

INSTALLATION MANUAL FOR DEALERS  
**DATA & GRAPHICS PROJECTOR**

BEFORE  
INSTALLATION

INSTALLATION

CONNECTIONS

BEFORE  
ADJUSTMENTS

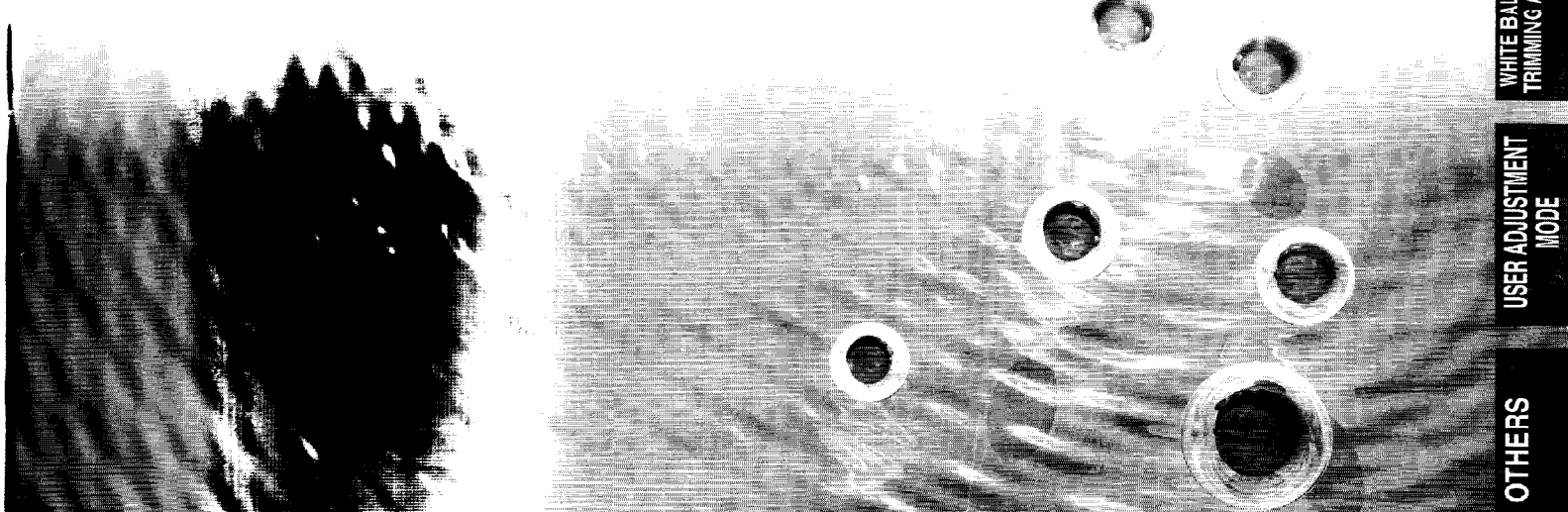
FOCUS  
ADJUSTMENT

PICTURE DISTORTION AND  
CONVERGENCE ADJUSTMENT

WHITE BALANCE AND  
TRIMMING ADJUSTMENT

USER ADJUSTMENT  
MODE

OTHERS



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## **BEFORE INSTALLATION**

Before mounting the projector, some adjustments and settings are necessary.

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## **INSTALLATION**

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These are adjustments which users can make by themselves. Some of them are not available in service adjustment mode.

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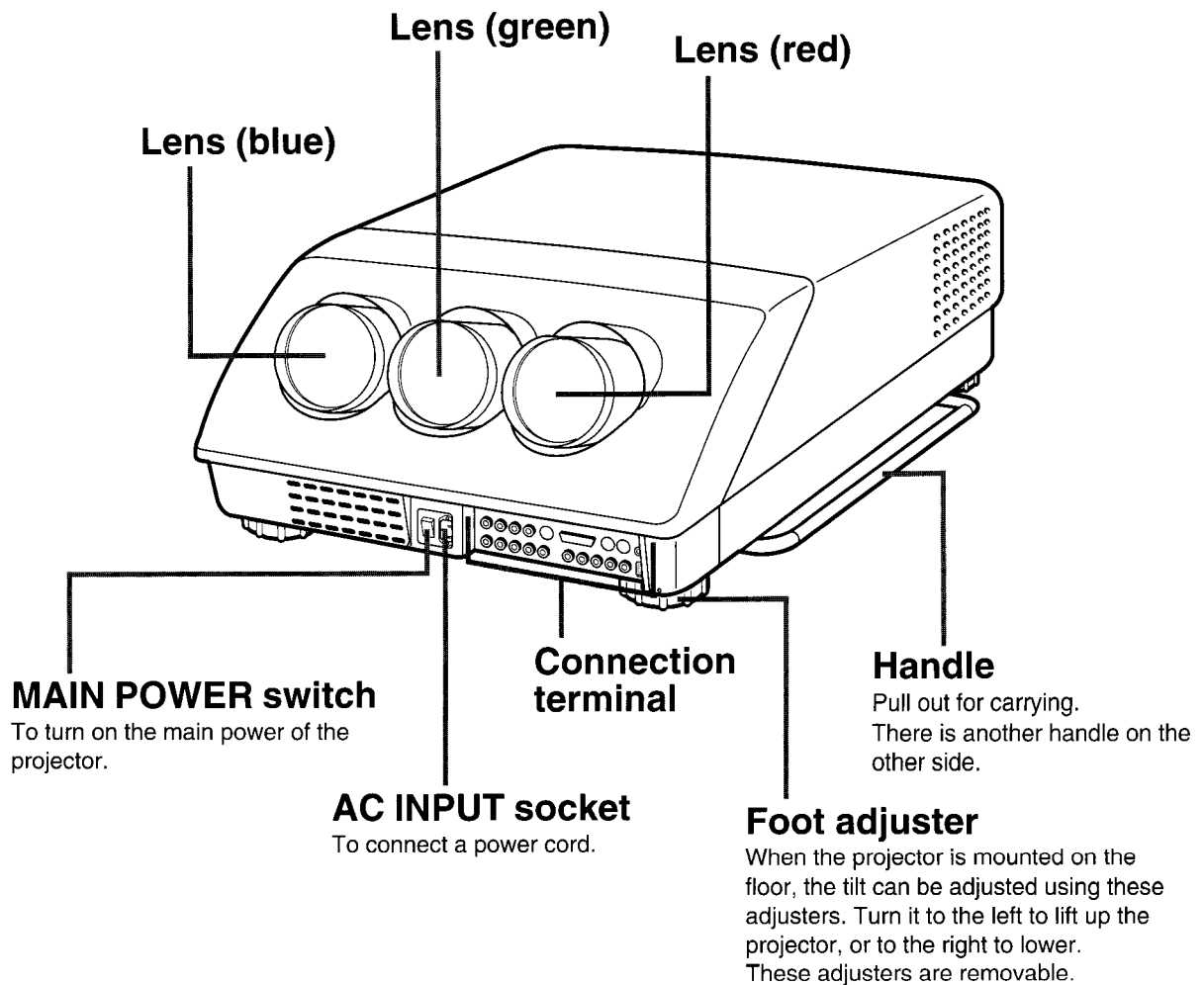
**OTHER**

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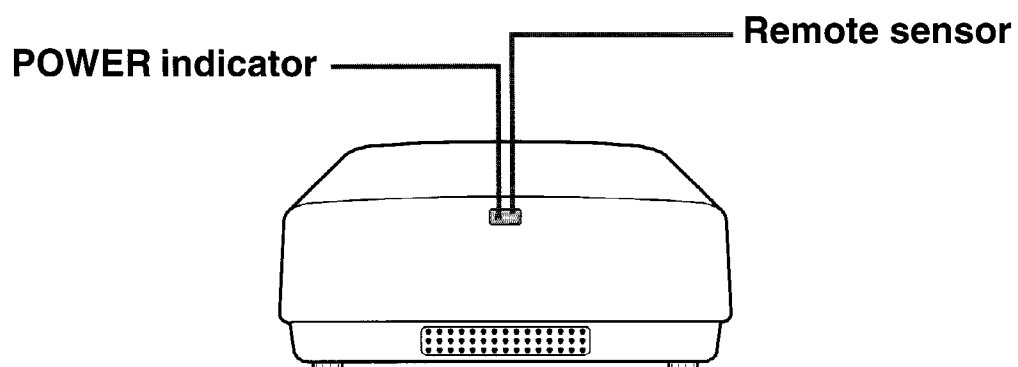
# PARTS NAMES AND FUNCTIONS

Introduces the projector's parts names and their functions.

