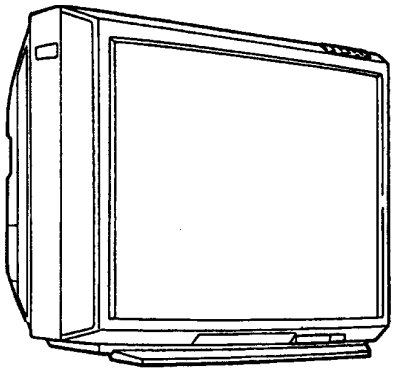
# KV-K29CF1
## RM-845P

# SERVICE MANUAL

*PX Model*
*Chassis No. SCC-G98A-A*



# G3F CHASSIS

| MODELS OF THE SAME SERIES | |
|---|---|
| KV-K29CF1 | KV-K21MF1/K25MF1 KV-K25MF1J/KV-K29MF1J |
| KV-K29MF1 | |
| KV-K25SN21/K29SN21 | |

## SPECIFICATIONS

| | |
|---|---|
| Power requirements | 110-240 V AC, 50/60Hz |
| Power consumption | 171 W |
| Television system | B/G, I, D/K, M |
| Color system | PAL, PAL 60, SECAM, NTSC 4.43, NTSC 3.58 |
| Channel coverage | B/G<br>VHF: E2 to E12/UHF : E21 to E69/<br>CATV : S01 to S03, S1 to S41<br>I<br>UHF : B21 to B68/<br>CATV : S01 to S03, S1 to S41<br>D/K<br>VHF: R1 to R12/UHF : R21 to R60/<br>CATV : S01 to S03, S1 to S41<br>M<br>VHF: A2 to A13/UHF : A14 to A79/<br>CATV : A-8 to E, G to W+25, W+27 to W+84 |
| Antenna | 75-ohm external antenna terminal for VHF/UHF |
| Audio output (speaker) | 13W×2 |
| Number of terminal | Video Input : 3 Output : 1<br>Audio Input : 3 Output : 1<br>S1-Video Input : 2<br>Y : 1 Vp-p, 75 ohms, unbalanced, sync negative<br>G : 0.286 Vp-p, 75 ohms |
| Picture tube | Super Trinitron |
| Tube size | 29-inch measured diagonally |
| Screen size | 68-cm measured diagonally |
| Dimensions (W/H/D) | 694×578×527 mm |
| Weight | 50 kg |
| Supplied accessories | Remote Commander RM-845P (1)<br>Size AA (R6) battery (1)<br>U/V mixer |
| Optional accessories | TV stand SU-K1G<br>Magic Commander RM-829, RM-848 |

Design and specifications are subject to change without notice.

MICROFILM

TRINITRON® COLOR TV

SONY®

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**CAUTION**

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

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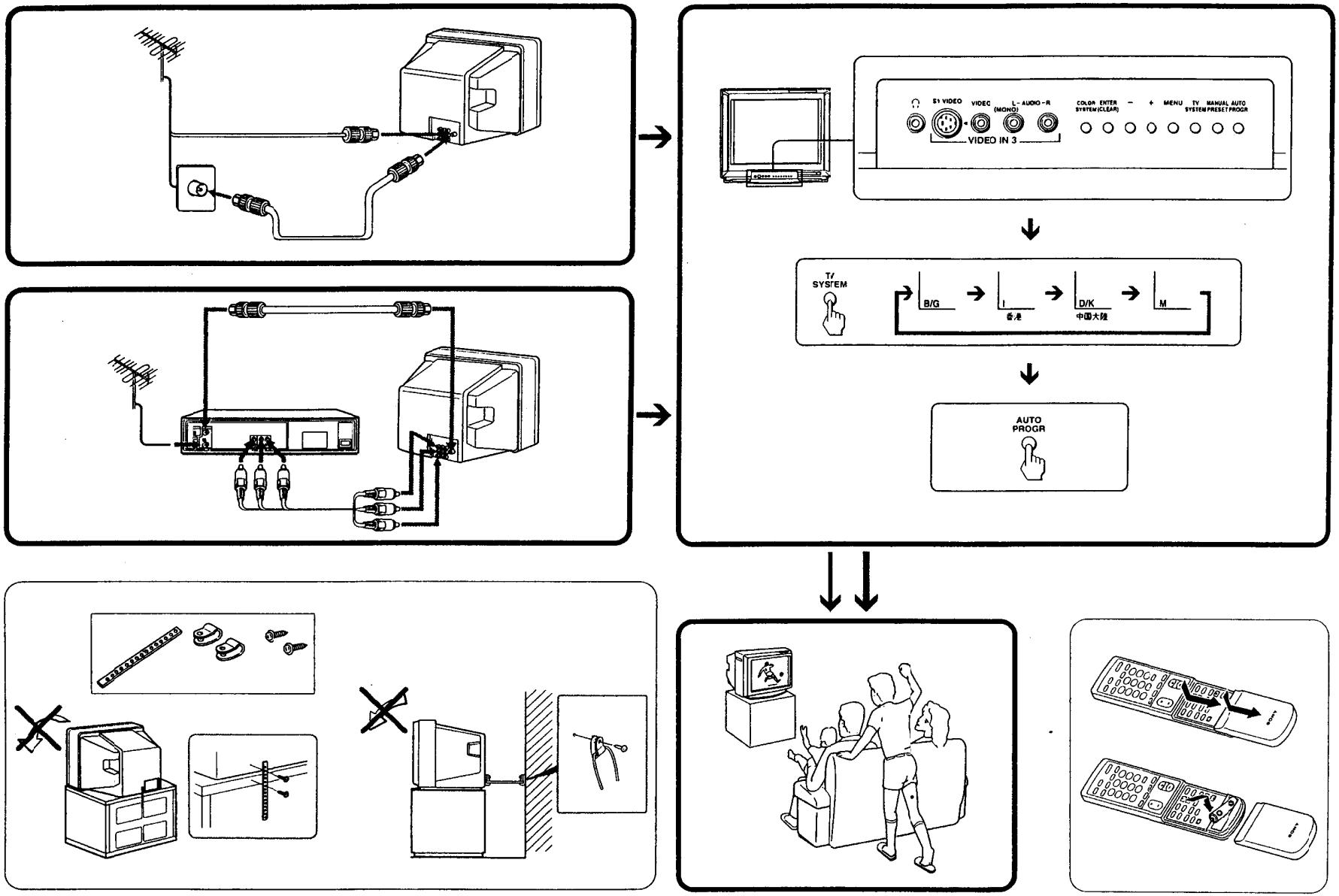
The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remein as in the manual.

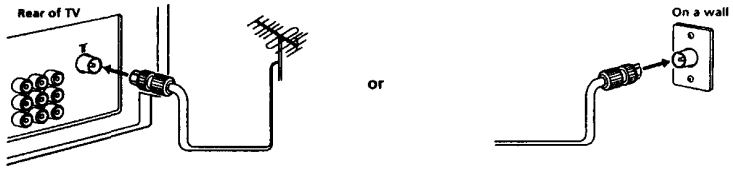
# SECTION 1
# GENERAL



# 1-1. HOOKING UP

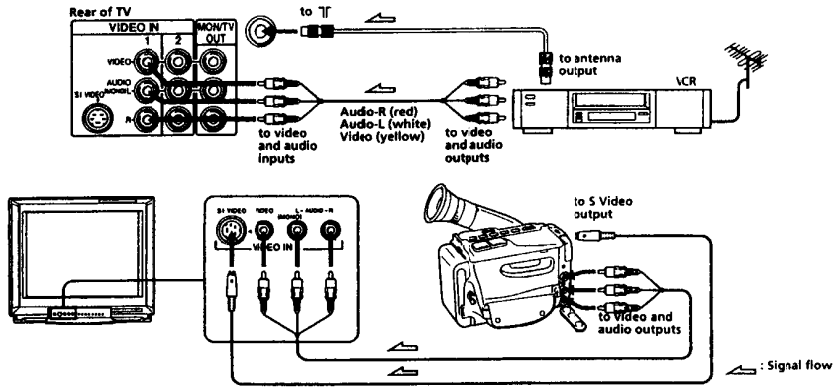
## Connecting a VHF antenna or a combination VHF/UHF antenna — 75-ohm coaxial cable (round)

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




## Hooking up to optional equipment

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




**When connecting a monaural VCR**
Connect the yellow plug to VIDEO and the black plug to AUDIO-L (mono).

**If both S1-Video and video signals are input**
The S1-Video input signal is selected. To view a video signal, disconnect the S1-Video connection.

**Note on the S1-Video signal**
When inputting the S1-Video signal through the VIDEO IN 1 or VIDEO IN 3 jack, set wide mode to OFF if you do not want to display the picture in wide mode (see page 17).

**Note on the video input**
When no signal is input, the screen becomes blue.



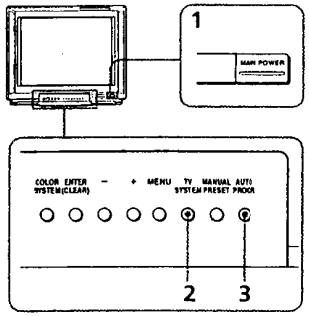


# 1-2. PRESETTING CHANNELS

You can preset TV channels easily by storing all the receivable channels automatically. You can also preset channels manually or disable program positions.

## Presetting channels automatically

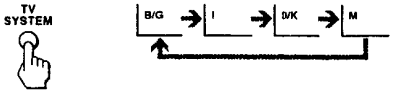
You can preset up to 100 TV channels in numerical sequence from program position 1.



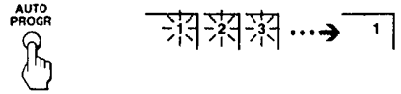

**1 Press MAIN POWER.**

When the TV is in standby mode after pressing MAIN POWER, press POWER on the TV or remote commander.

**2 Press TV SYSTEM to select your local TV system.**




**3 Press AUTO PROGR.**




**To start presetting channels automatically from the specified program position**

1 Press MANUAL PRESET.
2 Press TV SYSTEM to select your local TV system.
3 Press PROGR +/– to select the program position.
4 Press AUTO PROGR.

## Presetting channels manually

To change the program position for a channel or to receive a channel with a weak signal, preset the channel manually.
Example: To preset a channel in program position 8

**1 Press MANUAL PRESET.**

**2 Press PROGR +/– until "8" appears.**

**3 Press TV SYSTEM to select your TV system.**

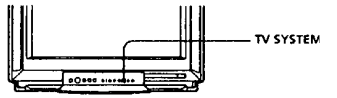
**4 Press + or – until the channel you want appears.**

**5 Press MANUAL PRESET.**

**To preset other channels**
Repeat steps 1 to 5.

**If the TV system is not properly selected**
The color of the picture may be poor and/or the sound may be noisy. In this case, select the appropriate TV system.

1 Press PROGR +/– to select the program position.
2 Press TV SYSTEM until the picture and sound become normal.




**Note**
- The setting of the TV SYSTEM is memorized for each program position.

## Disabling program positions

By disabling unused or unwanted program positions, you can skip those position when you press PROGR +/–.
Example: To disable program position 8

**1 Press PROGR +/– until "8" appears.**

**2 Press MANUAL PRESET.**

**3 Press ENTER (CLEAR) on the TV.**
To disable other program positions, repeat steps 1 to 3.

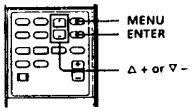
**4 Press MANUAL PRESET.**

**To cancel the skip setting**
Preset the channel manually or automatically again.



# 1-3. CHANGING THE MENU LANGUAGE

If you prefer Chinese to English, you can change the menu language. You can use buttons on both the remote commander and the TV.




**1 Press MENU.**

**2 Press △ + or ▽ – to move the cursor (▶) to LANGUAGE.**

**3 Press ENTER.**

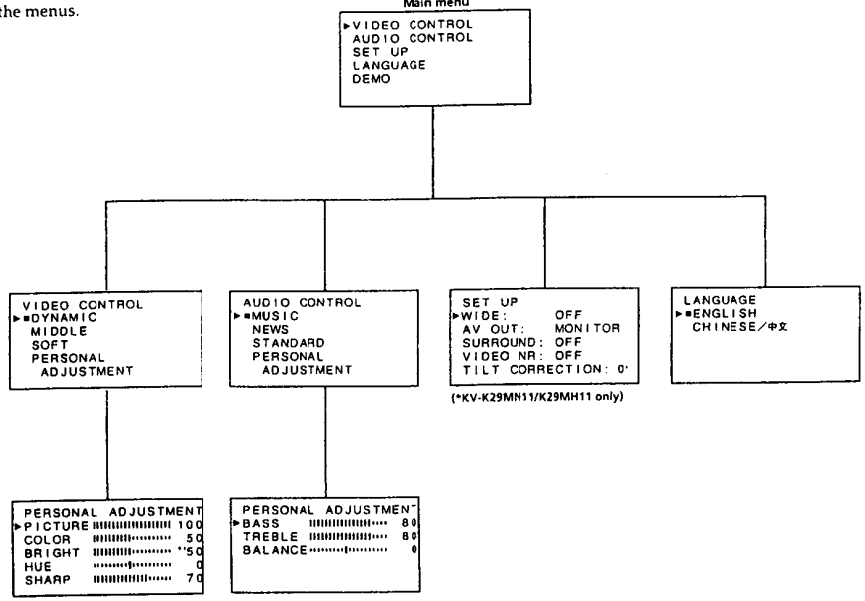
**4 Press △ + or ▽ – to select CHINESE.**

**5 Press ENTER.**

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

# 1-4. INTRODUCING THE MENU

You can use the on-screen menus to set the picture quality, sound, and other settings. You can use buttons on both the remote commander and the TV to operate the menus.




(*KV-K29MN11/K29MH11 only)

## Getting back to the previous menu

**Move the cursor (▶) up to the first line of each menu (except the main menu), and press ENTER.**

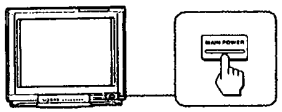
## Cancelling the menu screen

**Press MENU.**

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

## 1-5. WATCHING THE TV

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

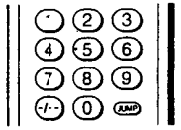


When the TV is in standby mode after pressing MAIN POWER, press POWER on the TV or remote commander.

**2 Select the TV channel you want to watch.**

**To select a channel directly**

Press a number button.



To select a two-digit channel, press "-/--" before the number buttons.

For example: to select channel 25, press "-/--," then "2" and "5."

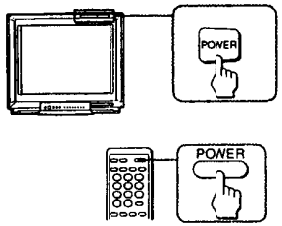
**To scan through channels**

Press PROGR +/– until the channel you want appears.

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

### Switching off the TV

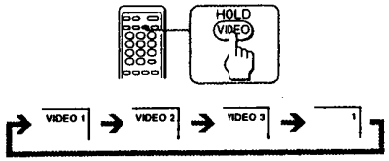
To switch off the TV temporarily, press POWER.



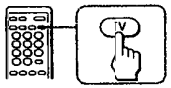

To switch off the TV completely, press MAIN POWER. If the main power is turned off in standby mode, the STANDBY indicator continues to light up for a while.

### Watching the video input

**Press VIDEO/HOLD.**

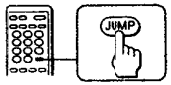



**To watch TV, press TV.**



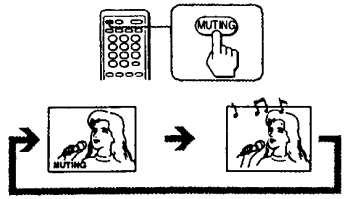

### Switching back quickly to the previous channel

**Press JUMP.**



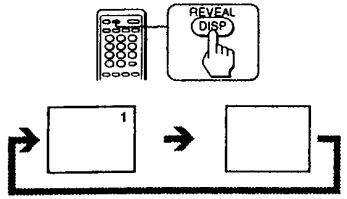

### Muting the sound

**Press MUTING.**




### Displaying on-screen information

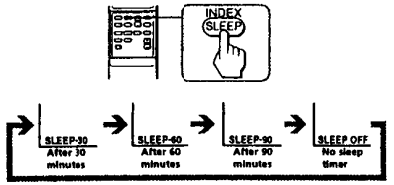
**Press DISP/REVEAL.**




### Setting the Sleep Timer

You can set the TV to turn off automatically after the length of time you specify elapses.

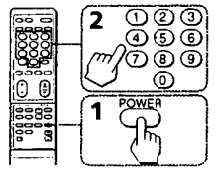
**Press SLEEP/INDEX.**




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

## 1-6. SETTING THE REMOTE COMMAND MODE

You can use the supplied remote commander to operate this TV and Sony video equipment, such as a VCR or multi disc player. To operate Sony video equipment, first set the remote command mode for the video equipment you want to use.

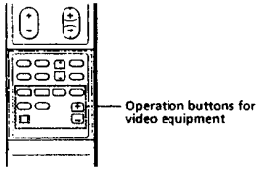



**1 Press and hold the POWER button.**

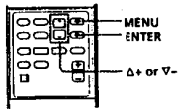
**2 Press the number buttons that correspond to the remote command mode.**

| Mode Number buttons | Remote command mode |
|---|---|
| 0 then 1 | VTR1 (e.g. Beta format VCR) |
| 0 then 2 | VTR2 (e.g. 8 mm format VCR) |
| 0 then 3 | VTR3 (e.g. VHS format VCR) |
| 0 then 4 | MDP (multi disc player) |

After setting the remote command mode, you can use the following buttons to operate the video equipment.



## 1-7. ADJUSTING THE PICTURE




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

```
▶VIDEO CONTROL
 AUDIO CONTROL
 SET UP
 LANGUAGE
 DEMO
```

**2** **Press Δ+ or ∇– to move the cursor (▶) to VIDEO CONTROL.**

```
▶VIDEO CONTROL
 AUDIO CONTROL
 SET UP
 LANGUAGE
 DEMO
```

**3** **Press ENTER.**

```
 VIDEO CONTROL
▶■DYNAMIC
  MIDDLE
  SOFT
  PERSONAL
    ADJUSTMENT
```

**4** **Press Δ+ or ∇– to select the setting, and press ENTER.**

| Select | To |
|---|---|
| DYNAMIC | Display more contrast picture |
| MIDDLE | Display normal contrast picture |
| SOFT | Display picture suitable for movies and video games |
| PERSONAL | Display the picture that is adjusted using ADJUSTMENT |
| ADJUSTMENT | Make specific adjustments. See "Adjusting the picure precisely." |

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

### Adjusting the picture precisely

You can adjust the picture quality precisely with the ADJUSTMENT option. The adjusted settings are stored in the PERSONAL option.

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

**2** **Press Δ+ or ∇– to move the cursor (▶) to VIDEO CONTROL, and press ENTER.**

**3** **Press Δ+ or ∇– to move the cursor (▶) to ADJUSTMENT, and press ENTER.**

**4** **Press Δ+ or ∇– to move the cursor (▶) to the item you want to adjust, and press ENTER.**

```
 PERSONAL ADJUSTMENT
▶PICTURE ||||||||||||||||| 100
 COLOR   ||||||||||||||||   50
 BRIGHT  ||||||||||||||||   50
 HUE     ||||||||||||||||    0
 SHARP   |||||||||||||||    70
```

**5** **Press Δ+ or ∇– to adjust the item, and press ENTER.**

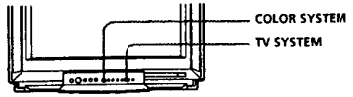
| Item | Press Δ+ to | Press ∇– to |
|---|---|---|
| PICTURE | Increase picture contrast | Decrease picture contrast |
| COLOR | Increase color intensity | Decrease color intensity |
| BRIGHT | Brighten the picture | Darken the picture |
| HUE | Make skin tones become greenish | Make skin tones become reddish |
| SHARP | Sharpen the picture | Soften the picture |

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

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

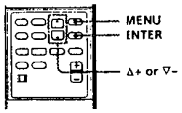
**Note**
- You can adjust HUE for NTSC system only.

**If the color of the picture is abnormal**
When receiving programs through the Ψ terminal: Press TV SYSTEM or COLOR SYSTEM until the color becomes normal.




**Note**
- Normally set COLOR SYSTEM to AUTO.

## 1-8. ADJUSTING THE SOUND




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

```
▶VIDEO CONTROL
 AUDIO CONTROL
 SET UP
 LANGUAGE
 DEMO
```

**2** **Press Δ+ or ∇– to move the cursor (▶) to AUDIO CONTROL.**

```
 VIDEO CONTROL
▶AUDIO CONTROL
 SET UP
 LANGUAGE
 DEMO
```

**3** **Press ENTER.**

```
 AUDIO CONTROL
▶■MUSIC
  NEWS
  STANDARD
  PERSONAL
    ADJUSTMENT
```

**4** **Press Δ+ or ∇– to select the sound that you want, and press ENTER.**

| Select | To |
|---|---|
| MUSIC | Listen to music programs. |
| NEWS | Listen to news programs. A person's voice can be heard clearly. |
| STANDARD | Listen to sound other than music or news. |
| PERSONAL | Listen to the sound that is adjusted using ADJUSTMENT. |
| ADJUSTMENT | Make specific settings. See "Adjusting the sound precisely." |

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

## Adjusting the sound precisely

You can adjust the sound precisely with the ADJUSTMENT option. The adjusted settings are stored in the PERSONAL option.

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

**2** **Press △+ or ▽- to move the cursor (▶) to AUDIO CONTROL, and press ENTER.**

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

**4** **Press △+ or ▽- to move the cursor (▶) to the item you want to adjust, and press ENTER.**

**5** **Press △+ or ▽- to adjust the item, and press ENTER.**

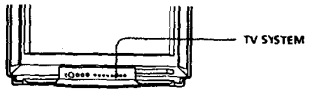
| Item | Press △+ to | Press ▽- to |
|---|---|---|
| BASS | Increase the bass sound | Decrease the bass sound |
| TREBLE | Increase the treble sound | Decrease the treble sound |
| BALANCE | Increase the volume of right speaker | Increase the volume of left speaker |

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

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

**If the sound is distorted or noisy**

When receiving programs through the 'I' terminal:
Press TV SYSTEM until the sound becomes clear.

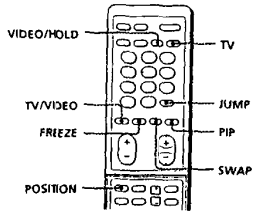





# 1-9. WATCHING TWO PICTURES SIMULTANEOUSLY

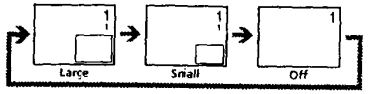
■ *KV-K29CF1 only*

With this function you can display a Picture In Picture (PIP) screen (small picture) within the main picture of a TV program or a video input.




## Displaying PIP

**Press PIP.**




The channels are displayed as follows:
Main screen: green
PIP screen: white

**Selecting a TV program or video in the main screen**

To select a TV program, press TV and select the channel.
To select a video, press VIDEO/HOLD to select a video input.

**Selecting a TV program or video in the PIP screen**

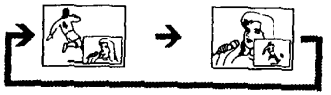
To select a TV program, press TV/VIDEO to select TV then select the channel.
To select a video, press TV/VIDEO to select a video input.

**Note**

- You can display different TV programs simultaneously using the VCR's built-in tuner.

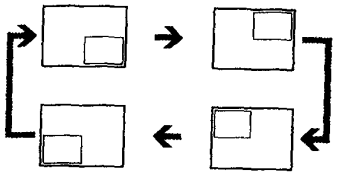
## Swapping pictures between the main and PIP screens

**Press SWAP.**



## Changing the position of the PIP screen

**Press POSITION.**



## Freezing the PIP screen

**Press FREEZE.**

To restore the normal picture, press FREEZE again.

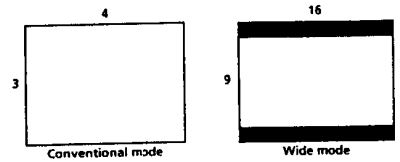
**Notes**

- When you display a VCR picture on the PIP screen at a speed other than normal speed, the picture may be noisy depending on the VCR. The picture can be improved by selecting the smaller size of the PIP screen.
- If you display different color systems (PAL, PAL 60, SECAM, NTSC) on the main screen and the PIP screen, the size of the PIP screen may be different and the PIP picture may be noisy. This is not caused by the malfunction of the TV.

# 1-10. CUSTOMIZING THE TV (SET UP)

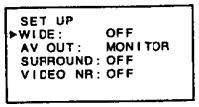
## Setting wide mode

When receiving the signal conforming to wide mode (S1-Video signal), you can change the size of the picture on the screen.




**1 Press MENU.**

**2 Press Δ+ or ∇– to select SET UP, and press ENTER.**




**3 Press Δ+ or ∇– to select WIDE, and press ENTER.**

**4 Press Δ+ or ∇– to select the wide mode to suit the size of the picture you want to display on the TV screen.**

| Select | To |
|---|---|
| ON | Display the picture on the screen in wide mode |
| AUTO | Display the picture on the screen in wide mode automatically when receiving the S1-Video signal through the S1-Video input jack |
| OFF | Display the picture on the screen in conventional size |

**Note**

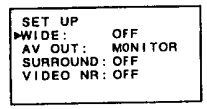
- When the picture is in wide mode, he bright lines which are used for adjusting the CRT at optimum level appear at the top of the screen.

