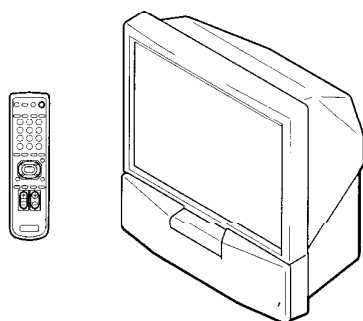


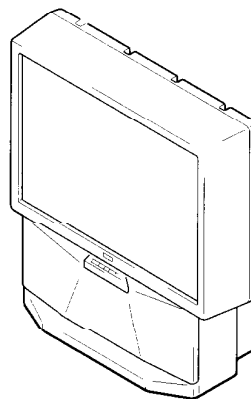
# SERVICE MANUAL

## RG-2 CHASSIS

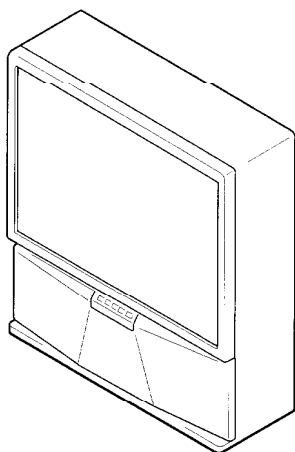
<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>
KP-EF41MN	RM-871	Indonesia	SCC-N83A-A
KP-EF53MN	RM-871	Indonesia	SCC-N83B-A
KP-EF61MN	RM-871	Indonesia	SCC-N83C-A



KP-EF41MN



KP-EF53MN



KP-EF61MN



MICROFILM

\* Please file according to model size. ... ☐

41 53 61

PROJECTION TV  
**SONY**®

## SPECIFICATIONS

### Projection system

3 picture tubes, 3 lenses, horizontal in-line system

### Picture tube

7 inch high-brightness monochrome tubes (6.3 raster size), with optical coupling and liquidcooling system

### Projection lenses

High performance, large-diameter hybrid lens F1.0

### Screen size

41 inches (KP-EF41)  
53 inches (KP-EF53)  
61 inches (KP-EF61)

### Television system

B/G, I, D/K, M

### Color system

PAL, PAL 60, SECAM, NTSC<sup>4.43</sup>, NTSC<sup>3.58</sup>

### Channel coverage

#### B/G

VHF: E2 to E12  
UHF: E21 to E69  
CATV: S01 to S03, S1 to S41

#### I

UHF: B21 to B68  
CATV: S01 to S03, S1 to S41

#### D/K

VHF: C1 to C12, R1 to R12  
UHF: C13 to C57, R21 to R60  
CATV: Z1 to Z39, S01 to S03, S1 to S41

#### M

VHF: A2 to A13  
UHF: A14 to A79  
CATV: A-8 to A-2, A to W+4, W+6 to W+84

### Stereo system

NICAM stereo B/G, I, D/K  
A2 stereo (German) B/G

### Antenna

75 ohm external antenna terminal

### Audio output (Speaker)

15 W × 2

### Number of terminals

#### Video

Input: 4, Output: 1  
phono jacks, 1 Vp-p, 75 ohms

#### Audio

Input: 5, Output: 1, VARIABLE output:  
1, phono jacks, 500 mVrms

#### S video

Input: 2,  
Y: 1 Vp-p, 75 ohms, unbalanced, sync negative,  
C: 0.286 Vp-p, 75 ohms

#### Component video

Input: 1, phono jacks  
Y: 1.0 Vp-p, 75 ohms, sync negative  
C<sub>B</sub>/B-Y: 0.7 Vp-p, 75 ohms  
C<sub>R</sub>/R-Y: 0.7 Vp-p, 75 ohms  
Audio: 500 mVrms  
Output: 1, minijack

#### Headphone

### Power requirement

110 – 240 V AC, 50/60 Hz

### Power consumption

160 W

### Dimensions (w/h/d)

948 × 992 × 511 mm (KP-EF41)  
1218 × 1413 × 602 mm (KP-EF53)  
1338 × 1520 × 655 mm (KP-EF61)

### Mass

Approx. 43 kg (KP-EF41)  
Approx. 70 kg (KP-EF53)  
Approx. 124 kg (KP-EF61)

### Supplied accessories

Remote commander RM-871 (1)  
Size R6 (AA) battery (2)

### Optional accessory


AV rack SU-EF41 (KP-EF41),  
SU-EF4853 (KP-EF53)

Design and specifications are subject to change without notice.

### CAUTION

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

### 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.

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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.

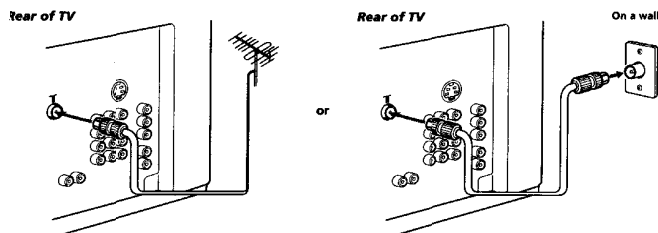
## SECTION 1 GENERAL

### Getting Started

## Connections

### Connecting a VHF antenna or a combination VHF/UHF antenna — 75-ohm coaxial cable (round)

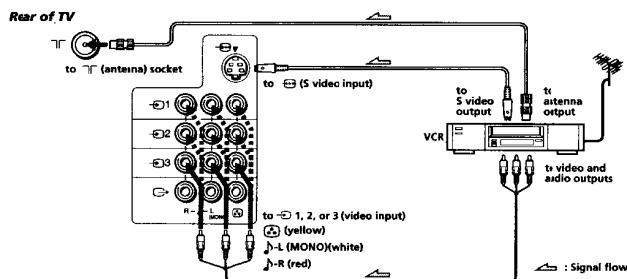
Attach an optional IEC antenna connector to the 75-ohm coaxial cable. Plug the connector into the  $\Gamma$  (antenna) socket at the rear of the TV.



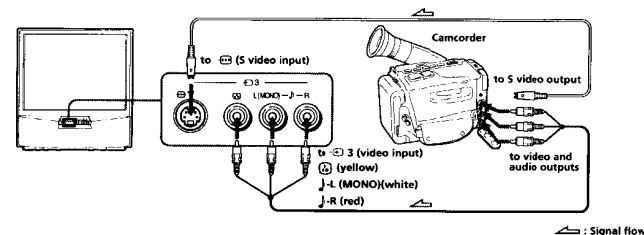
### Connecting optional equipment

You can connect optional audio/video equipment to your TV such as a VCR, multi disc player, camcorder, video game or stereo system.

### Connecting video equipment using video input jacks



### Front of TV



### When connecting a monaural VCR

Connect the yellow plug to  $\text{3}$  (video input) and the black plug to  $\text{J-L (MONO)}$  (audio input).

### When connecting video game equipment

Connect video game equipment to the  $\text{3}$  (video input) jacks at the front or the rear of your TV.

### When connecting a VCR to the $\Gamma$ (antenna) terminal

Preset the signal output from the VCR to the program position 0.

### When connecting video equipment to the $\text{3}$ (video input) jacks at the front and the rear

Do not connect video equipment to the  $\text{3}$  (video input) jacks at the front and the rear of your TV simultaneously; otherwise the picture will not be displayed properly on the screen.

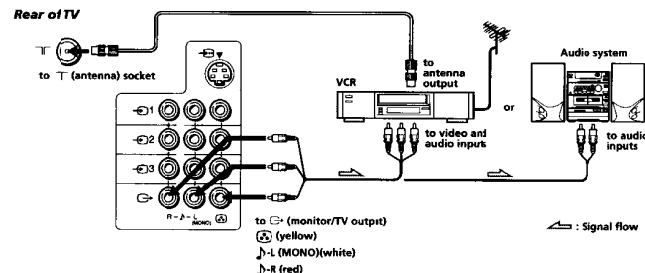
### If both S video and video signals are input simultaneously

The S video input signal is selected. To view a video input signal, disconnect the  $\text{S}$  (S video) connection.

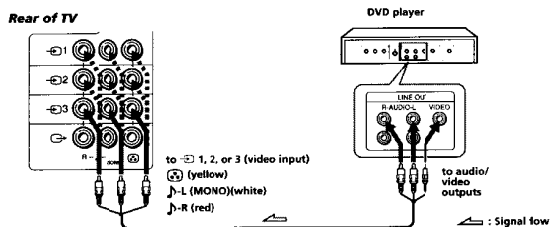
### Note on the video input

When no signal is input, the screen becomes blue.

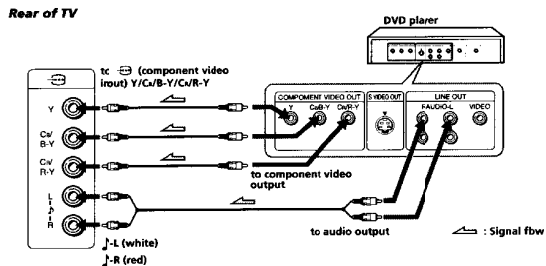
### Connecting audio/video equipment using $\text{3}$ (monitor/TV output) jacks



### Connecting a DVD player



### Connecting a DVD player with component video output connectors



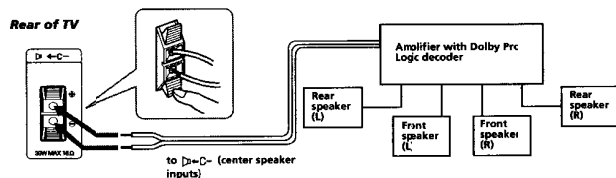
#### Notes

- Since the high quality pictures on a DVD disc contain a lot of information, picture noise may appear. In this case, adjust the sharpness (SHARP) in the VIDEO ADJUST menu. (See page 20.)
- Connect your DVD player directly to your TV. Connecting the DVD player through other video equipment will cause unwanted picture noise.

### Connecting an amplifier with Dolby® Pro Logic decoder

Even though you use an amplifier with Dolby Pro Logic decoder instead of the projection TV's audio system, you can still use the projection TV's center speaker.

• Manufactured under license from Dolby Laboratories Licensing Corporation. DOLBY, the double-D symbol and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.

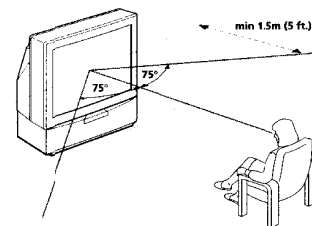


## Installing the projection TV

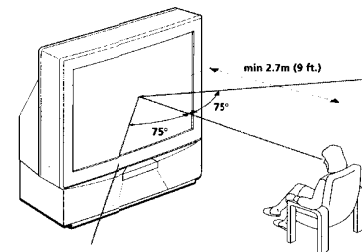
For the best picture quality, install the projection TV within the areas shown below.

### Optimum viewing area (Horizontal)

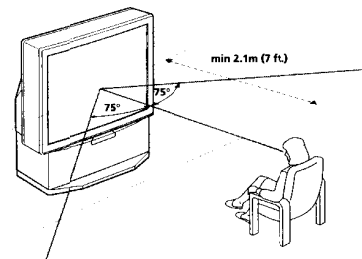
KP-EF41



KP-EF61

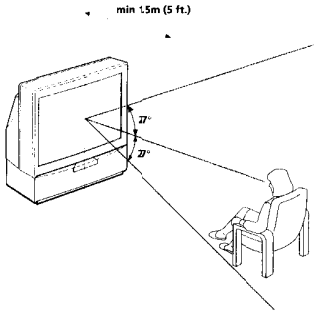


KP-EF53

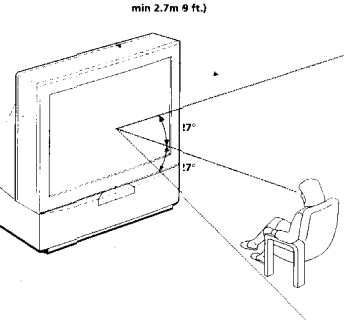


Optimum viewing area (Vertical)

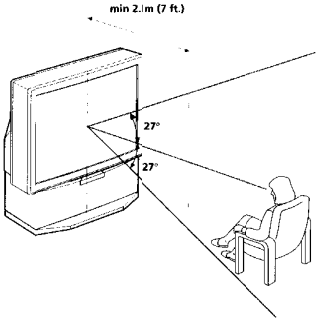
KP-EF41



KP-EF61



KP-EF53

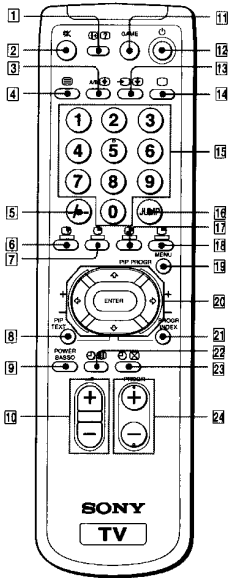


— 9 —

## Getting to know the remote commander

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

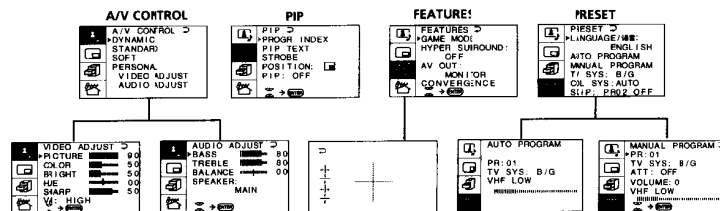
Label color	Button function
White	For general TV operations.
Green	For Teletext operations.
Yellow	For PIP and PROGRAM INDEX operations.



Symbol	Name	Refer to page
1	On-screen display button	19
2	Teletext: Reveal button	29
3	Mute on/off button	19
4	A/B Sound select button	24
5	Teletext: Enlarge button	29
6	Teletext button	28
7	Double-digit entering button	18
8	Input select for PIP button	26
9	PIP freezing button	27
10	PIP TEXT PIP TEXT button	30
11	POWER BASSO POWER BASSO button	22
12	Volume control button	18
13	GAME GAME button	31
14	TV standby button	18
15	Input mode selector	19
16	Hold button	28
17	TV power on/TV mode selector	19
18	Number buttons	18
19	JUMP JUMP button	19
20	Swapping picture button	27
21	PIP display button	26
22	MENU MENU button	12
23	Cursor control key	12
24	ENTER Enter button	12
25	PROGR PROGRAM INDEX button	25
26	Wake up button (not in use for your model)	
27	Teletext: INDEX button	28
28	Sleep timer button	19
29	Teletext: Text clear button	29
30	PROGR +/- Program selectors	18

## Introducing the menu system

You can preset TV channels, adjust the picture and sound qualities, and select some settings using the on-screen menus. You can use the buttons on both the remote commander and the TV to operate the menus.



### Getting back to the previous menu (except for AUTO PROGRAM)

Press **←** or **→** to move the cursor (▸) to the first line (□) of each menu, and press **ENTER**.

### Cancelling the menu screen

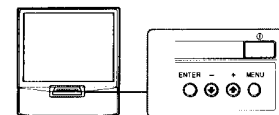
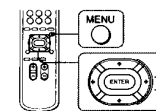
Press **MENU**.

### Notes (except for AUTO PROGRAM)

- When a menu is selected after pressing **ENTER**, the color of both the menu and the menu symbol change and the cursor (▸) appears beside the first item of the menu.
- When an item on the menu is selected after pressing **ENTER**, the color of the item changes.
- You can refer to the guide (→) at the bottom of the menus (except for the A/V CONTROL and PRESET menus) for the basic operations of the menu.
- If more than approximately 60 seconds elapse after you press a button, the menu screen disappears automatically.

## Changing the menu language

If you prefer Chinese (for MN, MG, HK and SN models)/Arabic (for ME model) to English, you can change the menu language. You can use buttons on both the remote commander and the TV.



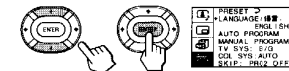
### 1 Press ① to turn on the TV.



### 2 Press **MENU**.



### 3 Press **←** or **→** to move the cursor (▸) to the PRESET menu (PRE), and press **ENTER**.



### 4 Make sure the cursor (▸) appears beside **LANGUAGE/ 语言 (اللغة)**, and press **ENTER**.

### 5 Press **←/→/↵** to select **中文 (عربي)**, and press **ENTER**.

All of the menus change to Chinese (Arabic).

### 6 Press **MENU** to return to the normal screen.

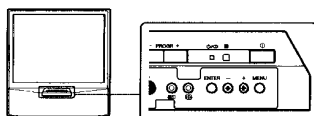


## Presetting channels

You can preset TV channels easily by storing all the receivable channels automatically. You can also preset channels manually or disable program positions (see page 16).

### Presetting channels automatically

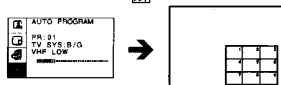
You can preset up to 100 TV channels in numerical sequence from the program position 1. You can preset channels automatically using the button on the TV or the menu.



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



2 Press **ENTER**.



The TV starts scanning and presetting channels automatically. When all of the receivable channels are stored, the AUTO PROGRAM menu disappears and the first nine preset TV programs appear on the nine sub screens. The nine sub screens disappear after being displayed for several seconds.

#### Note

- If you want to return to the normal screen while the nine sub screens are being displayed, you can press **PROGR INDEX** on the remote commander.

### To preset channels automatically using the menu

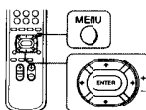
1 Press **MENU**.

2 Press **+** or **-** to move the cursor (**▶**) to the **PRESET** menu (**PS**), and press **ENTER**.

3 Press **+** or **-** to move the cursor (**▶**) to **AUTO PROGRAM**, and press **ENTER**.

### Presetting channels manually

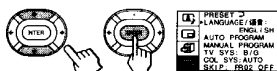
To change the program position for a channel or to receive a channel with a weak signal which you cannot receive by automatic presetting, preset the channel manually.



1 Press **MENU**.



2 Press **+** or **-** to move the cursor (**▶**) to the **PRESET** menu (**PS**), and press **ENTER**.



3 Select your local TV system.

- Press **+** or **-** to move the cursor (**▶**) to **TV SYS**, and press **ENTER**.
- Press **+/+/+/+** until your local TV system appears on the menu, and press **ENTER**.

4 Press **+** or **-** to move the cursor (**▶**) to **MANUAL PROGRAM**, and press **ENTER**.



5 Select the program position to which you want to preset a channel.

- Make sure the cursor (**▶**) appears beside **PR**, and press **ENTER**.
- Press **+/+/+/+** until the program position you want appears on the menu, and press **ENTER**.

6 Select the desired channel.

- Press **+** or **-** to move the cursor (**▶**) to **VHF LOW** (VHF Hi or UHF), and press **ENTER**.
- Press **+/+/+/+** until the desired channel picture appears on the TV screen, and press **ENTER**.

7 Press **MENU** to return to the normal screen.

#### If the TV system is not properly selected

The picture color may be poor and/or the sound may be noisy. In this case, select the appropriate TV system.

- Press **PROGR +/-** or the number buttons to select the program position.
- Display the **PRESET** menu.
- Press **+** or **-** to move the cursor (**▶**) to **TV SYS**, and press **ENTER**.
- Press **+/+/+/+** until the appropriate TV system appears, and press **ENTER**.

#### Notes

- The TV SYS (TV system), the ATT (attenuator), and the VOLUME (volume offset) settings are memorized for each program position.
- If you do not know your local TV system, consult your nearest Sony dealer or authorized service center.

## Attenuating the signal for individual programs

If the TV signal is too strong, the picture may be distorted. You can reduce the picture distortion by attenuating the signal individually.

1 Display the **PRESET** menu.



2 Press **+** or **-** to move the cursor (**▶**) to **MANUAL PROGRAM**, and press **ENTER**.



3 Press **+** or **-** to move the cursor (**▶**) to **ATT**, and press **ENTER**.



4 Press **+/+/+/+** to select **ON**, and press **ENTER**.



## Disabling program positions

By disabling unused or unwanted program positions, you can skip those positions when you press **PROGR** +/-.

### 1 Press **MENU**.



### 2 Press +/- to move the cursor (P) to the **PRESET** menu (P), and press **ENTER**.



### 3 Press +/- to move the cursor (P) to **SKIP**, and press **ENTER**.

### 4 Press +/- until the unused or unwanted program position appears on the menu, and press **ENTER**.

### 5 Press +/- to select **ON**, and press **ENTER**.

### 6 To disable other program positions, repeat steps 4 and 5.

### 7 Press **MENU** to return to the normal screen.

#### To cancel the skip setting

##### 1 Display the **PRESET** menu.

##### 2 Press +/- or +/- to move the cursor (P) to **SKIP**, and press **ENTER**.

##### 3 Press +/- or +/- until the program position you want to cancel the skip setting appears, and press **ENTER**.

##### 4 Press +/- to select **OFF**, and press **ENTER**.

## Presetting the volume level for individual programs

If the volume of the selected program is louder than that of other programs, set the volume level.

### 1 Press **MENU**.



### 2 Press +/- to move the cursor (P) to the **PRESET** menu (P), and press **ENTER**.



### 3 Press +/- to move the cursor (P) to **MANUAL PROGRAM**, and press **ENTER**.



### 4 Press +/- to move the cursor (P) to **VOLUME**, and press **ENTER**.

### 5 Press +/- to set the level, and press **ENTER**.

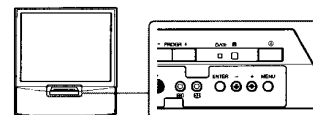
The level can be set as 0, -1, -2, ..., -6 (minimum).

## Adjusting the convergence (CONVERGENCE)

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

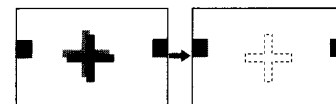
After 20-30 minutes of turning on the power, adjust convergence.

### Adjusting the convergence automatically



#### Press **AUTO** on the TV.

The auto convergence function works for about 30 seconds.



### Adjusting the convergence manually

When the auto convergence function does not work correctly with **AUTO**, adjust convergence by selecting **CONVERGENCE** of the **FEATURES** menu.

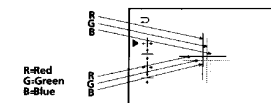
#### 1 Press **MENU**.

#### 2 Press +/- to move the cursor (P) to the **FEATURES** menu (F), and press **ENTER**.

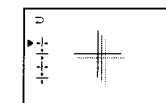


### 3 Press +/- to move the cursor (P) to **CONVERGENCE** and press **ENTER**.

The **CONVERGENCE** adjustment screen appears.

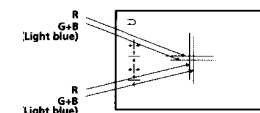


### 4 Press +/- to move the cursor (P) to the symbol showing the line you want to adjust, and press **ENTER**.



- + : Red vertical line (left/right adjustment)
- + : Red horizontal line (up/down adjustment)
- + : Blue vertical line (left/right adjustment)
- + : Blue horizontal line (up/down adjustment)

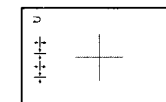
### 5 Press +/- to move the line until it converges with the center green line, and press **ENTER**.



To move up/right, press +.

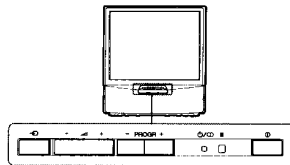
To move down/left, press +.

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



### 7 Press **MENU** to return to the normal screen.

## Watching the TV



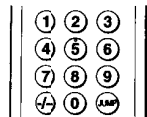
- 1 Press **⏻** to turn on the TV.



When the TV is turned on in the standby mode, the **⏻/⏻** indicator on the TV lights up. To turn on the TV completely, press **⏻** on the remote commander or the TV.

- 2 Select the TV program you want to watch.

**To select a program position directly**  
Press the number button.

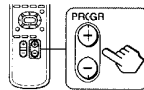


To select a two-digit program position, press “+/-” before the number buttons.  
For example: to select program position 25, press “+/-” then “2” and “5.”

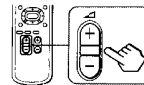


### To scan through program positions

Press **PGOGR +/-** on the remote commander or the TV until the program position you want appears.



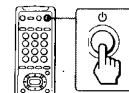
- 3 Press **Δ +/-** on the remote commander or the TV to adjust the volume.



### Turning off the TV

#### To turn off the TV temporarily

Press **⏻** on the remote commander. The **⏻/⏻** indicator lights up.



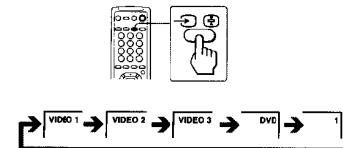
#### To turn off the TV completely

Press **⏻** on the TV.