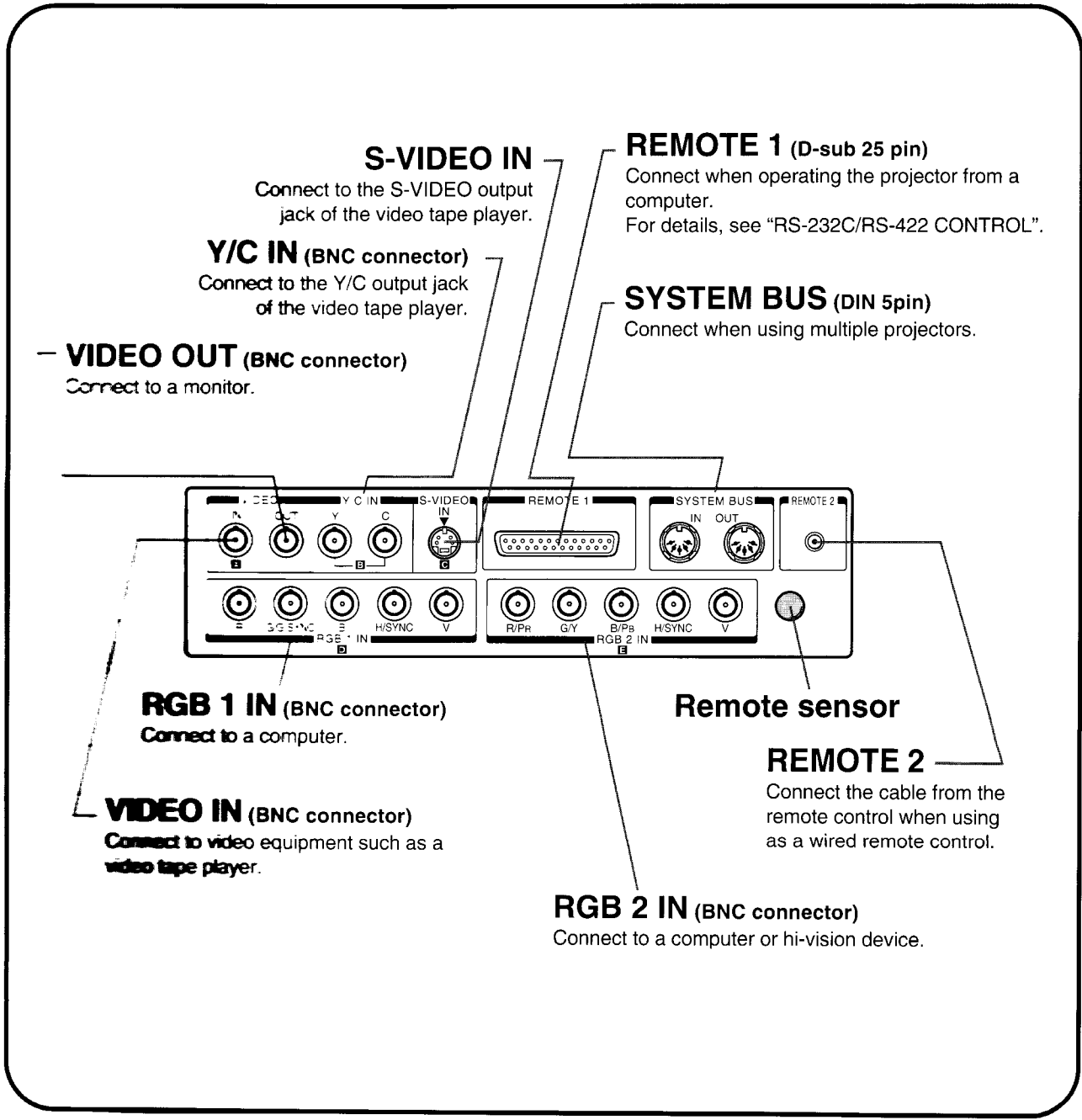
## Main Unit



## Rear Side



**Connectors Names**

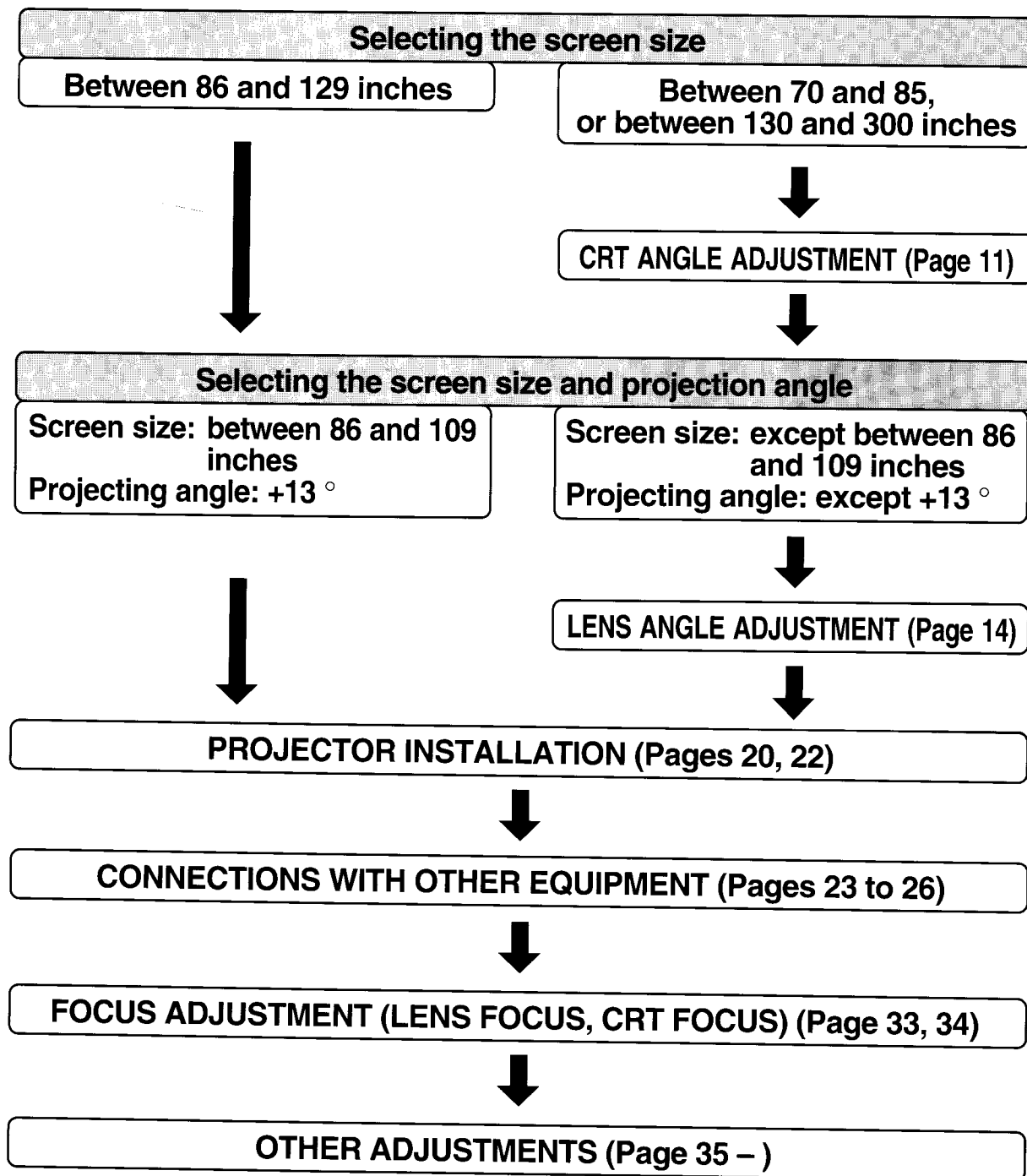


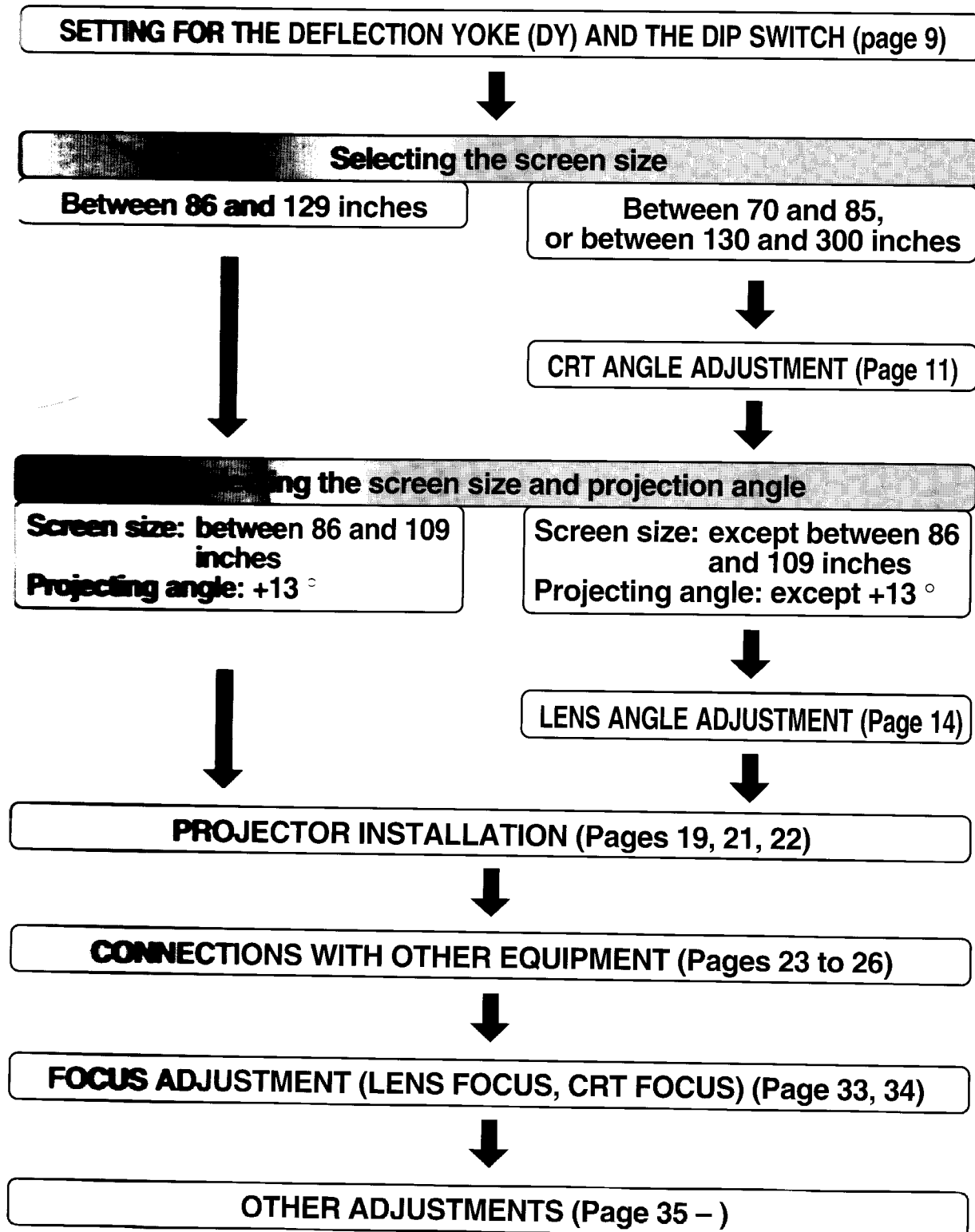
# ADJUSTMENT PROCEDURE

The adjustment procedure differs depending on the projector mounting or the screen sizes.

## Adjustment Procedure for Ceiling-Mounted Projection

The factory setting of the projector is for use by ceiling-mounted, with +13° of projection angle, to a 100 inches screen.



**Adjustment Procedure for Floor-Mounted Projection**

# OPENING THE COVERS

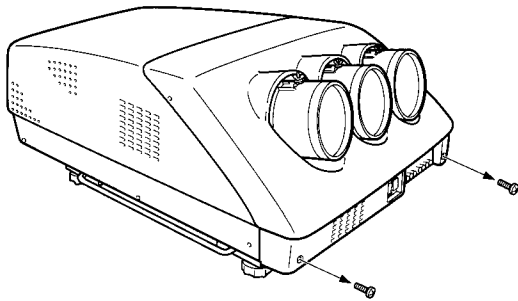
This section explains how to open the front and upper covers. The covers need to be opened for certain adjustments.

## Taking Off the Front Cover

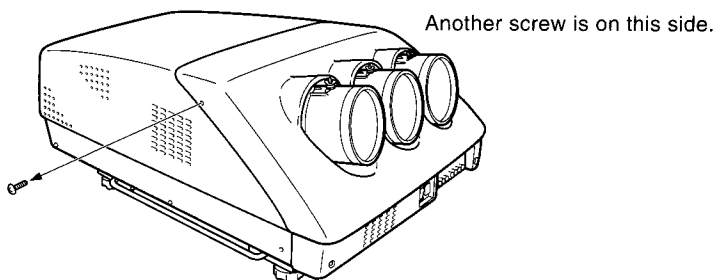
**[Preparation]**

Make sure that the power is off, and disconnect the power cord from the projector.

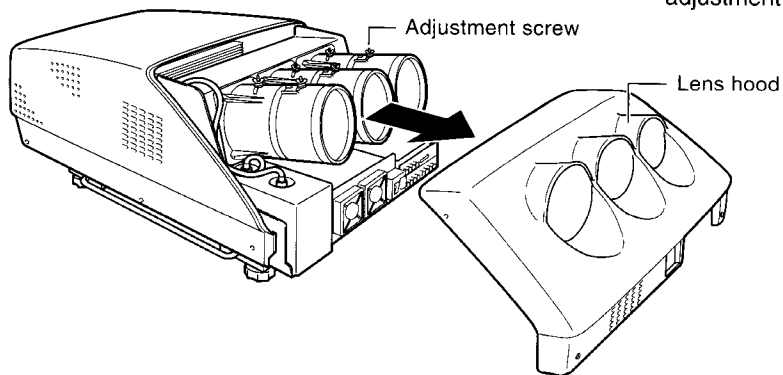
- 1 Remove the two screws from the front cover.**



- 2 Remove the two screws from the both sides.**



- 3 Take off the front cover.**



Be careful not to knock the lens hood against the adjustment screws.

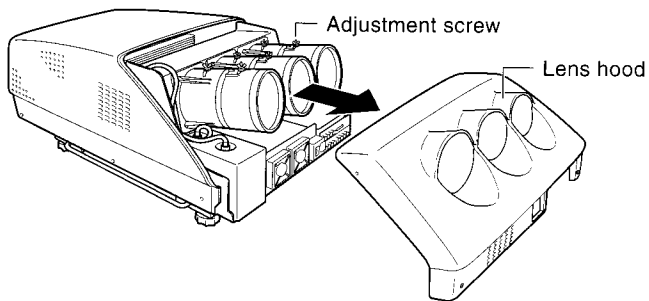


**CAUTION**

Do not turn on the projector while opening the cover.  
It may cause a danger such as an electric shock.

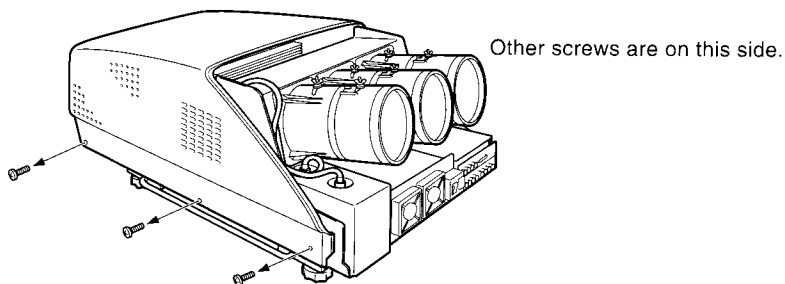
## Opening the Upper Cover

- 1** Remove the front cover following the procedure "Taking Off the Front Cover".

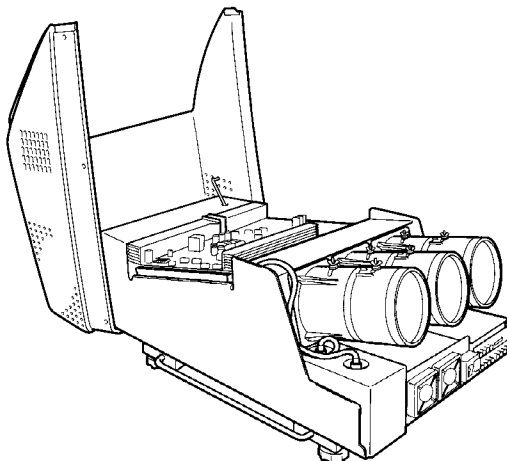


Be careful not to knock the lens hood against the adjustment screws.

- 2** Remove the six screws from the both sides.



- 3** Open the upper cover and fix it using the hook.



Hook the cover on one of the ventilating holes on the side.

### Notes

- To take off the upper cover, pull it along the hinge. The pins come out of the hinge, and the upper cover comes off.

# POLARITY SETTING FOR THE DEFLECTION YOKE (DY) AND THE DIP SWITCH

It is necessary to set the polarity according to the projector mounting.

## Setting the Polarity

The picture may be oriented upside down depending on whether the projector is mounted on the floor or the ceiling, and also may be turned inside out if it is projected onto a translucent screen from behind. Set the polarity for proper projection according to the type of mounting.

If the polarity is changed, the convergence will need to be re-adjusted.

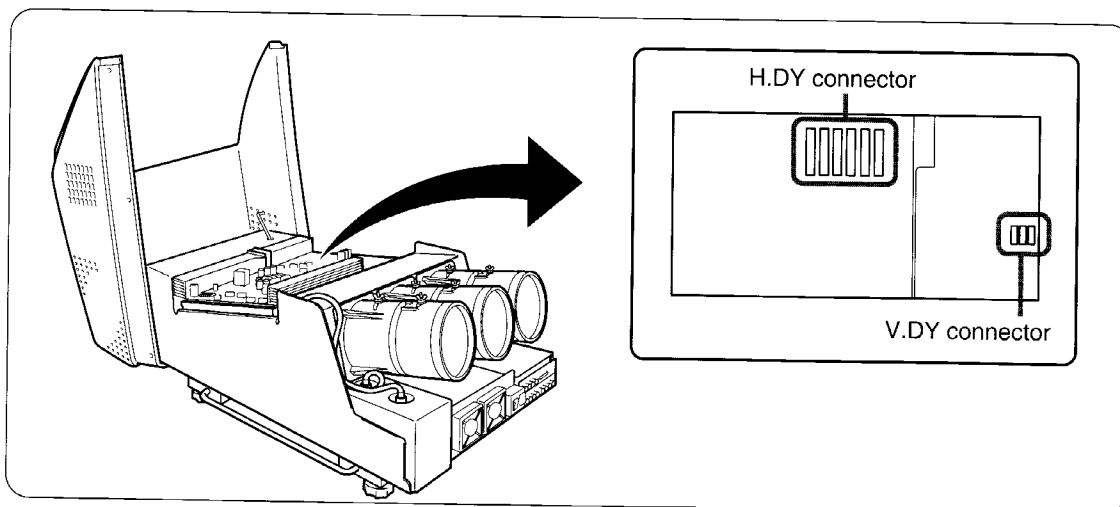
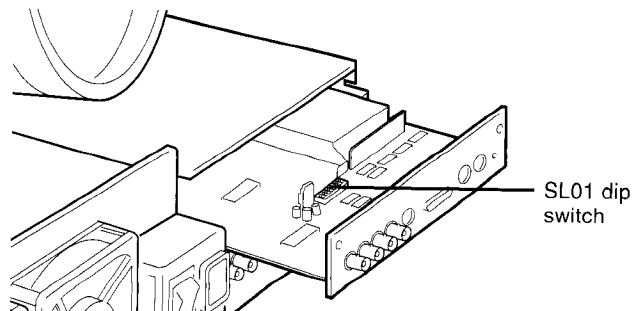
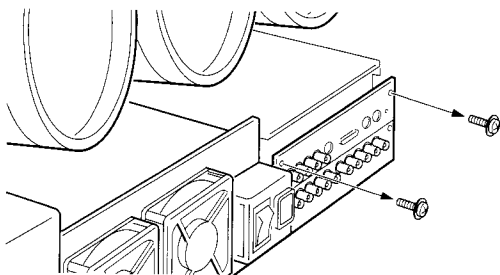
### Attention

- When you set the polarity, turn off the projector's power. If the polarity is changed with the power on, the circuits inside the unit may be disrupted and the CRT may be damaged.
- Do not pull the wire when pulling out the connector. If the wire is pulled, it may break or the joint may be damaged.

## 1 Open the front and upper covers.

Open the covers following the procedures "Taking Off the Front Cover" and "Opening the Upper Cover".

## 2 Remove the two screws from the connectors panel (upper half) on the front side, and pull out the board.



**Note**

The H.DY connector is a locking connection. When disconnecting, release the lock by holding both sides of the frame, and pull out the connector. To connect, insert firmly until it is locked.

