when you are confused about the TV settings.
Press CH- in step 5. The settings of picture and sound are restored to the factory setting.

Erasing or adding channels

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



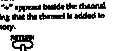
1 Press MENU.
The main menu appears.

2 Press A+ or V- to select SET UP and press RETURN.
The SET UP menu appears.

3 Press A+ or V- to select CH SET UP and press RETURN.
The CH SET UP menu appears.

4 Press A+ or V- to select CH ERASE/ADD and press RETURN.
The CH ERASE/ADD menu appears.

5 Erase and/or add the channel you want.
To erase an unwanted channel
(1) Make sure the cursor (>) is beside ERASE.
(2) Press CH +/- to select the channel you want to erase and,



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

To add a channel that you want
(1) Press A+ or V- to select ADD.
(2) 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.

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

7 When you finish, press MENU.

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

Setting cable TV on or off

If you have connected the TV to a cable TV system, set CABLE to ON, the factory setting. If not, set CABLE to OFF.
You do not have to do this procedure if you execute AUTO SET UP (page 9). Do this procedure only when you want to set it manually.

1 Press MENU.

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

3 Press A+ or V- to move the cursor (>) to CH SET UP and press RETURN.

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 A+ or V- to move the cursor and press RETURN.
(2) Press A+ or V- to select ON or OFF and,
(3) press RETURN.

5 Press MENU to return to the original screen.

Note
- If CH SET UP menu appears in black, the TV is set to a video input and you cannot select CABLE. Press TV/VIDEO or the channel number appears.

Presetting channels

You can preset TV channels easily by AUTO PROGRAM feature.
You do not have to do this procedure if you execute AUTO SET UP (page 9). Do this procedure only when you want to set it manually.

1 Press MENU.

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

3 Press A+ or V- to move the cursor (>) to CH SET UP and press RETURN.

4 Press A+ or V- to move the cursor (>) to AUTO PROGRAM and press RETURN.

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

5 Press MENU to return to the original screen.

Note
- If the CH SET UP menu appears in black, the TV is set to a video input and you cannot select AUTO PROGRAM. Press TV/VIDEO or TV so that a channel number appears.

Setting S video on or off

■ *KV-27V10/29V10C/29V10M/32S10 only*

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

1 **Press TV/VIDEO select VIDEO 1.**

2 **Press MENU.**

3 **Press △+ or ▽– to move the cursor (▶) to SET UP and press RETURN.**

4 **Press △+ or ▽– to move the cursor (▶) to S VIDEO and press RETURN.**

5 **Press △+ or ▽– to select ON or OFF and press RETURN.**

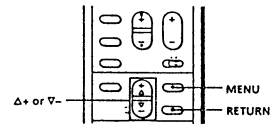
6 **Press MENU to return to the original screen.**

Note
- If S VIDEO appears in black, set a video input to VIDEO 1.
- If you set S VIDEO to ON, the TV automatically receive S video signals whenever a VCR with S video is connected.

Changing the menu language

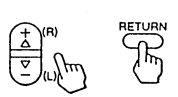
■ *KV-29RS10/29V10C/29V10M only*

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

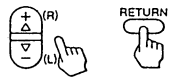


1 **Press MENU.**
The main menu appears.

2 **Press △+ or ▽– to move the cursor (▶) to ENGLISH and press RETURN.**



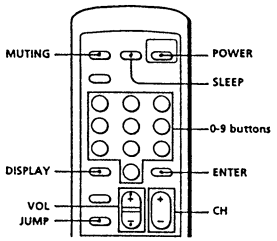
3 **Press △+ or ▽– to select ESPAÑOL and press RETURN.**



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

Note
- Certain parts of the ESPAÑOL menus remain in English.

Watching the TV

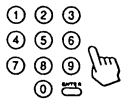


1 **Press POWER to turn the TV on.**

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

2 **Select the channel you want:**

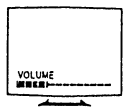
To select a channel directly
Press the 0 – 9 buttons and then press ENTER.



The channel can also be selected without pressing ENTER.

To scan through channels
Press CH +/– until the channel you want appears.

3 **Press VOL +/– to adjust the volume.**



Note
- Set the CABLE BOX/TV selector to TV. *(KV-27V10/29V10C/29V10M only)*

Switching quickly between two channels

Press JUMP.
The channel you watched previously appears.

Pressing JUMP again switches back the channel.

Muting the sound

Press MUTING.
"MUTING" appears on the screen.

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

Displaying on-screen information

Use this feature to check the channel number, channel caption (if set), and MTS mode (if SAP is selected).

Press DISPLAY.

To cancel the display, press DISPLAY again.

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.

Setting S video on or off

■ *KV-27V10B3/V10C2B/V10M3/2B10 only*

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

1 Press TV/VIDEO select VIDEO 1.

2 Press MENU.

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

4 Press Δ+ or V– to move the cursor (▶) to S VIDEO and press RETURN.

5 Press Δ+ or V– to select ON or OFF and press RETURN.

6 Press MENU to return to the original screen.

Note
- If S VIDEO appears in black, set a video input to VIDEO 1.
- If you set S VIDEO to ON, the TV automatically receive S video signals whenever a VCR with S video is connected.

Changing the menu language

■ *KV-28S1TB3/V10C2B/V10M only*

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

1 Press MENU.
The main menu appears.

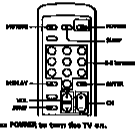
2 Press Δ+ or V– to move the cursor (▶) to ENGLISH and press RETURN.

3 Press Δ+ or V– to select ESPAÑOL and press RETURN.

4 Press MENU to return to the original screen.

Note
- Contents of the ESPAÑOL menu remain in English.

Watching the TV



1 Press POWER to turn the TV on.

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

2 Select the channel you want:
To select a channel directly
Press the 0 – 9 buttons and then press ENTER.

The channel can also be selected without pressing ENTER.

To scan through channels
Press CH +/– until the channel you want appears.

3 Press VOL +/– to adjust the volume.

Note
- Set the CABLE BOX/TV selector to TV.
(KV-27V10B3/V10C2B/V10M only)

Switching quickly between two channels

Press JUMP.
The channel you watched previously appears.

Pressing JUMP again switches back the channel.

Muting the sound

Press MUTING.
"MUTING" appears on the screen.

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

Displaying on-screen information

Use this feature to check the channel number, channel caption (if set), and MTS mode (if SAP is selected).

Press DISPLAY.

To cancel the display, press DISPLAY again.

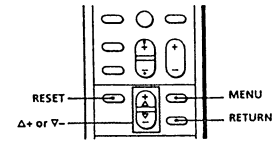
Setting the Sleep Timer

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.

Adjusting the picture (VIDEO)

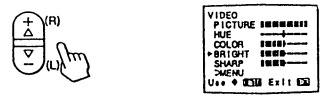
When watching TV programs, you can adjust the quality of the picture to suit your taste.
You can adjust the picture of video input(s) as well. These settings are stored separately from those for the TV picture.



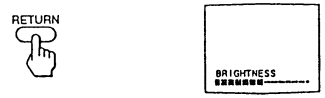
1 **Press MENU.**

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

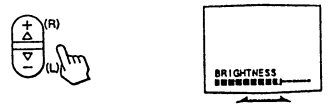
3 **Select the item you want to adjust.**
For example:
(1) To adjust brightness, press Δ+ or ∇– to select BRIGHT and,



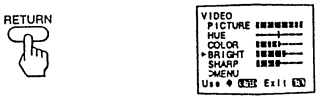
(2) press RETURN.



4 **Adjust the selected item:**
(1) Press Δ+ 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

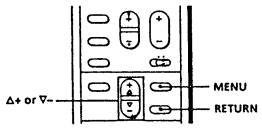
Item	Press Δ+ to	Press ∇– to
PICTURE	Increase picture contrast and give vivid color	Decrease picture contrast and give soft color
HUE	Make skin tones become greenish	Make skin tones become purplish
COLOR	Increase color intensity	Decrease color intensity
BRIGHT	Brighten the picture	Darken the picture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

To restore the factory settings
Press RESET while the VIDEO menu is displayed.
All the settings are restored to the factory settings.

Adjusting screen brightness automatically (LUMISPONDER)

■ ***KV-27V10/29V10C/29V10M only***

The LUMISPONDER feature adjusts the brightness of the screen automatically according to the ambient brightness. The LUMISPONDER function automatically adjusts the level set by the user in the VIDEO menu to the standard.



1 **Press MENU.**

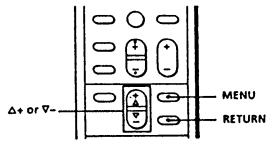
2 **Press Δ+ or ∇– to select VIDEO and press RETURN.**

3 **Press Δ+ or ∇– to select LUMISPONDER and press RETURN.**

4 **Press Δ+ or ∇– to select ON or OFF and press RETURN.**

Adjusting the sound (AUDIO)

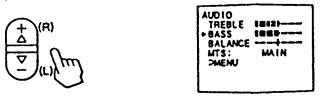
You can adjust the quality of the sound to suit your taste.
You can adjust the sound of video input(s) as well. These settings are stored separately from those for the TV sound.



1 **Press MENU.**

2 **Press Δ+ or ∇– to select AUDIO and press RETURN.**

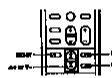
3 **Select the item you want to adjust.**
For example:
(1) To adjust bass, press Δ+ or ∇– to select BASS and,



(2) press RETURN.

Adjusting the picture (VIDEO)

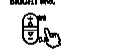
When watching TV programs, you can adjust the quality of the picture to suit your taste.
You can adjust the picture of video input(s) as well.
These settings are stored separately from those for the TV picture.



1 Press MENU.

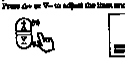
2 Make sure the cursor (▷) is beside VIDEO and press RETURN.

3 Select the item you want to adjust.
For example:
(1) To adjust brightness, press A+ or V– to select BRIGHT and,



(2) press RETURN.

4 Adjust the selected item
(1) Press A+ or V– 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

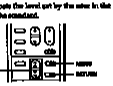
Item	Press A+ to	Press V– to
PICTURE	Increase picture contrast and give vivid color	Decrease picture contrast and give soft color
HUE	Make skin tones become greenish	Make skin tones become purplish
COLOR	Increase color intensity	Decrease color intensity
BRIGHT	Brighten the picture	Darken the picture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

To restore the factory settings
Press RESET while the VIDEO menu is displayed.
All the settings are restored to the factory settings.

Adjusting screen brightness automatically (LUMISPONDER)

This operation is for VPC-X2 model only

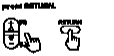
The LUMISPONDER feature adjusts the brightness of the screen automatically according to the ambient brightness. The LUMISPONDER function automatically adjusts the level set by the user in the VIDEO menu to the standard.



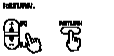
1 Press MENU.

2 Press A+ or V– to select VIDEO and press RETURN.

3 Press A+ or V– to select LUMISPONDER and press RETURN.

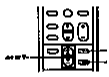


4 Press A+ or V– to select ON or OFF and press RETURN.



Adjusting the sound (AUDIO)

You can adjust the quality of the sound to suit your taste.
You can adjust the sound of video input(s) as well.
These settings are stored separately from those for the TV sound.



1 Press MENU.

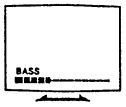
2 Press A+ or V– to select AUDIO and press RETURN.

3 Select the item you want to adjust.
For example:
(1) To adjust bass, press A+ or V– to select BASS and,

(2) press RETURN.

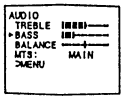
4 Adjust the selected item:

(1) Press △+ or ▽– to adjust the item and,



(2) press RETURN.

The new setting appears in the 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.

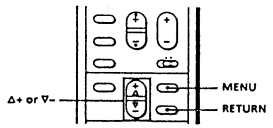
Note

- When SPEAKER (page 17) is OFF and AUDIO OUT (page 18) is FIXED condition, sound menu appears mid-level setting and it cannot be adjusted.

Listening to surround sound (SURROUND)

■ *KV-27V10/29V10C/29V10M only*

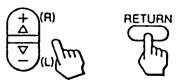
SURROUND feature simulate sound reproduction with the atmosphere of a movie theater or a concert hall. Surround sound is only effective for stereo programs.



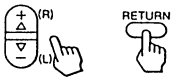
1 Press MENU.

2 Press △+ or ▽– to select AUDIO and press RETURN.

3 Press △+ or ▽– to select SURROUND and press RETURN.

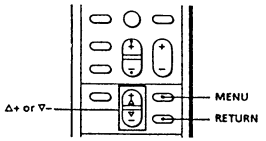


4 Press △+ or ▽– to select ON and press RETURN.



Selecting stereo or bilingual programs (MTS)

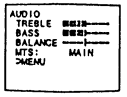
The Multichannel TV Sound (MTS) feature allows you to enjoy stereo sound or Second Audio Programs (SAP) at your choice. The initial setting is stereo sound (MAIN).



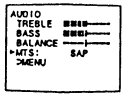
1 Press MENU.

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.

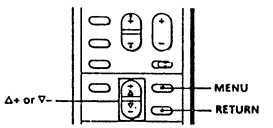
Note

- Stereo and SAP sounds are subject to program sources.

Setting the speaker switch (SPEAKER)

■ *KV-27V10/29V10C/29V10M only*

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



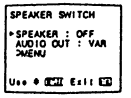
1 Press MENU.

2 Press △+ or ▽– to select AUDIO and press RETURN.

3 Press △+ or ▽– to select SPEAKER SWITCH and press RETURN.

4 Make sure the cursor (▸) is beside SPEAKER and press RETURN.

5 Press △+ or ▽– to select ON or OFF and press RETURN.



4 Adjust the selected item:
(1) Press A+ or V– 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 A+ to	Press V– to
TREBLE	Increase the treble response	Decrease the treble response
BASS	Increase the bass response	Decrease the bass response
BALANCE	Increase the right speaker's volume	Increase the left speaker's volume

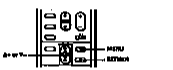
To restore the factory settings
Press RESET while the AUDIO menu is displayed.

Note
- When SPEAKER (page 17) is OFF and AUDIO OUT (page 18) is FIXED, sound from speakers and level setting will not be adjusted.

Listening to surround sound (SURROUND)

* *KV-32V10/32V10CZA/36V only*

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



1 Press MENU.

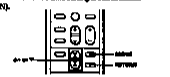
2 Press A+ or V– to select AUDIO and press RETURN.

3 Press A+ or V– to select SURROUND and press RETURN.

4 Press A+ or V– to select ON and press RETURN.

Selecting stereo or bilingual programs (MTS)

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



1 Press MENU.

2 Press A+ or V– to select AUDIO and press RETURN.

3 Press A+ or V– to select MTS and press RETURN.

4 Press A+ or V– to select MAIN, SAP, or MONO and press RETURN.

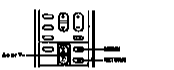
Choose	To
MAIN	Listen to stereo sound. The STEREO indicator on the TV lights up while a stereo broadcast is received.
SAP	Listen to bilingual programs. The sound of non-SAP programs will be muted when SAP is selected.
MONO	Reduce noise during stereo broadcasts.

Note
- Stereo and SAP sounds are subject to program source.

Setting the speaker switch (SPEAKER)

* *KV-32V10/32V10CZA/36V only*

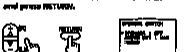
You may switch off the TV speakers when, for example, you want to listen to the sound through a stereo system.



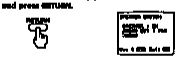
1 Press MENU.

2 Press A+ or V– to select AUDIO and press RETURN.

3 Press A+ or V– to select SPEAKER (SWITCH) and press RETURN.



4 Make sure the cursor (▶) is beside SPEAKER and press RETURN.

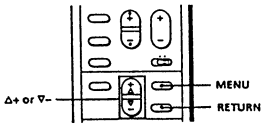


5 Press A+ or V– to select ON or OFF and press RETURN.

Setting audio out (AUDIO OUT)

■ *KV-27V10/29V10C/29V10M only*

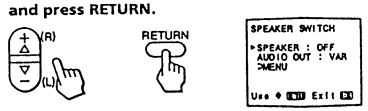
You can select audio out to variable or fixed when SPEAKER is set to OFF.
Audio out is variable when SPEAKER is set to ON.



1 Press MENU.

2 Press Δ+ or ∇– to select AUDIO and press RETURN.

3 Press Δ+ or ∇– to select SPEAKER SWITCH and press RETURN.



4 Press Δ+ or ∇– to select AUDIO OUT and press RETURN.

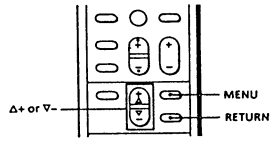
5 Press Δ+ or ∇– to select VAR or FIXED and press RETURN.

VAR: Sound output varied according to the TV settings. You can adjust the volume, bass, treble and balance.
FIXED: Sound output is always fixed to a certain level.
You cannot adjust the volume.

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



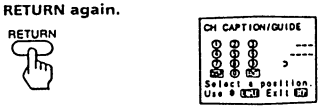
1 Press TV/VIDEO to select TV mode.

2 Press MENU.

3 Press Δ+ or ∇– to select SET UP and press RETURN.

4 Press Δ+ or ∇– to select CH CAPTION/GUIDE and press RETURN.

5 Press RETURN again.



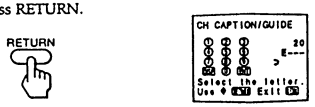
6 Press Δ+ or ∇– to select a channel guide number button and press RETURN.
Each time you press Δ+ or ∇–, the channel numbers change to red in turns. The channel number button you select will be the one you press to call up your favorite channel.

7 Press Δ+ 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 Δ+ or ∇– to select the first letter.
Each time you press Δ+ or ∇–, the letter changes as shown below and,

0⟷1⟷...⟷9⟷A⟷B⟷...⟷Z⟷&⟷/⟷_(blank space)

(2) press RETURN.



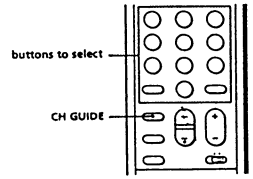
(3) Repeat steps (1) and (2) to select the remaining letters and press RETURN.

9 Repeat step 5 to 7 to caption other channels.

To erase a caption
Press RESET after step 5.

Notes
- The position number you already selected appears in yellow.
- If the CH CAPTION/GUIDE menu appears in black, the TV is set to a video input and you cannot select CH CAPTION/GUIDE.
  Press TV/VIDEO to select TV mode.
- If more than 90 seconds elapse after you press a button, the menu disappear automatically.

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 DISPLAY or ENTER button to select the channel you want.

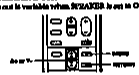
To cancel the CHANNEL GUIDE menu
Press CH GUIDE again.

Setting audio out

(AUDIO OUT)

■ KV-20V1[illegible]/16C[illegible] only

You can select audio out to variable or fixed when SPEAKER is set to OFF.
Audio out is variable when SPEAKER is set to ON.



1 Press MENU.

2 Press Δ+ or V– to select AUDIO and press RETURN.

3 Press Δ+ or V– to select SPEAKER SWITCH and press RETURN.

4 Press Δ+ or V– to select AUDIO OUT and press RETURN.

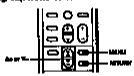
5 Press Δ+ or V– to select VAR or FIXED and press RETURN.

VAR: Sound output varied according to the TV settings. You can adjust the volume, bass, treble and balance.
FIXED: Sound output is always fixed to a certain level.
You cannot adjust the volume.

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



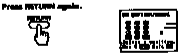
1 Press TV/VIDEO to select TV mode.

2 Press MENU.

3 Press Δ+ or V– to select SET UP and press RETURN.

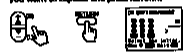
4 Press Δ+ or V– to select CH CAPTION/GUIDE and press RETURN.

5 Press RETURN again.



6 Press Δ+ or V– to select a channel guide number button and press RETURN.
Each time you press Δ+ or V–, the channel number changes in red to burn. The channel number button you select will be the one you press to call up your favorite channel.

7 Press Δ+ or V– 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 Δ+ or V– to select the first letter.
Each time you press Δ+ or V–, the letter changes as shown below and,

(2) press RETURN.

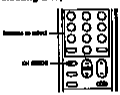
(3) Repeat steps (1) and (2) to select the remaining letters and press RETURN.

9 Repeat step 8 to 7 to caption other channels.

To erase a caption
Press RESET after step 5.

Notes
- The position number you already selected appears in yellow.
- If the CH CAPTION/GUIDE menu appears in black, the TV is set to a video input and you cannot select CH CAPTION/GUIDE.
  Press TV/VIDEO to select TV mode.
- If more than 60 seconds elapse after you press a button, the menu disappears automatically.

Selecting a captioned channel



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

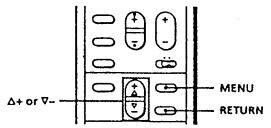
2 Press a channel number button, the DISPLAY or ENTER button to select the channel you want.

To cancel the CHANNEL GUIDE menu
Press CH GUIDE again.

Setting video labels (VIDEO LABEL)

■ *KV-27V10/29V10C/29V10M only*

This feature allows you to label each 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 Δ+ or ∇– to select SET UP and press RETURN.

3 Press Δ+ or ∇– to select VIDEO LABEL and press RETURN.

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

5 Press Δ+ or ∇– to select the label and press RETURN.

Each time you press Δ+ or ∇–, the label changes as shown below.

VIDEO 1
VIDEO 1 ⟷ S VIDEO ⟷ BETA ⟷ 8 mm ⟷ VHS ⟷ LD

VIDEO 2
VIDEO 2 ⟷ BETA ⟷ 8 mm ⟷ VHS ⟷ LD

VIDEO 3
VIDEO 3 ⟷ BETA ⟷ 8 mm ⟷ VHS ⟷ LD

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

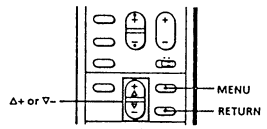
Note

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

Displaying Caption Vision (CAPTION VISION)

■ *KV-27S10/27V10/32S10 only*

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



1 Press MENU.

2 Press Δ+ or ∇– to select CAPTION VISION and press RETURN.

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

Note

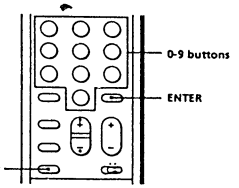
- Captions may appear with a white box or another error instead of a certain word. Poor reception of TV programs can also cause errors in Caption Vision.

Operating video equipment

■ *KV-27V10/29V10C/29V10M only*

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

Setting the manufacturer's code



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

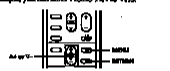
The code numbers for Sony equipment are assigned as follows:

01 ..... Beta, ED Beta VCR
02 ..... 8 mm VCR
03 ..... VHS VCR (Factory setting)
04 ..... MDP

Setting video labels
(VIDEO LABEL)

■ XV-Z77*/Z*7*/Z*7*/Z*7*/Z*7*/Z*7* only

This feature allows you to label each 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 A+ or V- to select SET UP and press RETURN.

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

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

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

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

VIDEO 1
VIDEO 1 → 1 HDMI → BETA → 2 mm → VHS → UP

VIDEO 2
VIDEO 2 → BETA → 8 mm → VHS → UP

VIDEO 3
VIDEO 3 → BETA → 8 mm → VHS → UP

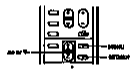
6 Repeat steps 4 and 5 to label other input modes.

Note
- If more than 10 seconds elapse after you press a button, the menu disappear automatically.

Displaying Caption Vision (CAPTION VISION)

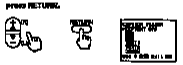
■ XV-Z77*/Z*7*/Z*7*/Z*7*/Z*7*/Z*7* only

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

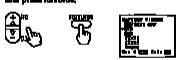


1 Press MENU.

2 Press A+ or V- to select CAPTION VISION and press RETURN.



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



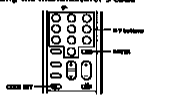
Notes
- Captions may appear with a white box or a random error instead of a certain word. This is common of TV programs on the screen source in Caption Vision.

Operating video equipment

■ XV-Z77*/Z*7*/Z*7*/Z*7*/Z*7*/Z*7* only

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

Setting the manufacturer's code



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

The code numbers for Sony equipment are assigned as follows:

01 ..... Beta, BD Beta VCR
02 ..... 8 mm VCR
03 ..... VHS VCR (Factory setting)
04 ..... MDP

● KV-27V15/32V15

Step 1: Hookup

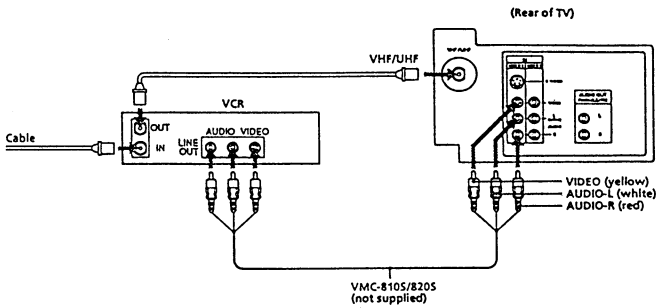
Connecting an antenna/cable TV system with a VCR

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 at once using a window Picture (Picture in Picture)

Without a cable box

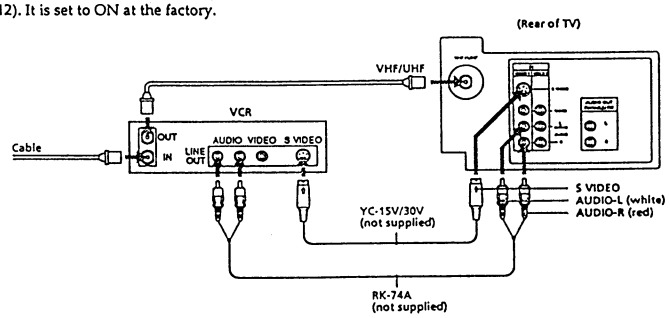


Note

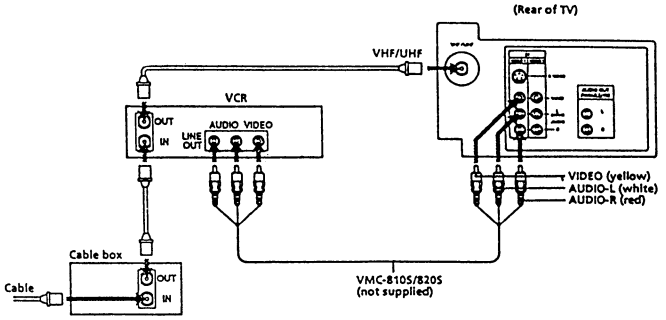
- To connect a monaural VCR, connect the audio output of the VCR to AUDIO-L (mono) of VIDEO 1 IN on the TV.

To an S video equipped VCR without a cable box

If your VCR has an S video output jack, hook up as follows and then set S VIDEO to ON on your TV(page12). It is set to ON at the factory.



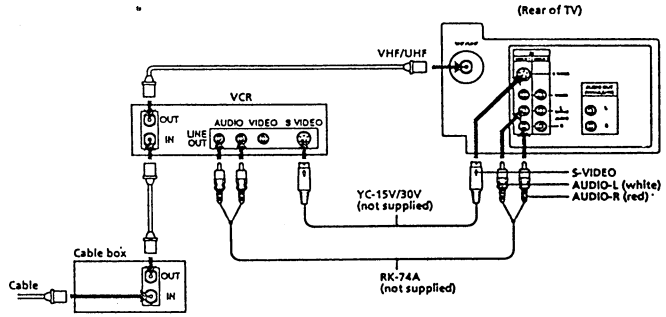
With a cable box



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



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.

