

## SECTION 3 ADJUSTMENTS

### 3-1. Basic Adjustments

#### Note 1: Precautions Upon Adjusting

- When the CRT has been replaced, fix DY, and decide the position of the neck assembly before beginning adjustments.
- The service mode can be exited by turning OFF the power.

#### 1-1. Attaching the Neck Assembly

1. Fix DY to the CRT funnel, and then fix the Mg Focus Coil.
2. Secure the 2-pole and 4-pole magnet assemblies 6 to 8 mm away from the Mg Focus Coil.
3. Attach the C board.

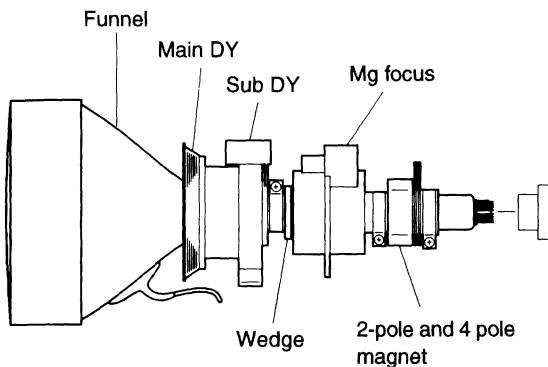


Fig. 1

#### 1-2. Adjusting Conditions

##### 1-2-1. Projector

- (1) Place the unit on a table which satisfies the projection conditions in Fig. 2.  
(See Fig. 2-1, Fig. 2-2, Fig. 2-3.)

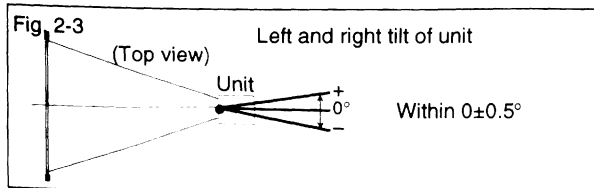
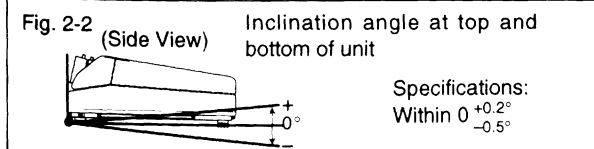
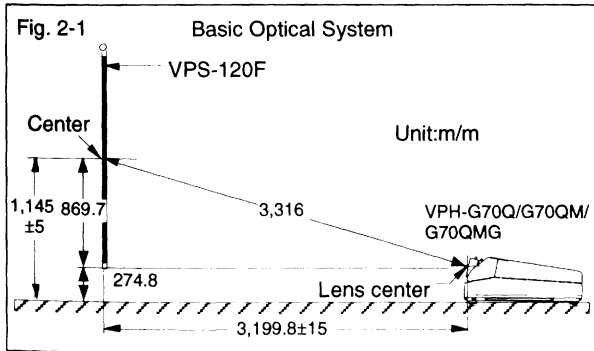


Fig. 2

##### 1-2-2. CRT Convergence Angle Check

1. Open the top cover, and check that there are adjusting screws in the adjusting hole for the 120-inch screen. (See Fig. 5.)  
If, there are no adjusting screws in the 120-inch adjusting hole, adjust as follows.

- (1) Turn on the power of the projector.
- (2) Set the remote control to the serviceman adjustment mode.  
For details, see "Preparation" on page 1-36 (EN).
- (3) Reset the green, red and blue centering.  
For details, see "Resetting the Data" on page 1-70 (EN).
- (4) Make sure that the on-screen display is shown as follows:
  - The center of the green hatch pattern aligns with the horizontal center of the screen.
  - The center of the red and blue hatch patterns align at even intervals from the green hatch pattern.

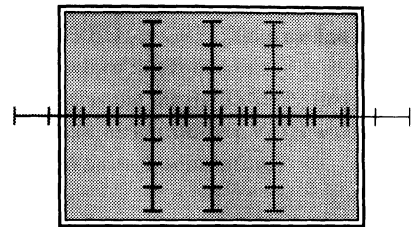


Fig. 3

If the center of the green HATCH pattern does not align with the center of the screen, re-install the projector correctly.

- (5) Loosen the two red CRT fixing screws (black) by using the supplied tool. Make sure not to remove the screws.

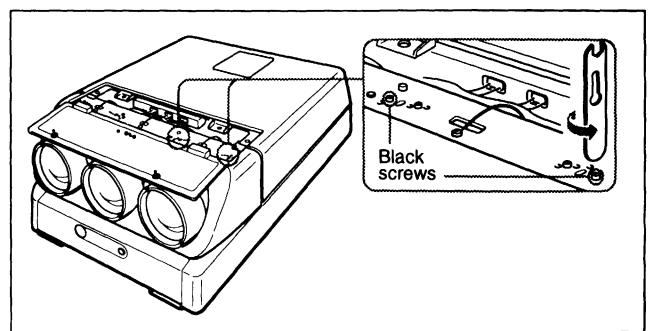


Fig. 4

- (6) Insert two adjusting screws (two gold screws) in the adjusting hole for the 120-inch screen.

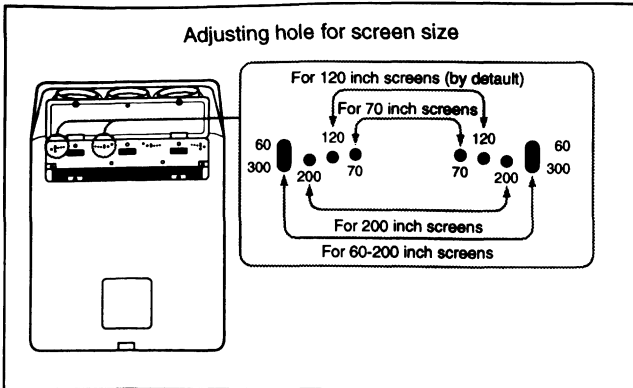


Fig. 5

- (7) Tighten the two red CRT fixing screws (black).  
 (8) Repeat steps (5) to (7) to loosen the two blue CRT fixing screws (black), adjust the blue CRT conversion angle and tighten the two adjustment screws (gold)

## 1-3. Focus Adjustment

### 1-3-1. Preparations

- Turn ON the MAIN POWER SW (AC ON/OFF), and press the POWER ON key of the remote commander to turn ON the unit.
- Continue pressing the RESET key of the remote commander to set the factory data reset state.

RESET key (Press more than 5 seconds)



ALL RESET



ALL RESET MODE



FACTORY RESET

Factory data reset

- \* The same state as that at shipment is set so that the replaced color can be adjusted.  
 At the same time, other colors can be checked.

- Select INPUT-A in the no-signal state,
- Set the serviceman adjusting mode.

ENTER key



ENTER key



▲ key



▼ key



ENTER key

Serviceman adjusting mode

- Select P3 (fH=31.5 kHz, fV=60Hz) for the internal oscillation pattern of the service setting menu using the MENU key.

### 1-3-2. Focus Rough Adjustment

- Set INPUT-A to the no-signal state, and select INPUT-A.
- Select the ME pattern using the PATTERN key.
- Set the color to be adjusted to a single color using the CUT OFF key, and adjust the lens focus roughly.

- \* The center may not be adjusted correctly when the sub-focus of the lens is not correct.

- Press the MG FOCUS of the remote commander, set the MG FOCUS adjustment mode, and select the ME pattern using the PATTERN key.
- Roughly adjust the center focus of R, G, and B using ALL.
- Repeat steps (3) to (5) and adjust the center focus.

### 1-3-3. DY Angle Adjustment

- (1) Set INPUT-A to the no-signal state, and select INPUT-A.
- (2) Press the REGISTRATION CENT key and ADJ G key, and receive the cross-hair pattern.
- (3) Press the CUT OFF R and B keys and set green only.
- (4) Adjust GREEN DY so that the horizontal cross-hair pattern becomes parallel to the horizontal line of the screen.
- (5) Roughly adjust the coil so that the connector part of the GREEN MG FOCUS coil faces up.

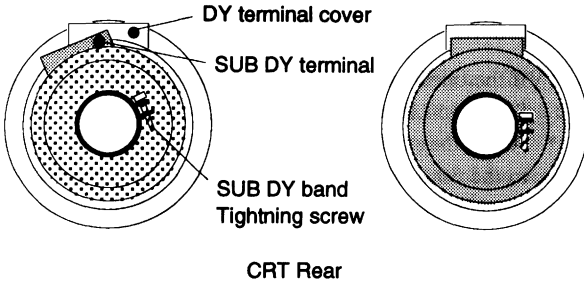


Fig. 6

- (6) Adjust the GREEN CENT to the screen center using the remote commander.
- (7) Roughly adjust the GREEN H.SIZE, H.LIN, and V.BOW so that the horizontal line at the center becomes straight.  
In H.SIZE/LIN adjustment, the screen edge or the 30 to 50 mm marks inside the screen serve as the reference positions. (In order to adjust the DY tilt easily, adjust the external lines of the cross-hatch slightly outside these marks in the H.SIZE adjustment.)
- (8) Press the REGISTRATION EW key, and check that the V.SKEW data is "128".
  - \* Adjust to "128" if it is not.
- (9) Adjust the GREEN DY angle, adjust the cross-hair horizontal line to the horizontal line on the screen, and secure DY (fine adjustment).
  - \* Use a non-magnetized screwdriver to tighten the screws.
  - \* Fix the DY to the CRT funnel.
  - \* Tightening torque for DY  
80 to 120 N.Cm (8.16 to 12.24 kgF.Cm)
- (10) After fixing DY, check that the values after adjustment are within the specification.

#### DY tilt adjustment specifications

- \* GREEN specifications:  
When SKEW adjustments are performed using the remote commander and the GREEN horizontal line is finely adjusted to the horizontal line on the screen, check that the value is within  $128 \pm 5$ .

- (11) Adjust the RED DY in the same way.

- \* Press the CUT OFF B key, and receive RED and GREEN.
- \* Use the GREEN cross-hair as the reference and not the screen horizontal line.
- \* When adjusting the [RED SIZE] first, set the [RED SIZE] data to 128, and rotate the LV1 (H width coil) of the E board. (Perform a rough adjustment.)

#### DY tilt adjustment specifications

- \* RED specifications:  
When V.SKEW adjustments are performed using the remote commander to finely adjust and the RED/BLUE horizontal line to the GREEN horizontal line, check that the data value is within  $128 \pm 5$ .

- (12) Adjust the BLUE DY in the same way as RED.

- \* Press the CUT OFF G key (or R key), and receive BLUE and RED (or GREEN).
- \* Use the RED (or GREEN) cross-hair as the reference and not the screen horizontal line.
- \* When adjusting the [RED SIZE] first, set the [RED SIZE] data to 128, and rotate the LV3 (H width coil) of the E board. (Perform a rough adjustment.)