### 3 Set the polarity with the H.DY and V.DY connectors and the SL01 dip switch.

**For ceiling-mounted front projection (factory set)**

**H.DY Connector**

Lead (red)      Lead (blue)

**V.DY Connector**

Lead (brown)      Lead (yellow)

**SL01 dip switch**

Set all to "OFF".

Insert the connectors to PA10, PA11 and PA12.

**For floor-mounted front projection**

**H.DY Connector**

Lead (blue)      Lead (red)

**V.DY Connector**

Lead (yellow)      Lead (brown)

**SL01 dip switch**

Set 7 and 8 to "ON".

Insert the connectors to PA07, PA08 and PA09.

### 4 Attach the front and upper covers.

**Notes**

- When rear projecting using a mirror, set the polarity in the same manner as for front projection without a mirror.
- When the current mounting is changed, change the polarity using the V.DY connector to reverse the picture upside down, or using the H.DY connector to turn the picture inside out (ex. letter inversion R/Я). The SL01 din switch is a device which synchronizes the picture

# CRT ANGLE ADJUSTMENT

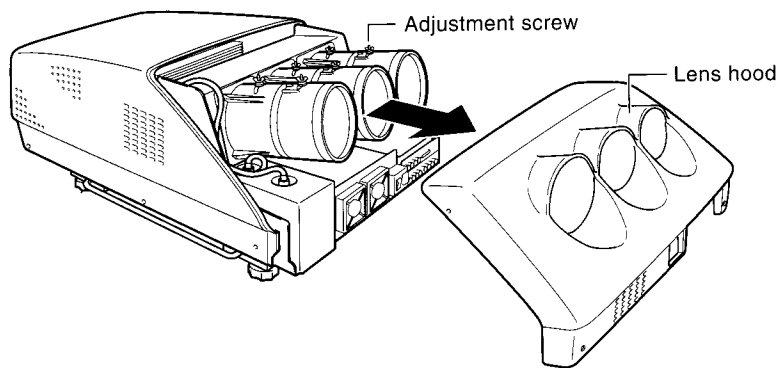
This projector can project a picture on screens of between 70 and 300 inches. Adjust the CRT angles according to the screen size.

## Adjusting the CRT Angles

### Notes

- The CRT angle adjustment is not necessary when the screen size is between 86 and 129 inches.
- The CRT adjustment is made on the red and blue CRTs (left and right) only.

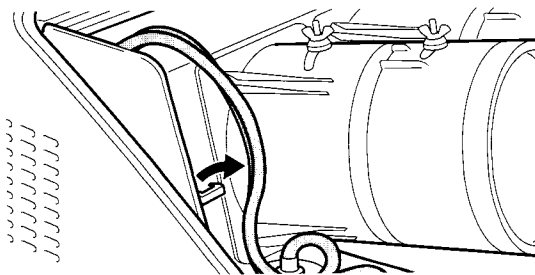
**1** Remove the front cover following the procedure "Taking off the Front Cover".



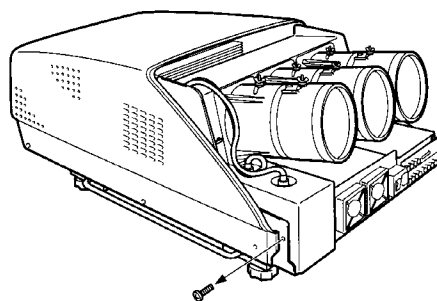
Be careful not to knock the lens hood against the adjustment screws.

**2** Take out the HV-OUT block.

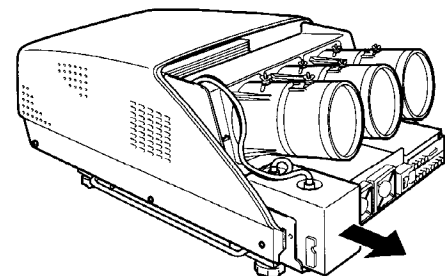
- 1) Pull out the cord from the holder.



- 2) Remove the screw from the HV-OUT block.



- 3) Pull out the HV-OUT block.



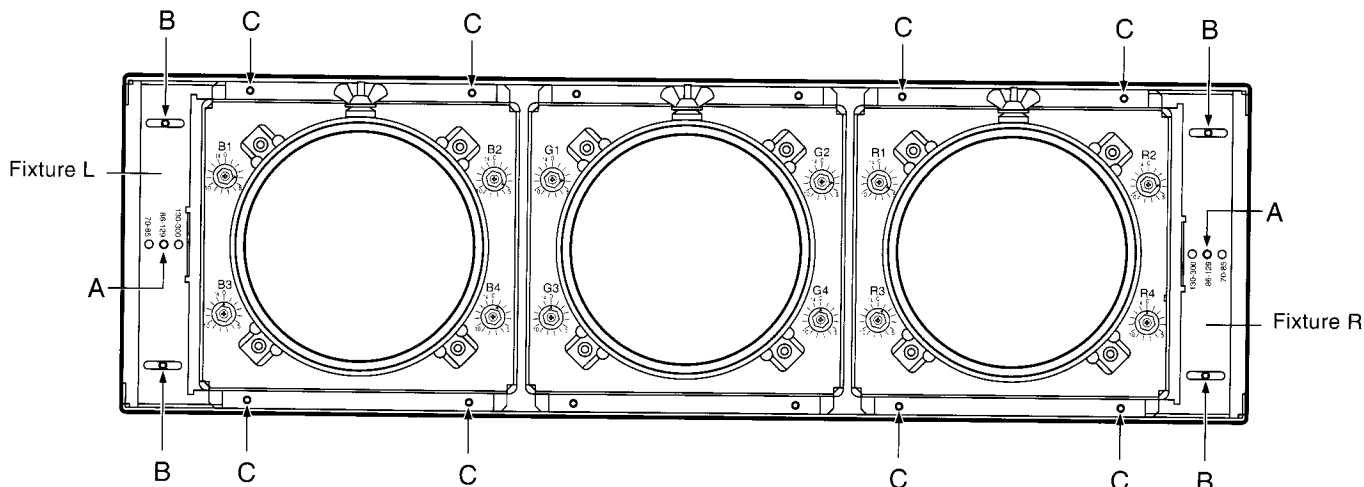
120 95

1800  
14400  
1800  
16400

76200

8100  
1000  
12500

BEFORE  
INSTALLATION



**3** Remove the two A screws.

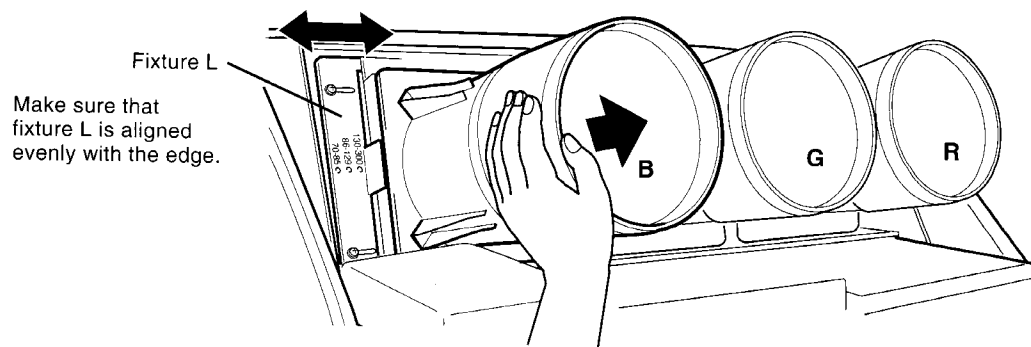
**4** Loosen the four B screws.

**5** Loosen the eight C screws.

Do not remove the C screws. The lens and CRT may fall out.

**6** Slide fixture L to align it with one of the three screw holes according to the screen size.

While pushing lens B toward lens G, align fixture L to the screw hole for the required screen size.



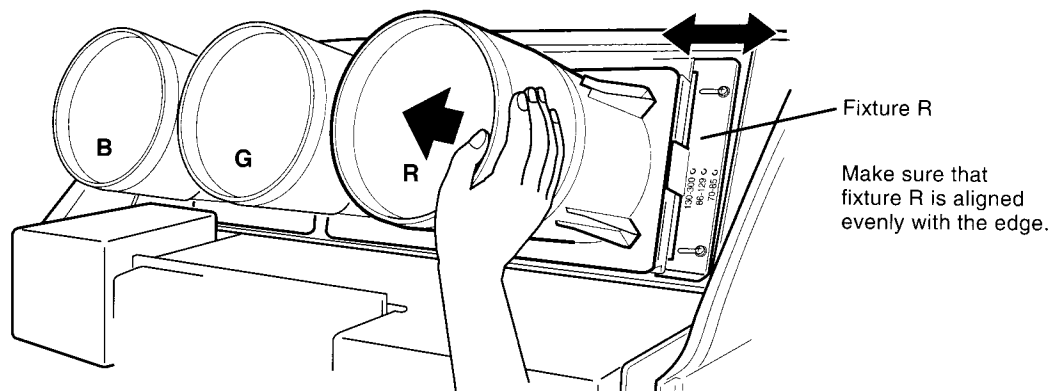
# **CRT ANGLE ADJUSTMENT** (Continued)

## **Adjusting the CRT Angles (Continued)**

**7** Tighten screws A and B on fixture L.

**8** Slide fixture R to align it with one of the three screw holes according to the screen size.

While pushing lens R toward lens G, align fixture R to the screw hole for the required screen size.



**9** Tighten screws A and B on fixture R.

**10** Tighten the eight C screws.

**11** Put back the HV-OUT block.

Follow the procedure in step 2 in reverse order.  
Tighten the screw and put the cord into the holder.

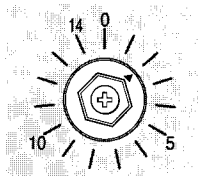
**12** Attach the front cover.



# LENS ANGLE ADJUSTMENT (Continued)

## Adjusting the Lens Angles (Continued)

### 3 Turn the bolt to the adjustment value obtained in step 2.

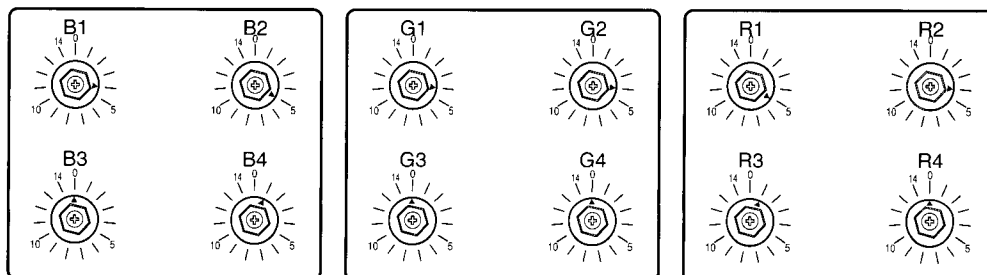


Set the mark ▲ on each bolt (R1 to R4, G1 to G4 and B1 to B4), to the corresponding adjustment value.  
Use a 10mm (3/8 inches) socket wrench.

- The adjusting bolts have stoppers. Do not turn the bolts too much or they will break.

Example: Turn the bolts according to the example in step 2.

| B1 | B2 | B3 | B4 | G1 | G2 | G3 | G4 | R1 | R2 | R3 | R4 |
|----|----|----|----|----|----|----|----|----|----|----|----|
|    |    |    |    |    |    |    |    |    |    |    |    |
| 4  | 5  | 0  | 1  | 4  | 4  | 0  | 0  | 5  | 4  | 1  | 0  |



### 4 Tighten the twelve D screws using a Philips screwdriver.

### 5 Attach the front cover.



## Adjustment Value Tables

Positive tilting angle adjustment value tables (0° to +13°)

★G1, G2, B1, R2

| Screen size (inches) | Projection angle to the screen |    |    |    |    |    |    |    |    |    |     |     |     |     |
|----------------------|--------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
|                      | 0°                             | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° |
| 70 - 74              | 0                              | 0  | 1  | 2  | 3  | 4  | 5  | 5  | 6  | 7  | 7   | 8   | 9   | 9   |
| 75 - 85              | 0                              | 0  | 1  | 2  | 3  | 3  | 4  | 5  | 5  | 6  | 7   | 7   | 8   | 9   |
| 86 - 109             | 0                              | 0  | 0  | 2  | 2  | 3  | 3  | 4  | 4  | 5  | 6   | 6   | 7   | 7   |
| 110 - 149            | 0                              | 0  | 0  | 0  | 1  | 2  | 3  | 3  | 3  | 4  | 4   | 5   | 5   | 6   |
| 150 - 200            | 0                              | 0  | 0  | 0  | 0  | 1  | 2  | 2  | 2  | 3  | 3   | 4   | 4   | 4   |
| 201 - 250            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 2  | 2  | 2   | 3   | 3   | 3   |
| 251 - 300            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |

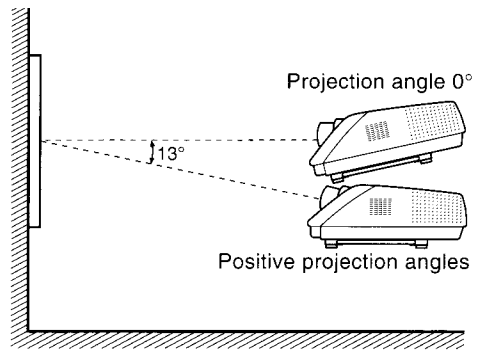
★B2, R1

| Screen size (inches) | Projection angle to the screen |    |    |    |    |    |    |    |    |    |     |     |     |     |
|----------------------|--------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
|                      | 0°                             | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° |
| 70 - 74              | 5                              | 5  | 6  | 7  | 8  | 9  | 10 | 10 | 11 | 12 | 12  | 13  | 14  | 14  |
| 75 - 85              | 4                              | 4  | 5  | 6  | 7  | 7  | 8  | 9  | 9  | 10 | 11  | 11  | 12  | 13  |
| 86 - 109             | 3                              | 3  | 3  | 5  | 5  | 6  | 6  | 7  | 7  | 8  | 9   | 9   | 10  | 10  |
| 110 - 149            | 1                              | 1  | 1  | 1  | 2  | 3  | 4  | 4  | 4  | 5  | 5   | 6   | 6   | 7   |
| 150 - 200            | 1                              | 1  | 1  | 1  | 1  | 2  | 3  | 3  | 3  | 4  | 4   | 5   | 5   | 5   |
| 201 - 250            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 2  | 2  | 2   | 3   | 3   | 3   |
| 251 - 300            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |

★B4, R3

| Screen size (inches) | Projection angle to the screen |    |    |    |    |    |    |    |    |    |     |     |     |     |
|----------------------|--------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
|                      | 0°                             | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° |
| 70 - 74              | 5                              | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5   | 5   | 5   | 5   |
| 75 - 85              | 4                              | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4   | 4   | 4   | 4   |
| 86 - 109             | 3                              | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   | 3   |
| 110 - 149            | 1                              | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1   | 1   | 1   |
| 150 - 200            | 1                              | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1   | 1   | 1   |
| 201 - 250            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |
| 251 - 300            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |

★G3, G4, B3, R4 are all "0".