● KV-27V15/32V16

Step 1: Hookup

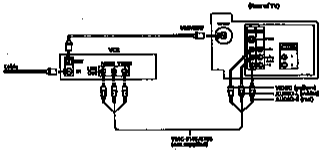
Connecting an antenna/cable TV system with a VCR

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 watching another Program
- Watch two TV programs at once using a window Picture (Picture in Picture)

Without a cable box

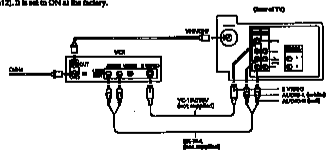


Note

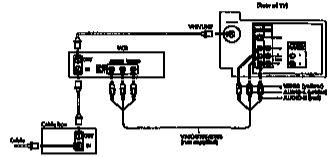
- To connect a monaural VCR, connect the audio output of the VCR to AUDIO-L (mono) of VIDEO 1 IN on the TV.

To an S video equipped VCR without a cable box

If your VCR has an S video output jack, hook up as follows and then set S VIDEO to ON in your TV(page12). It is set to ON at the factory.



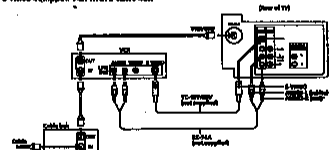
With a cable box



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



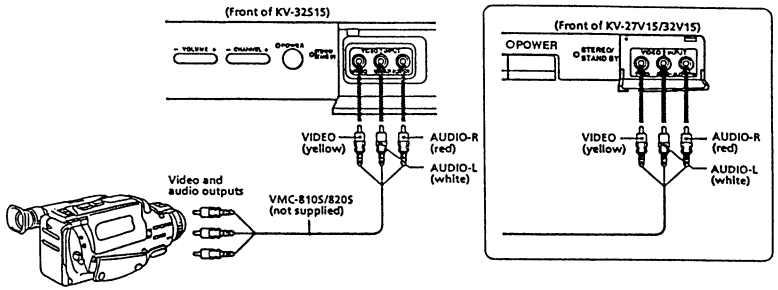
Note

- When 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.

Connecting a camcorder

■ *KV-27V15/32S15/32V15 only*

This connection is convenient for viewing a camcorder.

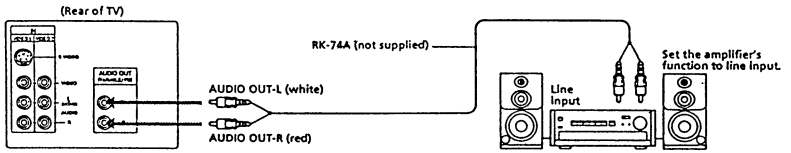


Note

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

Connecting an audio system

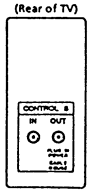
when connecting audio equipment, see page 20 for more information.



Connecting other Sony equipment with CONTROL S jack

■ *KV-27V15/32V15 only*

Connect the supplied cable box controller (Cable Mouse) to the CONTROL S OUT jack. Refer to the the Cable Mouse's manual for details on the connection.

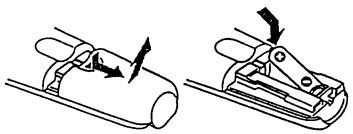


Make the following connections to control the TV and connected equipment with one remote commander.

- 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.



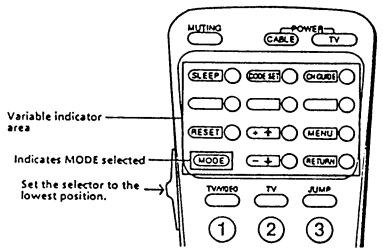
Notes

- 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.

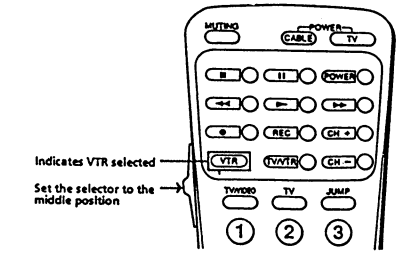
Using the remote commander

The upper half of the remote commander has three selectable operation modes. Each button in this area has three different functions. You can select the mode by sliding a selector on the left side.

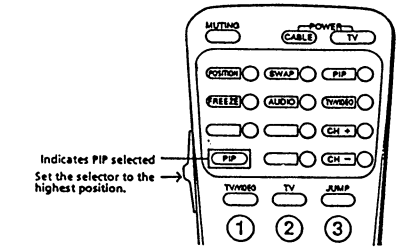
For normal TV viewing



For operating video equipment



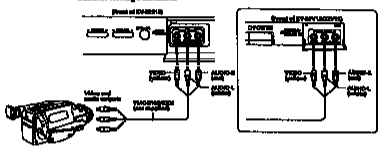
For using the Picture-in-Picture feature



Connecting a camcorder

■ *KV-27V15/13/13S22V15 only*

This connection is convenient for viewing a camcorder.

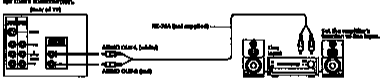


Note

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

Connecting an audio system

When connecting audio equipment, see page 20 for more information.



Connecting other Sony equipment with CONTROL S jack

■ *KV-27V15/13/13S22V15 only*

Connect the supplied cable box controller (Cable Mouse) to the CONTROL S OUT jack. Refer to the the Cable Mouse's manual for details on the connection.

Make the following connections to control the TV and connected equipment with one remote commander.

- 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.

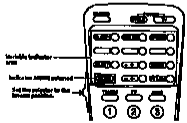
Notes

- 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, stay 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.

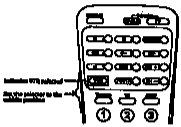
Using the remote commander

The upper half of the remote commander has three selectable operation modes. Each button in this area has three different functions. You can select the mode by sliding a selector on the left side.

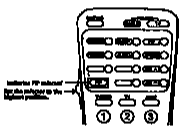
For normal TV viewing



For operating video equipment



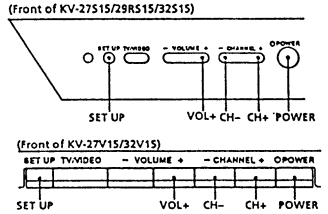
For using the Picture-in-Picture feature



Step 3: Setting up the TV automatically (AUTO SET UP)

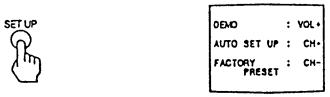
For cable box control (Cable Mouse) users (KV-27V15/32V15 only)
Refer to the supplied manual of Cable Mouse on how to set up your TV.

You can set up your TV easily by using AUTO SET UP feature. It presets all the receivable channels.
To set up the TV manually, see "Setting cable TV on or off" (page12) and "Presetting channels"(page12).
If the TV is set to a video input, you cannot execute AUTO SET UP. Press TV/VIDEO or TV so that a channel number appears.

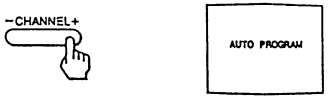


1 Press POWER to turn the TV on.

2 Press SET UP on the front of the TV.
The menu appears.



3 Press CH +.



"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. If the TV receives cable TV channels, CATV is set to ON automatically.

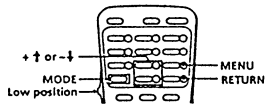
Note
- If more than 90 seconds elapse after you press a button, the menu disappear automatically.

DEMO:To browse the main functions,
Press VOL + in step 3. The functions and menus are displayed one by one.

FACTORY PRESET:To restore the factory settings when you are confused about the TV settings,
Press CH– in step 3. The settings of picture and sound are restored to the factory setting.

Erasing or adding channels

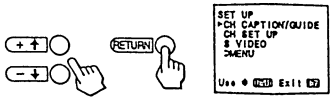
After AUTO SET UP you can erase unnecessary channels or add the channels you want. Preset channels during the day rather than late at night, when some channels may not be broadcasting.



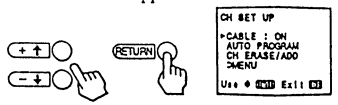
1 Press MENU.
The main menu appears.

(continued)

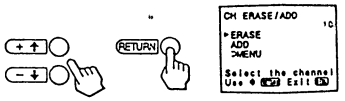
2 Press + ↑ or – ↓ to move the cursor (▶) to SET UP and press RETURN.
The SET UP menu appears.



3 Press + ↑ or – ↓ to move the cursor (▶) to CH SET UP and press RETURN.
The CH SET UP menu appears.

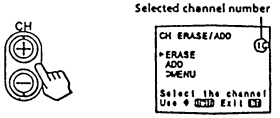


4 Press + ↑ or – ↓ to move the cursor (▶) to CH ERASE/ADD and press RETURN.
The CH ERASE/ADD menu appears.



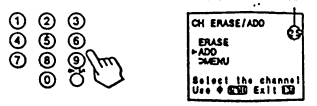
5 Erase and/or add the channel you want:

To erase an unwanted channel
(1) Make sure the cursor (▶) is beside ERASE.
(2) Press CH +/– to select the channel you want to erase and,



(3) press RETURN.
The indication "–" appears beside the channel number, showing that the channel is erased from the preset memory.

To add a channel that you want
(1) Press + ↑ or – ↓ to move the cursor (▶) to ADD.
(2) 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.

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

7 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.

Step 3: Setting up the TV automatically

(AUTO SET UP)

[illegible]

You can set up your TV easily by using AUTO SET UP feature. It presets all the receivable channels.
To set up the TV manually, see "Setting cable TV on or off" (page 12) and "Presetting channels" (page 12).
If the TV is set to a video input, you cannot execute AUTO SET UP. Press TV/VIDEO or TV so that a channel number appears.

1 Press POWER to turn the TV on.

2 Press SET UP on the front of the TV.
The menu appears.

3 Press CH +.

"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. If the TV receives cable TV channels, CATV is set to ON automatically.

Note
- If more than 30 seconds elapse after you press a button, the menu disappears automatically.

DEMO: To browse the main functions,
Press VOL + in step 3. The functions and menus are displayed one by one.

FACTORY PRESET: To restore the factory settings when you are confused about the TV settings,
Press CH- in step 3. The settings of picture and sound are restored to the factory setting.

Erasing or adding channels

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

1 Press MENU.
The main menu appears.

(continued)

2 Press + + or - + to move the cursor (▷) to SET UP and press RETURN.
The SET UP menu appears.

3 Press + + or - + to move the cursor (▷) to CH SET UP and press RETURN.
The CH SET UP menu appears.

4 Press + + or - + to move the cursor (▷) to CH ERASE/ADD and press RETURN.
The CH ERASE/ADD menu appears.

5 Erase and/or add the channel you want:
To erase an unwanted channel
(1) Make sure the cursor (▷) is inside ERASE.
(2) Press CH +/- to select the channel you want to erase and.

(3) press RETURN.
The indication "-" appears inside the channel number, showing that the channel is erased from the preset memory.

To add a channel that you want
(1) Press + + or - + to move the cursor (▷) to ADD.
(2) Press the 0 - 9 buttons to select the channel you want to add and press ENTER and.

(3) press RETURN.
The indication "+" appears inside the channel number, showing that the channel is added to the preset memory.

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

7 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.

Setting cable TV on or off

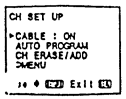
For cable box control (Cable Mouse) users (KV-27V15/32V15 only)
Refer to the supplied manual of Cable Mouse on how to set cable TV.

If you have connected the TV to a cable TV system, set CABLE to ON, the factory setting. If not, set CABLE to OFF.
You do not have to do this procedure if you execute AUTO SET UP (page 10). Do this procedure only when you want to set it manually.

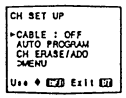
1 Press MENU.

2 Press + ↑ or – ↓ to move the cursor (▶) to SET UP and press RETURN.

3 Press + ↑ or – ↓ to move the cursor (▶) to CH SET UP and press RETURN.



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, press RETURN.



5 Press MENU to return to the original screen.

Note
If CH SET UP appears in black, the TV is set to a video input and you cannot select CABLE. Press TV/VIDEO or TV so that a channel number appears.

Presetting channels

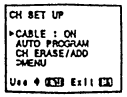
For cable box control (Cable Mouse) users (KV-27V15/32V15 only)
Refer to the supplied manual of Cable Mouse on how to preset channels.

You can preset TV channels easily by AUTO PROGRAM feature.
You do not have to do this procedure if you execute AUTO SET UP (page 10). Do this procedure only when you want to set it manually.

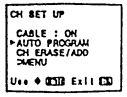
1 Press MENU.

2 Press + ↑ or – ↓ to move the cursor (▶) to SET UP and press RETURN.

3 Press + ↑ or – ↓ to move the cursor (▶) to CH SET UP and press RETURN.



4 Press + ↑ or – ↓ to move the cursor (▶) 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.

5 Press MENU to return to the original screen.

Note
- If the CH SET UP menu appears in black, the TV is set to a video input and you cannot select AUTO PROGRAM. Press TV/VIDEO or TV so that a channel number appears.

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 (▶) to SET UP and press RETURN.

4 Press + ↑ or – ↓ to move the cursor (▶) to S VIDEO and press RETURN.

5 Press + ↑ or – ↓ to select ON or OFF and press RETURN.

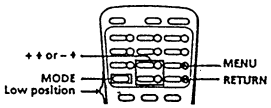
6 Press MENU to return to the original screen.

Notes
- If S VIDEO appears in black, set a video input to VIDEO 1.
- If you set S VIDEO to ON, the TV automatically receive S video signals whenever a VCR with S video is connected.

Changing the menu language

■ *KV-29RS15 only*

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



1 Press MENU.
The main menu appears.

2 Press + ↑ or – ↓ to move the cursor (▶) to ENGLISH and press RETURN.

3 Press + ↑ or – ↓ to select ESPAÑOL and press RETURN.

4 Press MENU to return to the original screen.

Note
- Certain parts of the ESPAÑOL menus remain in English.

Setting cable TV on or off

If you have connected the TV to a cable TV system, set CABLE to ON, the factory setting. If not, set CABLE to OFF.
You do not have to do this procedure if you execute AUTO SET UP (page 10). Do this procedure only when you want to set it manually.

1 Press MENU.

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

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

4 Set CABLE to ON or OFF:
(1) Move into the cursor (▶) to 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 press RETURN.

5 Press MENU to return to the original screen.

Note
If CH SET UP appears in black, the TV is set to a video input and you cannot select CABLE. Press TV/VIDEO or TV to find a channel number appears.

Presetting channels

You can preset TV channels easily by AUTO PROGRAM feature.
You do not have to do this procedure if you execute AUTO SET UP (page 10). Do this procedure only when you want to set it manually.

1 Press MENU.

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

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

4 Press + + or – + to move the cursor (▶) 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.

5 Press MENU to return to the original screen.

Note
• If the CH SET UP menu appears in black, the TV is set to a video input and you cannot select AUTO PROGRAM. Press TV/VIDEO or TV to find a channel number appears.

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 (▶) to SET UP and press RETURN.

4 Press + + or – + to move the cursor (▶) 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, set a video input to VIDEO 1.
• If you set S VIDEO to ON, the TV automatically receives S video signals whenever a VCR with S video is connected.

Changing the menu language

In KV-29/32TS only

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

1 Press MENU.
The main menu appears.

2 Press + + or – + to move the cursor (▶) to ENGLISH and press RETURN.

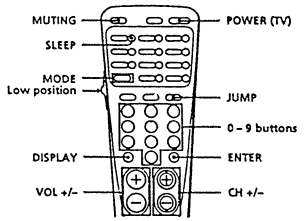
3 Press + + or – + to select ESPAÑOL and press RETURN.

4 Press MENU to return to the original screen.

Note
• Certain parts of the ESPAÑOL menus remain in English.

Watching the TV

For cable box control (Cable Mouse) users (*KV-27V15/32V15 only*)
Refer to the supplied manual of Cable Mouse on "How to watch the TV using the cable box control."



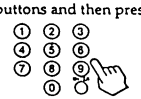
1 Press POWER (TV) to turn the TV on.

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

2 Select the channel you want:

To select a channel directly

Press the 0 – 9 buttons and then press ENTER.

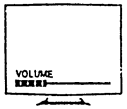


The channel can also be selected without pressing ENTER.

To scan through channels

Press CH +/– until the channel you want 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 switches back the channel.

Muting the sound

Press MUTING.

"MUTING" appears on the screen.

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

Displaying on-screen information

Use this feature to check the channel number, channel caption (if set), and MTS mode (if SAP is selected).

Press DISPLAY.

To cancel the display, press DISPLAY again.

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.

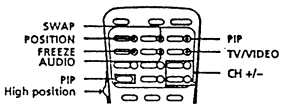
Each time you press SLEEP, the time changes as follows: 30 → 60 → 90 → OFF.

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

Watching two programs at a time —PIP

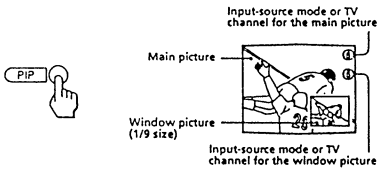
The Picture-in-Picture (PIP) feature allows you to watch both the main picture and a window picture simultaneously.

You can watch two TV channels at a time with this feature. See "Connecting an antenna/cable TV system with a VCR" (page 6) for connections.

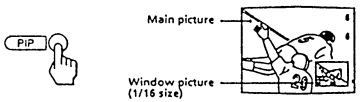


Displaying a window picture

Press PIP.



Press PIP again to display a smaller window picture.



To remove the window picture, press PIP again.

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.
- The window picture sound is also output from the VARIABLE/FIX AUDIO OUT jacks when you listen to it.

Changing the window picture input mode

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

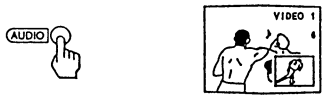
Each time you press TV/VIDEO, "TV", "VIDEO 1", "VIDEO 2" and "VIDEO 3 (*except for KV-27S15/29RS15*)" appear in sequence.

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

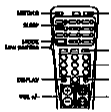


To restore the main picture sound, press AUDIO again.

Changing TV channels in the window picture

Press CH +/– in the PIP control area.

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 so that a channel number appears.

2 Select the channel you want:
To select a channel directly
Press the 0 – 9 buttons and then press ENTER.

The channel can also be selected without pressing ENTER.
To scan through channels
Press CH +/- until the channel you want appears.

3 Press VOL +/- to adjust the volume.

Note
- In the CABLE BOX/TV selector is TV.

Switching quickly between two channels

Press JUMP.
The channel you watched previously appears.

Pressing JUMP again switches back the channel.

Muting the sound

Press MUTING.
"MUTING" appears on the screen.

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

Displaying on-screen information

Use this feature to check the channel number, channel caption (if set), and MTS mode (if SAP is selected).
Press DISPLAY.

To cancel the display, press DISPLAY again.

Setting the Sleep Timer

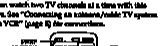
The TV stays on for the length of time you specify and then shuts off automatically.

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.

Watching two programs at a time —PIP

The Picture-in-Picture (PIP) feature allows you to watch both the main picture and a window picture simultaneously.
You can watch two TV channels at a time with this feature. See "Connecting an antenna/cable TV system with a VCR" (page 8) for connections.



Displaying a window picture

Press PIP.

Press PIP again to display a smaller window picture.

To remove the window picture, press PIP again.

Notes
- If the main picture is not applying an image, the window picture may be in black and white.
- The window picture may be affected by the condition of the main picture.
- The window picture sound is also output from the VARIABLE/FIX AUDIO OUT jacks when you listen to it.

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 (except for KV-27615/29615)" 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 *A* 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.

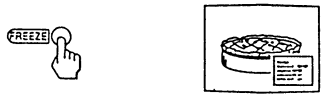
Changing the position of the window picture

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.

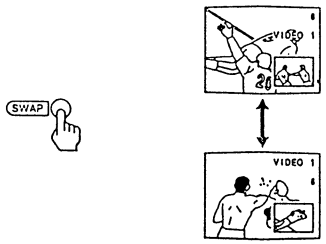
Press FREEZE.



To restore the normal screen, press FREEZE again.

Swapping the main and window pictures

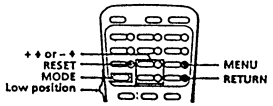
Press SWAP.
Each time you press SWAP, the images from the main and window pictures switch places along with the sound.



Note
- The channels being received through the AUX jack cannot be displayed as a window picture (*KV-32V15 only*).

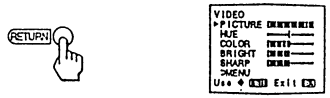
Adjusting the picture (VIDEO)

When watching TV programs, you can adjust the quality of the picture to suit your taste.
You can adjust the picture of video input(s) as well. These settings are stored separately from those for the TV picture.

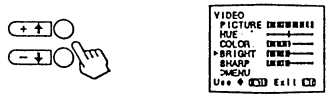


1 Press MENU.

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

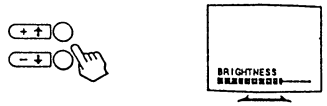


3 Select the item you want to adjust.
For example:
(1) To adjust brightness, press + ↑ or – ↓ to select BRIGHT and,

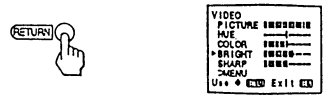


(2) press RETURN.

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 and give vivid color	Decrease picture contrast and give 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

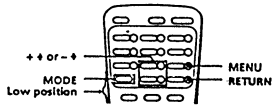
To restore the factory settings

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

Adjusting screen brightness automatically (LUMISPONDER)

■ *KV-27V15/32V15 only*

The LUMISPONDER feature adjusts the brightness of the screen automatically according to the ambient brightness. The LUMISPONDER function automatically adjusts the level set by the user in the VIDEO menu to the standard.



1 Press MENU.

2 Press + ↑ or – ↓ to select VIDEO and press RETURN.

3 Press + ↑ or – ↓ to select LUMISPONDER and press RETURN.

4 Press + ↑ or – ↓ to select ON or OFF and press RETURN.

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

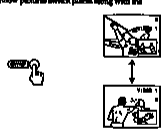
This feature is useful when you want to write down a recipe from a cooking program, a displayed address or a phone number and so on.

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 from the main and window pictures switch places along with the sound.



Note
- The channels being received through the AUX jack cannot be displayed as a window picture (KV-27V15 only).

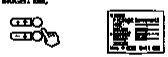
Adjusting the picture (VIDEO)

When watching TV programs, you can adjust the quality of the picture to suit your taste.
You can adjust the picture of video keywords as well.
These settings are stored separately from those for the TV picture.

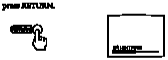
1 Press MENU.

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

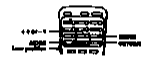
Item	Press + or –	Press – or +
PICTURE	Increase picture contrast and give vivid color	Decrease picture contrast and give soft color
HUE	Make skin tones become greenish	Make skin tones become pinkish
COLOR	Increase color intensity	Decrease color intensity
BRIGHT	Brighten the picture	Darken the picture
SHARP	Sharpen the picture	Soften the picture

To restore the factory settings
Press RESET while the VIDEO menu is displayed.
All the settings are restored to the factory settings.

Adjusting screen brightness automatically (LUMISPONDER)

■ *KV-27V15/27V15 only*

The LUMISPONDER feature adjusts the brightness of the screen automatically according to the ambient brightness. The LUMISPONDER function automatically adjusts the level set by the user in the VIDEO menu to the standard.

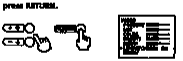


1 Press MENU.

2 Press + or – to select VIDEO and press RETURN.

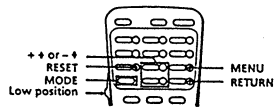
3 Press + or – to select LUMISPONDER and press RETURN.

4 Press + or – to select ON or OFF and press RETURN.



Adjusting the sound (AUDIO)

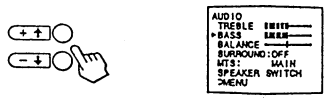
You can adjust the quality of the TV sound to suit your taste.
You can adjust the sound of video input(s) as well. These settings are stored separately from those for the TV sound.



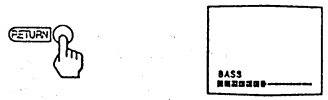
1 Press MENU.

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

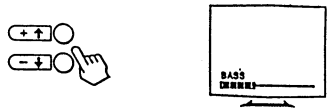
3 Select the item you want to adjust.
For example:
(1) To adjust bass, press + or – to select BASS and,



(2) press RETURN.



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

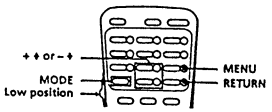
Press RESET while the AUDIO menu is displayed.

Note

- When SPEAKER (page 20) is OFF and AUDIO OUT (page 20) is 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 effective for stereo programs.



1 Press MENU.

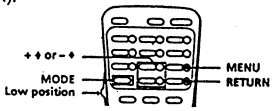
2 Press + or – to select AUDIO and press RETURN.

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

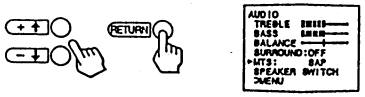


1 Press MENU.

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.

Adjusting the sound
(AUDIO)

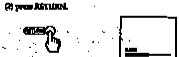
You can adjust the quality of the TV sound to suit your taste.
You can adjust the sound of video input(s) as well. These settings are stored separately from those for the TV sound.

1 Press MENU.

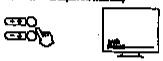
2 Press + or – to select AUDIO and press RETURN.

3 Select the item you want to adjust.
For example
(1) To adjust BASS, press + or – to select BASS and

(2) press RETURN.



4 Adjust the selected items
(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 SURROUND (page 20) is ON and AUDIO OUT (page 20) is FIXED condition, the sound is set to mid-level and is cannot be adjusted.

Listening to surround sound
(SURROUND)

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

1 Press MENU.

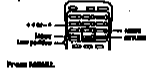
2 Press + or – to select AUDIO and press RETURN.

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 allows you to enjoy stereo sound or Second Audio Programs (SAP) of your choice. The initial 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.

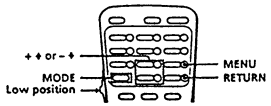
4 Press + or – to select MAIN, SAP, or MONO and press RETURN.

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

Note
- Stereo and SAP sounds are subject to program source.

Setting the speaker switch (SPEAKER)

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



1 Press MENU.

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

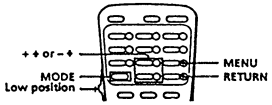
3 Press + + or – + to select SPEAKER SWITCH and press RETURN.

4 Make sure the cursor (▸) is beside SPEAKER and press RETURN.

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

Setting audio out (AUDIO OUT)

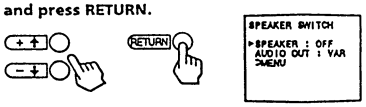
You can select audio out to variable or fixed when SPEAKER is set to OFF.
Audio out is variable when SPEAKER is set to ON.