#### DY tilt adjustment specifications

- \* BLUE specifications:  
When V.SKEW adjustments are performed using the remote commander to finely adjust the RED/BLUE horizontal line to the GREEN horizontal line, check that the data value is within  $128 \pm 5$ .

Note) The DY angle adjustment need only be performed for the replaced color.

### 1-3-4. MG Focus Coil Angle Adjustment

- (1) Set INPUT-A to the no-signal state, select INPUT-A, and select P3 (fH=31.5 kHz, fV=60Hz) for the internal oscillation pattern in the service setting menu.
- (2) Press the MG FOCUS key and ADJ G key, and set the MG FOCUS GREEN adjustment mode, and output the dot pattern using the PATTERN key.
- (3) Press the CUT OFF R and B keys to set GREEN only.
- (4) Set CONTR to MAX using the + key.
- (5) Set the FOCUS (G) ALL data to MIN.
- (6) Adjust the 4-pole coil so that the dots become round. (The 4PA and 4PD data should be "128".)

\* Perform only the replaced color.

- (7) Next, set the MG FOCUS (G) 4PA data to MAX.
- (8) Adjust the MG FOCUS COIL angle so that the CENTER dots become vertical, and fix it.

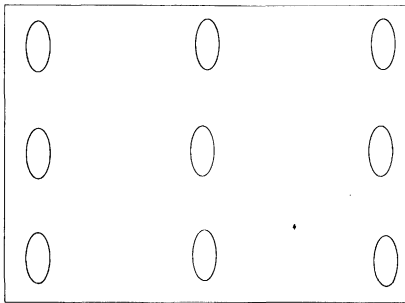


Fig. 7

- \* Use a non-magnetized screwdriver to tighten the screws.
- \* Fix the Mg Focus coil at the rear of the DY.
- \* Tightening torque for Mg FOCUS band  
80 to 120 N.Cm (8.16 to 12.24 kg.Cm)

- (11) Return the 4PA and 4PD data back to 128.
- (12) Output the ME signal using the PATTERN key, and roughly adjust FOCUS ALL.
- (13) Adjust RED and BLUE in the same way.  
Pressing the MG FOCUS key further in the RED, BLUE FOCUS mode sets the DEFOCUS mode (displayed on the screen) in which focus will not work. In this case, exit the DEFOCUS mode.  
(Press the MG FOCUS key again.)
- (14) Return the CONTR back to 80.
- (15) Press the MEMORY key to memorize this.

### 1-3-5. 31.5 kHz Signal Registration Rough Adjustment

- (1) Set INPUT-A to the no-signal state, select INPUT-A, and select P3 (fH=31.5 kHz, fV=60Hz) for the internal oscillation pattern in the service setting menu.
- (2) Press the REGISTRATION CENT key and ADJ G key, and set the CENT GREEN adjustment mode, and press the CUT OFF R and B keys to set GREEN only.
- (3) Adjust the GREEN center to the screen center using the ◀, ▶, ▼, or ▲ arrow key.
- (4) Press the REGISTRATION key and set the SIZE GREEN adjustment mode, and roughly adjust H. SIZE and V.SIZE.

- \* If the linearity has deviated, adjust it while adjusting the SIZE and LIN tracking.
- \* Adjust the external circumference of the GREEN test signal to the 30 to 50 mm position inside the screen or to the specified marker. (Same for below)

- (5) Press the REGISTRATION key and set the KEY adjustment mode, and roughly adjust H.KEY and V.KEY.
- (6) Press the REGISTRATION key and set the BOW adjustment mode, and roughly adjust H.BOW and V.BOW.
- (7) Press the REGISTRATION SKEW key, set the SKEW adjustment mode, and roughly adjust H SKEW and V SKEW.
- (8) Press the REGISTRATION key and set the PIN adjustment mode, and roughly adjust H.PIN and V.PIN.
- (9) Press the ADJ B key and set the REC adjustment mode.
- (10) Press the CUT OFF B key to set RED and GREEN only.
- (11) Roughly adjust RED CENT, SIZE, LIN, BOW, SKEW, PIN and KEY in the same way.

- \* Adjust the RED signal to the GREEN signal.

- (12) Roughly adjust BLUE in the same way.

- \* Adjust the BLUE signal to RED (or GREEN signal).

- (13) Continue pressing the MEMORY key to set STANDARD DATA SAVE.
- (14) Press the NORMAL key and exit the adjustment mode.
- (15) Press the PATTERN key to output the cross-hatch, and check that the RED, GREEN, and BLUE registration have been adjusted roughly.

- \* If the three colors R, G, and B are not output, press the CUT OFF key and output all the colors.

### 1-3-6. 2/4-pole Mg Adjustment (Center Adjustment)

- (1) Set INPUT-A to the no-signal state, select INPUT-A, and select P3 (fH=31.5 kHz, fV=60Hz) for the internal oscillation pattern in the service setting menu.
  - (2) Press the MG FOCUS key and ADJ G key, and set the MG Focus GREEN adjustment mode, and press the CUT OFF R and B keys to set GREEN only.
  - (3) Set CONTR to MAX using the CONTR (+) key.
  - (4) Press the PATTERN key once, and output the DOT-HATCH pattern.
  - (5) Increase the ALL data, and output flare into the surrounding HATCH.
  - (6) Look at the core of the center, and adjust 2PH and 2PV so that the luminance line comes to the center of the flare using the ◀, ▶ arrow key.
  - (7) Decrease the ALL data, and increase the size of the dots.
  - (8) Adjust the 4-pole magnet at the CRT neck, so that the dots become dead-round.
- (The 2-pole coil must be attached closely to FOCUS.)

\* Do not adjust 4PA and 4PD using the remote commander here.

- (9) Adjust 2PH and 2PV, 4-pole MG two or three times while adjusting the tracking.
- (10) Adjust in the same way for RED and BLUE.  
(Note down the 2PH and 2PV data in the same way.)
- (11) Continue pressing the MEMORY key to set STANDARD DATA SAVE.
- (12) Return the CONTR data back to 80.
- (13) Roughly adjust the R, G, and B centering again.
- (14) Press the MEMORY key and save the DATA.

#### 2/4-pole Mg adjustment

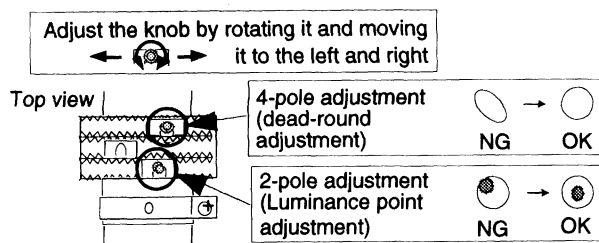


Fig. 8

### 1-3-7. Zenith Angle Adjustment

- (1) Set INPUT-A to the no-signal state, select INPUT-A, and select P3 (fH=31.5 kHz, fV=60Hz) for the internal oscillation pattern in the service setting menu.
- (2) Cover the GREEN lens with a lens cap for MG FOCUS.

(Cap for MG FOCUS adjustment:  
Cap with a open center to eliminate  
the flare around the lens.)

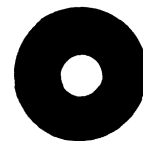


Fig. 9

- (3) Press the FG FOCUS key and ADJ G key, and set the MG FOCUS GREEN adjustment mode, and press the CUT OFF R and B keys to set GREEN only.

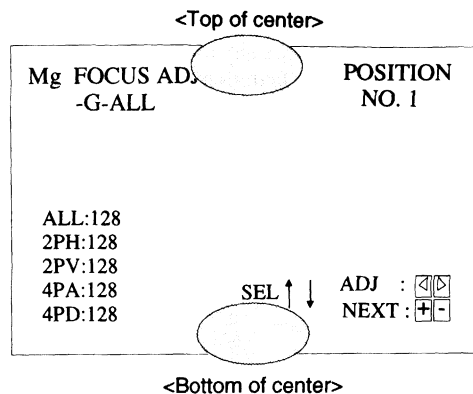


Fig. 10

- (4) Press the PATTERN key several times, and output the ME pattern.
- (5) Roughly adjust the POSITION-No.1 ALL FOCUS and POSITION 2, 3, 4, 5 MG, AQP, DQP.
- (6) Remove the MG FOCUS lens cap.
- (7) Roughly adjust the lens corner focus using the ME pattern.

\* If the center focus is not precisely adjusted, adjust it again.  
\* The pattern need not be ME.

- (8) Set the ME pattern, look at the bottom part at the center of the screen, and adjust the center focus of the lens at this part to optimum.

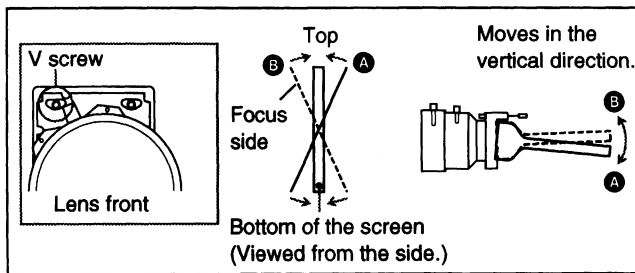
- (9) Next, look at the top part at the center of the screen, rotate the lens center focus to the left, and check if there exists a position at which the lens focus becomes optimum.  
If such a position exists, take the point as "left".  
If no such position exists, adjust the focus at the bottom part precisely again, look at the top part, rotate the lens center focus to the right, and check if such a point exists.  
Take the point as "right".

**Zenith angle adjustment specification:**

Adjust the main lens focus precisely at the bottom part at the center (or top part). At this time, the precise focus point should be within the 50 mm from the screen towards the unit.

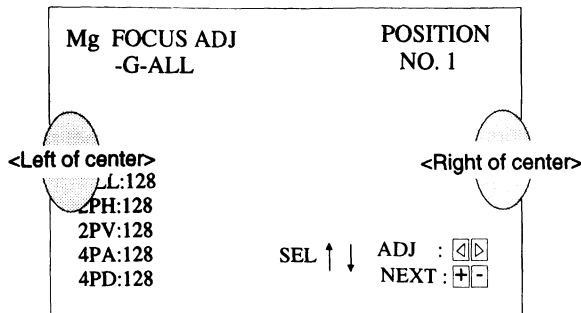
- \* If the focus point is at the far end of the screen, change the measuring point (change to bottom if at the top and vice versa) so that the focus point comes to the front of the screen.

- (10) Adjust the focus at the bottom part precisely again.  
(11) Rotate the zenith angle adjustment nut (V) in the same direction as the direction obtained in (9) so that the focus at the top and bottom becomes the same.