Negative tilting angle adjustment value tables (0° to -13°)

★G3, G4, B3, R4

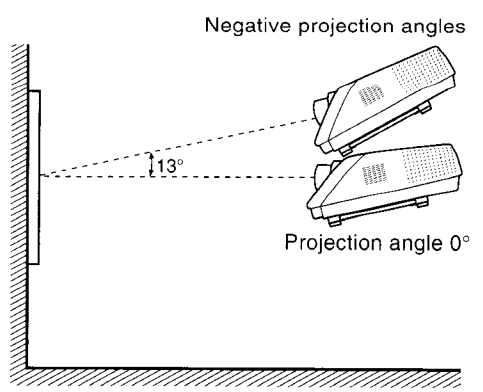
| Screen size (inches) | Projection angle to the screen |    |    |    |    |    |    |    |    |    |     |     |     |     |
|----------------------|--------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
|                      | 0°                             | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° |
| 70 - 74              | 0                              | 0  | 1  | 2  | 3  | 4  | 5  | 5  | 6  | 7  | 7   | 8   | 9   | 9   |
| 75 - 85              | 0                              | 0  | 1  | 2  | 3  | 3  | 4  | 5  | 5  | 6  | 7   | 7   | 8   | 9   |
| 86 - 109             | 0                              | 0  | 0  | 2  | 2  | 3  | 3  | 4  | 4  | 5  | 6   | 6   | 7   | 7   |
| 110 - 149            | 0                              | 0  | 0  | 0  | 1  | 2  | 3  | 3  | 3  | 4  | 4   | 5   | 5   | 6   |
| 150 - 200            | 0                              | 0  | 0  | 0  | 0  | 1  | 2  | 2  | 2  | 3  | 3   | 4   | 4   | 4   |
| 201 - 250            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 2  | 2  | 2   | 3   | 3   | 3   |
| 251 - 300            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |

★B4, R3

| Screen size (inches) | Projection angle to the screen |    |    |    |    |    |    |    |    |    |     |     |     |     |
|----------------------|--------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
|                      | 0°                             | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° |
| 70 - 74              | 5                              | 5  | 6  | 7  | 8  | 9  | 10 | 10 | 11 | 12 | 12  | 13  | 14  | 14  |
| 75 - 85              | 4                              | 4  | 5  | 6  | 7  | 7  | 8  | 9  | 9  | 10 | 11  | 11  | 12  | 13  |
| 86 - 109             | 3                              | 3  | 3  | 5  | 5  | 6  | 6  | 7  | 7  | 8  | 9   | 9   | 10  | 10  |
| 110 - 149            | 1                              | 1  | 1  | 1  | 2  | 3  | 4  | 4  | 4  | 5  | 5   | 6   | 6   | 7   |
| 150 - 200            | 1                              | 1  | 1  | 1  | 1  | 2  | 3  | 3  | 3  | 4  | 4   | 5   | 5   | 5   |
| 201 - 250            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 2  | 2  | 2   | 3   | 3   | 3   |
| 251 - 300            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |

★B2, R1

| Screen size (inches) | Projection angle to the screen |    |    |    |    |    |    |    |    |    |     |     |     |     |
|----------------------|--------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
|                      | 0°                             | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° |
| 70 - 74              | 5                              | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5   | 5   | 5   | 5   |
| 75 - 85              | 4                              | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4   | 4   | 4   | 4   |
| 86 - 109             | 3                              | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   | 3   |
| 110 - 149            | 1                              | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1   | 1   | 1   |
| 150 - 200            | 1                              | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1   | 1   | 1   |
| 201 - 250            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |
| 251 - 300            | 0                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   |



# PICTURE BRIGHTNESS SETTING

Set the brightness of the picture.

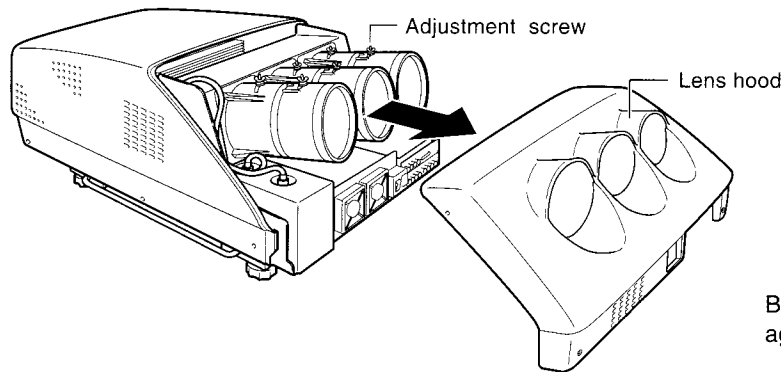
## Setting the Picture Brightness

The picture can be made one and a half times brighter than normal by the switching on this setting.

### Attention

If the projector has been projecting brighter pictures with the switch on for a prolonged time, the CRT life is shorter than with normal setting (switch off). The recommended setting is "OFF".

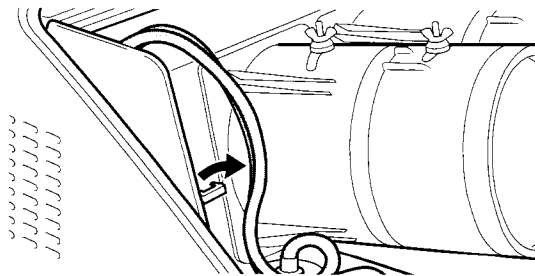
## 1 Remove the front cover following the procedure "Taking off the Front Cover".



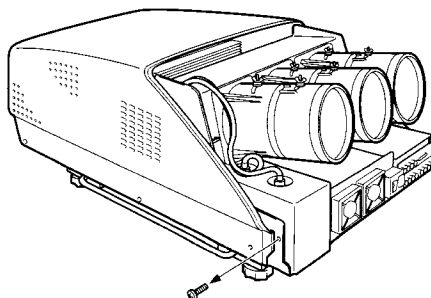
Be careful not to knock the lens hood against the adjustment screws.

## 2 Take out the HV-OUT block.

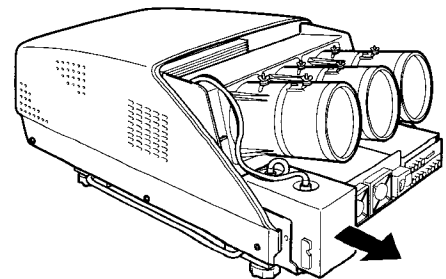
- 1) Pull out the cord from the holder.



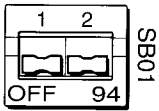
- 2) Remove the screw from the HV-OUT block.



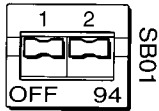
- 3) Pull out the HV-OUT block.



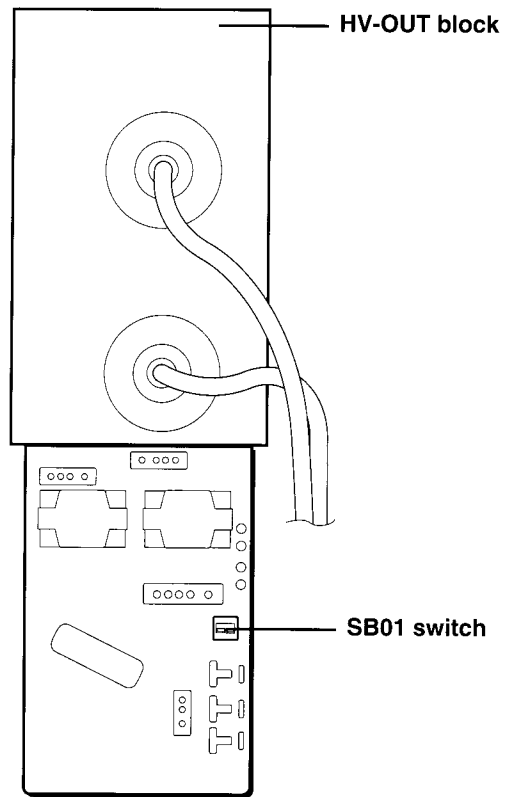
### 3 Set the switch.



OFF: Standard brightness  
(factory set)



ON: Brighter pictures



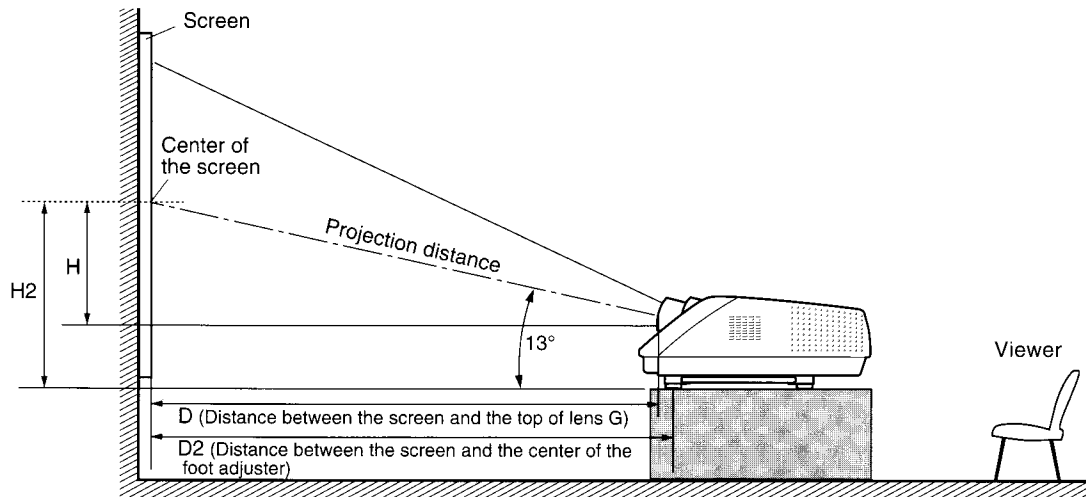
### 4 Put back the HV-OUT block.

Follow the procedure in step 2 in reverse order.  
Tighten the screw and put the cord in the holder.

### 5 Attach the front cover.

# PROJECTOR INSTALLATION

## Floor-mounted Front Projection



| Screen size (inches) | Projection distance mm (inches) | D mm (inches)    | H mm (inches)   | D2 mm (inches)   | H2 mm (inches)  |
|----------------------|---------------------------------|------------------|-----------------|------------------|-----------------|
| 70                   | 2288 (90 1/16)                  | 2229 (87 3/4)    | 515 (20 1/4)    | 2290 (92 5/16)   | 786 (30 7/8)    |
| 80                   | 2587 (101 7/8)                  | 2521 (99 1/4)    | 582 (22 15/16)  | 2581 (103 13/16) | 853 (33 1/2)    |
| 90                   | 2886 (113 5/8)                  | 2812 (110 3/4)   | 649 (25 9/16)   | 2873 (115 1/4)   | 921 (36 1/8)    |
| 100                  | 3186 (125 7/16)                 | 3104 (122 3/16)  | 717 (28 3/16)   | 3165 (126 3/4)   | 988 (38 13/16)  |
| 110                  | 3485 (137 3/16)                 | 3395 (133 11/16) | 784 (30 7/8)    | 3456 (138 3/16)  | 1055 (41 7/16)  |
| 120                  | 3784 (149)                      | 3687 (145 3/16)  | 851 (33 1/2)    | 3748 (149 11/16) | 1123 (44 1/8)   |
| 130                  | 4083 (160 3/4)                  | 3979 (156 5/8)   | 919 (36 3/16)   | 4039 (161 3/16)  | 1190 (46 3/4)   |
| 140                  | 4382 (172 9/16)                 | 4270 (168 1/8)   | 986 (38 13/16)  | 4331 (172 5/8)   | 1257 (49 3/8)   |
| 150                  | 4682 (184 5/16)                 | 4562 (179 5/8)   | 1053 (41 7/16)  | 4622 (184 1/8)   | 1325 (52 1/16)  |
| 160                  | 4981 (196 1/8)                  | 4853 (191 1/16)  | 1120 (44 1/8)   | 4914 (195 5/8)   | 1392 (54 11/16) |
| 180                  | 5579 (219 11/16)                | 5436 (214)       | 1255 (49 7/16)  | 5497 (218 9/16)  | 1527 (60)       |
| 200                  | 6178 (243 1/4)                  | 6019 (237)       | 1390 (54 11/16) | 6080 (241 1/2)   | 1661 (65 5/16)  |
| 220                  | 6776 (266 13/16)                | 6603 (259 15/16) | 1524 (60)       | 6663 (264 1/2)   | 1796 (70 5/8)   |
| 240                  | 7375 (290 3/8)                  | 7186 (282 7/8)   | 1659 (65 5/16)  | 7246 (287 7/16)  | 1930 (75 7/8)   |
| 260                  | 7973 (313 7/8)                  | 7769 (305 7/8)   | 1794 (70 5/8)   | 7830 (310 3/8)   | 2065 (81 3/16)  |
| 280                  | 8572 (337 7/16)                 | 8352 (328 13/16) | 1928 (75 15/16) | 8413 (333 3/8)   | 2200 (86 1/2)   |
| 300                  | 9170 (361)                      | 8935 (351 3/4)   | 2063 (81 3/16)  | 8996 (356 5/16)  | 2334 (91 13/16) |

Each distance is calculated by the following formula.

$$\text{Projection distance (mm)} = 29.923 \times \text{screen size (inches)} + 193.23$$

$$D \text{ (mm)} = \text{Projection distance (mm)} \times \cos(13^\circ)$$

$$H \text{ (mm)} = \text{Projection distance (mm)} \times \sin(13^\circ)$$

$$D2 \text{ (mm)} = (\text{Projection distance (mm)} + 244.97) \times \cos(13^\circ) - 178.0$$

$$H2 \text{ (mm)} = (\text{Projection distance (mm)} + 244.97) \times \sin(13^\circ) + 216.4$$

$$\text{Projection distance (inches)} = 1 \frac{3}{16} \times \text{screen size (inches)} + 7 \frac{5}{8}$$