1 Press MENU.

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

3 Press + + or – + to select SPEAKER SWITCH and press RETURN.



4 Press + + or – + to select AUDIO OUT and press RETURN.

5 Press + + or – + to select VAR or FIXED and press RETURN.

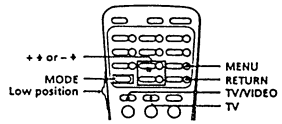
VAR: Sound output varied according to the TV settings. You can adjust the volume, bass, treble and balance.
FIXED: Sound output is always fixed to a certain level. You cannot adjust the volume.

Customizing the channel number buttons (CH CAPTION/GUIDE)

For cable box control (Cable Mouse) users (KV-27V15/32V15 only)
Make the setting of Cable Mouse before customizing the channel number buttons.

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



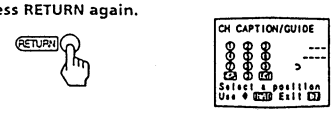
1 Press TV/VIDEO or TV to select TV mode.

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.

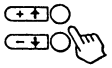


6 Press + + or – + to select a channel guide number button and press RETURN.
Each time you press + + or – +, the channel positions change to red in turns. The channel number button you select will be the one you press to call up your favorite channel.

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)



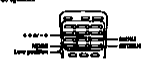
(2) press RETURN.

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

(continued)

Setting the speaker switch (SPEAKER)

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

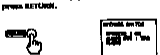


1 Press MENU.

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

3 Press + or – to select SPEAKER SWITCH and press RETURN.

4 Make sure the cursor (▷) is beside SPEAKER and press RETURN.



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

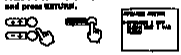
Setting audio out (AUDIO OUT)

You can select audio out to variable or fixed when SPEAKER is set to OFF.
Audio out is variable when SPEAKER is set to ON.

1 Press MENU.

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

3 Press + or – to select SPEAKER SWITCH and press RETURN.



4 Press + or – to select AUDIO OUT and press RETURN.

5 Press + or – to select VAR or FIXED and press RETURN.

VAR: Sound output varies according to the TV setting. You can adjust the volume, bass, treble and balance.
FIXED: Sound output is always fixed to a certain level. You cannot adjust the volume.

Customizing the channel number buttons (CH CAPTION-GUIDE)

You can choose up to 15 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 52 "SPORTS" 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.

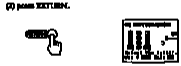
5 Press RETURN again.

6 Press + or – to select a channel guide number button and press RETURN.
Each time you press + or –, the channel positions change to set in turn. The channel number button you select will be the one you press to call up your favorite channel.

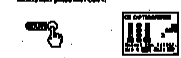
7 Press + or – to select the channel that you want to caption and press RETURN.

8 Enter the letters (up to four) to caption the channel.
(1) Press + or – to enter the first letter.
Each time you press + or –, the letter changes as shown below and,

(2) press RETURN.



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



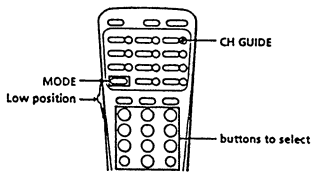
(cont'd next)

9 Repeat step 5 to 7 to caption other channels.

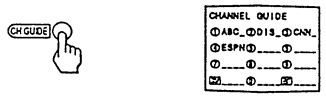
To erase a caption
Press RESET after step 5.

NOTE
- The position number you already selected appears in yellow.
- 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.

Selecting a captioned channel



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



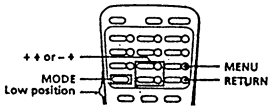
2 Press a channel number button, the DISP or ENT button to select the channel you want.

To cancel the CHANNEL GUIDE menu
Press CH GUIDE again.

Setting video labels (VIDEO LABEL)

■ *KV-27V15/32S15/32V15 only*

This feature allows you to label each 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.

5 Press + ↑ or – ↓ to select the label and press RETURN.

Each time you press + ↑ or – ↓, the label changes as shown below.

VIDEO 1
VIDEO 1 ⟷ S VIDEO ⟷ BETA ⟷ 8 mm ⟷ VHS ⟷ LD

VIDEO 2
VIDEO 2 ⟷ BETA ⟷ 8 mm ⟷ VHS ⟷ LD

VIDEO 3
VIDEO 3 ⟷ BETA ⟷ 8 mm ⟷ VHS ⟷ LD

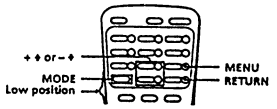
6 Repeat steps 4 and 5 to label other input modes.

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

Displaying Caption Vision (CAPTION VISION)

■ *KV-27S15/27V15/32S15/32V15 only*

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



1 Press MENU.

2 Press + ↑ or – ↓ to select CAPTION VISION and press RETURN.

3 Press + ↑ or – ↓ to select the caption type and press RETURN.

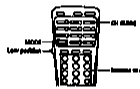
Note
- Captions may appear with a white box or another error instead of a certain word. Poor reception of TV programs can also cause errors in Caption Vision.

9 Repeat step 5 to 7 to caption other channels.

To erase a caption
Press RESET after step 5.

NOTE
- The position number you already selected appears in yellow.
- 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 10 seconds elapse after you press a button, the menu disappears automatically.

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)

■ KV-27V1DE25/KE27V1E only

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

1 Press MENU.

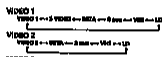
2 Press + or – to select SET UP and press RETURN.

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.

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 10 seconds elapse after you press a button, the menu disappears automatically.

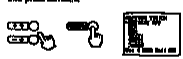
Displaying Caption Vision (CAPTION VISION)

■ KV-27V1DE25/KE27V1E only

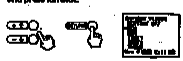
Some source programs provide with Caption Vision (Closed Caption). To display Caption Vision, select either CC1, CC2, TEXT1, or TEXT2 from the menu. CC1 or CC2 shows you a caption, that is a printed version of the dialog or sound effects of a program. (The mode should be set to CC1 for most programs.)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

1 Press MENU.

2 Press + or – to select CAPTION VISION and press RETURN.



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

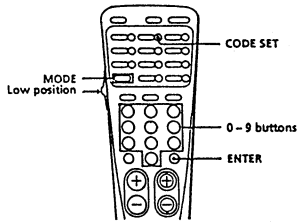


Note
- Captions may appear with a white box or another error instead of a certain word. Poor reception of TV program can also cause errors in Caption Vision.

Operating video equipment

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

Setting the manufacturer's code



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

The code numbers for Sony equipment are assigned as follows:

01 Beta, ED Beta VCR
02 8 mm VCR
03 VHS VCR (Fadtory preset of Remote Commander.)

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
MITSUBISHI	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
MITSUBISHI	51
PANASONIC	55
PHILIPS	52
PIONEER	51
RCA	51
SANYO	57
SHARP	56
YAMAHA	53

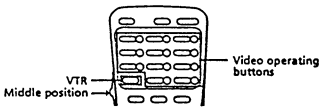
Notes

- 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.

Caution

When you remove a battery from the remote commander, the code may revert to 03. Reset the code each time you replace the battery, if necessary.

Operating video equipment



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 II
To search the picture forward and backward	Press ▶▶ or ◀◀ during playback

Operating the laser-disc player	Buttons on the remote commander
To play	Press ▶
To stop	Press ■
To pause	Press II 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 +/–

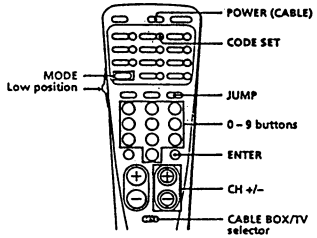
Note

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

Operating a cable box

For cable box control (Cable Mouse) users (KV-27V15/32V15 only)
Set the CABLE BOX/TV selector to TV.

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.



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

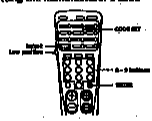
2 While pressing CODE SET, press 6 and 8 (Zenith's code number —see chart on the next page) and ENTER.

(continued)

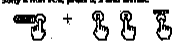
Operating video equipment

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

Setting the manufacturer's code



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



The code numbers for Sony equipment are assigned as follows

02 Beta, BD Beta VCR
02 8 mm VCR
03 VHS VCR (Factory preset of Remote Commander)

VCR Manufacturer Code numbers

Manufacturer	Code number
SONY	02, 03, 08
CANON	03
BAUSSON	12, 16, 21
NIKKEI	10, 11, 12, 18
FUNAI	23
GENERAL ELECTRIC	05, 07
GOLDSTAR	23
HITACHI	07, 08, 10
JVC	14, 23
MAGNAVOX	08, 10, 09
MITSUBISHI	10, 16, 20, 27
MULTITECH	20
NEC	16, 23, 31
PANASONIC	05, 09
PHILCO	05, 06
PHILIPS	05, 06, 09
QUASAR	05, 06
RCA	07, 10
SAMSUNG	26, 32
SANYO	11, 13
SCOTT	21
SHARP	22, 14
SHINTOM	24
SYLVANIA	05, 06, 09
SYMPHONIC	20
TEKNIKA	26, 10
TOSHIBA	20, 21
TOTE VISION	28
ZENITH	27

MDP manufacturer code numbers

Manufacturer	Code number
SONY	04
KENWOOD	30
MAGNAVOX	30
MARANZ	30
MITSUBISHI	03
PANASONIC	03
PHILIPS	30
PIONEER	31
RCA	31
SANYO	27
SHARP	30
YAMAHA	30

Notes

- If more than one code number is listed, try entering these one by one until you move to the correct code for your equipment.
- In some case 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.

Caution

When you remove a battery from the remote commander, the code may revert to 02. Reset the code each time you replace the battery, if necessary.

Operating video equipment

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 ENTER simultaneously
To play	Press ▶
To stop	Press ■
To fast forward	Press ▶▶
To rewind the tape	Press ◀◀
To pause	Press II
To search the picture forward and backward	Press ▶▶ or ◀◀ during playback

Operating the laser disc player	Buttons on the remote commander
To play	Press ▶
To stop	Press ■
To pause	Press II 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 +/-

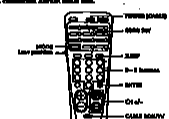
Note

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

Operating a cable box

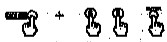
Setting the manufacturer's code

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.



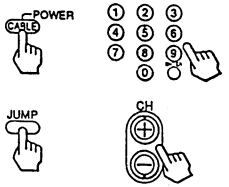
1 Set the CABLE BOX/TV selector to CABLE BOX.

2 While pressing CODE SET, press 0 and 2 (Zenith's code number —see chart on the next page) and ENTER.



(continued)

3 Use POWER(CABLE) and the TV control buttons (0 – 9, ENTER, JUMP and CH +/–) to operate the cable 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.

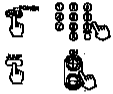
Manufactures and code numbers (cable box)

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 to the correct code for your equipment.
- If you enter a new code number, the code number you previously entered at that setting is erased.
- In some 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.

3 Use POWER (CABLE) and the TV control buttons (0 – 9, ENTER, JUMP and CH +/–) to operate the cable 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.

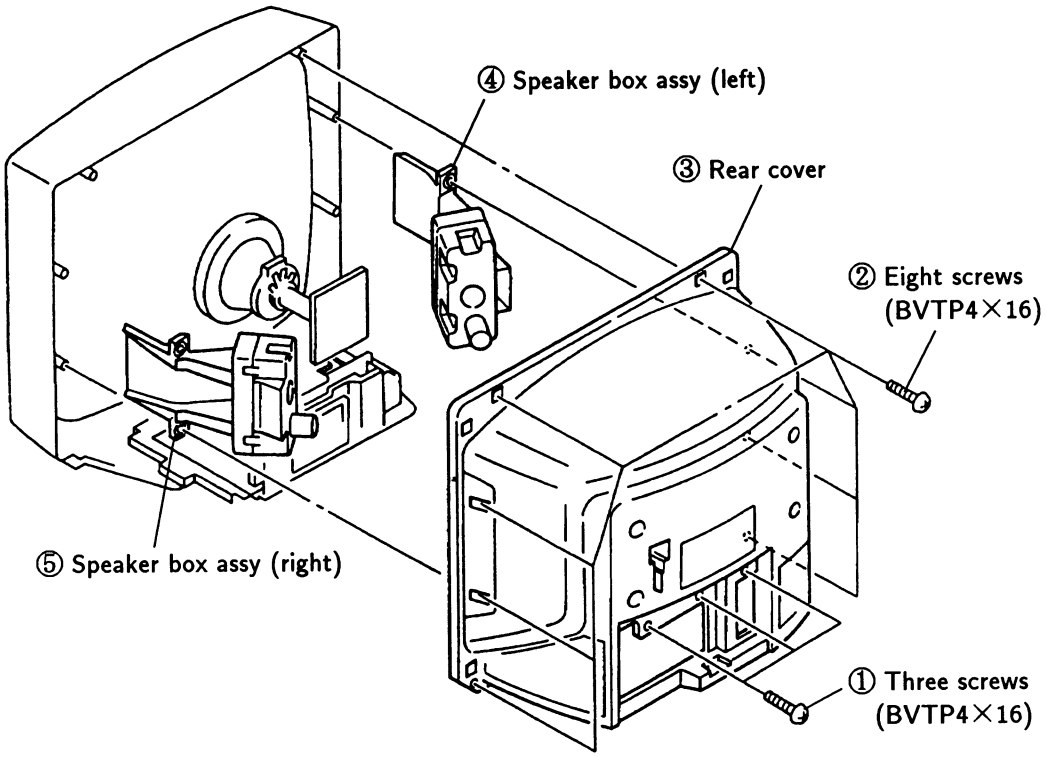
Manufacturer and code numbers (cable box)

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

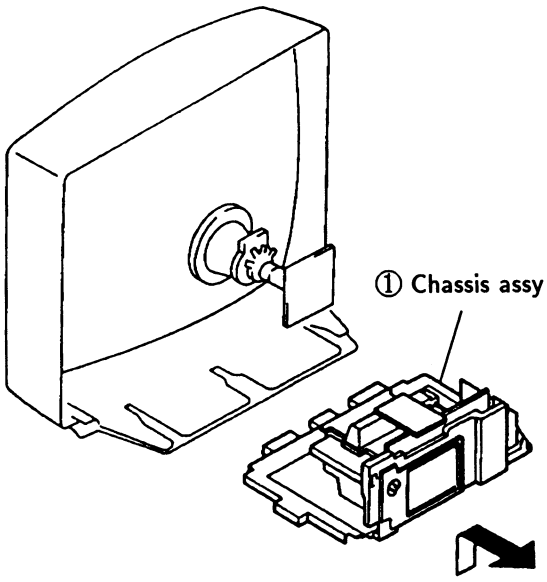
Notes
- If more than one code number is listed, try entering them one by one until you move to the correct code for your equipment.
- If you enter a new code number, the code number you previously entered in that setting is erased.
- In some cases, your equipment may use a code that is not provided with 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.

SECTION 2
DISASSEMBLY

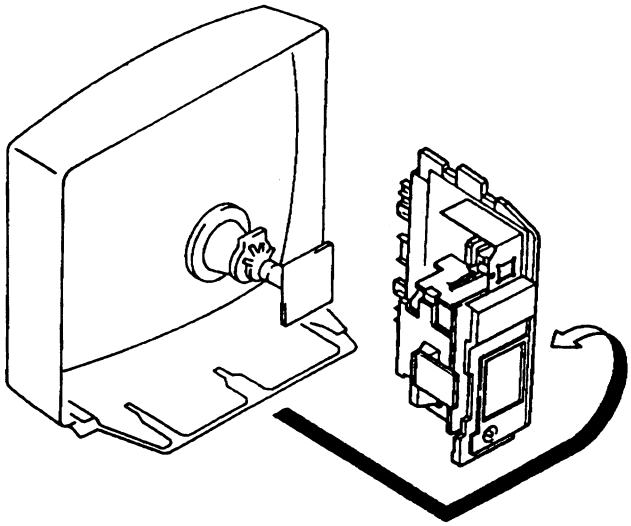
2-1. REAR COVER AND SPEAKER BOX ASSEMBLY REMOVAL



2-2. CHASSIS ASSEMBLY REMOVAL

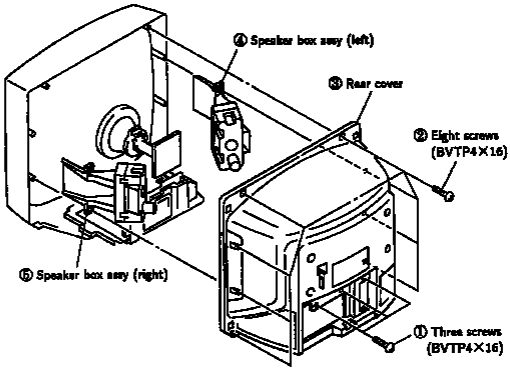


2-3. SERVICE POSITION

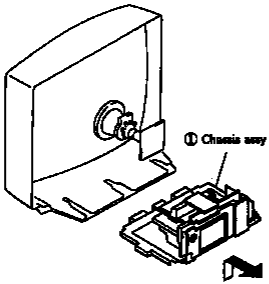


SECTION 2
DISASSEMBLY

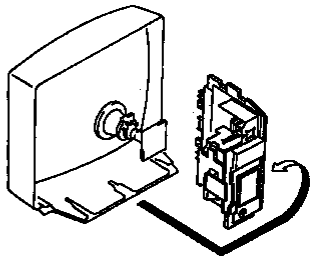
2-1. REAR COVER AND SPEAKER BOX ASSEMBLY REMOVAL



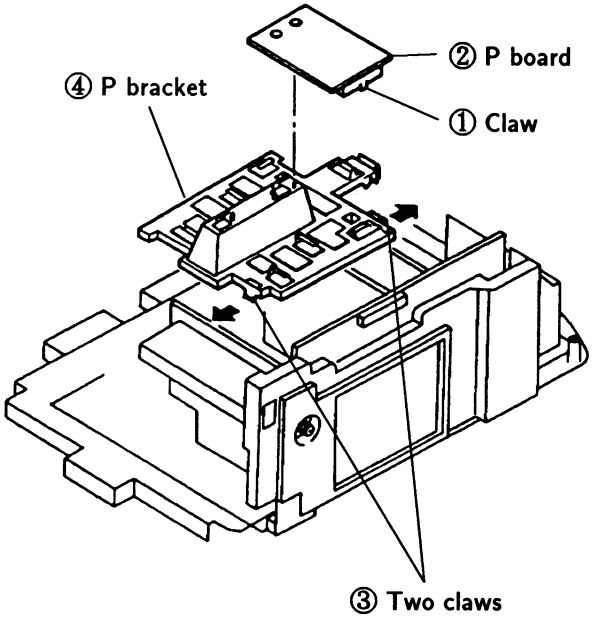
2-2. CHASSIS ASSEMBLY REMOVAL



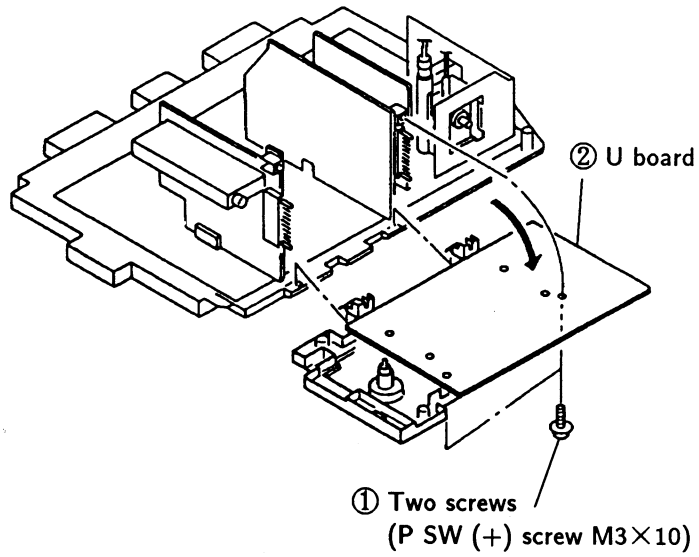
2-3. SERVICE POSITION



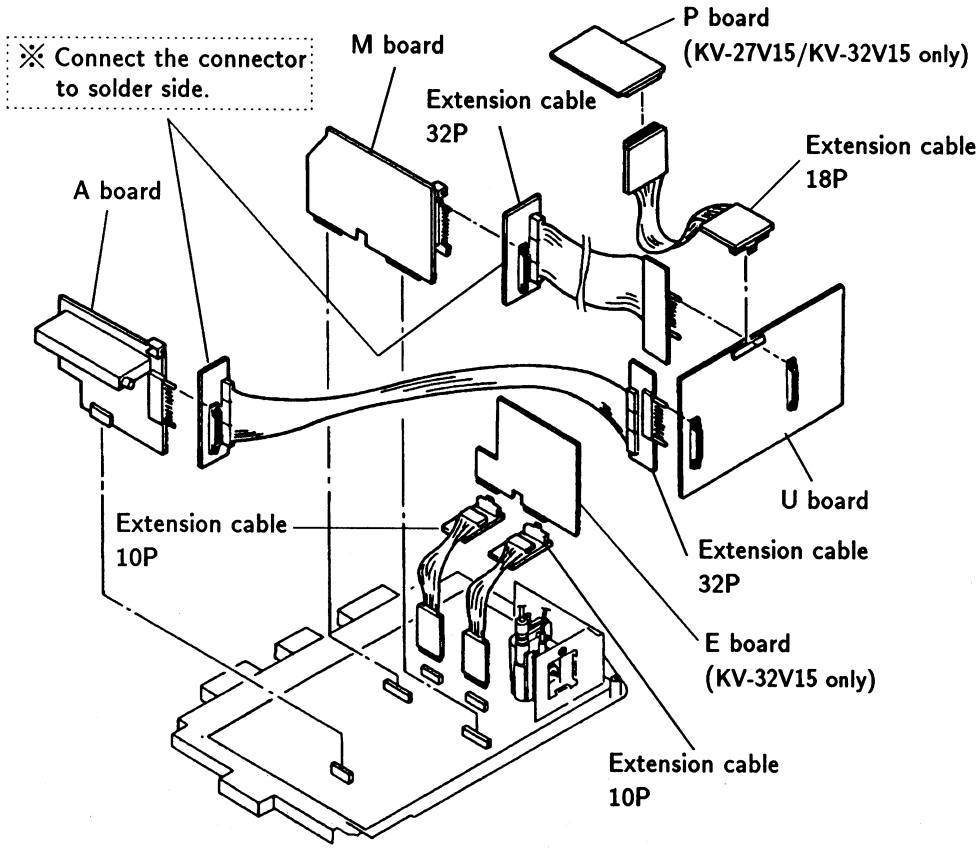
2-4. P BOARD AND BRACKET REMOVAL (KV-27V15/KV-32V15 only)

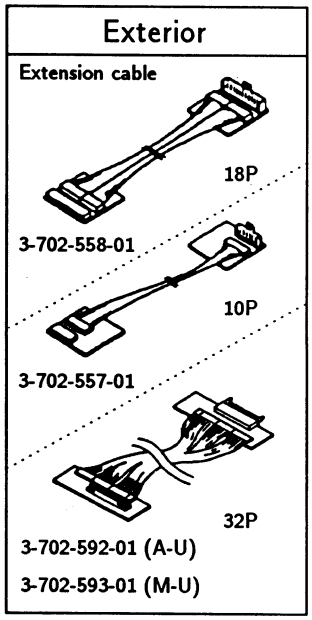


2-5. U BOARD REMOVAL

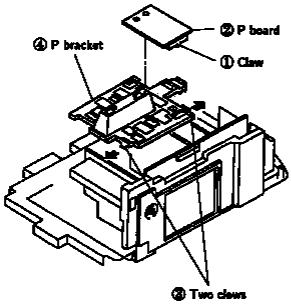


2-6. EXTENSION CABLE

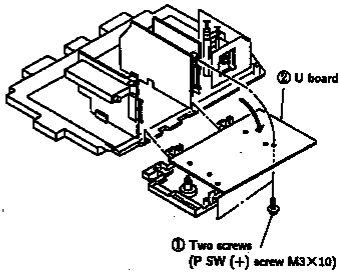




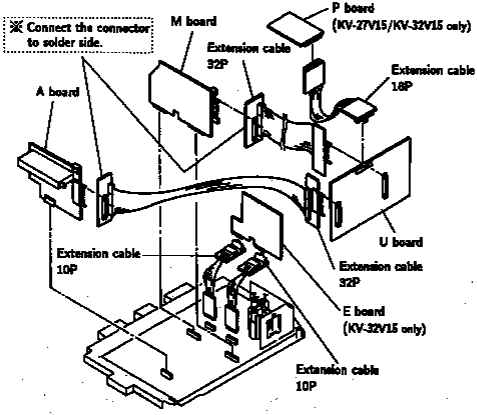
2-4. P BOARD AND BRACKET REMOVAL (KV-27V15/KV-32V15 only)

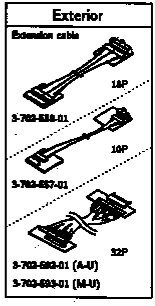


2-5. U BOARD REMOVAL

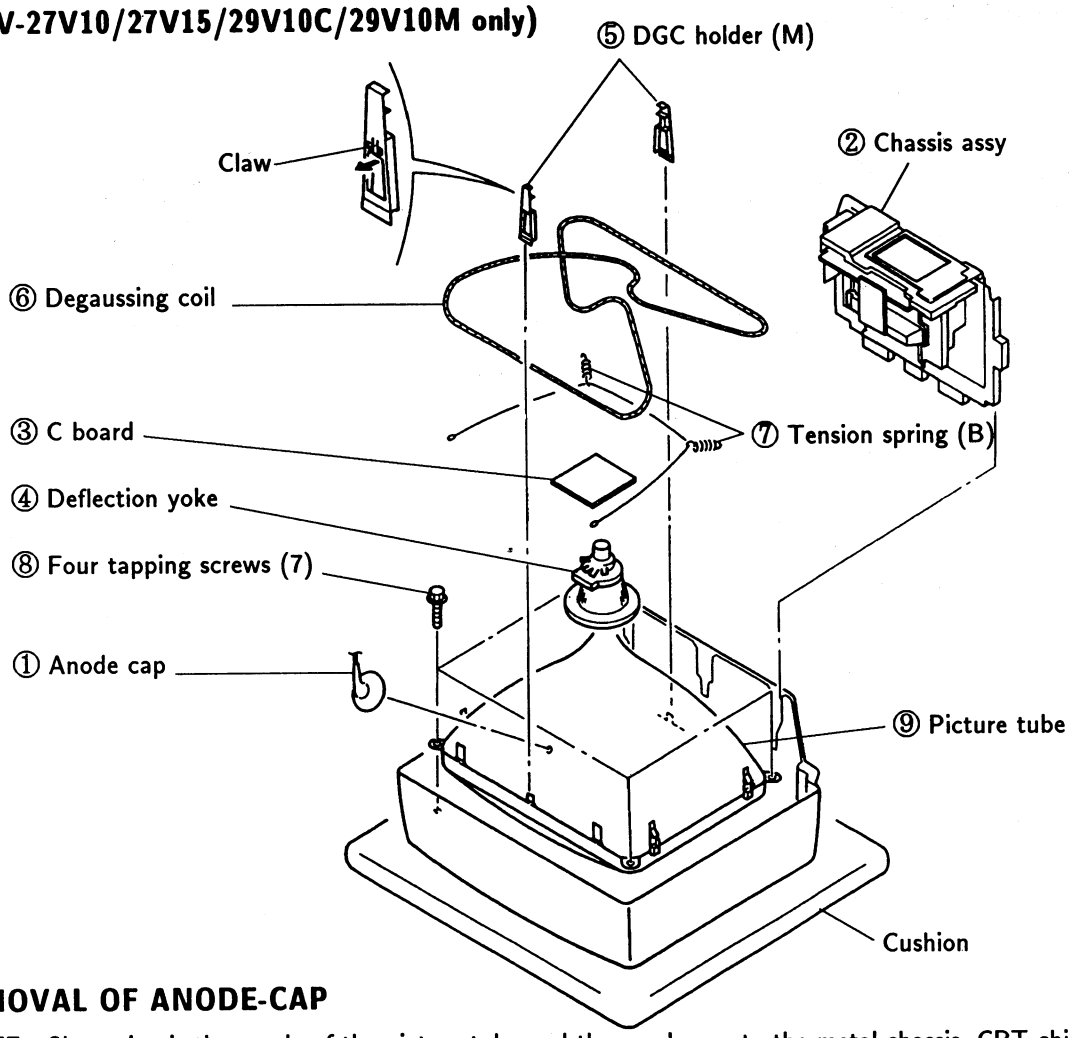


2-6. EXTENSION CABLE





2-7. PICTURE TUBE REMOVAL (1)
(KV-27V10/27V15/29V10C/29V10M only)

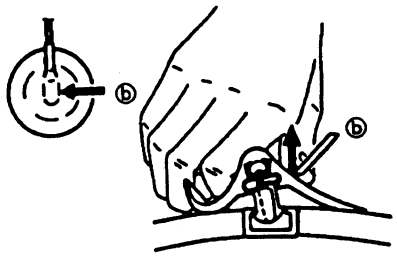


• REMOVAL OF ANODE-CAP

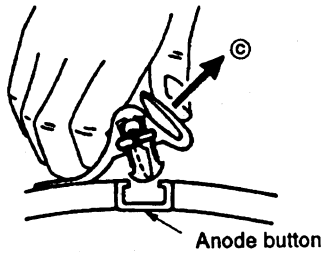
NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT chield or carbon painted on the CRT, after removing the anode.