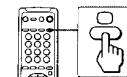
### Watching the video input

Press **▶⏻** on the remote commander or **▶⏻** on the TV.



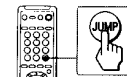
#### To watch TV

Press **⏻** on the remote commander or **⏻** on the TV.



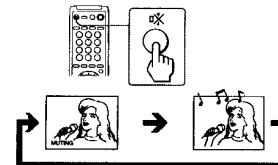
### Switching back quickly to the previous channel

Press **JUMP**.



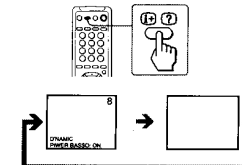
### Muting the sound

Press **⏻**.



### Displaying the on-screen information

Press **⏻**.



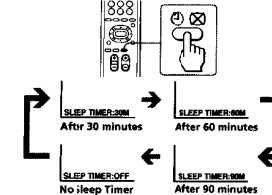
#### Note

- The on-screen display shows the program position or the video mode, the picture and sound information. The on-screen display for the picture and sound information disappears after being displayed for approximately three seconds.

### Setting the Sleep Timer

You can set the TV to turn off automatically after the period of time you want.

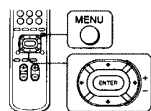
Press **⏻**.



To cancel the Sleep Timer, press **⏻** repeatedly until “SLEEP TIMER OFF” appears, or turn the TV off.

## Adjusting the picture and sound

### Selecting the picture and sound modes

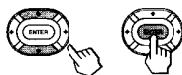


#### 1 Press MENU.



#### 2 Make sure the cursor (►) appears in the A/V CONTROL menu (A), and press ENTER.

#### 3 Press + or + to move the cursor (►) to DYNAMIC, STANDARD, SOFT, or PERSONAL, and press ENTER



Select	To
DYNAMIC	Receive high contrast picture with powerful sound.
STANDARD	Receive normal contrast picture with medium listening sound.
SOFT	Receive mild picture with soft sound.
PERSONAL	Receive the last picture and sound settings that are adjusted using VIDEO ADJUST and AUDIO ADJUST.

#### 4 Press MENU to return to the normal screen.



### Adjusting the picture settings (VIDEO ADJUST)

You can adjust the picture settings to suit your taste with the VIDEO ADJUST option. The adjusted settings are stored in the PERSONAL option.

#### 1 Press MENU.



#### 2 Make sure the cursor (►) appears in the A/V CONTROL menu (A), and press ENTER.

#### 3 Press + or + to move the cursor (►) to VIDEO ADJUST and press ENTER.



#### 4 Press + or + to move the cursor (►) to the item you want to adjust, and press ENTER.

#### 5 Press +/+ to adjust the selected item, and press ENTER.

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

#### 6 To adjust other items, repeat steps 4 and 5.

#### 7 Press MENU to return to the normal screen.

### Description of adjustable items

Item	Press +/+	Press +/+
PICTURE	Decrease picture contrast.	Increase picture contrast.
COLOR	Decrease color intensity.	Increase color intensity.
BRIGHT	Darken the picture.	Brighten the picture.
HUE	Make picture tones become reddish.	Make picture tones become greenish.
SHARP	Soften the picture.	Sharpen the picture.
VM	Decrease emphasis on picture edges.	Increase emphasis on picture edges.

#### Note

- You can adjust HUE for the NTSC color system only. (Note that you can't adjust the NTSC color system or the component inputs.)

### If the picture is slightly snowy

You may try to improve the picture by changing the VM setting as described below:

- Display the VIDEO ADJUST menu.
- Press + or + to move the cursor (►) to VM, and press ENTER.
- Press +/+ to select LOW, and press ENTER.

### If the picture color is abnormal when receiving programs through the T (antenna) terminal

Change the color system or the TV system from the PRESET menu as described below until the color becomes normal.

- Display the PRESET menu.
- Press + or + to move the cursor (►) to COL SYS or TV SYS, and press ENTER.
- Press +/+ to change the color system or the TV system until the color becomes normal, and press ENTER.

#### Note

- Normally set the color system (COL SYS) to AUTO.

### Adjusting the sound settings (AUDIO ADJUST)

You can adjust the sound settings to suit your taste with the AUDIO ADJUST option. The adjusted settings are stored in the PERSONAL option.

#### 1 Press MENU.



#### 2 Make sure the cursor (►) appears in the A/V CONTROL menu (A), and press ENTER.

#### 3 Press + or + to move the cursor (►) to AUDIO ADJUST, and press ENTER.



#### 4 Press + or + to move the cursor (►) to the item you want to adjust, and press ENTER.

#### 5 Press +/+ to adjust the selected item, and press ENTER.

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

#### 6 To adjust other items, repeat steps 4 and 5.

#### 7 Press MENU to return to the normal screen.

### Description of adjustable items

Item	Press +/+	Press +/+
BASS	Decrease the bass sound.	Increase the bass sound.
TREBLE	Decrease the treble sound.	Increase the treble sound.
BALANCE	Increase the left speaker's volume.	Increase the right speaker's volume.

### If the sound is distorted or noisy when receiving programs through the T (antenna) terminal

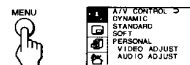
Change the TV system from the PRESET menu as described below until the sound becomes normal.

- Display the PRESET menu.
- Press + or + to move the cursor (►) to TV SYS, and press ENTER.
- Press +/+ to change the TV system until the sound becomes normal, and press ENTER.

## Setting the speaker

If you connect a Dolby Pro Logic-compatible amplifier to the center speaker terminals, you can use the projection TV speakers as center speakers.

### 1 Press MENU.

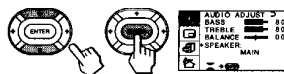


### 2 Make sure the cursor (P) appears in the A/V CONTROL menu (A), and press ENTER.

### 3 Press + or - to move the cursor (P) to AUDIO ADJUST, and press ENTER.



### 4 Press + or - to move the cursor (P) to SPEAKER, and press ENTER.



### 5 Press +/- to set the speaker, and press ENTER.

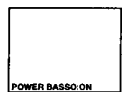
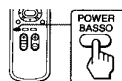
To use the projection TV speakers as center speakers, select CENTER IN.  
To listen to the sound from a projection TV, select MAIN.

### 6 Press MENU to return to the normal screen.

## Listening with dynamic sound (POWER BASSO)

The POWER BASSO sound node enables you to enjoy a high quality sound with the best combination of all types of sound. It reproduces dynamic and clear sounds and emphasizes low and high audio effects as well.

### Press POWER BASSO.



The sound node of the TV program or the video input changes to the POWER BASSO sound.

### To cancel the POWER BASSO mode

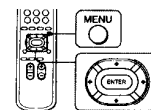
Press POWER BASSO again.

#### Note

- You can select any of the surround sound modes (HYPER SURROUND) to cancel the POWER BASSO sound.

## Listening to the surround sound (HYPER SURROUND)

The HYPER SURROUND feature enables you to enjoy a surround sound effect that is like being in a concert hall or movie theater when receiving stereo signals.



### 1 Press MENU.

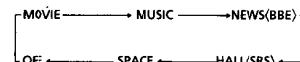


### 2 Press + or - to move the cursor (P) to the FEATURES menu (A), and press ENTER.



### 3 Press + or - to move the cursor (P) to HYPER SURROUND, and press ENTER.

### 4 Press +/- to select MOVIE, MUSIC, NEWS(BBE), HALL(SRS) or SPACE, and press ENTER.



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

### 5 Press MENU to return to the normal screen.

## Description of adjustable items

Select	To
MOVIE	Listen to a sound that emphasizes the bass audio effect of movie theater.
MUSIC	Listen to a dynamic and clear sound that emphasizes the low and high audio sounds.
NEWS(BBE)	Listen to a sound that emphasizes voice.
HALL(SRS)	Listen to a sound that spreads out over a large area, giving the feeling of being at a concert hall.
SPACE	Listen to a monaural sound that gives a stereo-like effect.
OFF	Turn off the surround sound.

#### Notes

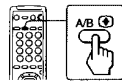
- The BBE is manufactured by Sony Corporation under license from BBE Sound, Inc. It is covered by U.S. Patent No. 4,638,258 and No. 4,482,866. The word "BBE" and the BBE symbol are the trademarks of BBE Sound, Inc.
- The (SRS) SRS (SOUND RETRIEVAL SYSTEM) is manufactured by Sony Corporation under license from SRS Labs, Inc. It is covered by U.S. Patent No. 4,748,669. The word "SRS" and the SRS symbol (SRS) are registered trademarks of SRS Labs, Inc.

## Selecting a stereo or bilingual program

You can enjoy stereo sound or bilingual programs of NICAM and A2 (German) stereo systems.

**Press A/B( ) repeatedly until you receive the sound you want.**

The on-screen display changes corresponding to the selected sound and the  $\text{A/B}$  indicator also lights up.



### When receiving a NICAM program

Broadcasting	On-screen display (Selected sound)
NICAM stereo	NICAM (Stereo sound) → MONO (Regular sound)
NICAM bilingual	NICAM MAIN (Mainsound) → NICAM SUB (Sub sound) → MONO (Regular sound)
NICAM monaural	NICAM MAIN (Mainsound) → MONO (Regular sound)

### When receiving an A2 (German) program

Broadcasting	On-screen display (Selected sound)
A2 (German) stereo	MONO (Regular sound) → STEREO (Stereo sound)
A2 (German) bilingual	MAIN (Mainsound) → SUB (Sub sound)

### Receiving area for NICAM and A2 (German) programs

System	Receiving area
NICAM	Hong Kong, Singapore, New Zealand, Malaysia, Thailand, etc.
A2 (German)	Australia, Malaysia, Thailand, etc.

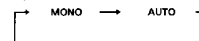
#### Notes

- If the signal is very weak, the sound becomes monaural.
- If the stereo sound is noisy when receiving a NICAM program, select "MONO." The sound becomes monaural, but the noise is reduced.

**If the sound is distorted or noisy when receiving a monaural program through the antenna terminal**

Press A/B( ) repeatedly until "MONO" appears on the screen while the  $\text{A/B}$  indicator is off.

To cancel the monaural sound setting, press A/B( ) again until "AUTO" appears on the screen.



#### Notes

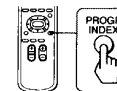
- The "MONO" or "AUTO" setting is memorized for each program position.
- You cannot receive stereo broadcast signal when the TV is in the "MONO" setting.

## Viewing multiple programs at the same time (PROGRAM INDEX)

The PROGRAM INDEX feature allows you to view all the preset TV programs and the video inputs on the nine subscreens at the same time.

You can view multiple programs on the nine sub screens using the button on the remote commander or the menu.

**Press PROGRAM INDEX.**



The first nine preset programs appear on the nine sub screens.

>>> 1	2	3
4	5	6
7	8	9

**To view the next or the previous nine preset programs on the nine sub screens**

Press PROGR +/- on the remote commander or the TV.

>>> 10	11	12
V1	V2	V3
1	2	3

**To select the program you want to watch directly after viewing multiple programs**

Press the number buttons,  $\text{A/B}$ , or press

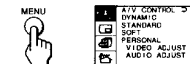
$\text{A/B}$  to move the cursor (>>>) to the screen of the program you want to watch, and press ENTER.

### To restore the normal screen

Press PROGR INDEX again or  $\text{A/B}$ . You can also select PROGR INDEX or PIP : OFF from the PIP menu, and press ENTER to restore the normal screen.

**To view multiple programs on the nine sub screens using the menu**

**1 Press MENU.**



**2 Press + or - to move the cursor (P) to the PIP menu (PIP), and press ENTER.**



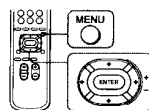
**3 Make sure the cursor (P) appears beside PROGRAM INDEX, and press ENTER.**

#### Notes

- You can change the position of the nine sub screens using the PIP menu (see "Changing the position of the PIP screen" on page 27).
- You can hear the sound of the main screen when viewing multiple programs on the nine sub screens.
- You can use the number buttons on the remote commander to change the program position of the main screen when viewing multiple programs on the nine sub screens.

## Displaying frame-by-frame pictures (STROBE)

You can watch a slow motion movement of the main screen picture which is displayed frame-by-frame on the nine sub screens.



1 Press MENU.



2 Press + or + to move the cursor (P) to the PIP menu (PIP), and press ENTER.



3 Press + or + to move the cursor (P) to STROBE, and press ENTER.



### To restore the normal screen

Select STROBE again or PIP : OFF from the PIP menu, and press ENTER.

You can also press , , , , , , or to restore the normal screen.

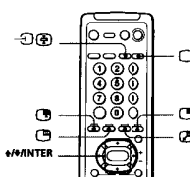
### Notes

- You can change the position of the nine sub screens using the PIP menu (see "Changing the position of the PIP screen" on page 17).
- You can hear the normal sound when using the STROBE feature.

26 EN Operations

## Using the Picture-in-Picture (PIP) features

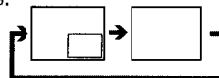
With the Picture-in-Picture (PIP) feature, you can display a sub screen within the main picture of different TV programs or video inputs.



### Displaying the PIP screen

You can display the PIP screen using the button on the remote commander or the menu.

Press .



### Selecting a TV program or video input in the PIP screen

To select a TV program, press + or +, and press ENTER.

To select a video input, press on the remote commander or on the TV.

### To display the PIP screen using the menu

1 Press MENU.

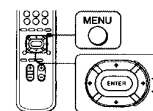
2 Press + or + to move the cursor (P) to the PIP menu (PIP), and press ENTER.

3 Press + or + to move the cursor (P) to PIP, and press ENTER.

4 Press +/+/+ to select ON, and press ENTER.

5 Press MENU to return to the normal screen.

### Changing the position of the PIP screen



1 Press MENU.

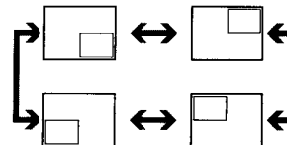


2 Press + or + to move the cursor (P) to the PIP menu (PIP), and press ENTER.



3 Press + or + to move the cursor (P) to POSITION, and press ENTER.

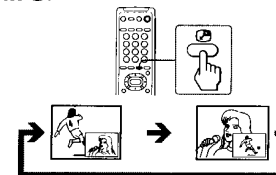
4 Press +/+/+ to select the position you want, and press ENTER.



5 Press MENU to return to the normal screen.

### Swapping pictures between the main and PIP screens

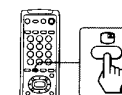
Press .



### Freezing the PIP screen

Press .

The PIP screen will freeze.



### To restore the normal screen

Press again.

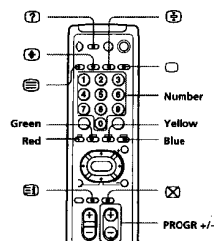
### Notes

- When you display a video input on the PIP screen at any speed other than the normal one, the picture may be disrupted, depending on the VCR.
- If you display different color systems on the main screen and the PIP screen, the size of the PIP screen may be different and the PIP picture may be disrupted. This does not indicate a malfunction of the TV.

Operations 27-EN

## Viewing Teletext

TV stations broadcast an information service called Teletext via a TV channel. Teletext service allows you to receive various information such as weather forecasts or news at any time.



### Displaying Teletext

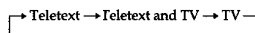
- 1 Select a TV channel that carries the Teletext broadcast you want to watch.
- 2 Press **[Teletext]** to display the Teletext. A Teletext page (normally the index page) is displayed. If there is no Teletext broadcast, "100" is displayed at the top left corner of the screen.

#### To turn off Teletext

Press **[0]**.

### Superimposing a Teletext page on the TV picture

Press **[TV]**. Each time you press **[TV]** the screen changes as follows:



### Checking the contents of a Teletext service (INDEX)

Press **[Index]** to display an overview of the Teletext contents and page numbers.

### Using FASTEXT

This feature allows you to quickly access a Teletext page that uses FASTEXT. When a FASTEXT program is broadcasted, the colored menus appear at the bottom of the screen. The colors of the menus correspond to the red (**[Red]**), green (**[Green]**), yellow (**[Yellow]**), and blue (**[Blue]**) colored-coded buttons on the remote commander.

#### To access a FASTEXT menu

Press the color-coded button on the remote commander that corresponds to the colored menu which appears at the bottom of the screen. The menu page appears on the screen after several seconds.

### Selecting a Teletext page

Press the number buttons to enter the three-digit page number of the Teletext page you want.

If you make a mistake, re-enter the correct page number.

#### To access the next or previous page

Press **PROGR +/-**.

You can also access a Teletext page of any page numbers that appear in the colored column at the bottom of the screen using the corresponding color-coded button on the remote commander.

### Holding a Teletext page (HOLD)

A Teletext page may consist of several subpages. You can stop the page scrolling in order to read the text at your own pace.

#### Press **[HOLD]**.

The HOLD symbol "**[HOLD]**" appears at the top left corner of the screen.

#### To resume normal Teletext operation

Press **[HOLD]** again or **[Teletext]**.

### Revealing concealed information (REVEAL)

The REVEAL option lets you disclose concealed information, such as an answer to a quiz that you find on some of the Teletext pages.

Press **[REVEAL]**.

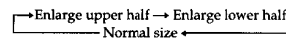
#### To conceal the information

Press **[REVEAL]** again.

### Enlarging the Teletext display (ENLARGE)

Press **[ENLARGE]**.

Each time you press **[ENLARGE]**, the Teletext display changes as follows:



### Waiting for a Teletext page while watching a TV program (TEXT CLEAR)

- 1 Enter the page number of the Teletext that you want to refer to, then press **[TEXT CLEAR]**.
- 2 When the page number is displayed on the screen, press **[Teletext]** to turn on the Teletext.

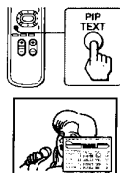
## Displaying Teletext on the PIP screen (PIP TEXT)

The PIP TEXT feature enables you to display a Teletext page on the PIP screen while watching a TV program.

You can display the Teletext on the PIP screen using the button on the remote commander or the menu.

- 1 Select a TV channel that carries the Teletext broadcast you want to watch.

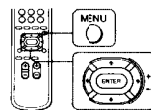
- 2 Press PIP TEXT.



### To restore the normal screen

Press PIP TEXT again, or press  $\square$ ,  $\odot$ , or PROG +/-. You can also select PIP OFF from the PIP menu, and press ENTER to restore the normal screen.

To display a Teletext page on the PIP screen using the menu



- 1 Press MENU.



- 2 Press + or + to move the cursor (P) to the PIP menu (PIP), and press ENTER.



- 3 Press + or + to move the cursor (P) to PIP TEXT, and press ENTER.

- 4 Press +/-/+ to select the Teletext page you want to watch.

### Notes

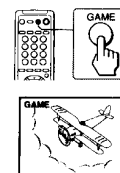
- You can also use the color-coded buttons (see page 28) while displaying a Teletext page on the PIP screen.
- To select a Teletext page on the PIP screen, press +/-/+ once only. If you press +/-/+ continuously, the Teletext page numbers also change continuously at a fast speed.
- You can change the position of a Teletext page on the PIP screen using the PIP menu (see "Changing the position of the PIP screen" on page 27).

## Viewing a video game screen (GAME MODE)

The GAME MODE feature optimizes the video game screen by giving a soft picture and dynamic sound effect.

You can display a video game screen using the button on the remote commander or the menu.

Press GAME.



The picture and sound change to the mode that is suitable for video games.

To view a video game screen using the menu

- 1 Press MENU.



- 2 Press + or + to move the cursor (P) to the FEATURES menu (FEATURES), and press ENTER.



- 3 Make sure the cursor (P) appears beside GAME MODE, and press ENTER.

To restore the normal picture and sound modes

Press  $\square$ ,  $\odot$ , or PROG +/-.



### Notes

- If you press the GAME button when the TV is in the standby mode, the TV turns on automatically and the picture and sound change to the mode that is suitable for video games.
- To display a video game screen, connect the video game equipment to the VIDEO 3 (video input) jacks at the front or the rear of the TV.



# Customizing the TV

## Using the AV OUT (advanced rec-out) terminal

You can select the output signal from the  (monitor/TV output) jacks at the rear of the TV. However, the signals of the PROGRAM INDEX, STROBE, PIP modes, the signals from the  (component video input) jacks, and the Teletext broadcast cannot be output even though MONITOR is selected.

### 1 Press MENU.



### 2 Press + or + to move the cursor (P) to the FEATURES menu (F), and press ENTER.





### 3 Press + or + to move the cursor (P) to AV OUT, and press ENTER.

### 4 Press +/-/+ to select the output signal, and press ENTER.

select	To
TV	Output the signal of the TV broadcast.
MONITOR	Output the signal of the picture you are watching as a main picture.

#### Notes:

- Do not change the channel while recording with a VCR through the  (monitor/TV output) jacks. If you change the channel, it also changes the channel you are recording.
- When the signals from the  (component video input) jacks are displayed on the main screen, the signals can't be output even though MONITOR is selected.

## Additional Information

# Troubleshooting

If you have any problems, read this manual again and check the countermeasure for each of the symptoms listed below.  
If the problem persists, contact your nearest Sony dealer or authorized service center.

### Snowy picture Noisy sound



- Check the antenna.
- Check the antenna connection on the TV and on the wall.
- Check the TV system (TV SYS) setting.
- Check the ATT (attenuator) setting.

### Dotted lines or stripes



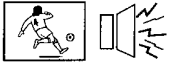
- This may be caused by local interference (e.g. cars, neon signs, hair dryers, etc.). Adjust the antenna for minimum interference.

### Double images or "ghosts"



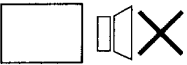
- This may be caused by reflections from nearby mountains or buildings. A highly directional antenna may improve the picture.



### Good picture Noisy sound



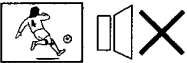
- Check the TV system (TV SYS) setting.




### No picture No sound



- Press .
- Press  to turn off the TV for about five seconds and then turn it on again.
- Check the power cord connection.
- Check the antenna connection.
- Check the VCR connections.

### Good picture No sound




- Press .
- If "CENTER IN" is displayed on the screen, select "SPEAKER: MAIN" of the AUDIO ADJUST menu.
- Press .
- Press A/B .

### No color



- Adjust the COLOR level in the VIDEO ADJUST menu of the PERSONAL option.
- Check the color system (COL SYS) setting.

### TV cannot receive stereo broadcast signal

- Press A/B  until "AUTO" appears on the screen.

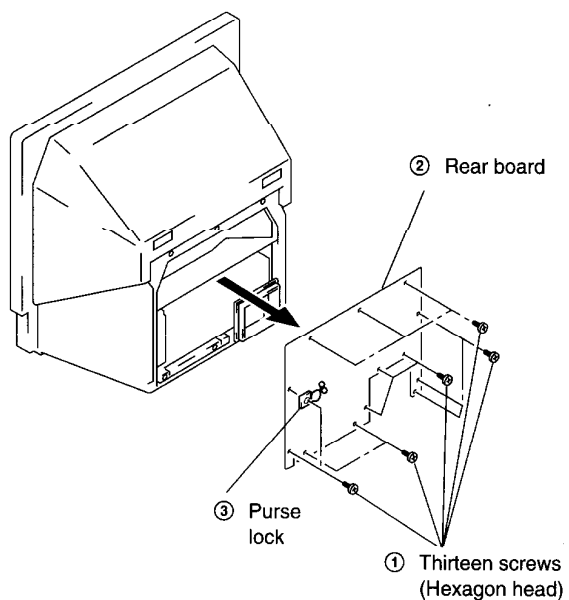
### TV cabinet creaks

- Even if the picture or the sound is normal, changes in the room temperature sometimes make the TV cabinet expand or contract, making a noise. This does not indicate a malfunction.