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

You can select the output signal from the MON/TV OUT jacks at the rear of the TV :o the TV signal or the signal of the picture you are watching as a monitor.

**1 Press MENU.**

**2 Press Δ+ or ∇– to select SET UP, and press ENTER.**




**3 Press Δ+ or ∇– to select AV OUT, and press ENTER.**

**4 Press Δ+ or ∇– to select the output signal, and press ENTER.**

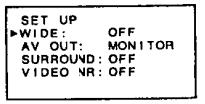
| Select | To |
|---|---|
| TV | Output the TV signal. |
| MONITOR | Output the signal of the picture you are watching as a monitor. |

## Selecting the surround sound

You can enjoy a surround sound effect that is like being in a music hall when receiving stereo signals.

**1 Press MENU.**

**2 Press Δ+ or ∇– to select SET UP, and press ENTER.**




**3 Press Δ+ or ∇– to select SURROUND, and press ENTER.**

**4 Press Δ+ or ∇– to turn the surround sound on or off, and press ENTER.**

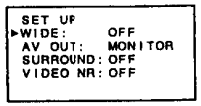
| Select | To |
|---|---|
| ON | Listen to surround sound that is effective for stereo signals |
| SPACE | Listen to surround sound that is effective for monaural signals |
| OFF | Turn off surround sound |

## Reducing the noise of the picture

You can reduce the noise level of the picture when the TV receives a weak signal or when you play a videotape that is in poor condition.

**1 Press MENU.**

**2 Press Δ+ or ∇– to select SET UP, and press ENTER.**




**3 Press Δ+ or ∇– to select VIDEO NR, and press ENTER.**

**4 Press Δ+ or ∇– to turn the noise reduction on or off, and press ENTER.**

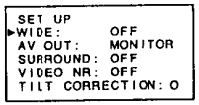
## Adjusting the tilt of the picture

■ *KV-K29SN21/K29CF1 only*

You can adjust the tilt of the picture if it is not aligned to the TV screen. This happens when you set the TV in the direction with effect of the earth's magnetic fields.

**1 Press MENU.**

**2 Press Δ+ or ∇– to select SET UP, and press ENTER.**




**3 Press Δ+ or ∇– to select TILT CORRECTION, and press ENTER.**

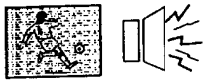
**4 Press Δ+ or ∇– to select the most suitable value to align the picture position.**

TILT CORRECTION : -3 ← –2 ← –1 ← 0 → +1 → +2 → +3
∇– Δ+

## 1-11. TROUBLESHOOTING

If you have any problem, read this manual again and check the countermeasures for each symptom listed below.
If the problem persists, contact your nearest authorized service center or dealer.

**Snowy picture**
**Noisy sound**



➡Check the antenna.
➡Check the antenna connection on the TV and on the wall.
➡Check the TV system setting.

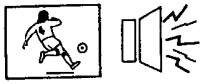
**Dotted lines or stripes**

➡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"**

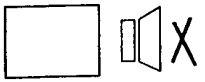
➡This may be caused by reflections from nearby mountains or buildings. A highly directional antenna may improve the picture.

**Good picture**
**Noisy sound**



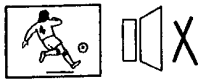
➡Check the TV SYSTEM setting.

**No picture**
**No sound**



➡Press MAIN POWER.
➡Press POWER.
➡Check the antenna connection.
➡Check the VCR connections.

**Good picture**
**No sound**



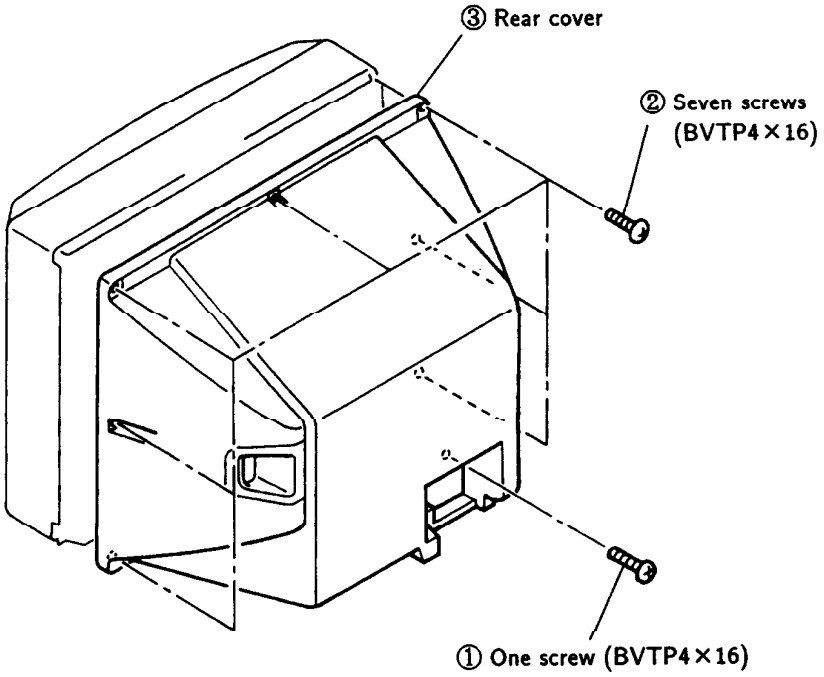
➡Press VOLUME +.
➡Press MUTING.
➡Press A/B/ENLARGE.

**No color**

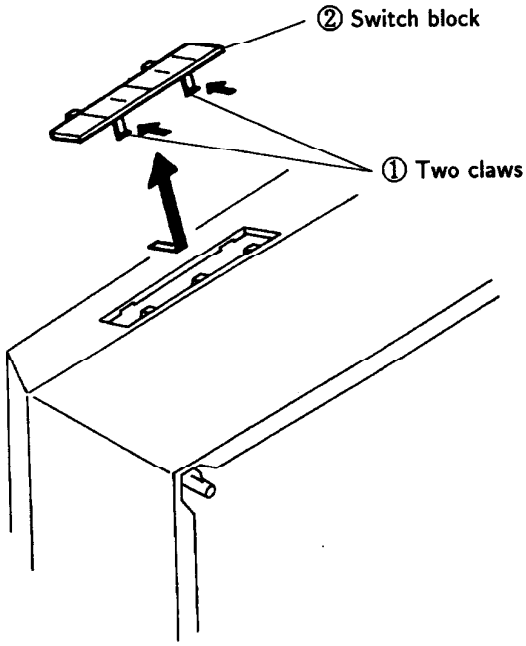
➡Adjust the COLOR level in the VIDEO CONTROL menu's ADJUSTMENT option.
➡Check the COLOR SYSTEM setting.

# SECTION 2
# DISASSEMBLY

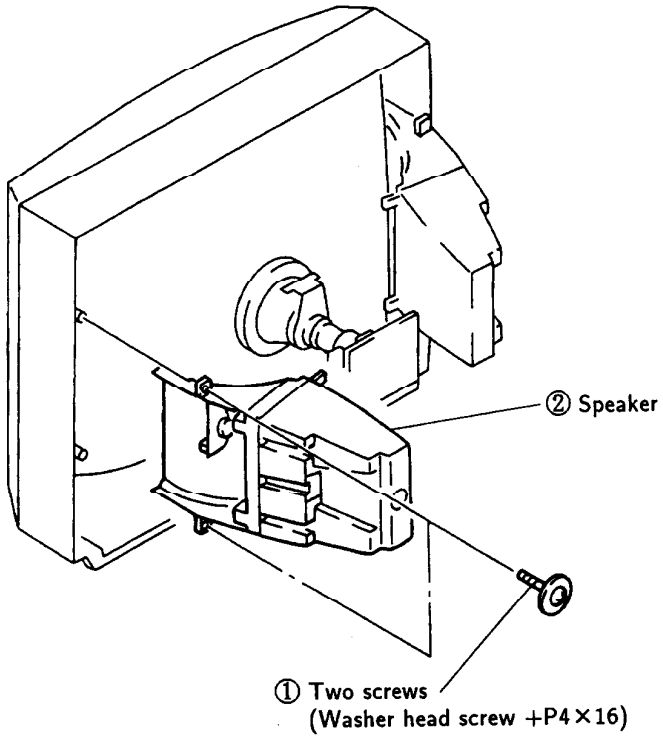
## 2-1. REAR COVER REMOVAL



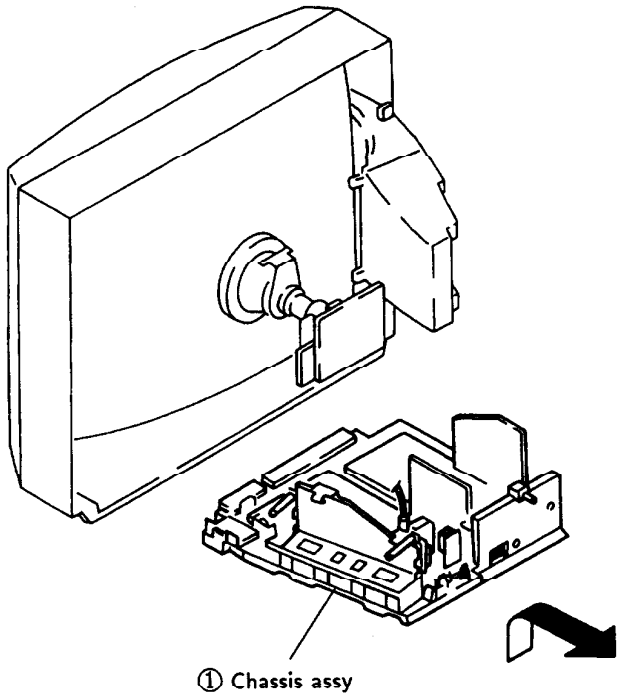

## 2-2. SWITCH BLOCK REMOVAL



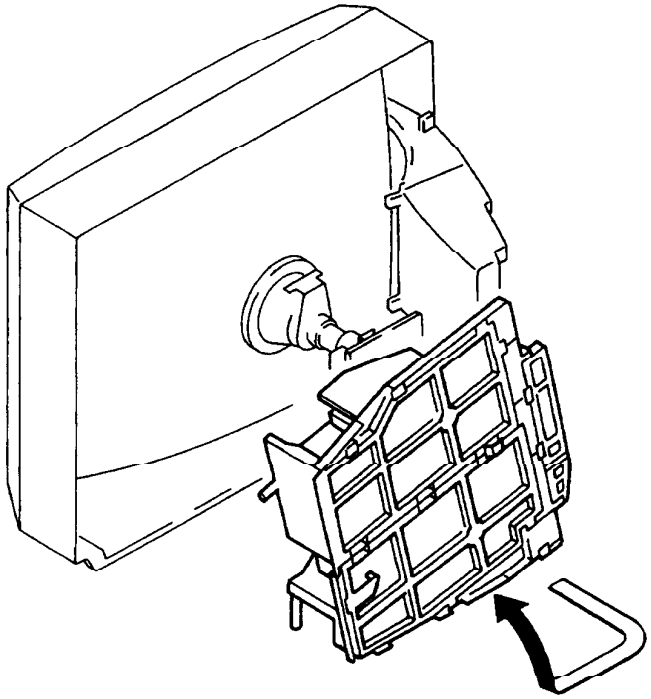
## 2-3. SPEAKER REMOVAL



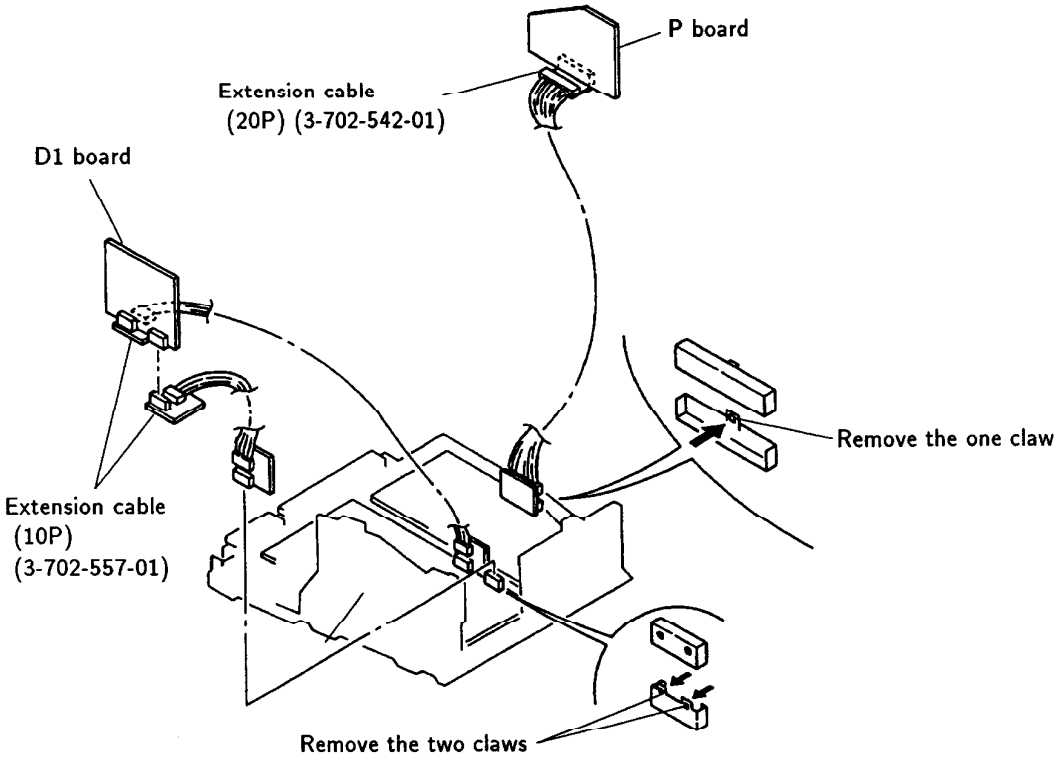

## 2-4. CHASSIS ASSY REMOVAL



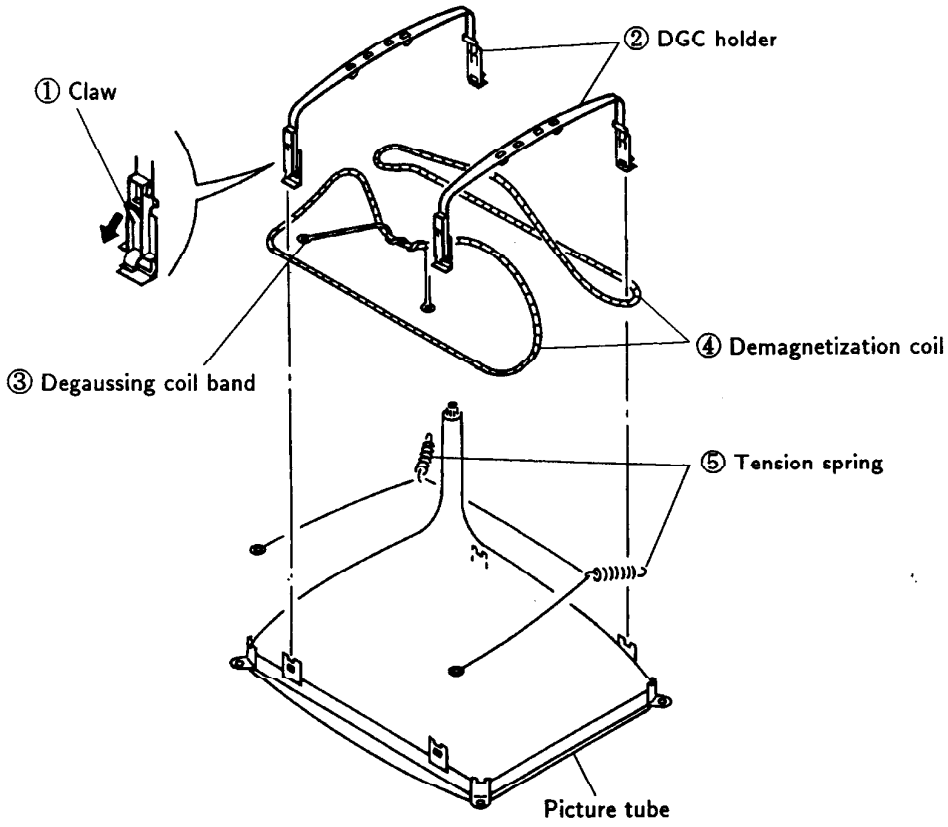
## 2-5. SERVICE POSITION



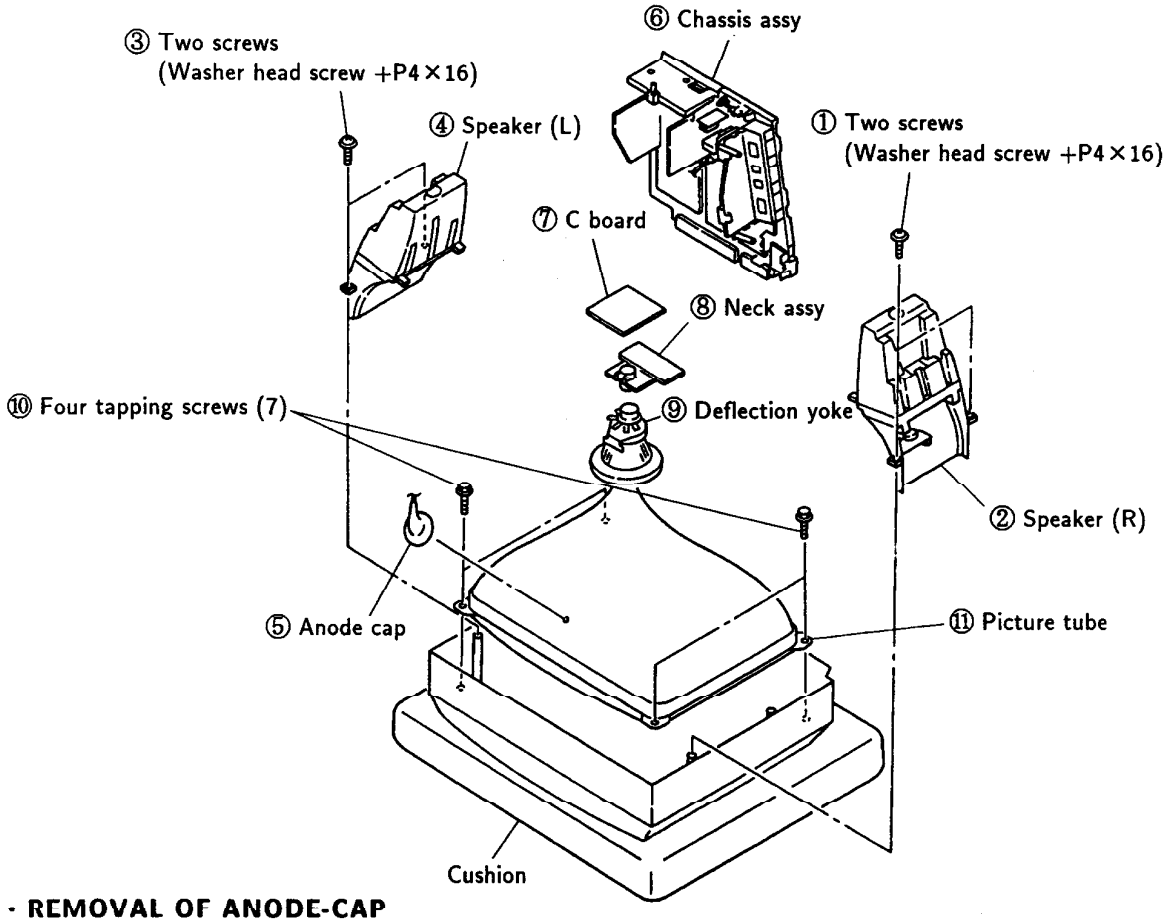
## 2-6. EXTENSION CABLE



## 2-7. DEMAGNETIZATION COIL REMOVAL



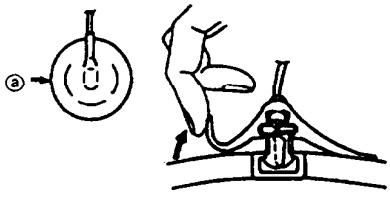
## 2-8. PICTURE TUBE REMOVAL



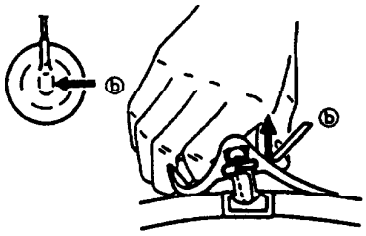

### · REMOVAL OF ANODE-CAP

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

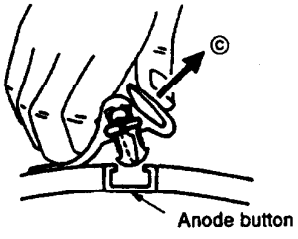
**· REMOVING PROCEDURES**




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




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



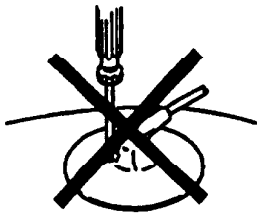

③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

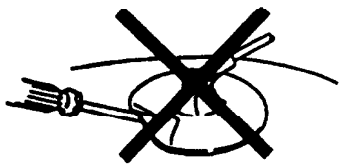
**· HOW TO HANDLE AN ANODE-CAP**

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

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

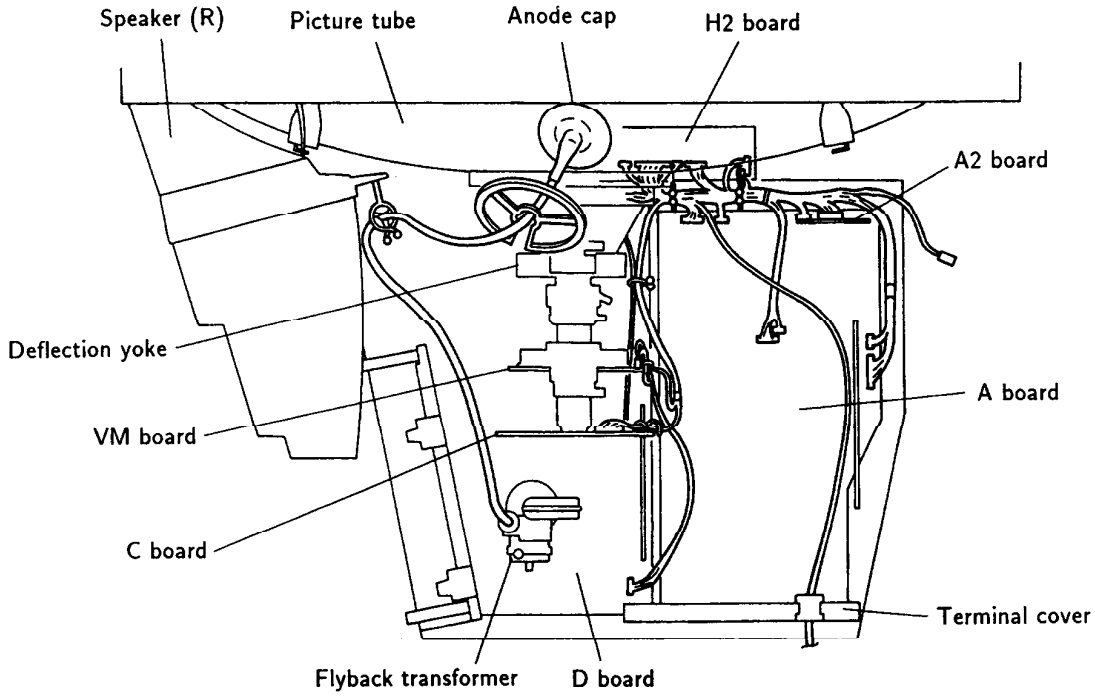
③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.