• REMOVING PROCEDURES

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



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



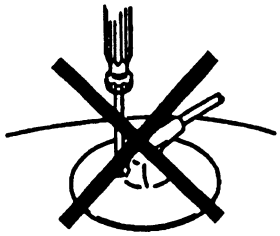
③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

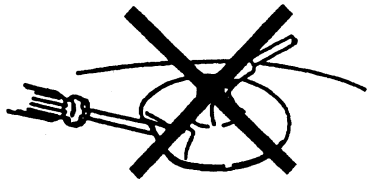
• HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material!

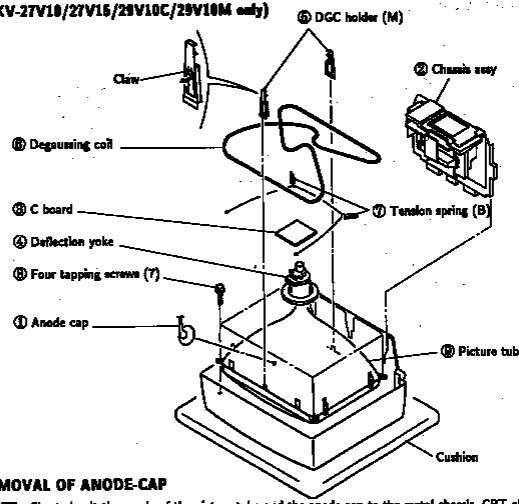
② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.





2-7. PICTURE TUBE REMOVAL (1)
(KV-27V10/27V15/29V10C/29V10M only)

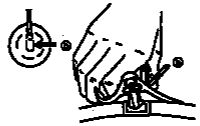


• REMOVAL OF ANODE-CAP

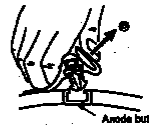
NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon painted on the CRT, after removing the anode.

• REMOVING PROCEDURES

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



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



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

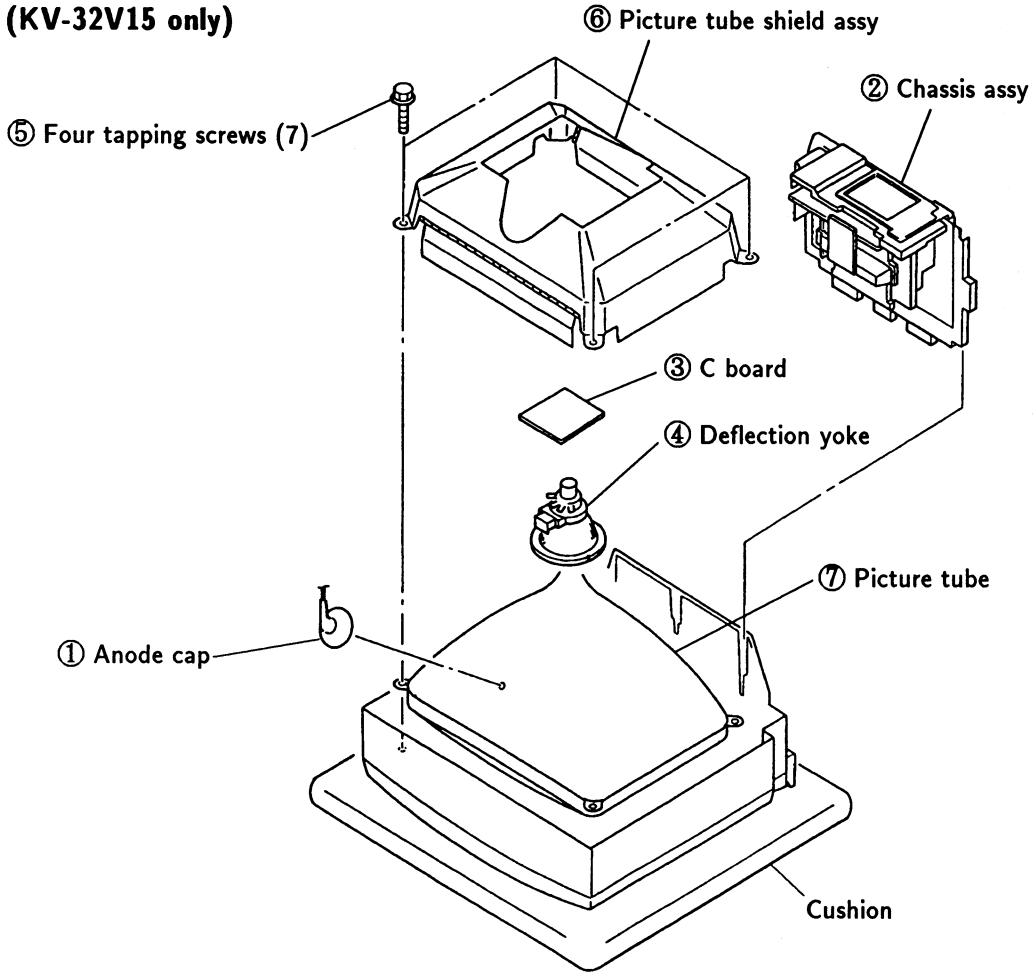
• HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped materiall

② Don't press the rubber hardly not to hurt inside of anode-caps!
A metorial fitting called as shutter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly! The shutter-hook terminal will stick out or hurt the rubber.

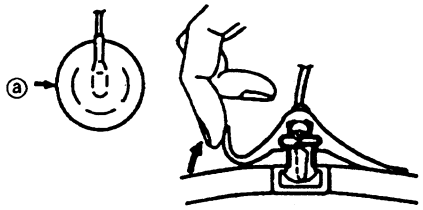
2-7. PICTURE TUBE REMOVAL (2) (KV-32V15 only)



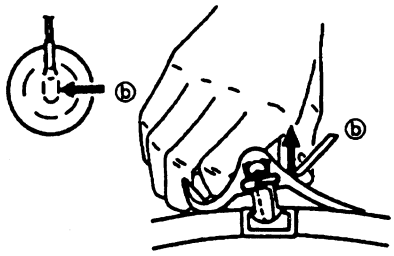
· REMOVAL OF ANODE-CAP

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

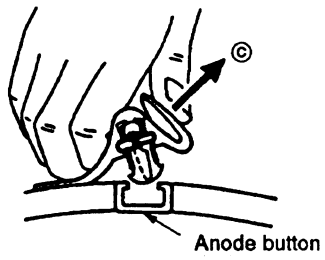
· REMOVING PROCEDURES



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



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



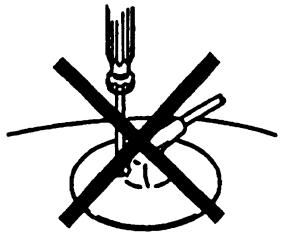
③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

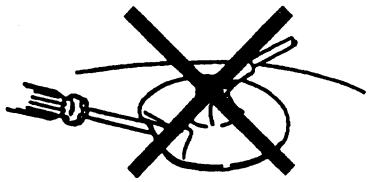
· HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material!

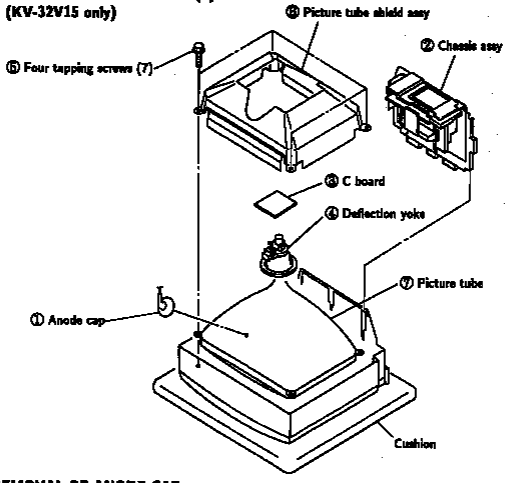
② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.





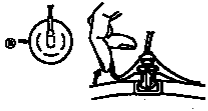
2-7. PICTURE TUBE REMOVAL (2)
(KV-32V15 only)



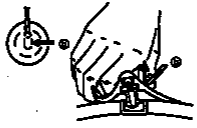
• REMOVAL OF ANODE-CAP

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

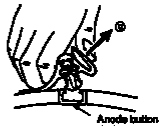
• REMOVING PROCEDURES



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



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



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

• 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

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

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

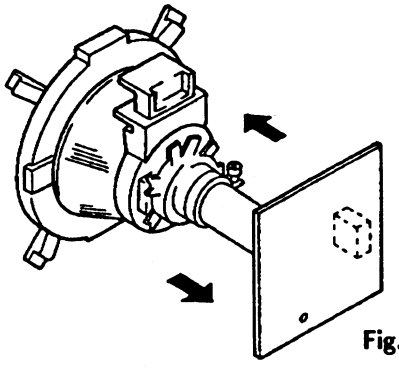


Fig.3-1

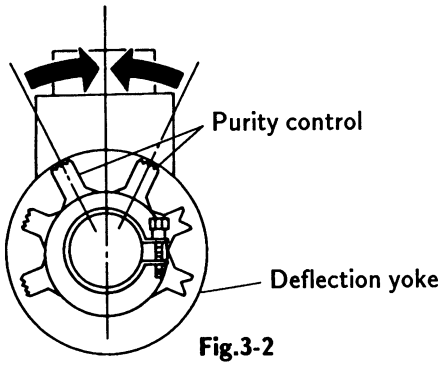


Fig.3-2

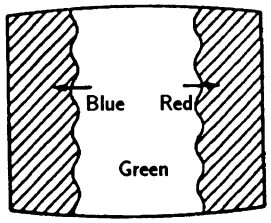


Fig.3-3

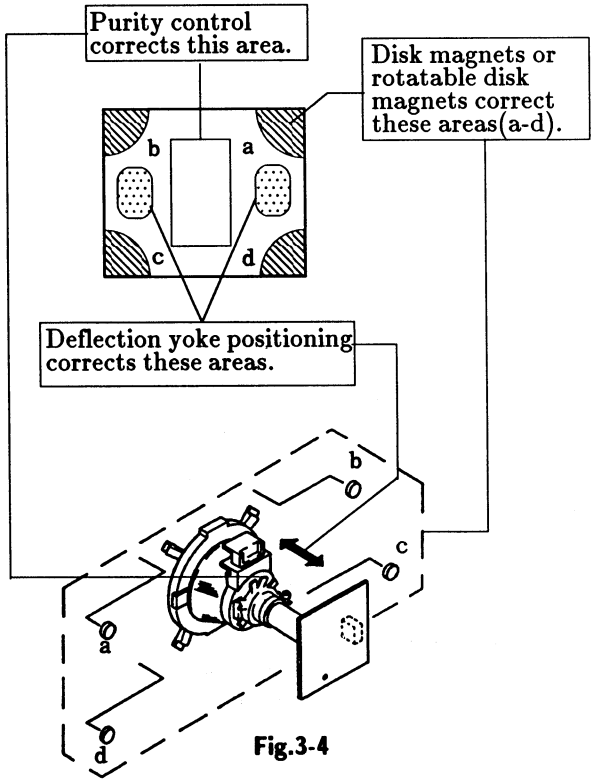


Fig.3-4

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

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

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

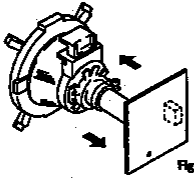


Fig.3-1

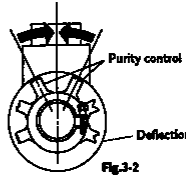


Fig.3-2

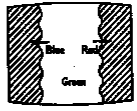


Fig.3-3

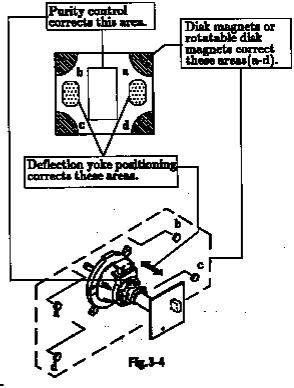


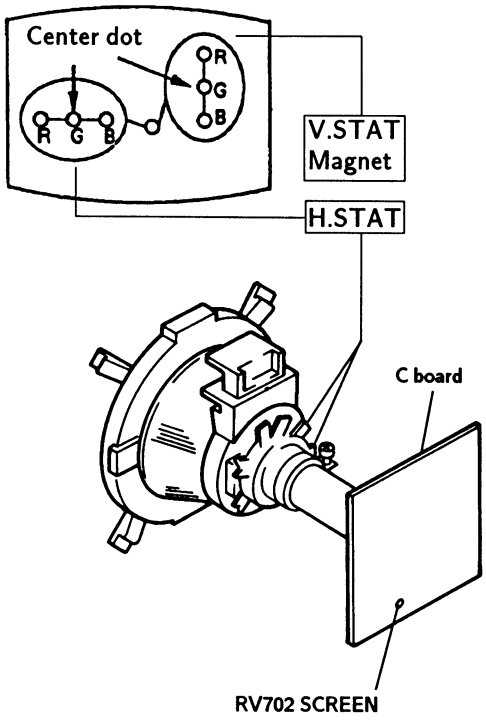
Fig.3-4

3-2. CONVERGENCE

Preparation :

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

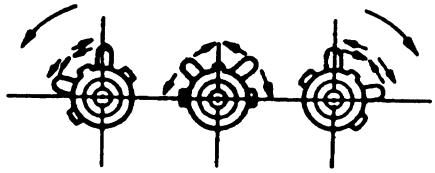
(1) **Horizontal and Vertical Static Convergence**



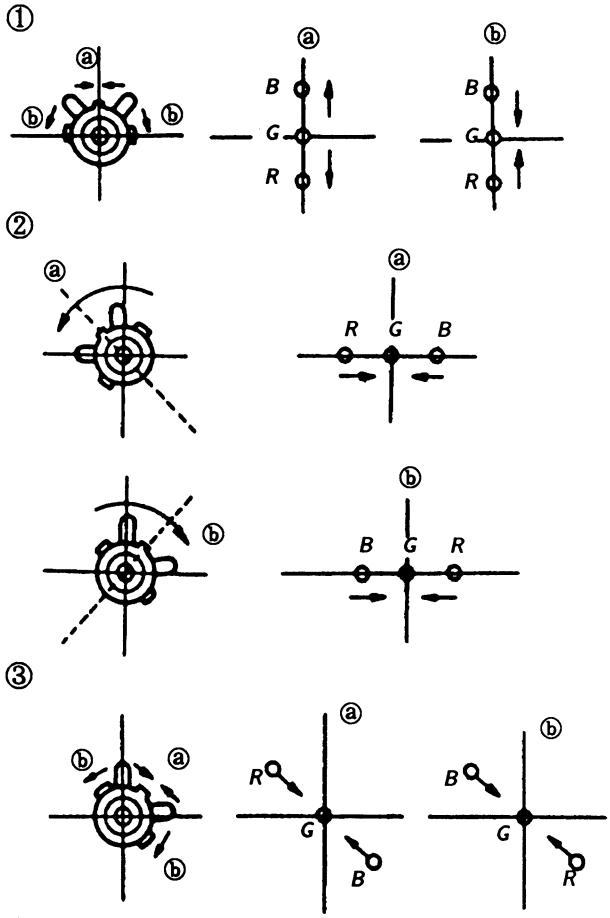
1. V. STAT Adjustment
   Turn the V. STAT tabs to left or right so that the vertical red, green and blue dots converge in the center of the screen.
2. H. STAT Adjustment
   Simultaneously turn the 2 V. STAT tabs in the same direction so that the horizontal red, green and blue dots converge in the center 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.



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

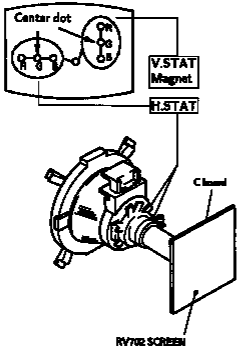


3-2. CONVERGENCE

Preparation :

- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimise 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.
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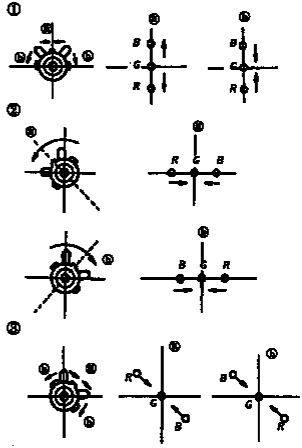
   Simultaneously turn the 2 V. STAT tabs in the same direction so that the horizontal red, green and blue dots converge in the center of the screen.

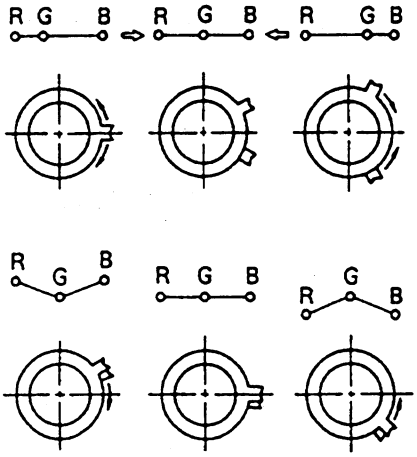
Note : Do not move the purity tab during adjustment with the V. STAT tab. If the purity tab is moved, the convergence condition will change, and possibly lead to misadjustment of a different yoke.

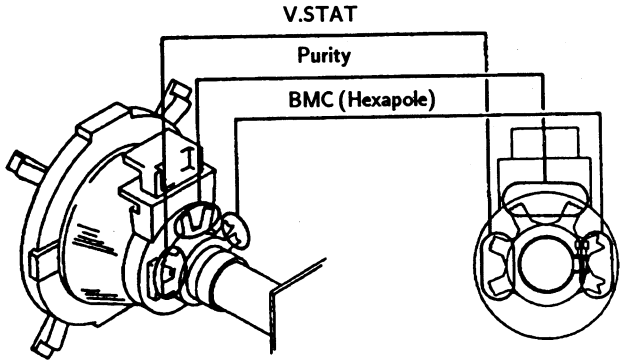
- Tilt the V.STAT tabs and adjust the static convergence by turning the V.STAT tabs to the left or right.

4. The V.STAT tabs are moved in the direction of the ⓐ and ⓑ 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 :

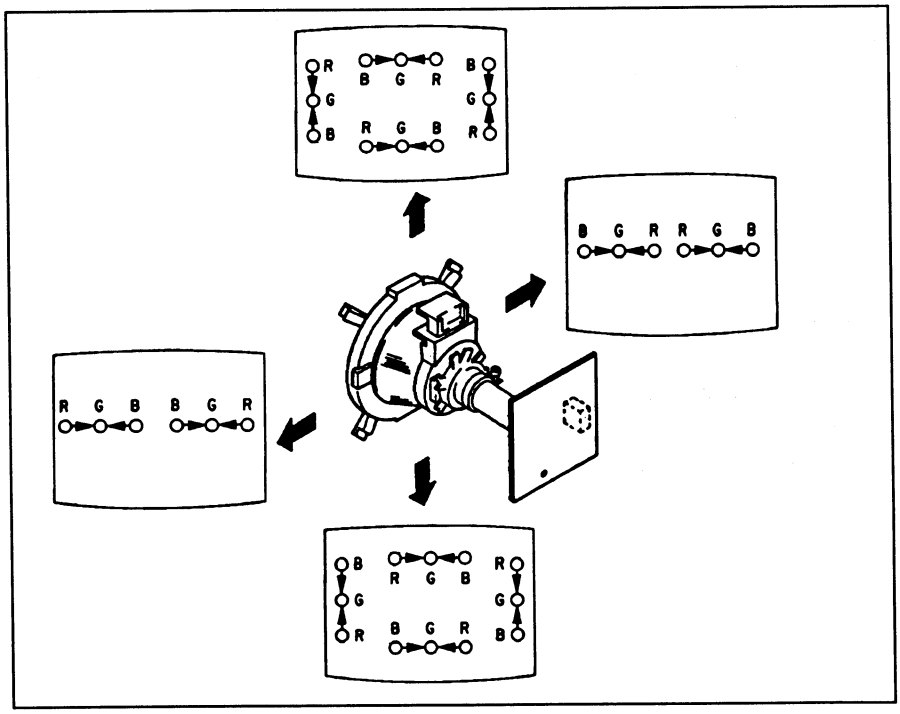
- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.

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

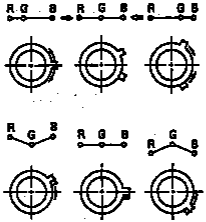
• Y separation axis correction magnet adjustment

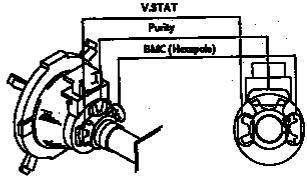
1. Receive the cross-hatch signal, and adjust [PIX] to "MIN" and [BRT] to "standard".
2. Adjust the deflection yoke to the upright condition when it hits the CRT.
3. Adjust so that the Y separation axis correction magnet on the neck assembly is symmetrical at the top and bottom (open state).
4. Return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



- 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 tabe 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.
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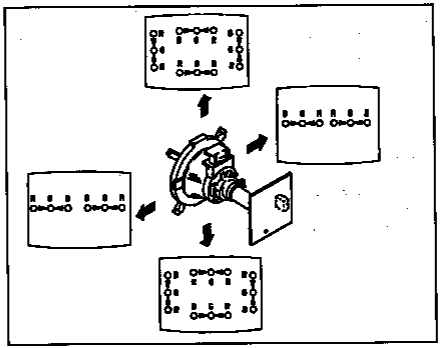
4. Tighten the deflection yoke screws.
5. Install the defelection yoke spacer.

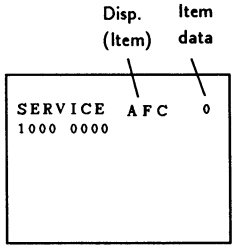


(3) Dynamic Convergence Circuit Adjustment

SERVICE MODE PROCEDURE

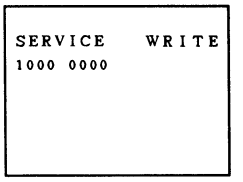
1. Standby mode.(Power off)
2. [DISPLAY] → [5] → [VOL (+)] → [POWER] on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN



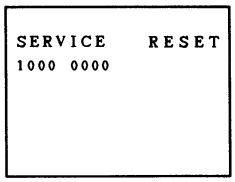
3. The CRT displays the item Being adjusted.
4. Press [1] or [4] on the Remote Commander to select the item.
5. Press [3] or [6] on the Remote Commander to change the data.
6. Press [MUTING] then [ENTER] to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



[MUTING] Green
↓
[ENTER] Red

7. Press [8] then [ENTER] on the Remote Commander to initlalize.



Factory original setting

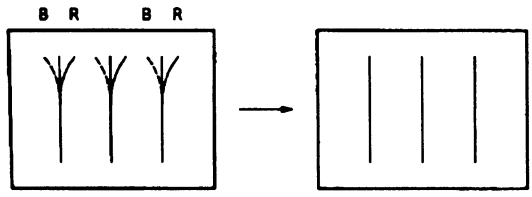
8. Turn set off and on to exit.

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

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

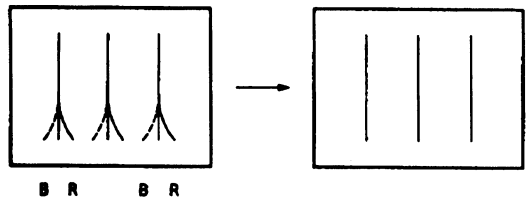
U. YBOW

Select UYBO with [1] and [4]



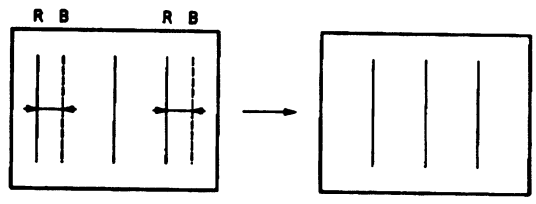
L. YBOW

Select LYBO with [1] and [4]



H. AMP

Select HAMP with [1] and [4]

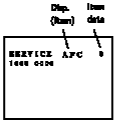


(3) Dynamic Convergence Circuit Adjustment

SERVICE MODE PROCEDURE

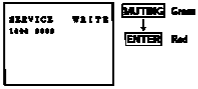
1. Standby mode.(Power off)
2. DISPLAY → 5 → VOL (+) → POWER on the Remote Commander. (Press each button within a second.)

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 initialise.

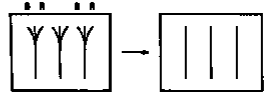
8. Turn set off and on to exit.