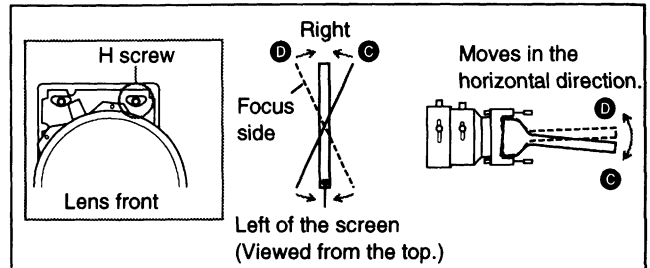
**Fig.11**

- (12) Adjust the focus at the bottom part precisely, check that the focus at the top part is within the reference value. If it is not, adjust in the same way again.  
(13) Perform the H zenith adjustment in the same way as (3).



**Fig.12**

- (14) Set the ME pattern, look at the left part at the center of the screen, and adjust the lens center focus at this part so that it becomes optimum.  
(15) Next, look at the right part at the center of the screen, rotate the lens center focus to the left, and check if there exists a position at which the lens focus becomes optimum.  
If such a position exists, take the point as "left".  
If no such position exists, adjust the focus at the left part precisely again, look at the right part, rotate the lens center focus to the right, and check if such a point exists.  
Take the point as "right".  
(16) Adjust the focus of the left part precisely again.  
(17) Rotate the zenith angle adjustment nut (V) in the same direction as the direction obtained in (15) so that the focus at the left and right becomes the same.



**Fig.13**

- (18) Adjust the focus at the left part precisely, and check that the focus at the right part is within the reference value. If it is not, adjust in the same way again.

**Zenith angle adjustment specification:**

Adjust the main lens focus precisely at the left part at the center (or right part). At this time, the focus point should be within the 50 mm from the screen towards the unit.

- \* If the focus point is at the far end of the screen, change the measuring point (change to left if at the right and vice versa) so that the focus point comes to the front of the screen.

- (19) After the above, roughly adjust the lens focus at the center of the screen again.  
(20) Adjust in the same way as GREEN for RED and BLUE.

- \* Take note that in the MG Focus rough adjustment of RED and BLUE, pressing the MG FOCUS key twice will set the DEFOCUS mode. (If this mode is set accidentally, pressing the key another time will set back the normal FOCUS mode.)

### 1-3-8. VIDEO Size Adjustment

- (1) Press the INPUT SELECT VIDEO key, and input the NTSC monoscope signal.
- (2) Press the CUT OFF R and B keys to set GREEN only.
- (3) Press the MG FOCUS key and ADJ G key, and set the Mg FOCUS GREEN adjustment mode, and roughly adjust the GREEN center focus (MG-ALL).
- (4) Press the REGISTRATION CENT key and ADJ G key, set the GREEN adjustment mode, and adjust the hatch center to the screen center.
- (5) Press the RGB SHIFT key to set the RGB SHIFT adjustment mode, and input the monoscope signal.  
Press the CUT OFF R and B keys to set GREEN only.  
Adjust the monoscope center to the screen center by SHIFT adjustment.
- (6) Press the REGISTRATION SIZE key and set the SIZE GREEN adjustment mode. Then press the PATTERN key several times to input the monoscope signal, move the left and right edges of the monoscope near the screen edge, press the REGISTRATION LIN key to set the LIN adjustment mode, and adjust the linearity.  
  
\* Press the CUT OFF R and B keys to set GREEN only.
- (7) Repeat the SIZE and LIN adjustment (and CENT adjustment), and adjust the left and right edges of the monoscope to the screen edge.  
  
\* To change the linearity considerably in H.LIN adjustment, perform the CENT adjustment again.
- (8) Press the RGB SIZE key, and set the H.SIZE data (Hc) to 238 to 242.
- (9) Press the MEMORY key.
- (10) Adjust RV104 of the E board, and set the H size of the monoscope to 16 frames.

#### H.SIZE Adjustment Specifications of Monoscope

H size... $16 \pm 0.15$  frames

(Note: V size... $12 \pm 0.15$  frames)

Note) This adjustment need not be performed when colors other than green have been replaced.

### 1-3-9. HWC (H Width Coil) Adjustment

- (1) Set INPUT-A to the no-signal state, select INPUT-A, and select P3 ( $fH=31.5$  kHz,  $fV=60$ Hz) for the internal oscillation pattern in the service setting menu.
- (2) Press the REGISTRATION CENT key and ADJ G key to set the CENT GREEN adjustment mode, and press the CUT OFF R and B keys to set GREEN only.
- (3) Adjust the GREEN center to the screen center. If already adjusted, this is not necessary.
- (4) Press the REGISTRATION SIZE key to set the SIZE GREEN adjustment mode, adjust the H.SIZE, move the left and right edges of the test pattern near the screen edge. Then press the REGISTRATION LIN key and set the LIN adjustment mode, and adjust the linearity.
- (5) Repeat the SIZE and LIN adjustment, and adjust the left and right edges of the test pattern to the screen edge.  
(If necessary, adjust CENT again.)
- (6) Press the REGISTRATION CENT key and ADJ R key to set the CENT RED adjustment mode, and cut off BLUE using the CUT OFF keys.
- (7) Adjust the RED center to the GREEN center (not necessary if already adjusted).  
(If necessary, adjust CENT again.)
- (8) Move onto the SIZE and LIN adjustments, and adjust the RED left and right edges of the test pattern to GREEN.)
- (9) Adjust the RED H.SIZE data to 128.
- (10) Adjust RED HWC (LV1) of the E board, and adjust the RED left and right edges to GREEN.  
(If necessary, adjust [LIN]+[R] as well.)
- (11) Adjust BLUE HWC of the E board (LV3) in the same way for BLUE.

### 1-3-10. MG FOCUS Adjustment for 31.5 kHz Signal

- (1) Press the INPUT-A key, and receive the 31.5 kHz INT.OSC.
- (2) Press the REGISTRATION CENT key and ADJ G key, and set the CENT G adjustment mode, and press the CUT OFF R and B keys to set GREEN only.
- (3) Check that the GREEN center is adjusted to the screen center (if it is not, adjust again).
- (4) Press the REGISTRATION SIZE key and set the SIZE adjustment mode, and adjust the H.SIZE again.
- (5) Press the PATTERN key and output the cross-hatch pattern, and check that the image distortion has been roughly adjusted (if it has not, adjust it again).
- (6) Press the MG FOCUS key to set the MG Focus adjustment mode, and press the PATTERN key several times to output the ME pattern.

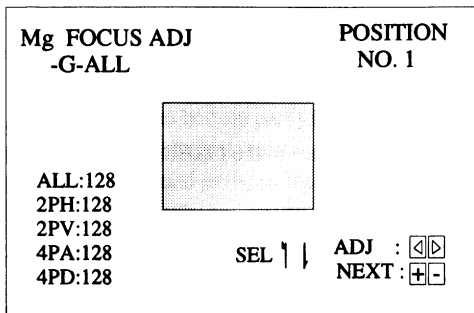


Fig. 14

- (7) Perform the POSITION-No.1 adjustment so that the ME pattern at the center becomes the optimum focus.  
(The corner focus should have been roughly adjusted in 1-4-2).  
(Refer to page 3-2.)
- (8) Adjust the GREEN main lens, and adjust the center focus to optimum.
- (9) Cover the lens with the focus adjustment lens cap.

(Cap for MG FOCUS adjustment:  
Cap with a open center to eliminate  
the flare around the lens.)

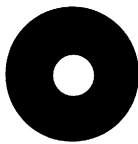


Fig. 15

- (10) Adjust P1-All again.

- (11) Press the POSITION [+] key and set the POSITION-No.2 adjustment mode.

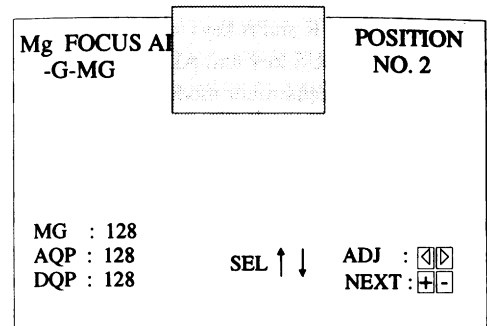


Fig. 16

- (12) Press the MG FOCUS key and set the MG FOCUS adjustment mode, and and adjust so that the focus of the ME pattern at the top becomes optimum.
- (13) Set the AQP adjustment mode using the ▼ and ▲ keys, and adjust to the optimum focus in the same way.
- (14) Set the DQP adjustment mode using the ▼ and ▲ keys, and adjust to the optimum focus in the same way.
- (15) Repeat steps (12) to (14) several times, and adjust to the optimum focus while adjusting the tracking.
- (16) Press the POSITION [+] key and set the POSITION-No.3 adjustment mode.

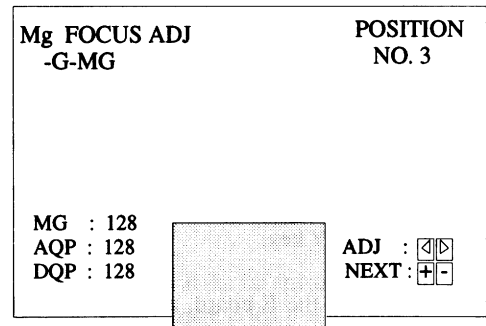


Fig. 17

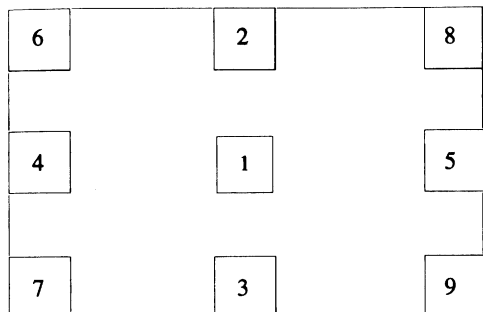
- (17) Adjust in the same way as the POSITION-No.2 adjustment.
- (18) Adjust in the same way for POSITION-No.4 to POSITION-No.9.
- (19) Press the MEMORY key, and memorize them.



(20) Perform the MG FOCUS adjustment of RED and BLUE in the same way as GREEN.

(21) After the adjustment, perform standard data save.

- \* Check the centering and image distortion.
- \* MG-FOCUS P1-All adjustment and lens adjustment.
- \* POSITION No.2 to POSITION No.9 MG FOCUS, and AQP and DQP adjustments.
- \* Memorize them.



- \* The numbers indicate the POSITION during AQP and DQP adjustments.

**Fig. 18**

### 1-3-11. VIDEO Block MG FOCUS Adjustment

- (1) Press the INPUT SELECT VIDEO key, and input the NTSC monoscope signal.
- (2) Press the MG FOCUS key and ADJ G key, and set the GREEN MG FOCUS adjustment mode, and press the CUT OFF R and B keys to set GREEN only. Roughly adjust ALL FOCUS at POSITION-No.1.
- (3) Roughly adjust GREEN CENT, SIZE, LIN, BOW, SKEW, PIN, and KEY.
- (4) Perform the rough adjustments in (2) and (3) for RED and BLUE as well.
- (5) Set the MG FOCUS GREEN adjustment mode, and press the CUT OFF R and B keys to set GREEN only.
- (6) Press the CONTR + key and set the CONTR to MAX.
- (7) Increase the ALL data, and output flair.
- (8) Press the PATTERN key, and output the OUT-HATCH pattern.
- (9) Adjust 2PH and 2PV with the arrow ◀ and ▶ keys, and adjust so that the bright line comes to the center of the flair.
- (10) Decrease the ALL data, and increase the size of the dots.
- (11) Adjust 4PA and 4PD so that the dots become dead-round.
- (12) Return the CONTR data back to 80.
- (13) Roughly adjust the GREEN centering again.
- (14) Cover the lens with a lens cap for MG FOCUS adjustment, and finely adjust the focus of POSITION-No.1.