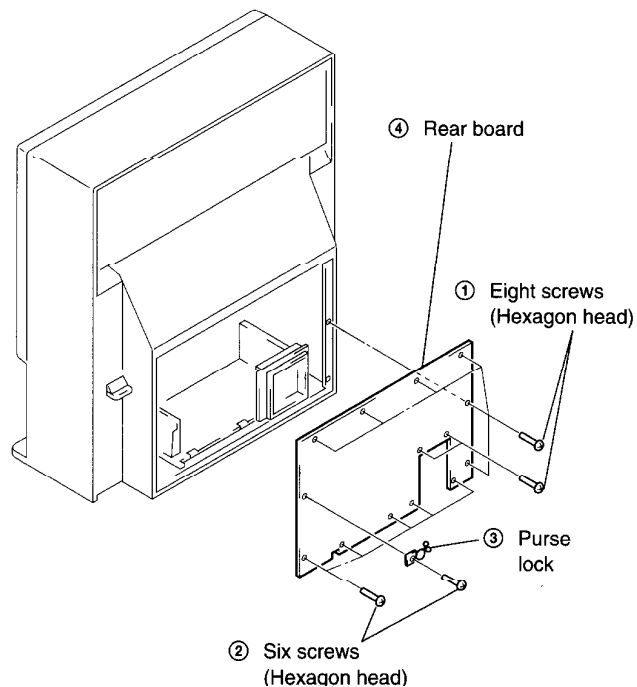
## SECTION 2 DISASSEMBLY

### 2-1. REAR BOARD REMOVAL

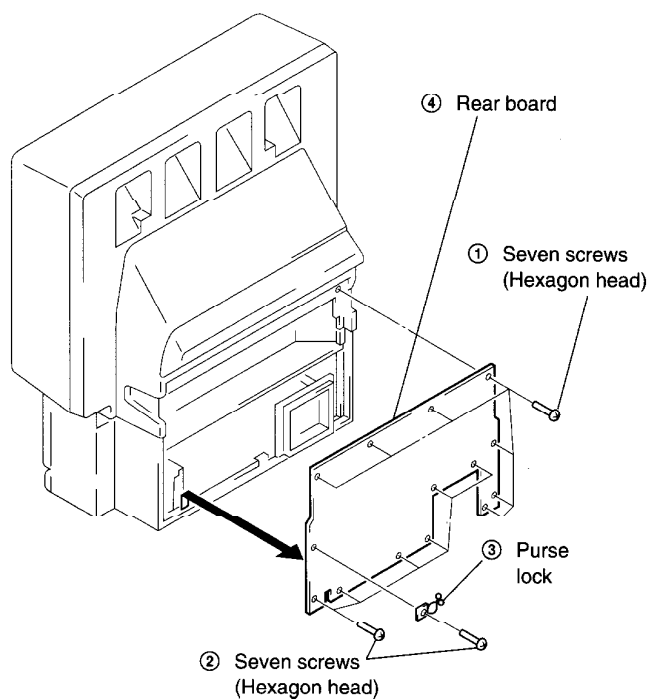
#### • KP-EF41



#### • KP-EF61

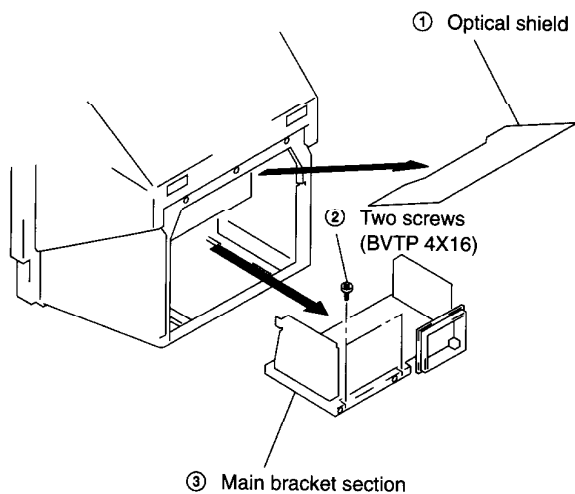


#### • KP-EF53

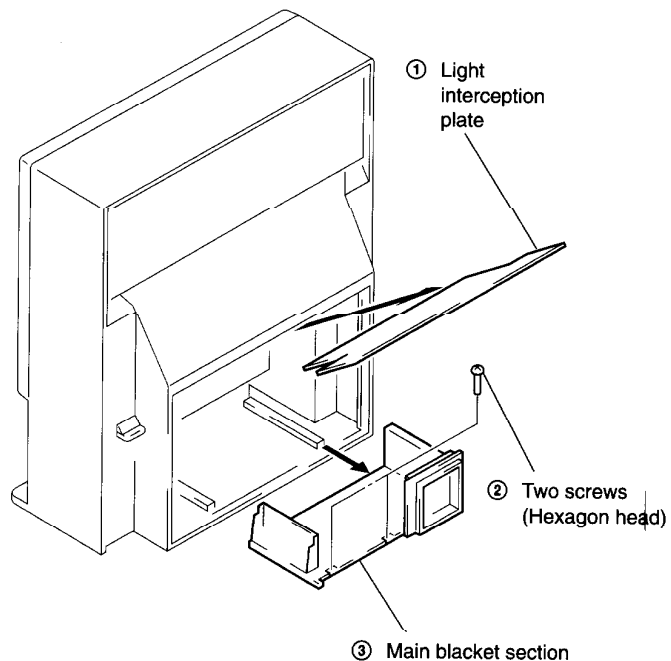


## 2-2. MAIN BRACKET SECTION REMOVAL

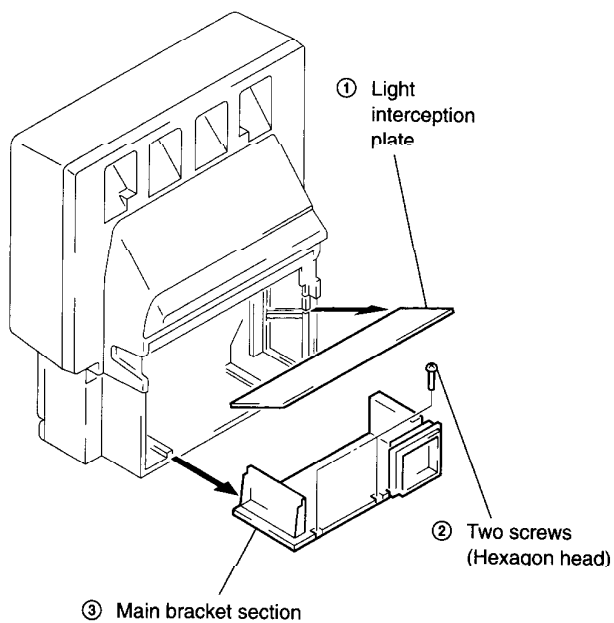
### • KP-EF41



### • KP-EF61

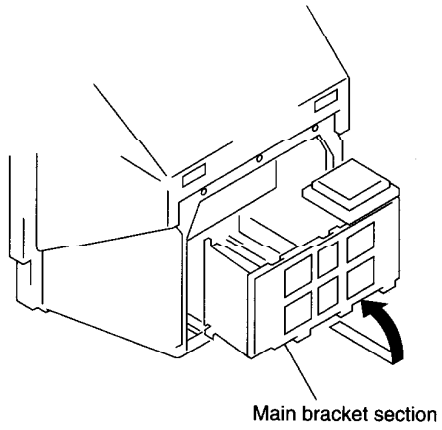


### • KP-EF53

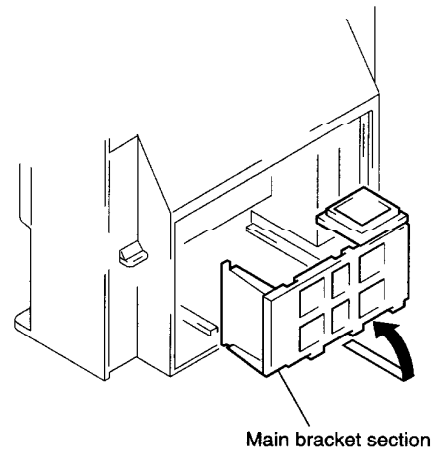


## 2-3. SERVICE POSITION

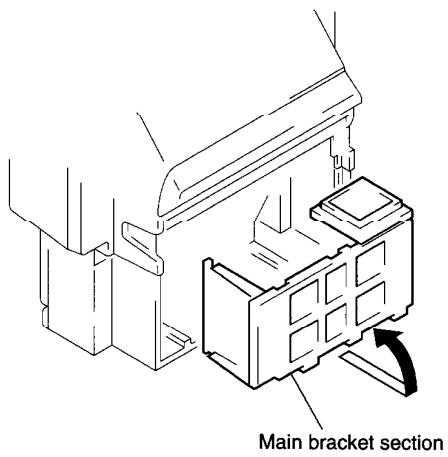
### • KP-EF41



### • KP-EF61

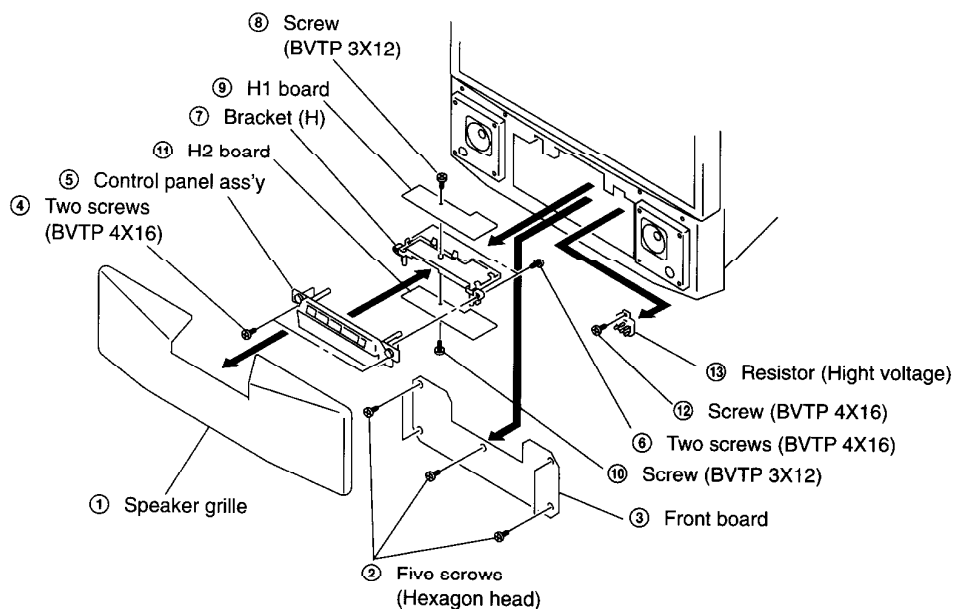


### • KP-EF53

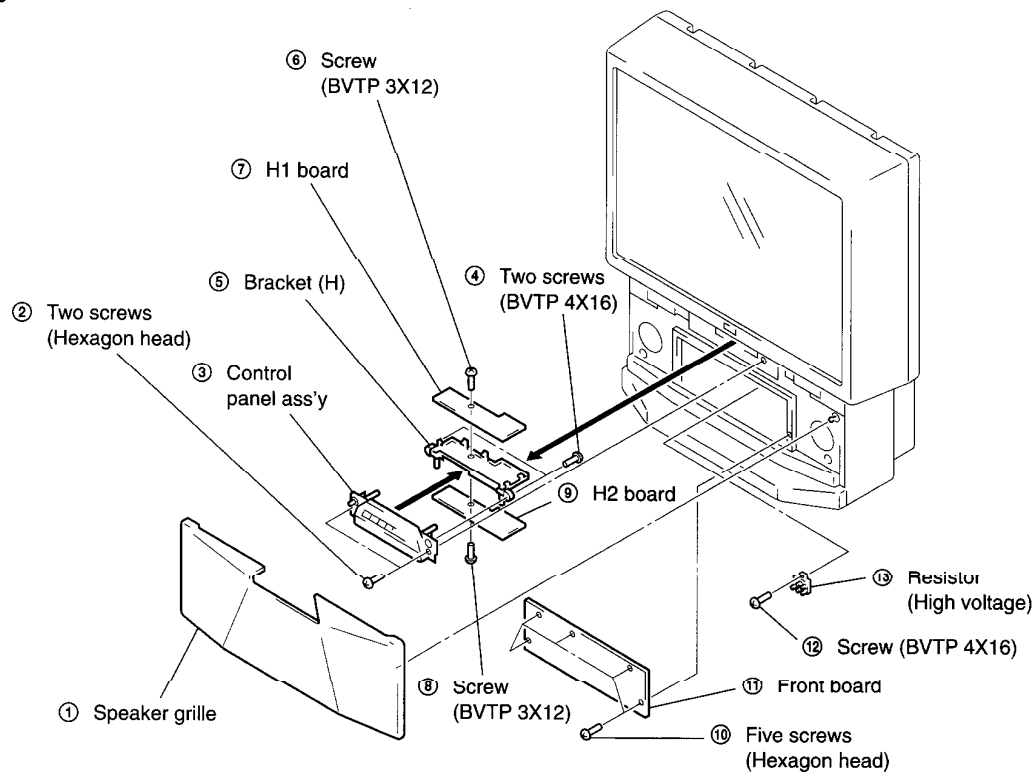


## 2-4. H1 BOARD, H2 BOARD AND RESISTOR (HIGH VOLTAGE) REMOVAL

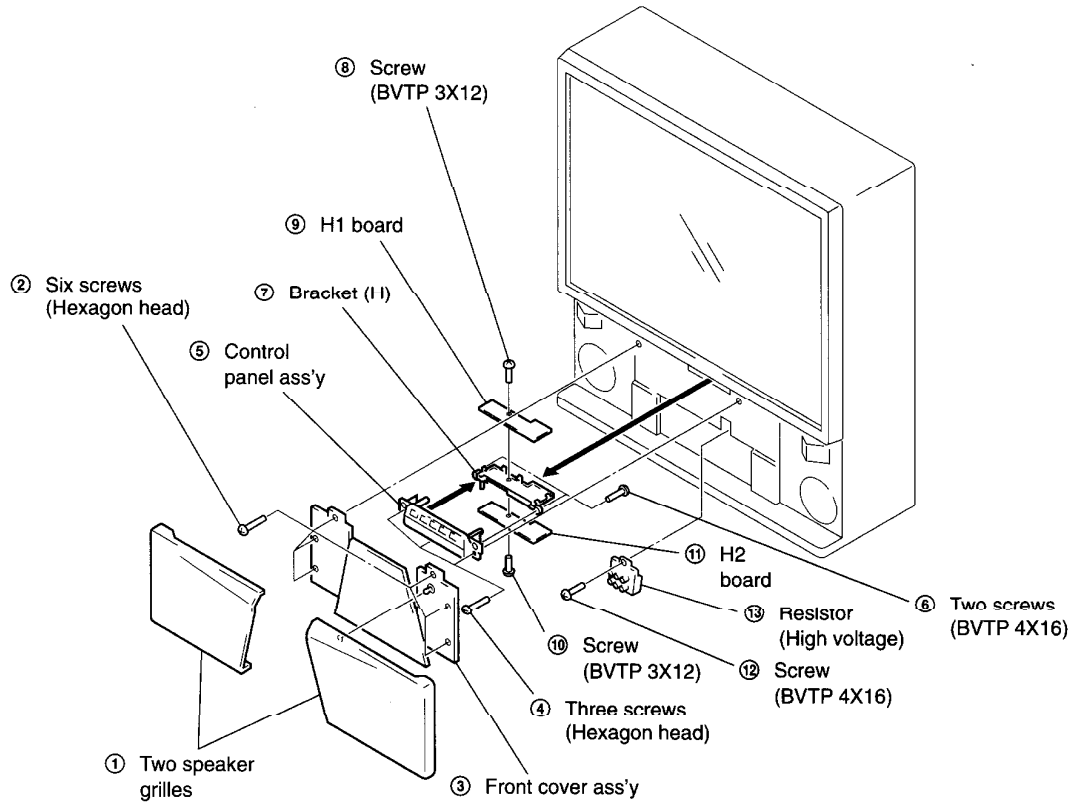
### • KP-EF41



### • KP-EF53

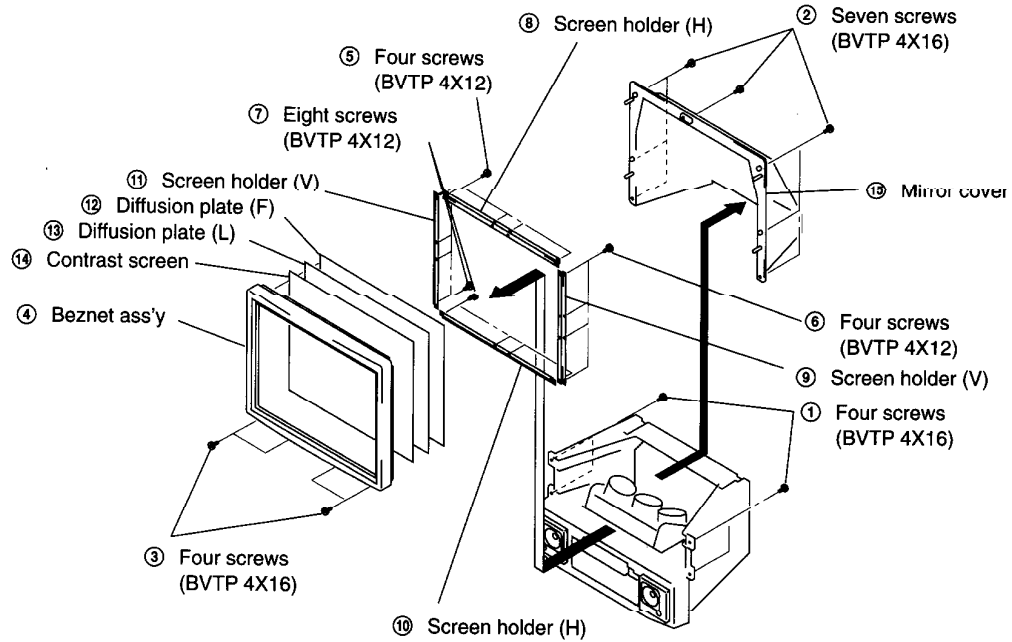


• KP-EF61

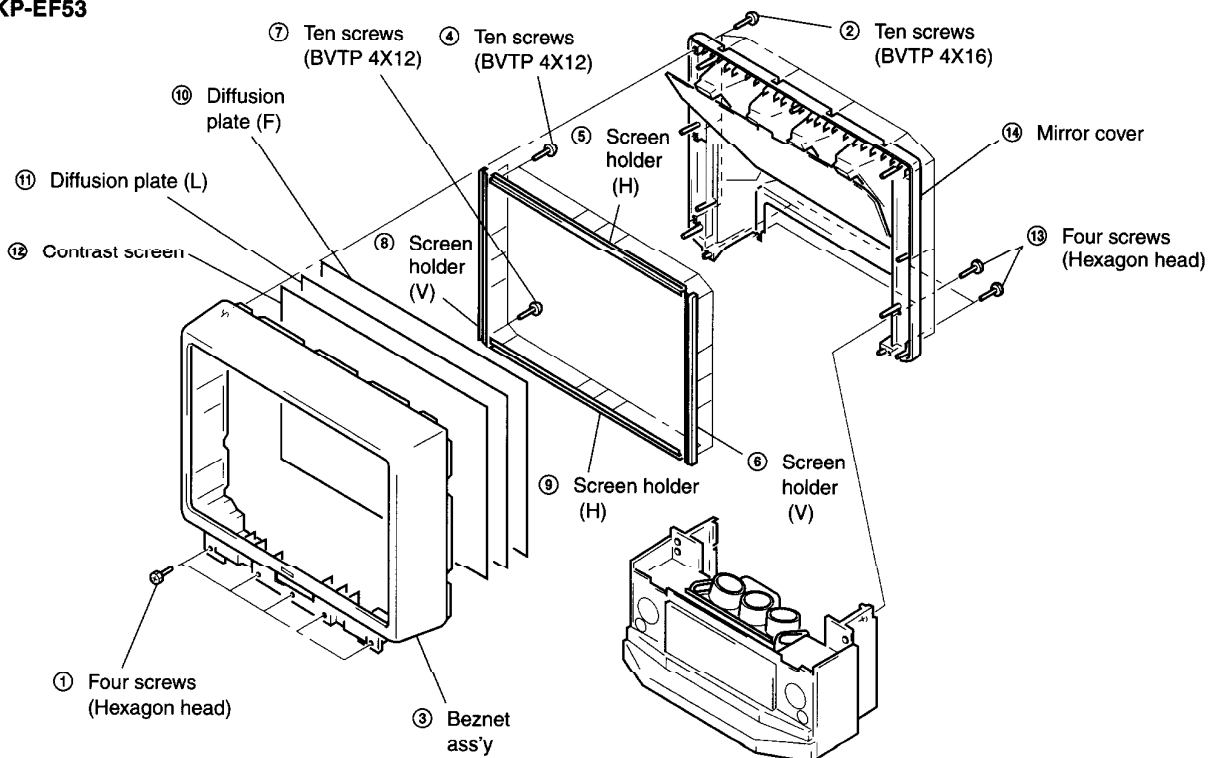


## 2-5. BEZNET SECTION REMOVAL

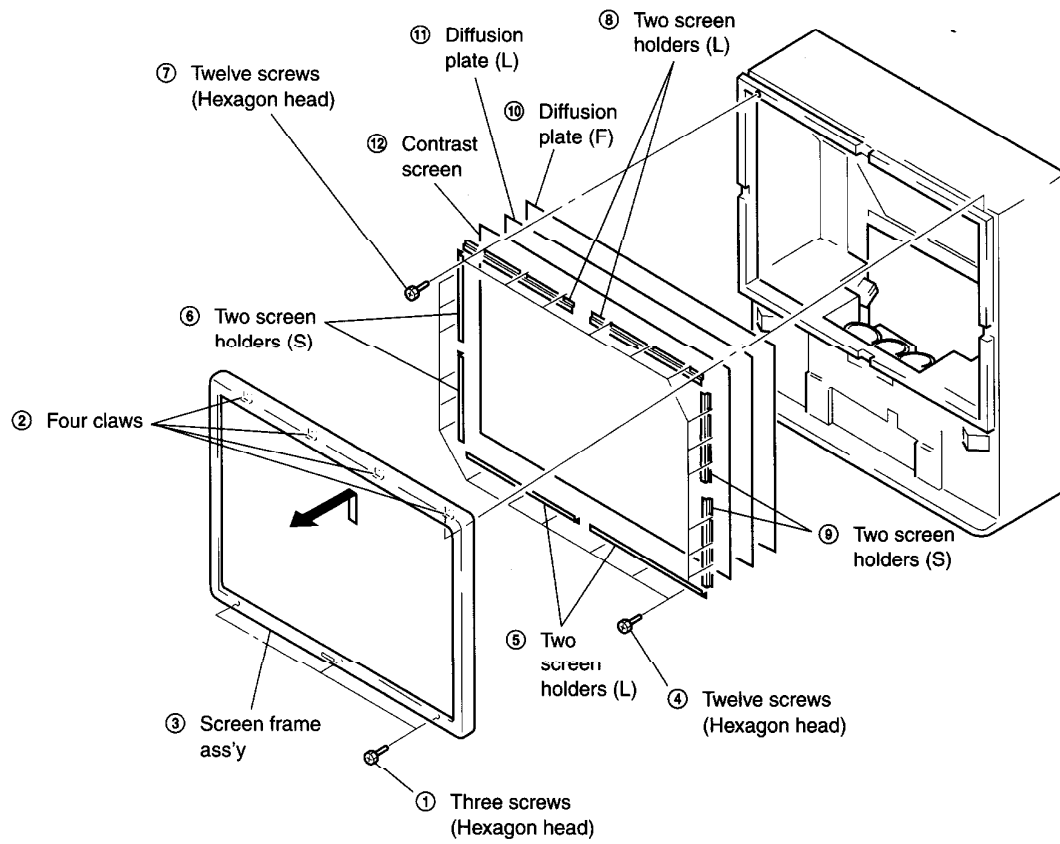
### • KP-EF41



### • KP-EF53

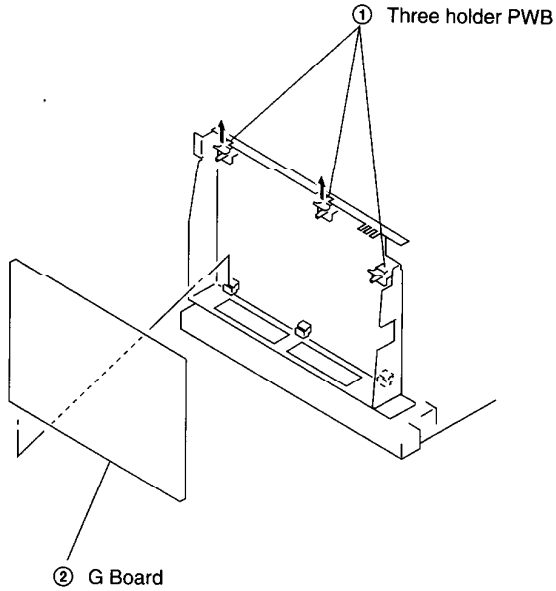


• KP-EF61

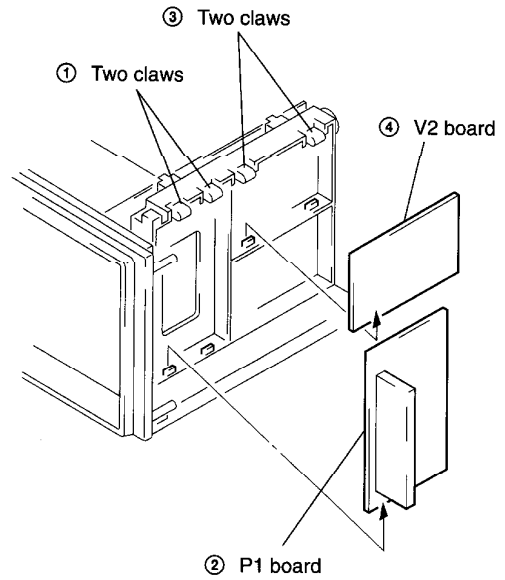




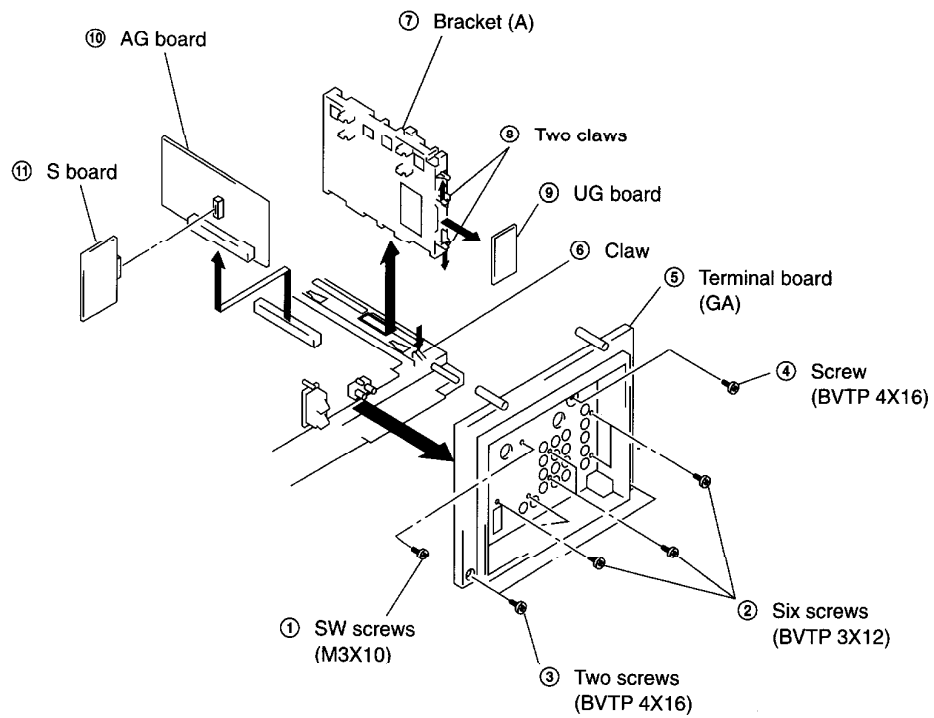
## 2-6. G BOARD REMOVAL



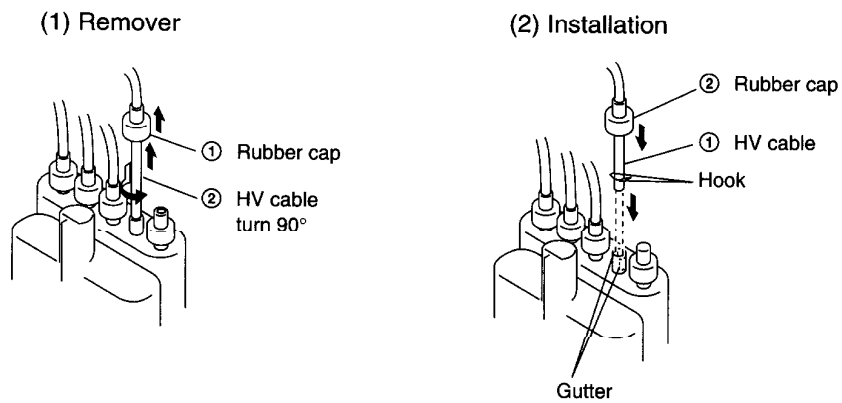
## 2-7. P1 BOARD AND V2 BOARD REMOVAL



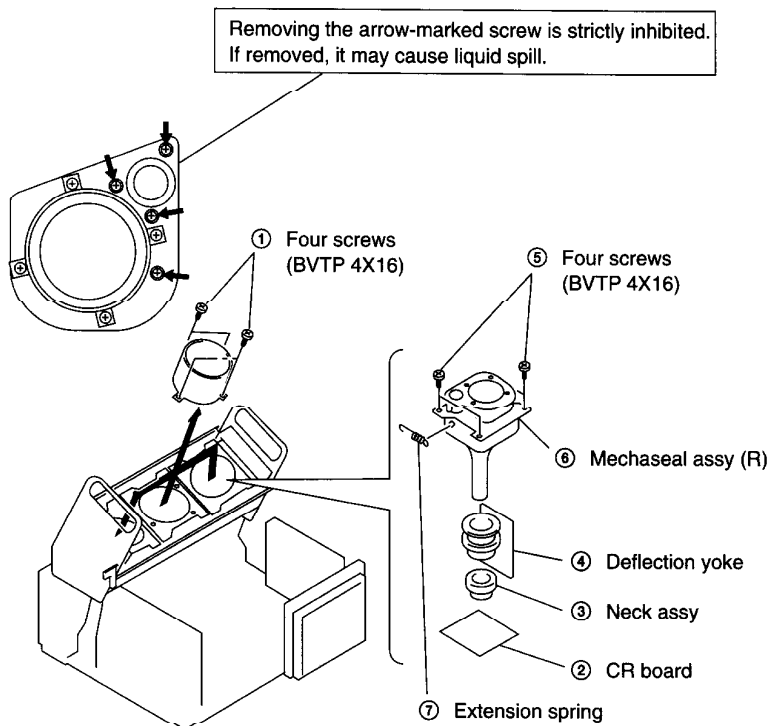
## 2-8. UG BOARD, AG BOARD AND S BOARD REMOVAL



## 2-9. HIGH-VOLTAGE CABLE INSTALLATION AND REMOVAL



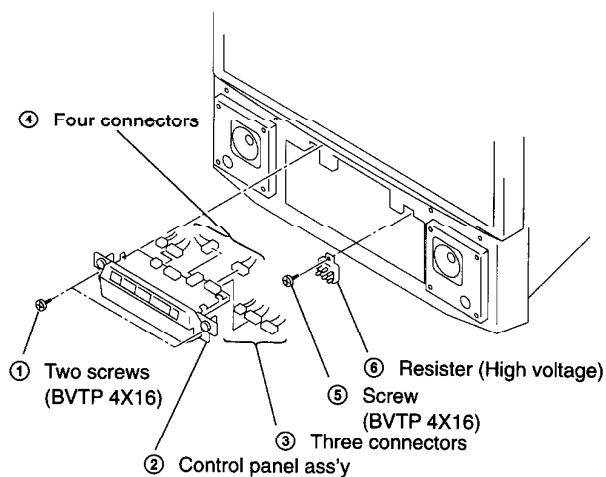
## 2-10. MECHASEL ASSY REMOVAL



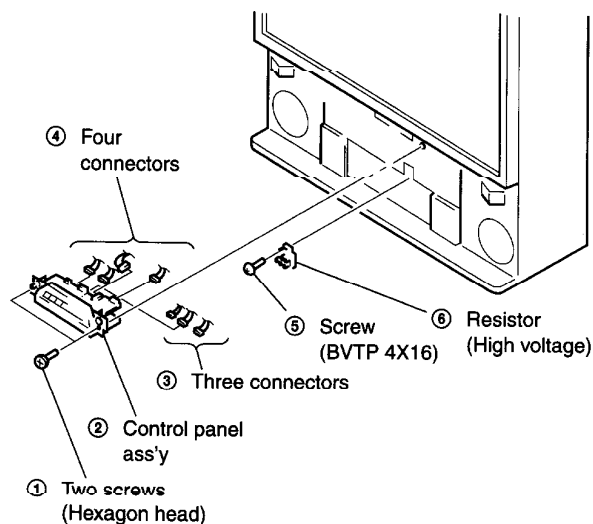
## 2-11. CHASSIS BLOCK REMOVAL

### (1) H1, H2 BOARDS AND RESISTOR REMOVAL

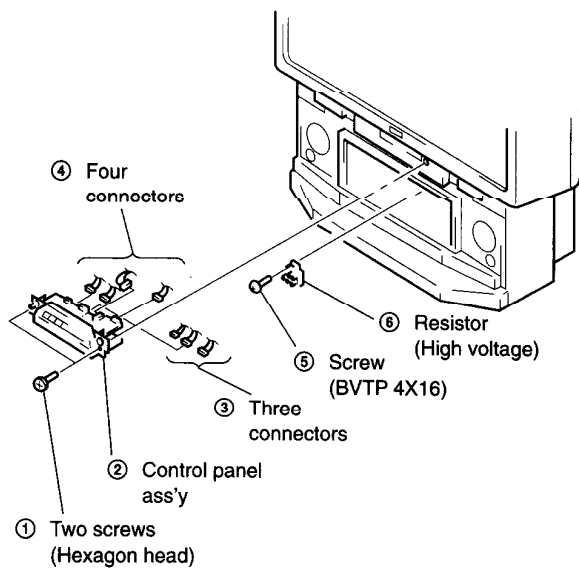
#### • KP-EF41



#### • KP-EF61



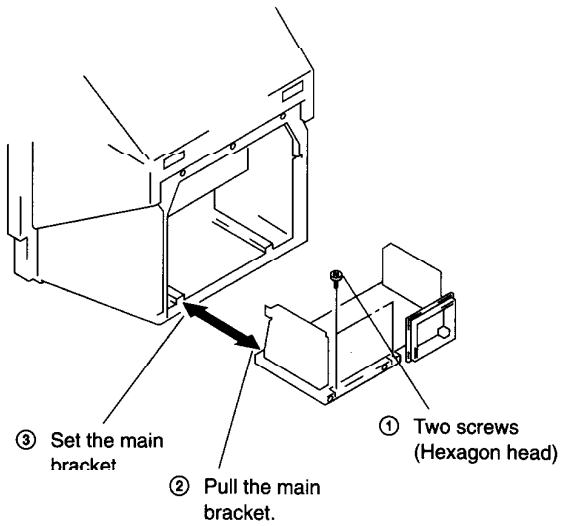
#### • KP-EF53



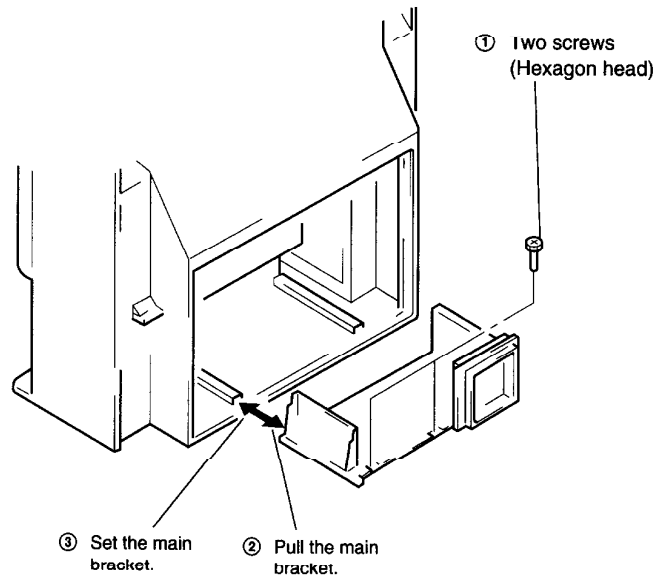
## (2) MAIN BRACKET REMOVAL

\* Pay particular attention to the wires of each PCB when pulling out the main bracket.

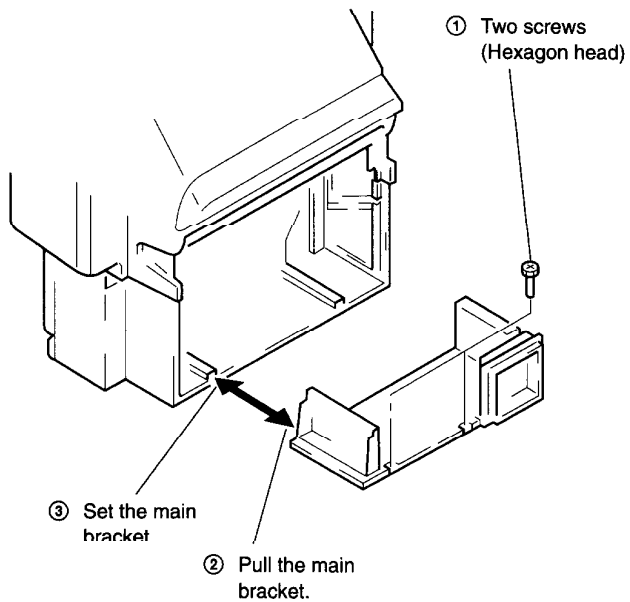
### • KP-EF41



### • KP-EF61



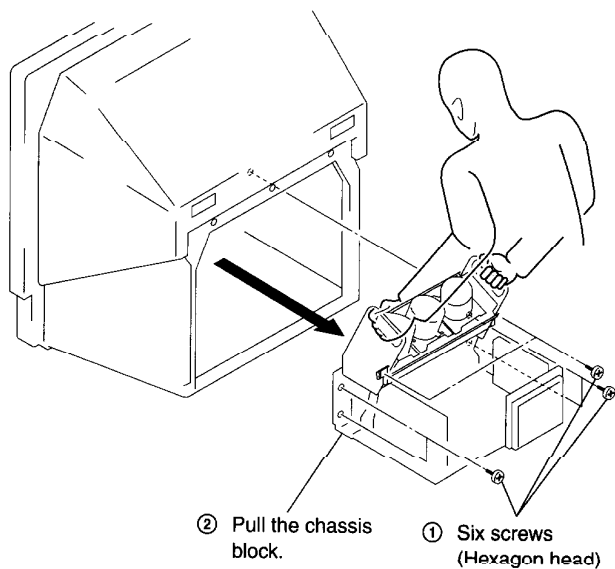
### • KP-EF53



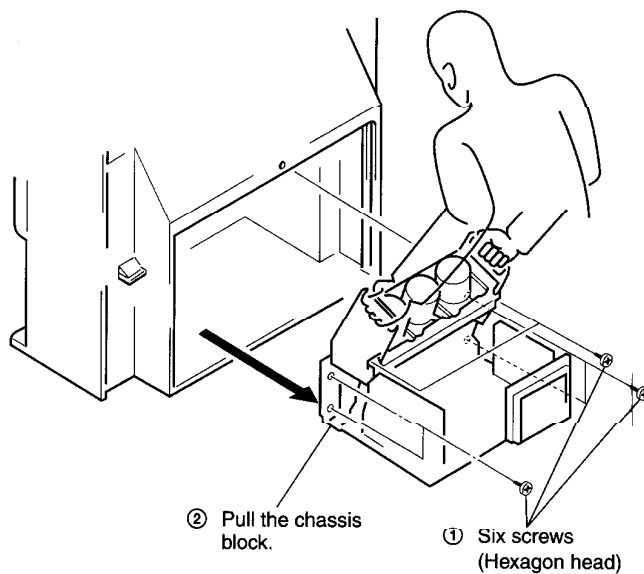
### (3) CHASSIS BLOCK REMOVAL

\* Pull out the chassis block by gripping the handles as shown in the diagram.  
At this time, pay particular attention to the components removed in (1).

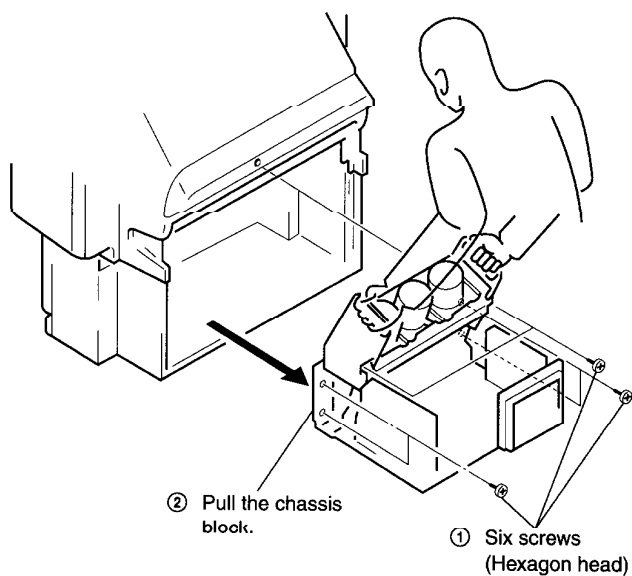
#### • KP-EF41



#### • KP-EF61



#### • KP-EF53



## SECTION 3 SET-UP ADJUSTMENTS

### 3-1. SCREEN VOLTAGE ADJUSTMENT (ROUGH ALIGNMENT)

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

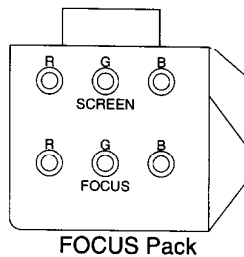


Fig. 3-1

### 3-2. FOCUS ADJUSTMENT

1. Loose the lens screw.
2. Set in service mode.
3. Place the caps on the red and blue lens so that only the green color is shown.
4. Press the Commander button and select OSD (CHSW) to display the test signal (crosshatch) on the screen.
5. Rotate the green lens and align with the optimal focus point from the test signal.