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

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

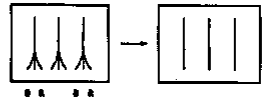
U. YBOW

Select UYBO with 1 and 4



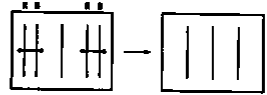
L. YBOW

Select LYBO with 1 and 4



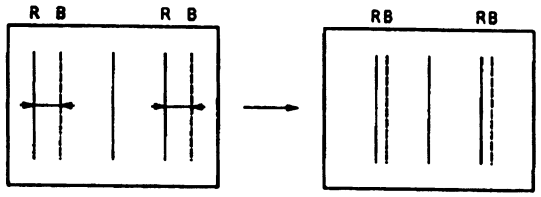
H. AMP

Select HAMP with 1 and 4



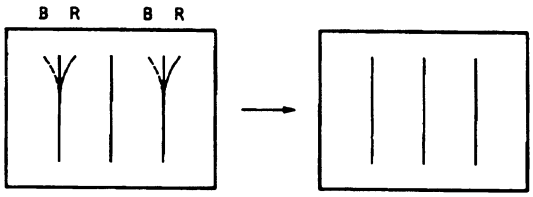
H. TILT

Select HTILT with [1] and [4]



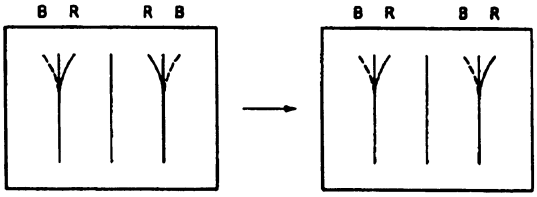
U. CBOW

Select UCBO with [1] and [4]



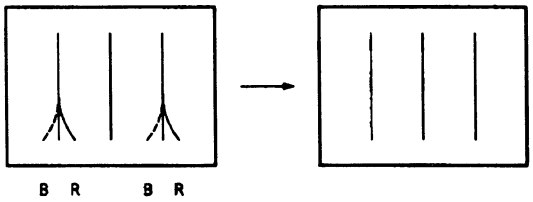
U. TILT

Select UTIL with [1] and [4]



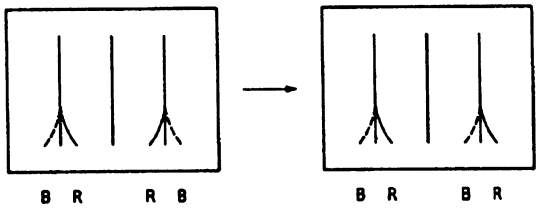
L. CBOW

Select LCBO with [1] and [4]

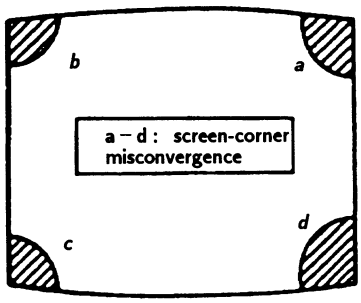


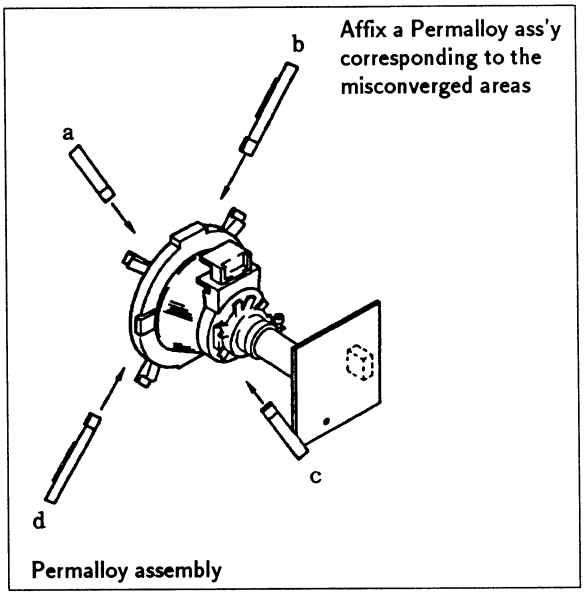
L. TILT

Select L. TIL with [1] and [4]



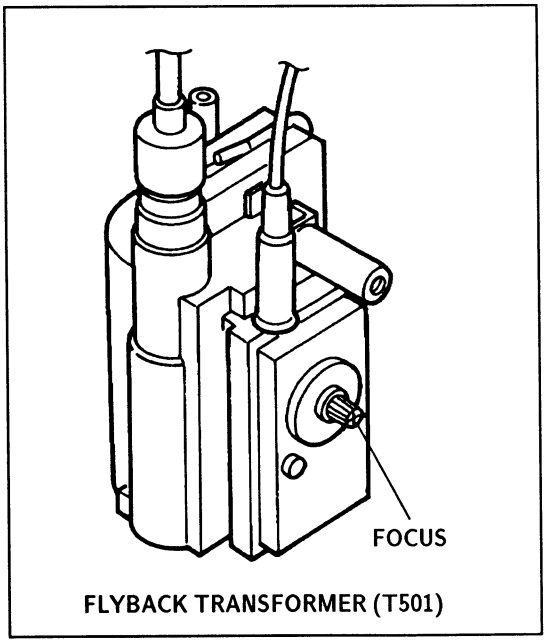
(4) Screen-corner Convergence





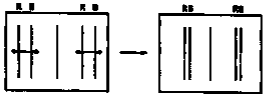
3-3. FOCUS ADJUSTMENT

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



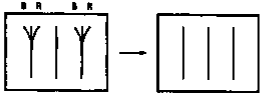
H. TILT

Select HTILT with 1 and 4



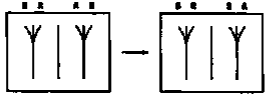
U. CBOW

Select UCBO with 1 and 4



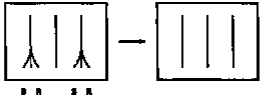
U. TILT

Select UTIL with 1 and 4



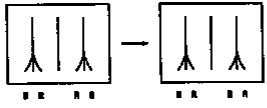
L. CBOW

Select LCBO with 1 and 4

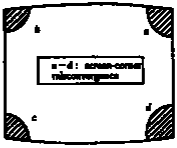


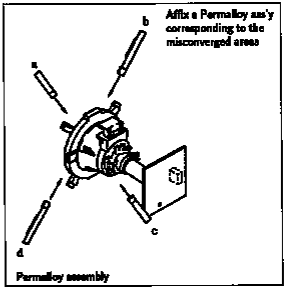
L. TILT

Select L. TIL with 1 and 4



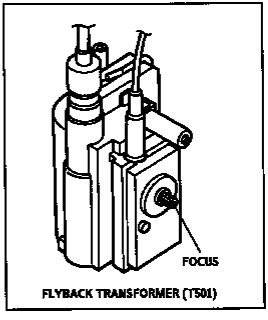
(4) Screen-corner Convergence





3-3. FOCUS ADJUSTMENT

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



KV-27V10/27V15 RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15 RM-Y117 RM-Y117 RM-Y121 RM-CM101

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.

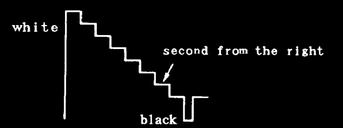
2. WHITE BALANCE ADJUSTMENTS

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 4.7kΩ-10kΩ) between pin ① of IC601 and B+ line.
   2) Supply 130±2.0V AC to with variable autotransformer.
2. Hold-down operation confirmation
   1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to 1760±50μA 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±50μA 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

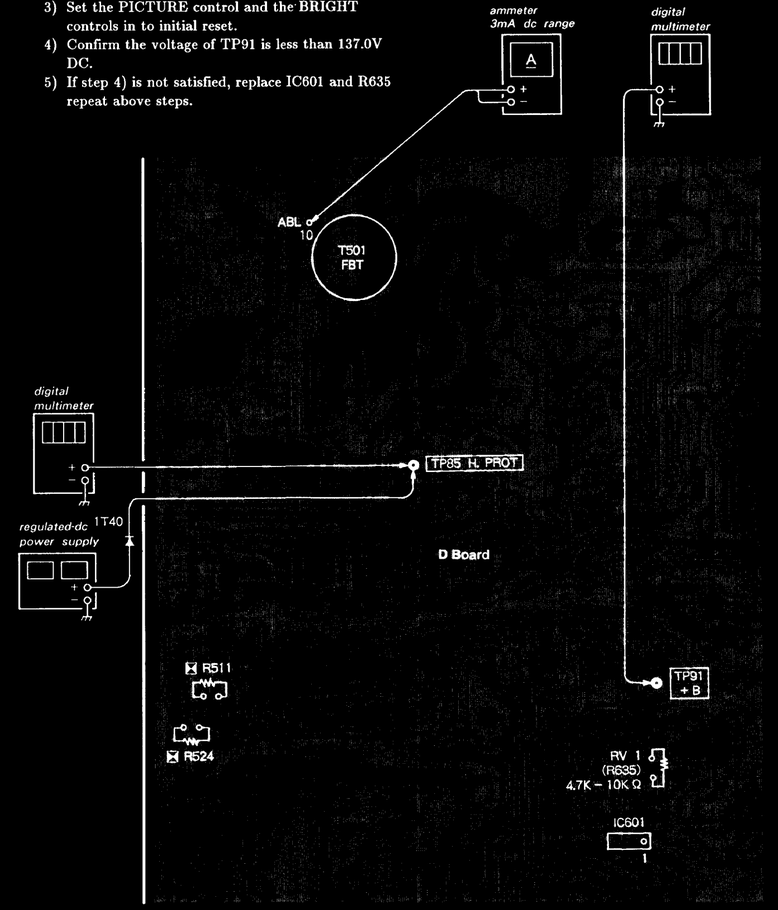
1. Preparation before confirmation
   1) Turn the POWER switch ON, and receive entirely white signals and set the PICTURE and BRIGHT controls to maximum.
   2) Confirm that voltage of the check terminal of TP-85 (D BOARD) is more than 114.0V DC (27 inch) 122.3V DC (32inch) when the set is operating normally with 120.0±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±50μA 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±50μA 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$\pm^{2.0}_{0.0}$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 MΩ when confirming the voltage of the protector terminal of TP85.



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 4.7kΩ-10kΩ) between pin ① of IC601 and B+ line.
   2) Supply 130±2.0V AC to with variable autotransformer.
2. Hold-down operation confirmation
   1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to 1760±50μA 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±50μA 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±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±50μA 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±50μA 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 ⊠).

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 4.7kΩ-10kΩ) between pin ① of IC601 and B+ line.
   2) Supply 130±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±50μA 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±50μA 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±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±50μA with PICTURE and BRIGHT etc controls .
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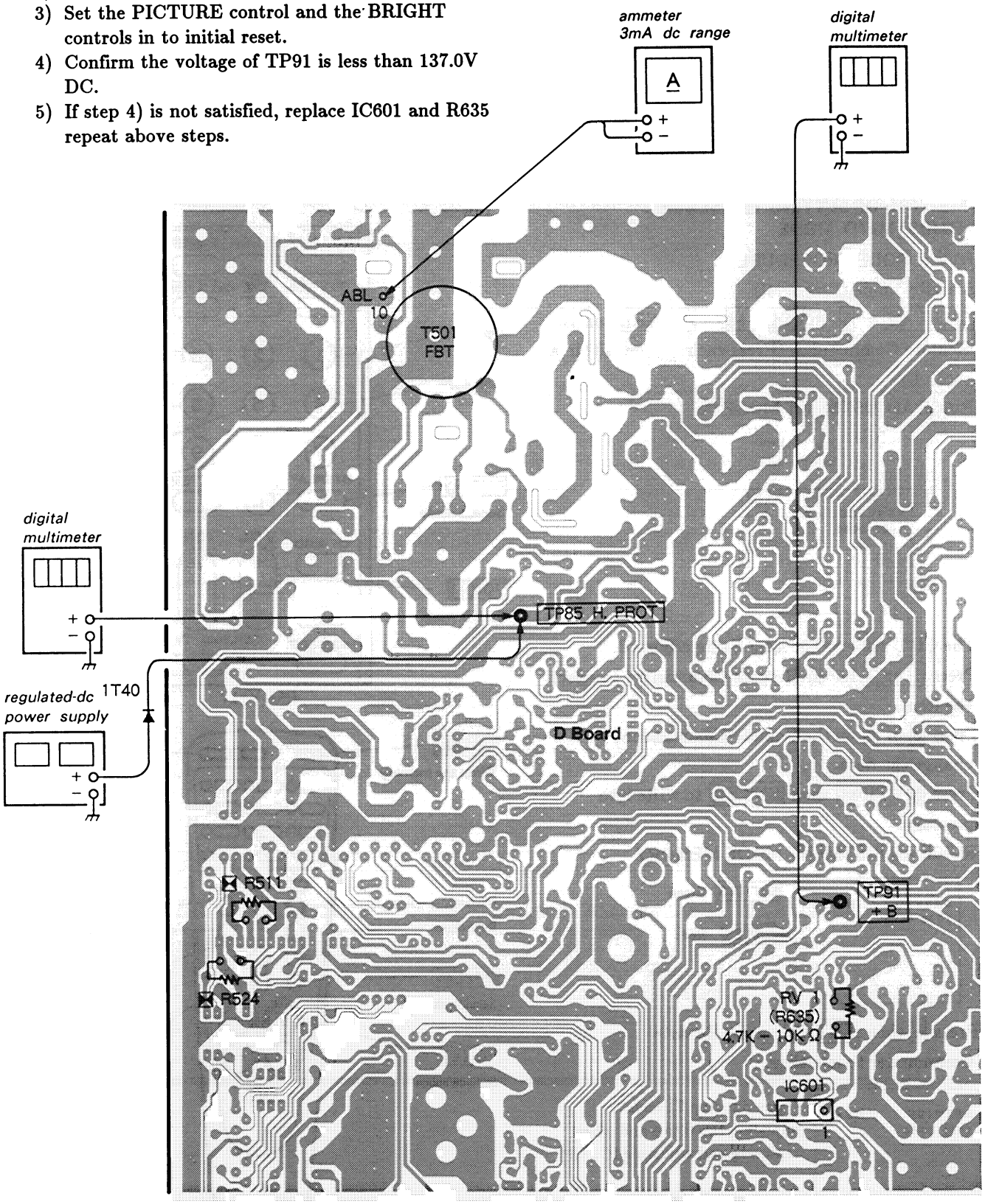
      NOTE: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.
   3) Turn the POWER switch ON, and receive dot signals and adjust ABL current to 160±50μA with PICTURE and BRIGHT etc controls .
   4) Apply DC voltage of over 130.0V gradually to the check terminal of TP-85 (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 $\pm^{2.0}_{0.0}$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 MΩ when confirming the voltage of the protector terminal of TP85.

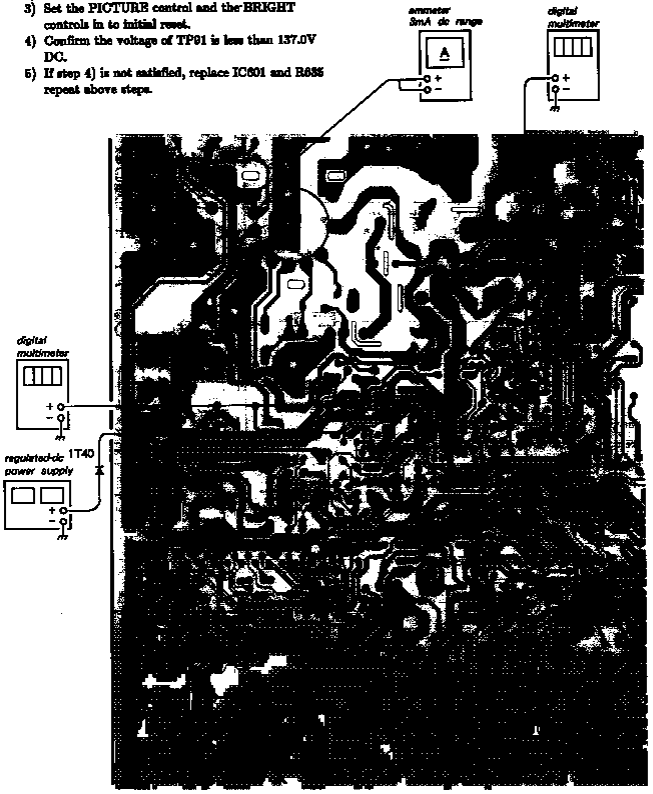


B+ VOLTAGE CONFIRMATION

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

1) Supply 130±1V 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 MΩ 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.

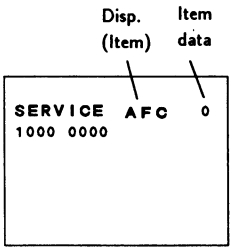
NOTE : Test Equipment Required.
1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio OSC

1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

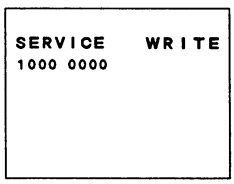
1. Standby mode.(Power off)
2. [DISPLAY] → [5] → [VOL (+)] → [POWER] on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN



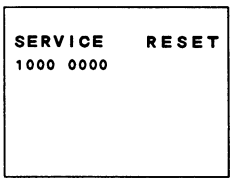
3. The CRT displays the item Being adjusted.
4. Press [1] or [4] on the Remote Commander to select the item.
5. Press [3] or [6] on the Remote Commander to change the data.
6. Press [MUTING] then [ENTER] to write into memory.

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.

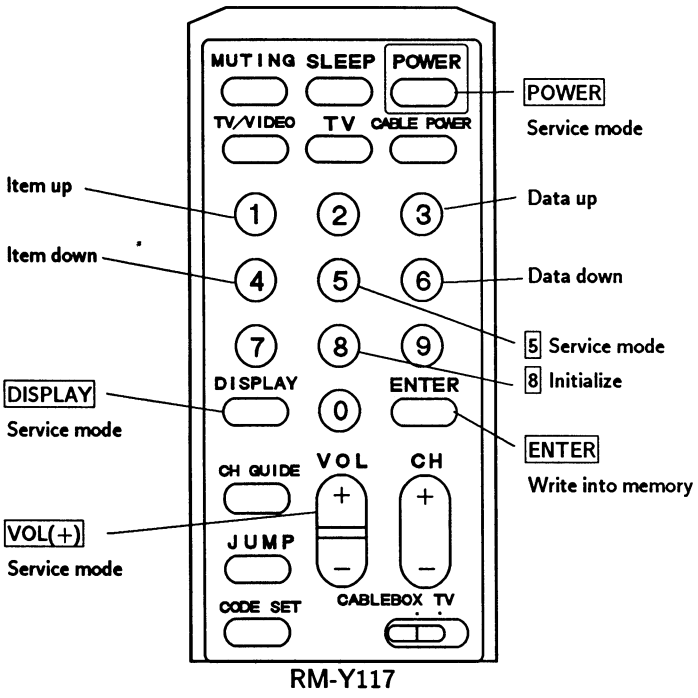
Factory original setting

8. Turn set off and on to exit.

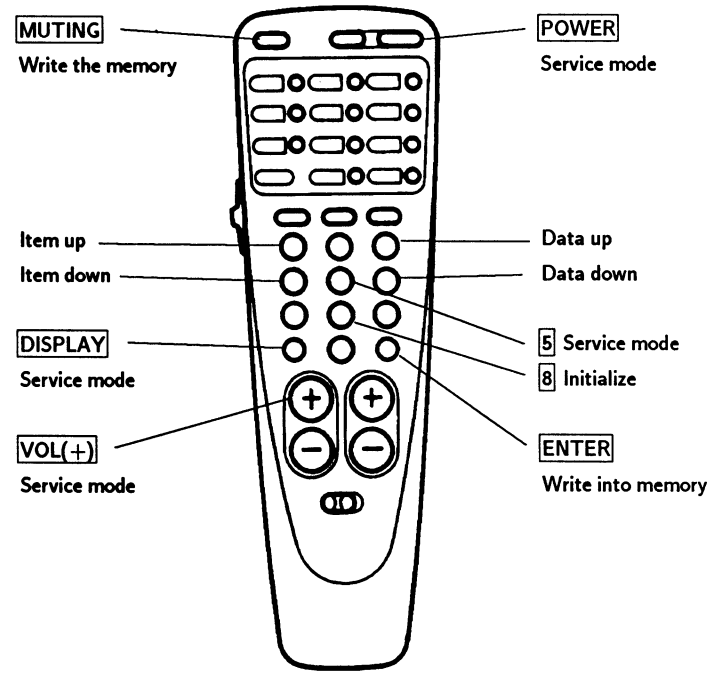
2. MEMORY WRITE CONFIRMATION METHOD

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



RM-Y117



RM-Y121

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.

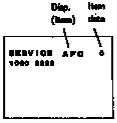
1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio OSC

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 8 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 initialise.

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

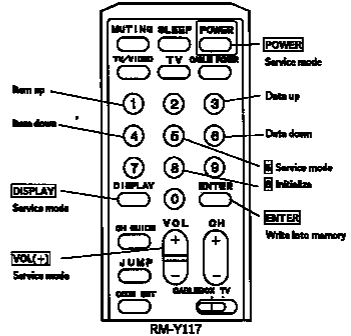
Factory original setting

8. Turn set off and on to exit.

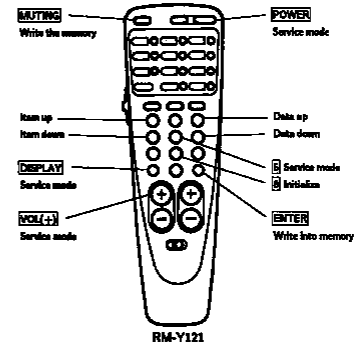
2. MEMORY WRITE CONFIRMATION METHOD

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



RM-Y117



RM-Y121

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	Refference 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	DPDV	Lumipon (dpdv)	0~3	* 1	* 1
35	MPIC	Lumipon (depth)	0~63	* 48	* 48
36	SVOL	Sub Volume	0~15	* 0	* 0
37	SBAL	Sub Balance	0~15	7	7
38	BASS	Sub Bass	0~15	* 8	* 8
39	TRE	Sub Treble	0~15	* 8	* 8
40	UYBO	Upper Y. Bow	0~63	31	31
41	LYBO	Lower Y. Bow	0~63	25	25
42	HAMP	H. Amp	0~63	33	33
43	HTIL	H. Tilt	0~63	33	33
44	UCBO	Upper C. Bow	0~63	38	38
45	UTIL	Upper Tilt	0~63	40	40
46	LCBO	Lower C. Bow	0~63	41	41
47	LTIL	Lower Tilt	0~63	46	46
48	DCSH	DC. Shift	0~63	37	37
49	PHPO	PinP H Position	0~127	76	76
50	PHUE	PinP Hue	0~127	* 0	* 0
51	ID-0	Model ID	0~127	by Model	by Model
52	ID-1	Model ID	0~127	by Model	by Model
53	ID-2	Model ID	0~127	by Model	by Model
54	ID-3	Model ID	0~127	by Model	by Model
55	ID-4	Model ID	0~127	by Model	by Model

* : Set-up value

Note : No.from 1 to 55 is to show adjusment 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-27V 10 (US/CND)

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 0 1 0 0 0	72
54	ID-3	0 0 0 0 0 0 0	0
55	ID-4	0 0 1 0 0 0 1	17

KV-27V 15 (US/CND)

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 0 1 0 0 0	72
54	ID-3	1 0 0 0 0 0 0	64
55	ID-4	0 0 1 0 0 1 1	19

KV-29V 10 C (WP)/29 V 10 M (E)

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	0 1 0 0 0 0 0	32
54	ID-3	0 0 0 0 0 0 0	0
55	ID-4	0 0 1 0 0 0 1	17

KV-32 V 15 (US/CND)

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 0 1 0 0 0	72
54	ID-3	0 1 0 0 1 0 0	36
55	ID-4	0 0 1 0 0 1 1	19

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	Reffierence 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	DPDV	Lumipos (dpdv)	0~3	*1	*1
35	MPIC	Lumipos (depth)	0~63	*48	*48
36	SVOL	Sub Volume	0~15	*0	*0
37	SBAL	Sub Balance	0~15	7	7
38	BASS	Sub Bass	0~15	*8	*8
39	TRE	Sub Treble	0~15	*8	*8
40	UYBO	Upper Y. Bow	0~63	31	31
41	LYBO	Lower Y. Bow	0~63	25	25
42	HAMP	H. Amp	0~63	33	33
43	HTIL	H. Tilt	0~63	33	33
44	UCBO	Upper C. Bow	0~63	38	38
45	UTIL	Upper Tilt	0~63	40	40
46	LCBO	Lower C. Bow	0~63	41	41
47	LTIL	Lower Tilt	0~63	46	46
48	DCSH	DC. Shift	0~63	37	37
49	PHPO	PinP H Position	0~127	76	76
50	PHUE	PinP Hue	0~127	*0	*0
51	ID-0	Model ID	0~127	by Model	by Model
52	ID-1	Model ID	0~127	by Model	by Model
53	ID-2	Model ID	0~127	by Model	by Model
54	ID-3	Model ID	0~127	by Model	by Model
55	ID-4	Model ID	0~127	by Model	by Model

*: Set-up value

Note : No.from 1 to 55 is to show adjustment order.

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

KV-27V 10 (US/CND)

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 0 1 0 0 0	72
54	ID-3	0 0 0 0 0 0 0	0
55	ID-4	0 0 1 0 0 0 1	17

KV-27V 15 (US/CND)

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 0 1 0 0 0	72
54	ID-3	1 0 0 0 0 0 0	64
55	ID-4	0 0 1 0 0 1 1	19

KV-29V 10 C (WP)/29 V 10 M (E)

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	0 1 0 0 0 0 0	32
54	ID-3	0 0 0 0 0 0 0	0
55	ID-4	0 0 1 0 0 0 1	17

KV-32 V 15 (US/CND)

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 0 1 0 0 0	72
54	ID-3	0 1 0 0 1 0 0	36
55	ID-4	0 0 1 0 0 1 1	19

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± 60Hz.
7. Call the item of AFC again, adjust the level" 0 ".
8. Write into the memory by pressing MUTING then ENTER.

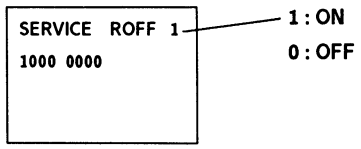
V.FREQUENCY ADJUSTMENT (VFRE)

1. Select video 1 with no connecting the signal.
2. Set to Service adjustment Mode.
3. Connect the frequency counter across connectorCN131 Pin⑦ (V. DRIVE) connector and ground.
4. Select VFRE with 1 and 4.
5. Adjust with 3 and 6 for the 56 ±0.5Hz.
6. Write the memory by pressing MUTING then ENTER .

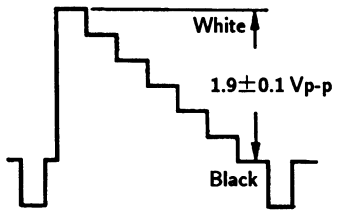
SUB CONTRAST ADJUSTMENT (SPIX)

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±0.1Vp-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

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 Pin⑭ (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± 60Hz.
7. Call the item of AFC again, adjust the level" 0 ".
8. Write into the memory by pressing MUTING then ENTER.