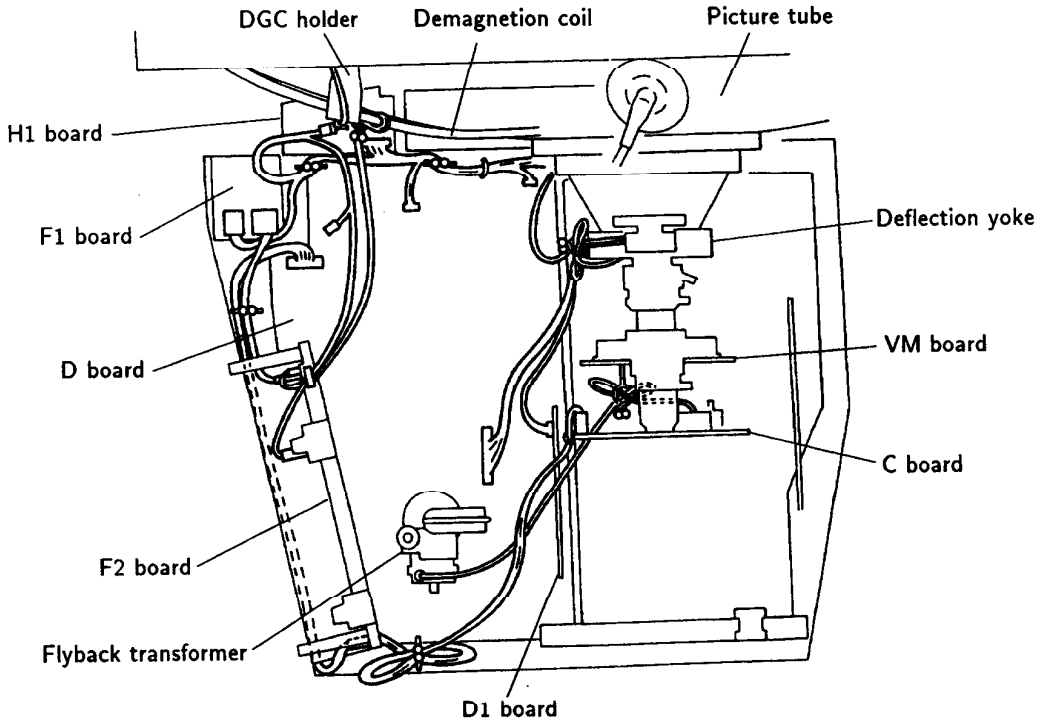


## 2-9. HARNESS LOCATION

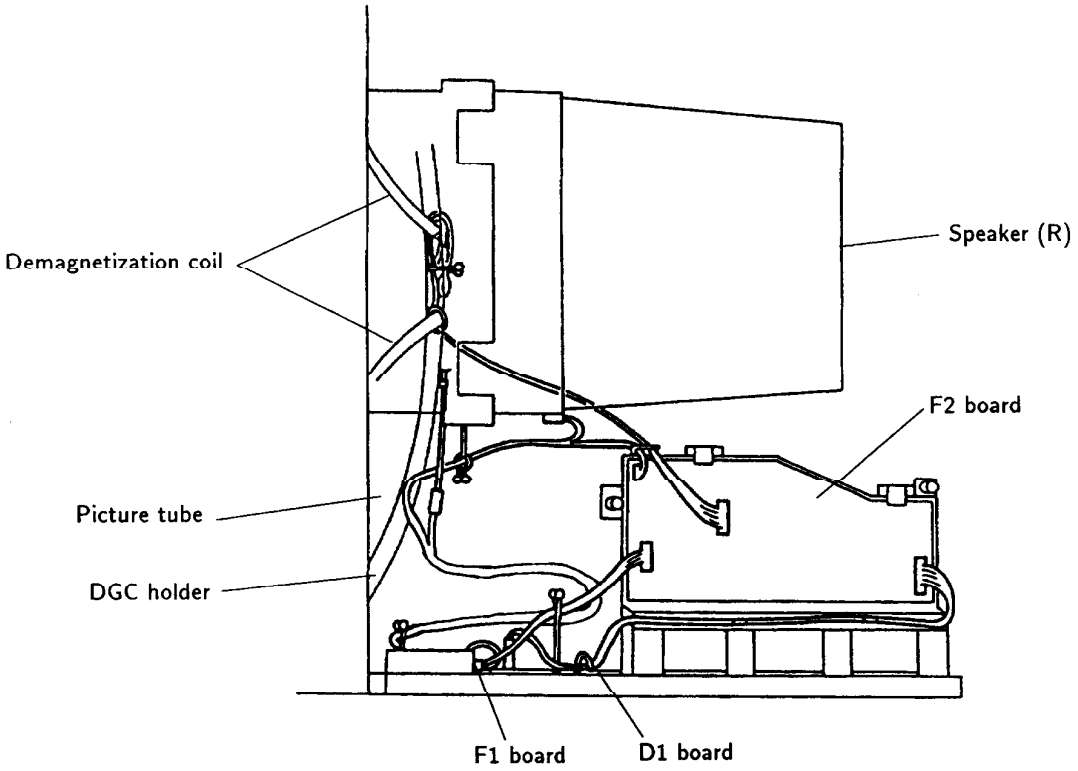
### (1) TOP VIEW



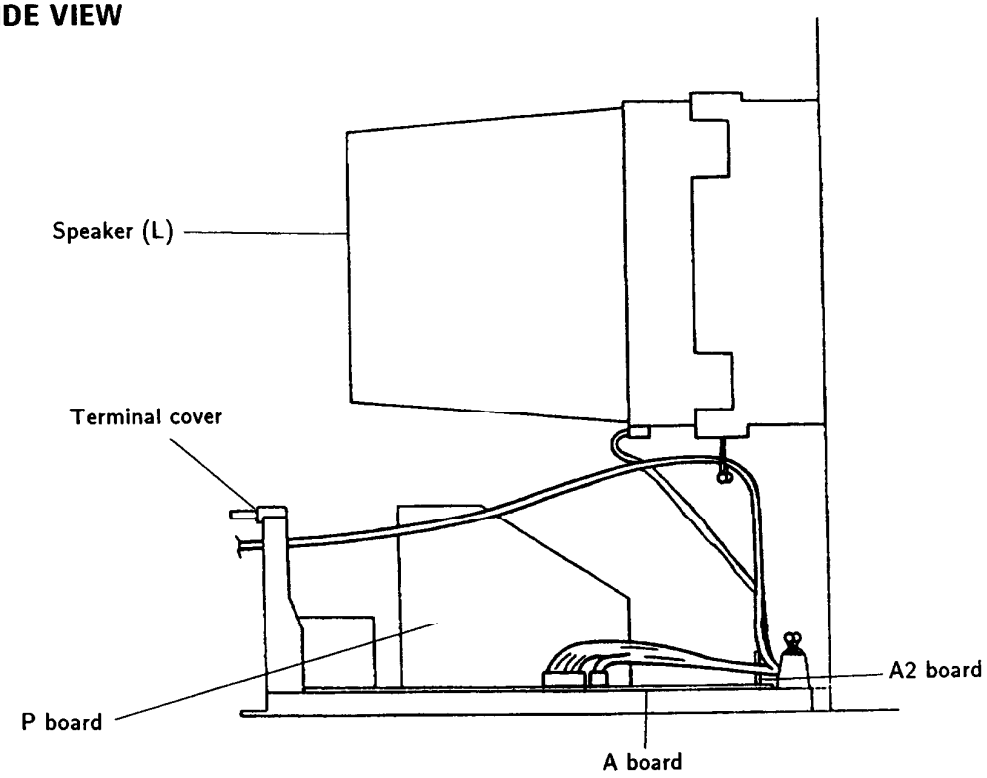

### (2) TOP VIEW (LEFT)



## (3) LEFT SIDE VIEW




## (4) RIGHT SIDE VIEW



# SECTION 3
# SET-UP ADJUSTMENTS

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

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

PICTURE control . . . . . RESET
BRIGHTNESS control . . . . . center

Perform the adjustments in order as follows :

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

**Note :** Test Equipment Required.

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

**Preparations :**

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

## 3-1. BEAM LANDING

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

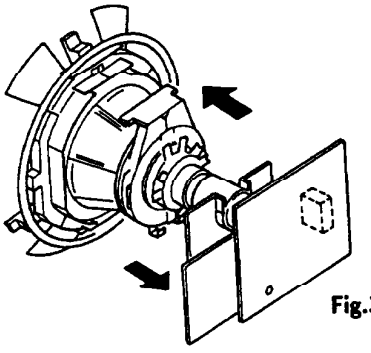


Fig.3-1

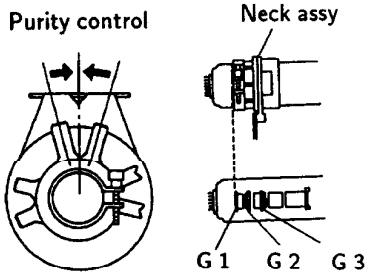



Fig.3-2

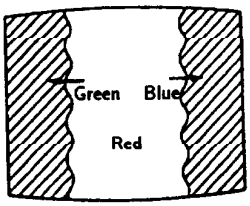



Fig.3-3

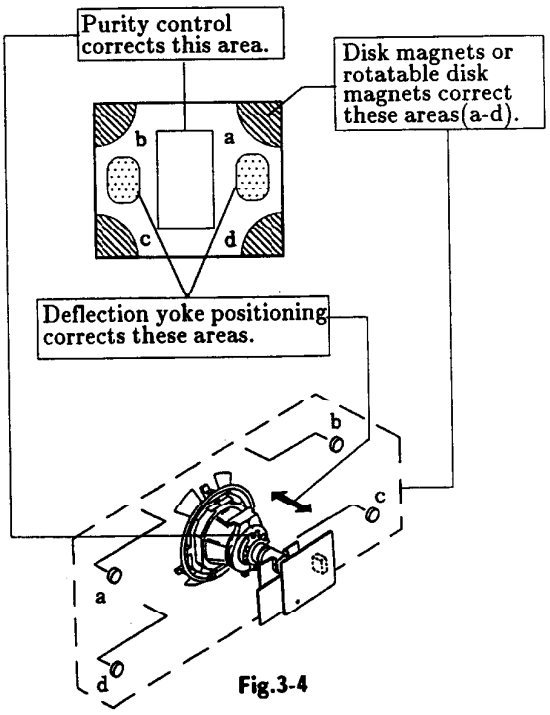


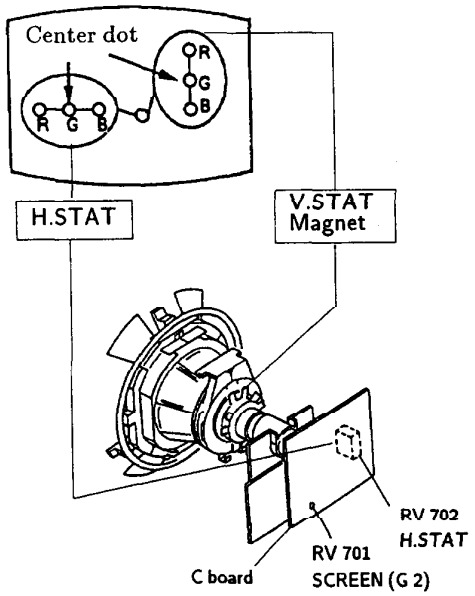

Fig.3-4

## 3-2. CONVERGENCE

**Preparation :**

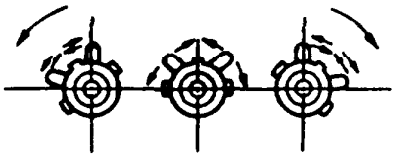
- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide dot pattern.

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

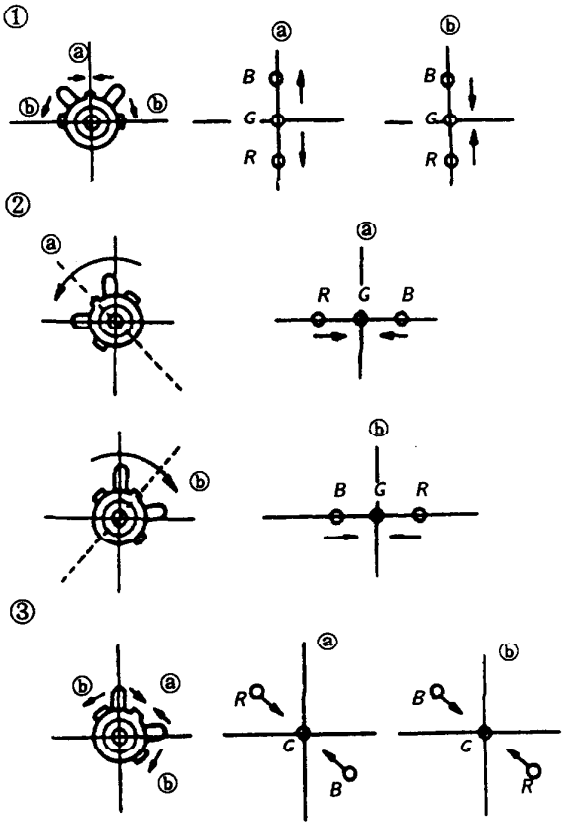



1. (Moving horizontally), adjust the H.STAT control so that the red, green, and blue points are on top of each other at the center of the screen.
2. (Moving vertically), adjust the V.STAT magnet so that the red, green, and blue points are on top of each other at the center of the screen.
3. If the H.STAT variable resistor cannot bring the red, green, and blue points together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V. STAT magnet in the manner given below.
   (In this case, the H.STAT variable resistor and the V.STAT magnet influence each other)

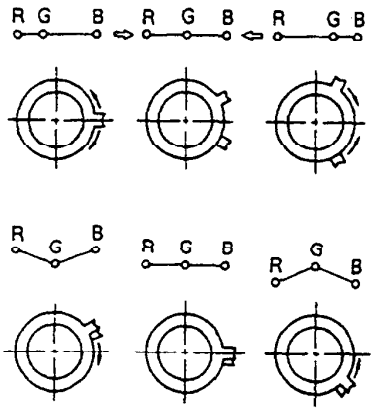
- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.



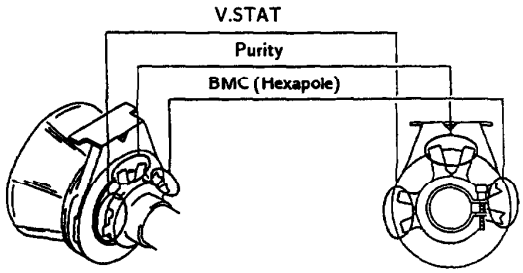
4. If the V.STAT magnet is moved in the direction of the ⓐ and ⓑ arrows, the red, green, and blue points move as shown below.



- Operation of BMC (Hexapole) Magnet




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




**• Y separation axis correction magnet adjustment**

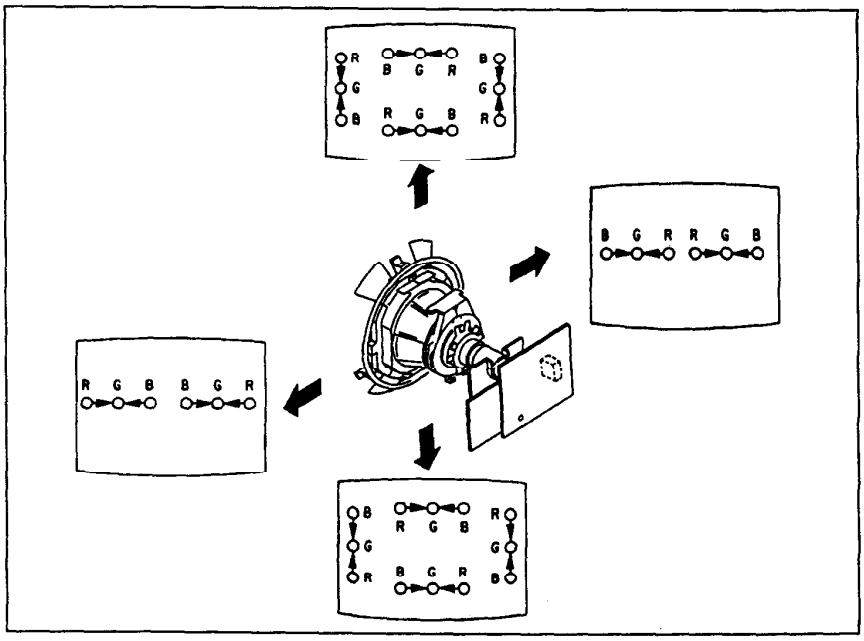
1. Receive the cross-hatch signal, and adjust [PIX] to "MIN" and [BRT] to "standard".
2. Adjust the deflection yoke to the upright condition when it hits the CRT.
3. Adjust so that the Y separation axis correction magnet on the neck assembly is symmetrical at the top and bottom (open state).
4. Return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

(2) **Dynamic Convergence Adjustment**

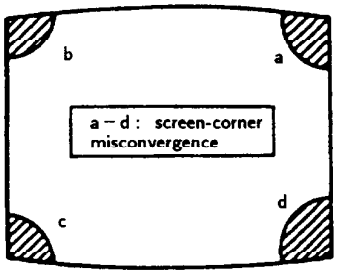
**Preparations :**

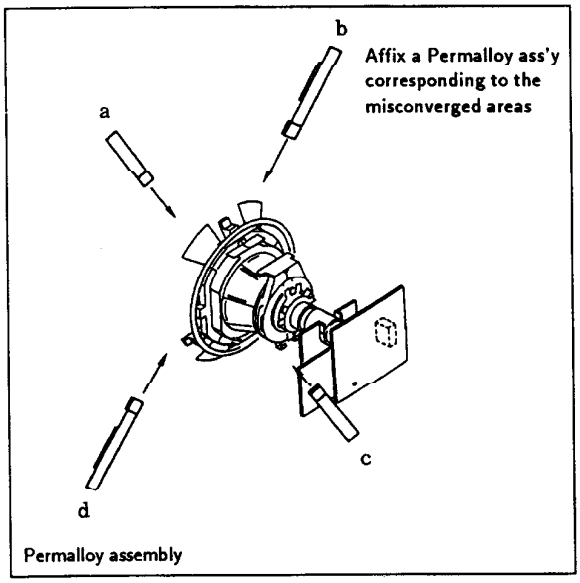
- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.

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



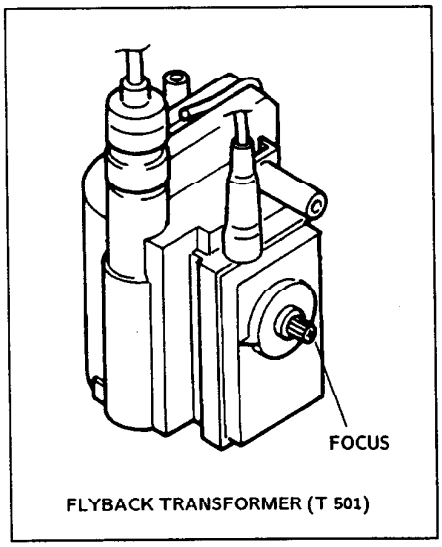
(3) Screen-corner Convergence




## 3-3. FOCUS ADJUSTMENT

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




### a. AN ITEM OF ADJUSTMENT

| Item number | Adjustment item | Standard DATA | | | | Note |
|---|---|---|---|---|---|---|
| | | 50 Hz | | 60 Hz | | |
| | | Normal | Wide | Normal | Wide | |
| 07 | GDR | 1F | 1F | 1F | 1F | G Drive |
| 08 | BDR | 1F | 1F | 1F | 1F | B Drive |
| 09 | GCT | 07 | 07 | 07 | 07 | G CUT-OFF |
| 0A | BCT | 07 | 07 | 07 | 07 | B CUT-OFF |
| 05 | SBR | 1F | 1F | 1F | 1F | SUB-BRIGHTNESS |

### b. METHOD OF CANCELLATION FROM SERVICE MODE

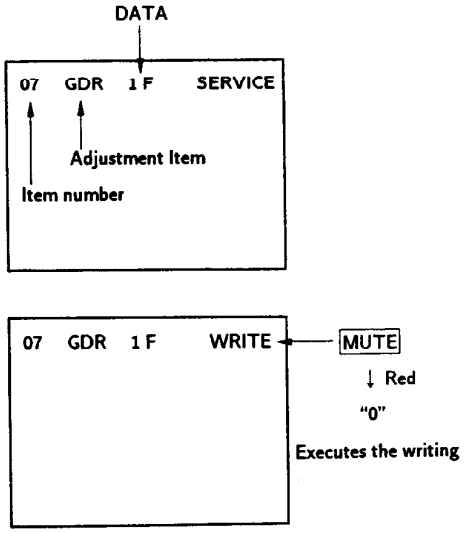
Set the standby condition (Press POWER button on the commander) in the next place, press POWER button again, hereupon it becomes TV mode.

### c. METHOD OF WRITE FOR MEMORY

1) Set to Service Mode.
2) Press 1 (UP) and 4 (DOWN), select an item of adjustments.
3) Press MUTE button indicate WRITE (RED) on screen.
4) Press 0 button to write for memory.

### d. MEMORY WRITE CONFIRMATION METHOD

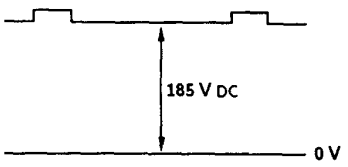
1) After adjustment, pull out the plug from AC outlet, and next place, plug in AC outlet again.
2) Turn the power switch ON and set to Service Mode.
3) Call the adjusted items again, confirm they were adjusted.



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

### 1. G 2 (SCREEN) ADJUSTMENT(RV 701)

1) Set the PICTURE and BRIGHTNESS to normal.
2) Put to VIDEO input mode without signals.
3) Set to Service Mode.
4) Change BLU data of the item number "57" from "01" to "00". (To turn off Blue Black.)
5) Press [MUTE], and [0] to write the data in the memory.
6) Connect R, G, and B of the C board cathode to the oscilloscope.
7) Adjust G2 (RV701) volume to the value below.



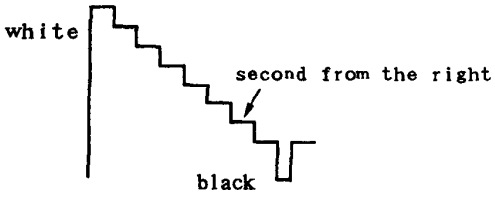

8) Re-set BLU data of the item number "57" from "00" back to "01".
9) Press [MUTE], and [0] to write the data in the memory.

### 2. WHITE BALANCE ADJUSTMENTS

1) Set to service mode.
2) Input an entire white signal.
3) Set the PICTURE to minimum.
4) Select SBR with [1] and [4], and then set the level to minimum with [3] and [6].
5) Select GCT and BCT with [1] and [4]. And adjust the level with [3] and [6] for the best white balance.
6) Set the PICTURE to maximum.
7) Select GDR and BDR with [1] and [4], and adjust the level with [3] and [6] for the best white balance.
8) Write into the memory by pressing [MUTE] → then [0].

### 3. SUB BRIGHT ADJUSTMENT

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



# SECTION 4
# SELF DIAGNOSIS FUNCTION

If no acknowledgement is returned from a device which is turned "ON", the device has a problem.
In this case, one of the LED's responding to the problem device will flicker defined number of times.

Flickering is operated by lighting the LED's for 60ms and turning them off for 600ms.

The flickering frequency responding to each failed device is shown below.

| Device | NONVOLATILE MEMORY | AV SWITCH (CXA1545S) | MAIN Y/C (TDA9145) | RGB JUNGLE (CXA1587) | DY DSP (CXD2018) | SURROUND PROCESSOR (TA8776N) |
|---|---|---|---|---|---|---|
| Flickering Frequency | 1 | 2 | 3 | 4 | 5 | 6 |

All the devices are checked one after another from the left on the table.
If an error is found, the responding LED will start flickering.
So, if more than 2 devices are failed, the one on the left side will start flickering at first.

# SECTION 5
# CIRCUIT ADJUSTMENTS

## 5-1. ADJUSTMENTS WITH COMMANDER

Servise adjustments are made with the RM-845 that comes with this unit.

**Entering service mode**

With the unit on standby

↓

"DISPLAY"

↓

"5"

↓

"VOL (+)"

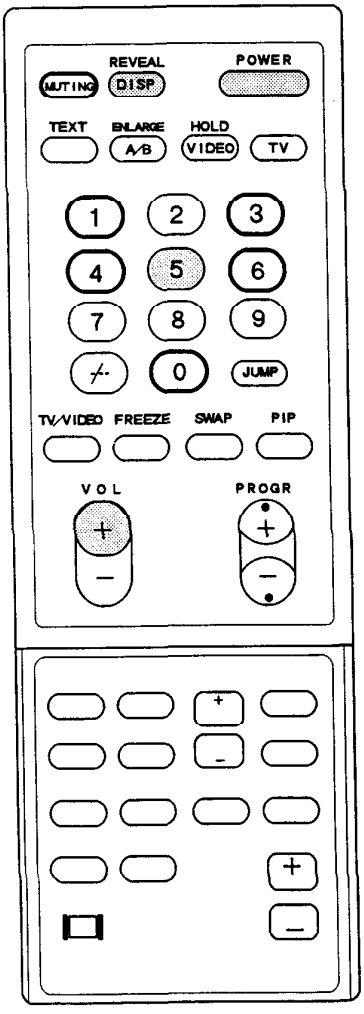
↓

"POWER"

This operation sequence puts the unit into servise mode.