6. Rotate the green VR on the FOCUS Pack and align to obtain the optimal focus point.
7. Perform the same alignment for red and blue lenses and electric focus.
8. Fix lens screw.

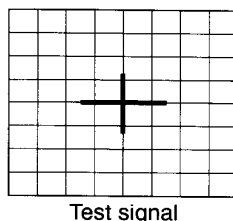


Fig. 3-2

### 3-3. SCREEN (G2) ADJUSTMENT

1. Connect JIG (A) to 200 V and GND.
2. Select VIDEO mode without signals.
3. Connect JIG to the TP701(KR), TP731(KG) or TP761(KB) of CR board, CG board and CB board.
4. Adjust R, G and B screen voltage to until retrace line disappears with screen VR on the focusblock.

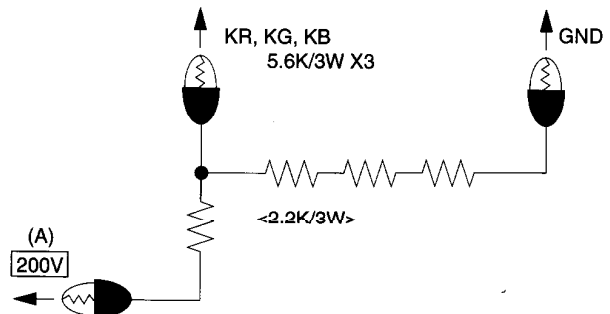


Fig. 3-3

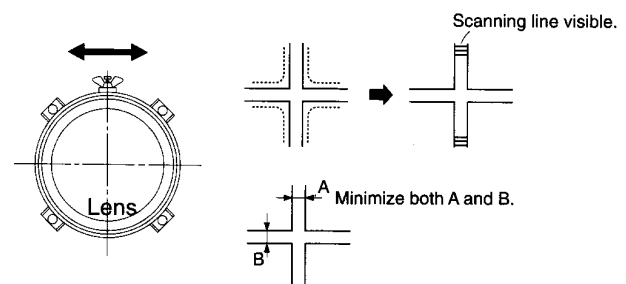


Fig. 3-4

Fig. 3-5

### 3-4. DEFLECTION YOKE TILT ADJUSTMENT

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

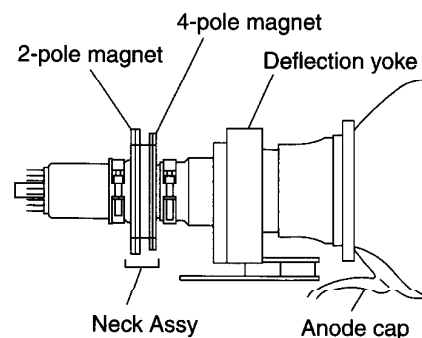


Fig. 3-6

### 3-5. 2-POLE MAGNET ADJUSTMENT

1. Set in service mode.
2. Set to receive the Dot signal.
3. Place the caps on the red and blue lens so that only the green color is shown.
4. Turn the green VR on the focus block to the right and set to overfocus to enlarge the spot.
5. Now align the 2-Pole Magnet so that the enlarged spot is in the center of the Just Focus spot.
6. Align the green focus VR and set for just (precise) focus.
7. Perform the same alignment for red and blue.

Use the center dot

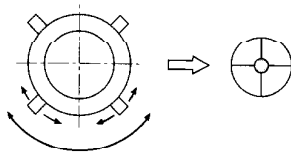


Fig. 3-7

### 3-6. 4-POLE MAGNET ADJUSTMENT

1. Set in service mode.
2. Set to receive the Dot signal.
3. Place the caps on the red and blue lens so that only the green color is shown.
4. Turn the green VR on the focus block to the left and set to underfocus to enlarge the spot.
5. Now align the 4-Pole Magnet so that the enlarged spot becomes a perfect circle.
6. Perform the same alignment for red and blue.

Use the center dot

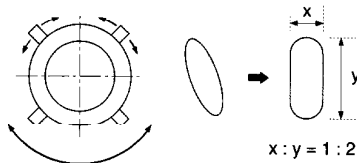
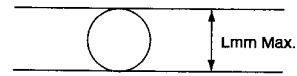


Fig. 3-8

### 3-7. DEFOCUS ADJUSTMENT (Blue)

1. Receive the Dot signal.
2. Place the caps on the red and green lens so that only the blue color is shown.
3. Rotate the blue focus volume on the focus pack and adjust to obtain best electrical focus.
4. Rotate Blue focus volume of focus pack clockwise, so that diameter of the Dot see Caution.

### [Change Blue Defocus]



Inch	41"	53"	61"
L.	7	9	10

Fig. 3-10

### 3-8. GREEN AND RED FOCUS ADJUSTMENT

#### 3-8-1. Green and Red Lens Focus Adjustment

- 1) Input a monoscope signal.
- 2) Place a lens cover over Red and Blue lenses and project only Green.
- 3) Rotate the Green lens and adjust to obtain the best lens focus.
- 4) Fix lens screw.
- 5) Repeat above process for Red.

#### 3-8-2. Green and Red Electrical Focus Adjustment

- 1) Input a monoscope signal.
- 2) Project only Green.
- 3) Rotate the green focus volume on the focus pack and adjust to obtain an optimal electrical focus in the top right corner, taking care of center focus is not NG. obtain a compromise between center and corner focus.
- 4) Repeat above process for Red.