- \* The lens need not be adjusted.

- (13) Using the same method as in "1-3-10. 3.15 kHz MG FOCUS Adjustment", adjust the Green MG FOCUS, AQP, and DQP of "POSITION-No.2" to "POSITION-No.9" of the VIDEO signal block (15 kHz).
- (14) Adjust RED and BLUE in the same way as above.

### 1-3-12. Adjustment of Other Frequencies

- (1) Input the following frequencies to INPUT A, and perform the same adjustment as the "1-3-11. VIDEO Block MG FOCUS Adjustment".

fH=24 kHz, 48 kHz, 64 kHz, 75 kHz, 93 kHz, 106 kHz.

## 1-4. Registration Adjustment

### 1-4-1. INPUT MEMORY NO. 0 Adjustment

- (1) Input the VIDEO monoscope signal to VIDEO IN.

For VPH-G70QMG, set INPUT-A to the no-signal state, and select P1 (fH=15.7 kHz, fV=60Hz) for the internal oscillation pattern in the service setting menu.

- (2) Press the BLKG key, and move the blanking at the top outside the effective screen using the ▲ arrow key.
- (3) Press the POSITION + key, and move the blanking at the bottom outside the effective screen using the ▼ arrow key.
- (4) Press the POSITION + key, and move the blanking at the left outside the effective screen using the ◀ arrow key.
- (5) Press the POSITION + key, and move the blanking at the right outside the effective screen using the ▶ arrow key.
- (6) Press the MEMORY key.
- (7) Press the REGISTRATION CENT key, and set the GREEN adjustment mode using the ADJ G key.
- (8) Adjust the vertical lines and horizontal lines to the center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (9) Press the REGISTRATION SIZE key, and adjust so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (10) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE, and adjust to the respective specified values using the arrow keys.  
(Up to 21 blocks.)

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.
- \* During the adjustment, adjust SIZE if it has deviated.

- (11) Press the MEMORY key.

- (12) Press the REGISTRATION CENT key and ADJ R key, and set the RED adjustment mode, and adjust so that the RED vertical and horizontal lines come to the GREEN center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (13) Press the REGISTRATION SIZE key, and adjust so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (14) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE, and adjust to the respective specified values using the arrow keys.  
(Up to 21 blocks.)

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.
- \* During the adjustment, adjust SIZE and CENTER if they have deviated.

- (15) Press the MEMORY key.

- (16) Adjust BLUE in the same way, and press the MEMORY key.

### 1-4-2. INPUT MEMORY NO. 1-7 Adjustment

- (1) Press the INPUT-A key, and select the INT.OSC PATTERN.

INC. OSC PATTERN	fH	fV	H/C	V	SonG
2	24.83	56.42	NEG	NEG	—
3	31.47	59.94	NEG	NEG	—
4	48.36	59.99	—	—	NEG
5	63.98	60.02	POS	POS	—
6	75.00	60.00	POS	POS	—
7	93.75	75.00	POS	POS	—
8	106.25	85.00	POS	POS	—

- (2) Press the BLKG key, and move the blanking at the top outside the effective screen using the ▲ arrow key.
- (3) Press the POSITION + key, and move the blanking at the bottom outside the effective screen using the ▼ arrow key.
- (4) Press the POSITION + key, and move the blanking at the left outside the effective screen using the ◀ arrow key.
- (5) Press the POSITION + key, and move the blanking at the right outside the effective screen using the ▶ arrow key.
- (6) Press the MEMORY key.
- (7) Press the REGISTRATION CENT key and ADJ G key, and set the GREEN adjustment mode.
- (8) Adjust the vertical lines and horizontal lines to the center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (9) Press the REGISTRATION SIZE key, and adjust so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀, ▶, ▲, and ▼ arrow keys.

- (10) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE, and adjust to the respective specified values using the arrow keys.

(Up to 21 blocks.)

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.
- \* During the adjustment, adjust SIZE if it has deviated.

- (11) Press the MEMORY key.

- (12) Press the REGISTRATION CENT key and ADJ R key, and set the RED adjustment mode, and adjust so that the RED vertical and horizontal lines come to the GREEN center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.

- (13) Press the REGISTRATION SIZE key, and adjust so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀, ▶, ▲, and ▼ arrow keys.

- (14) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE, and adjust to the respective specified values using the arrow keys.

(Up to 21 blocks.)

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.
- \* During the adjustment, adjust SIZE and CENTER if they have deviated.

- (15) Press the MEMORY key.

- (16) Adjust BLUE in the same way, and press the MEMORY key.

- (17) Adjust for all frequencies of the specified signal.

### **1-4-3. INPUT MEMORY NO.8) Adjustment**

**Note) IDTV mode adjustment. Use the EXB-DS10 (IDTV board).**

- (1) Open the top board, and insert the connector from EXB-DS10 into CN438/439 of the BA board.

- (2) Input the specified signal into the VIDEO IN terminal (Monoscope signal).

For VPH-G70QMG, connect the BC board for the jig to CN435 of the BA board, and then input the VIDEO signal.

- (3) Press the MENU key, and set INT IDTV to ON on the OPTION menu.

- (4) Press the INPUT VIDEO key and receive the signal.

- (5) Press the BLKG key, and move the blanking at the top outside the effective screen using the ▲ arrow key.

- (6) Press the POSITION + key, and move the blanking at the bottom outside the effective screen using the ▼ arrow key.

- (7) Press the POSITION + key, and move the blanking at the left outside the effective screen using the ◀ arrow key.

- (8) Press the POSITION + key, and move the blanking at the right outside the effective screen using the ▶ arrow key.

- (9) Press the MEMORY key.

- (10) Press the REGISTRATION CENT key, and set the GREEN adjustment mode using the CENT ADJ G key.

- (11) Adjust the vertical lines and horizontal lines to the center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.

- (12) Press the REGISTRATION SIZE key, and adjust so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀, ▶, ▲, and ▼ arrow keys.

- (13) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE, and adjust to the respective specified values using the arrow keys.

(Up to 21 blocks.)

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.

- \* During the adjustment, adjust SIZE if it has deviated.

- (14) Press the MEMORY key.

- (15) Press the REGISTRATION CENT key and ADJ R key, and set the RED adjustment mode, and adjust so that the RED vertical and horizontal lines come to the GREEN center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (16) Press the REGISTRATION SIZE key, and adjust so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (17) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE (Up to 21 blocks.), and adjust to the respective specified values using the arrow keys.

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.
- \* During the adjustment, adjust SIZE and CENTER if they have deviated.

- (18) Press the MEMORY key.
- (19) Adjust BLUE in the same way, and press the MEMORY key.
- (20) Press the BLKG key and set the BLKG adjustment mode.
- (21) Adjust the BLKG at the top, bottom, left, and right to about 40 mm outside the effective screen using the ◀, ▶, ▲, and ▼ keys and POSITION keys.  
Press the MEMORY key.
- (22) Press the MENU key, and set INT.IDTV to OFF at the OPTION menu.

#### 1-4-4. INPUT MEMORY NO. 9 Adjustment

- \* Hi-Vision adjustment. Use the Hi-Vision signal.

- (1) Input the following specified signal into the RGB terminals of INPUT-A.

	fH	fV	H/C	V	SonG	CH
INPUT MEM.NO.9	33.75	60.00	(NEG)	(NEG)	NEG	INPUT-A

- (2) Press the MENU key, set INPUT-A to HDTV-YPbPr at the SET SETTING menu, and set SYNC SEL to INT at the INPUT SETTING menu.
- (3) Press the INPUT-A key, and input the specified signal.
- (4) Press the BLKG key, and move the blanking at the top outside the effective screen using the ▲ arrow key.
- (5) Press the POSITION + key, and move the blanking at the bottom outside the effective screen using the ▼ arrow key.
- (6) Press the POSITION + key, and move the blanking at the left outside the effective screen using the ◀ arrow key.
- (7) Press the POSITION + key, and move the blanking at the right outside the effective screen using the ▶ arrow key.
- (8) Press the MEMORY key.
- (9) Press the REGISTRATION CENT key and ADJ G key, and set the GREEN adjustment mode.

- (10) Adjust the vertical and horizontal lines to the center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (11) Press the REGISTRATION SIZE key, and adjust the H direction so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀ and ▶ arrow keys. Next, decrease the V size to 16:9 using the ▲ and ▼ arrow keys.
- (12) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE, and adjust to the respective specified values using the arrow keys.  
(Up to 21 blocks.)

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.
- \* During the adjustment, adjust SIZE if it has deviated.

- (13) Press the MEMORY key.
- (14) Press the REGISTRATION CENT key and ADJ R key, and set the RED adjustment mode, and adjust so that the RED vertical and horizontal lines come to the GREEN center line of the screen using the ◀, ▶, ▲, and ▼ arrow keys.
- (15) Press the REGISTRATION SIZE key, and adjust the H direction so that the outer circumference of the cross-hair is at the approximately 30 m/m position inside the screen using the ◀ and ▶ arrow keys. Next, decrease the V size to 16:9 using the ▲ and ▼ arrow keys.
- (16) Set the modes LIN, SKEW, BOW, KEY, KEY BALANCE, PIN, PIN BALANCE, and ZONE, and adjust to the respective specified values using the arrow keys.

- \* When adjusting the four corners, adjust using KEY, KEY BALANCE, PIN and PIN BALANCE. Do not use ZONE as much as possible.
- \* During the adjustment, adjust SIZE and CENTER if they have deviated.

- (17) Press the MEMORY key.
- (18) Adjust BLUE in the same way, and press the MEMORY key.
- (19) Press the BLKG key and set the BLKG adjustment mode.
- (20) Adjust the BLKG at the top, bottom, left, and right to about 40 mm outside the effective screen using the ◀, ▶, ▲, and ▼ keys and POSITION keys.  
Press the MEMORY key.
- (21) Press the MENU key, and set INPUT-A to RGB at the SET SETTING menu.

### 1-4-5. H.INV. Center Adjustment

- (1) Turn OFF the power of the unit, and reverse the polarity of the horizontal deflection connectors.