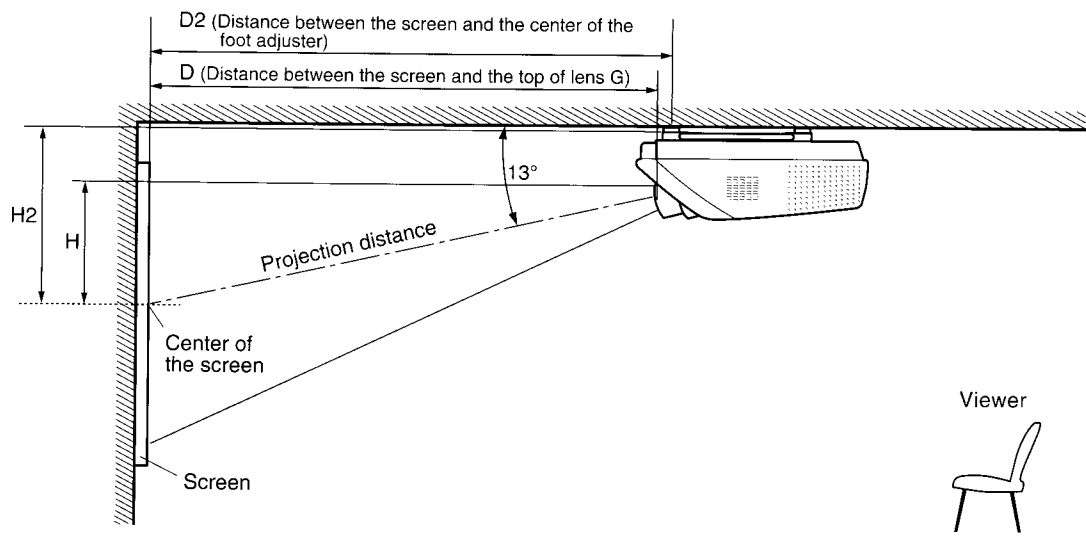
$$D \text{ (inches)} = \text{Projection distance (inches)} \times \cos(13^\circ)$$

$$H \text{ (inches)} = \text{Projection distance (inches)} \times \sin(13^\circ)$$

$$D2 \text{ (inches)} = (\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \cos(13^\circ) - 7$$

$$H2 \text{ (inches)} = (\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \sin(13^\circ) + 8 \frac{1}{2}$$

## Ceiling-mounted Front Projection



| Screen size (inches) | Projection distance mm (inches) | D mm (inches)    | H mm (inches)   | D2 mm (inches)   | H2 mm (inch)    |
|----------------------|---------------------------------|------------------|-----------------|------------------|-----------------|
| 70                   | 2288 (90 1/16)                  | 2229 (87 3/4)    | 515 (20 1/4)    | 2290 (92 5/16)   | 761 (30 1/4)    |
| 80                   | 2587 (101 7/8)                  | 2521 (99 1/4)    | 582 (22 15/16)  | 2581 (103 13/16) | 828 (32 7/8)    |
| 90                   | 2886 (113 5/8)                  | 2812 (110 3/4)   | 649 (25 9/16)   | 2873 (115 1/4)   | 896 (35 1/2)    |
| 100                  | 3186 (125 7/16)                 | 3104 (122 3/16)  | 717 (28 3/16)   | 3165 (126 3/4)   | 963 (38 3/16)   |
| 110                  | 3485 (137 3/16)                 | 3395 (133 11/16) | 784 (30 7/8)    | 3456 (138 3/16)  | 1030 (40 13/16) |
| 120                  | 3784 (149)                      | 3687 (145 3/16)  | 851 (33 1/2)    | 3748 (149 11/16) | 1098 (43 1/2)   |
| 130                  | 4083 (160 3/4)                  | 3979 (156 5/8)   | 919 (36 3/16)   | 4039 (161 3/16)  | 1165 (46 1/8)   |
| 140                  | 4382 (172 9/16)                 | 4270 (168 1/8)   | 986 (38 13/16)  | 4331 (172 5/8)   | 1232 (48 3/4)   |
| 150                  | 4682 (184 5/16)                 | 4562 (179 5/8)   | 1053 (41 7/16)  | 4622 (184 1/8)   | 1300 (51 7/16)  |
| 160                  | 4981 (196 1/8)                  | 4853 (191 1/16)  | 1120 (44 1/8)   | 4914 (195 5/8)   | 1367 (54 1/16)  |
| 180                  | 5579 (219 11/16)                | 5436 (214)       | 1255 (49 7/16)  | 5497 (218 9/16)  | 1502 (59 3/8)   |
| 200                  | 6178 (243 1/4)                  | 6019 (237)       | 1390 (54 11/16) | 6080 (241 1/2)   | 1636 (64 11/16) |
| 220                  | 6776 (266 13/16)                | 6603 (259 15/16) | 1524 (60)       | 6663 (264 1/2)   | 1771 (70)       |
| 240                  | 7375 (290 3/8)                  | 7186 (282 7/8)   | 1659 (65 5/16)  | 7246 (287 7/16)  | 1905 (75 5/16)  |
| 260                  | 7973 (313 7/8)                  | 7769 (305 7/8)   | 1794 (70 5/8)   | 7830 (310 3/8)   | 2040 (80 9/16)  |
| 280                  | 8572 (337 7/16)                 | 8352 (328 13/16) | 1928 (75 15/16) | 8413 (333 3/8)   | 2175 (85 7/8)   |
| 300                  | 9170 (361)                      | 8935 (351 3/4)   | 2063 (81 3/16)  | 8996 (356 5/16)  | 2309 (91 3/16)  |

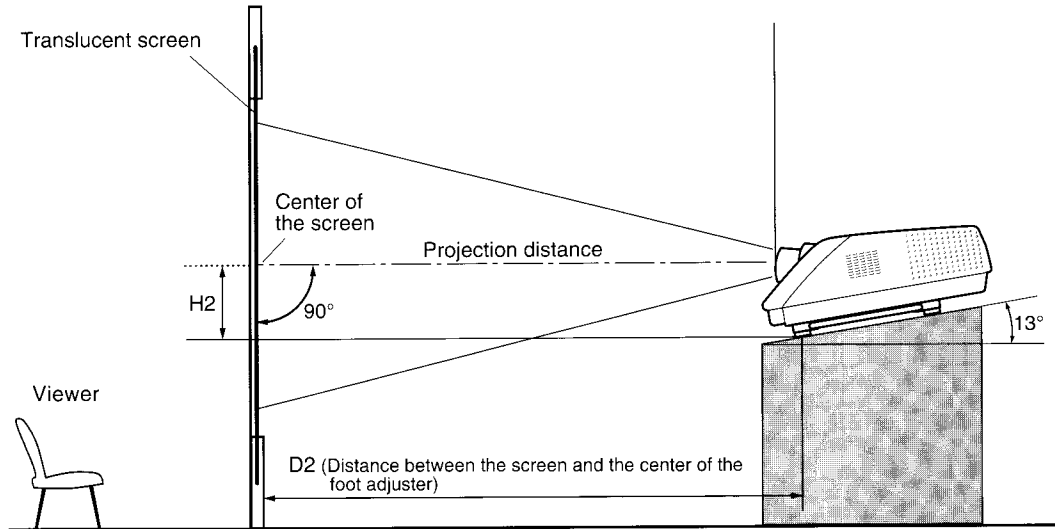
Each distance is calculated by the following formula.

Projection distance (mm) =  $29.923 \times \text{screen size (inches)} + 193.23$   
 D (mm) =  $\text{Projection distance (mm)} \times \cos(13^\circ)$   
 H (mm) =  $\text{Projection distance (mm)} \times \sin(13^\circ)$   
 D2 (mm) =  $(\text{Projection distance (mm)} + 244.97) \times \cos(13^\circ) - 178.0$   
 H2 (mm) =  $(\text{Projection distance (mm)} + 244.97) \times \sin(13^\circ) + 191.4$

Projection distance (inches) =  $1 \frac{3}{16} \times \text{screen size (inches)} + 7 \frac{5}{8}$   
 D (inches) =  $\text{Projection distance (inches)} \times \cos(13^\circ)$   
 H (inches) =  $\text{Projection distance (inches)} \times \sin(13^\circ)$   
 D2 (inches) =  $(\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \cos(13^\circ) - 7$   
 H2 (inches) =  $(\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \sin(13^\circ) + 7 \frac{9}{16}$

# PROJECTOR INSTALLATION (Continued)

## Floor-mounted Rear Projection



| Screen size (inches) | Projection distance mm (inches) | D2 mm (inches)   | H2 mm (inches) |
|----------------------|---------------------------------|------------------|----------------|
| 70                   | 2288 (90 1/16)                  | 2408 (94 13/16)  | 251 (9 7/8)    |
| 80                   | 2587 (101 7/8)                  | 2707 (106 9/16)  | 251 (9 7/8)    |
| 90                   | 2886 (113 5/8)                  | 3007 (118 3/8)   | 251 (9 7/8)    |
| 100                  | 3186 (125 7/16)                 | 3306 (130 1/8)   | 251 (9 7/8)    |
| 110                  | 3485 (137 3/16)                 | 3605 (141 15/16) | 251 (9 7/8)    |
| 120                  | 3784 (149)                      | 3904 (153 11/16) | 251 (9 7/8)    |
| 130                  | 4083 (160 3/4)                  | 4203 (165 1/2)   | 251 (9 7/8)    |
| 140                  | 4382 (172 9/16)                 | 4503 (177 1/4)   | 251 (9 7/8)    |
| 150                  | 4682 (184 5/16)                 | 4802 (189 1/16)  | 251 (9 7/8)    |
| 160                  | 4981 (196 1/8)                  | 5101 (200 13/16) | 251 (9 7/8)    |
| 180                  | 5579 (219 11/16)                | 5700 (224 3/8)   | 251 (9 7/8)    |
| 200                  | 6178 (243 1/4)                  | 6298 (247 15/16) | 251 (9 7/8)    |
| 220                  | 6776 (266 13/16)                | 6897 (271 1/2)   | 251 (9 7/8)    |
| 240                  | 7375 (290 3/8)                  | 7495 (295 1/16)  | 251 (9 7/8)    |
| 260                  | 7973 (313 7/8)                  | 8093 (318 5/8)   | 251 (9 7/8)    |
| 280                  | 8572 (337 7/16)                 | 8692 (342 3/16)  | 251 (9 7/8)    |
| 300                  | 9170 (361)                      | 9290 (365 3/4)   | 251 (9 7/8)    |

Each distance is calculated by the following formula.

$$\begin{aligned} \text{Projection distance (mm)} &= 29.923 \times \text{screen size (inches)} + 193.23 \\ \text{D2 (mm)} &= (\text{Projection distance (mm)} + 244.97) - 178.0 \times \cos(13^\circ) + 216.4 \times \sin(13^\circ) \\ \text{H2 (mm)} &= (\text{Projection distance (mm)} + 244.97) + 216.4 \times \cos(13^\circ) + 178.0 \times \sin(13^\circ) \end{aligned}$$

$$\begin{aligned} \text{Projection distance (inches)} &= 1 \frac{3}{16} \times \text{screen size (inches)} + 7 \frac{5}{8} \\ \text{D2 (inches)} &= (\text{Projection distance (inches)} + 9 \frac{5}{8}) - 7 \times \cos(13^\circ) + 8 \frac{1}{2} \times \sin(13^\circ) \\ \text{H2 (inches)} &= (\text{Projection distance (inches)} + 9 \frac{5}{8}) + 8 \frac{1}{2} \times \cos(13^\circ) + 7 \times \sin(13^\circ) \end{aligned}$$

## Projection Distance Calculation

Projection distance: distance between the center of the screen and the top of lens G

Projection distance (mm) =  $29.923 \times \text{Screen size (inches)} + 193.23$

D (mm) = Projection distance (mm)  $\times \cos(\alpha)$

H (mm) = Projection distance (mm)  $\times \sin(\alpha)$

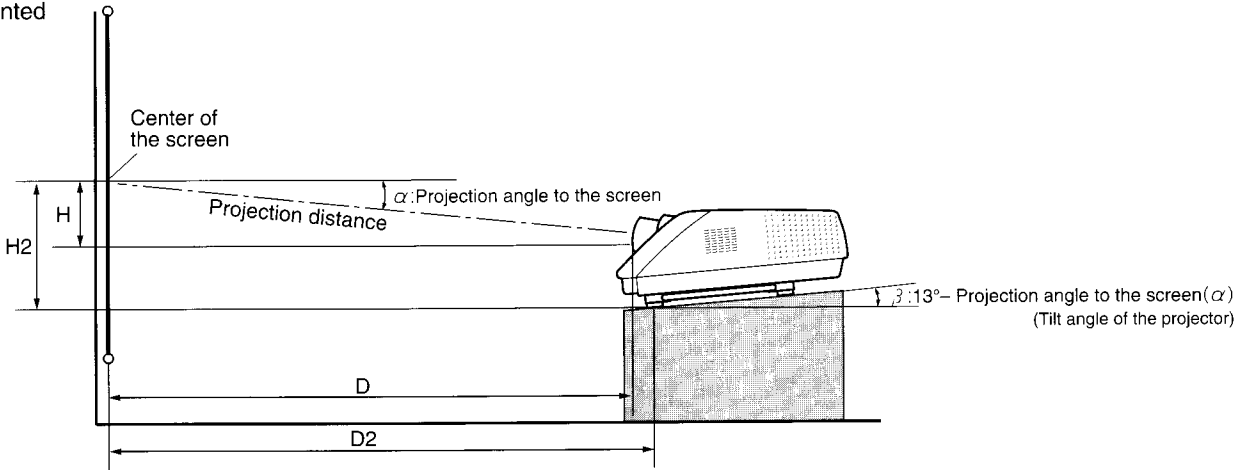
Projection distance (inches) =  $1 \frac{3}{16} \times \text{Screen size (inches)} + 7 \frac{5}{8}$

D (inches) = Projection distance (inches)  $\times \cos(\alpha)$

H (inches) = Projection distance (inches)  $\times \sin(\alpha)$

$\alpha$  = Projection angle to the screen

Floor-mounted projection



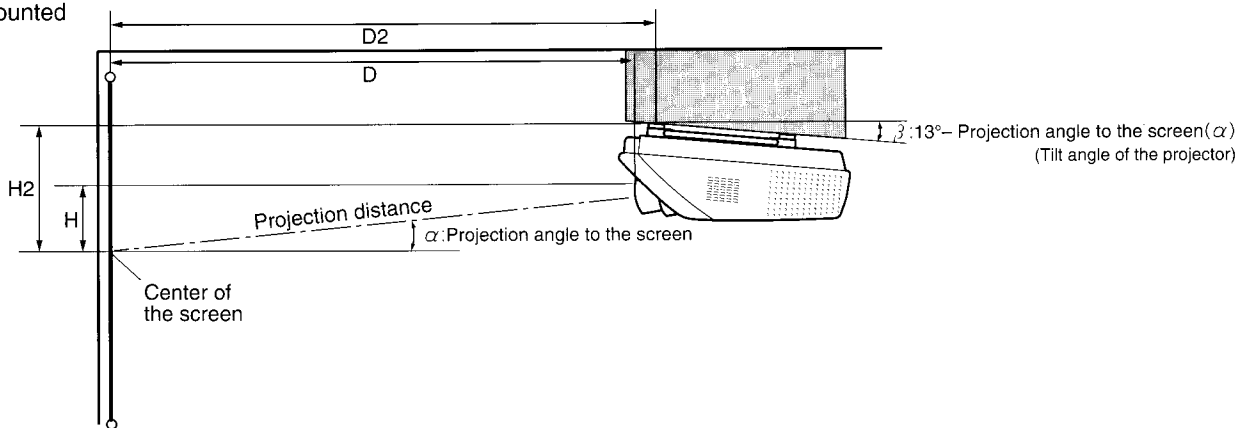
$D2 \text{ (mm)} = (\text{Projection distance (mm)} + 244.97) \times \cos(\alpha) - 178.0 \times \cos(\beta) + 216.4 \times \sin(\beta)$