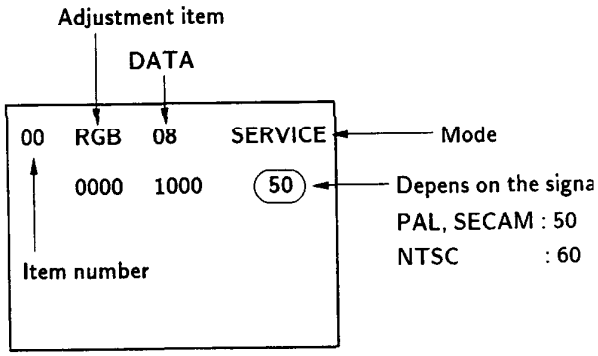
| | |
|---|---|
| "1", "4" | Raise/lower the service item number |
| "3", "6" | Raise/lower the data |
| "MUTE" | Writes |
| "0" | Executes the writing |

| | |
|---|---|
| "7", "0" | The data all becomes the values in memory |
| "8", "0" | User control all goes to the standard state |
| "5", "0" | Service data initialization (Besure not to use usually.) |
| "2", "0" | Write 50Hz adjustment data to 60Hz, or in opposition. (Be sure not to use usually.) |




RM-845 P

The screen display is :



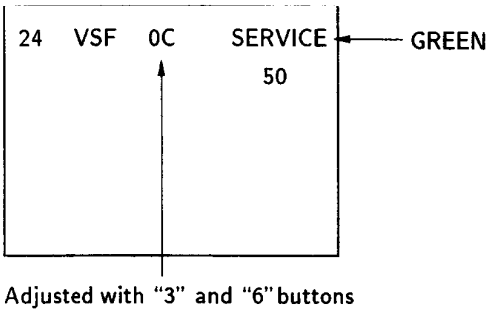

| | |
|---|---|
| "1", "4" | Select the adjustment item. |
| ↓ | |
| "3", "6" | Raise/lower the data. |
| ↓ | |
| "MUTE" | Writes |
| ↓ | |
| "0" | Executes the writing. |

## 5-2. ADJUSTMENT METHOD

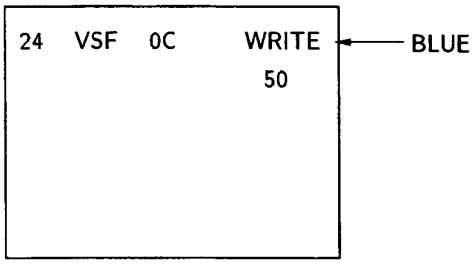
Item Number 24

This explanation uses V-SHFT as an example.

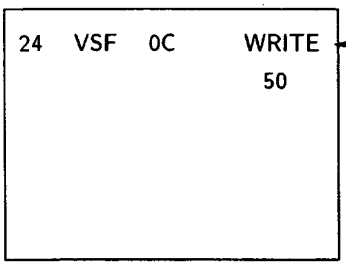
1. Select 24 V-SHFT with the "1" and "4" buttons.
2. Raise/lower the data with the "3" and "6" buttons.
3. Select the optimum state. (The standard is for 0F PAL reception.)
4. Write with the MUTE button. (The display changes to blue WRITE.)
5. Execute the writing with the "0" button. (The WRITE display changes briefly to red.)




Adjusted with "3" and "6" buttons




Written with "MUTE"




The WRITE display changes briefly to red, then the display returns to a green SERVICE.

Write excuted with "0"

Use the same method for Items Number 00-5E. Use "1" and "4" to select the adjustment item, use "3" and "6" to adjust, write with "MUTE", then execute the write with "0".

**Note :** In "WRITE", the data of all items are wrote together to memory.

- H-FRE can be adjusted automatically. Feed a standard signal and input "9", the automatic adjustment is executed.
- As for V-FREQ, by searching the bolded screen V range with adjusting data.

**Note :** In item 02 50Hz, or item 03 60Hz, it operates normally in spite of the 50Hz or the 60Hz of the input signal. Therefore be sure to adjust data according to the input signal.

| Item number | Adjustment Item | Data range | Standard DATA | | | | Note | (Device) |
|---|---|---|---|---|---|---|---|---|
| | | | 50 Hz | | 60 Hz | | | |
| | | | Normal | Wide | Normal | Wide | | |
| 00 | RGB | 00~0F | 07 | 07 | 07 | 07 | RGB PICTURE | (CXA 1587 S) |
| 01 | SCN | 00~0F | 08 | 06 | 08 | 06 | SUB-Contrast | (CXA 1587 S) |
| 02 | VM | 00~03 | 01 | 01 | 01 | 01 | VM Level | (CXA 1587 S) |
| 03 | SCL | 00~0F | 08 | 07 | 08 | 07 | SUB-COLOR | (CXA 1587 S) |
| 04 | SHU | 00~0F | 08 | 08 | 08 | 08 | SUB-HUE | (CXA 1587 S) |
| 05 | SBR | 00~3F | 1F | 1F | 1F | 1F | SUB-BRIGHTNESS | (CXA 1587 S) |
| 06 | ABL | 00~03 | 03 | 03 | 02 | 02 | ABL Mode | (CXA 1587 S) |
| 07 | GDR | 00~3F | 1F | 1F | 1F | 1F | G Drive | (CXA 1587 S) |
| 08 | BDR | 00~3F | 1F | 1F | 1F | 1F | B Drive | (CXA 1587 S) |
| 09 | GCT | 00~0F | 07 | 07 | 07 | 07 | G CUT-OFF | (CXA 1587 S) |
| 0A | BCT | 00~0F | 07 | 07 | 07 | 07 | B CUT-OFF | (CXA 1587 S) |
| 0B | AKR | 00~FF | 7F | 7F | 7F | 7F | AKB OFF R CUT-OFF | (CXA 1587 S) |
| 0C | AKG | 00~FF | 7F | 7F | 7F | 7F | AKB OFF G CUT-OFF | (CXA 1587 S) |
| 0D | AKB | 00~FF | 7F | 7F | 7F | 7F | AKB OFF B CUT-OFF | (CXA 1587 S) |
| 0E | GMA | 00~0F | 0C | 0C | 0C | 0C | $\gamma$ control | (CXA 1587 S) |
| 0F | DCT | 00~03 | 00 | 00 | 00 | 00 | DC TRAN | (CXA 1587 S) |
| 10 | DPI | 00~03 | 03 | 03 | 03 | 03 | D-PIC | (CXA 1587 S) |
| 11 | YFI | 00~3F | 22 | 22 | 22 | 22 | Y Filter Adjust | (CXA 1587 S) |
| 12 | SHL | 00~01 | 01 | 01 | 01 | 01 | SHP-LIM | (CXA 1587 S) |
| 13 | YDL | 00~0F | 07 | 07 | 07 | 07 | Y Delay Time | (CXA 1587 S) |
| 14 | YSW | 00~03 | 01 | 01 | 01 | 01 | Y-SW OUT | (CXA 1587 S) |
| 15 | HSH | 00~3F | 24 | 24 | 28 | 28 | H Shift | (CXA 1587 S) |
| 16 | POV | 00~0F | 08 | 08 | 08 | 08 | Pre-Over | (CXA 1587 S) |
| 17 | SHF | 00~03 | 02 | 02 | 02 | 02 | SHP-F 0 | (CXA 1587 S) |
| 18 | SSH | 00~03 | 01 | 01 | 02 | 02 | SUB-Sharpness | (CXA 1587 S) |
| 19 | RMT | 00~01 | 00 | 00 | 00 | 00 | R-Mute | (CXA 1587 S) |
| 1A | GMT | 00~01 | 00 | 00 | 00 | 00 | G-Mute | (CXA 1587 S) |
| 1B | BMT | 00~01 | 00 | 00 | 00 | 00 | B-Mute | (CXA 1587 S) |
| 1C | AG 1 | 00~01 | 00 | 00 | 00 | 00 | Aging 1 (White) | (CXA 1587 S) |
| 1D | AKF | 00~01 | 00 | 00 | 00 | 00 | AKB-OFF | (CXA 1587 S) |
| 1E | SMD | 00~01 | 00 | 00 | 00 | 00 | Scan Mode | (CXA 1587 S) |
| 1F | VEX | 00~01 | 00 | 00 | 00 | 00 | V-Extension | (CXA 1587 S) |
| 20 | AFC | 00~03 | 03 | 03 | 03 | 03 | AFC Loop Gain | (CXA 1587 S) |
| 21 | AFF | 00~01 | 00 | 00 | 00 | 00 | AFC-OFF | (CXA 1587 S) |
| 22 | RFP | 00~01 | 00 | 00 | 00 | 00 | Reference Position | (CXA 1587 S) |
| 23 | VSZ | 00~3F | 1E | 1E | 1A | 1A | V-Size | (CXD 2018 Q) |
| 24 | VSF | 00~3F | 2E | 2E | 32 | 32 | V-Shift | (CXD 2018 Q) |
| 25 | SCR | 00~F | 08 | 08 | 08 | 08 | S-Correction | (CXD 2018 Q) |
| 26 | VLN | 00~F | 08 | 08 | 08 | 08 | V-Linearity | (CXD 2018 Q) |
| 27 | HSZ | 00~3F | 0C | 0C | 0 E | 0 E | H-Size | (CXD 2018 Q) |
| 28 | PAP | 00~3F | 2E | 2E | 2E | 2E | Pin-Amp | (CXD 2018 Q) |
| 29 | TLT | 00~0F | 09 | 09 | 09 | 09 | Tilt | (CXD 2018 Q) |
| 2A | UCP | 00~0F | 0A | 0A | 0A | 0A | Upper Corner Pin | (CXD 2018 Q) |
| 2B | LCP | 00~0F | 0C | 0C | 0C | 0C | Lower Corner Pin | (CXD 2018 Q) |
| 2C | VBW | 00~0F | 08 | 08 | 08 | 08 | V-Bow | (CXD 2018 Q) |
| 2D | VAG | 00~0F | 08 | 08 | 08 | 08 | V-Angle | (CXD 2018 Q) |
| 2E | HVV | 00~07 | 04 | 04 | 07 | 07 | HV-Comp-V | (CXD 2018 Q) |
| 2F | HVH | 00~07 | 00 | 00 | 00 | 00 | HV-Comp-H | (CXD 2018 Q) |
| 30 | FCL | 00~07 | 03 | 03 | 03 | 03 | Frame Color | (SDA 9188) |
| 31 | FON | 00~01 | 01 | 01 | 01 | 01 | Frame ON | (SDA 9188) |
| 32 | DLY | 00~07 | 00 | 00 | 00 | 00 | Select Delay LL 3 P | (SDA 9188) |
| 33 | P-V | 00~0F | 07 | 07 | 07 | 07 | V read delay | (SDA 9188) |
| 34 | PVS | 00~07 | 04 | 04 | 04 | 04 | PIP-V offset | (SDA 9188) |
| 35 | P-H | 00~3F | 0A | 0A | 07 | 07 | H read delay | (SDA 9188) |
| 36 | PHS | 00~0F | 07 | 07 | 03 | 03 | PIP-H offset | (SDA 9188) |
| 37 | CTR | 00~0 F | 0A | 0A | 0A | 0A | Contrast | (SDA 9188) |
| 38 | FWV | 00~01 | 01 | 01 | 01 | 01 | Frame Width V | (SDA 9188) |
| 39 | FWH | 00~01 | 01 | 01 | 01 | 01 | Frame Width H | (SDA 9188) |
| 3A | DVI | 00~0F | 07 | 07 | 07 | 07 | Setting Delay VSI | (SDA 9188) |
| 3B | DVP | 00~0 F | 0F | 0F | 0F | 0F | Delay VSP Pulse | (SDA 9188) |
| 3C | BRT | 00~0 F | 0C | 0C | 0C | 0C | Frame BRIGHT Data | (SDA 9188) |

| Item number | Adjustment Item | Data range | Standard DATA | | | | Note | (Device) |
|---|---|---|---|---|---|---|---|---|
| | | | 50 Hz | | 60 Hz | | | |
| | | | Normal | Wide | Normal | Wide | | |
| 3D | LEV | 00~0 F | 00 | 00 | 00 | 00 | Level Adjust | (TDA 9840) |
| 3E | STR | 00~3 F | 02 | 02 | 02 | 02 | Stereo Adjust | (TDA 9840) |
| 3F | AXG | 00~01 | 00 | 00 | 00 | 00 | AUX Output Gain | (TDA 8204) |
| 40 | AXM | 00~01 | 00 | 00 | 00 | 00 | AUX Output Mute | (TDA 8204) |
| 41 | VCX | 00~01 | 00 | 00 | 00 | 00 | VCXO free run | (TDA 8204) |
| 42 | ERC | 00~01 | 00 | 00 | 00 | 00 | Error count Time | (TDA 8204) |
| 43 | MXE | 00~01 | 00 | 00 | 00 | 00 | MAX. allowed Error | (TDA 8204) |
| 44 | SRO | 00~01 | 00 | 00 | 00 | 00 | SRO set Bit | (TDA 8204) |
| 45 | ATO | 00~00 | 01 | 01 | 01 | 01 | Auto Selection | (TDA 8204) |
| 46 | SYS | 00~01 | 00 | 00 | 00 | 00 | System select | (TDA 8204) |
| 47 | FSW | 00~03 | 00 | 00 | 00 | 00 | Force Switch | (TDA 8204) |
| 48 | SYN | 00~01 | 01 | 01 | 01 | 01 | Synthesizer | (TDA 8204) |
| 49 | VCR | 00~01 | 00 | 00 | 00 | 00 | VCC Reference Sw | (CXP 1315 P) |
| 4A | SEL | 00~FF | 5F | 5F | 5 F | 5F | Separation Level | (CXP 1315 P) |
| 4B | DCS | 00~3F | | | | | | |
| 4C | UYB | 00~3F | | | | | | |
| 4D | LYB | 00~3F | | | | | | |
| 4E | HAP | 00~3F | | | | | | |
| 4F | HTL | 00~3F | | | | | | |
| 50 | UCB | 00~3F | | | | | | |
| 51 | UTL | 00~3F | | | | | | |
| 52 | LCB | 00~3F | | | | | | |
| 53 | LTL | 00~3F | | | | | | |
| 54 | TXP | 00~0 F | 05 | 05 | 05 | 05 | Teletext Picture | (Teletext $\mu$-Con) |
| 55 | ODL | 00~FF | 10 | 10 | 10 | 10 | Power ON Delay | (CXP 80424) |
| 56 | OSH | 00~3 F | 0F | 0F | 0F | 0F | OSD Position H | (CXP 80424) |
| 57 | BLU | 00~01 | 01 | 01 | 01 | 01 | Blue Back Feature | (CXP 80424) |
| 58 | ROC | 00~0F | 04 | 07 | 07 | 07 | Center of Rotation | (CXP 80424) |
| 59 | ROS | 00~07 | 07 | 03 | 03 | 03 | Step Width | (CXP 80424) |
| 5A | HTR | 00~3 F | 1 F | 1 F | 1 F | 1 F | H Trapezoid | (CXP 80424) |
| 5B | MUT | 00~01 | 01 | 01 | 01 | 01 | No Sync. Mute | (CXP 80424) |
| 5C | DID | 00~01 | 00 | 00 | 00 | 00 | Disable Degauss | (CXP 80424) |
| 5D | OP0 | 00~FF | *1 | *1 | *1 | *1 | Option 0 | (CXP 80424) |
| 5E | OP1 | 00~0F | *2 | *2 | *2 | *2 | Option 1 | (CXP 80424) |

*1 Input data are different according to models.

| Item | CCD | Text | PinP | Jpn | NICM | W. G | MTS | Comb |
|---|---|---|---|---|---|---|---|---|
| KV-K29CF1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |

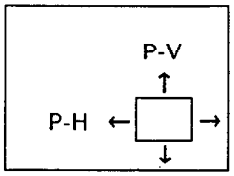
*2 Input data are different according to models.

| Item | — | — | — | — | Mono | Tilt | Dcon | Chin |
|---|---|---|---|---|---|---|---|---|
| KV-K29CF1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

## 5-3. DISPLAY POSITION ADJUSTMENT

Item Numbers 33-36

33 P-V Pin-P vertical position correction
34 PVS Pin-P vertical offset
35 P-H Pin-P horizontal position correction
36 PHS horizontal offset




- When pressing PIP "POSITION" key in the service mode, "POSITION" turns round and round automatically.

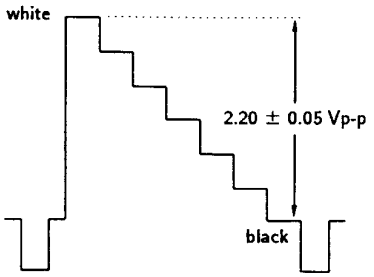
Item Numbers 33-36 are set to the standard values.

54 TXP Teletext picture
Corrects the brightness for when teletext is received.
Standard value is 05.

## 5-4. A BOARD ADJUSTMENT

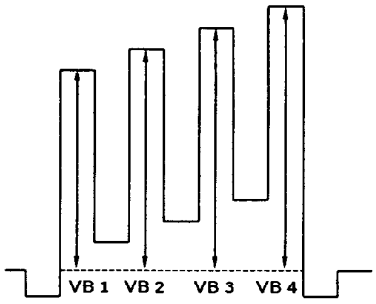
### SUB CONTRAST ADJUSTMENT (SCN)

1. Receive a PAL color-bar 10 ith 100 IRS.
2. Put DC 4.0 V to the pin ㉖ (ABL IN) of IC 304, A board. Set the PICTURE 100%, BRIGHT 50% and COLOR MIN.
3. Connect an oscilloscope to the pin ⑥ (R OUT) of CN 118, A board.
4. Set to Service Mode and select 01 (SIN) with [1] and [4] of the commander to adjust to 2.2±0.05 V.
5. Press [MUTING] → [0] of the commander to write the data.
6. Receive a NTSC color-bar and adjust as step 4 and 5.
7. Receive the PAL color-bar to set to WIDE mode by pressing [MENU] Then set to Servise Mode and adjust 01 (SCN) to write the 2 step dropped value of the step 4.
8. Receive the NTSC color-bar and adjust as step 7.




### SUB COLOR ADJUSTMENT (SCL)

1. Receive a PAL color-bar.
2. Connect an oscilloscope to the pin ⑦ (B OUT) of CN118, A board. Set the PICTURE 100%, COLOR 38%, BRIGHT 50%.
3. Set to Service Mode and select 03 (SCL) with [1] and [4] of the commander to adjust to VB2=VB3=VB4 with [3] and [6].
4. Press [MUTING] → [0] of the commander to write the data.
5. Adjust as step 4 and 5 by receiving NTSC color bar.

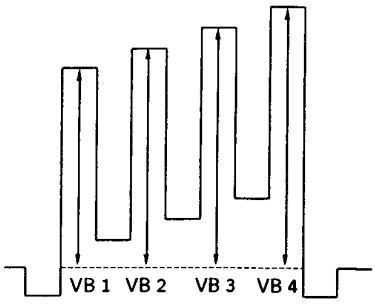



VB 2=VB 3=VB 4

6. Receive the PAL color-bar to set to WIDE mode by pressing [MENU] Then set to Servise Mode and adjust 03 (SCL) to write the 1 step dropped value of the step 4.
7. Receive the NTSC color-bar and adjust as step 7.

**SUB HUE ADJUSTMENT (SHU)**

1. Receive a NTSC color-bar.
2. Connect an oscilloscope to the pin ⑦ (B OUT) of CN 118, A board.
3. Select 04 (SHU) with 1 and 4 of the commander by setting to Service Mode and adjust to VB 1=VB 2 =VB 3=VB 4 with 3 and 6.




VB 1=VB 2=VB 3=VB 4

4. Press MUTING → 0 of the commander to write the data.
5. Set to WIDE Mode by MENU button to write the same value as the step 3.

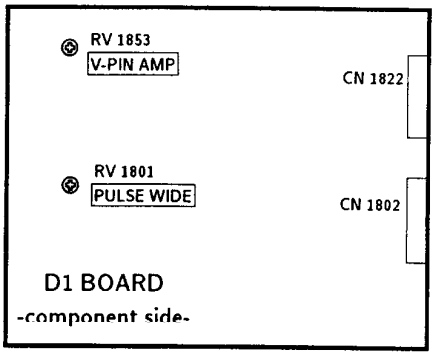
**PIP H. V. POSITION (P-H, P-V)**

1. Receive a PAL color-bar.
2. Set the PIP picture by pressing PIP button of the commander.
3. Set to Service Mode.
4. Select 33 (P-V) with the 1 and 4 of the commander to set the data "07" with 3 and 6.
5. Select 35 (P-H) to set the data "0 A".
6. Receive a NTSC color-bar.
7. Select 33 (P-V) to set the data "07" with 3 and 6. Select 35 (P-H) to set the data "07" with 3 and 6.
8. Check by pressing POSITION of the commander.
9. Press MUTING → 0 of the commander to write the data.

**Y. FILTER ADJUSTMENT (YF1)**

1. Set to Service Mode.
2. Select 14 (Y. SW) with the 1 and 4 of the commander to set the data "3" with 3 and 6.
3. Put SINE wave of 4.43 MHz to the pin ② (YIN) of IC304.
4. Connect an oscilloscope to the pin ① of CN105, A board.
5. Adjust so that the waveform is minimum by selecting 11 (YF1) with 3 and 6.
6. Press MUTING → 0 of the commander to write the data.

## 5-5. D1 BOARD ADJUSTMENT



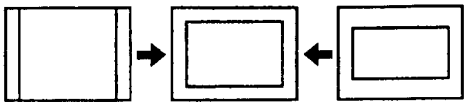

**V-PIN AMP, PULSE WIDTH ADJUSTMENT (RV 1853, RV 1801)**

1. Receive a color-bar.
2. Connect AC voltmeter between the pin ① of CN 1802 and GND.
3. Turn RV 1853 clockwise to the end and RV 1801 counterclockwise to the end.
4. Turn RV 1801 clockwise a little to adjust the value on the AC voltmeter to AC 25 ± 0.5 Vp-p.

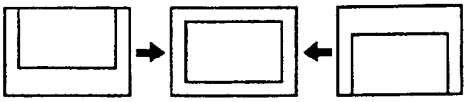
## 5-6. PICTURE DISTORTION ADJUSTMENT

Item Numbers 23-2D

23 VSZ (V SIZE)



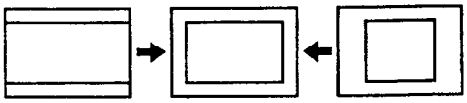
24 VSF (V SHIFT)



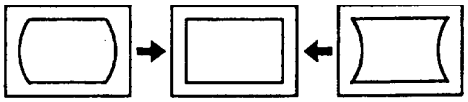
25 SCR (VERTICAL S correction)

26 VLN (V LINEARITY)

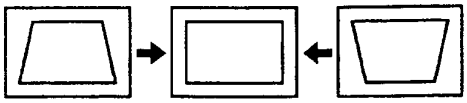
27 HSZ (H SIZE)



28 PAP (PIN AMP)



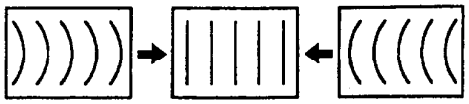
29 TLT (TILT)



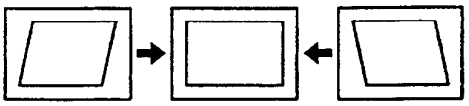
2A UCP (Upper Corner Pin)

2B LCP (Lower Corner Pin)

2C VBOW (V-BOW)



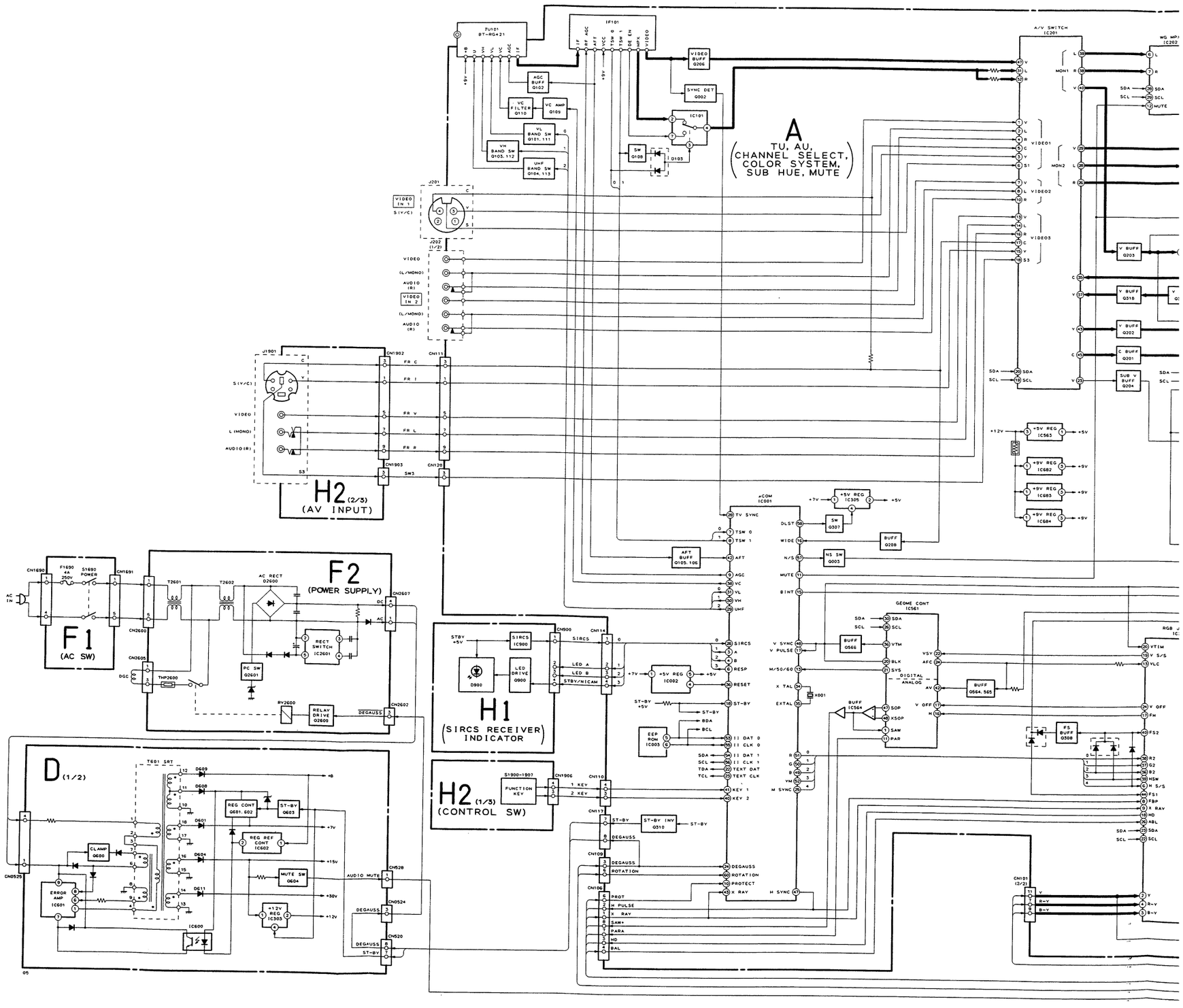
2D VAG (V-ANGLE)