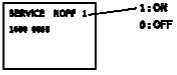
V.FREQUENCY ADJUSTMENT (VFRE)

1. Select video 1 with no connecting the signal.
2. Set to Service adjustment Mode.
3. Connect the frequency counter across connectorCN131 Pin⑰ (V. DRIVE) connector and ground.
4. Select VFRE with 1 and 4.
5. Adjust with 3 and 6 for the 60 ±0.5Hz.
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)



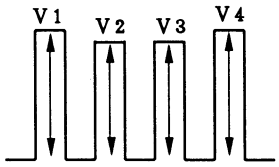
4. Connect an oscilloscope to CN708 Pin① (R OUT) of C board and ground.
5. Select SPIX with 1 and 4.
6. Adjust with 3 and 6 for the 1.9±0.1Vp-p.

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).



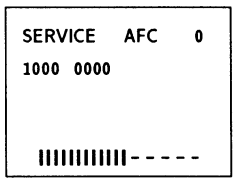
6. Increase the data of SCOL by 3 steps.
7. Write into the memory by pressing MUTING then ENTER .

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 .

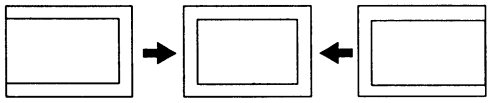


H.CENTER ADJUSTMENT (H POS)

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 .

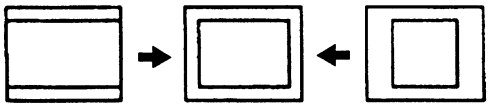
H. CENTER (HPOS)



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 .

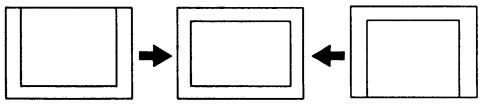
H. SIZE (HSIZ)



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 senter.
5. Write into the memory by pressing MUTING then ENTER .

V. CENTER (VPOS)



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 Pin② (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)

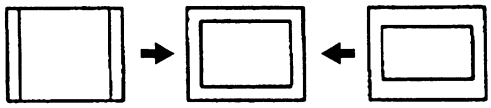
1. Input a cross-hatch signal.
2. Set to service adjustment Mode.
3. Select VPOS with 1 and 4.
4. Adjust with 3 and 6 for the best vertical center.
5. Write into the memory by pressing MUTING then ENTER.

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 .

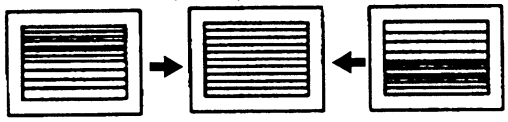
V. SIZE (VSIZ)



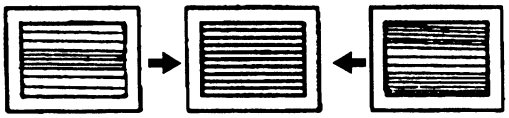
V LINEARITY(VLIN), VS CORRECTION(VSCO), PIN AMP(PAMP), CORNER PIN(CPIN), AND PIN PHASE(PPHA) ADJUSTMENTS

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 byPressing MUTING then ENTER.

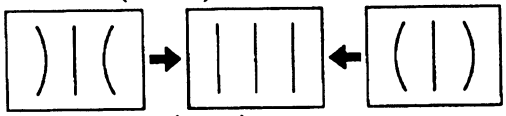
V LINEARITY (VLIN)



VS CORRECTION (VSCO)

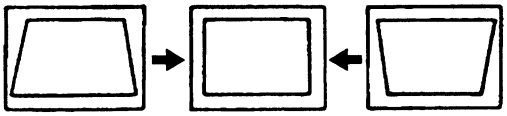


PIN AMP (PAMP)



CORNER PIN (CPIN)

PIN PHASE (PPHA)



5-3. P BOARD ADJUSTMENTS (KV-27V15/32V15 only)

P IN P H. POSITION (PHPO)

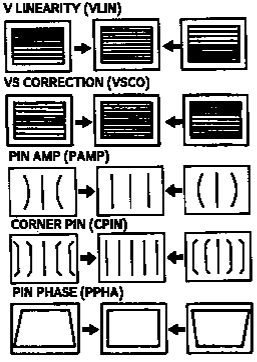
1. Input a color-bar signal
2. Set to Service adjustment Mode.
3. Select PHPO with 1 and 4.
4. Adjust with 3 and 6 for the best balanced cent position at 4 corner P in P display position.
5. Write the memory by pressing MUTING then ENTER .

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 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 byPressing MUTING then ENTER.



5-3. P BOARD ADJUSTMENTS (KV-27V15/32V15 only)

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.

KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

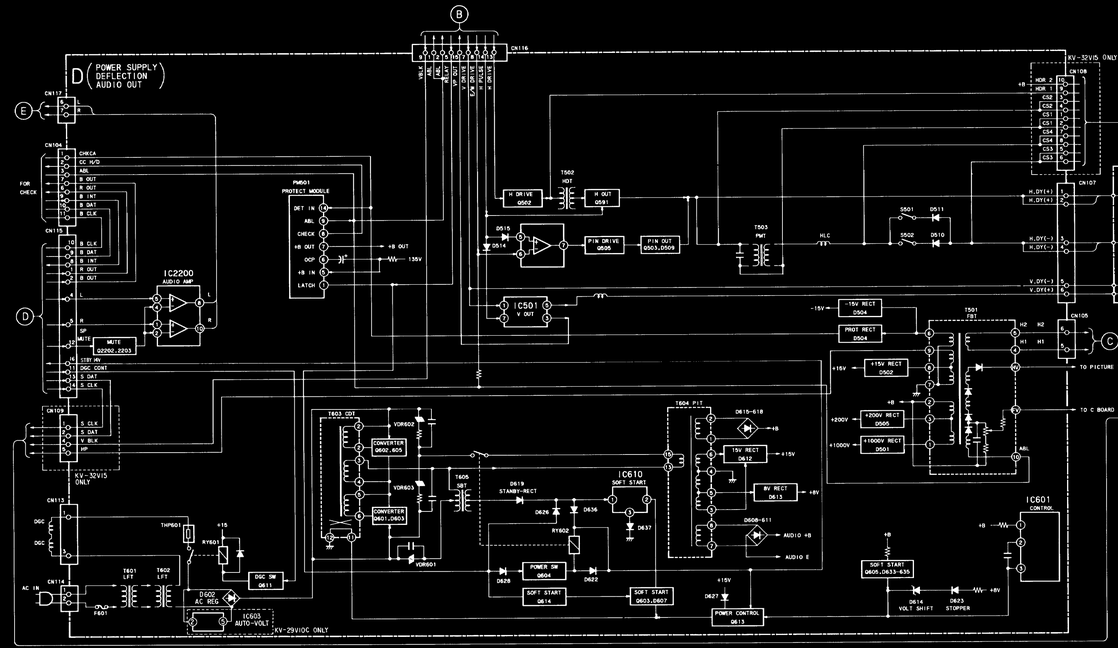
SECTION 6 DIAGRAMS

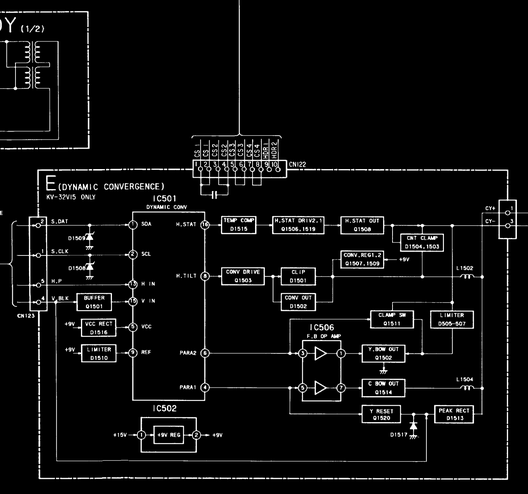
6-1. BLOCK DIAGRAMS (1)

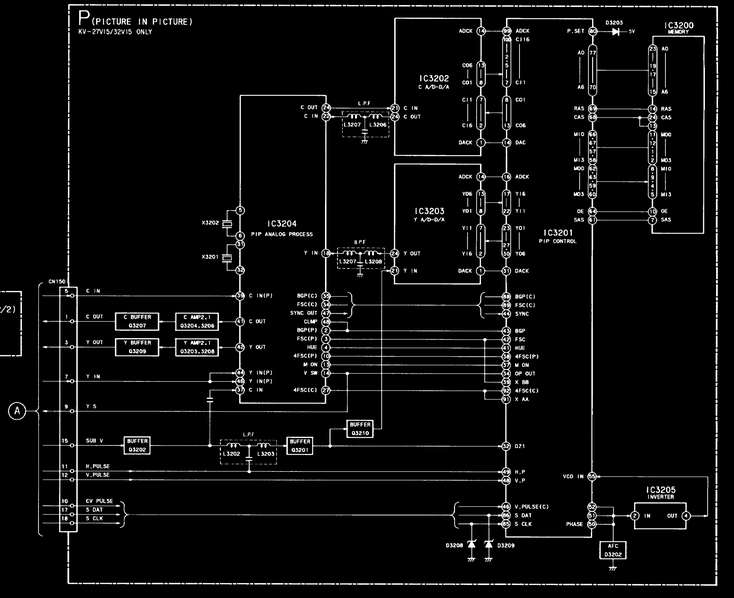
KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

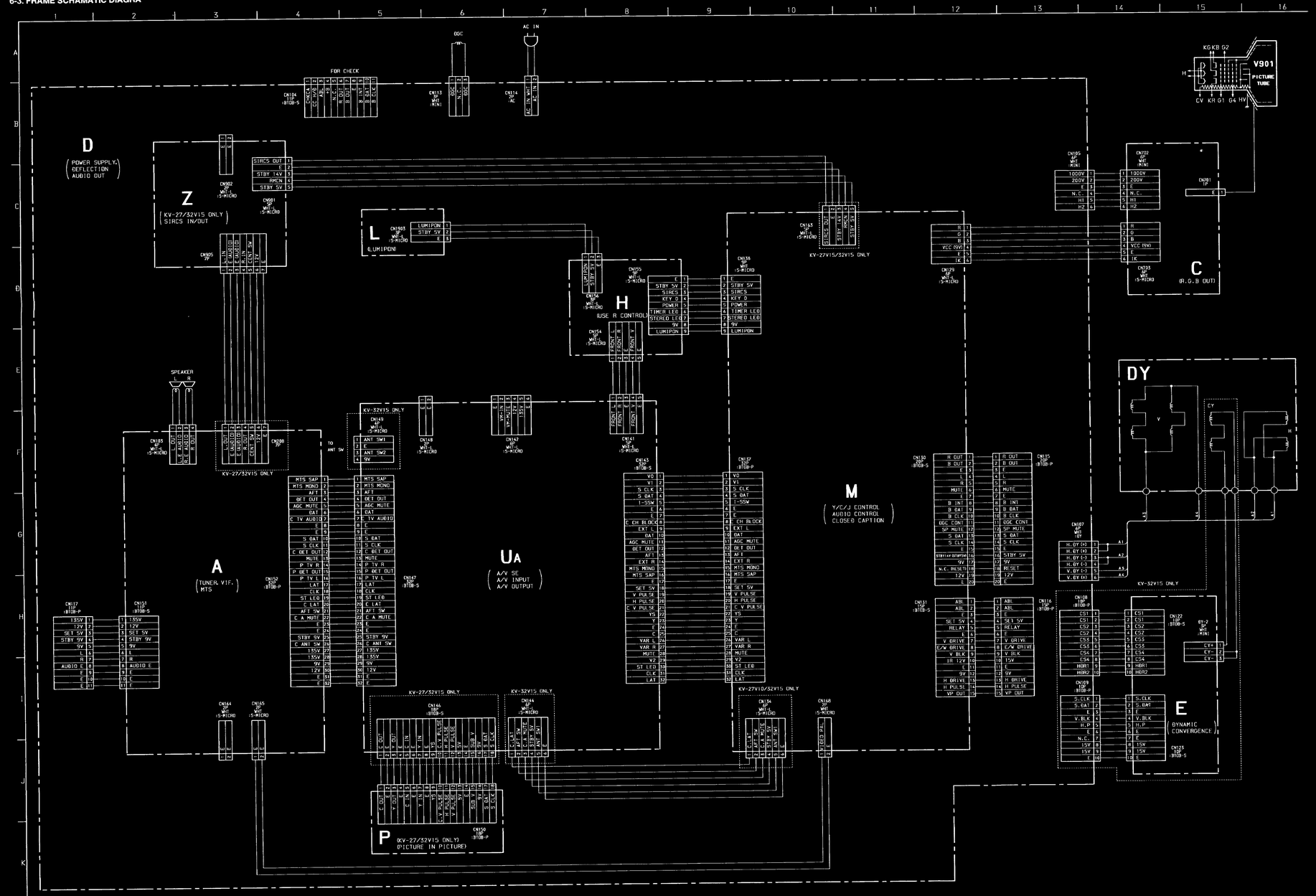
KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

6-2. BLOCK DIAGRAMS (2)

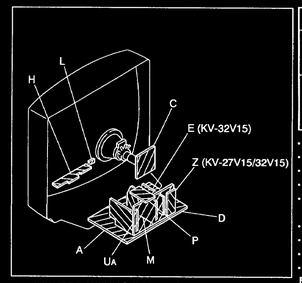







D
(POWER SUPPLY, DEFLECTION AUDIO OUT)
Z
(KV-27/32V15 ONLY SIRCS IN/OUT)
L
(LUMIPON)
H
(USE R CONTROL)
A
(TUNER V1F. MTS)
UA
(A/V SE A/V INPUT A/V OUTPUT)
M
(Y/C/J CONTROL AUDIO CONTROL CLOSED CAPTION)
C
(R.G.B OUT)
DY
E
(DYNAMIC CONVERGENCE)
P
(KV-27/32V15 ONLY) (PICTURE IN PICTURE)
V901
PICTURE TUBE
SPEAKER
FOR CHECK
AC IN
TO ANT SW
KV-27/32V15 ONLY
KV-32V15 ONLY
KV-27V10/32V15 ONLY

6-4. CIRCUIT BOARDS LOCATION



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

- All voltages are in V.
- Voltage are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 MΩ 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.
- ▭ : B+ line.
- ▭ : 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
	: ※	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 ⧟ display is on the component side.

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

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

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

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

6-5. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note:

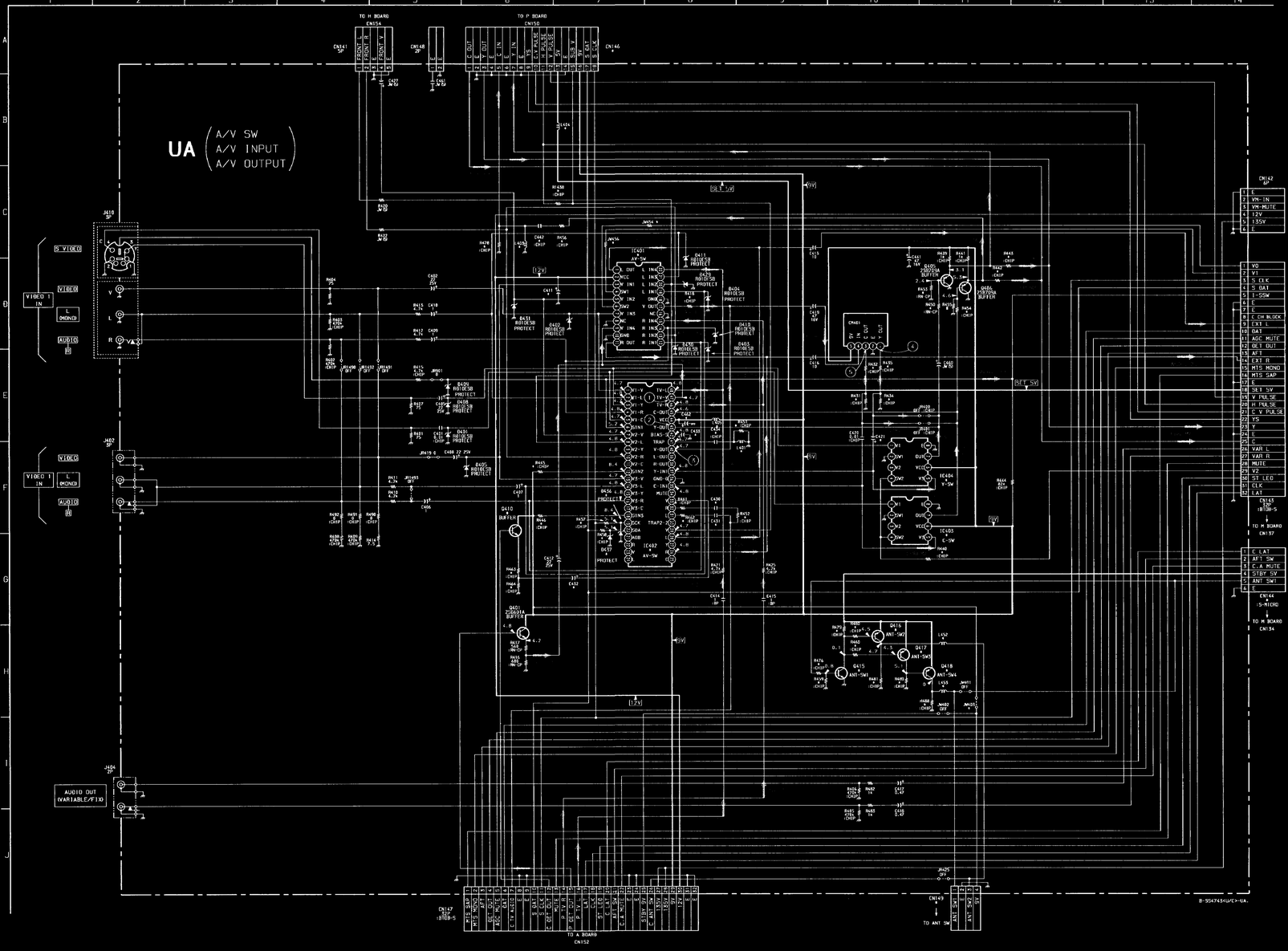
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytic and tantalums.
- All electrolytics are in 50V unless otherwise specified.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch: 5 mm
Rating electrical power 1/4W

- Chips resistors are 1/10W.
- All resistors are in ohms. kΩ=1000Ω, MΩ=1000KΩ
- ▭ : nonflammable resistor.
- ⏦ : fusible resistor.
- △ : internal component.
- ▭ : panel designation, and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊥ : earth-ground. (cool)
- ⏚ : earth-chassis. (hot)
- The components identified by ◪ 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 ◪ , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ◨ and repeat the adjustment until the specified value is achieved. (Refer to R511 and R524 on page 34, 35)
- When replacing the part in below table be sure to parform the related adjustment.

Schematic diagrams

UA board ➡



– UA BOARD –

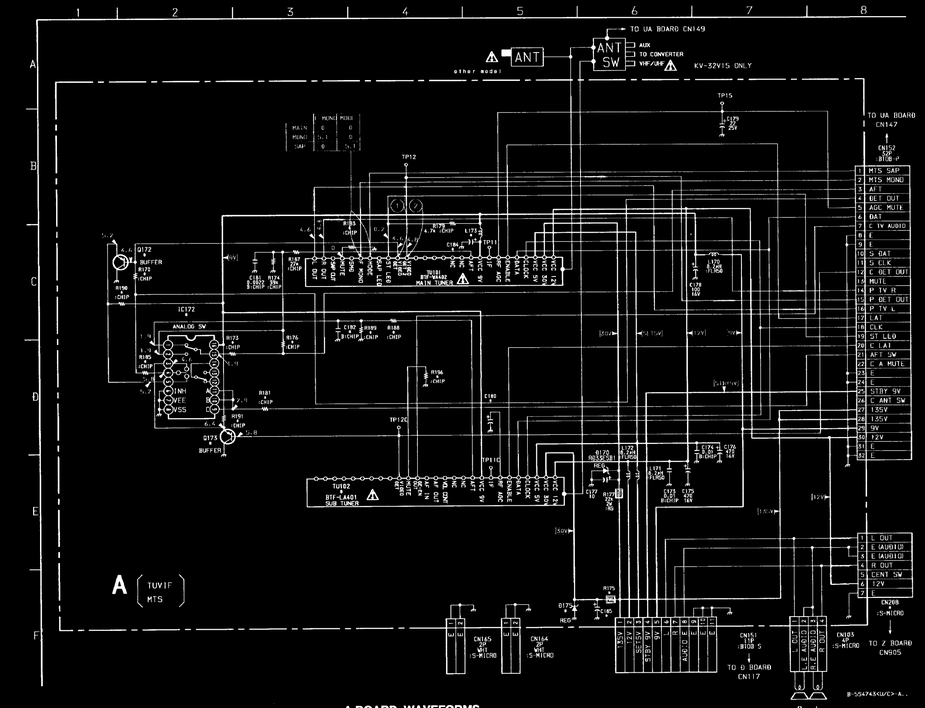
Ref	LOCATION	KV-27V10/27V15 /29V10C/29V10M	KV-32V15
C411	C – 6	100 25V	–
C421	E – 10	0.47	22 25V
C430	F – 8	–	1
C431	F – 8	–	1
C432	F – 7	–	22 25V
C433	E – 8	–	33 25V
C434	E – 8	–	100P
C442	C – 6	–	100P
C462	E – 8	–	100 16V
CN142	C – 14	–	2P
CN144	F – 14	–	6P
CN146	A – 7	–	18P
CN149	K – 11	–	4P
D436	F – 7	–	RD10ESB
D437	F – 7	–	RD10ESB
IC401	C – 7	M52470AP	–
IC402	E – 7	–	CXA1545AS
IC403	F – 10	MM1114XFF	–
IC404	E – 10	MM1118XFF	–
JW403	J – 11	–	10MM
JW454	C – 8	10K	–
JW456	C – 7	10K	–
L401	E – 9	–	18 µH
L403	C – 6	–	33 µH
L404	B – 6	–	33 µH
L405	E – 8	–	JW (5)
L452	I – 10	–	JW (5)
L453	J – 10	–	JW (5)
Q410	F – 6	–	2SD601A
Q415	I – 9	–	2SD601A
Q416	I – 9	–	2SB709A
Q417	I – 10	–	2SB709A
Q418	I – 10	–	2SB709A
R418	D – 8	100	–
R413	D – 10	680	1K
R432	D – 10	680	0
R434	D – 10	680	1K
R435	D – 10	680	0
R440	F – 10	100	–
R442	C – 11	100	–
R443	C – 11	100	–
R445	E – 6	–	10K
R446	F – 6	–	10K
R450	C – 11	100	470
R451	E – 9	–	4.7K
R452	F – 9	–	100
R453	C – 11	1.2K	560
R454	D – 11	100	0
R456	C – 6	–	470
R457	F – 7	–	220
R458	F – 7	–	220
R459	I – 9	–	22K
R460	I – 9	–	330
R461	F – 8	–	4.7K
R462	F – 8	–	4.7K
R463	F – 6	–	680
R464	G – 6	–	680
R476	I – 9	–	22K
R478	C – 6	–	470
R479	I – 9	–	22K
R480	I – 9	–	22K
R481	I – 10	–	22K
R488	I – 10	–	22K
R489	I – 10	–	22K
R1438	C – 6	–	22K

– : NOT MOUNT

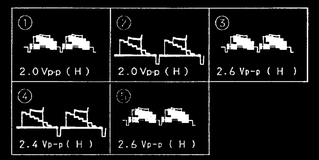
– A BOARD –

Ref	LOCATION	KV-27V10/27V15 /29V10C/29V10M	KV-32V15
C180	D – 5	–	22MF / 25V
C182	D – 3	–	0.0022MF
C184	D – 5	–	10MF / 50V
C185	F – 6	–	10MF / 50V
CN208	F – 8	7P	–
D175	F – 5	–	RD33ESB1
IC172	D – 2	–	BU4053BF
L173	C – 5	–	8.2 µH
Q172	C – 2	–	2SA1162-G
Q173	D – 2	–	2SA1162-G
R170	C – 2	100 1/10W	–
R173	D – 3	–	0 1/10W
R175	F – 6	–	22K 2W
R176	D – 3	0 1/10W	–
R181	D – 3	–	100 1/10W
R185	D – 2	–	100 1/10W
R188	D – 4	–	39K 1/10W
R189	D – 4	–	27K 1/10W
R190	C – 2	–	4.7K 1/10W
R191	D – 3	–	4.7K 1/10W
R193	C – 3	–	330 1/10W
R196	D – 4	–	330 1/10W
TU102	E – 4	–	BTF-LA401