$H2 \text{ (mm)} = (\text{Projection distance (mm)} + 244.97) \times \sin(\alpha) + 216.4 \times \cos(\beta) + 178.0 \times \sin(\beta)$

$D2 \text{ (inches)} = (\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \cos(\alpha) - 7 \times \cos(\beta) + 8 \frac{1}{2} \times \sin(\beta)$

$H2 \text{ (inches)} = (\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \sin(\alpha) + 8 \frac{1}{2} \times \cos(\beta) + 7 \times \sin(\beta)$

Ceiling-mounted projection



$D2 \text{ (mm)} = (\text{Projection distance (mm)} + 244.97) \times \cos(\alpha) - 178.0 \times \cos(\beta) + 191.4 \times \sin(\beta)$

$H2 \text{ (mm)} = (\text{Projection distance (mm)} + 244.97) \times \sin(\alpha) + 191.4 \times \cos(\beta) + 178.0 \times \sin(\beta)$

$D2 \text{ (inches)} = (\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \cos(\alpha) - 7 \times \cos(\beta) + 7 \frac{9}{16} \times \sin(\beta)$

$H2 \text{ (inches)} = (\text{Projection distance (inches)} + 9 \frac{5}{8}) \times \sin(\alpha) + 7 \frac{9}{16} \times \cos(\beta) + 7 \times \sin(\beta)$

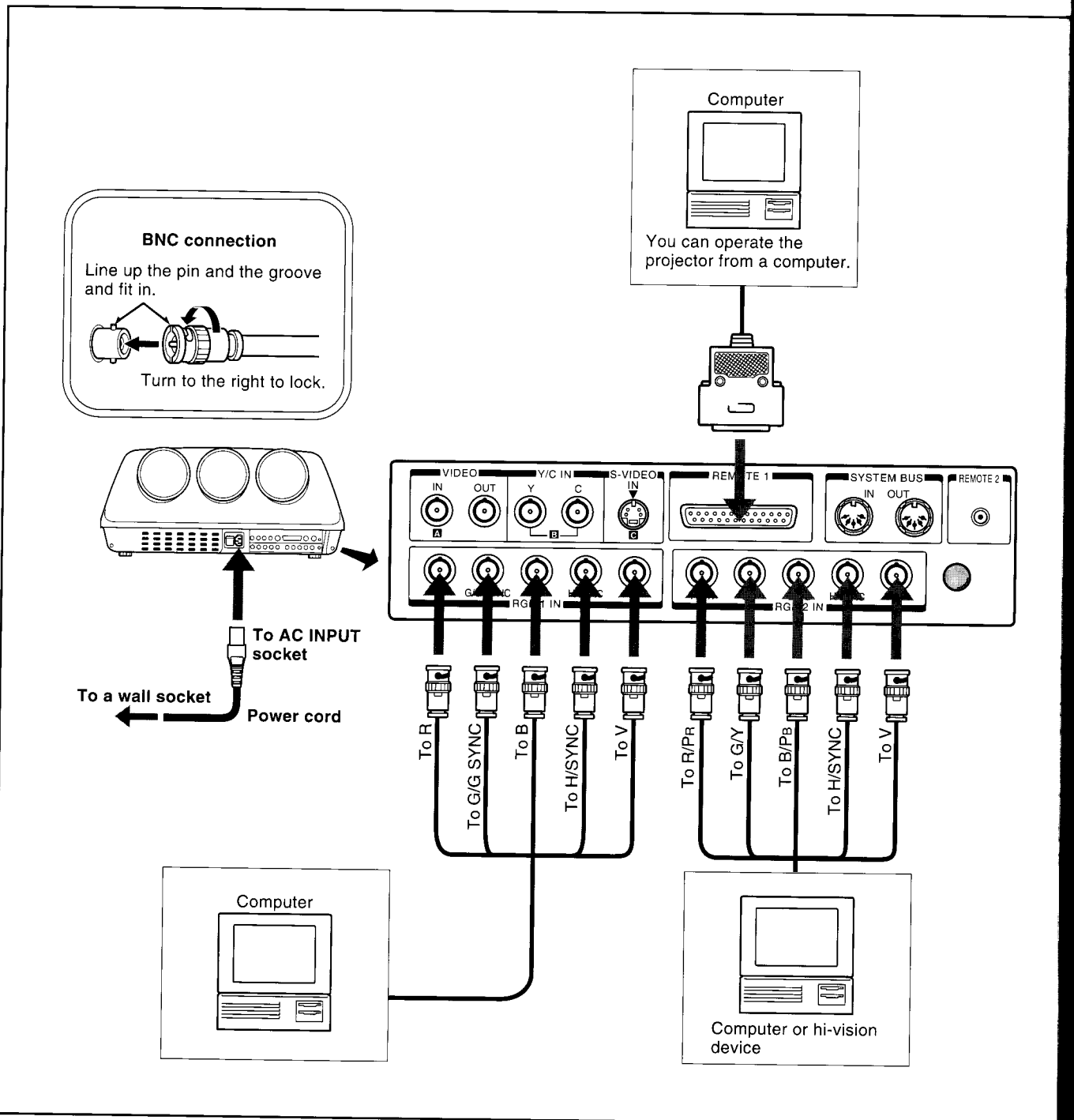
# CONNECTIONS WITH OTHER EQUIPMENT

You can connect the projector to computers, video tape players.

## Connecting With Computers

**[Preparation]**

Check that the power for the projector and the computer is off before connecting the cables.





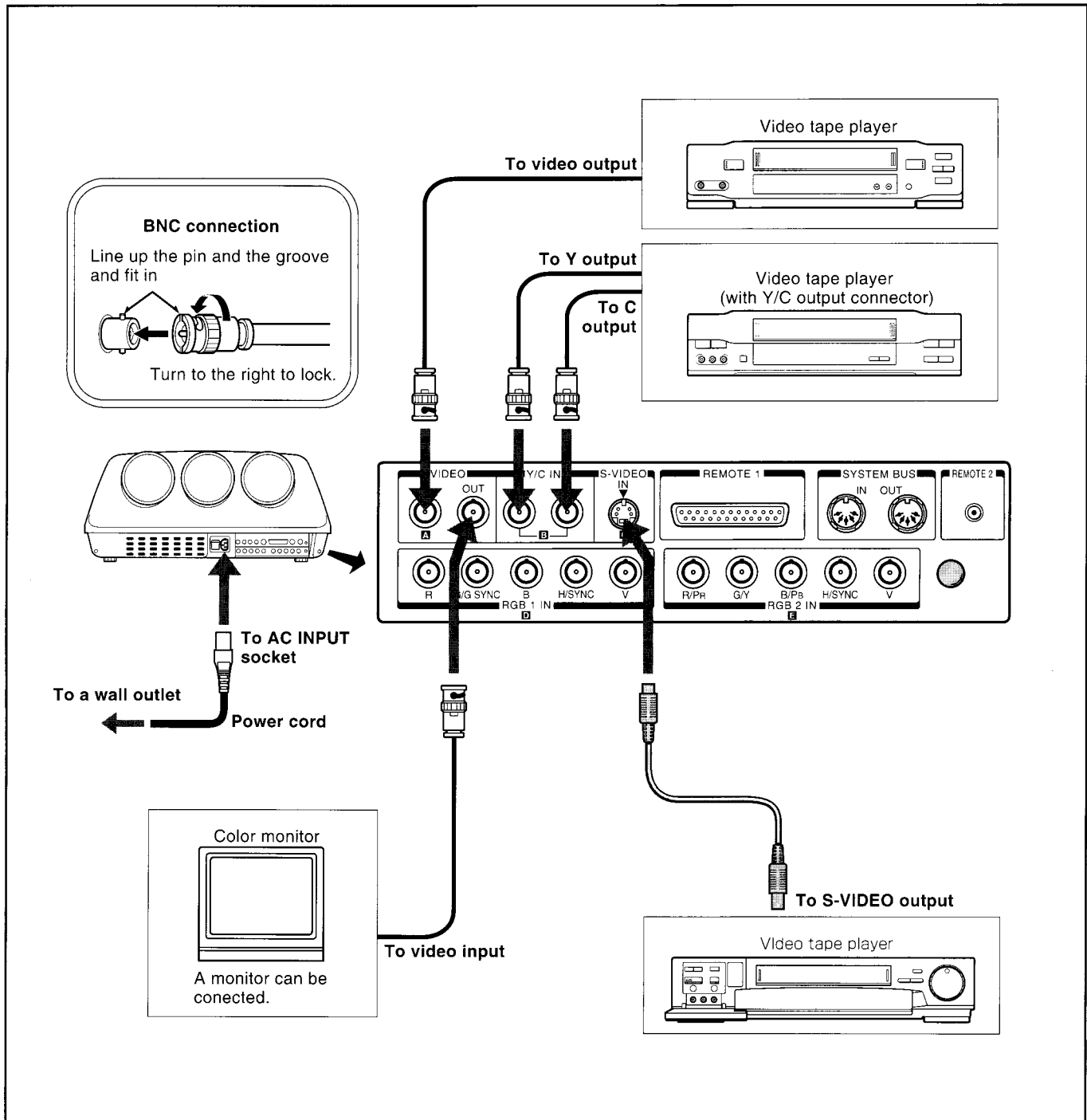
**Notes**

- Use the correct cables for the connector configurations.
- For RGB input and video input, the connection cables should be no longer than 25 m (82 feet).

## Connecting With Video Equipment

**[Preparation]**

Check that the power for the projector and video equipment is off before connecting the cables.



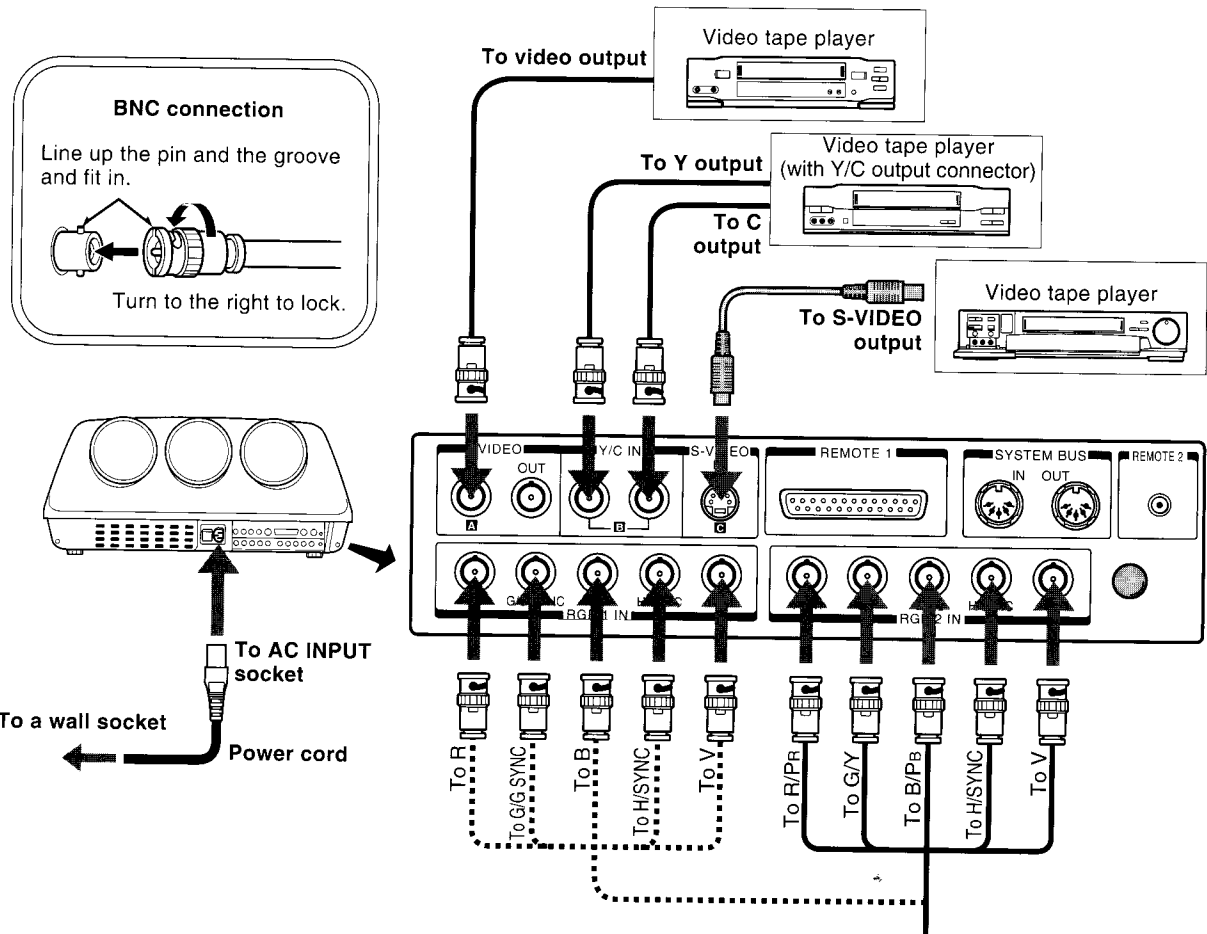
# CONNECTIONS WITH OTHER EQUIPMENT (USING A SWITCHER)

## Connecting Equipment Using a Switcher

**[Preparation]**

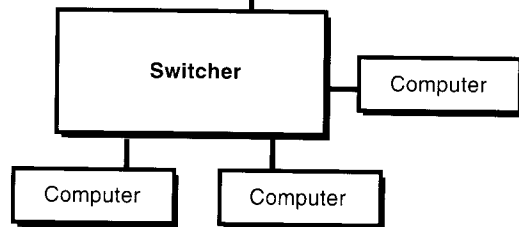
Check that the power for the projector and equipment is off before connecting the cables.

Using a switcher, many equipment can be connected to this projector. Up to 30 input signals are available on this projector.



### Projecting a Picture Through the Switcher

- To connect a YPbPr hi-vision device using a switcher, use the input connectors **E** to connect the output cable of the switcher.
- When the switcher is connected to **D** connectors, select the input source by pressing the D (INPUT SELECT) button on the remote control; when connected to **E** connectors, select by the E button.



**Notes**

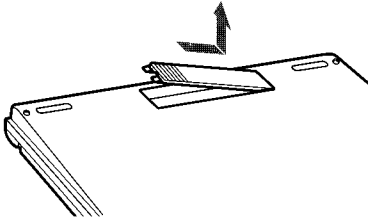
- Use the correct cables for the connector configurations.
- For RGB input and video input, the connection cables should be no longer than 25 m (82 feet).