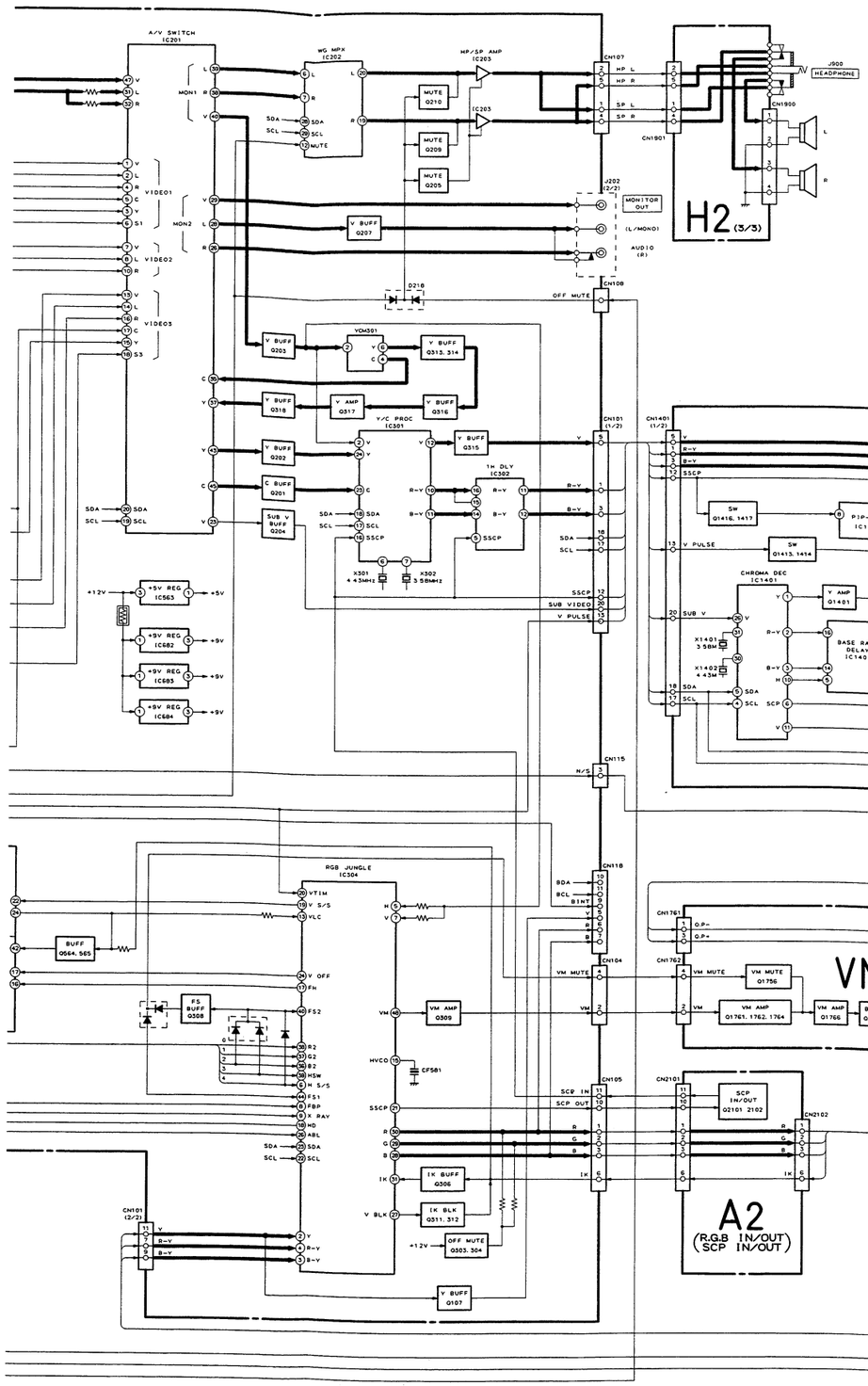
# SECTION 6
# DIAGRAMS

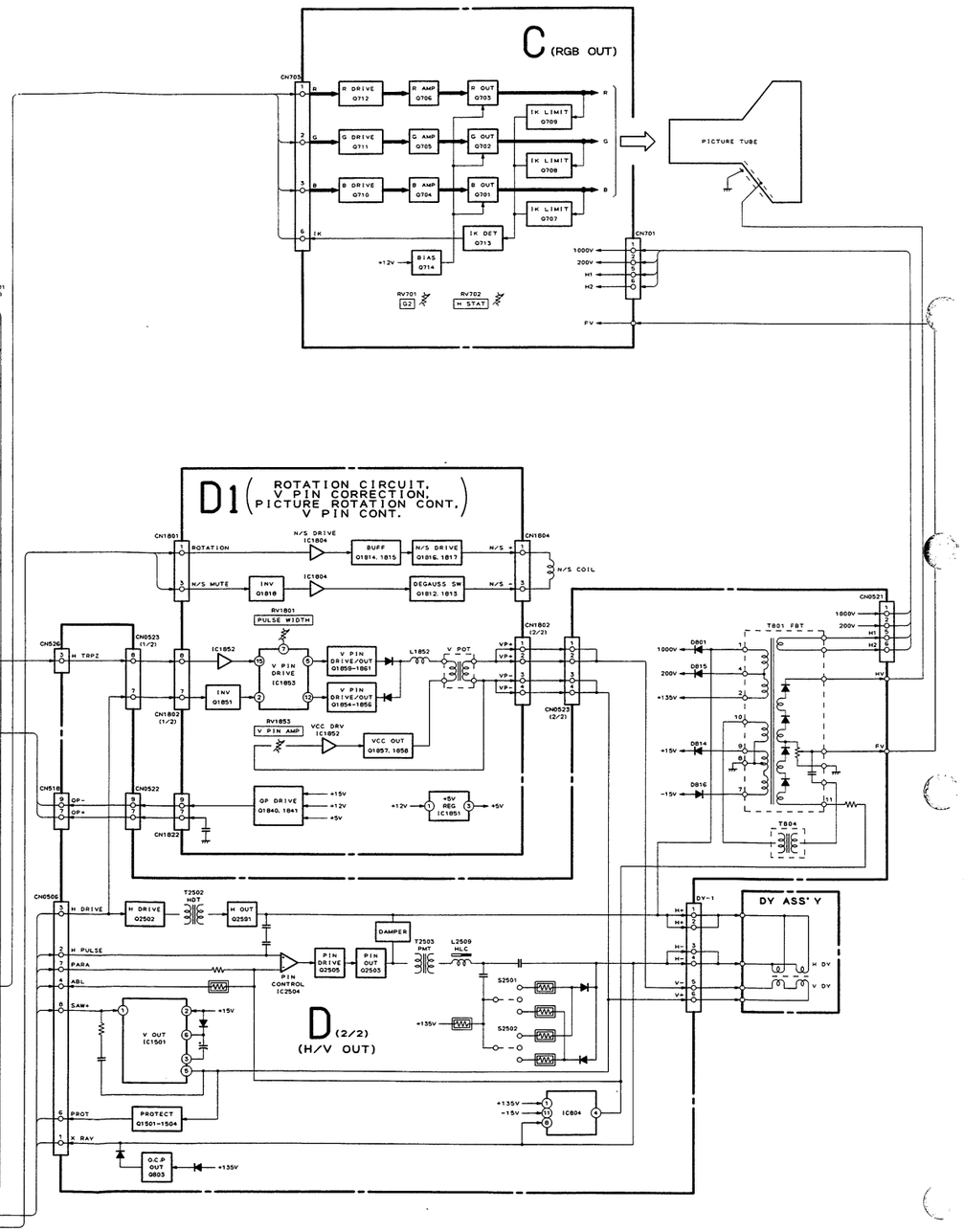
## 6-1. BLOCK DIAGRAM

KV-K29CF1
RM-845P

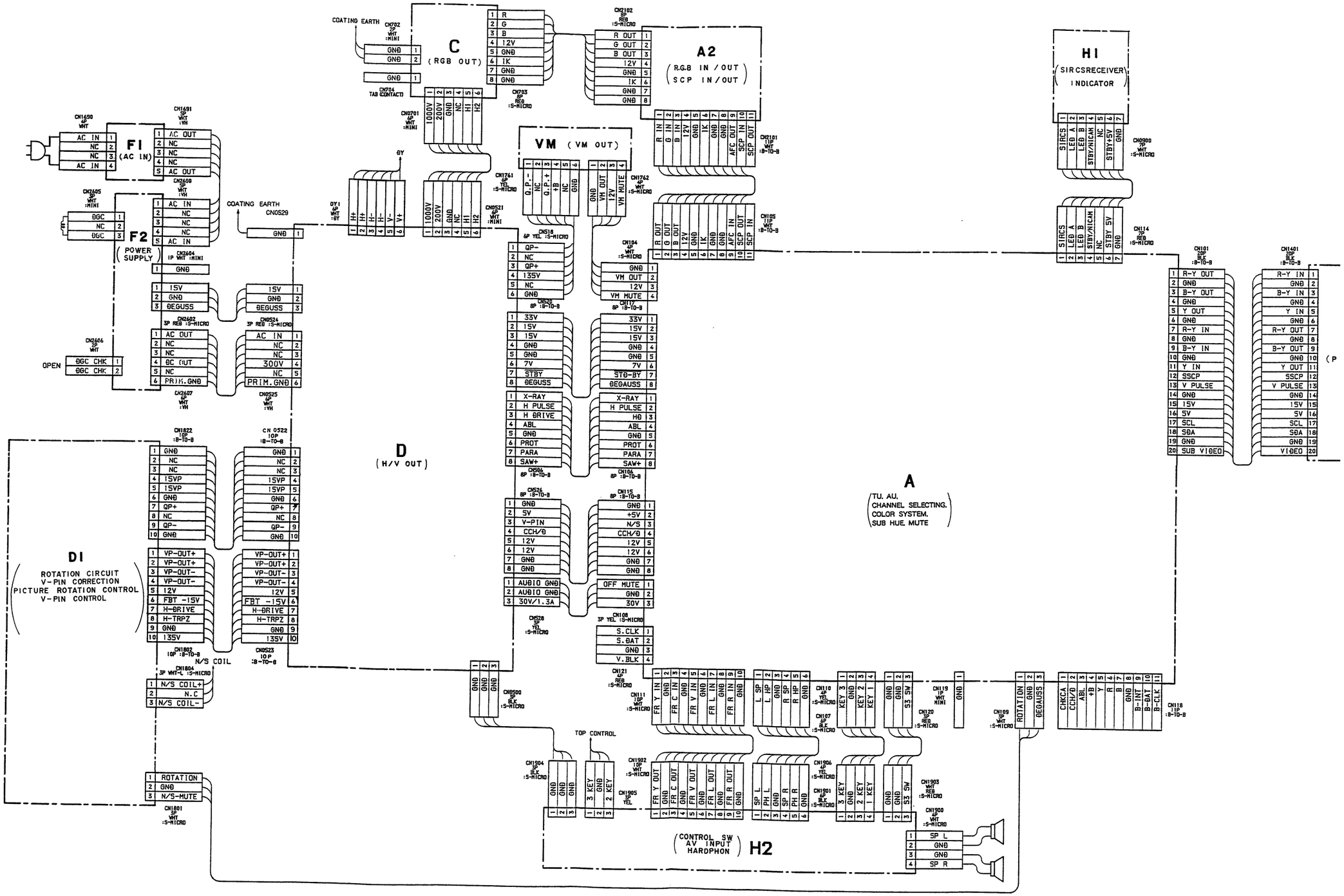


KV-K29CF1
RM-845P



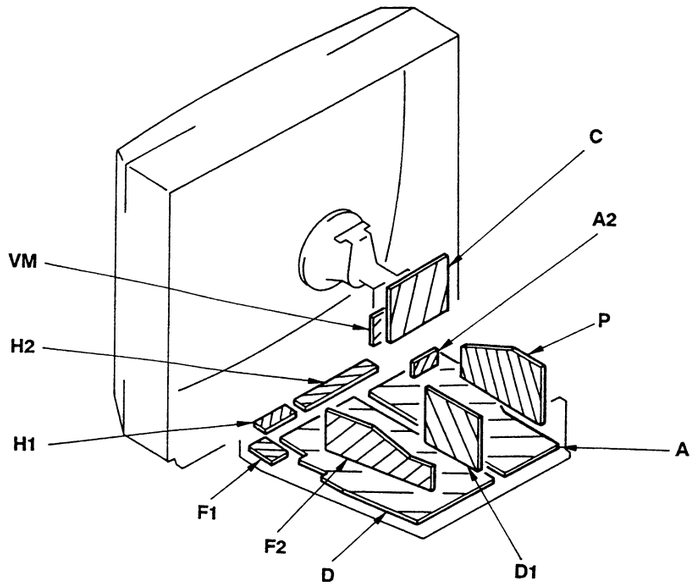



## 6-2. FRAME SCHEMATIC DIAGRAM



KV-K29CF1
RM-845P

## CIRCUIT BOARDS LOCATION






## 6-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

**Note:**

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms.
  kΩ =1000Ω, MΩ =1000KΩ
- Indication of resistance, which does not have one for rating electrical power, is as follows.

  | Pitch: 5 mm |
  |---|
  | Rating electrical power ¼ W (CHIP: 1/10W) |

- : nonflammable resistor.
- △ : internal component.
- : panel designation, or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Readings are taken with a color-bar signal input.
  no mark : PAL
  〈 〉: SECAM
  ( ): NTSC 3.58
  { }: NTSC 4.43
- Readings are taken with a 10 MΩ digital multimeter.
- Voltage are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- ＊ : Can not be measured.
- Circled numbers are waveform reference.
- ▬▬ : B + bus.
- ▬ ▬ ▬ : B − bus.
- ▒▒▒ : signal path.

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

**Reference information**

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

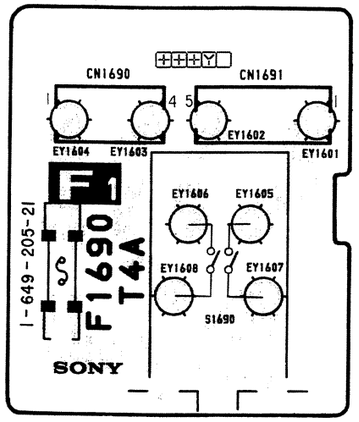
KV-K29CF1 RM-845P

## PRINTED WIRING BOARDS

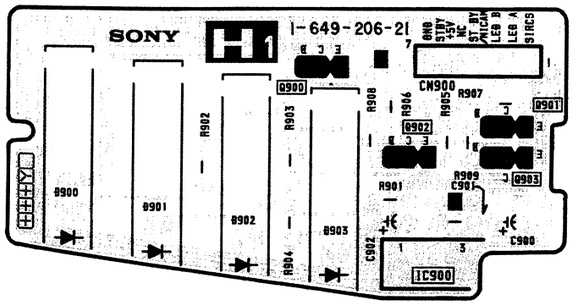
F1 [AC IN] H1 [SIRCS RECEIVER, INDICATOR]

F2 [POWER SUPPLY] H2 [CONTROL SW, AV INPUT, HEADPHONE]

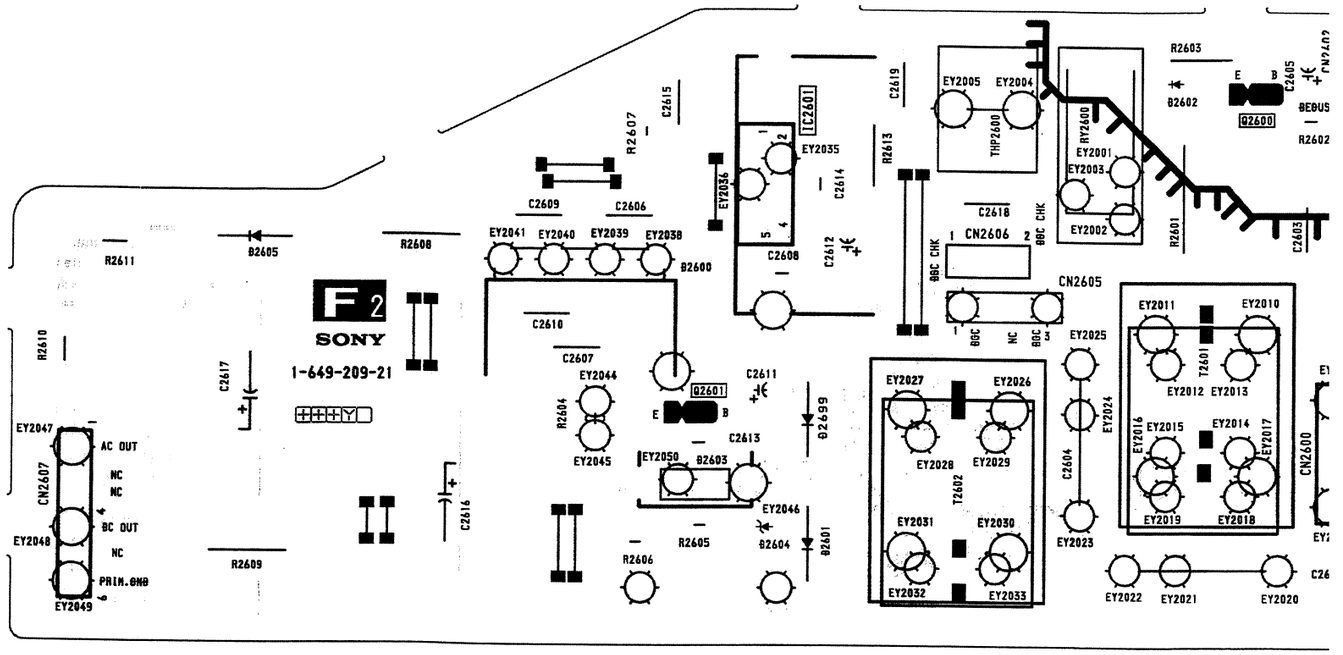
– F1 Board –



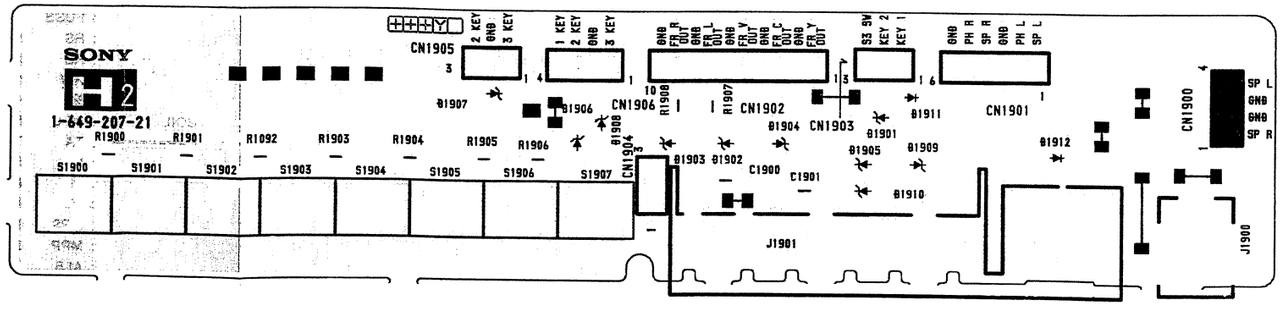

– H1 Board –

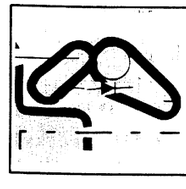



– F2 Board –




– H2 Board –



**NOTE:**
The cir
600 Vp
inspecti

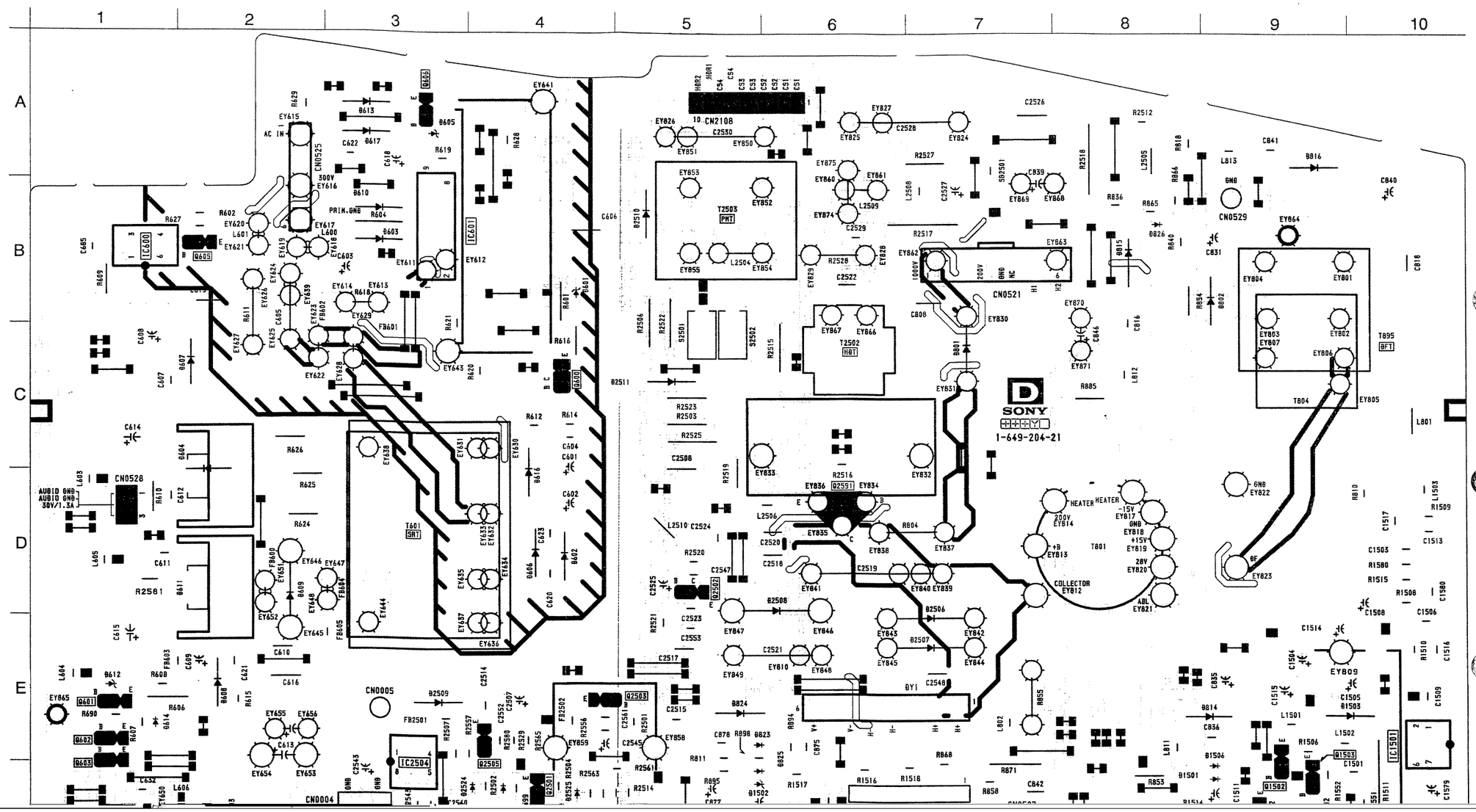
KV-K29CF1
RM-845P

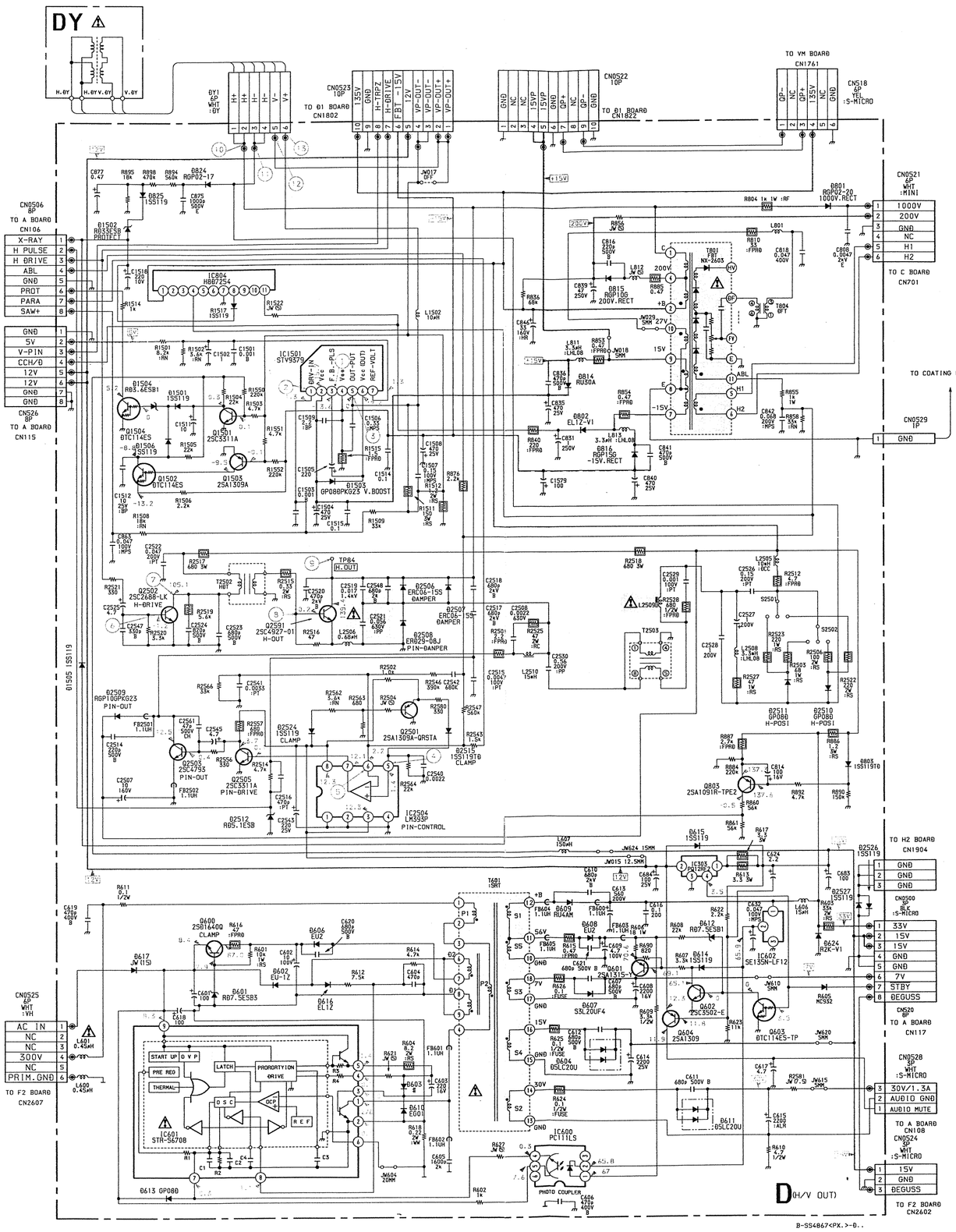
# D [H/V OUT]