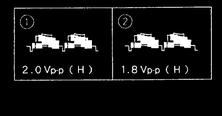
– : NOT MOUNT



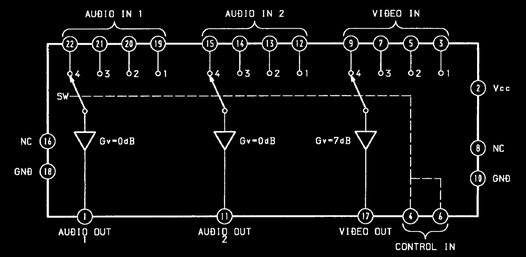
• UA BOARD WAVEFORMS



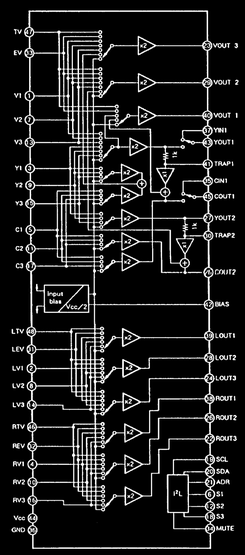
• A BOARD WAVEFORMS



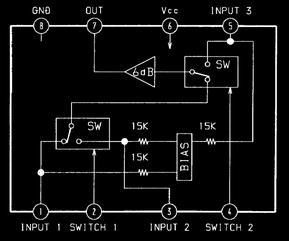
• UA Board IC401 M52470AP



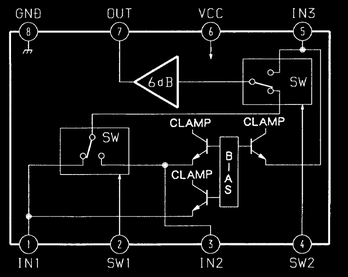
• UA Board IC402 CXA1545AS



• UA Board IC403 MM1114XFF

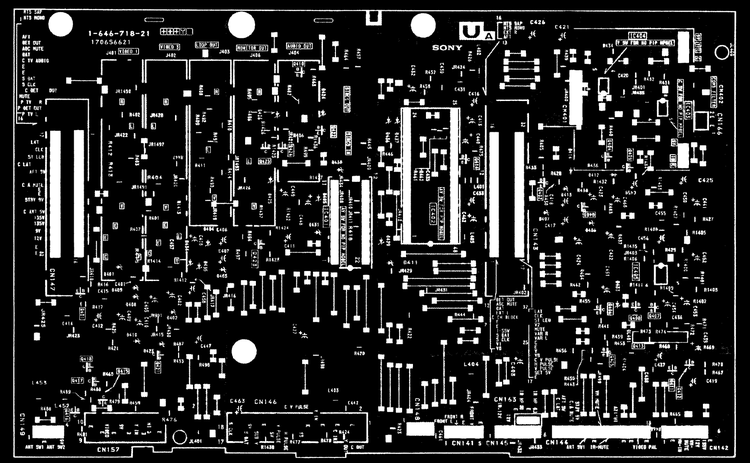


• UA Board IC404 MM1118XFF

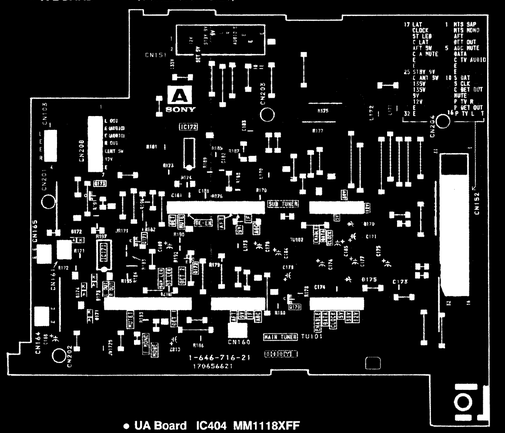


UA A/V SW, A/V INPUT, A/V OUTPUT **A** TUNER, VIF, MTS

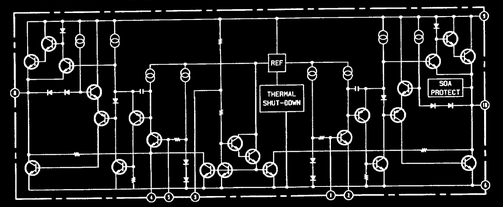
– UA BOARD – 〈Conductor Side〉



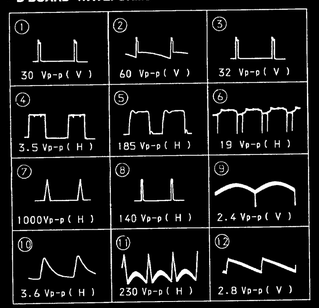
– A BOARD – 〈Conductor Side〉



• D Board IC2200 TDA2009A



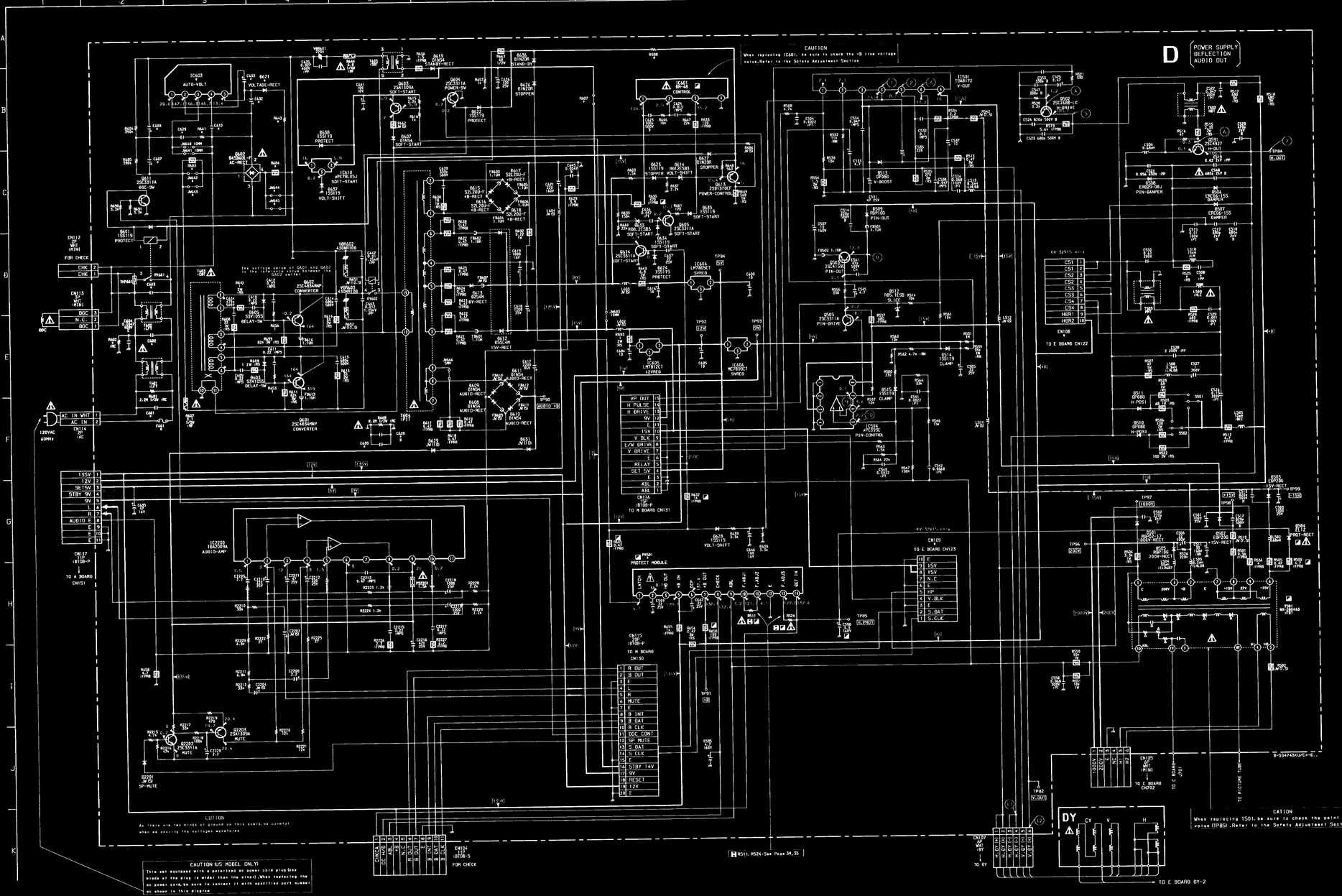
• D BOARD WAVEFORMS



– D BOARD –

Ref	LOCATION	KV-27V10 / 29V10M	KV-27V15	KV-29V10C	KV-32V15
C508	D – 15	0.0022 / 630V	0.0022 / 630V	0.0022 / 630V	–
C601	E – 2	0.47 / 125V	0.47 / 125V	0.47 / 300V	0.47 / 125V
C602	E – 2	0.47 / 125V	0.47 / 125V	–	0.47 / 125V
C603	D – 2	0.47 / 125V	0.47 / 125V	–	0.47 / 125V
C607	C – 2	470 / 200V	470 / 200V	560 / 250V	470 / 200V
C608	B – 2	470 / 200V	470 / 200V	560 / 250V	470 / 200V
C628	F – 5	–	–	470P / 400V	–
C629	B – 2	–	–	0.047 / 200V	–
C630	B – 3	–	–	0.1	–
C632	B – 3	–	–	2.2	–
C633	B – 3	–	–	100	–
C639	F – 5	470P / 400V	470P / 400V	–	470P / 400V
CN108	D – 13	–	–	–	10P
CN109	H – 12	–	–	–	10P
D621	B – 4	–	–	RGP02-17	
F601	F – 2	6.3A/125V	6.3A/125V	6.3A/250V	6.3A/125V
IC803	B – 3	–	–	STR81159A	
JW640	B – 3	10MM	10MM	–	10MM
JW641	B – 3	10MM	10MM	–	10MM
JW642	C – 3	10MM	10MM	–	10MM
JW643	C – 3	10MM	10MM	–	10MM
JW644	C – 4	10MM	10MM	–	10MM
JW645	C – 4	10MM	10MM	–	10MM
JW681		–	–	10MM	–
JW682		–	–	10MM	–
PM501	H – 9	PM-38	PM-38	PM-38	PM-39
R525	D – 15	47 / 2W	47 / 2W	47 / 2W	–
R536	H – 15	–	–	–	4.7
R602	E – 2	2.2M 1/2W	2.2M 1/2W	8.2M / 1W	22M 1/2W
R641	B – 3	–	–	4.7 1/4W	–
R642	B – 4	–	–	2.2 1/4W	–
R683	C – 3	–	–	1 10W	–
R684	C – 4	–	–	1 10W	–
R687	B – 7	6.8 / 1W	6.8 / 1W	JW(12.5)	6.8 / 1W

–: NOT MOUNT



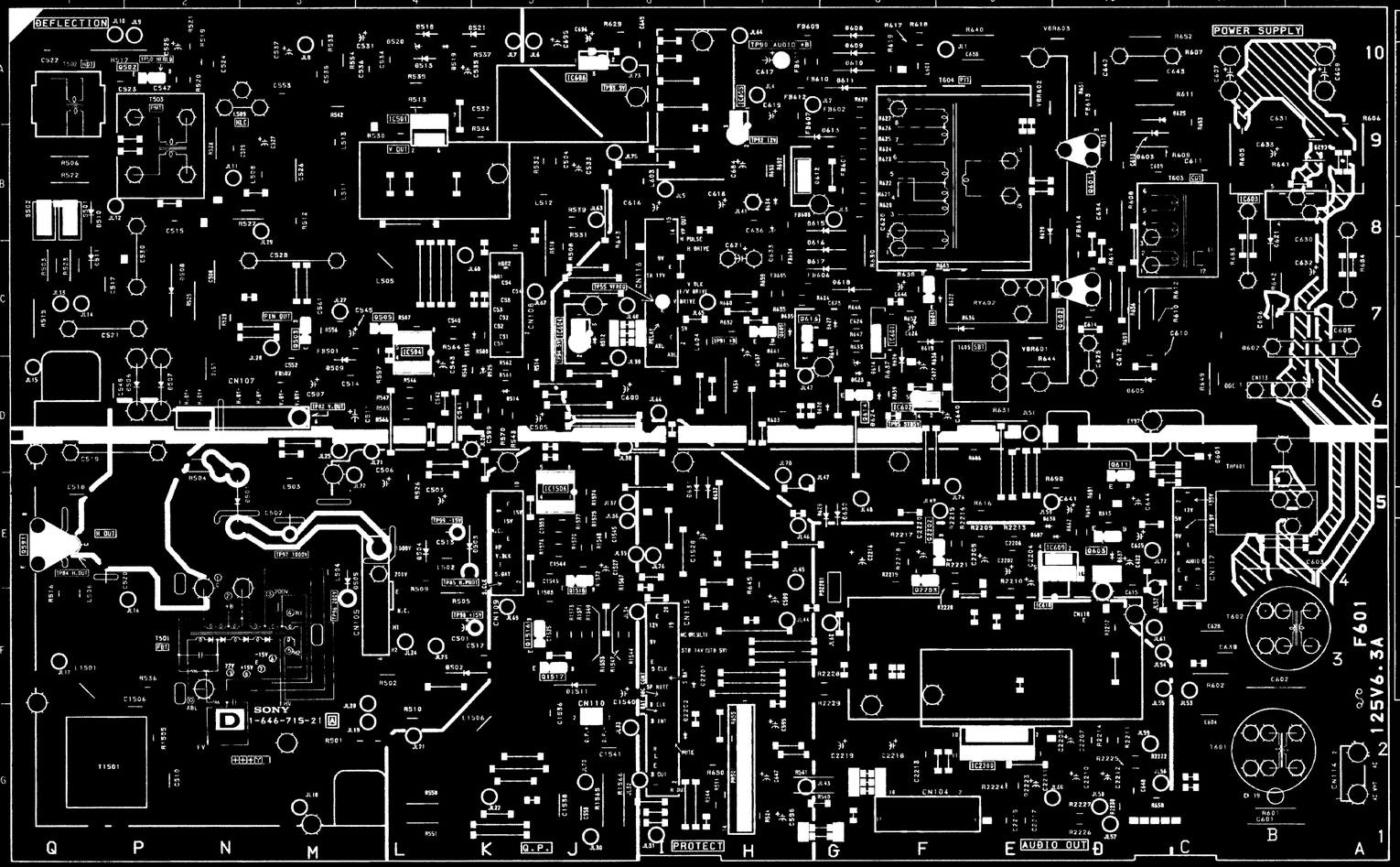
Schematic diagrams ← A board

Schematic diagrams D board →

KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121 RM-CM101

D POWER SUPPLY, DEFLECTION, AUDIO OUT

– D BOARD – (Conductor Side)



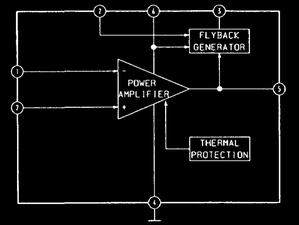
IC	
IC501	A – 4
IC504	C – 4
IC601	C – 8
IC603	B – 11
IC604	C – 5
IC605	A – 7
IC606	A – 5
IC610	F – 10
IC2200	G – 9

TRANSISTOR	
Q502	A – 2
Q503	C – 3
Q505	C – 4
Q591	E – 1
Q601	B – 10
Q602	C – 10
Q603	E – 10
Q604	C – 8
Q605	C – 7
Q611	E – 10
Q613	C – 7
Q614	D – 8
Q2202	E – 8
Q2203	E – 8

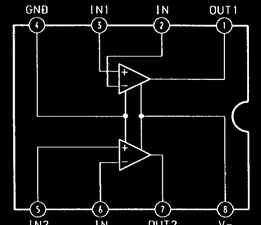
DIODE	
D501	E – 3
D502	F – 4
D503	E – 4
D504	E – 4
D505	E – 3
D506	D – 2
D507	D – 2
D508	C – 2
D509	D – 3
D510	B – 1
D511	C – 1
D512	C – 6
D513	A – 4
D514	D – 5
D515	C – 4
D601	D – 11
D602	C – 11
D603	B – 10
D605	D – 10
D607	E – 10
D608	A – 8
D609	A – 8
D610	A – 8
D611	A – 8
D612	B – 7
D613	B – 8
D614	D – 8
D615	B – 8
D616	C – 8
D617	C – 8
D618	C – 8
D619	C – 8
D622	C – 9
D623	D – 8
D624	D – 8
D626	D – 8
D627	C – 8
D628	D – 8
D633	B – 7
D634	B – 7
D635	C – 8
D636	C – 9
D637	E – 10
D638	E – 10

NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

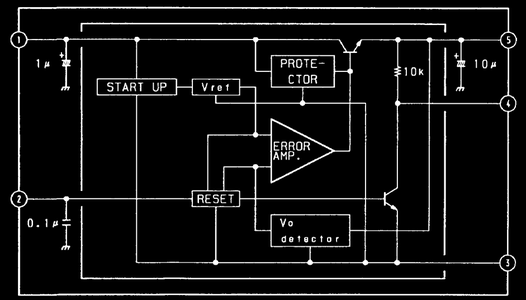
• D Board IC501 TDA8172



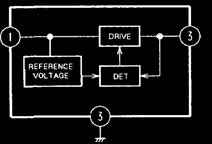
• D Board IC504 μPC393C



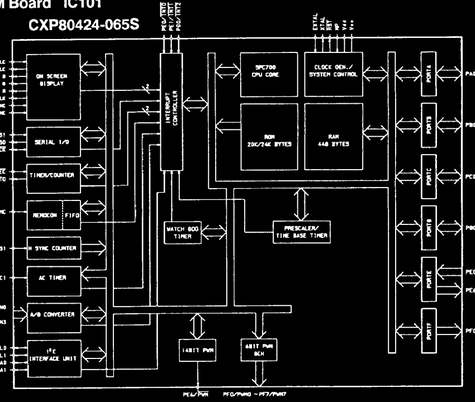
• D Board IC602 L78LR05D



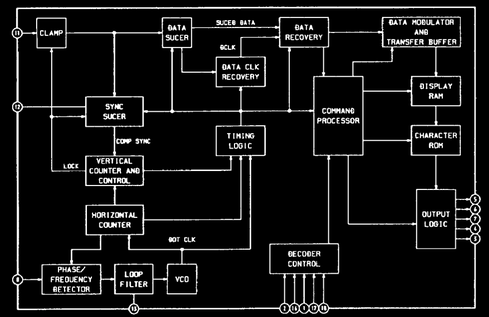
• D Board IC610 μPC78L05J



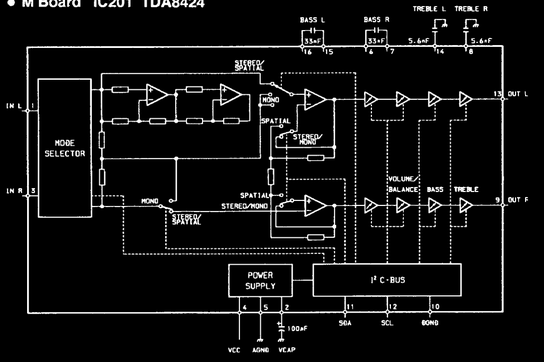
• M Board IC101
CXP80424-065S



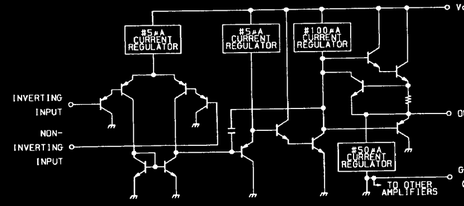
• M Board IC150 MC144143



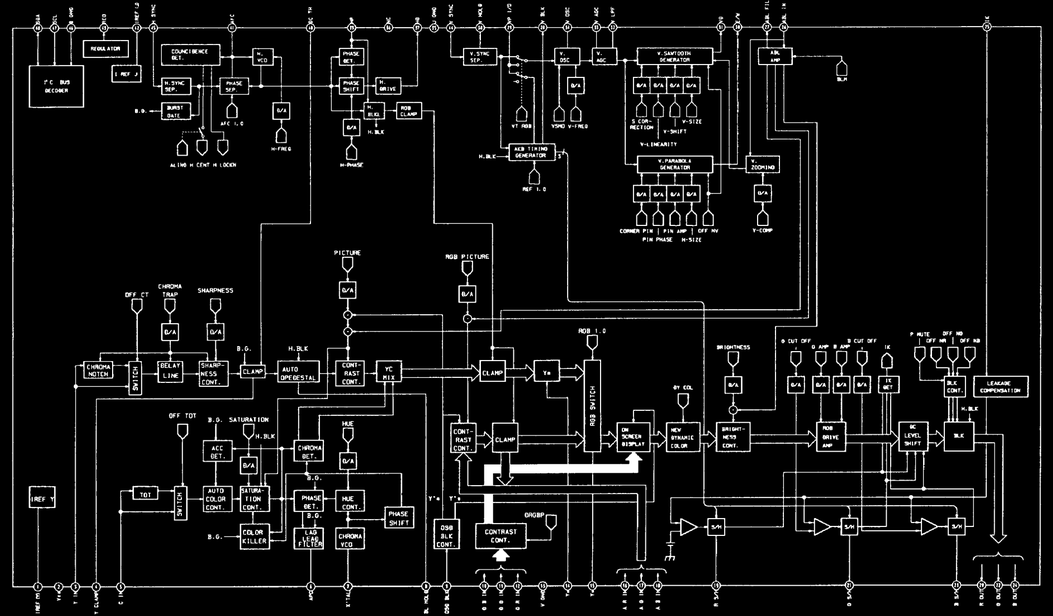
• M Board IC201 TDA8424



• M Board IC202 LM358PS-T1



• M Board IC301 CXA1468AS



KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

IC		DIODE	
IC101	C-6, H-6	D001	F-5
IC102	B-6, H-6	D002	F-5
IC103	D-4, G-4	D004	D-4
IC150	B-4, H-4	D005	G-6
IC201	B-2, H-2	D006	B-6, H-6
IC202	D-1	D007	B-7, H-7
IC301	B-3, G-3	D008	B-7, H-7
TRANSISTOR		D009	B-6, H-6
Q001	D-6	D150	G-4
Q004	G-6	D201	A-1
Q005	H-6	D202	A-1
Q151	G-5	D205	C-2, G-2
Q201	I-1	D206	B-2, H-2
Q301	A-2	D301	B-4, H-4
Q302	A-2	D304	B-4, H-4
Q308	D-3		

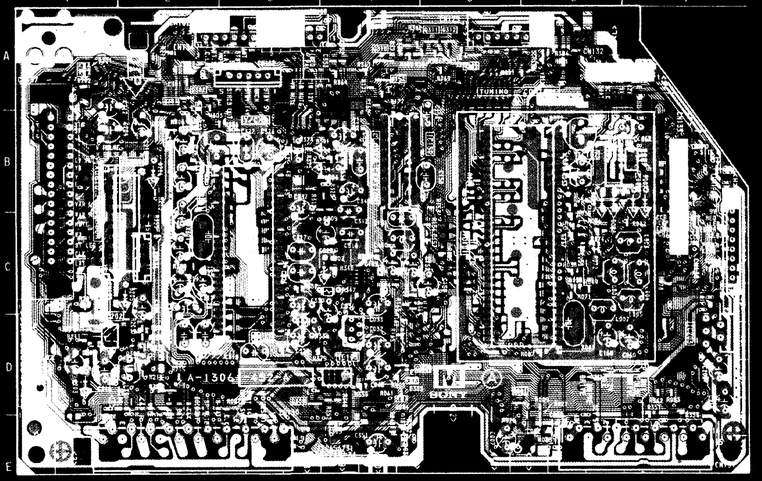
KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121
RM-CM101

M [Y/C/J, CONTROL AUDIO, CONTROL CLOSED CAPATION]

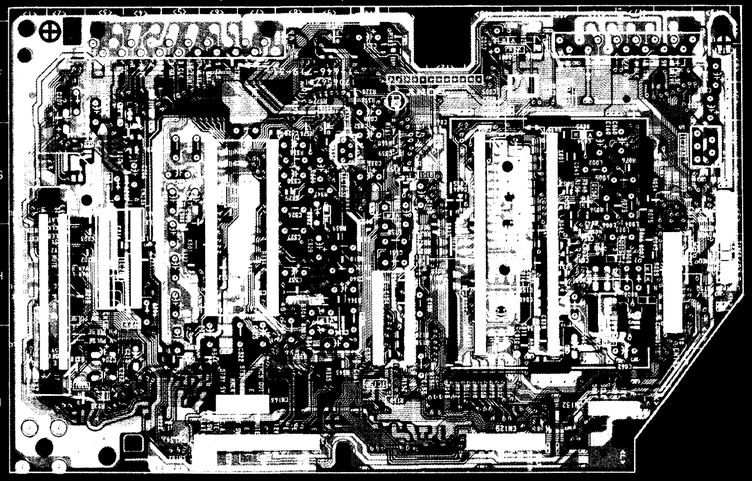
Note :
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

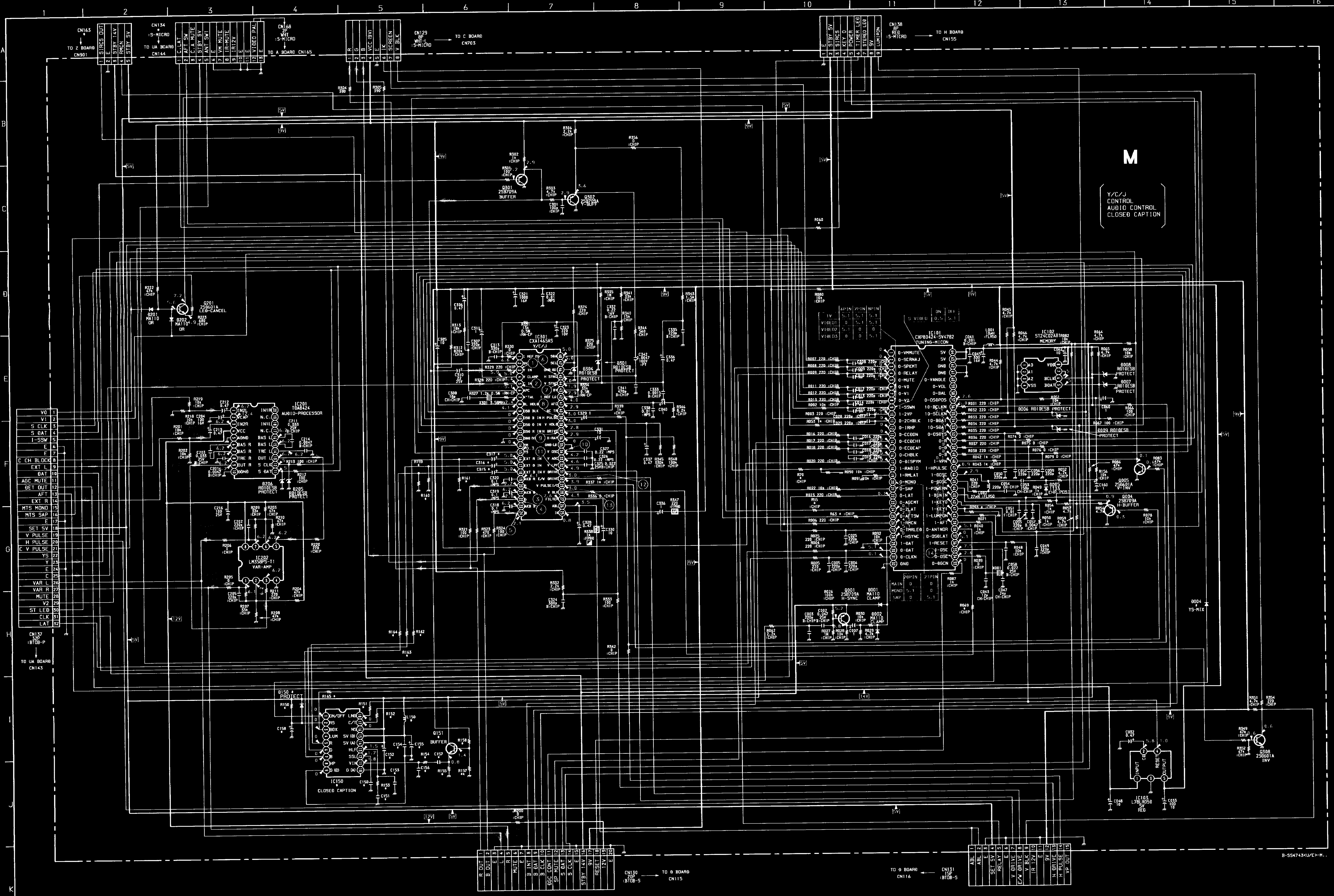
– M BOARD –

〈Component Side〉



〈Conductor Side〉



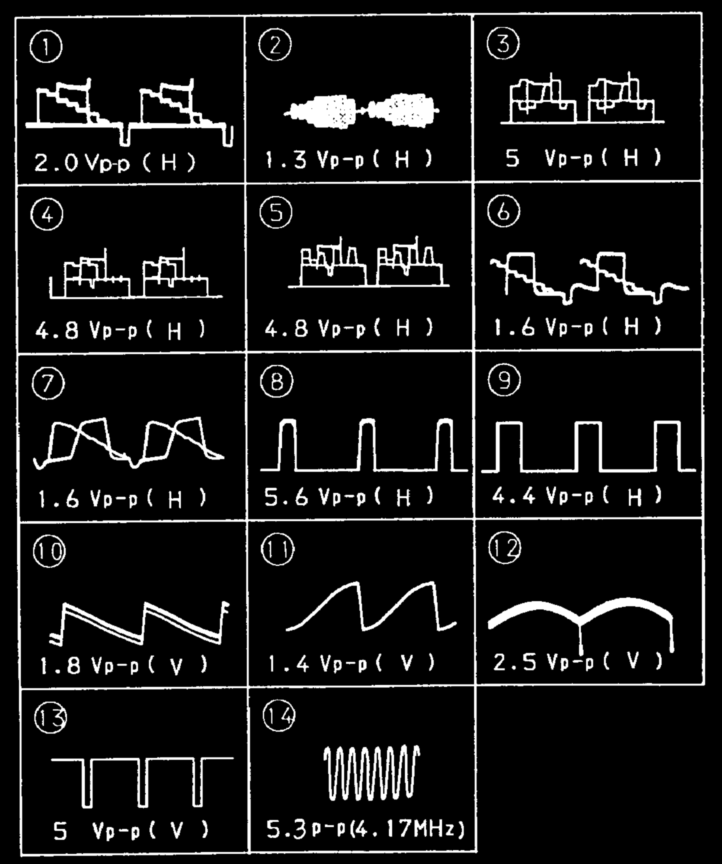


– M BOARD –

Ref	LOCATION	KV-27V10/ 27V15/32V15	KV-29V10C/ 10M
C150	J – 5	0.1	–
C151	J – 5	0.0068	–
C152	I – 5	10	–
C153	I – 5	0.0033	–
C154	I – 5	0.1 /25V	–
C155	I – 5	10	–
C156	I – 6	560P	–
C157	I – 6	0.1 / 25V	–
C158	I – 4	1	–
C315	F – 6	10	–
C316	F – 6	10	–
C317	F – 6	10	–
CN134	A – 3	6P	–
CN163	A – 2	5P	–
D004	G – 15	MA110	–
D150	H – 4	MA110	–
IC150	I – 4	MC144143	–
L150	I – 5	10 µH	–
Q151	I – 6	2SD601A	–
R055	F – 10	220	–
R060	C – 10	18K	0
R063	F – 10	220	–
R069	G – 12	220	–
R070	F – 10	1K	–
R090	F – 10	–	–
R150	H – 4	100K	–
R151	I – 5	1K	–
R152	I – 5	1K	–
R153	I – 5	6.8K	–
R154	I – 5	470	–
R155	I – 6	1K	–
R157	I – 6	10K	–
R158	I – 6	10K	–
R159	F – 5	1K	–
R160	F – 5	1K	–
R161	F – 6	1K	–
R162	G – 5	4.7K	–
R163	H – 5	4.7K	–
R164	H – 5	4.7K	–
R165	H – 4	4.7K	–
R166	I – 4	1K	–
R168	I – 4	1K	–