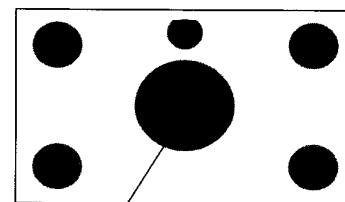


Fig. 3-11

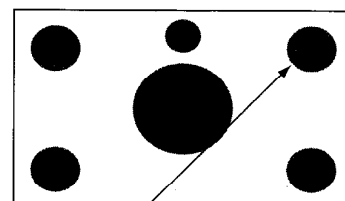





Fig. 3-12

## SECTION 4

### SAFETY RELATED ADJUSTMENT

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

Part Replaced (  )
R1

Part Replaced (  )
E Board C515, C516, C554, D504, D507, L506, Q502, R1, R514, R516, R517, T502, T504 (FBT)
G Board IC6008

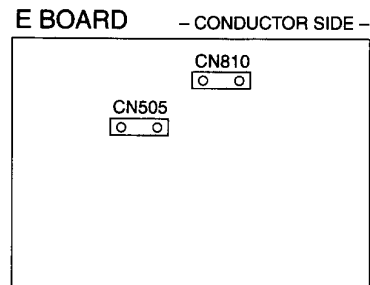


Fig. 4-3

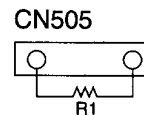


Fig. 4-4

#### 4-1. HV HOLD-DOWN ADJUSTMENT

1. Remove CN810. Connect HV meter to HV Block.
2. Connect External Power Supply to CN810 ② pin (+135V) and ① pin (GND).

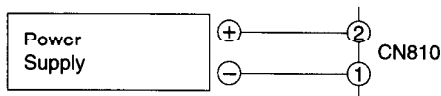


Fig. 4-1

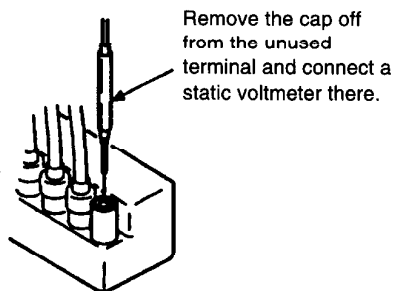


Fig. 4-2

3. Turn on the set.
4. Slowly up the supply voltage from 0V to 135V.
5. Receive dot picture and set PICTURE/BRIGHTNESS to minimum.
6. Slowly up the voltage until hold-down circuit works (picture disappear).
7. Read the HV meter of peak HV voltage.  
Spec:  $34.5 \pm 0.75\text{KV}$
8. If Hold-down voltage is less than 33.75KV then solder R1=820K.
9. If hold-down voltage is over than 35.25KV then take-off R514 and solder R1=9.1K.



SECTION 5  
CIRCUIT ADJUSTMENTS

5-1. ADJUSTMENTS WITH COMMANDER

Service adjustments are made with the RM-871 that comes with this unit.

**Entering service mode**

With the unit on standby

i+

5

△

□

The operation sequence puts the unit into service mode.

1, 4

3, 6

MUTING

0

Select the adjustment item.

Raise/lower the data value.

Writes.

Executes the writing.

- 7, 0

8, 0

5, 0

i+, 0
- All the data becomes the values in memory.

All user control goes to the standard state.

Service data initialization (Be sure not to use usually.)

Write 50Hz adjustment data to 60Hz, or vice versa. (not to use 2, 0.)

The screen display is :

Adjustment item

Item number    DATA    Mode

00    VSH    1F    SERVICE    50

xxx    V2    1C    00 00 00    20

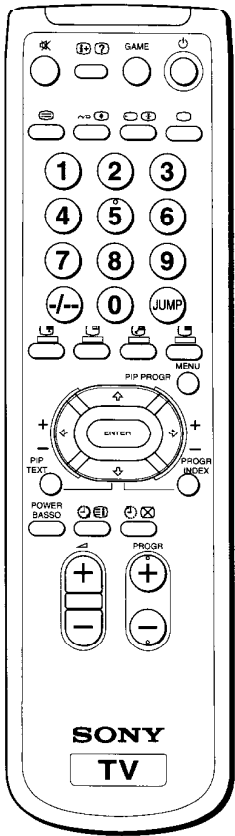
SOFTWARE VERSION

OEM CODE    H SYNC COUNTER

Depends on the signals

PAL, SECAM : 50

NTSC : 60



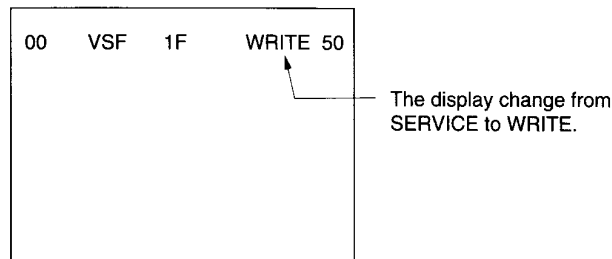
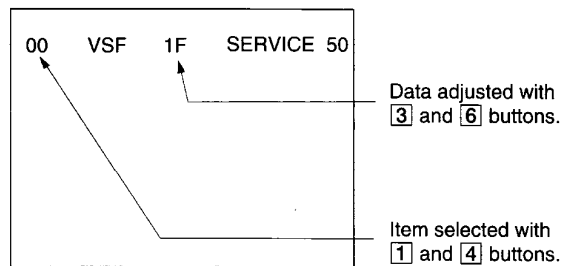
RM-871

## 5-2. ADJUSTMENT METHOD

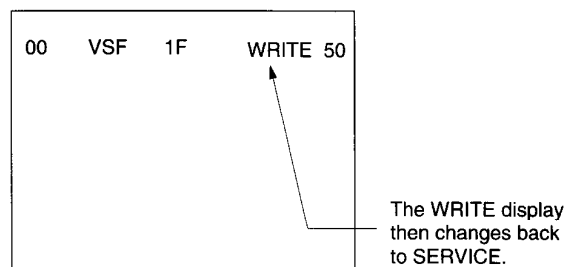
Item Number 00

This explanation uses V-Position as an example.

1. Select 00 VSH with the **[1]** and **[4]** buttons.
2. Raise/lower the data with the **[3]** and **[6]** buttons.
3. Select the optimum state. (The standard is 1F for PAL reception.)
4. Write with the **MUTING** button. (The display changes to WRITE.)
5. Execute the writing with the **[0]** button. (The WRITE display will be changed back to SERVICE.)



Written with **MUTING**



Write executed with **[0]**

Use the same method for Items Number 00-99. Use **[1]** and **[4]** to select the adjustment item, use **[3]** and **[6]** to adjust, write with **MUTING**, then execute the write with **[0]**.

- As for V-FREQ, by searching the bolded screen V range with adjusting data.

**Note :** 1. For adjustment Items that have different standard data between 50Hz or 60Hz and normal or wide, be sure to use the respective input signal while adjusting.  
2. In **WRITE**, the data for all items are written into memory.

## 5-3. ADJUSTMENT AFTER IC1001 and IC1702 REPLACEMENT

1. Enter to Service Mode.
2. Change IC1001 (Except for Registration Adjustment).  
Change IC1702 (Only Registration Adjustment).
3. Call each item number, and check if the respective screen shows the normal picture.  
In cases where items are not well adjusted, rectify the items with fine adjustment.  
Write the data per each item number ( **MUTING** + **[0]** )
4. Select item numbers "98" (OP0) and "99" (OP1) and respectively set the bit per model with command buttons **[3]** and **[6]**.

Adjustment Item Table


Item Display	Adj Item	Data Range	Std Values	Register Name	Device
00	VSH	00~3F	1B	V POSITION	CXA2050S
01	VSZ	00~3F	21	V SIZE	
02	HSH	00~0F	07	H POSITION	
03	HSZ	00~3F	12	H SIZE	
04	SCR	00~0F	06	S CORRECTION	
05	VLN	00~0F	08	V LINEARITY	
06	PAP	00~3F	OE	PIN COMP	
07	PPH	00~0F	05	PIN PHASE	
08	UCP	00~0F	05	UP CORNER PIN	
09	LCP	00~0F	05	LOW CORNER PIN	
0A	BOW	00~0F	05	AFC-BOW	
0B	ANG	00~0F	09	AFC-ANGLE	
OSD0	CHSW	0,1	0	Hatch Display (0: Disp Hatch, 1: No Disp)	CXP86213-002S
OSD1	OSDH	1-32	10	OSD H POS	
OSD2	OSDV	1-32	10	OSD V POS	
OSD3	VMRK	0,1	0	V SIZE Mark	
SFT0	SFTE	0,1	1	Shift Enable	
SFT1	SFTF	0	0	Shift Fast	
GH0	GSEL	0,1	0	OSD Select for GH, GV (0: G + R, 1: Green)	
GH1	CENT	0	0	CENTER	
GH2	SKEW	-127~+127	0	SKEW	
GH3	BOW	-127~+127	0	BOW	
GH4	4bow	-127~+127	0	4th BOW	
GH5	SIZE	-127~+127	0	SIZE	
GH6	LIN	-127~+127	0	LINEARITY	
GH7	MSIZ	-127~+127	0	MID SIZE	
GH8	MLIN	-127~+127	0	MID LINEARITY	
GH9	KFY	-127~+127	0	KEYSTONE	
GH10	SSKW	-127~+127	0	SUB SKEW	
GH11	MPIN	-127~+127	15	MID PINCUSION	
GH12	PIN	-127~+127	-12	PINCUSION	
GH13	SBOW	-127~+127	8	SUB BOW	
GH14	MBOW	-127~+127	0	MID BOW	
GH15	4PIN	-127~+127	0	4th PINCUSION	
GH16	4SBO	-127~+127	0	4th SUB BOW	
GV0	CENT	0	0	CENTER	
GV1	SKEW	-127~+127	0	SKEW	
GV2	BOW	-127~+127	0	BOW	
GV3	SIZE	-127~+127	0	SIZE	
GV4	LIN	-127~+127	0	LINEARITY	
GV5	MSIZ	-127~+127	0	MID SIZE	
GV6	MKEY	-127~+127	0	MID KEYSTONE	
GV7	KEY	-127~+127	0	KEYSTONE	
GV8	SSKW	-127~+127	0	SUB SKEW	
GV9	MPIN	-127~+127	0	MID PINCUSION	
GV10	PIN	-127~+127	20	PINCUSION	
GV11	SBOW	-127~+127	16	SUB BOW	
GV12	WAVE	-127~+127	0	WAVWE	
GV13	4PIN	-127~+127	25	4th PINCUSION	
RH0	CENT	-95~+96	0	CENTER	
RH1	SKEW	-95~+96	0	SKEW	
RH2	BOW	-127~+127	0	BOW	
RH3	4BOW	-127~+127	0	4th BOW	
RH4	SIZE	-127~+127	25	SIZE	
RH5	LIN	-127~+127	10	LINEARITY	
RH6	MSIZ	-127~+127	30	MID SIZE	
RH7	MLIN	-127~+127	-30	MID LINEARITY	

Item Display	Adj Item	Data Range	Std Values	Register Name	Device
RH8	KEY	-127~+127	0	KEYSTONE	
RH9	SSKW	-127~+127	0	SUB SKEW	
RH10	MPIN	-127~+127	0	MID PINCUSION	
RH11	PIN	-127~+127	-10	PINCUSION	
RH12	SBOW	-127~+127	40	SUB BOW	
RH13	MBOW	-127~+127	12	MID BOW	
RH14	4PIN	-127~+127	0	4th PINCUSION	
RH15	4SBO	-127~+127	0	4th SUB BOW	
RV0	CENT	-95~+96	-10	CENTER	
RV1	SKEW	-95~+96	0	SKEW	
RV2	BOW	-127~+127	4	BOW	
RV3	SIZE	-127~+127	0	SIZE	
RV4	LIN	-127~+127	0	LINEARITY	
RV5	MSIZ	-127~+127	0	MID SIZE	
RV6	MKEY	-127~+127	10	MID KEYSTONE	
RV7	KEY KEYSTONE	-10	-10	-127±127	
RV8	SSKW	-127~+127	10	SUB SKEW	
RV9	MPIN	-127~+127	0	MID PINCUSION	
RV10	PIN PINCUSION	10	10	-127±127	
RV11	SBOW	-127~+127	16	SUB BOW	
RV12	WAE	-127~+127	30	WAVE	
RV13	4PIN	-127~+127	10	4th PINCUSION	
RV14	MWAVE	-31~+31	0	MID WAVE	
BH0	BSEL	0,1	0	OSD Select for BH, BV (0: B + G, 1: B + R)	
BH1	CENT	-95~+96	0	CENTER	
BH2	SKEW	-95~+96	0	SKEW	
BH3	BOW	-127~+127	0	BOW	
BH4	4BOW	-127~+127	0	4th BOW	
BH5	SIZE	-127~+127	-25	SIZE	
BH6	LIN	-127~+127	-10	LINEARITY	
BH7	MSIZ	-127~+127	30	MID SIZE	
BH8	MLIN	-127~+127	30	MID LINEARITY	
BH9	KEY	-127~+127	0	KEY KEYSTONE	
BH10	SSKW	-127~+127	0	SUB SKEW	
BH11	MPIN	-127~+127	0	MID PINCUSION	
BH12	PIN	-127~+127	-10	PINCUSION	
BH13	SBOW	-127~+127	-40	SUB BOW	
BH14	MBOW	-127~+127	-16	MID BOW	
BH15	4PIN	-127~+127	0	4PIN 4th PINCUSION	
BH16	4SBO	-127~+127	0	4th SUB BOW	
BV0	CENT	-95~+96	-10	CENTER	
BV1	SKEW	-95~+96	0	SKEW	
BV2	BOW	-127~+127	0	BOW	
BV3	SIZE	-127~+127	0	SIZE	
BV4	LIN	-127~+127	0	LINEARITY	
BV5	MSIZ	-127~+127	0	MID SIZE	
BV6	MKEY	-127~+127	-10	MID KEYSTONE	
BV7	KEY	-127~+127	10	KEYSTONE	
BV8	SSKW	-127~+127	-10	SUB SKEW	
BV9	MPIN	-127~+127	0	MID PINCUSION	
BV10	PIN	-127~+127	10	PINCUSION	
BV11	SBOW	-127~+127	32	SUB BOW	
BV12	WAVE	-127~+127	-30	WAVE	
BV13	4PIN	-127~+127	10	4th PINCUSION	
BV14	MWAVE	-31~+31	0	MID WAVE	
ACV0	ART0	1-8	6	DATA SAMPLE LENGTH	
ACV1	ATIM	0-255	1S	SAMPLE START TIME (UP)	


Item Display	Adj Item	Data Range	Std Values	Register Name	Device
ACV2	ATIM	0-255	132	SAMPLE START TIME (LSR)	
ACV3	ATIB	0-255	240	SAMPLE START TIME (BOT)	
ACV4	AH51	0-255	1S	OSD H POS 50 (L & R)	
ACV5	AH52	0-255	130	OSD H POS 50 (UP & BOTTOM)	
ACV6	AV5T	0-255	1	OSD V POS 50 (UP)	
ACV7	AV5M	0-255	60	OSD V POS 50 (L & R)	
ACV8	AV5B	0-255	130	OSD V POS 60 (BOTTOM)	
ACV9	AH61	0-255	18	OSD H POS 60 (L & R)	
ACV10	AH62	0-255	130	OSD H POS 60 (BOTTOM)	
ACV11	AV6T	0-255	1	OSD V POS 50 (UP)	
ACV12	AV6M	0-255	46	OSD V POS 50 (L & R)	
ACV13	AV6B	0-255	100	OSD V POS 50 (BOTTOM)	
ACV14	RHCO	-127~+127	0	RH CENT ADJ OFFSET	
ACV15	BHCO	-127~+127	0	BH CENT ADJ OFFSET	
ACV16	RCO	-127~+127	0	RV CENT ADJ OFFSET	
ACV17	BVCO	-127~+127	0	BV CENT ADJ OFFSET	
ACV18	RHSO	-127~+127	0	RH SKEW ADJ OFFSET	
ACV19	BHSO	-127~+127	0	BH SKEW ADJ OFFSET	
ACV20	RVSO	-127~+127	0	RV SKEW ADJ OFFSET	
ACV21	BVSO	-127~+127	0	BV SKEW ADJ OFFSET	
ACV22	AERR	0-255	0	AUTO CONV. ERROR CODE	
MSC0	ACTL	0-255	0	COUNTER (LOW BYTE)	
MSC1	ACTH	0-255	0	COUNTER (HIGH BYTE)	
0C	VAP	00~3F	2F	V ASPECT	CXA2050S
0D	VSC	00~3F	1F	V SCROLL	
0E	ULN	00~0F	00	UP V LINEARITY	
0F	LIN	00~0F	00	LOW V LINEARITY	
10	EHH	00~03	00	EHT-H	
11	EHV	00~03	00	EHT-V	
12	HBS	00~01	01	H BLK WID.ON/OFF	
13	LBK	00~0F	0F	L BLK WIDTH	
14	RBK	00~0F	0F	R BLK WIDTH	
15	JSW	00~01	00	JUMP ON/OFF SW	
16	VBW	00~03	02	V BLK WID.CON.	
17	AFC	00~03	01	AFC-MODE	
18	FHH	00~01	00	FH-HI	
19	VFQ	00~03	00	V-FREQ	
1A	VOF	00~01	00	V OFF	
1B	VMD	00~01	00	CD-MODE2	
1C	CMD	00~01	00	CD-MODE	
1D	TTL	00~03	00	INTERLACE	
1E	ZSW	00~01	00	ZOOM SW	
1F	POV	00~03	03	PRE-OVER	
20	CT1	00~01	01	C-TRAP(NTSC)	
21	CT2	00~01	01	C-TRAP(PAL)	
22	CFO	00~0F	07	C-TRAP fo ADJ	
23	SFO	00~01	00	SHARPNESS fo ADJ	
24	TOT	00~01	01	TOT FILTER SW	
25	CSW	00~03	00	COLOR SW	
26	XTL	00~03	00	XTAL	
27	CV1	00~01	01	CV/YC SEL(NTSC)	
28	CV2	00~01	01	CV/YC SEL(PAL)	
29	VM	00~01	01	VM ON/OFF	
2A	YVM	00~01	00	YS1/VM SW(0:YS1)	
2B	DPC	00~01	01	D-PIC ON/OFF	

Item Display	Adj Item	Data Range	Std Values	Register Name	Device
2C	DCO	00~01	01	DYNAMIC COLOR	
2D	GMM	00~03	01	GAMMA	
2E	DTR	00~01	01	DC-TRANSIENT	
2F	DL1	00~07	03	DELAY CTRL(PAL)	
			03		
30	DL2	00~07	03	DELAY CTRL(NTSC)	
			03		
31	DL3	00~07	03	DELAY CTRL(SECAM)	
			03		
32	DL4	00~07	07	DELAY AT DVD(50Hz)	
33	DL5	00~07	07	DELAY AT DVD(60Hz)	
34	SCN	00~0F	09	SUB-CONTRAST	
35	SC1	00~0F	0B	SUB-COLOR(OTHER)	
36	SC2	00~0F	0B	SUB-COLOR(NTSC)	
37	SH1	00~0F	04	SUB-HUE(TV)	
38	SH2	00~0F	07	SUB-HUE(VIDEO)	
39	SBR	00~3F	24	SUB-BRIGHT	
3A	SSH	00~07	04	SUB-SHARPNESS	
			02		
3B	GDR	00~3F	1D	G-DRIVE	
3C	BDR	00~3F	20	B-DRIVE	
3D	GCF	00~0F	07	G-CUTOFF	
3E	BCF	00~0F	08	B-CUTOFF	
3F	RPO	00~03	01	UF[0..1]	
			02		
40	PON	00~01	01	PIC-ON	
41	RON	00~01	01	R ON	
42	GON	00~01	01	G ON	
43	BON	00~01	01	B ON	
44	AKF	00~01	00	AKB ON/OFF SW	
45	ESY	00~01	00	EXT SYNC SEL	
			00		
46	AGG	00~01	00	AGING MODE ON/OFF	
47	ABL	00~01	00	ABL PIC/PIcandBRT SW	
				(1:PIC ONLY)	
48	LIM	00~01	00	RGB LIMIT ON/OFF	
				(1:ON)	
49	PB	00~01	01	PICTURE BOOSTER	No use
4A	BOF	00~01	01	BLACK OFFSET	
4B	UVG	00~3F	1F	USER VAR.GAMMA	
4C	ADG	00~3F	1F	ADAPTIVE GAMMA	
4D	NLA	00~3F	05	NON-LINEAR AMP	
4E	WDS	00~02	00	WINDOW SELECT	
4F	LST	00~0F	07	WINDOW LINE START	
50	LSP	00~0F	07	WINDOW LINE STOP	
51	FST	00~0F	07	WINDOW FIELD START	
52	FSP	00~0F	07	WINDOW FIELD STOP	
53	VA	00~01	01	V APERTURE ON/OFF	No use
54	VAW	00~03	02	V APERTURE WHITE	
55	VAB	00~03	02	V APERTURE BLACK	
56	VAC	00~0F	02	V APERTURE CORE	
57	SHP	00~3F	25	SHARPNESS	No use
			20		
58	VMH	00~3F	29	VM LIMITTER(HIGH)	
59	VML	00~3F	1C	VM LIMITTER(LOW)	

Item Display	Adj Item	Data Range	Std Values	Register Name	Device
5A	COR	00~3F	1C	CORING	SDA9189X
5B	DOF	00~3F	15	DSC OFFSET	
5C	DGA	00~3F	1F	DSC GAIN	
5D	DLT	00~01	01	DELAY TIME	
5E	SDL	00~0F	00	SEL PIN DELAY	
5F	POH	00~FF	1B	H POSITION(MSB 8bit)	
60	POV	00~FF	2F	V POSITION	
61	HDL	00~1F	0B	HSI DELAY	
62	AMS	00~01	00	DECIMATION FILTER	
63	VDL	00~1F	0B	VSI DELAY	
64	VSP	00~1F	0D	VSP DELAY	
65	CON	00~0F	06	CONTRAST	
66	FRY	00~0F	09	FRAME Y	
67	FRV	00~0F	00	FRAME V	
68	FRU	00~0F	00	FRAME U	
69	INF	00~01	01	INNER FRAME	
6A	FWV	00~03	02	FRAME WIDTH V	MSP3410
6B	FWH	00~07	07	FRAME WIDTH H	
6C	PLL	00~03	02	PLL LOOP FILTER	
6D	PDV	00~0F	00	PEDESTAL V	
6E	PDU	00~0F	00	PEDESTAL U	
6F	DAT	00~01	00	DAC STREAM CONTROL	
70	DAN	00~01	00	DAC CONTROL	
71	FAW	00~FF	08	NICAM FAW THRESH	
72	CTM	00~FF	08	NICAM ERROR BIT(MONO)	
73	CTN	00~FF	50	NICAM ERROR BIT(NICAM)	
74	WCD	00~FF	0A	W.G.DATA CHANGE	
75	WST	00~FF	15	W.G.STEREO THRESHOLD	
76	WTM	00~FF	50	W.G.TIMER	
77	WBT	00~01	EA	W.G.BILINGUAL THRESHOLD	
78	AGC	00~01	01	AGC AUTO/CONST	
79	CDB	00~3F	28	AGC GAIN CONST	
7A	FGP	00~7F	24	FM(BG,I,DK)PRESCALE	
7B	EMP	00~7F	40	FM(M)PHESCALE	
7C	WGP	00~7F	3C	W.G.PRESCALE	
7D	NIP	00~7F	7F	NICAM PRESCALE	
7E	CRM	00~01	00	CARRIER MUTE	
7F	CML	00~03	00	CARRIER MUTE LEVEL	
80	ACO	00~01	01	AUDIO CLOCK OUT	
81	WAC	00~0F	01	W.G.AGREEMENT COUNT	
82	DLY	00~FF	30	STEREO SEARCH DELAY	
83	DLG	00~FF	10	W.G.SEARCH DELAY	
84	TXP	00~0F	0E	TEXT PICTURE CONT	SAA5261
85	MXP	00~0F	0F	TEXT MIX MODE PIC	CXA1315
86	TXH	00~03	02	TEXT DISPLAY POSITION(H)	
87	BB1	00~3F	1D	BBE CONTROL HIGH	
88	BB2	00~3F	1D	BBE CONTROL MIDDLE	
89	BB3	00~3F	28	BBE CONTROL LOW	No use
8A	ATW	00~03	01	AUTO WIDE IDENT SPEED	
8B	BKP	00~FF	00	BLK OFF PICTURE	No use
8C	OSH	00~3F	0D	OSD POSITION H	
8D	ODL	00~FF	10	POWER ON DELAY	
8E	BLU	00~01	01	BLUE BACK ON/OFF	
8F	RQC	00~0F	0F	N/S CENTER VOL	

Note:  Items are fixed data.

Item Display	Adj Item	Data Range	Std Values	Register Name	Device
90	ROS	00~07	07	USER SET UP	
91	DKS	00~01	01	D/K STEREO SEARCH	
92	MUT	00~01	01	NO SYNC MUTE	
93	DID	00~01	00	DISABLE DEGAUSS	
94	DWZ	00~01	00	DISABLE WIDEZOOM	
95	BCS	00~01	00	BASS CENTER SHIFT	
96	RVS	00~01	00	BASS VOLUME SHIFT	
97	WBS	00~03	00	WOOFER OFF BASS SHIFT	
98	OP0	00~FF	C1	OPTION 0	
99	OP1	00~FF	3E	OPTION 1	

Note:  Items are fixed data.