# REMOTE CONTROL PREPARATION AND OPERATION

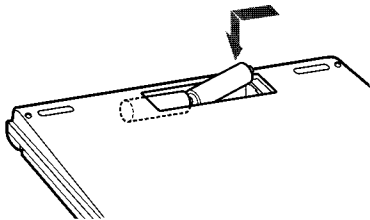
This section explains how to install the batteries and use the remote control.

## Installing Batteries and Remote Control Operation

**1** Open the cover.

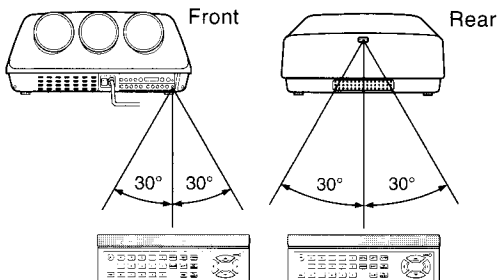


**2** Install the batteries and attach the cover.



Make sure that the +/- polarities match the illustration in the compartment.

**3** Face the main unit and press a remote control button.



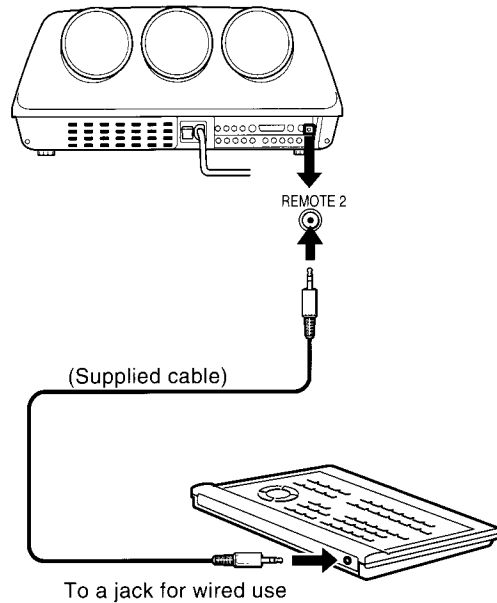
Distance: within about 7 m (23 feet) from the front of the remote sensor

Angle: within about 30° of the remote sensor in every direction

- The remote control may not operate when there is sunlight or other strong light on the remote sensor.

## Remote Control and Projector Connections

The remote control and the projector can be directly connected. This connection is used when wireless remote control is not possible.



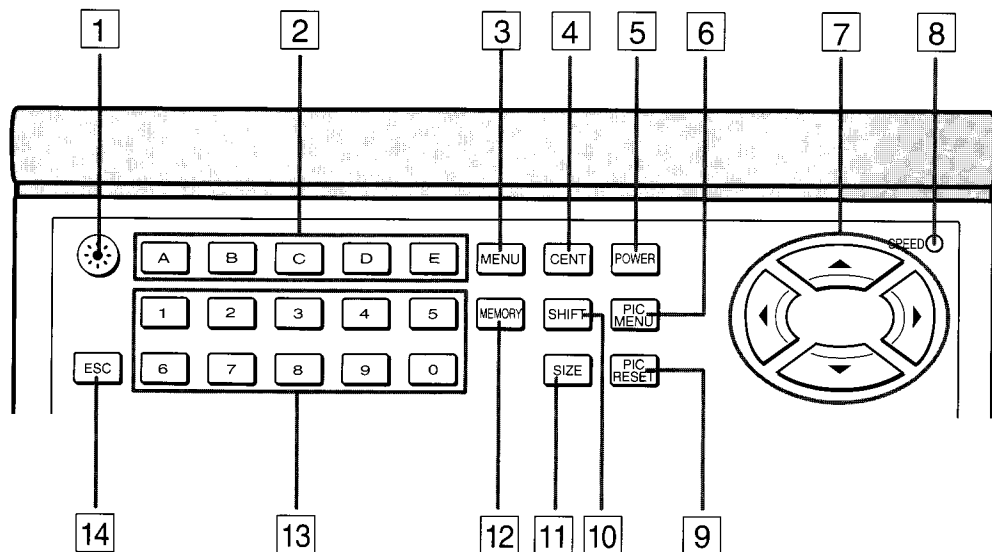
**Note**

When using the wireless remote control, disconnect this cable from the projector and the remote control.

# BUTTONS ON THE REMOTE CONTROL

This section explains the buttons required for adjustment.

## Buttons on the Remote Control



**1 LIGHT button**

To illuminate the button display, for example in dark rooms. The lights automatically turn off after about 30 seconds if no button is pressed. When the remote control is connected to the projector using the cable, the lights automatically turn on.

**2 A, B, C, D, and E buttons**

To select the input source. Not available during adjustments or while the menu screen is displayed.

**3 MENU button**

To display the menu screen.

**4 CENT button**

To make the convergence adjustment by users.

**5 POWER button**

To alternate power-on and standby. Not available during adjustments or while the menu screen is displayed.

**6 PIC MENU button**

To display the adjustment items for the picture quality.

**7 Arrow buttons**

To make various adjustments, selections and settings.

**8 SPEED button**

To change the adjustment speed.

**9 PIC RESET button**

To return the picture quality adjustments to their original values.

**10 SHIFT button**

To adjust the picture position.

**11 SIZE button**

To adjust the picture size.

**12 MEMORY button**

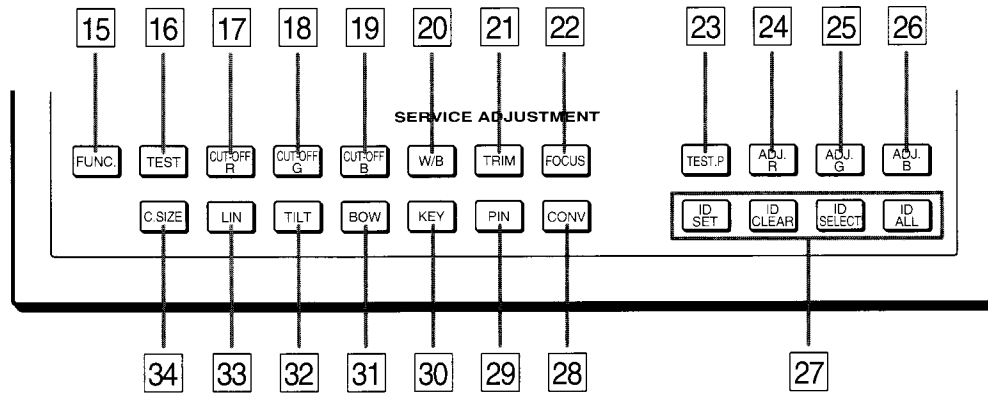
To store the adjustments or the setting values into memory.

**13 Number buttons**

To select the items on the menu screen in service adjustment mode.

**14 ESC button**

To cancel an adjustment or close the menu display, etc.



- |  |   |
|--|---|
| <p><b>15</b> <b>FUNC.</b> button<br/>To switch the functions during adjustment.</p> <p><b>16</b> <b>TEST</b> button<br/>Pressing this button and holding down for about 3 seconds switches to service adjustment mode for various adjustments. To return to reception mode, press this button and hold it down for about 3 seconds again.</p> <p><b>17</b> <b>CUT-OFF R</b> button<br/>To turn on or off the red picture.</p> <p><b>18</b> <b>CUT-OFF G</b> button<br/>To turn on or off the green picture.</p> <p><b>19</b> <b>CUT-OFF B</b> button<br/>To turn on or off the blue picture.</p> <p><b>20</b> <b>W/B</b> button<br/>To make the white balance adjustment. This is the color temperature adjustment for when the picture is bright and when it is dark.</p> <p><b>21</b> <b>TRIM</b> button<br/>To use in the trimming adjustment when the picture sticks out of the screen.</p> <p><b>22</b> <b>FOCUS</b> button<br/>To adjust the CRT focus.</p> <p><b>23</b> <b>TEST.P</b> button<br/>To change the test pattern type during adjustment.</p> | <p><b>24</b> <b>ADJ.R</b> button<br/>To select red as the color for adjustment.</p> <p><b>25</b> <b>ADJ.G</b> button<br/>To select green as the color for adjustment.</p> <p><b>26</b> <b>ADJ.B</b> button<br/>To select blue as the color for adjustment.</p> <p><b>27</b> <b>ID SET, CLEAR, SELECT ALL buttons</b><br/>Not used for the normal installation.</p> <p><b>28</b> <b>CONV</b> button<br/>To make the convergence adjustment.</p> <p><b>29</b> <b>PIN</b> button<br/>To make the pin-cushion distortion adjustment.</p> <p><b>30</b> <b>KEY</b> button<br/>To make the keystone distortion adjustment.</p> <p><b>31</b> <b>BOW</b> button<br/>To make the bow distortion adjustment.</p> <p><b>32</b> <b>TILT</b> button<br/>To make the picture tilt adjustment.</p> <p><b>33</b> <b>LIN</b> button<br/>To make adjustments of the linearity distortion.</p> <p><b>34</b> <b>C.SIZE</b> button<br/>To make adjustments of the red or blue picture size.</p> |
|--|---|

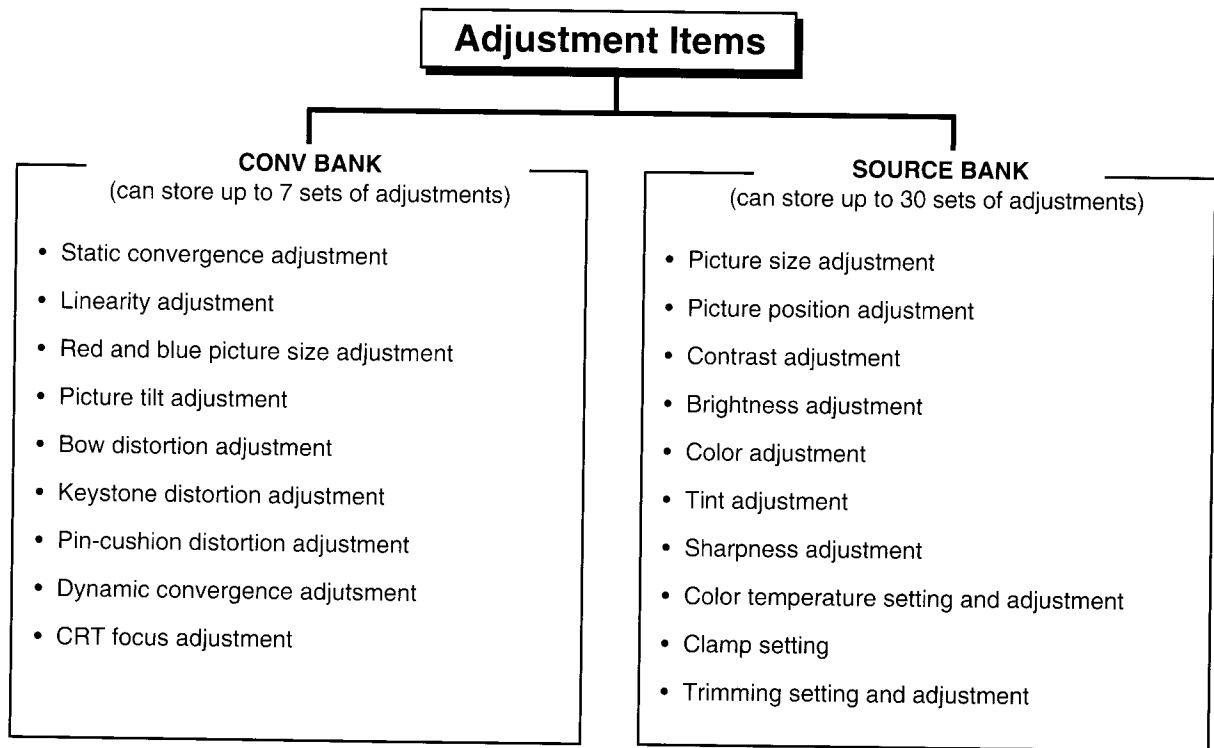
# SUMMARY OF CONTENTS OF ADJUSTMENTS

This section explains the contents of projector adjustment.

## Memory Data

This projector has memory functions, which can hold up to 30 sets of adjustments.

Adjustment values are automatically assigned to either a convergence bank (CONV BANK) or source bank (SOURCE BANK) according to the adjustment item.



### Notes

- When storing into memory, the SOURCE BANK number is displayed. The CONV BANK number is not displayed, but is automatically assigned according to the synchronization frequency of the input source.
- The SOURCE BANK and CONV BANK assigned to the reception signals can be checked with the menu screen. See "INPUT SOURCE DATA DISPLAY" in the chapter of user adjustment mode.

### Memory data usage example

The contents of picture quality adjustment can be changed and stored into memory for each input signal. Once the adjustments have been stored into memory, from the next time on, just changing the input signal automatically changes the adjusted picture quality. For example, you can adjust the picture quality for images from the video deck as you like and adjust the picture quality for images from the computer as you like. From the next time, just selecting the corresponding input source projects the images with the set picture quality.

### Screen display

When a new input source signal for which adjustments have not yet been stored into memory is connected to this projector, the display below appears. Make necessary adjustments for the input source signal. Adjustment or data copy button operation puts out this screen display. If you do nothing, this display goes out on its own after about 100 seconds.

```

NEW SOURCE
fH: XXkHz
fV: XXHz
SOURCE BANK: XX

PLEASE ADJ. or COPY
  
```

### Memory capacity for adjustments

This projector can store the contents of up to 30 sets of adjustments. If you connect a new input source that will exceed this memory capacity limit, "SOURCE BANK:FULL" is displayed.

In this state, if you store the adjustments for a new input source into memory, it is written over the contents of the source bank currently displayed. If you do not want to lose the adjustment data for the source bank currently displayed, at the stage when the "SOURCE BANK:FULL" display appears, delete an unneeded source bank to create space for the new adjustments.

```

NEW SOURCE
fH: XXkHz
fV: XXHz
SOURCE BANK: FULL

PLEASE ADJ. or COPY
  
```

#### Notes

- For details on copying and deleting of SOURCE BANK data, see "FILE OPERATIONS ON ADJUSTMENT DATA STORED IN SOURCE BANKS (SUMMARY)".
- For details on copying and deleting of CONV BANK data, see "CONVERGENCE ADJUSTMENT DATA FILE OPERATIONS (SUMMARY)".

#### Attention

In addition to the adjustments explained in this manual, this projector has adjustments that can be made with the remote control. These adjustments are made at the factory and require measurement instruments, so do not try to make any adjustments not explained in this manual.

# BEFORE STARTING ADJUSTMENT (SUMMARY)

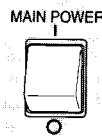
This section gives an overall summary before adjustments.

## Summary Explanation Before Starting Adjustments

When making an adjustment except in user adjustment mode, it is necessary to put the projector into service adjustment mode.

### Entering service adjustment mode

- 1** Turn on the **POWER** switch on the projector.