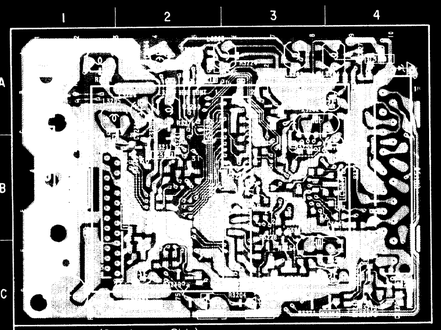
– : NOT MOUNT

• M BOARD WAVEFORMS

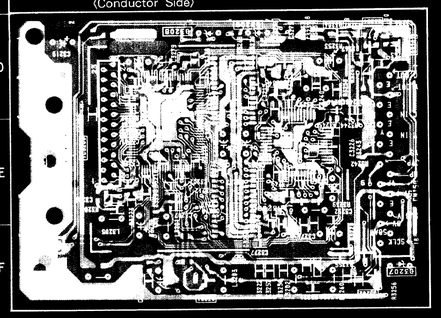


P [PICTURE IN PICTURE] **H** [USER CONTROL]

– P BOARD – (Component Side) **(KV-27V15/32V15 only)**



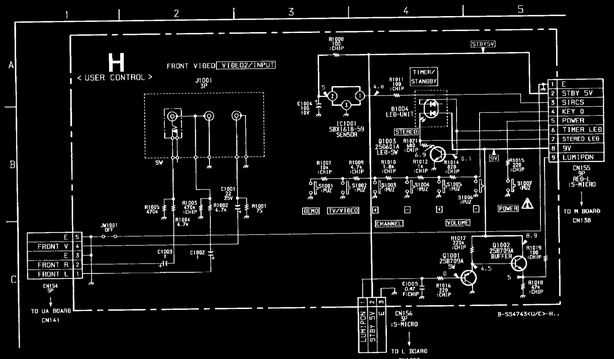
(Conductor Side)



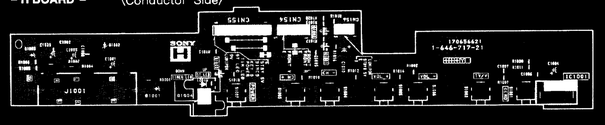
IC	
IC3200	B – 1, E – 1
IC3201	B – 1
IC3202	C – 3
IC3203	A – 3
IC3204	B – 3
IC3205	B – 1
TRANSISTOR	
Q3201	F – 2
Q3202	F – 4
Q3203	C – 4
Q3204	D – 4
Q3206	D – 4
Q3207	D – 4
Q3208	C – 4
Q3209	C – 9
Q3210	A – 2
DIODE	
D3202	B – 1
D3203	D – 2
D3208	C – 2, D – 2
D3209	C – 3, D – 3

Note :

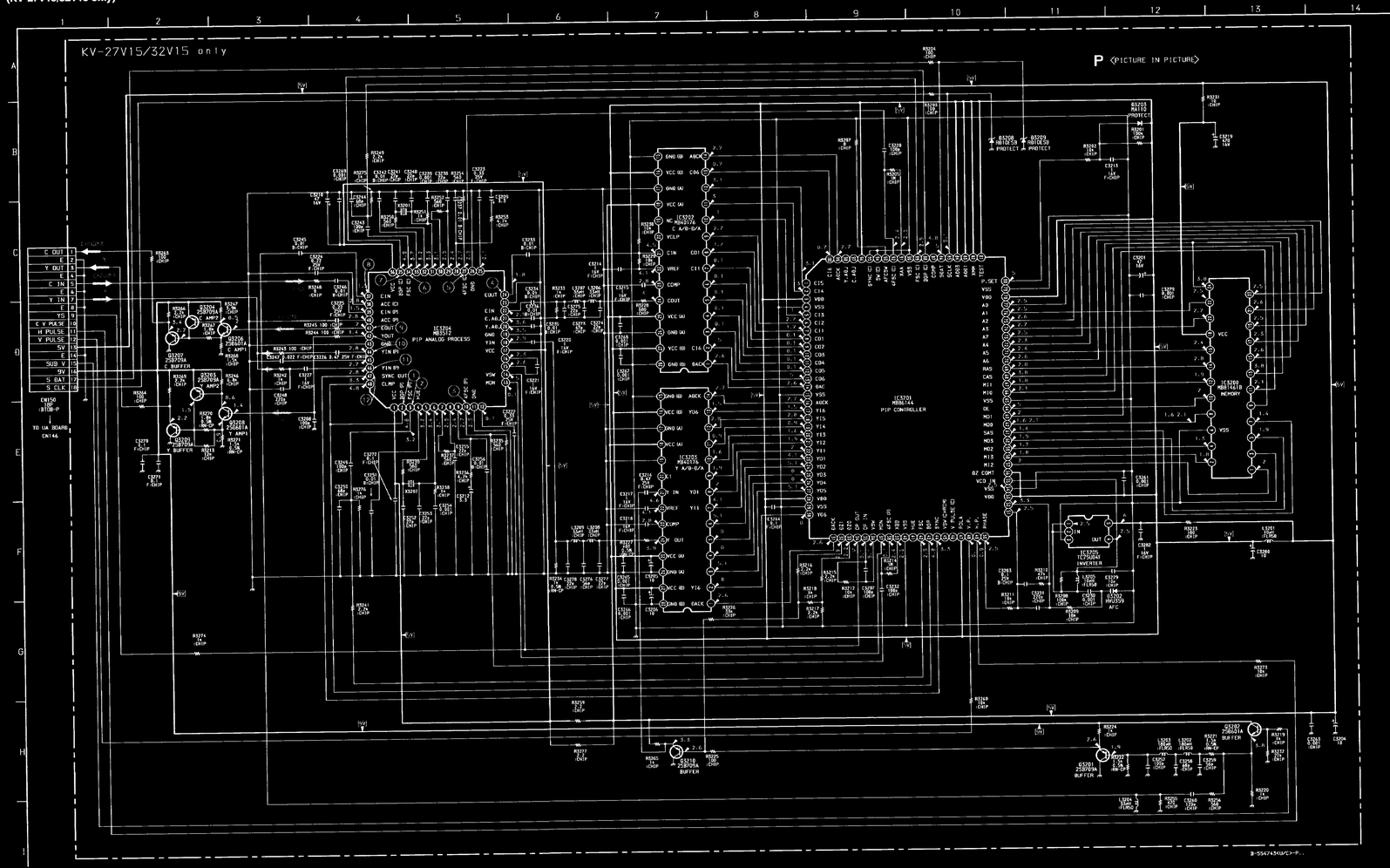
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.



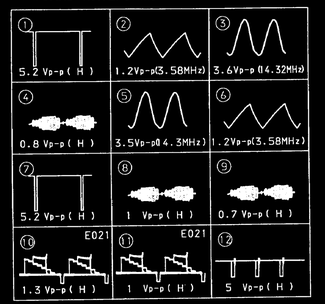
– H BOARD – (Conductor Side)



(KV-27V15/32V15 only)

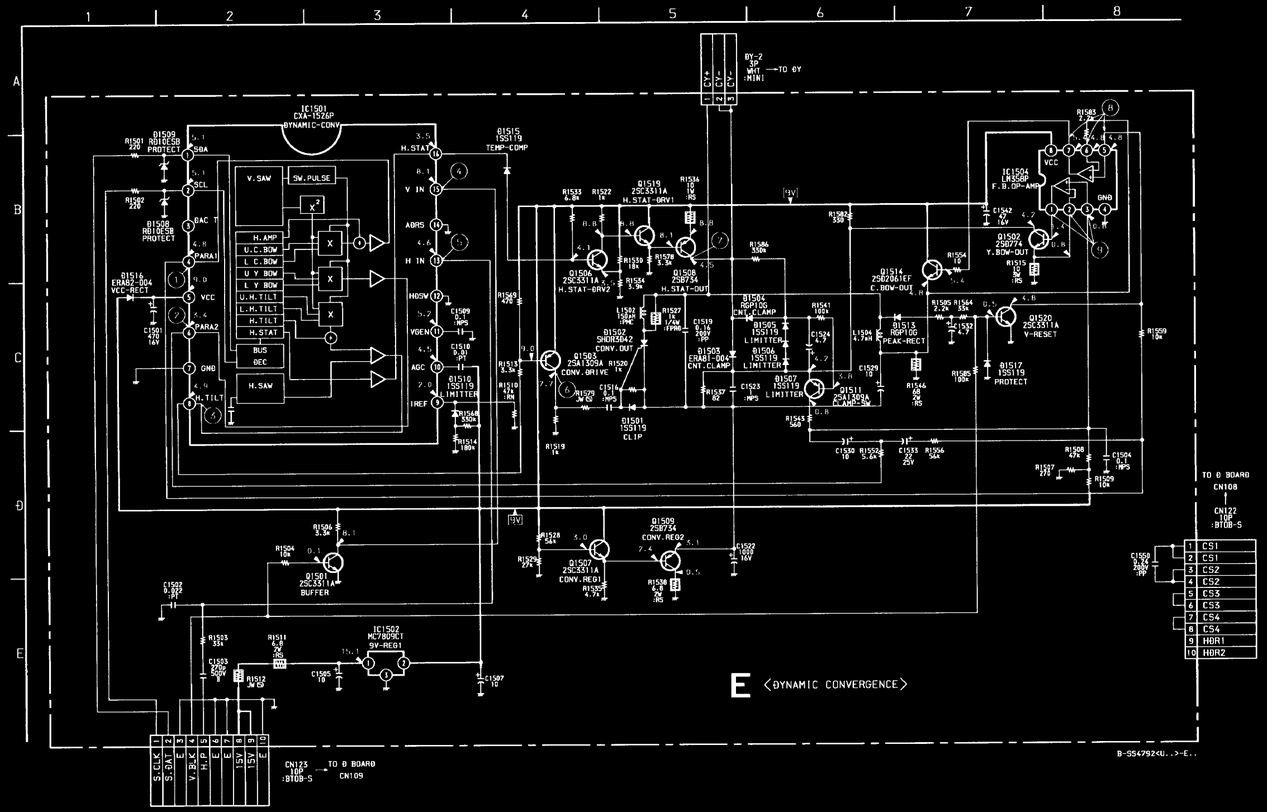


• P BOARD WAVEFORMS



KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121 RM-CM101

(KV-32V15 only)

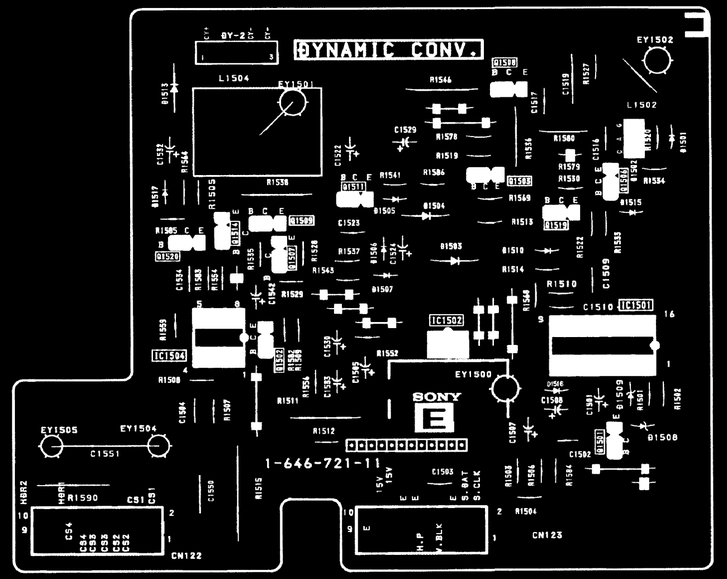


E <DYNAMIC CONVERGENCE>

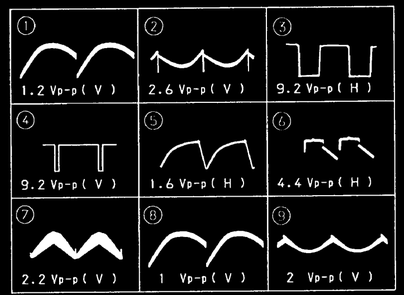
E [DYNAMIC CONVERGENCE]

– E BOARD – (Conductor Side)

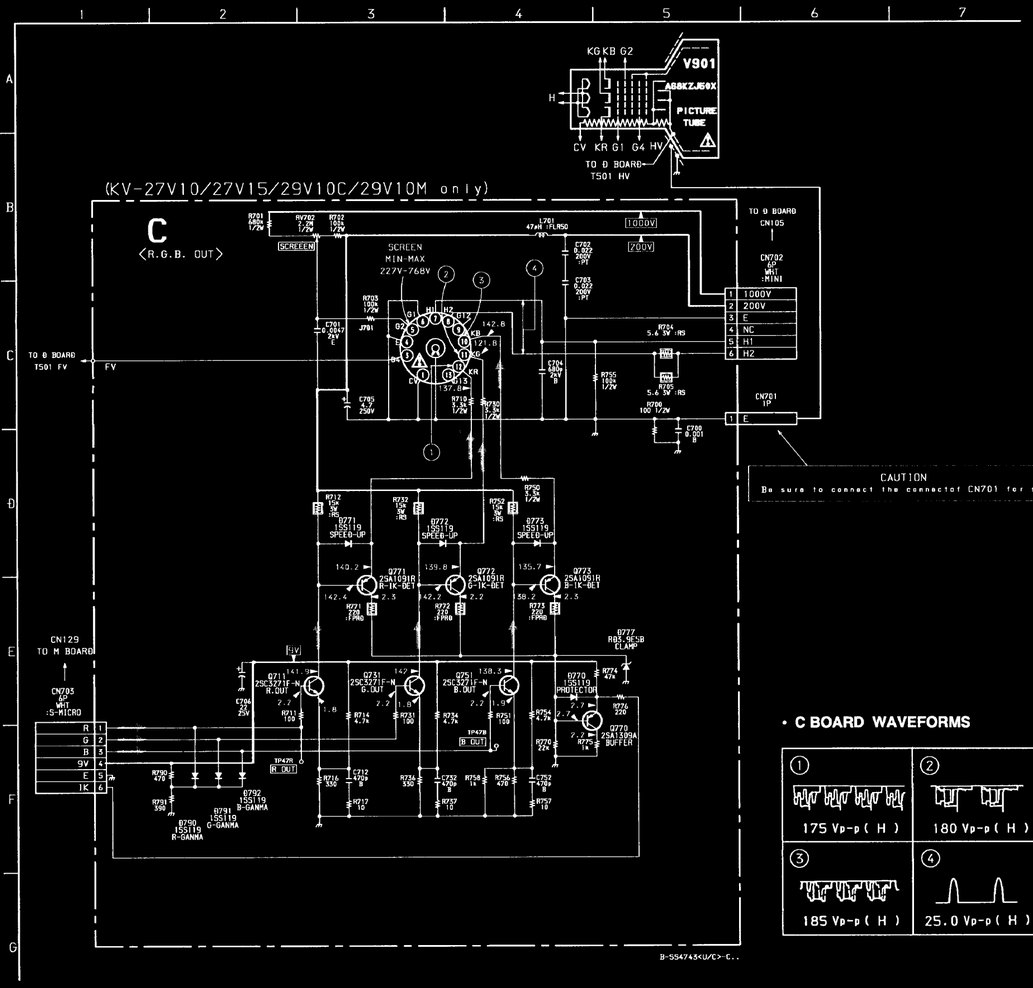
(KV-32V15 only)



• E BOARD WAVEFORMS



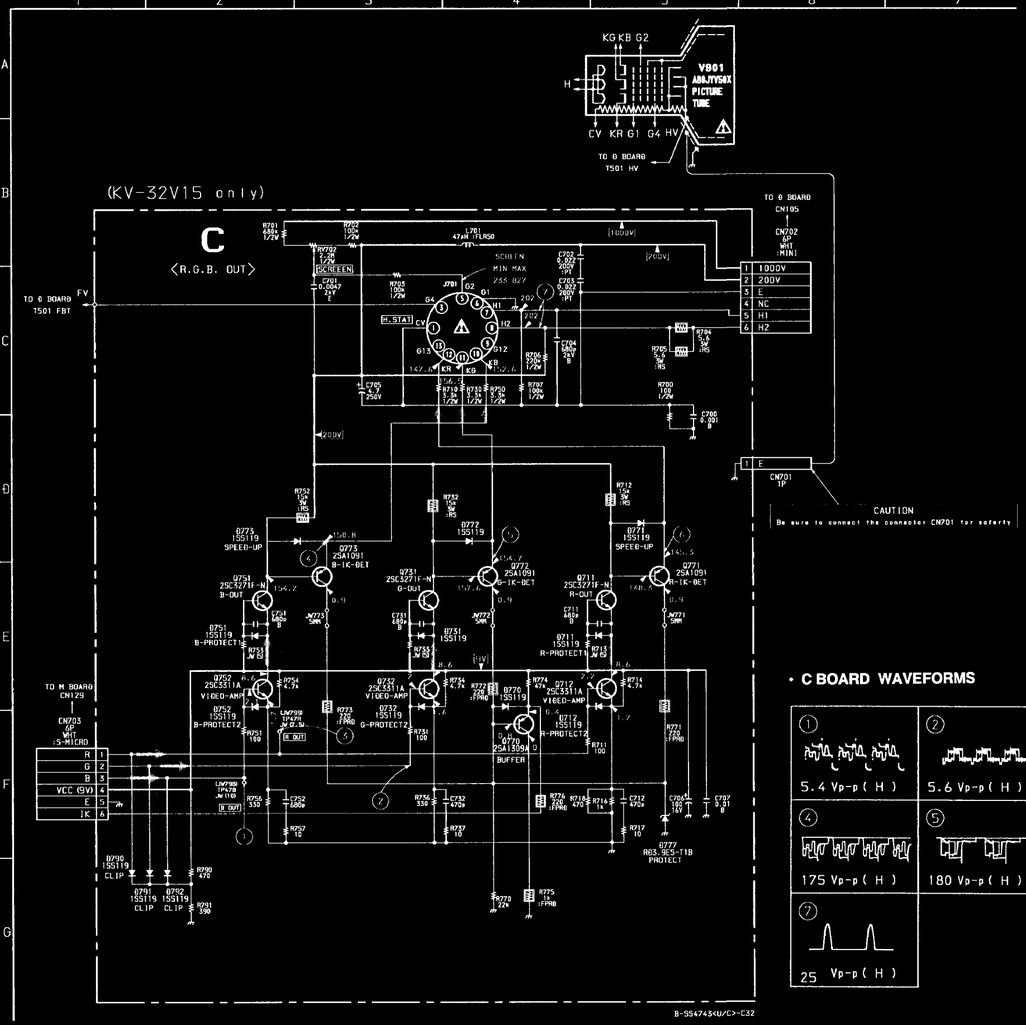
(KV-27V10/27V15/29V10C/29V10M only)



• C BOARD WAVEFORMS

① 175 Vp-p (H)	② 180 Vp-p (H)
③ 185 Vp-p (H)	④ 25.0 Vp-p (H)

(KV-32V15 only)

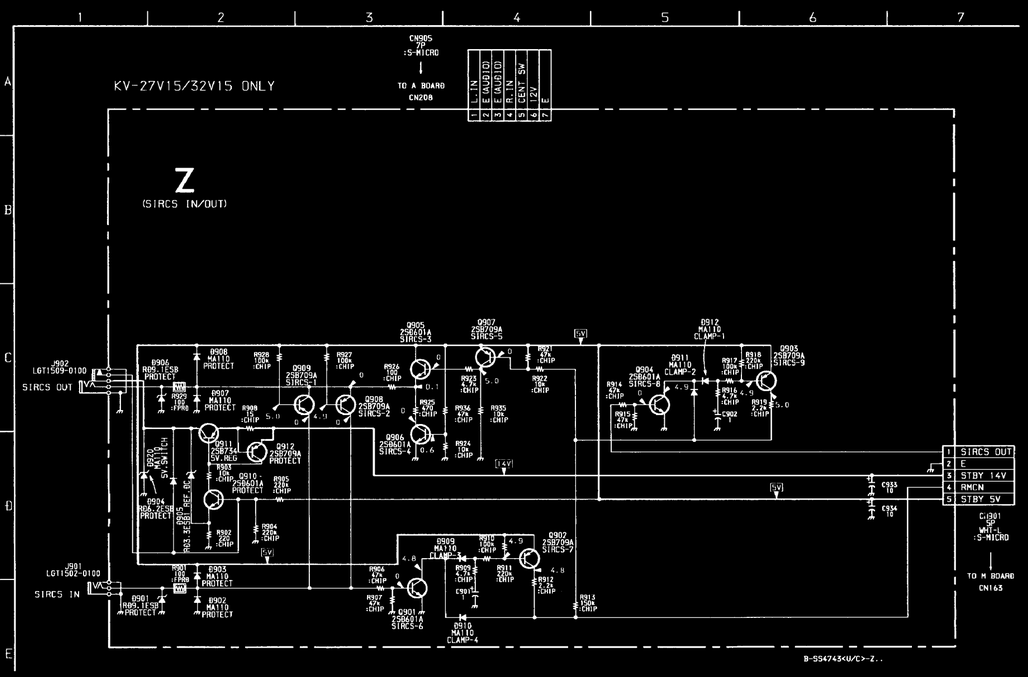


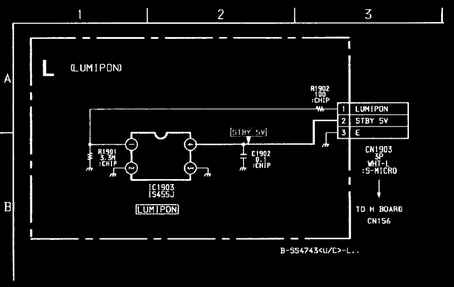
• C BOARD WAVEFORMS

① 5.4 Vp-p (H)	② 5.6 Vp-p (H)	③ 5.6 Vp-p (H)
④ 175 Vp-p (H)	⑤ 180 Vp-p (H)	⑥ 185 Vp-p (H)
⑦ 25 Vp-p (H)		

KV-27V10/27V15
RM-Y117 RM-Y121/RM-CM101
KV-29V10C/29V10M/32V15
RM-Y117 RM-Y117 RM-Y121 RM-CM101

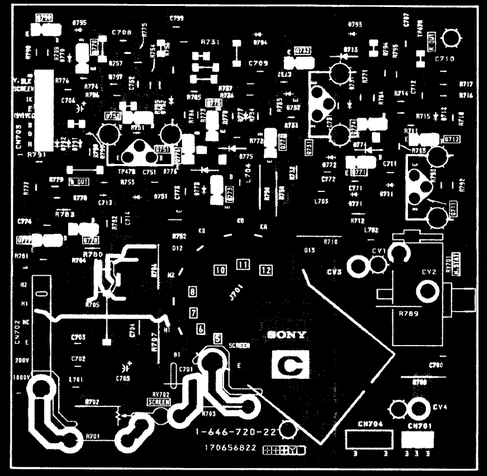
(KV-27V15/32V15 only)



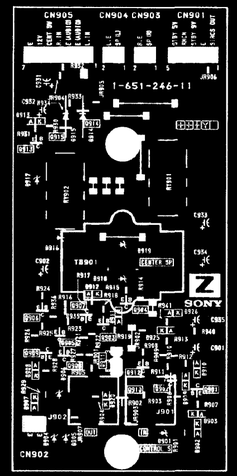


C [R. G. B. OUT] **Z** [SIRCS IN/OUT] **L** [LUMIPON]

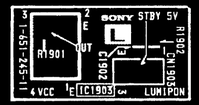
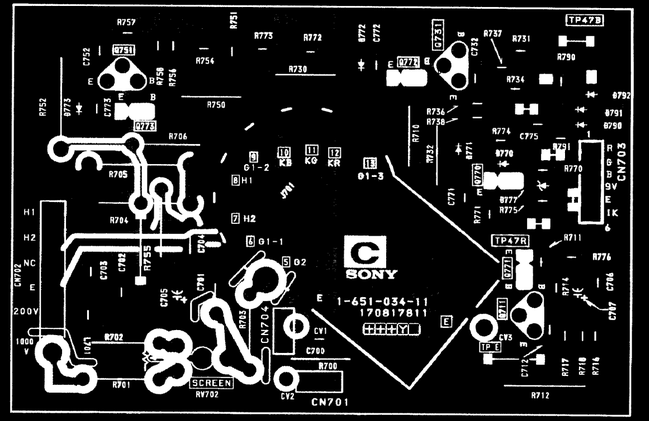
– C BOARD – (KV-32V15 only) 〈Conductor Side〉



– Z BOARD – (KV-27V15/32V15 only) 〈Conductor Side〉



– L BOARD – 〈Conductor Side〉



– C BOARD – (KV-27V10/27V15/29V10C/29V10M only) 〈Conductor Side〉