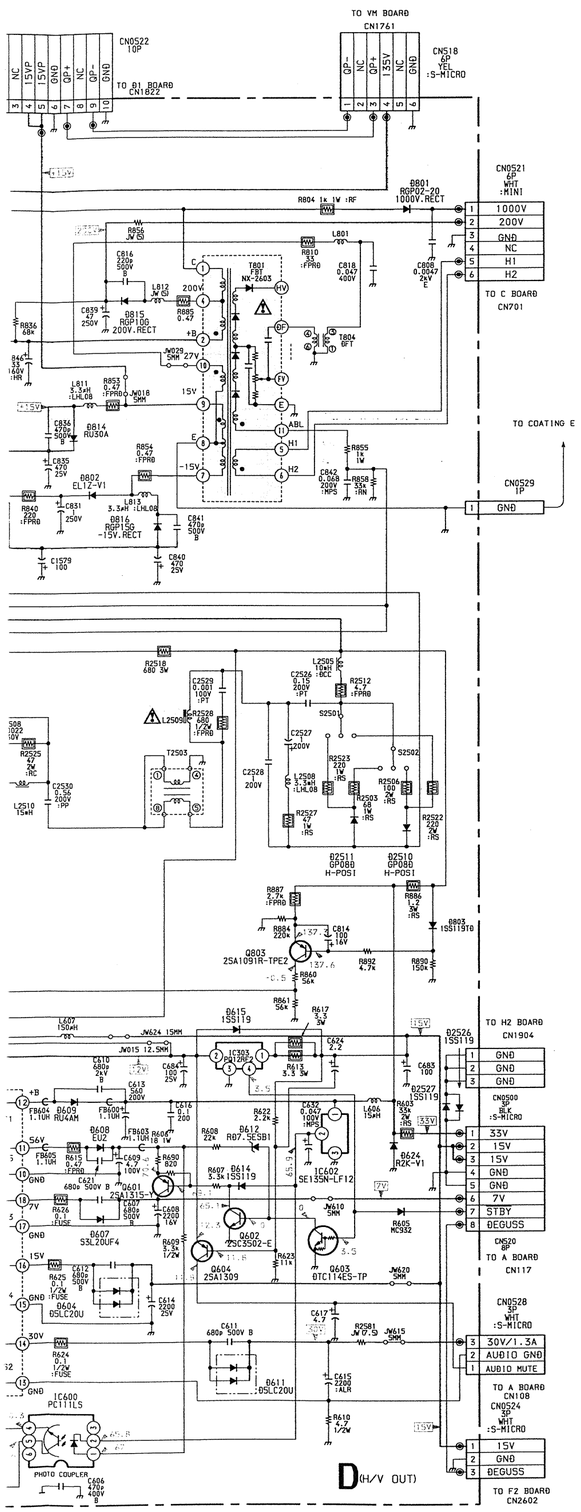
– D Board –

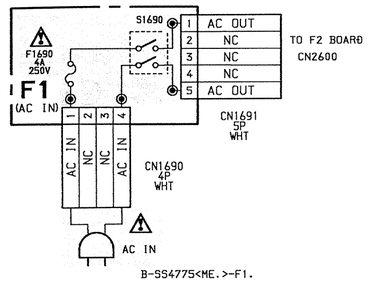
• D BOARD

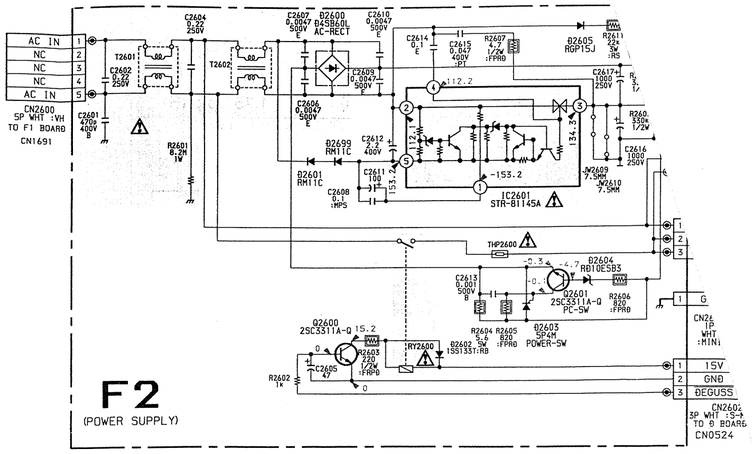
| IC | | DIODE | |
|---|---|---|---|
| IC303 | F – 3 | D601 | B – 4 |
| IC600 | B – 1 | D602 | D – 4 |
| IC601 | B – 3 | D604 | C – 2 |
| IC602 | F – 1 | D606 | D – 4 |
| IC804 | F – 7 | D607 | C – 2 |
| IC1501 | E – 10 | D608 | E – 2 |
| IC2504 | E – 3 | D609 | D – 2 |
| | | D610 | B – 3 |
| | | D611 | D – 2 |
| | | D612 | E – 1 |
| | | D613 | A – 3 |
| | | D614 | E – 1 |
| | | D615 | F – 2 |
| | | D616 | D – 4 |
| | | D617 | A – 3 |
| | | D624 | F – 2 |
| TRANSISTOR | | D801 | C – 7 |
| | | D802 | B – 9 |
| | | D803 | F – 6 |
| Q600 | C – 4 | D814 | E – 9 |
| Q601 | E – 1 | D815 | B – 8 |
| Q602 | E – 1 | D816 | A – 9 |
| Q603 | E – 1 | D824 | E – 5 |
| Q604 | F – 3 | D825 | E – 5 |
| Q803 | F – 6 | D1501 | E – 9 |
| Q1501 | F – 9 | D1502 | F – 5 |
| Q1502 | E – 9 | D1503 | E – 10 |
| Q1503 | E – 9 | D1504 | F – 9 |
| Q1504 | F – 9 | D1505 | F – 5 |
| Q2501 | F – 4 | D1506 | E – 9 |
| Q2502 | D – 5 | D2506 | D – 7 |
| Q2503 | E – 4 | D2507 | E – 7 |
| Q2505 | E – 4 | D2508 | D – 6 |
| Q2591 | D – 6 | D2509 | E – 3 |
| | | D2510 | B – 5 |
| | | D2511 | C – 5 |
| | | D2512 | F – 4 |
| | | D2515 | F – 4 |
| | | D2524 | F – 3 |
| | | D2526 | F – 1 |
| | | D2527 | F – 1 |

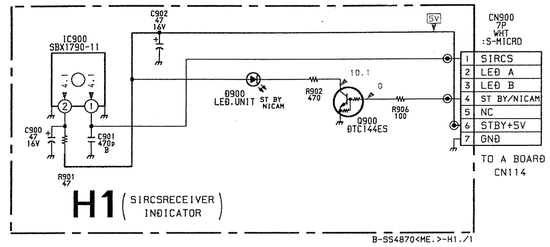


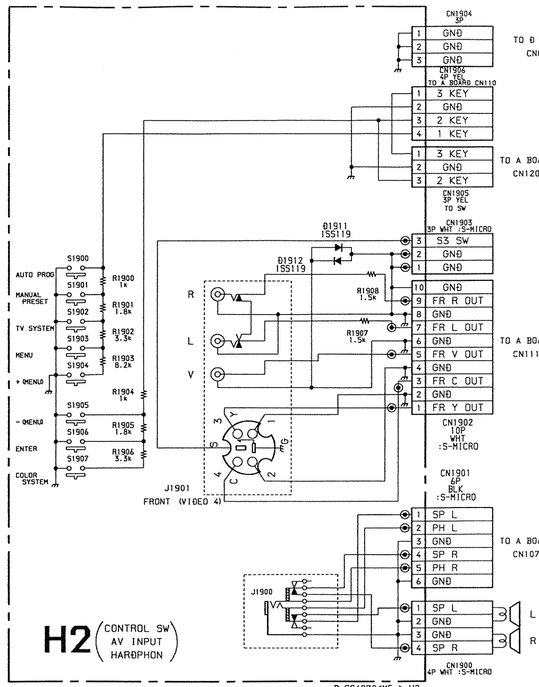

DY
CN0506 8P
TO A BOARD CN106
X-RAY
H PULSE
H DRIVE
ABL
GND
PROT
PARA
SAW+
CN526 8P
TO A BOARD CN115
GND
5V
V-PIN
CCH/Ø
12V
12V
GND
GND
CN0523 10P
TO B1 BOARD CN1802
CN0522 10P
TO B1 BOARD CN1822
TO VM BOARD CN1761
CN518 6P FFC :S-MICRO
CN0521 6P WHT :MINI
1000V
200V
GND
NC
H1
H2
TO C BOARD CN701
TO COATING E
CN0529 1P
GND
IC804 H887254
IC1501 STV9379
Q1504 RB3.6ESB1
Q1501 1SS119
Q1505 2SC3311A
Q1504 DTC114ES
Q1502 DTC114ES
Q1503 2SA1309A
Q1503 GP08PKG23 V.BOOST
Q2502 2SC2688-LK H-DRIVE
T2502 H87
Q2591 2SC4927-01 H-OUT
TP84 H.OUT
Q2506 ERC06-15S DAMPER
Q2507 ERC06-15S DAMPER
Q2508 ERD29-06J PIN-DAMPER
Q2509 RGP10GPKG23 PIN-OUT
Q2503 2SC4793 PIN-OUT
Q2505 2SC3311A PIN-DRIVE
Q2512 RD5.1ESB
Q2524 1SS119 CLAMP
Q2501 2SA1309A-QRSTA
Q2515 1SS119TB CLAMP
IC2504 LM393P PIN-CONTROL
T2503
Q2511 GP08D H-POSI
Q2510 GP08D H-POSI
Q803 2SA1091R-TPE2
T801 FBT NX-2603
Q815 RGP10G 200V.RECT
Q802 EL1Z-V1
Q816 RGP15G -15V.RECT
Q814 RU30A
Q813 3.3kH ILHL08
D801 RGP20-20 1000V.RECT
D808 0.0047 2kV E
D805 1SS119TG
Q804 6PT
Q805 2SC5502-E
Q806 2SA1309
Q807 DTC114ES-TP
IC1602 SE135N-LF12
Q1602 2SA1515-Y
Q1601 2SA1309
Q1603 2SC3502-E
Q1604 2SA1309
Q1605 2SC3502-E
Q1606 2SA1309
Q1607 2SC3502-E
Q1608 2SA1309
Q1609 2SC3502-E
Q1610 2SA1309
Q1611 2SC3502-E
Q1612 2SA1309
Q1613 2SC3502-E
Q1614 2SA1309
Q1615 2SC3502-E
Q1616 2SA1309
Q1617 2SC3502-E
Q1618 2SA1309
Q1619 2SC3502-E
Q1620 2SA1309
Q1621 2SC3502-E
Q1622 2SA1309



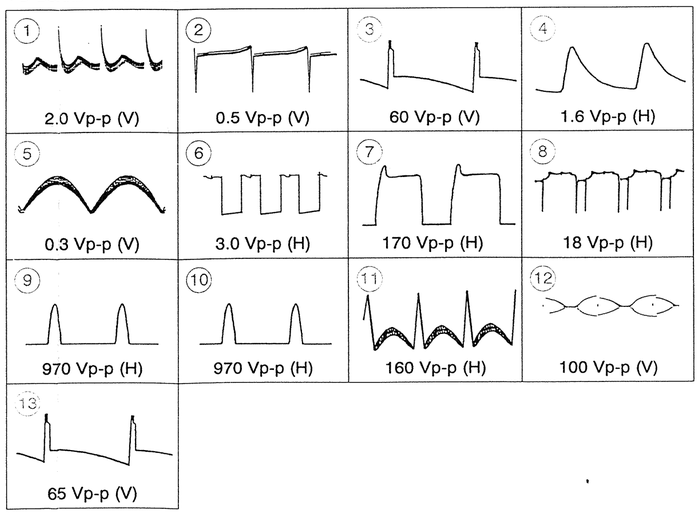




• D BOARD WAVEFORMS

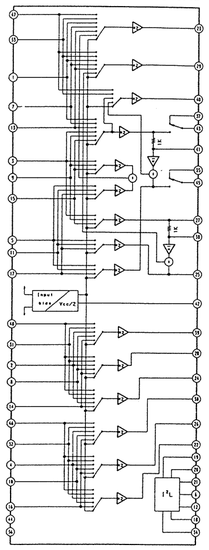


## iagram of A Board

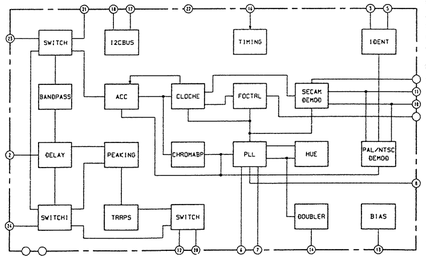
### AVEFORMS

| | | | |
|---|---|---|---|
| 5 Vp-p (H) | 2 2.0 Vp-p (H) | 3 PAL SECAM NTSC4.43 2.0 Vp-p (H) | 3 NTSC3.58 1.75 Vp-p (H) |
| 2.25 Vp-p (H) | 5 2.25 Vp-p (H) | 6 2.0 Vp-p | 7 PAL SECAM NTSC4.43 2.0 Vp-p (H) |
| 7 NTSC3.58 1.75 Vp-p (H) | 8 1.2 Vp-p (H) | 9 PAL SECAM NTSC4.43 1.1 Vp-p (H) | 9 NTSC3.58 0.8 Vp-p (H) |
| 10 1.2 Vp-p (H) | 11 0.8 Vp-p (H) | 12 0.9 Vp-p (H) | 13 0.8 Vp-p (H) |
| 14 0.9 Vp-p (H) | 15 1.6 Vp-p (H) | 16 1.3 Vp-p | 17 3.2 Vp-p (H) |
| 18 3.2 Vp-p (H) | 19 3.2 Vp-p (H) | | |

**A Board IC201 CXA1545AS**



**A Board IC301 TDA9145**




**Schematic diagrams**

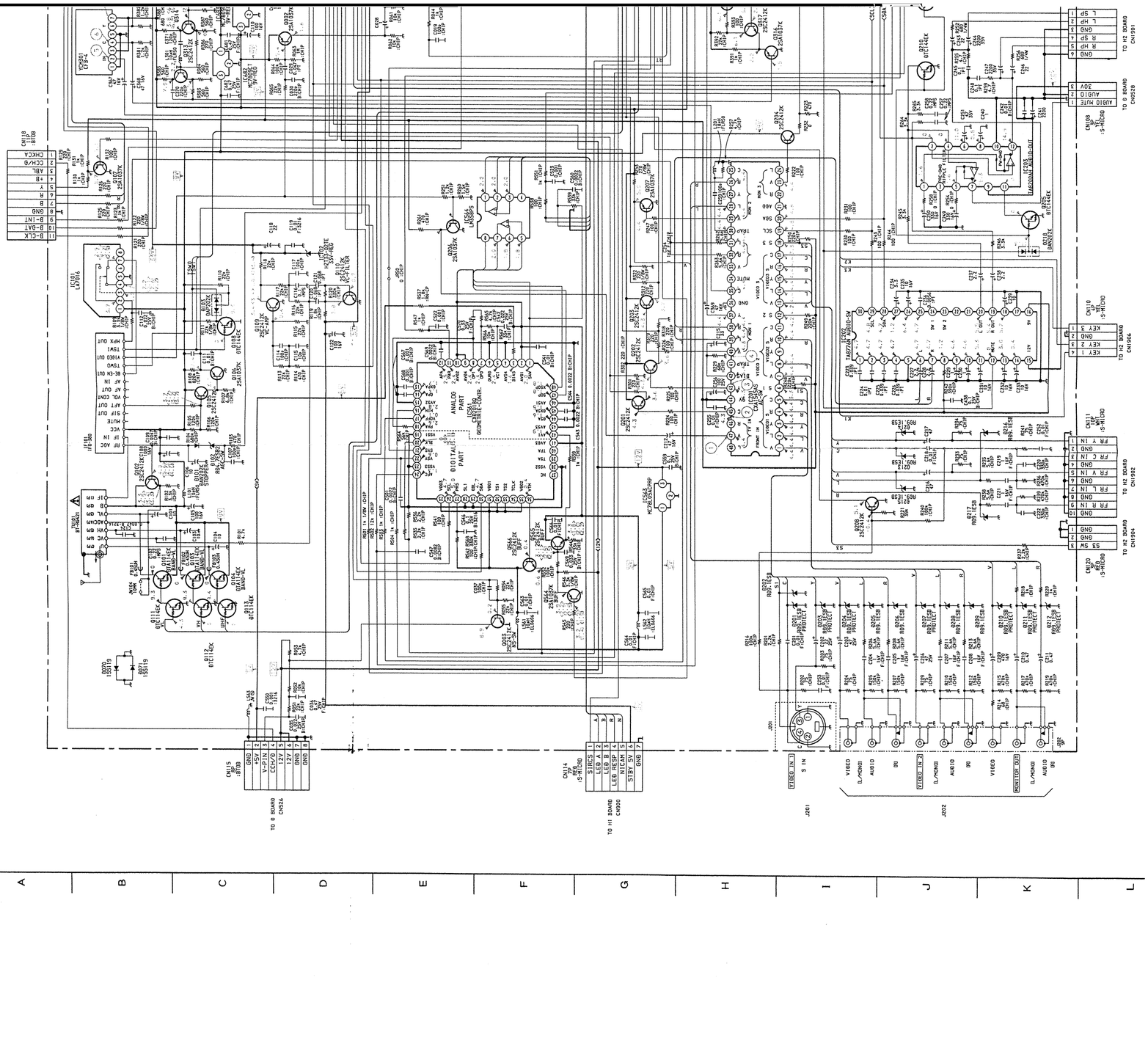
D F1 F2

← H1 H2 boards



**Schematic diagram**

A board →


A
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9
IC101 LA7016
IC201 TA8774A AUDIO-SW
IC203 TA8254AH
IC501 DIGITAL PART
IC502 ANALOG PART
IC503 MC78L05ACP
IC504 MC78L08ACP
Q101 2SA1037K
Q102 2SA1037K
Q103 2SA1037K
Q104 2SA1037K
Q105 2SA1037K
Q106 2SA1037K
Q107 2SA1037K
Q108 2SA1037K
Q109 2SA1037K
Q110 2SA1037K
Q111 DTC114EK
Q112 DTC114EK
Q113 DTC114EK
Q114 DTA114EK
Q115 DTA114EK
Q116 DTA114EK
Q117 2SA1037K
Q118 2SA1037K
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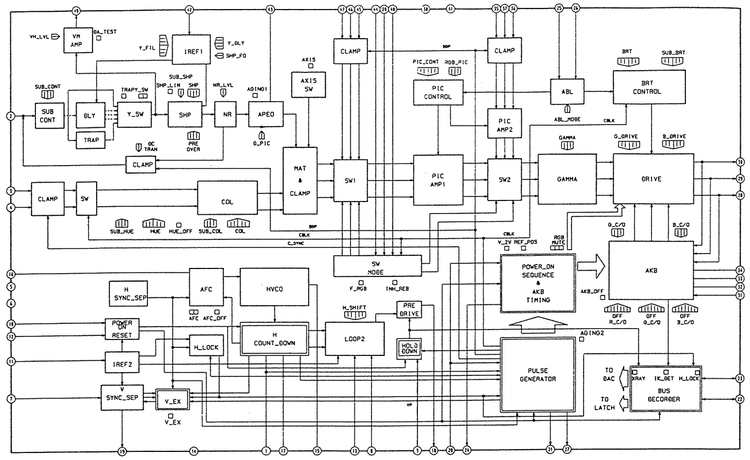
Q245 2SA1037K

KV-K29CF1
RM-845P

**A** [TU, AU, CHANNEL SELECTION, COLOR SYSTEM, SUB HUE, MUTE]

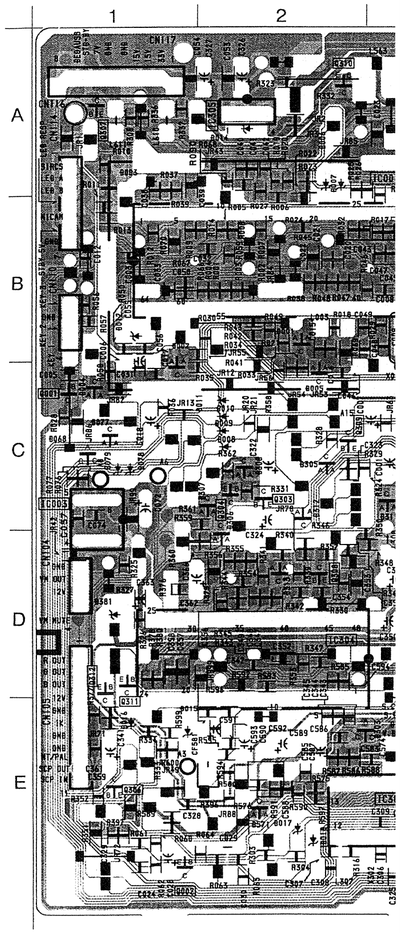
A Board IC304 CXA1587S




• A BOARD

| IC | | Q104 | E – 9 | Q312 | D – 1 | D204 | C – 9 | IF BLOCK | |
|---|---|---|---|---|---|---|---|---|---|
| | | Q105 | E – 6 | Q313 | B – 9 | D205 | B – 9 | | |
| IC001 | B – 2 | Q106 | E – 6 | Q314 | A – 9 | D206 | B – 9 | IF101 | D – 6 |
| IC002 | C – 3 | Q107 | A – 9 | Q315 | E – 3 | D207 | C – 9 | | |
| IC003 | C – 1 | Q108 | D – 6 | Q316 | A – 9 | D208 | C – 9 | | |
| IC101 | D – 6 | Q109 | D – 9 | Q317 | A – 9 | D209 | C – 9 | TUNER | |
| IC102 | C – 8 | Q110 | D – 9 | Q318 | A – 8 | D210 | D – 9 | | |
| IC201 | C – 9 | Q111 | D – 9 | Q564 | B – 5 | D211 | D – 9 | TU101 | E – 9 |
| IC202 | B – 6 | Q112 | E – 9 | Q565 | B – 5 | D212 | D – 9 | | |
| IC203 | D – 5 | Q113 | E – 9 | Q566 | C – 5 | D213 | C – 8 | CRYSTAL | |
| IC301 | E – 3 | Q201 | B – 9 | | | D214 | C – 8 | | |
| IC302 | E – 4 | Q202 | B – 8 | DIODE | | D215 | C – 8 | X001 | C – 3 |
| IC304 | D – 2 | Q203 | B – 8 | | | D216 | C – 8 | X301 | E – 3 |
| IC305 | A – 2 | Q204 | C – 7 | D001 | B – 2 | D217 | C – 8 | X302 | E – 2 |
| IC561 | C – 5 | Q205 | D – 5 | D004 | C – 1 | D218 | D – 5 | | |
| IC563 | B – 5 | Q206 | B – 9 | D005 | C – 2 | D301 | D – 3 | | |
| IC564 | B – 4 | Q207 | B – 8 | D015 | E – 1 | D302 | E – 5 | | |
| IC682 | A – 7 | Q208 | C – 7 | D016 | E – 1 | D303 | E – 2 | | |
| IC683 | B – 6 | Q209 | D – 6 | D068 | C – 1 | D304 | E – 4 | | |
| IC684 | B – 6 | Q210 | D – 5 | D077 | C – 1 | D305 | C – 2 | | |
| | | Q303 | C – 2 | D078 | C – 1 | D306 | D – 2 | | |
| TRANSISTOR | | Q304 | C – 2 | D079 | C – 1 | D307 | C – 2 | | |
| | | Q306 | E – 1 | D101 | E – 7 | D308 | C – 2 | | |
| Q002 | E – 1 | Q307 | A – 1 | D102 | E – 6 | D311 | C – 3 | | |
| Q003 | B – 3 | Q308 | D – 2 | D103 | D – 6 | D312 | C – 2 | | |
| Q101 | D – 9 | Q309 | C – 2 | D201 | B – 9 | D313 | C – 2 | | |
| Q102 | E – 8 | Q310 | A – 2 | D202 | B – 9 | D381 | D – 1 | | |
| Q103 | E – 9 | Q311 | D – 1 | D203 | B – 9 | D571 | E – 2 | | |