## ITEM INFORMATION

No.98 OP 0

ITEM	MSP RST	H.D. M	—	—	—	—	—	Text Mode
Normal	0	0	0	0	0	0	0	1

bit 0 0: Automatic mode 1: Fastext mode  
bit 6 0: High Deviation mode Disable 1: High Deviation mode Enable  
bit 7 0: Off 1: On

No.99 OP 1

ITEM	WIDE	WOOFER	TILT	VM	COMB ELECT	COMB	SECAM	B/G ONLY
Normal	0	0	1	1	1	1	1	0

E: Tilt, Digital comb, SECAM decoder  
V: Wide, Tilt, Digital comb, SECAM decoder  
J: Tilt, Grass comb, VM, SECAM decoder

bit3 0: Grass comb 1: Digital comb  
bit2 0: comb OFF 1: comb ON



## 5-4. REGISTRATION (CONVERGENCE) ADJUSTMENT METHOD

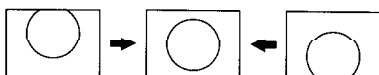
### PAL REGISTRATION ADJUSTMENT

- 1) Receive the PAL SPCB signal.
- 2) Select Service mode and enter adjustment items for Green signal.

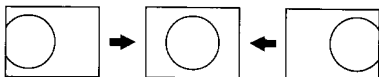
### CENTER ADJUSTMENT

- 1) Adjust GH and GV CENT.

#### GV CENT



#### GH CENT

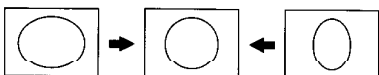


### SIZE ADJUSTMENT

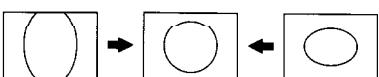
- 1) Adjust GH SIZE data "0".
- 2) Adjust VSP H SIZE.
- 3) Make GV SIZE data "00".
- 4) Adjust VSP V-SIZE.
- 5) Adjust VSP SSCOR.

SPEC : H-SIZE 16.4 +/- 0.15 Sq.  
V-SIZE 12.3 +/-0.15Sq.

#### VSP HSIZE



#### VSP VSIZE



### MAIN DEFLECTION ADJUSTMENT

- 1) Adjust VSP V-Lin.

Correct linearity of the horizontal top and bottom lines.

#### VSP VLINE



- 2) Adjust VSP H-SKEW

Correct the vertical center line to be in parallel with the screen edges and other colors.

#### VSP H-SKEW



- 3) Adjust VSP H-BOW.

Correct linearity of the vertical center line.

#### VSP H-BOW



- 4) Adjust VSP H-PIN.

Correct the vertical left and right lines and eliminate pin-cushion-shaped distortion.

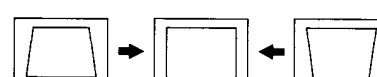
#### VSP H-PIN



- 5) Adjust VSP H-Key.

Correct the vertical left and right lines to be in parallel with each other.

#### VSP H-KEY



- 6) Adjust VSP UC. PIN

Correct the screen top section line bow.

#### VSP UC. PIN



- 7) Adjust VSP LC. PIN

Correct the screen bottom section line bow.

#### VSP LC. PIN



# **SUB DEFLECTION ADJUSTMENT ITEM**

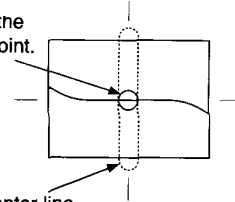
Adjustment O : Yes - : No

Display	Adjustment item	Adjustment type					
		GH	GV	RH	RV	BH	BV
BSEL	COL SELECT	-	-	-	-	O	-
CENT	CFNT	O	O	O	O	O	O
SKEW	SKEW	O	O	O	O	O	O
BOW	BOW	O	O	O	O	O	O
4BOW	4TH BOW	O	-	O	-	O	-
SIZE	SIZE	O	O	O	O	O	O
LIN	LIN	O	O	O	O	O	O
MSIZ	MID SIZE	O	O	O	O	O	O
MLIN	MID LIN	O	O	O	-	O	-
MKEY	MID KEY	-	O	-	O	-	O
KEY	KEY	O	O	O	O	O	O
SSKW	SUB SKEW	O	O	O	O	O	O
MPIN	MID PIN	O	O	O	O	O	O
PIN	PIN	O	O	O	O	O	O
SBOW	SUB BOW	O	O	O	O	O	O
WAVE	WAVE	-	O	-	O	-	O
MBOW	MID BOW	O	-	O	-	O	-
4PIN	4TH PIN	O	O	O	O	O	O
4SBOW	4TH SUB BOW	O	-	O	-	O	-

## **VERTICAL LINE ADJUSTMENT**

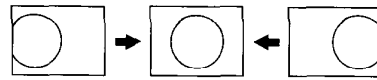
1. Carefully watching out for the GH CENT screen centre section, adjust GH CENT, GH BOW, GH SKEW.
2. GH 4th Bow adjustment. Correct the corner distortion which could not be adjusted with GH BOW.

Watch out only for the GH CENT center point.



Watch the vertical center line.

### **GH CENT**



### **GH BOW**



### **GH SKEW**

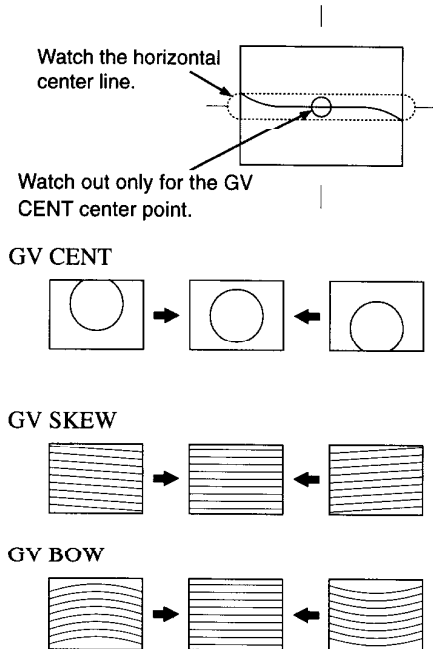


### **GH 4BOW**



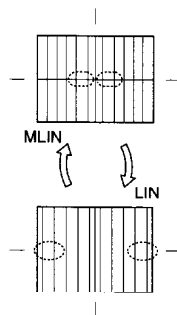
### HORIZONTAL LINE ADJUSTMENT

1. Finely adjust the centre position of the vertical line at the centre of the screen with GV CENT.
2. Using GV SKEW and GV BOW, correct the tilt and bow of the horizontal line at the centre of the screen.



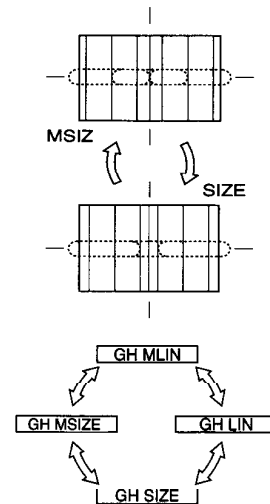
### SIZE AND LINEARITY ADJUSTMENT

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



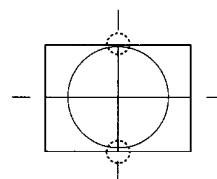
### HORIZONTAL SIZE ADJUSTMENT

1. Adjust with GH MSIZE, so that the sizes of both edges and centre are equal.
2. Adjust with GH SIZE, so that the horizontal sizes of both edges and centre are equal.
3. While tracking adjust GH MSIZE and GH SIZE so that the space intervals for the horizontal section of the screen are equal.
4. Adjust again if M LIN is changed after GH MSIZE and GH SIZE are complete.



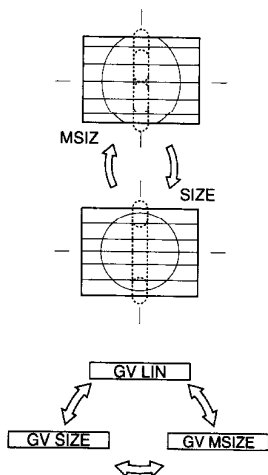
### GREEN VERTICAL LINEARITY ADJUSTMENT

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



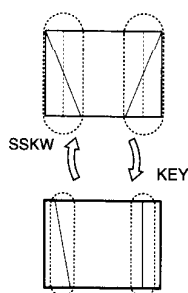
### GREEN VERTICAL SIZE ADJUSTMENT

1. Adjust GV MSIZE so that the sizes at the top and bottom and centre are equal.
2. Set the vertical size to correct specification.
3. While tracking adjust GV MSIZE and GV SIZE so that the space intervals for the vertical line of the screen are equal, also the vertical size should be within space.
4. Adjust again if GV LIN has been altered after completing the above adjustments.



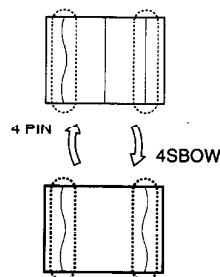
### GREEN HORIZONTAL TRAPEZOIDAL DISTORTION ADJUSTMENT

1. Adjust GH SSKW so that the tilt of the vertical lines at both edges of the screen are symmetrical left and right.
2. Adjust GH KEY so that there is no tilt in the vertical lines at both edges of the screen.
3. While tracking adjust GH KEY and GH SSKW.



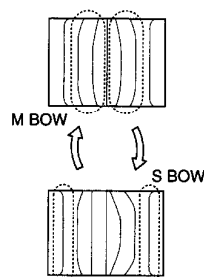
### GREEN HORIZONTAL QUATERNARY ADJUSTMENT

1. Adjust GH 4PIN, to correct the 4th order distortion.
2. Adjust GH 4SBO to balance and correct the 4th order distortion at both edges of the screen.
3. While tracking adjust GH 4PIN and GH 4SBOW.



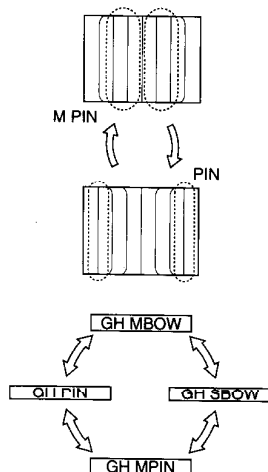
### GREEN HORIZONTAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT

1. Adjust GH MBOW, so that the pin asymmetry at both sides of the centre section are symmetrical left and right.
2. Adjust GH SBOW so that the bow at both edges of the screen is symmetrical left and right.
3. While tracking adjust GH MROW and GH SBOW so that the bow of vertical lines over the entire screen is symmetrical.



### GREEN HORIZONTAL SYMMETRICAL PIN DISTORTION ADJUSTMENT

1. Adjust GH MPIN to correct pin distorton at both edges of the centre section.
2. Use GH PIN to correct pin distortion at both edges of the screen.
3. While tracking adjust GH MPIN and GH PIN so that the PIN of vertical lines on the entire screen have no bowing.
4. If there is asymmetrical distortion after adjustments, re-adjust GH MBOW and GH SBOW while tracking.



### GREEN VERTICAL WAVE (3RD-ORDER) DISTORTION ADJUSTMENT

1. Check the screen at the top & bottom, and look for any 2nd or 3rd order waveform distortion of horizontal lines. Correct with GV WAVE.
2. While tracking adjust GV WAVE and GV KEY, if there are any KEY distortion.

GV WAVE



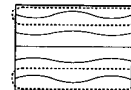
GV KEY



### GREEN VERTICAL 4TH ORDER DISTORTION ADJUSTMENT

1. By using GV 4 PIN, 4th-Order distortion of the horizontal lines at the top & bottom can be corrected. Since there is no 4SBO for vertical correction, there will be a slight imbalance, but adjust the registration to eliminate any distortion.

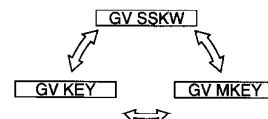
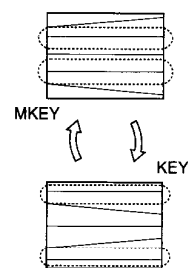
GV 4PIN



### GREEN VERTICAL TRAPEZOIDAL DISTORTION ADJUSTMENT

1. Adjust GV SSKW so that the tilt of the horizontal lines at the top and bottom of the screen are symmetrical.
2. Adjust GV MKEY so that there is no tilt for the middle section.
3. Adjust GV KEY so that there is no tilt at the top and bottom of the screen.
4. While tracking adjust GV MKEY and GV KEY, so that there is no tilt over the entire screen.
5. If the tilt is unbalanced after GV MKEY and GV KEY have been adjusted, readjust GV SSKW.

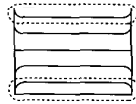
GV SSKW



### GREEN VERTICAL ASYMMETRICAL PIN DISTORTION (2ND-ORDER DISTORTION) ADJUSTMENT

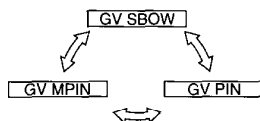
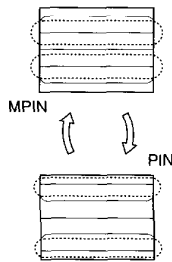
1. Correct the asymmetrical pin distortion at the top and bottom of the screen with GV SBOW.

GV SBOW



### GREEN VERTICAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT

1. Using GV MPIN adjust the pin distortion at both edges of the screen and at the centre.
2. Using GV PIN, adjust, so that the horizontal lines at the top & bottom of the screen are straight lines.
3. Adjust GV MPIN & GV PIN so that there is no curve in the horizontal lines on the entire screen.
4. After adjusting the items above, using tracking with GV SBOW, GV MPIN, and GV PIN to correct the entire screen.



### GREEN AND RED REGISTRATION ADJUSTMENT

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

Note : Main registration correction should not be while adjusting Red adjustment

BEWARE : Not to change Green Sub Items It's easily done by mistake.

### GREEN AND BLUE ADJUSTMENT

1. Adjust so that the blue and green lines are on top of each other.

Note : Main registration correction should not be while adjusting Blue adjustment.

BEWARE : Not to change Green & Red Sub Items. It's easily done by mistake.

### REGISTRATION DATA WRITE

After Finish all PAL registration adjustments, write PAL registration data by pressing from the appropriate buttons.

**DATA WRITE**

Press MUTE +0

### DATA COPY FROM PAL TO NTSC

Copy PAL data to NTSC data by pressing " DISPLAY " and " 0 "

\* Press " **i+** (DISPLAY) " + " 0 " to copy data from PAL to NTSC.

If you press " **i+** (DISPLAY) ", then it appears " WRT5060 " to display.

\* Make sure input signal is PAL. If input signal is NTSC and do this process, NTSC data are copied to PAL data!

### 5-5. AUTO CONVERGENCE ADJUSTMENT

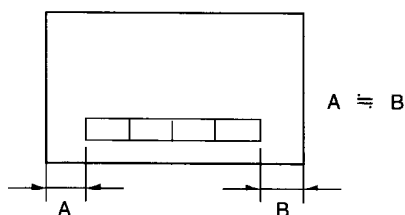
1. Enter service mode.
2. Confirm registration is well adjusted (especially center).
3. Push "Quick Focus" (Auto Convergence) button in the control panel.
4. If, Auto Convergence is successfully finished, then OK.
5. If not, please check the connection of the photo sensor and it's harness.

## 5-6. WHITE BALANCE ADJUSTMENT

1. Receive the monoscope signal and adjust the picture quality with the menu.
2. Adjust service mode S-BRIGHT so that the signal 10 IRE section barely glows.
3. Receive the all-white pattern signal.
4. Adjust the white balance with service mode G-CUTOFF and B-CUTOFF.
5. Adjust service mode S-BRIGHT so that the signal 100 IRE section barely glows.
6. Adjust the white balance with service mode G-DRIVE and B-DRIVE.
7. Repeatedly adjust the white balance for the minimum and maximum picture settings.

## 5-7. TEXT POSITION ADJUSTMENT

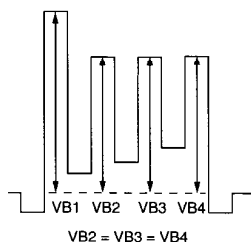
1. Receive RF signal with text.
2. Select item 86 (TXH) Text H position adjustment by commander.
3. Adjust H Position of Text.



## 5-8. PICTURE QUALITY ADJUSTMENTS

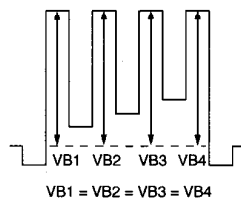
### SUB COLOR ADJUSTMENT (SC1, SC2)

1. Input a PAL color-bar.
2. Set to the following condition:  
PICTURE 90%, BRIGHTNESS 50%, COLOR 50%
3. Connect an oscilloscope to the pin ④ (B OUT) of CN405, AG board.
4. Set to Service Mode and select 35 SC1 with [1] and [4] of the commander then adjust to VB2=VB3=VB4 with [3] and [6].
5. Press [MUTING] → [0] of the commander to write the data.
6. Adjust 36 SC2 as step 2 to 5 when receiving NTSC color-bar.



### SUB HUE ADJUSTMENT (SH1, SH2)

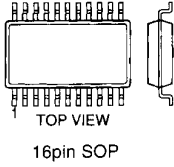
1. Input a PAL color-bar.
2. Set the following condition:  
PICTURE 90%, BRIGHTNESS 50%, COLOR 50%.
3. Connect an oscilloscope to the pin ④ (B OUT) of CN405, AG board.
4. Select 37 SH1 with [1] and [4] of the commander by setting to Service Mode and adjust to VB1=VB2=VB3=VB4 with [3] and [6].
5. Select Video1.



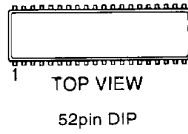
6. Input a PAL color-bar, video into video 1.
7. Adjust 38 SH2 as step 2 to 5.
8. Press [MUTING] → [0] of the commander to write the data.

## 6-5. SEMICONDUCTORS

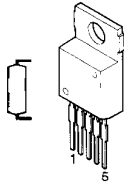
BA7606F  
CXA1315M  
CXA1875AM-T4  
HEF4053BT  
TDA4665T-T



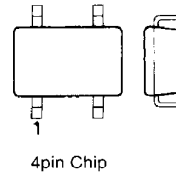
CXP86213-002S  
SAA5261



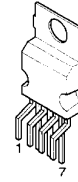
MC14052BF



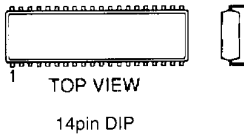
PST593C-MMP-4P



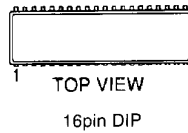
STV9379



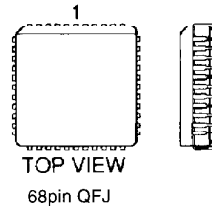
CA0007AD  
IR2112  
NJM2058D  
μPC339C



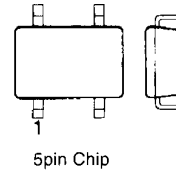
IR3M02  
IR3M02A



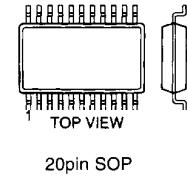
MSP3410D-PS-B4-T-ND



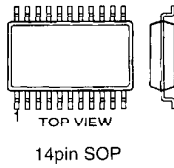
PST9143NL



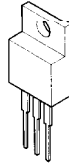
TDA8395T/N3



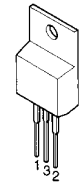
CA0007AM



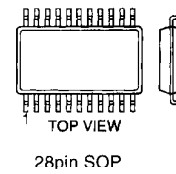
LM2940CT-5.0  
L7812CV  
NJM78M05FA  
PQ09RF2  
TA7812S  
μPC2405HF



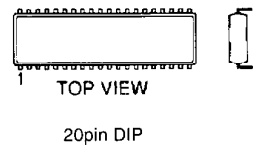
NJM79M05FA



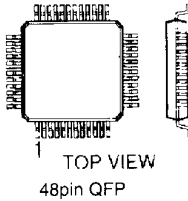
SDA9187-2XGEG



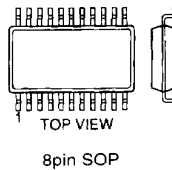
TDA8424



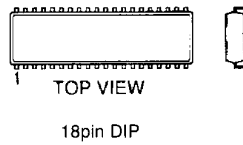
CXA1855Q  
MC141627FT



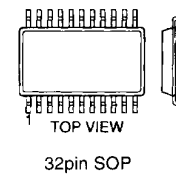
LM358D  
LM358DR-E2  
NJM4558M-TE2  
ST24C08FM6TR  
TL082CPS-E05  
TL082M  
μPC4558G2



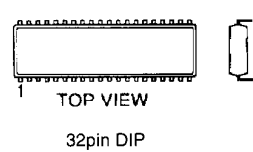
PA0053B



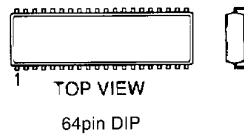
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SDA9189XGEGA132



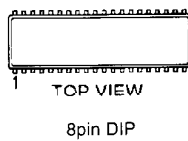
TDA9160A  
XR1071CP



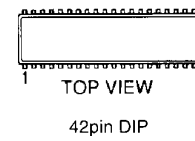
CXA2050S



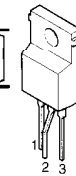
LM393P  
NJM4560D  
RC4560D  
TDA2822M  
TDA7264  
TOP209P  
μPC393C



PM0002B  
PM0011AS

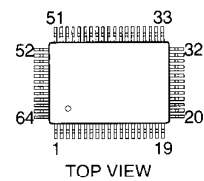


SE135N-LF12  
SE-135N

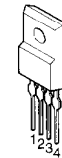


DTA144EKA-T146  
DTC114EK  
DTC114EKA-T146  
DTC124EK  
DTC124EKA-T146  
DTC143TKA-T146  
DTC144EKA  
DTC144EKA-T146  
2SA1037AK-T146-QR  
2SA1037AK-T146-R  
2SA1037K-T-146-QR  
2SA1162G  
2SC1623-L5L6  
2SC2412K-T-146-QR  
2SC2712-YG  
2SC2712-YG-TE85L

CXP85452-080Q-TL  
CXP85452-092Q-TL

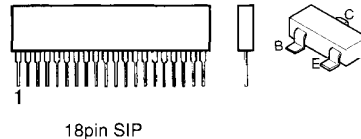


PQ05RF11



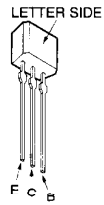
STK392-150

MARKING SIDE VIEW

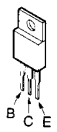




DTC144ESA  
2SA1175-HFE  
2SA1309A-QRSTA  
2SC2785-HFE  
2SC3311A-QRSTA



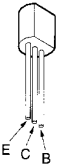
IRFI744G-LF  
2SA1837  
2SC4793  
2SC5022-02



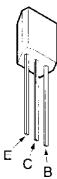
2SA1091-O



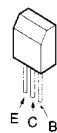
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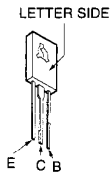
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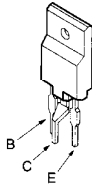
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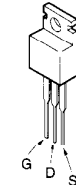
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2SC2688-LK



2SC4632LS-CB7  
2SD2539 (LBSONY-1)



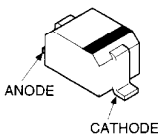
2SK2251-01-F19



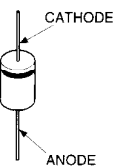
DAP202K



DTZ4.7C  
DTZ9.1  
UDZ-TE-17-3.9B  
UDZ-TE-17-4.7B  
UDZ-TE-17-9.1B  
1SS355  
1SS355TE-17



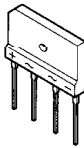
D1NL20-TR  
D2S4M



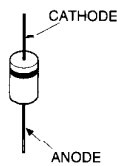
D10SC6M-4012



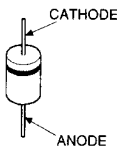
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D4SBS4-F  
D6SB60L  
RBA-406B



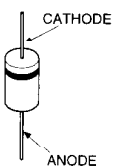
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ERC06-15S  
2SLA20F  
1SS133T-72  
1SS133T-77