DB board: CN242→CN245:RED signal  
CN243→CN246:GREEN signal  
2CN44→CN247:BLUE signal

- (2) Turn ON the power, and input the VIDEO signal.
- (3) Press the REGISTRATION CENT key, and press the ADJ G key and adjust the center of the GREEN HATCH.
- (4) Press the MEMORY key.
- (5) Likewise, adjust RED and BLUE, and press the MEMORY key.
- (6) Press INPUT-A, and input the 24 kHz and 60 Hz signals used in the registration adjustment.
- (7) Like steps (2) and (3), adjust the center.
- (8) Input all the signals used in "3-1-4. REGISTRATION Adjustment" one by one to adjust the center.
- (9) Turn OFF the power, and return the polarities of the horizontal deflection connectors to the original settings.

### 1-5. White Balance Adjustment

- \* For VPH-G70QMG, connect the IFB-G70QMG to CN435 of the BA board, and then input the VIDEO signal.

#### 1-5-1. Color Temperature 9300°K Adjustment

(Chromaticity diagram:  $x=0.284$ ,  $y=0.297$ )

- (1) Press the MENU key, and select the SET SETTING-SCREEN-S1 using the P6 key and ◀, ▶, ▲, and ▼ arrow keys.
- (2) Press the INPUT VIDEO key, and input the 100IRE all white signal from the VIDEO IN terminal.
- (3) Press the W/B GAIN key, and press the ADJ G key and set the GREEN adjustment mode.
- (4) Select 9300 using the POSITION +/- keys, and press the MEMORY key.
- (5) Adjust GAIN using the W/B GAIN and ADJ keys, and adjust BIAS using the W/B BIAS and ADJ keys, and preset the following values.

	R	G	B
GAIN	126	150	255
BIAS	137	141	109

- (6) Press the STATUS OFF key and erase the OSD.
- (7) Press the PATTERN key three times to set the external all white signal.
- (8) Attach the sensor of the W/B measuring device to the lens.

W/B measuring device (Color analyzer)

Model:PWB-801 (SONY)

Calibration coefficient

R/G:1.395

B/G:0.802

- (9) Press the W/B GAIN key and ADJ G key, and set the GREEN adjustment mode.
- (10) Press the ◀ and ▶ arrow keys and adjust the B/G value of the W/B measuring device to 1.00.

W/B 9300° K+8 MPCD specifications:

Cut off

R/G:1.00±0.15

B/G:1.00±0.15

Y:0.75±0.10

Highlight

R/G:1.00±0.10

B/G:1.00±0.10

- \* As BLUE serves as the reference for the 9300K GAIN, do not move BLUE.

- (11) Press the W/B GAIN key and ADJ R key, and set the RED adjustment mode.
- (12) Press the ◀ and ▶ arrow keys and adjust the R/G value of the W/B measuring device to 1.00.
- (13) Repeat steps (8) to (12) and adjust both R/G and B/G to 1.00.
- (14) Change the input signal to the 101 RE all white signal.
- (15) Press the W/B BIAS key and ADJ G key, and adjust the Y value of the W/B measuring device to 0.75.
- (16) Press the ADJ R key, and adjust the R/G value of the W/B measuring device to 1.00 using the ◀ and ▶ arrow keys.
- (17) Press the ADJ B key, and adjust the B/G value of the W/B measuring device to 1.00 using the ◀ and ▶ arrow keys.

W/B 9300° K+8 MPCD specifications

Cut off

R/G:1.00±0.15

B/G:1.00±0.15

Y:0.75±0.10

Highlight

R/G:1.00±0.10

B/G:1.00±0.10

- (18) Repeat steps (15) to (17) and adjust both R/G and B/G to 1.00.
- (19) Change the input signal to the 101 RE all white signal.
- (20) Press the W/B GAIN key and ADJ G key, and adjust the B/G value of the W/B measuring device to 1.00 using the ◀ and ▶ arrow keys.
- (21) Press the ADJ R key, and adjust the R/G value of the W/B measuring device to 1.00 using the ◀ and ▶ arrow keys.
- (22) Repeat the highlight adjustment in steps (10) to (13) and the cutoff adjustment in steps (15) to (17) two to three times to adjust the tracking.
- (23) When the specifications are satisfied, press the MEMORY key to memorize the 9300°K data.
- (24) Remove the sensor from the lens.

## 1-5-2. Color Temperature 6500°K Adjustment

Chromaticity diagram: $x=0.313$ ,  $y=0.329$ )

- (1) Press the INPUT VIDEO key, and input the 100 IRE all white signal from the VIDEO IN terminal.
- (2) Press the W/B GAIN key, and press the ADJ G key and set the GREEN adjustment mode.
- (3) Select 6500 using the POSITION +/- keys, and press the MEMORY key.
- (4) Adjust GAIN using the W/B GAIN and ADJ keys, and adjust BIAS using the W/B BIAS and ADJ keys, and preset the following values.

	R	G	B
GAIN	185	203	255
BIAS	74	77	46

- (5) Press the STATUS OFF key and erase the OSD.
- (6) Press the PATTERN key three times to set the external all white signal.
- (7) Attach the sensor of the W/B measuring device to the lens.

W/B measuring device (Color analyzer)

Model:PWB-801 (SONY)

Calibration coefficient

R/G:1.395

B/G:0.802

- (8) Press the W/B GAIN key and ADJ G key, and set the GREEN adjustment mode.
- (9) Press the ◀ and ▶ arrow keys and adjust the B/G value of the W/B measuring device to 0.74.

W/B 6500°K+8 MPCD specifications:

Cut off

R/G:1.08±0.15

B/G:0.74±0.15

Y:0.75±0.10

Highlight

R/G:1.08±0.10

B/G:0.74±0.10

\* As BLUE serves as the reference for the 6500K GAIN, do not move BLUE.

- (10) Press the W/B GAIN key and ADJ R key, and set the RED adjustment mode.
- (11) Press the ◀ and ▶ arrow keys and adjust the R/G value of the W/B measuring device to 1.08.
- (12) Repeat steps (8) to (11) and adjust R/G and B/G to 0.74 and 1.08 respectively.
- (13) Change the input signal to the 101 RE all white signal.
- (14) Press the W/B BIAS key and ADJ G key, and adjust the Y value of the W/B measuring device to 0.75.

- (15) Press the **ADJ B** key, and adjust the B/G value of the W/B measuring device to 0.74 using the ◀ and ▶ arrow keys.
- (16) Press the **ADJ R** key, and adjust the R/G value of the W/B measuring device to 1.08 using the ◀ and ▶ arrow keys.

W/B 6500°K+8 MPCD specifications:

Cut off

R/G:1.08±0.15  
B/G:0.74±0.15  
Y:0.75±0.10

Highlight

R/G:1.08±0.10  
B/G:0.74±0.10

- (17) Repeat steps (14) to (16), and adjust B/G and R/G to 0.74 and 1.08 respectively.
- (18) Change the input signal to the 101RE all white signal.
- (19) Press the **W/B GAIN** key and **ADJ G** key, and adjust the B/G value of the W/B measuring device to 0.74 using the ◀ and ▶ arrow keys.
- (20) Press the **ADJ R** key, and adjust the R/G value of the W/B measuring device to 1.08 using the ◀ and ▶ arrow keys.
- (21) Repeat the highlight adjustment in steps (8) to (11) and the cutoff adjustment in steps (14) to (16) two to three times to adjust the tracking.
- (21) When the specifications are satisfied, press the **MEMORY** key to memorize the 6500°K data.
- (22) Remove the sensor from the lens.

### 1-5-3. Color Temperature 5400°K Adjustment

**Chromaticity diagram: x=0.335, y=0.349)**

- (1) Press the **INPUT VIDEO** key, and input the 100IRE all white signal from the **VIDEO IN** terminal.
- (2) Press the **W/B GAIN** key, and press the **ADJ G** key and set the **GREEN** adjustment mode.
- (3) Select 5400 using the **POSITION** +/- keys, and press the **MEMORY** key.
- (4) Adjust **GAIN** using the **W/B GAIN** and **ADJ** keys, and adjust **BIAS** using the **W/B BIAS** and **ADJ** keys, and preset the following values.

	R	G	B
GAIN	227	255	212
BIAS	54	47	46

- (5) Press the **STATUS OFF** key and erase the OSD.
- (6) Press the **PATTERN** key three times to set the external all white signal.
- (7) Attach the sensor of the W/B measuring device to the lens.

W/B measuring device (Color analyzer)

Model:PWB-801 (SONY)

Calibration coefficient

R/G:1.395

B/G:0.802

- (8) Press the **W/B GAIN** key and **ADJ B** key, and set the **BLUE** adjustment mode.
- (9) Press the ◀ and ▶ arrow keys and adjust the B/G value of the W/B measuring device to 0.58.

W/B 5400°K+8 MPCD specifications:

Cut off

R/G:1.26±0.15  
B/G:0.58±0.15  
Y:0.75±0.10

Highlight

R/G:1.26±0.10  
B/G:0.58±0.10

\* As **GREEN** serves as the reference for the **5400K GAIN**, do not move **GREEN**.

- (10) Press the **W/B GAIN** key and **ADJ R** key, and set the **RED** adjustment mode.
- (11) Press the ◀ and ▶ arrow keys and adjust the R/G value of the W/B measuring device to 1.26.
- (12) Repeat steps (8) to (11) and adjust B/G and R/G to 0.58 and 1.26 respectively.
- (13) Change the input signal to the 101RE all white signal.

- (14) Press the W/B BIAS key and ADJ G key, and adjust the Y value of the W/B measuring device to 0.75 using the ◀ and ▶ arrow keys.
- (15) Press the ADJ B key, and adjust the B/G value of the W/B measuring device to 0.58 using the ◀ and ▶ arrow keys.
- (16) Press the ADJ R key, and adjust the R/G value of the W/B measuring device to 1.26 using the ◀ and ▶ arrow keys.

W/B 5400°K+8 MPCD specifications:

Cut off

R/G:1.26±0.15

B/G:0.58±0.15

Y:0.75±0.10

Highlight

R/G:1.26±0.10

B/G:0.58±0.10

- (17) Repeat steps (14) to (16), and adjust B/G and R/G to 0.58 and 1.26 respectively.
- (18) Change the input signal to the 101RE all white signal.
- (19) Press the W/B GAIN key and ADJ B key, and adjust the B/G value of the W/B measuring device to 0.58 using the ◀ and ▶ arrow keys.
- (20) Press the ADJ R key, and adjust the R/G value of the W/B measuring device to 1.26 using the ◀ and ▶ arrow keys.
- (21) Repeat the highlight adjustment in steps (8) to (11) and the cutoff adjustment in steps (13) to (16) two to three times to adjust the tracking.
- (22) When the specifications are satisfied, press the MEMORY key to memorize the 5400°K data.
- (23) Remove the sensor from the lens.