PRINTED WIRING BOARDS
– A Board –



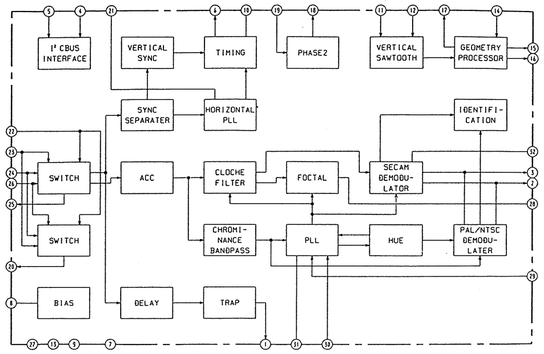
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

C D E F G H I J K L M N O P

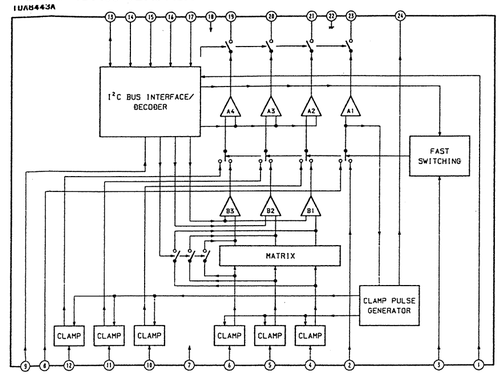
## • P BOARD WAVEFORMS

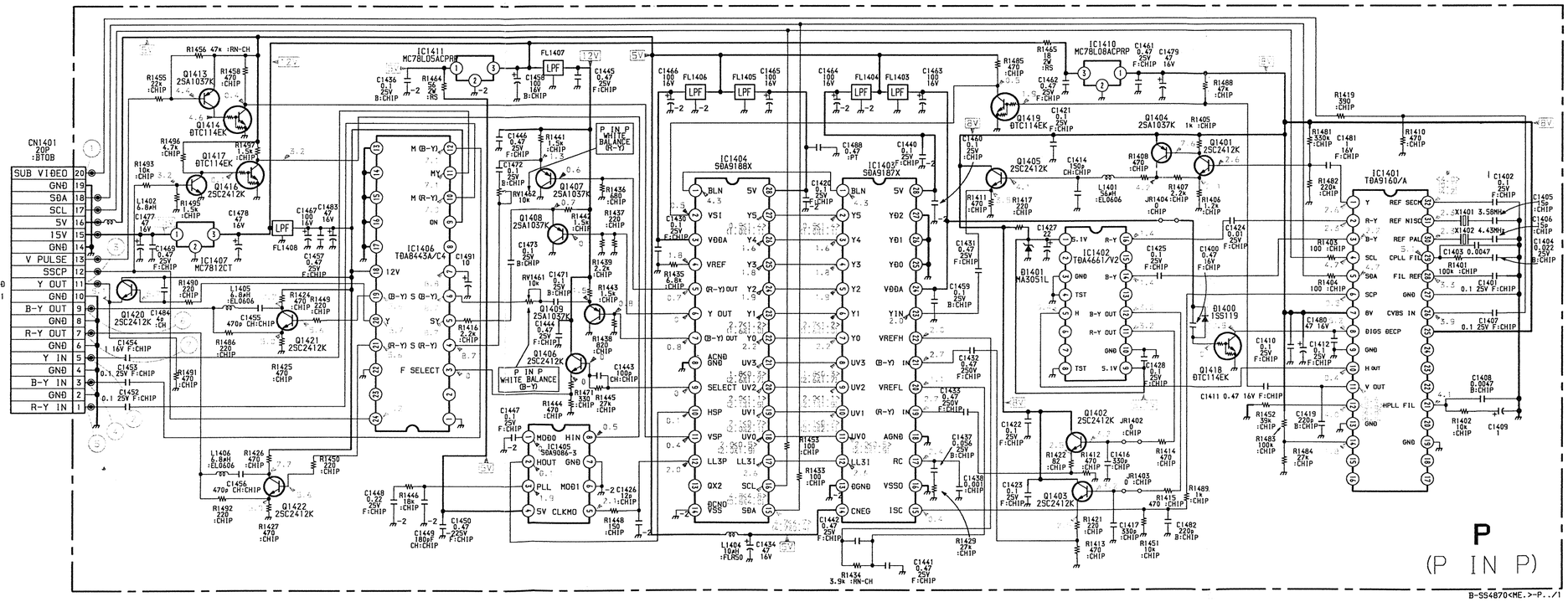
| | | | |
|---|---|---|---|
| ① 2.0 Vp-p (H) | ② PAL SECAM NYSC3.58 0.4 Vp-p (H) | ② NTSC4.43 0.4 Vp-p (H) | ③ PAL SECAM NYSC3.58 0.4 Vp-p (H) |
| ③ NTSC4.43 0.4 Vp-p (H) | ④ 1.5 Vp-p (H) | ⑤ 1.3 Vp-p (H) | ⑥ 1.5 Vp-p (H) |
| ⑦ 1.3 Vp-p (H) | | | |

### P Board IC1401 TDA9160

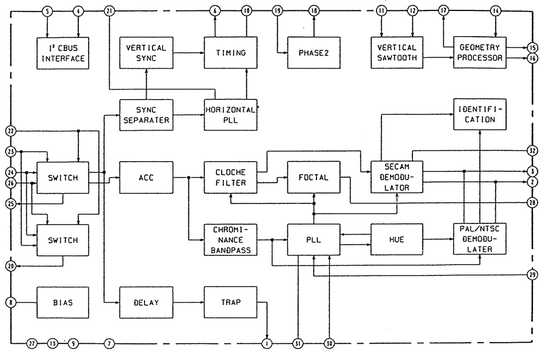



### P Board IC1406 TDA8443A

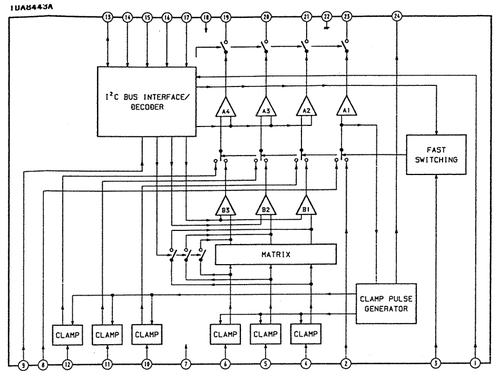


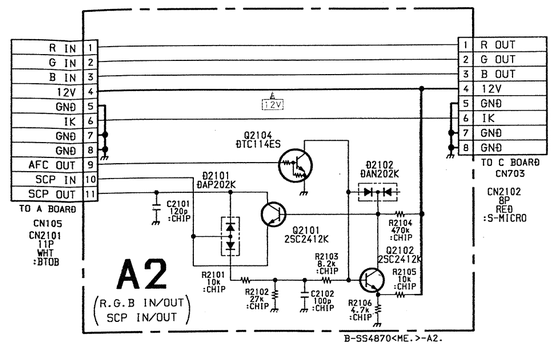



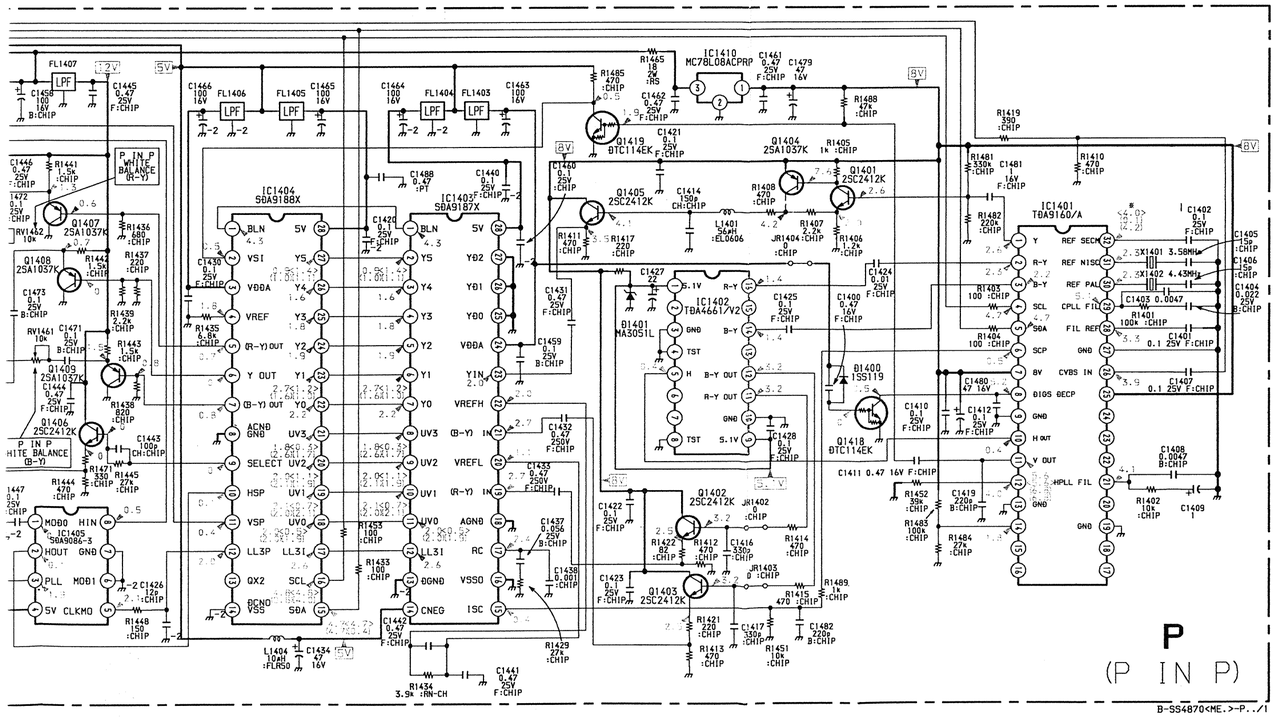
P Board IC1401 TDA9160

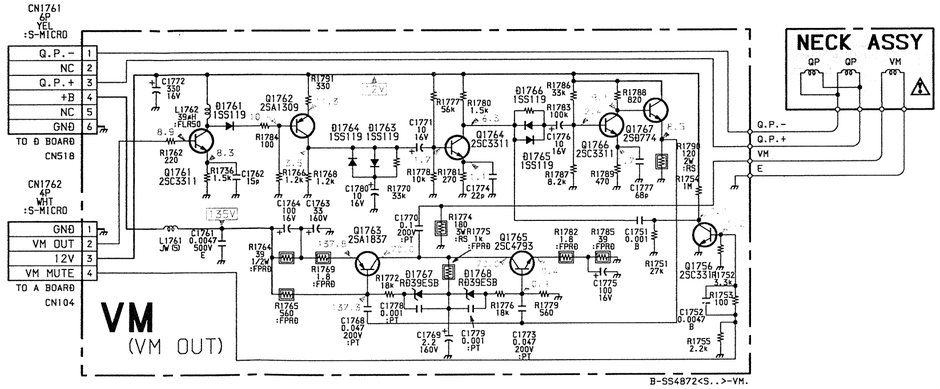



P Board IC1406 TDA8443A

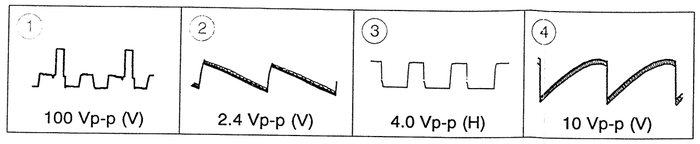


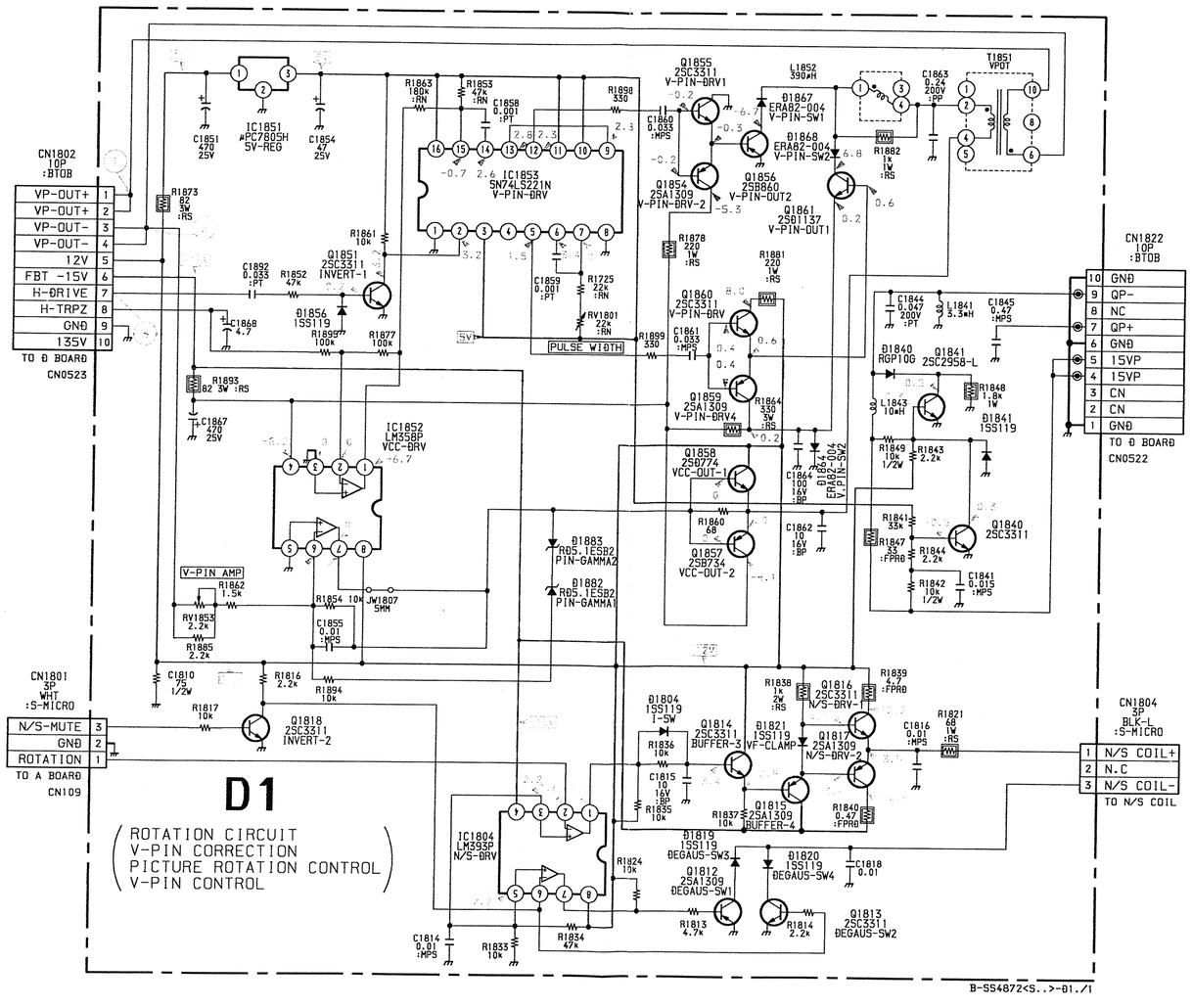



• D1 BOARD WAVEFORMS



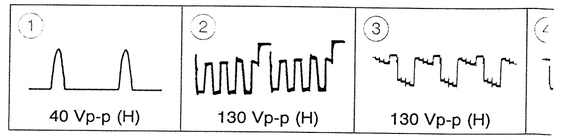

Schematic diagrams
A 2 P VM boards

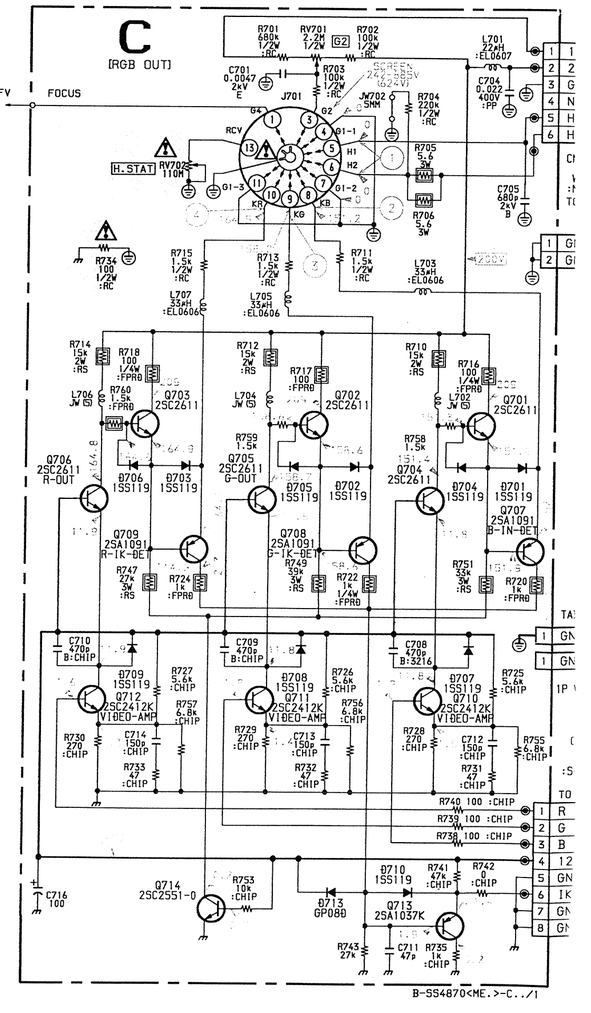


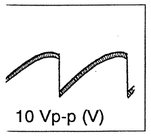
Schematic diagrams
C D 1 boards ➡

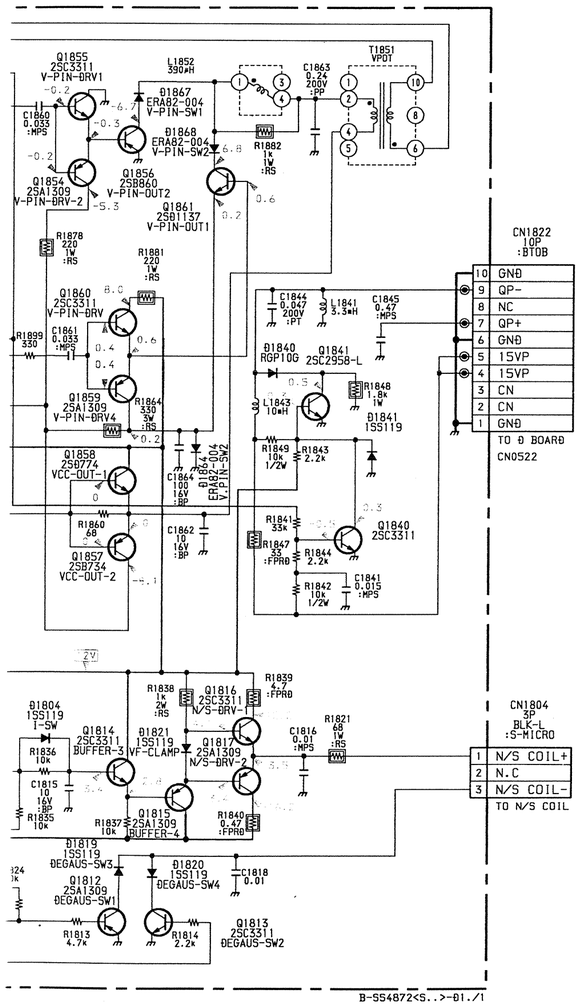


• C BOARD WAVEFORMS

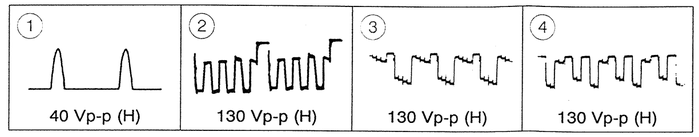


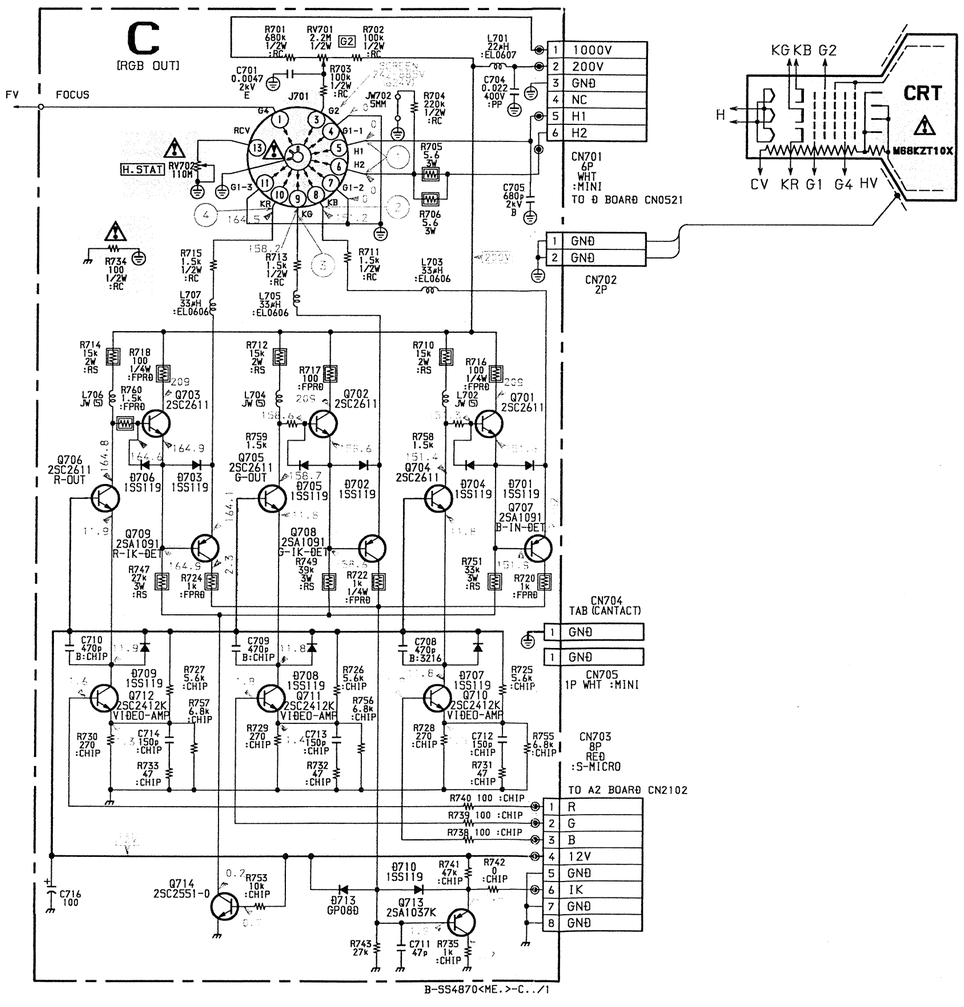






• C BOARD WAVEFORMS



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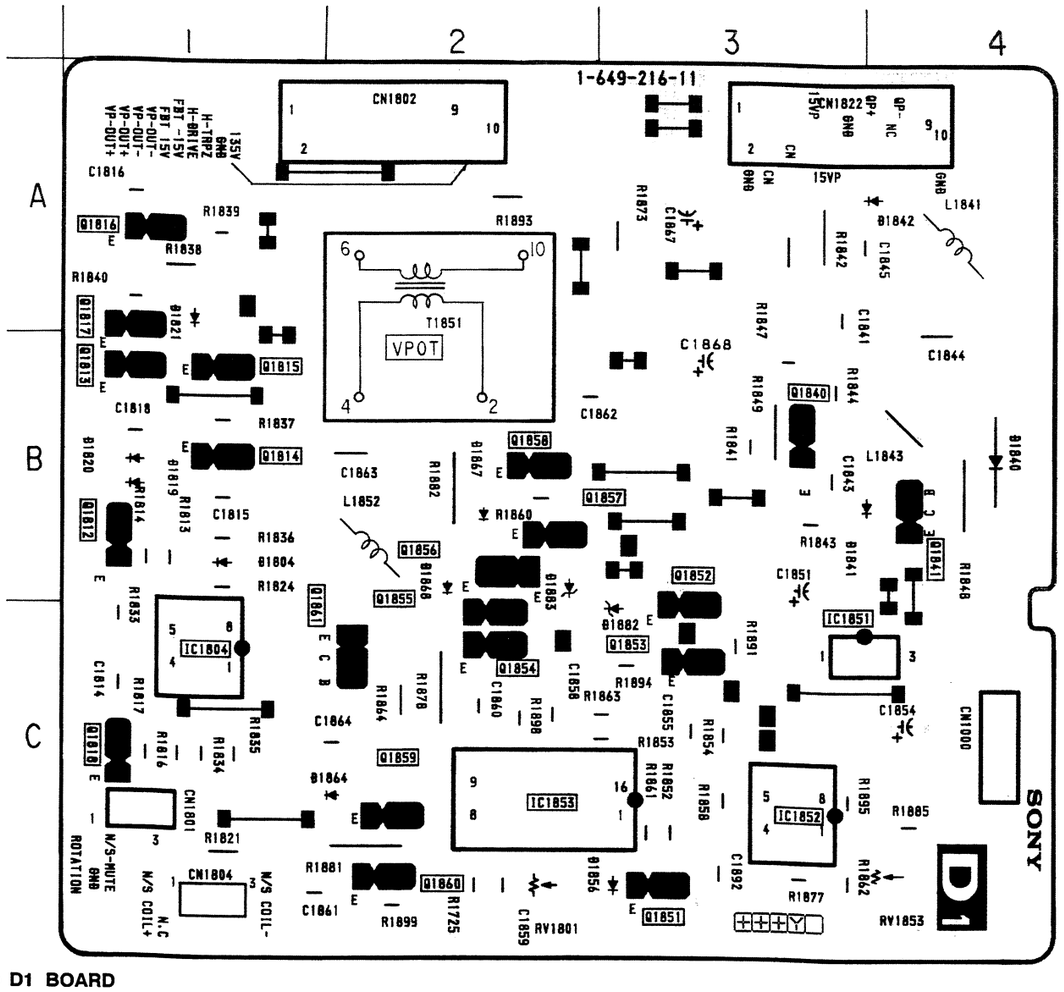
**D1** [ROTATION CIRCUIT, V-PIN CORRECTION, PICTURE ROTATION CONTROL, V-PIN CONTROL]