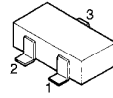
ERD29-08J



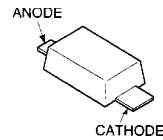
EL1Z  
EL1Z-V1  
GP08D  
GP08DPKG23  
MTZJ-T-77-9.1A  
RGP02-17EL-6433  
RGP02-17PKG23  
RGP02-20EL-6394  
RGP10GPKG23  
S2L40F  
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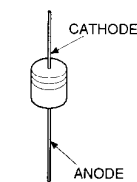
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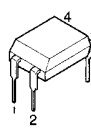
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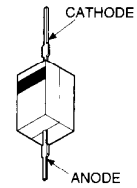
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MTZJ-T-77-3.6  
MTZJ-T-77-39  
MTZJ-T-77-5.1  
MTZJ-T-77-5.1B  
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MTZJ-T-77-7.5B  
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MTZJ-13  
MTZJ-13B  
MTZJ-33B  
MTZJ-33C  
MTZJ-7.5B  
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RD20ES-B2  
RD3.0ESB2  
RD3.0ES-T1B2  
RD3.6ES-B1  
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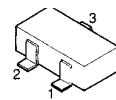
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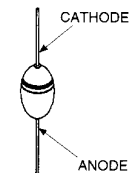
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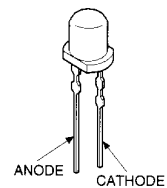
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U05G



SLA-580LT3F



## SECTION 7 EXPLODED VIEWS

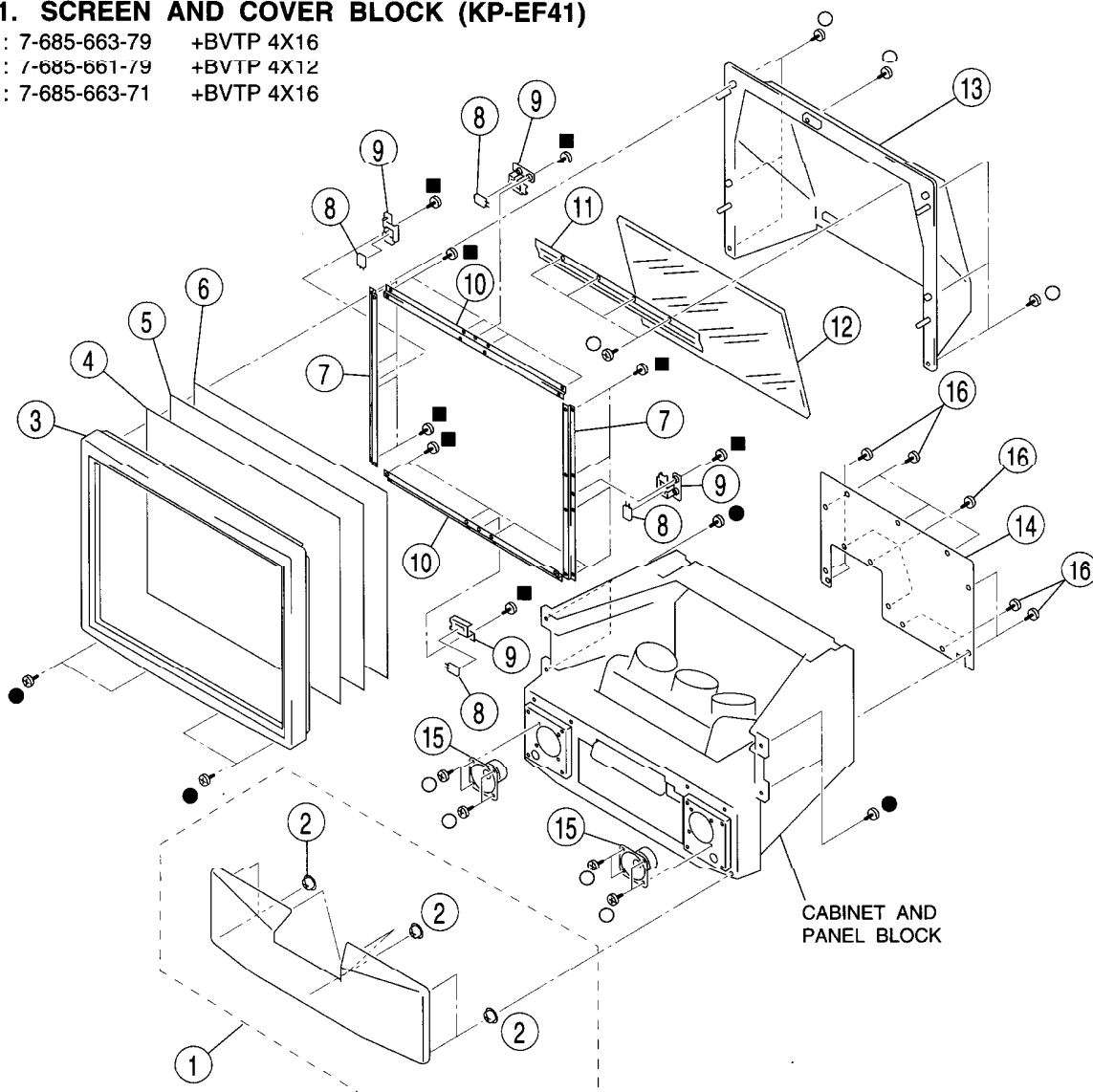
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

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

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

### 7-1. SCREEN AND COVER BLOCK (KP-EF41)

- : 7-685-663-79 +BVTP 4X16
- : 7-685-661-79 +BVTP 4X12
- : 7-685-663-71 +BVTP 4X16

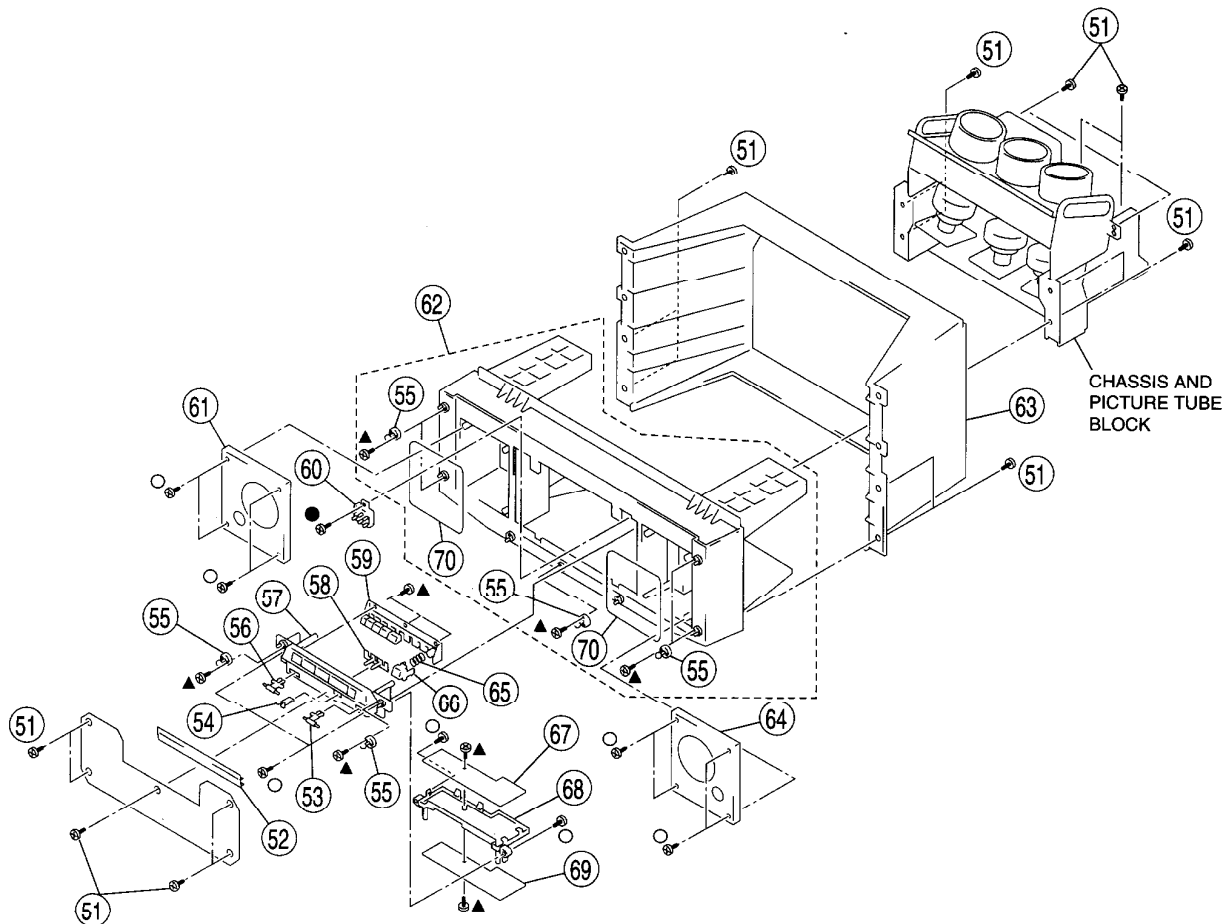


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
1	X-4035-350-1	GRILLE ASSY, SPEAKER	2	9	*4-063-173-01	HOLDER, SENSOR	
2	4-838-438-00	LATCH		10	*4-063-160-01	HOLDER (H), SCREEN	
3	X-4035-348-1	BEZNET ASSY		11	*4-054-837-01	HOLDER, MIRROR	
4	4-063-365-01	SCREEN, CONTRAST		12	4-063-153-01	MIRROR (41)	
5	4-063-063-11	PLATE (L), DIFFUSION		13	4-062-540-01	COVER, MIRROR	
6	4-063-064-11	PLATE (F), DIFFUSION		14	*4-063-177-01	BOARD (41), REAR	
7	*4-063-168-01	HOLDER (V), SCREEN		15	1-505-426-11	SPEAKER (10.6 CM)	
8	1-528-864-11	BATTERY, SOLAR		16	4-378-522-31	SCREW, TAPPING, HEXAGON HEAD	

## 7-2. CABINET AND PANEL BLOCK (KP-EF41)

- : 7-685-663-79 +BVTP 4X16  
 ● : 7-685-663-71 +BVTP 4X16  
 ▲ : 7-685-648-79 +BVTP 3X12

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

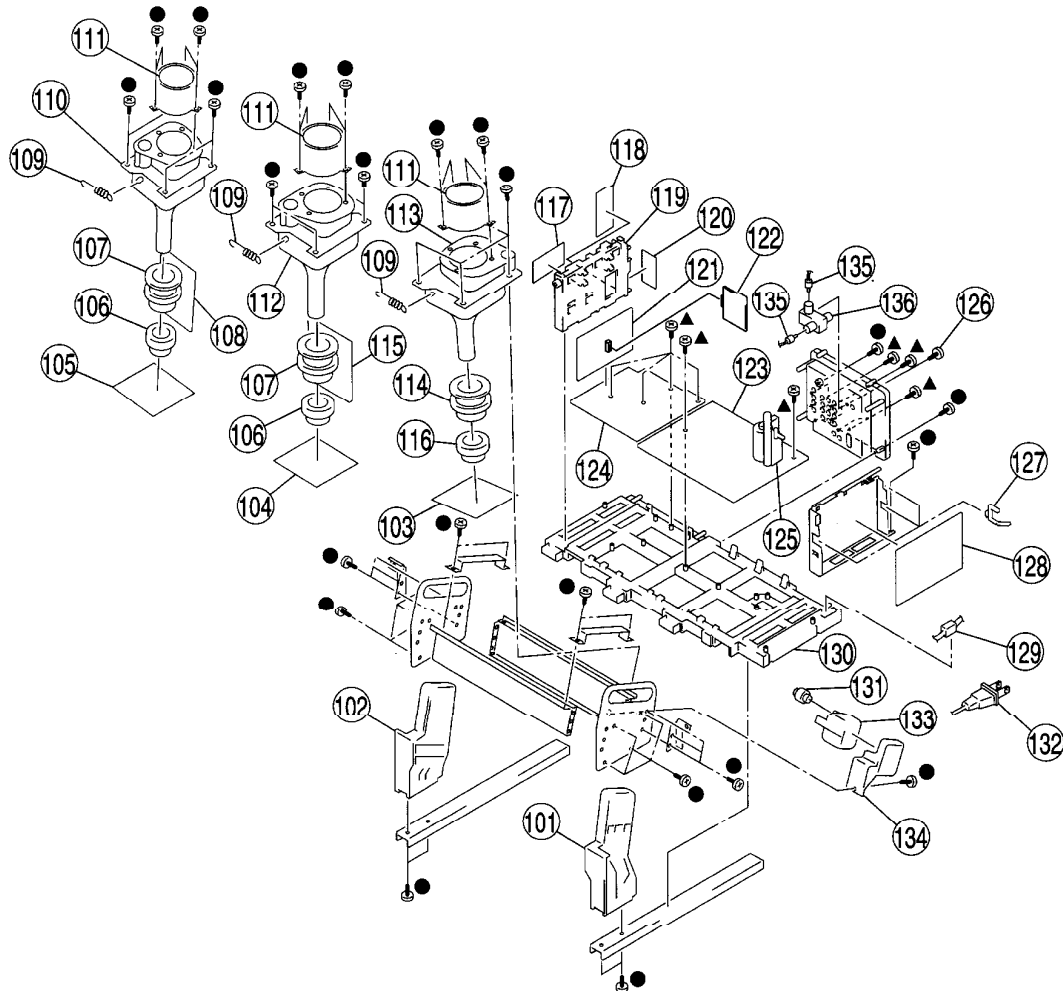


REF NO	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
51	4-378-522-31	SCREW, TAPPING, HEXAGON HEAD		61	*4-062-542-01	BOARD (L), BAFFLE	
52	4-063-172-11	DOOR		62	X-4035-351-1	CABINET ASSY, FRONT	55, 70
53	4-045-250-01	DAMPER		63	4-062-539-01	CABINET (REAR)	
54	4-047-464-01	CATCHER, PUSH		64	*4-062-543-01	BOARD (R), BAFFLE	
55	4-843-806-00	STRIKE		65	4-202-964-01	SPRING	
56	3-703-035-11	SHAFT, LID		66	4-063-165-01	BUTTON, POWER	
57	4-063-171-11	PANEL, CONTROL		67	*A-1372-413-A	H1 BOARD, COMPLETE	
58	4-063-164-01	GUIDE, LIGHT		68	*4-063-174-01	BRACKET (H)	
59	4-063-170-01	BUTTON, MULTI		69	*A-1375-169-A	H2 BOARD, COMPLETE	
60	▲ 1-223-925-41	RESISTOR ASSY (HIGH-VOLTAGE)		70	*4-063-151-01	SPACER (SP)	

### 7-3. CHASSIS AND PICTURE TUBE BLOCK (KP-EF41)

- : 7-685-663-71 +BVTP 4X16  
▲ : 7-685-648-79 +BVTP 3X12

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

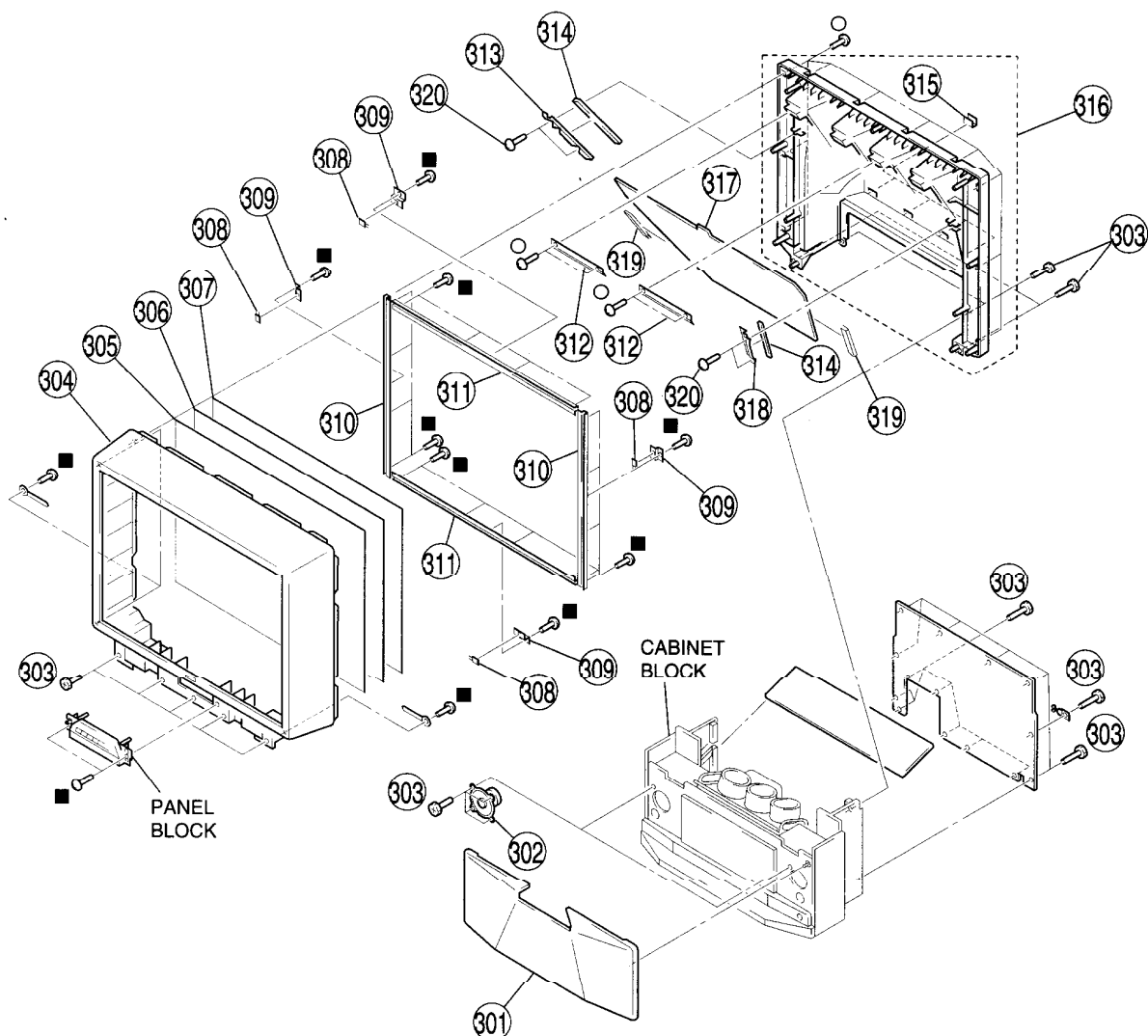


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
101	*4-062-545-01	STAY (R), SIDE		120	*A-1373-657-A	UG BOARD, COMPLETE	
102	*4-062-544-01	STAY (L), SIDE		121	*A-1298-316-A	AG BOARD, COMPLETE	
103	*A-1331-736-A	CB BOARD, COMPLETE		122	*A-1390-783-A	S BOARD, COMPLETE	
104	*A-1331-735-A	CG BOARD, COMPLETE		123	*A-1346-679-A	E BOARD, COMPLETE	
105	*A-1331-734-A	CR BOARD, COMPLETE		124	*A-1346-678-A	D BOARD, COMPLETE	
106	▲ 1-452-790-11	NECK ASSY		125	▲ 1-453-248-21	TRANSFORMER ASSY, FLYBACK (NX-4007//X4T4)	
107	▲ 1-451-455-11	DEFLECTION YOKE (R, G)		126	4-382-854-11	SCREW (M3X10), P, SW (+)	
108	*A-1390-784-A	ZR BOARD, COMPLETE		127	*4-316-015-00	HOLDER, WIRE	
109	4-048-142-11	SPRING, EXTENSION		128	*A-1316-354-A	G BOARD, COMPLETE	
110	▲ A-1501-259-A	MECHASEAL ASSY (R), SLANT		129	4-389-201-11	HOLDER, AC CORD	
111	4-056-258-01	LENS (DELTA 78)		130	*4-062-537-01	BRACKET, MAIN	
112	▲ A-1501-260-A	MECHASEAL ASSY (G), SLANT		131	4-373-137-01	CAP (Z), RUBBER	
113	▲ A-1501-261-A	MECHASEAL ASSY (B), SLANT		132	▲ 1-690-270-21	CORD, POWER (WITH CONNECTOR)	
114	▲ 1-451-455-21	DEFLECTION YOKE (B)		133	▲ 8-598-955-12	BLOCK ASSY, HIGH-VOLTAGE	
115	*A-1390-785-A	ZG BOARD, COMPLETE		134	*4-063-176-01	HOLDER, HVR	
116	▲ 1-452-909-31	MAGNET ASSY, 4 POLE		135	1-555-400-00	CABLE, PIN	
117	*A-1342-410-A	V2 BOARD, COMPLETE		136	1-251-372-21	BOOSTER, RF	
118	*A-1190-298-A	P1 BOARD, COMPLETE					
119	4-062-536-11	BRACKET (A)					

# 7-4. SCREEN AND COVER BLOCK (KP-EF53)

○ : 7-685-663-79 +BVTP 4X16

■ : 7-685-661-79 +BVTP 4X12

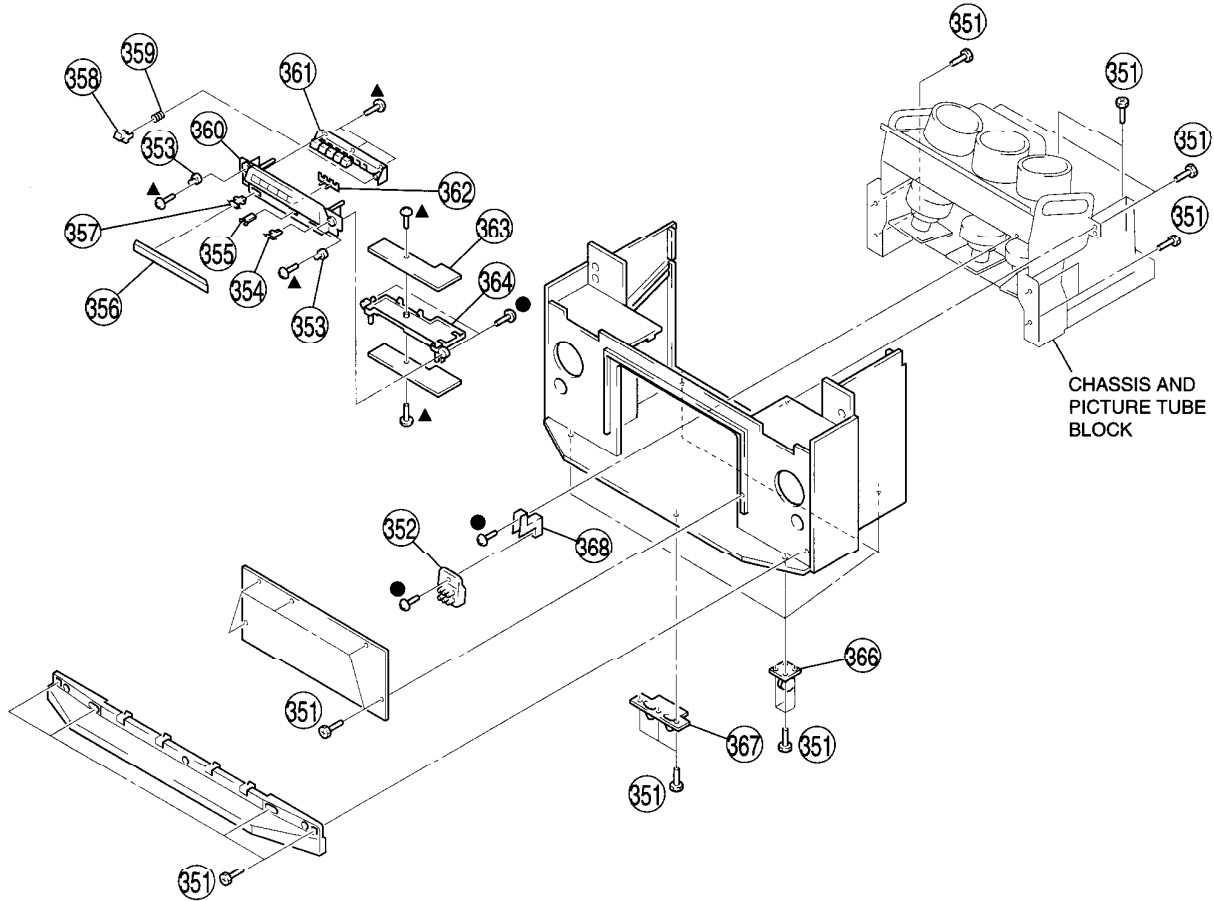


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
301	X-4035-511-1	GRILLE ASSY, SPEAKER		311	* 4-064-052-01	HOLDER (H), SCREEN	
302	1-505-573-11	SPEAKER (13 CM)		312	4-064-042-01	HOLDER, MIRROR	
303	4-378-522-31	SCREW, TAPPING, HEXAGON HEAD		313	* 4-051-790-02	HOLDER, MIRSD (L)	
304	X-4035-524-1	BEZNET ASSY (53)		314	* 4-049-098-01	CUSHION	
305	4-064-186-01	SCREEN, CONTRAST		315	4-048-150-01	CAP, HOLE	
306	4-064-185-01	PLATE (L), DIFFUSION		316	* X-4032-620-1	COVER ASSY, MIRROR	315
307	4 050 221 11	PLATE (R), DIFFUSION		317	4-004-186-01	MIRROR (53), REFLECTION	
308	1-528-864-11	BATTERY, SOLAR		318	* 4-051-789-02	HOLDER, MIRSD (R)	
309	* 4-063-173-01	HOLDER, SENSOR		319	4-033-775-41	PROTECTOR, MIRROR	
310	* 4-064-189-01	HOLDER (V53), SCREEN		320	4-340-851-02	SCREW (4X25) +PWH TAPPING	