#### 1-5-4. Color Temperature 3200°K Adjustment

Chromaticity diagram:x=0.427, y=0.408)

- (1) Press the INPUT VIDEO key, and input the 100IRE all white signal from the VIDEO IN terminal.
- (2) Press the W/B GAIN key and press the ADJ G key, and set the GREEN adjustment mode.
- (3) Select 3200 using the POSITION +/- keys, and press the MEMORY key.
- (4) Adjust GAIN using the W/B GAIN and ADJ keys, and adjust BIAS using the W/B BIAS and ADJ keys, and preset the following values.

	R	G	B
GAIN	255	184	39
BIAS	74	88	93

- (5) Press the STATUS OFF key and erase the OSD.
- (6) Press the PATTERN key three times to set the external all white signal.
- (7) Attach the W/B measuring device to the lens.

W/B measuring device (Color analyzer)

Model:PWB-801 (SONY)

Calibration coefficient

R/G:1.395

B/G:0.802

- (8) Press the W/B GAIN key and ADJ G key, and set the GREEN adjustment mode.
- (9) Press the ◀ and ▶ arrow keys and adjust the B/G value of the W/B measuring device to 2.00.

W/B 3200°K+8 MPCD specifications:

Cut off

R/G:2.00±0.15

B/G:0.20±0.15

Y:0.75±0.10

Highlight

R/G:2.00±0.10

B/G:0.20±0.10

\* As RED serves as the reference for the 3200K GAIN, do not move RED.

- (10) Press the W/B GAIN key and ADJ B key, and set the BLUE adjustment mode.
- (11) Press the ◀ and ▶ arrow keys and adjust the B/G value of the W/B measuring device to 0.20.
- (12) Repeat steps (8) to (11) and adjust R/G and B/G to 2.00 and 0.20 respectively.
- (13) Change the input signal to the 101RE all white signal.
- (14) Press the W/B BIAS key and ADJ G key, and adjust the Y value of the W/B measuring device to 0.75 using the ◀ and ▶ arrow keys.



- (15) Press the ADJ B key, and adjust the B/G value of the W/B measuring device to 0.20 using the ◀ and ▶ arrow keys.
- (16) Press the ADJ R key, and adjust the R/G value of the W/B measuring device to 2.00 using the ◀ and ▶ arrow keys.

W/B 3200°K+8 MPCD specifications:

Cut off

R/G:2.00±0.15

B/G:0.20±0.15

Y:0.75±0.10

Highlight

R/G:2.00±0.10

B/G:0.20±0.10

- (17) Repeat steps (14) to (16), and adjust B/G and R/G to 0.20 and 2.00 respectively.
- (18) Change the input signal to the 101RE all white signal.
- (19) Press the W/B GAIN key and ADJ G key, and adjust the R/G value of the W/B measuring device to 2.00 using the ◀ and ▶ arrow keys.
- (20) Press the ADJ B key, and adjust the B/G value of the W/B measuring device to 0.20 using the ◀ and ▶ arrow keys.
- (21) Repeat the highlight adjustment in steps (8) to (11) and the cutoff adjustment in steps (13) to (17) two to three times to adjust the tracking.
- (21) When the specifications are satisfied, press the MEMORY key to memorize the 3200°K data.
- (22) Remove the sensor from the lens.
- (23) Press the W/B GAIN key and press the ADJ G key, and set the GREEN adjustment mode.
- (24) Select PRESET using the POSITION +/- keys, and press the MEMORY key.
- (25) Press the W/B GAIN key and ADJ R, G, and B keys in order, adjust using the ◀ and ▶ arrow keys, and input the 6500 GAIN R, G, and B data.

PRESET GAIN R=6500 GAIN R

PRESET GAIN G=6500 GAIN G

PRESET GAIN B=6500 GAIN B

- (26) Press the W/B BIAS ADJ R, G, and B keys in order, adjust using the ◀ and ▶ arrow keys, and input the 6500 BIAS R, G, and B data.

PRESET GAIN R=6500 BIAS R

PRESET GAIN G=6500 BIAS G

PRESET GAIN B=6500 BIAS B

- (27) Press the MEMORY key.

## 1-5-5. Screen Setting Compensation Calculation

### (S1 → S2)

- (1) Press the INPUT VIDEO key, and input the 100 IRE all white signal into the VIDEO IN terminal.
- (2) Display the menu screen using the MENU key. Select SET SETTING→SCREEN SEL→S2.
- (3) Press the W/B GAIN key and ADJ G key, and set the GREEN adjustment mode.
- (4) Adjust the GAIN of R, G, and B using the W/B GAIN ADJ key, and input the data according to the following compensation calculation method.

Compensation calculation method:

S2 GAIN R=S1 GAIN R-26

S2 GAIN G=S1 GAIN G-18

S2 GAIN B=S1 GAIN B

- (5) Press the MEMORY key and memorize the data.
- (6) Press the POSITION + and – keys, and select 6500.
- (7) Adjust the R, G, and B GAIN using the W/B GAIN key and ADJ key, and input the data.
- (8) Press the MEMORY key and memorize the data.
- (9) Press the POSITION + and – keys, and select 5400.
- (10) Adjust the R, G, and B GAIN using the W/B GAIN key and ADJ keys, and input the data according to the following compensation calculation method..

Compensation calculation method:

S2 GAIN R=S1 GAIN R-26

S2 GAIN G=S1 GAIN G-18

S2 GAIN B=S1 GAIN B

- (11) Press the MEMORY key and memorize the data.
- (12) Press the POSITION + and – keys, and select 3200.
- (13) Adjust the R, G, and B GAIN using the W/B GAIN key and ADJ key, and input the data according to the following compensation calculation method.

Compensation calculation method:

S2 GAIN R=S1 GAIN R-26

S2 GAIN G=S1 GAIN G-18

S2 GAIN B=S1 GAIN B

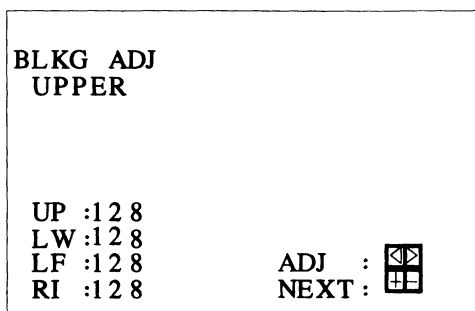
- (14) Press the MEMORY key and memorize the data.
- (15) Press the POSITION + and – keys, and select PRESET.
- (16) Adjust the R, G, and B GAIN using the W/B GAIN key and ADJ key, and copy the R, G, and B GAIN of 6500.
- (17) Press the MEMORY key and memorize the data.

## 1-6. SIZE/SHIFT/BLKG Adjustment

- \* For VPH-G70QMG, connect the IFB-G70QMG to CN435 of the BA board.

### 1-6-1. VIDEO SIZE/SHIFT/BLKG Adjustment

- (1) Input the monoscope signal to the VIDEO IN terminal.
- (2) Press the RGB SHIFT key, and adjust the monoscope center to the screen center using the ◀, ▶, ▲, and ▼ arrow keys.
- (3) Press the RGB SIZE key, and adjust the H.SIZE of the monoscope to 16 frames and V.SIZE to 12 frames using the ◀, ▶, ▲, and ▼ arrow keys.
- (4) Press the MEMORY key.
- (5) Press the BLKG key, and move the blanking at the top to the approximately 40 m/m position outside the effective screen using the ▲ and ▼ arrow keys.



Blanking adjusting position specification: 40±10 m/m

Fig. 19

- (6) Press the POSITION + key and set the bottom blanking adjustment mode.
- (7) Move the blanking at the bottom to the approximately 40 m/m position outside the effective screen using the ▼ and ▲ arrow keys.

Blanking adjusting position specification: 40±10 m/m

- (8) Press the POSITION + key and set the left blanking adjustment mode.
- (9) Move the blanking at the left to the approximately 40 m/m position outside the effective screen using the ◀ and ▶ arrow keys.

Blanking adjusting position specification: 40±10 m/m

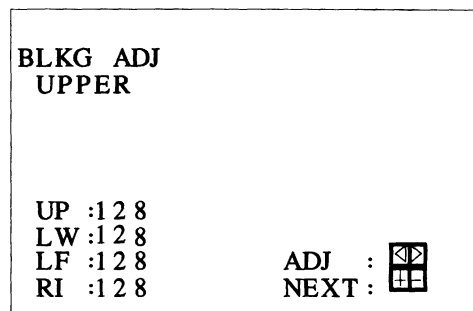
- (10) Press the POSITION + key and set the right blanking adjustment mode.
- (11) Move the blanking at the right to the approximately 40 m/m position outside the effective screen using the ▶ and ◀ arrow keys.

Blanking adjusting position specification: 40±10 m/m

- (12) Press the MEMORY key.

### 1-6-2. IDTV SIZE/SHIFT/BLKG Adjustment

- (1) Connect the EXB-DS10 for jig to the BA board.
- (2) Input the specified signal (monoscope) to the VIDEO IN terminal.
- (3) Press the MENU key, and turn ON INT IDTV at the OPTION menu.
- (4) Press the VIDEO key, and input the signal.
- (5) Press the RGB SHIFT key, and adjust the monoscope center to the screen center using the ◀, ▶, ▲ and ▼ arrow keys.
- (6) Press the RGB SIZE key, and adjust the H SIZE to 16 frames and V SIZE to 12 frames of the monoscope using the ◀, ▶, ▲ and ▼ arrow keys.
- (7) Press the MEMORY key.
- (8) Press the BLKG key, and move the blanking at the top to the approximately 40 m/m position outside the effective screen using the ▲ and ▼ arrow keys.



Blanking adjusting position specification: 40±10 m/m

Fig. 20

- (9) Press the POSITION + key and set the bottom blanking adjustment mode.
- (10) Move the blanking at the bottom to the approximately 40 m/m position outside the effective screen using the ▲ and ▼ arrow keys.

Blanking adjusting position specification: 40±10 m/m

- (11) Press the POSITION + key and set the left blanking adjustment mode.
- (12) Move the blanking at the left to the approximately 40 m/m position outside the effective screen using the ◀ and ▶ arrow keys.

Blanking adjusting position specification: 40±10 m/m

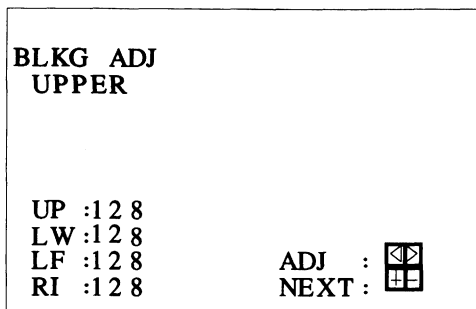
- (13) Press the POSITION + key and set the right blanking adjustment mode.
- (14) Move the blanking at the right to the approximately 40 m/m position outside the effective screen using the ▶ and ◀ arrow keys.

Blanking adjusting position specification: 40±10 m/m

- (15) Press the MEMORY key.
- (16) Press the MENU key, and turn OFF INT IDTV at the OPTION menu.