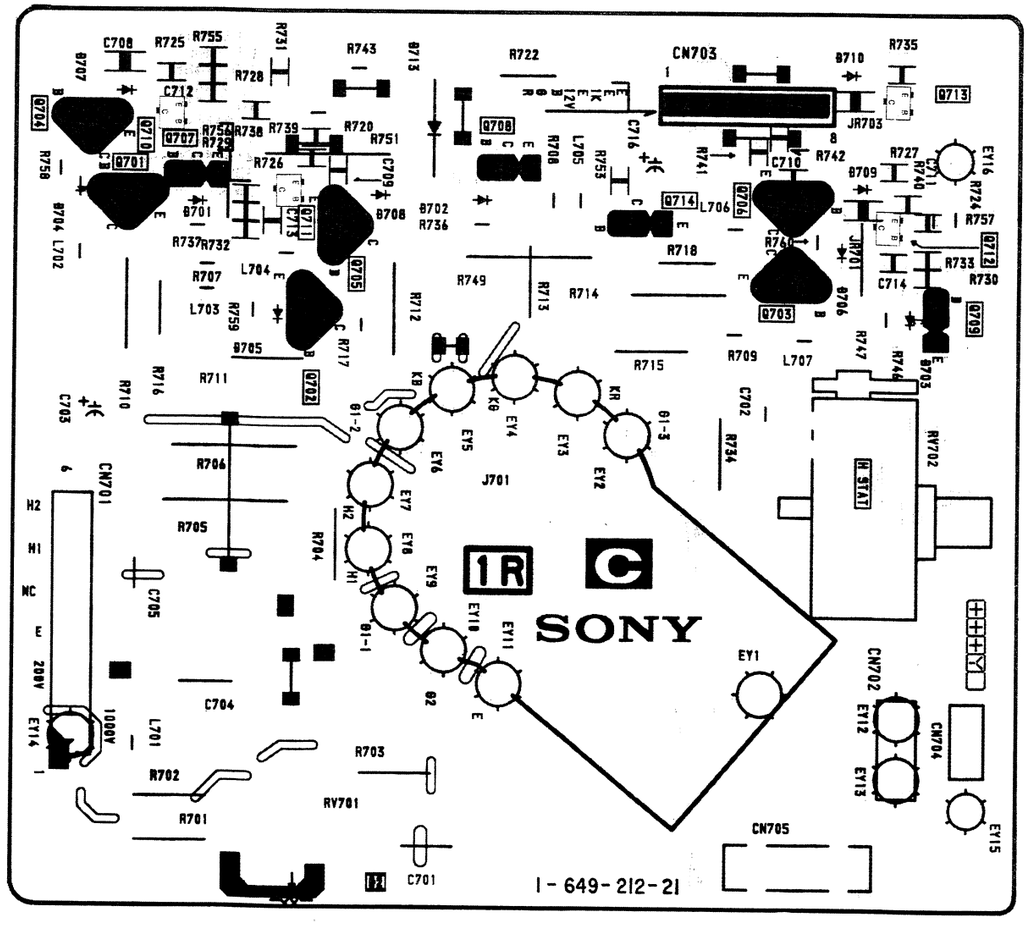
**C** [R, G, B OUT]

## PRINTED WIRING BOARDS

– D1 Board –




– C Board –



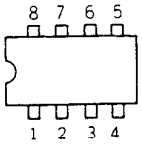

• **D1 BOARD**

| IC | | | |
|---|---|---|---|
| IC1804 | C – 1 | Q1851 | C – 3 |
| IC1851 | C – 3 | Q1854 | C – 2 |
| IC1852 | C – 3 | Q1855 | C – 2 |
| IC1853 | C – 2 | Q1856 | B – 2 |
| **TRANSISTOR** | | Q1857 | B – 2 |
| Q1812 | B – 1 | Q1858 | B – 2 |
| Q1813 | B – 1 | Q1859 | C – 2 |
| Q1814 | B – 1 | Q1860 | C – 2 |
| Q1815 | B – 1 | Q1861 | C – 2 |
| Q1816 | A – 1 | **DIODE** | |
| Q1817 | A – 1 | D1804 | B – 1 |
| Q1818 | C – 1 | D1819 | B – 1 |
| Q1840 | B – 3 | D1820 | B – 1 |
| Q1841 | B – 4 | D1821 | A – 1 |
| | | D1840 | B – 4 |
| | | D1841 | B – 3 |
| | | D1856 | C – 3 |
| | | D1864 | C – 2 |
| | | D1867 | B – 2 |
| | | D1868 | B – 2 |
| | | D1882 | C – 3 |
| | | D1883 | B – 2 |
| | | **VARIABLE RESISTOR** | |
| | | RV1801 | C – 2 |
| | | RV1853 | C – 4 |

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

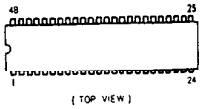
## 6-5. SEMICONDUCTORS

**CAT24C04P**
**LM358P**
**LM393P**
**SDA9086-3**
**μPC358C**
**μPC393C**

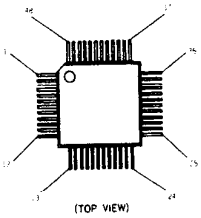



(Top view)

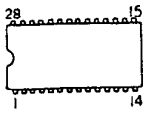
**CXA1545AS**
**CXA1587S**




**CXD2018Q**

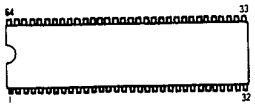



**SDA9187X**
**SDA9188X**




*(Top view)*

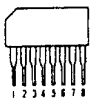
**CXP80424**
**CXP80424-SV4652**



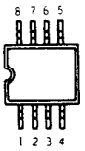

*(Top view)*

**HZT33-02TE**
**μPC574J**

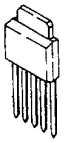
**LA7016**



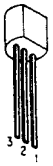

**LM358PS**




**L78LR05D-MA**

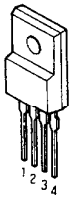


**MC78L05ACPRP**
**NJM78L05A**




**MC7809CT**
**MC7812CT**
**NJM78M09FA**
**TA7805S**
**μPC7805H**

**PQ05RF1**

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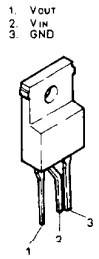
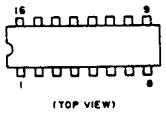
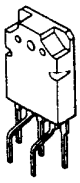



**SN74LS221N**
**TDA4661/V2**




**STR-81145A**



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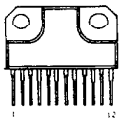


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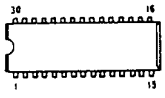
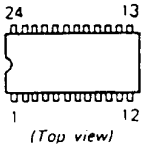


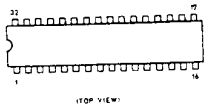

*(Top view)*

**TDA8443A/C4**
**TDA9145**
**TDA9145/N2B**

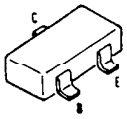



*(Top view)*

**TDA9160/N2**

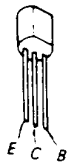



**DTA114EK**
**DTA144EK**
**DTC114EK**
**DTC144EK**
**2SA1037K**
**2SA1162-G**
**2SC2412K**
**2SC2412K-QR**
**2SC2413K**
**2SC2413KQ**

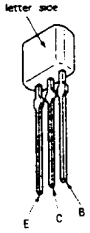



**DTC114ES**
**DTC144ES**

**2SA1091-O**
**2SC2551-O**

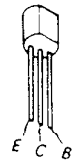



**2SA1175-HFE**
**2SA1309A**
**2SC2785-HFE**
**2SC3311A**



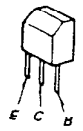
# KV-K29CF1
RM-845P

**2SA1315-Y**

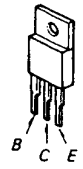



**2SA1837**

**2SB734-34**
**2SC2958-L**
**2SD774-34**

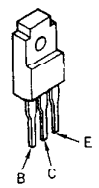



**2SB858-C**
**2SB860**




**2SC2611**
**2SC2688-LK**
**2SC3502-E**
**2SC3601-E**

**2SC3298B-O**
**2SC4793**
**2SD1137**

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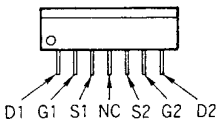


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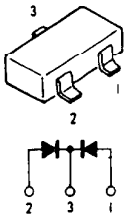


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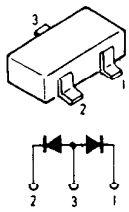


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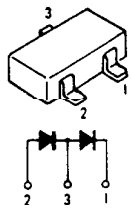
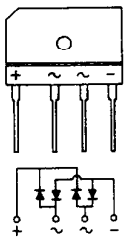
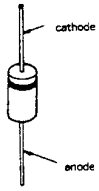


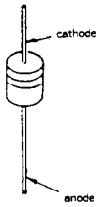

**D4SB60L**



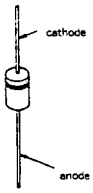

**EGP20G**
**EG01**
**EL-1Z**
**EU-1Z**
**EU-2**
**GP08D**
**RGP15G**
**RGP15J**



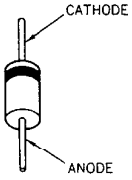

**ERA82-004**
**ERA85-009**
**HZS5CLL-TD**
**RD10ES-B3**
**RD3.6ES-B1**
**RD33ES-B2**
**RD39ES-B**
**RD39ES-B2**
**RD4.7ES-B2**
**RD5.1ES-B**
**RD5.1ES-B1**
**RD5.1ES-B2**
**RD5.6ES-B**
**RD7.5ES-B**
**RD7.5ES-B1**
**RD7.5ES-B2**
**RD7.5ES-B3**
**RD9.1ES-B**
**RD9.1ESL**
**1SS119**
**1SS133**



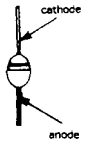

**ERC06-15S**
**RGP02-20EL-6394**



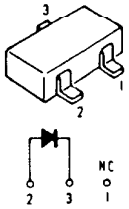

**ERD29-08J**
**RGP02-17**
**RGP02-17EL-6433**
**RU4AM**
**RU4DS**



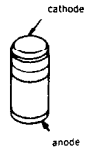

**GP08**
**U05G**



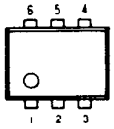

**MA3047**
**RD4.7M-B2**



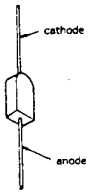

**MA3051L-TX**



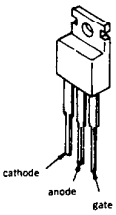

**PC111LS**
**PC111YS**




**RM11C**




**5P4M**
**5P6M**



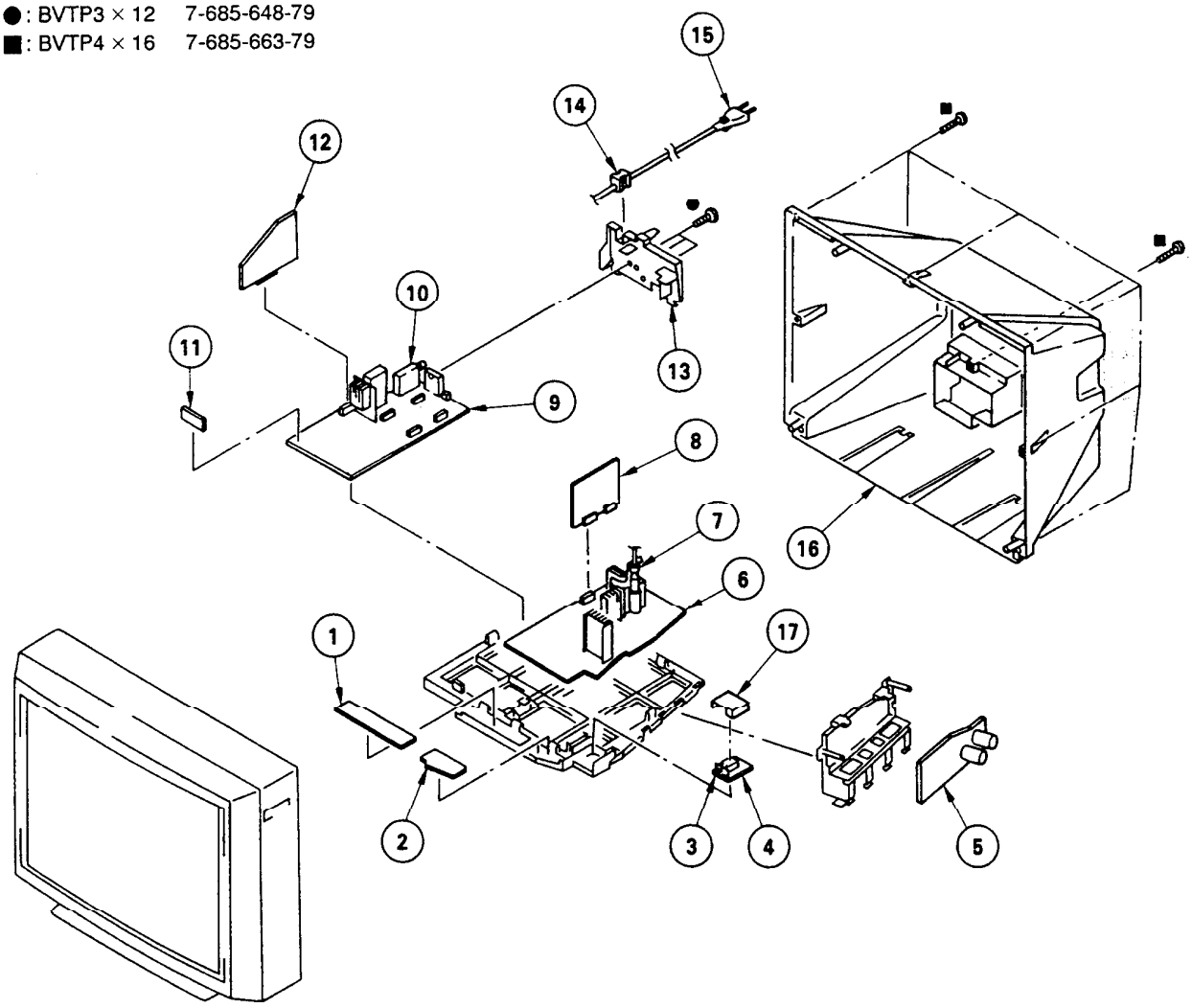
# SECTION 7
# EXPLODED VIEWS

NOTE:
- 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 ⚠ are critical for safety.
Replace only with part number specified.

## 7-1. CHASSIS

●: BVTP3 × 12 7-685-648-79
■: BVTP4 × 16 7-685-663-79

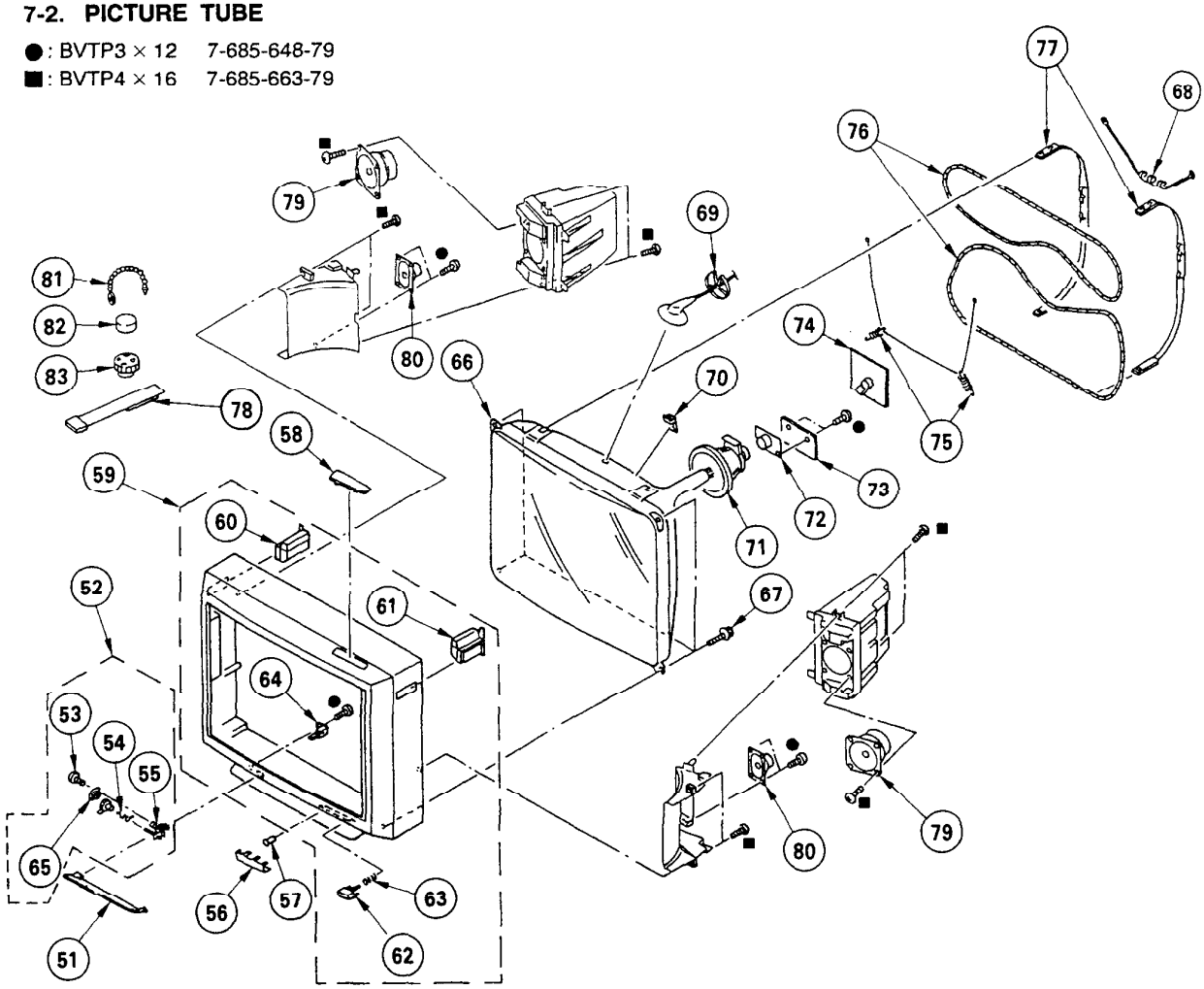



| REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| 1 | *1-649-207 21 | H2 BOARD | |
| 2 | *1-649-206-21 | H1 BOARD | |
| 3 | ⚠1-571-433-12 | SWITCH, PUSH (AC POWER) | |
| 4 | *A-1241-131-A | F1 BOARD, COMPLETE | |
| 5 | *A-1241-139-A | F2 BOARD, COMPLETE | |
| 6 | *A-1346-238-A | D BOARD, COMPLETE | |
| 7 | ⚠8-598-927-00 | TRANSFORMER, FLYBACK (NX2603//M3B) | |
| 8 | *A-1346-216-A | D1 BOARD, COMPLETE | |
| 9 | *A-1297-315-A | A BOARD, COMPLETE | |
| 10 | ⚠1-693-186-11 | TUNER (BT-RG421) | |
| 11 | *1-651-277-21 | A2 BOARD | |
| 12 | *A-1195-082-A | P BOARD, COMPLETE | |
| 13 | *4-042-949-01 | COVER, TERMINAL | |
| 14 | ⚠4-335-154-11 | GROMMET, AC CORD | |
| 15 | ⚠1-574-062-51 | CORD, POWER (WITH CONNECTOR) 6.0A/250V | |
| 16 | 4-043-176-01 | COVER, REAR | |
| 17 | 4-043-694-01 | COVER, POWER SWITCH | |

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

## 7-2. PICTURE TUBE

●: BVTP3 × 12 7-685-648-79
■: BVTP4 × 16 7-685-663-79




| REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| 51 | X-4031-956-1 | DOOR ASSY, CONTROL | |
| 52 | X-4031-244-1 | DAMPER ASSY | 53-55,65 |
| 53 | 4-033-184-01 | SCREW, SPECIAL | |
| 54 | 4-041-016-01 | SPRING | |
| 55 | 4-041-017-01 | SHAFT (MAIN), DAMPER DOOR | |
| 56 | 4-042-936-11 | WINDOW, ORNAMENTAL | |
| 57 | 4-042-927-01 | GUIDE, LIGHT | |
| 58 | 1-467-539-11 | SWITCH BLOCK | |
| 59 | X-4031-743-1 | CABINET ASSY (WITH BEZEL ASSY) | 60-64 |
| 60 | 4-042-942-11 | HANDLE (L) | |
| 61 | 4-042-943-11 | HANDLE (R) | |
| 62 | 4-042-937-01 | BUTTON, POWER | |
| 63 | 4-036-405-11 | SPRING, COMPRESSION | |
| 64 | 4-042-940-01 | UNIT, LOCK | |
| 65 | 4-036-880-11 | DAMPER | |
| 66 | ⚠8-733-841-05 | PICTURE TUBE (M68KZT10X) | |
| 67 | 4-390-505-01 | SCREW (7), TAPPING | |
| 68 | 4-043-827-11 | BAND, DEGAUSSING COIL | |
| 69 | *3-704-372-11 | HOLDER, HV CABLE | |
| 70 | 3-704-495-01 | SPACER, DY | |
| 71 | ⚠8-451-422-21 | DEFLECTION YOKE Y29GXA(SBN) | |
| 72 | ⚠1-452-509-12 | *NECK ASSY, PICTURE TUBE (NA-308)* | |
| 73 | *A-1342-239-A | VM BOARD, COMPLETE | |
| 74 | *A-1331-376-A | C BOARD, COMPLETE | |
| 75 | 4-369-318-61 | SPRING, TENSION | |
| 76 | ⚠1-403-672-11 | COIL, DEMAGNETIZATION | |
| 77 | *4-043-036-01 | *HOLDER, DGC* | |
| 78 | X-4309-608-0 | PERMALLOY ASSY, CONVERGENCE | |
| 79 | 1-504-479-11 | SPEAKER (10CM) | |
| 80 | 1-504-486-11 | SPEAKER (9X5CM) | |
| 81 | 4-308-870-00 | CLIP, LEAD WIRE | |
| 82 | 1-452-032-00 | MAGNET, DISK; 10MM ϕ | |
| 83 | 1-452-094-00 | MAGNET, ROTATABLE DISK; 15MM ϕ | |