## 7-5. CABINET AND PANEL BLOCK (KP-EF53)

- : 7-685-663-71 +BVTP 4X16  
▲ : 7-685-648-79 +BVTP 3X12

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

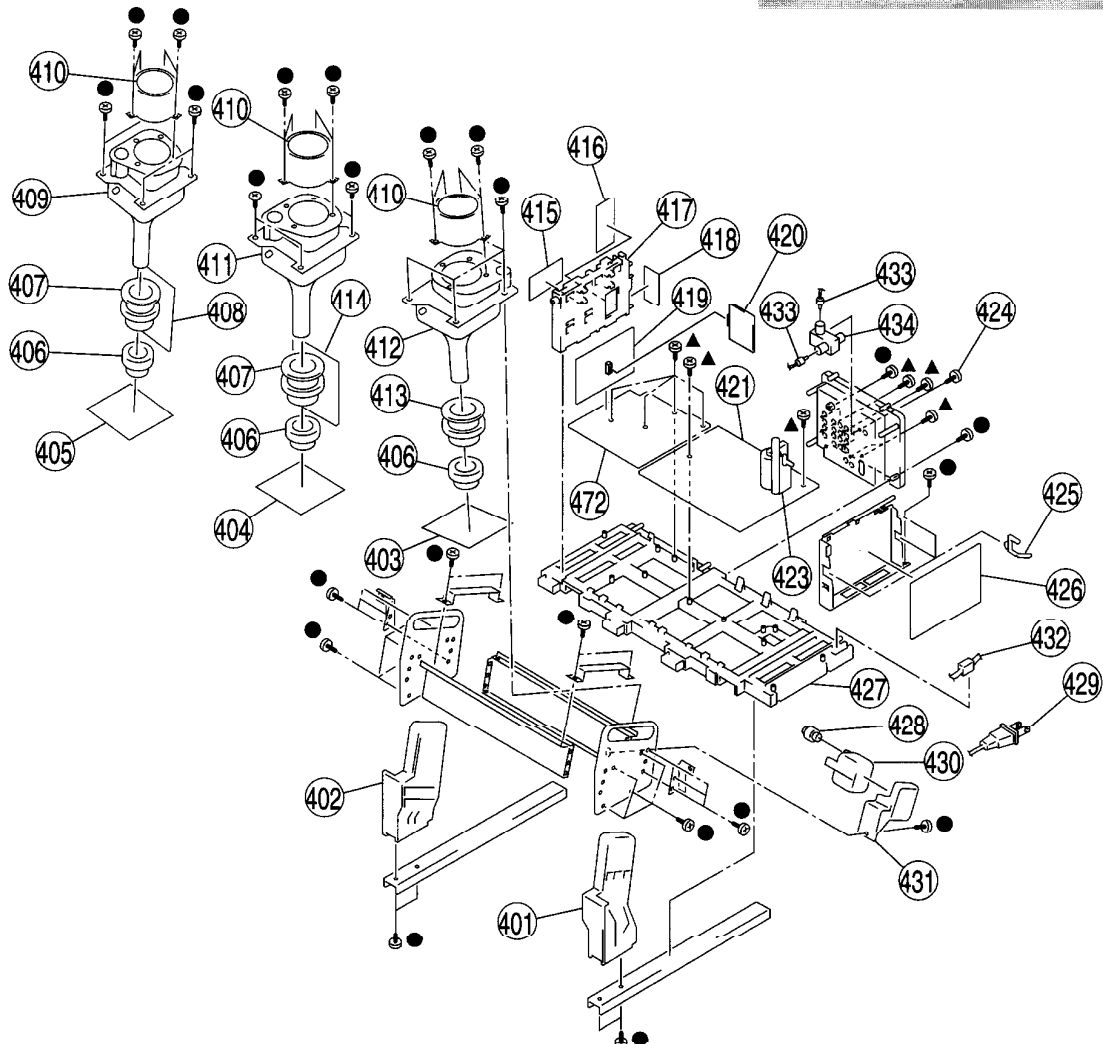


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
351	4-378-522-31	SCREW, TAPPING, HEXAGON HEAD		360	4-063-171-11	PANEL, CONTROL	
352	▲ 1-223-925-41	RESISTOR ASSY (HIGH-VOLTAGE)		361	4-063-170-01	BUTTON, MULTI	
353	4-843-806-00	STRIKE		362	4-063-164-01	GUIDE, LIGHT	
354	4-054-250-01	DAMPER		363	* A-1372-413-A	H1 BOARD, COMPLETE	
355	4-047-464-01	CATCHER, PUSH		364	* 4-063-174-01	BRACKET (H)	
356	4-063-172-11	DOOR		365	* A-1375-169-A	H2 BOARD, COMPLETE	
357	3-703-035-11	SHAFT, LID		366	4-040-755-01	CASTER (DIA. 30)	
358	4-063-165-01	BUTTON, POWER		367	4-048-175-01	FOOT, PLASTIC	
359	4-202-964-01	SPRING		368	* 4-054-825-01	BRACKET, FOCUS PACK	

## 7-6. CHASSIS AND PICTURE TUBE BLOCK (KP-EF53)

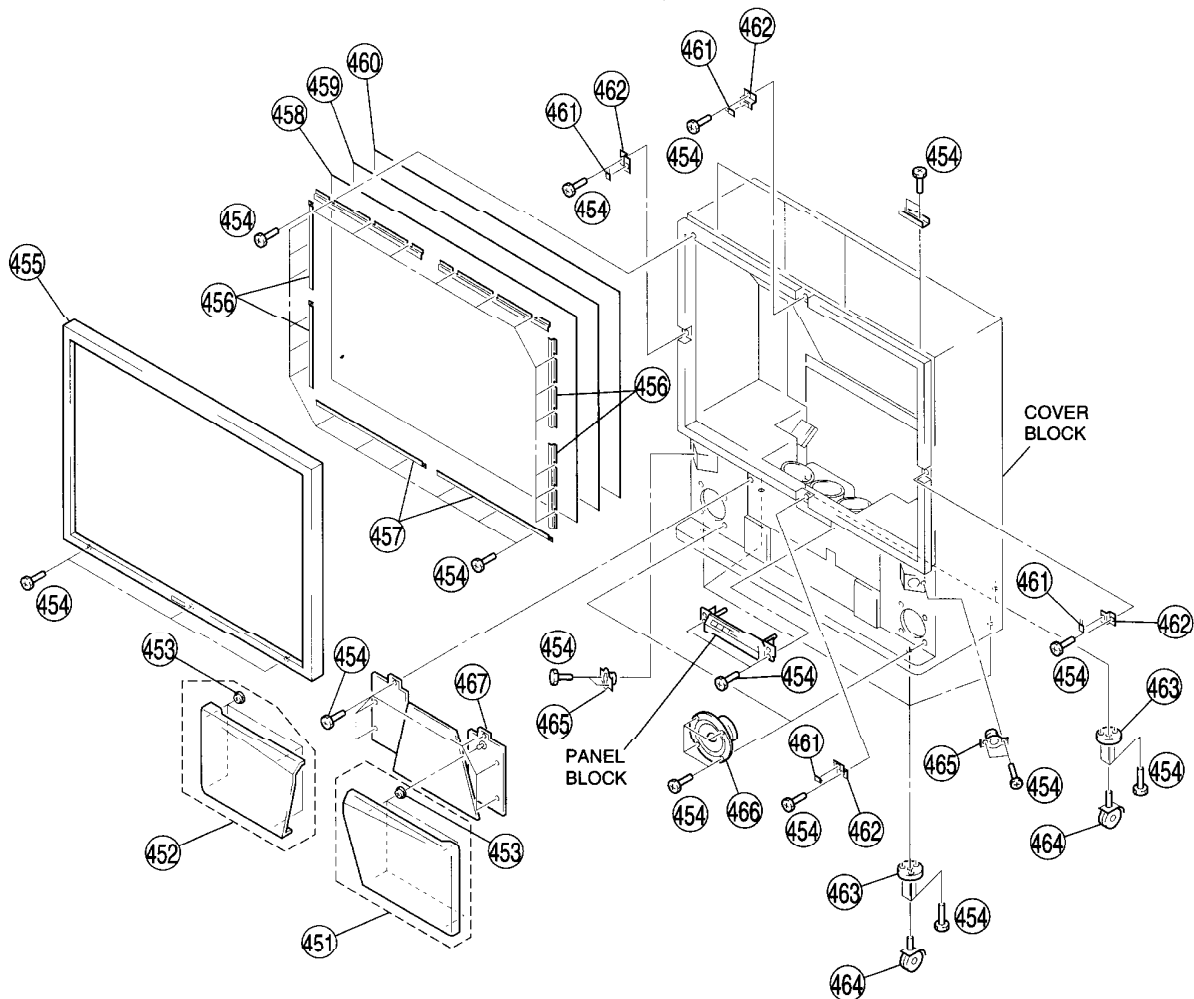
- : 7-685-663-71 +BVTP 4X16  
▲ : 7-685-648-79 +BVTP 3X12

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



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
401	* 4-062-545-01	STAY (R), SIDE		419	* A-1298-316-A	AG BOARD, COMPLETE	
402	* 4-062-544-01	STAY (L), SIDE		420	* A-1390-783-A	S BOARD, COMPLETE	
403	* A-1331-736-A	CB BOARD, COMPLETE		421	* A-1346-736-A	E BOARD, COMPLETE	
404	* A-1331-735-A	CG BOARD, COMPLETE		422	* A-1346-678-A	D BOARD, COMPLETE	
405	* A-1331-734-A	CR BOARD, COMPLETE		423	▲ 1-453-248-21	TRANSFORMER ASSY, FLYBACK (NX-4007//X4T4)	
406	▲ 1-452-790-11	NECK ASSY		424	4-382-854-11	SCREW (M3X10), P, SW (+)	
407	▲ 1-451-454-11	DEFLECTION YOKE (R, G)		425	* 4-316-015-00	HOLDER, WIRE	
408	* A-1390-784-A	ZR BOARD, COMPLETE		426	* A-1316-354-A	G BOARD, COMPLETE	
409	▲ 8-733-553-05	CRT 07MXC3 (R)		427	* 4-062-537-01	BRACKET, MAIN	
410	4-056-258-01	LENS (DELTA 78)		428	4-373-137-01	CAP (Z), RUBBER	
411	▲ 8-733-537-05	CRT 07MXC2 (G)		429	▲ 1-690-270-21	CORD, POWER (WITH CONNECTOR)	
412	▲ 8-733-528-05	CRT 07MAC3 (B) (GROUND SPRING)		430	▲ 8-598-955-12	BLOCK ASSY, HIGH-VOLTAGE	
413	▲ 1-451-455-41	DEFLECTION YOKE (B)		431	* 4-063-176-01	HOLDER, HVR	
414	* A-1390-785-A	ZG BOARD, COMPLETE		432	4-389-201-11	HOLDER, AC CORD	
415	* A-1342-410-A	V2 BOARD, COMPLETE		433	1-555-400-00	CABLE, PIN	
416	A-1190-298-A	P1 BOARD, COMPLETE		434	1-251-372-21	BOOSTER, RF	
417	4-062-536-11	BRACKET (A)					
418	* A-1373-657-A	UG BOARD, COMPLETE					

## 7-7. SCREEN BLOCK (KP-EF61)



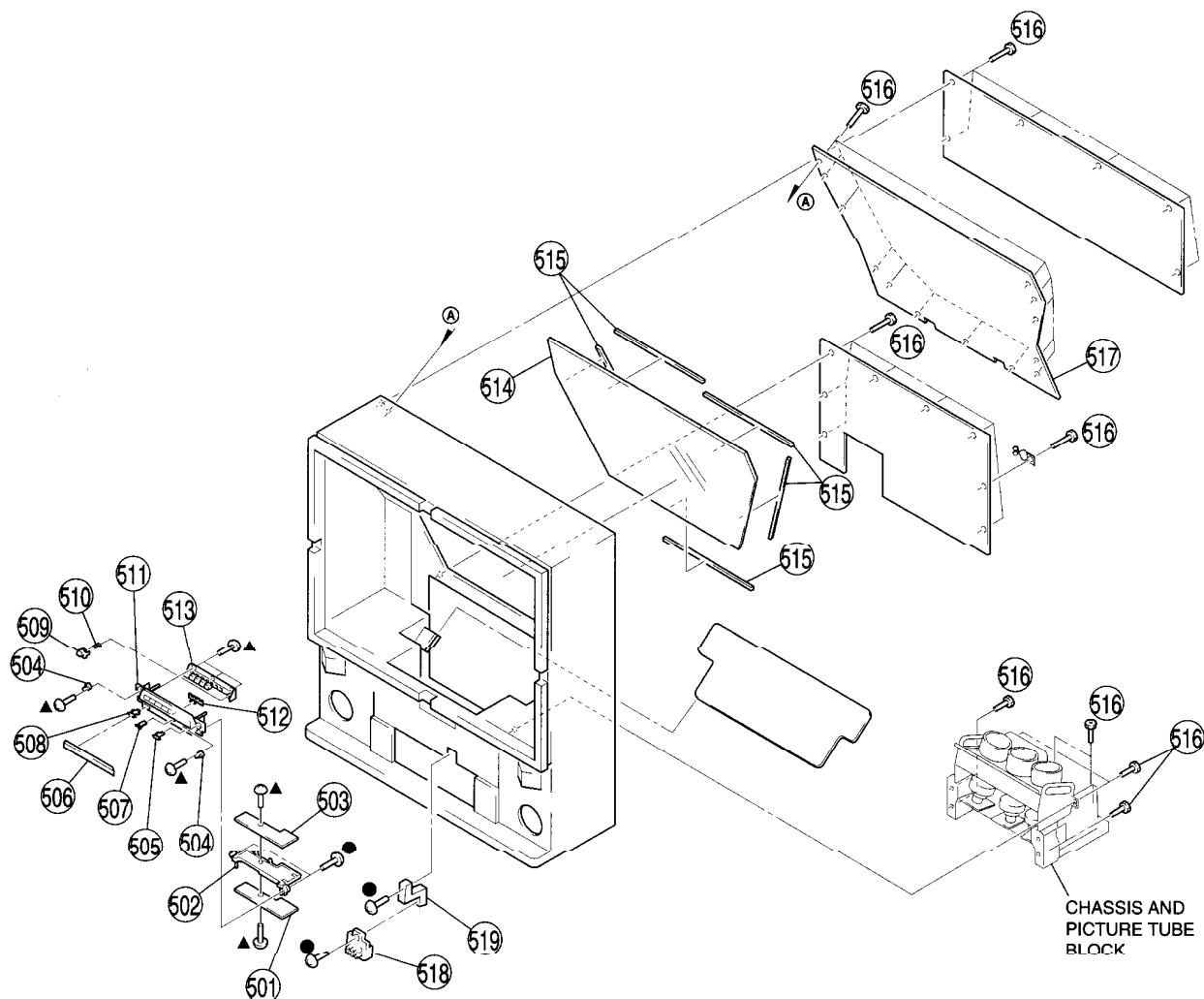
REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
451	X-4035-602-1	GRILLE (R) (61) ASSY, SPEAKER	453	460	4-040-123-11	PLATE (F), DIFFUSION	
452	X-4035-603-1	GRILLE (L) (61) ASSY, SPEAKER	453	461	1-528-864-11	BATTERY, SOLAR	
453	4-838-438-00	LATCH		462	* 4-063-173-01	HOLDER, SENSOR	
454	4-378-522-31	SCREW, TAPPING, HEXAGON HEAD		463	4-030-850-01	SOCKET, CASTER	
455	X-4035-605-1	FRAME (61) ASSY, SCREEN		464	4-040-508-01	CASTER	
456	4-064-633-01	HOLDER (S), SCREEN		465	1-505-703-11	SPEAKER (5 CM)	
457	4-064-634-01	HOLDER (L), SCREEN		466	1-505-704-11	SPEAKER (16 CM)	
458	4-064-629-01	SCREEN (61), CONTRAST		467	X-4035-607-1	COVER (61) ASSY, FRONT	
459	4-064-628-01	PLATE (L), DIFFUSION					



## 7-8. PANEL AND COVER BLOCK (KP-EF61)

- : 7-685-663-71 +BVTP 4X16  
 ▲ : 7-685-648-79 +BVTP 3X12

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

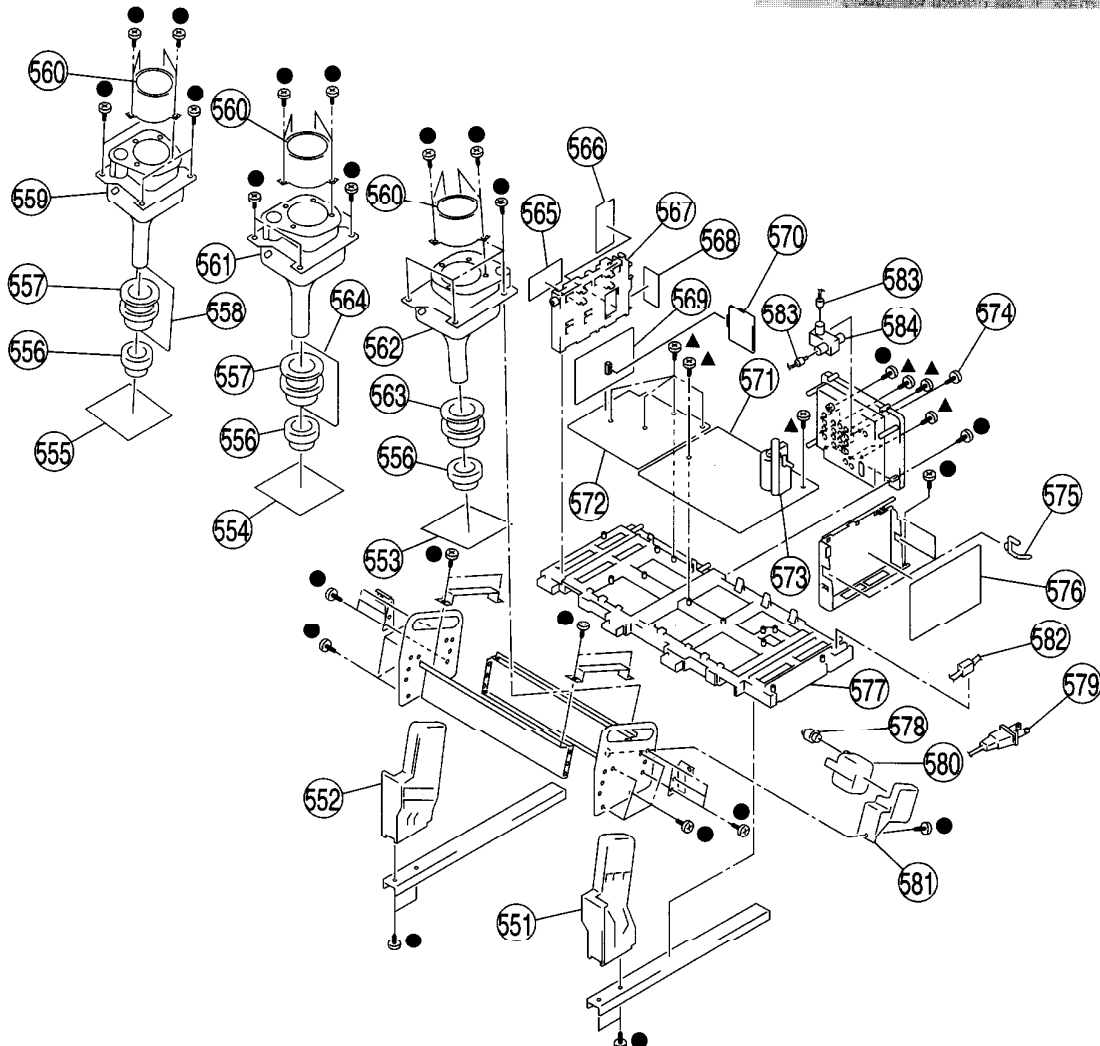


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
501	* A-1375-169-A	H2 BOARD, COMPLETE		511	4-063-171-11	PANEL, CONTROL	
502	* 4-063-174-01	BRACKET (H)		512	4-063-164-01	GUIDE, LIGHT	
503	* A-1372-413-A	H1 BOARD, COMPLETE		513	4-063-170-01	BUTTON, MULTI	
504	4-843-806-00	STRIKE		514	4-064-635-01	MIRROR (61), REFLECTION	
505	4-045-250-01	DAMPER		515	4-059-838-01	SPACER, MIRROR	
506	4-063-172-11	DOOR		516	4-378-522-31	SCREW, TAPPING, HEXAGON HEAD	
507	4-047-464-01	CATCHER, PUSH		517	4-064-640-01	COVER (61), MIRROR	
508	3-703-035-11	SHAFT, LID		518	▲ 1-223-925-41	RESISTOR ASSY (HIGH-VOLTAGE)	
509	4-063-165-01	BUTTON, POWER		519	* 4-054-825-01	BRACKET, FOCUS PACK	
510	4-202-964-01	SPRING					

## 7-9. CHASSIS AND PICTURE TUBE BLOCK (KP-EF61)

- : 7-685-663-71 +BVTP 4X16  
▲ : 7-685-648-79 +BVTP 3X12

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



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
551	*4-062-545-01	STAY (R), SIDE		569	*A-1298-316-A	AG BOARD, COMPLETE	
552	*4-062-544-01	STAY (L), SIDE		570	*A-1390-783-A	S BOARD, COMPLETE	
553	*A-1331-736-A	CB BOARD, COMPLETE		571	*A-1346-736-A	E BOARD, COMPLETE	
554	*A-1331-735-A	CG BOARD, COMPLETE		572	*A-1346-678-A	D BOARD, COMPLETE	
555	*A-1331-734-A	CR BOARD, COMPLETE		573	▲ 1-453-248-21	TRANSFORMER ASSY, FLYBACK (NX-4007//X4T4)	
556	▲ 1-452-790-11	NECK ASSY		574	4-382-854-11	SCREW (M3X10), P, SW (+)	
557	▲ 1-451-454-11	DEFLECTION YOKE (R, G)		575	*4-316-015-00	HOLDER, WIRE	
558	*A-1390-784-A	ZR BOARD, COMPLETE		576	*A-1316-354-A	G BOARD, COMPLETE	
559	▲ 8-733-555-05	CRT 07MXC4 (R)		577	*4-062-537-01	BRACKET, MAIN	
560	4-040-131-21	LENS (LINNIT POINT 6)		578	4-373-137-01	CAP (7), RUBBER	
561	▲ 8-733-537-05	CRT 07MXC2 (G)		579	▲ 1-690-270-21	CORD, POWER (WITH CONNECTOR)	
562	▲ 8-733-529-05	CRT 07MAC4 (B) (GROUND SPRING)		580	▲ 8-596-955-12	BLOCK ASSY, HIGH-VOLTAGE	
563	▲ 1-451-455-41	DEFLECTION YOKE (B)		581	*4-063-176-01	HOLDER, HVR	
564	*A-1390-785-A	ZG BOARD, COMPLETE		582	4-389-201-11	HOLDER, AC CORD	
565	*A-1342-410-A	V2 BOARD, COMPLETE		583	1-555-400-00	CABLE, PIN	
566	A-1190-298-A	P1 BOARD, COMPLETE		584	1-251-372-21	BOOSTER, RF	
567	4-062-536-11	BRACKET (A)					
568	*A-1373-657-A	UG BOARD, COMPLETE					