### 1-6-3. HDTV SIZE/SHIFT/BLKG Adjustment

- (1) Press the INPUT-A key, and input the specified signal.
- (2) Press the RGB SHIFT key, and adjust the video center to the screen center using the ◀, ▶, ▲, and ▼ arrow keys.
- (3) Press the RGB SIZE key, and adjust H.SIZE and V.SIZE to the screen size (16:9) using the ◀, ▶, ▲, and ▼ arrow keys.
- (4) Press the MEMORY key.
- (5) Press the BLKG key, and move the blanking at the top to the approximately 40 m/m position outside the effective screen using the ▲ and ▼ arrow keys.



Blanking adjusting position specification: 40±10 m/m

Fig. 21

- (6) Press the POSITION + key and set the bottom blanking adjustment mode.
- (7) Move the blanking at the bottom to the approximately 40 m/m position outside the effective screen using the ▼ and ▲ arrow keys.

Blanking adjusting position specification: 40±10 m/m

- (8) Press the POSITION + key and set the left blanking adjustment mode.
- (9) Move the blanking at the left to the approximately 40 m/m position outside the effective screen using the ◀ and ▶ arrow keys.

Blanking adjusting position specification: 40±10 m/m

- (10) Press the POSITION + key and set the right blanking adjustment mode.
- (11) Move the blanking at the right to the approximately 40 m/m position outside the effective screen using the ▶ and ◀ arrow keys.

Blanking adjusting position specification: 40±10 m/m

- (12) Press the MEMORY key.
- (13) Push up S100-1 SW of the YB board.

### 1-7. High Voltage Screen Distortion Adjustment

- (1) Press the INPUT-A key, and input the fH:31.5 kHz RGB stripe signal to the RGB terminals.
- (2) Continue pressing the CONTR and BRIGHT + keys until these levels are maximum.
- (3) Adjust RV101 of the E board until the left and right vertical lines of the stripes become straight.

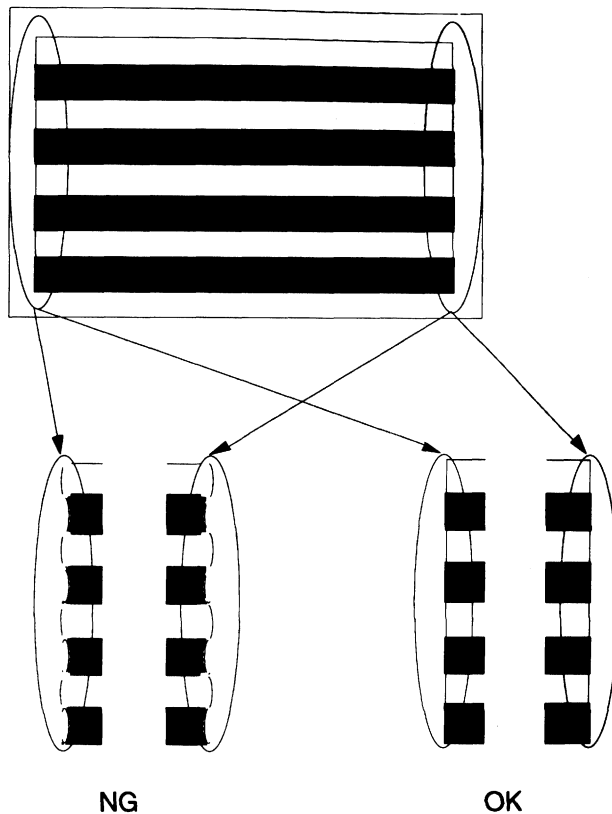





Fig. 22



### 1-8. Procedure After Completing Adjustments

After completing all adjustments, push down DIP SW 1 (S100) of the YB board, and push it up again to create the FACTORY DATA.

## 3-2. SAFETY RELATED ADJUSTMENTS

When the following parts (marked  on schematic diagrams) have been replaced, check and adjust the HV regulation circuit, HV hold down circuit.

-  RV2 [HV Regulation] PA board
-  IC2, IC3, IC4, IC7, IC9, IC10, IC12, IC13, D12, R53, R57, R59, R60, R61, R68, R69, R70, R72, R76, R77, R78, X1  
..... PA board

-  RV1 [HV Hold-down] PA board
-  IC1, D1, D2, C3, R1, R2, R3, R4, R5, R6, R7, R185, R194  
..... PA board

### RV1, RV2: HV protector, HV regulator check

- (1) Remove the PA board from the unit, and connect the extension board.
- (2) Connect the cable from the high voltage meter to the chassis and HV block. (Refer to Fig. 1.)

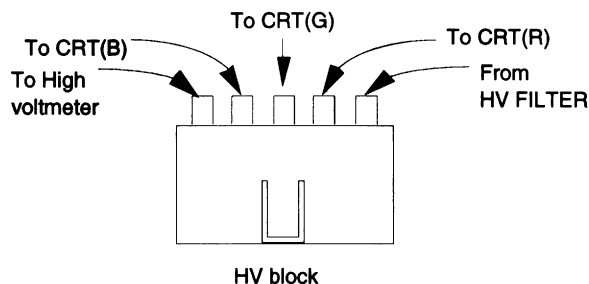


Fig. 1

- (3) Input the monoscope signal.
- (4) Press the VTR (+) key of the remote commander continuously to set the maximum CONT, and press the BRIGHT (+) key continuously to set the maximum BRIGHT.
- (5) Rotate RV2 (HV-REG) of the PA board slowly to the left (counterclockwise) and adjust the high voltage to 33 kV.

High voltage specifications during  
HV-PROT adjustment:  $33 \pm 0.3$  kV

- When the point at which HV.PROT operates cannot be adjusted to the specification.

Point at which HV.PROT operates

<32 kV: Connect 100 k $\Omega$  between TP1 and TP2.

$32.0 \text{ kV} \leq$  Point at which HV.PROT operates

<32.7 kV: Connect 270 k $\Omega$  between TP1 and TP2.

33.3 kV < Point at which HV.PROT operates: Cut R2.

Connect 120 k $\Omega$  between TP1 and TP2.

- (6) Rotate RV1 (HV-PROT) slowly to the right (clockwise) until the high voltage stops.  
(The power goes OFF several seconds later.)

- (7) Cover RV1 (HV-PROT) with a rotation-stopper cap, and apply RTV to fix it. (See Fig. 2.)
- (8) Rotate RV2 (V-REG) slightly in the clockwise direction so that the POWER turns ON.
- (9) Rotate RV2 (HV-REG) slightly to the left (counterclockwise), and check that the power goes OFF at a high voltage of 33 kV.

High voltage specification during  
HV-PROT adjustment:  $33 \pm 0.3$  kV

- (10) Rotate RV2 (HV-REG) slightly back in the clockwise direction so that the power turns ON.
- (11) Press the PIC key of the remote commander MUTING to cutoff.
- (12) Adjust RV2 (HV-REG) so that the high voltage becomes 32 kV.

High voltage specification during  
HV-PROT adjustment:  $33 \pm 0.3$  kV

- (13) Turn OFF the power, cover RV2 with a rotation-stopper cap, and apply RTV to fix it.  
(See Fig. 1)  
(Also apply sufficiently to the top of VR.)
- (14) Turn ON the power, and check that the high voltage is within the specification.

High voltage adjustment  
specification (During cutoff):  $32 \pm 0.3$  kV

- (15) Check that the high voltage change when the CONTR BRIGHT is set to MIN and set to MAX using the remote commander is within the specification.

High voltage change specification:  
High voltage adjustment value  $^{+0.2}_{-0.3}$  kV

- \* If outside the specification, perform steps (3) to (13) and check again.
- \* When re-adjusting RV 1 and RV2, replace the VR and rotation-stopper caps first.

- (16) Set CONTR and BRIGHT to "80" and "50" respectively.

- \* Apply RTV over the whole top part of the VR and top part of the cap.  
(No uncovered parts when seen from the top)

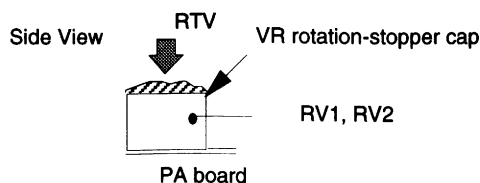
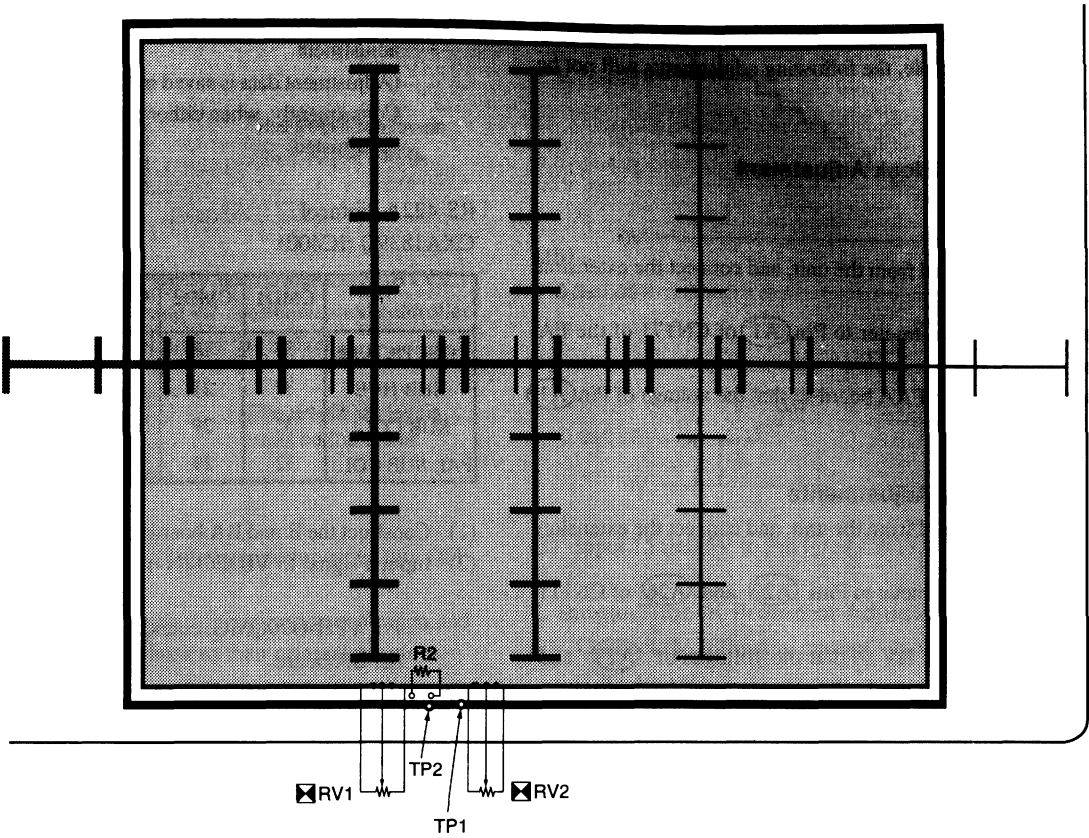


Fig. 2

PA BOARD



### 3-3. Electrical Adjustments

**Note)** Perform this adjustment only when the parts of each board have been replaced.  
If replaced as a whole, the following adjustments will not be required.

#### 3-3-1. Power Supply Block Adjustment

##### 1. DC (+) Adjustments

- (1) Remove the FA board from the unit, and connect the extension board.
- (2) Connect a digital voltmeter to Pin (A1) of CN171 of the FA board.
- (3) Adjust RV501 of the FAA board so that the voltage of Pin (A1) becomes  $375.0 \pm 2.0V$ .

##### 2. +115V (HV), +115V Adjustments

- (1) Remove the GA board from the unit, and connect the extension board.
- (2) Connect a digital voltmeter to Pins (A29) and (A26) of CN111 of the GA board.
- (3) Adjust the respective RV so that the voltages of (A29) and (A26) become the specified values.

Pin (A29) 115V (HV):  $115.0 \pm 0.5V$ ...RV201 (GA board)

Pin (A26) 115V:  $115.0 \pm 0.5V$ ...RV251 (GA board)

##### 3. Frequency Adjustment

- (1) Remove the GA board from the unit, and connect the extension board.
- (2) Connect a frequency counter to Pin ① of IC301.
- (3) Adjust RV301 of the GC board so that the frequency of Pin ?? of IC301 becomes  $100 \pm 4$  kHz.

#### 3-3-2. BA Board PICTURE CONTROL Adjustment

- \* The BA board and YB board are considered a pair in this adjustment.  
(Adjustment data is saved in IC302, IC308 of the YB board.)  
Consequently, when either one board is replaced, both must be adjusted.

RS-422A protocol  
CXA1839Q (IC400)

	CMD1	CMD2	CMD3	DATA1	DATA2 (Variable range)
NTSC PICTURE	32	10	10	00	DATA(00~3F)
SUB HUE	32	21	10	01	DATA(00~0F)
SUB COL1	32	29	10	00	DATA(00~0F)
PAL SUB COL1	32	29	10	01	DATA(00~0F)

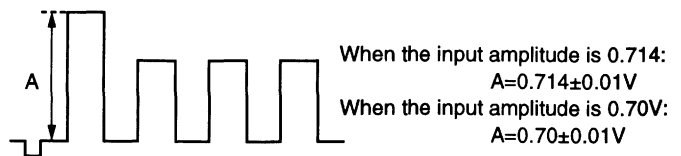
- (1) Construct the B and BA boards block using an extension board.
- (2) Input a signal to VIDEO IN of the BC board.

- \* For VPH-G70QMG, connect a IFB-G70QMG to CN435 of the BA board.

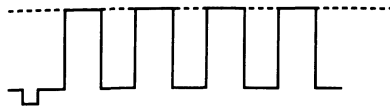
- (3) Connect an oscilloscope to TP403 (B OUT) of the BA board.
- (4) Connect a communication controller to the REMOTE 1 (RS422A) terminal of the YC board.

- \* Adjust the baud rate of the unit to the baud rate of the communication controller.

- (5) Turn ON the power of the unit, and select VIDEO.
- (6) Input the NTSC 100% color bar signal, and change the PICTURE data of XA1839Q (IC400) using the communication controller to the data at which the amplitude from the pedestal to 100IRE is closest to  $0.714 V_{p-p}$ .



- (7) Input the NTSC 75% color bar signal, and change the SUB, HUE, SUB COL1 data of the XA1839Q (IC400) using the communication controller to the data at which the amplitude is the flattest.



The amplitude levels must be the same.

- (8) Input the PAL 75% color bar signal, and change the SUB COL1 data of XA1839Q (IC400) using the communication controller to the data at which the amplitude is the flattest.



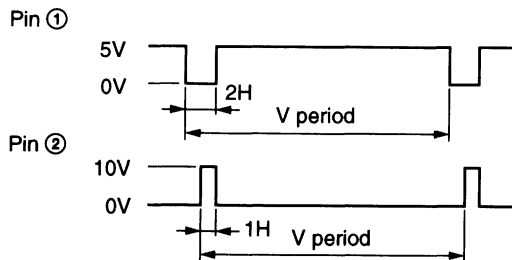
The amplitude levels must be the same.

- (9) While pressing the MEMORY key of the commander, turn OFF the power of the unit.
- (10) Disconnect the oscilloscope and communication controller, and return the B and BA boards back to their original positions.

### 3-3-3. C Board Adjustment

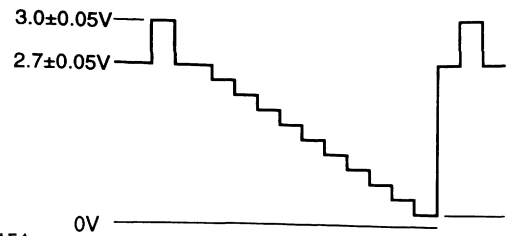
#### 1. Preparations

- (1) Input the following signals to CN158.

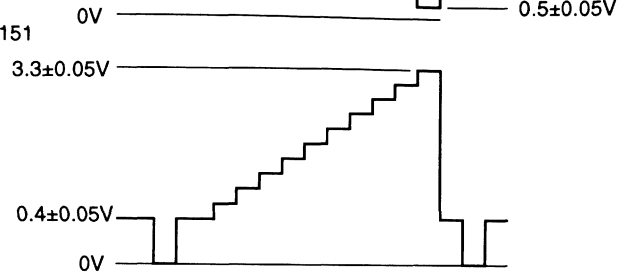


- (2) Input the following signals to J101 and J151.

J101



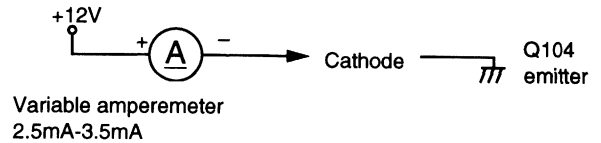
J151



- (3) Input  $15.0 \pm 0.5V$  to Pin ④ of CN157.

#### 2. Single-Tube IK Protector Adjustment

- (1) Connect the following current supply to the cathode of J102 (CRT socket).



- (2) Connect an oscilloscope to Pin ③ of CN158.
- (3) Raise the output of the current supply in (4), and adjust RV101 so that the output changes from High to Low at  $3.2 \pm 0.1 \text{ mA}$ .
- (4) Disconnect the power supply and oscilloscope in (4) and (5).

#### 3. GAIN Adjustment

- (1) Connect the following power supply to CN157.

Pin ①:  $+135.0 \pm 2.0V$   
 Pin ②:  $+103.0 \pm 2.0V$   
 Pin ④:  $+15.0V \pm 0.5V$   
 Pin ⑤:  $-15.0V \pm 0.5V$   
 Pin ⑦:  $-180.0 \pm 5.0V$

- (2) While observing the waveform of the cathode of J102 (CRT socket), adjust RV102 until the waveform is about to flatten.
- (3) While observing the waveform of the cathode of J102 (CRT socket), adjust RV103 until the waveform is about to flatten.

### 3-1-4. D Board Adjustment

- \* Remove the D board from the unit, and connect an extension board.
- \* Check the power supply voltage of CN331.  
CN331: Pin (A14) :+15V  
Pin (A17) :-15V  
Pin (A28) :+15V  
Pin (A29) :+6V  
Pin (A32) :-6V  
Pin (C23) :Jungle 115V

- \* Check that the H.V.SYNC is 5 Vp-p.

#### 1. FV Voltage Adjustment

- (1) Input a fH: 30 kHz signal to the VIDEO IN terminal.
- (2) Connect a digital voltmeter to TP7 (F-V).
- (3) Adjust RV2 so that the TP7 voltage becomes  $2.0V \pm V$ .

#### 2. AFC Adjustment

- (1) Connect a jumper wire between Pins (C23) and (A30) of CN331.
- (2) Connect an oscilloscope to TP5 (12V HD) and TP3 (H.SYNC).
- (3) Set S2 (HD ON/OFF) to OFF.
- (4) Input the fH:30 kHz H.SYNC.
- (5) Adjust RV3 so that the waveforms of TP5 (12V HD) and TP3 (H.SYNC) are synchronized.
- (6) Input the fH:100 kHz H.SYNC.
- (7) Adjust RV4 so that the waveforms of TP5 (12V HD) and TP3 (H.SYNC) are synchronized.
- (8) Input the fH:15.75 kHz H.SYNC.
- (9) Connect a jumper wire between Pins (C23) and (A30) of CN331.
- (10) Adjust RV5 so that the waveforms of TP5 (12V HD) and TP3 (H.SYNC) are synchronized.
- (11) Set S2 (HD ON/OFF) to ON.
- (12) Check that the waveforms of TP5 (12V HD) and TP3 (H.SYNC) switch to fH:15.75 kHz, fH:30 kHz, fH:64 kHz, fH:100 kHz, and fH:110 kHz, and that they are synchronized.

#### 3. V.HOLD Adjustment

- (1) Connect a frequency counter to (B1) of CN341.
- (2) Input the fV:60 Hz V.SYNC.
- (3) Set S1 (VD ON/OFF) to OFF.
- (4) Adjust RV1 so that the frequency counter value becomes 50.0 Hz.
- (5) Set S1 (ON/OFF) to ON.
- (6) Connect an oscilloscope to Pin (B1) of CN341 and TP4 (V.SYNC).
- (7) Switch V.SYNC to fV:38 kHz, fV:50 kHz, fV:60 Hz, fV:100 Hz, and fV:150 Hz, and check that the waveforms of Pin (B1) of CN341 and TP4 (V.SYNC) are synchronized.

### 3-3-5. EC Board Adjustment

#### 1. Fan Voltage Adjustment

- (1) Remove the EC board from the unit, and connect the extension board.
- (2) Connect a digital voltmeter to Pin (A9) of CN351.
- (3) Adjust RV430 so that the voltage of Pin (A9) of CN351 becomes  $13.0 \pm 0.1V$ .

### 3-3-6. E Board Adjustment

#### 1. Preparations

- \* Remove the E board from the unit, and connect the extension board.
- \* Check the voltage of each power supply.

#### 2. H.LIN Adjustment

- (1) Check the fH:20 kHz H.OSC signal input to Pin (A5) of CN231 on the oscilloscope.
- (2) Adjust the H.SIZE voltage of Pin (A7) of CN231 to 0V.
- (3) Adjust the H.LINE 1 voltage of Pin (A8) of CN241 to 0V.
- (4) Adjust the H.LINE 2 voltage of Pin (A9) of CN241 to 0V.
- (5) Connect a digital voltmeter to TP6 (H.LIN).
- (6) Adjust RV102 so that the voltage of TP6 (H.LIN) becomes  $0.78 \pm 0.02V$ .
- (7) Set back the voltages in (2), (3), and (4) to the original values.