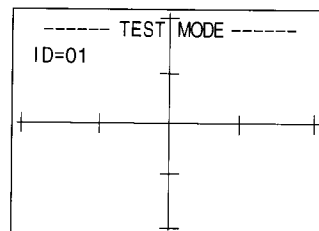
The **POWER** indicator on the rear side lights up in orange.

- 2** Press the **POWER** button on the remote control.



The **POWER** indicator on the rear side turns green.

- 3** Press the **TEST** button and hold it down for about three seconds.



The projector goes into service adjustment mode, and displays an initial screen as shown above. To return to reception mode, press this button and hold it down for about 3 seconds again. Various adjustments are made from this service adjustment mode.

### Ending the mode and turning off the power

- 1** In service adjustment mode, press the **TEST** button and hold it down for about 3 seconds.



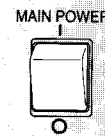
Service adjustment mode ends and the projector returns to normal reception mode.

- 2** Press the **POWER** button on the remote control.



The power is turned off.

- 3** Turn off the **POWER** switch on the projector.



#### Note

If the **POWER** switch is turned off before step 2, with the **POWER** indicator on the rear side lit in green, the projector will turn on the **POWER** indicator in green when the power is turned on next. (Last mode memory function)

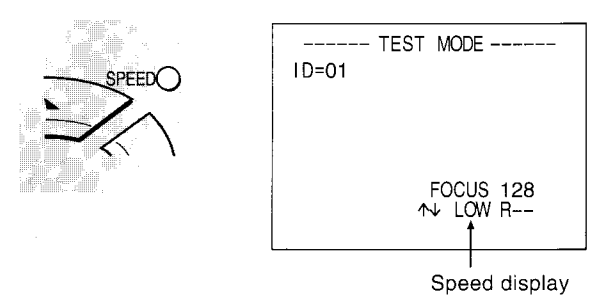


### Changing the adjustment speed

You can change the speed for adjustments.

---

**During adjustment, press the SPEED button.**



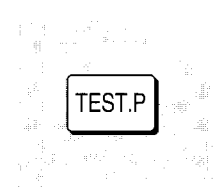
LOW: adjustment with standard speed  
 HI: adjustment with speed faster than for "LOW"

### Changing the test pattern

You can change the test pattern for adjustments.

---

**Press the TEST.P button.**



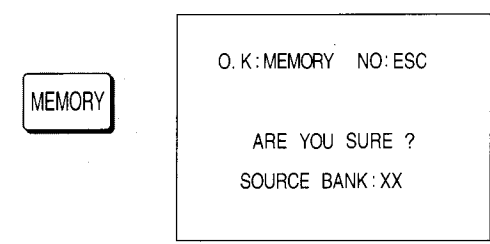
- For some adjustment items, the test pattern can not be changed.

### Storing adjustment data

After adjusting, it is necessary to store the adjustment values into memory.

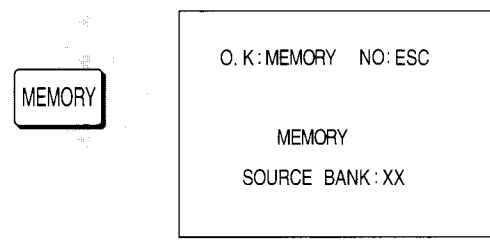
---

- 1 Make the adjustments.**
- 2 Press the MEMORY button.**



The confirmation screen is displayed.

- To store the adjustment state into memory, press the MEMORY button.
- To not store the adjustment state into memory, press the ESC button. Even if you do not store it into memory, this adjustment state is retained until you return to normal reception mode or turn off the power.



After the data has been stored into memory, the screen returns to the initial one in service adjustment mode.

- Attention**
- If the picture state has grown worse during adjustment, either return to normal reception mode without storing the adjustment values into memory or turn off the main power.
  - Do not turn off the power for the input source or change the connections during adjustment. The adjustment data may be broken or adjustment may become impossible.
  - In the subsequent individual adjustment methods, the instructions tell you to store the adjustment data after each adjustment item, but you can also make multiple adjustments before storing them all into memory. However, be careful. If you return to normal reception mode before storing the adjustments into memory, the adjustments return to their previous state. On the other hand, if you want to return to the previous adjustment state without storing the new adjustments into

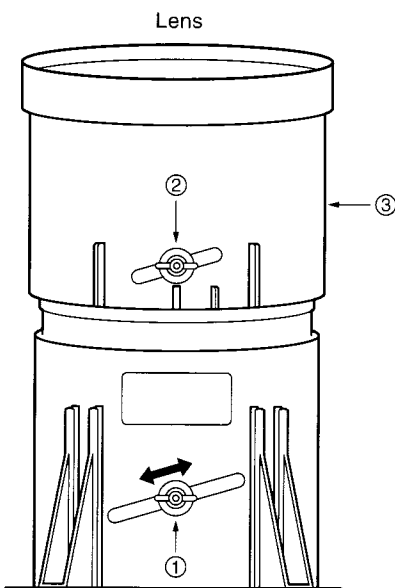
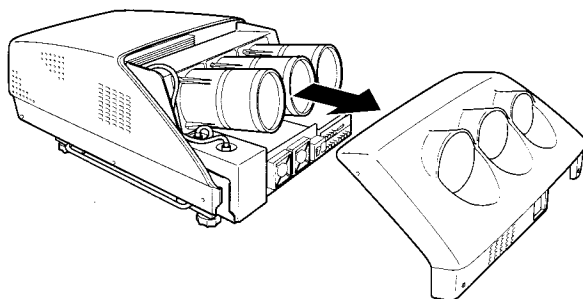
# FOCUS ADJUSTMENT

The focus adjustments are the lens focus adjustment and the CRT focus adjustment.

## Lens Focus Adjustment

**[Preparation]**

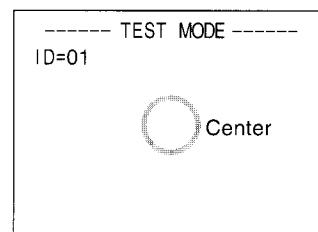
The front cover must be removed.  
See page 7.



**1** Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.

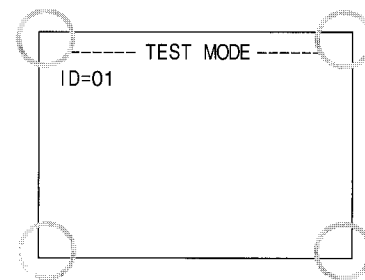


**2** Adjust screw ① while paying attention to the center of the picture.



Change the focus for the overall picture by loosening screw ① and moving in the direction of the arrow. Display a pattern for adjustment pressing the TEST button.

**3** Tighten screw ①, then adjust screw ② and lens mirror cylinder ③ while paying attention to the corners of the picture.



Change the focus of the picture corners by loosening screw ② and rotating lens mirror cylinder ③.

**4** After adjustment, tighten screws ① and ②.

**5** Adjust all three lenses with steps 2 through 4.

The picture center focus and edge focus may interfere with each other somewhat. Repeat these two adjustments back and forth as necessary.

**6** After adjustment, attach the front cover.

**Attention**

Adjust the focus before adjusting the convergence. If you adjust the focus after completing the convergence adjustment, the

# CRT Focus Adjustment

After adjusting the lens focus, adjust the CRT focus.

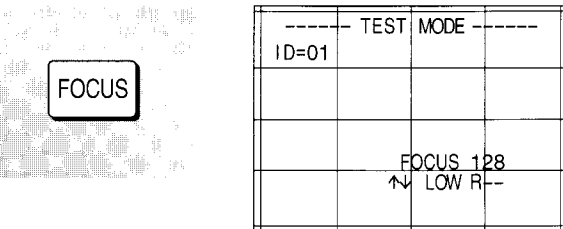
## [Preparation]

Select the input source to be adjusted for with the A, B, C, D, or E button.

**1** Press the **TEST** button and hold it down for about three seconds to put the projector into service adjustment mode.



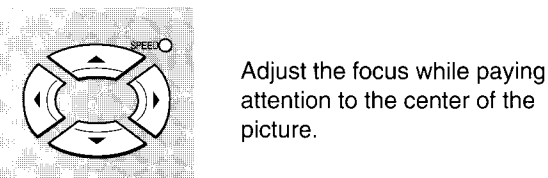
**2** Press the **FOCUS** button.



**3** Select the color to adjust with the **ADJ.R**, **ADJ.G**, or **ADJ.B** button.



**4** Adjust the focus with the arrow buttons.

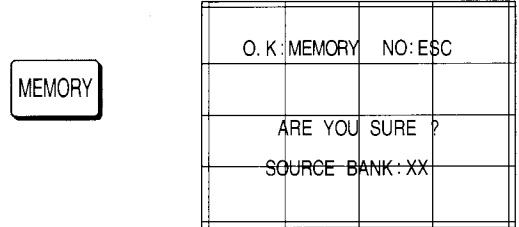


**5** Adjust the CRT focus for R, G, and B.

Repeat steps 3 and 4.

- If you can output a fine image, characters, or the like from the input source, press the **TEST.P** button, output the input source picture, and try adjusting.

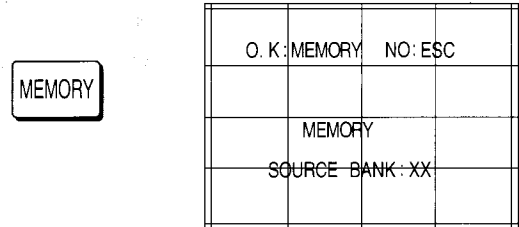
**6** Press the **MEMORY** button.



The confirmation screen is displayed. To store the adjustment state into memory, press the **MEMORY** button.



To not store the adjustment state into memory, press the **ESC** button.



The adjustment values are stored into memory and the screen return to the initial one in service adjustment mode.

### Note

The CRT focus adjustment values are stored in the CONV BANKs. Therefore, each of input sources may not be respectively adjusted as

# PICTURE DISTORTION AND CONVERGENCE ADJUSTMENT (SUMMARY)

This section gives an overall summary to read before you make the adjustments.

## Summary Explanation Before Starting Adjustments

The picture distortion and convergence adjustments for this projector are divided into seven banks, BANK1-BANK7, according to the horizontal synchronization frequency band. The adjustment data is stored into seven memory banks so the adjustment data in the bank corresponding to the horizontal synchronization frequency of the input source can be called up. Therefore, there is no need to adjust for every input source.

| Adjustment data bank             | BANK1   | BANK2   | BANK3   | BANK4   | BANK5   | BANK6   | BANK7    |
|----------------------------------|---------|---------|---------|---------|---------|---------|----------|
| Horizontal frequency range (kHz) | 15 – 19 | 19 – 26 | 26 – 34 | 34 – 45 | 45 – 60 | 60 – 80 | 80 – 100 |
| Adjustment frequency (kHz)       | 17      | 24      | 31      | 37      | 50      | 70      | 90       |

### ■ Types of adjustment data stored into adjustment data bank (CONV BANK)

- Static convergence adjustment data
- Linearity adjustment data
- Red and blue size adjustment data
- Picture tilt adjustment data
- Bow distortion adjustment data
- Keystone distortion adjustment data
- Pin-cushion distortion adjustment data
- Dynamic convergence adjustment data
- CRT focus adjustment data

### Notes

- In the installation service adjustment when this projector is purchased, by putting the projector into adjustment mode with the input sources that the customer will be using connected, the data in the banks corresponding to those horizontal synchronization frequency is called up and this data can be re-adjusted. Therefore in this case, all the banks are not necessarily adjusted. Also, even if there are multiple input sources, if the horizontal synchronization frequencies are within the range of the same bank, there is no need to adjust for each input source.  
The input signal synchronization frequencies and the numbers of the convergence adjustment data banks used can be checked by displaying the menu on the screen.
- For 20 to 30 minutes after turning the power on, the colors may not converge properly. Turn on the projector 20 to 30 minutes before you plan to use it to warm it up, then make the adjustments.

## CONV BANK Calling Up Function

This projector can call up the desired CONV BANK regardless of whether it has a corresponding input source or not, so every adjustment in the seven CONV BANKs can be finished at one time when the projector is installed.

The calling up procedure is as follows: first press the MENU button while in service adjustment mode to display the SERVICE MODE screen, then select "6:CONV BANK" using number button 6.

Now BANK1 to BANK7 can be selected successively by pressing number button 6 repeatedly.

After selecting the desired CONV BANK following the above procedure, press the ESC button three times to return to the SERVICE MODE screen. Make the picture distortion and convergence adjustments and store them in memory, then repeat this procedure to finish the adjustments for all the CONV BANKs.

## Procedure of Picture Distortion and Convergence Adjustments

### 1 Static convergence adjustment

- Adjustment in user adjustment mode The user makes this adjustment in reception mode. In this adjustment, only the red and blue are moved to match the green. See the user adjustment "CONVERGENCE ADJUSTMENT".
- Adjustment in service adjustment mode This adjustment is made in service adjustment mode selecting the adjustment color. This adjustment can be made for each of the three colors by aligning the reference green position with the regulation position and aligning the red and blue with the green.

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Page 37



### 2 Linearity adjustment

Adjust the picture size balance between the screen left and right, top and bottom and then in the center and the edge sections.

Page 39



### 3 Picture distortion adjustments

The keystone distortion, pin-cushion distortion, picture tilt, and picture bow distortion can be adjusted for the green picture. Precise picture distortion adjustment can be made using the green dynamic convergence adjustment function as necessary.

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### 4 Dynamic convergence adjustment

The dynamic convergence is adjusted by precisely adjusting the red and blue picture distortion and aligning with the green.

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# STATIC CONVERGENCE ADJUSTMENT

Adjusts the color deviation in the center of the picture.

## Static Convergence Adjustment (Adjustment in Service Mode)

This projector works by projecting images with three overlaying light beams, red, green, and blue (the three primary colors of light). This adjustment is for correctly overlaying these three primary colors and projecting beautiful color images.

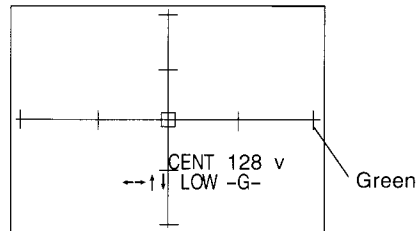
### [Preparation]

Select the input source to adjust for with the A, B, C, D, or E button.

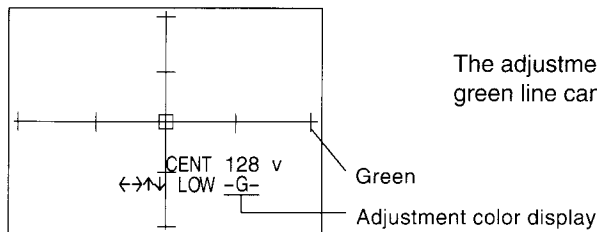
- 1 Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.



- 2 Press the CONV button.

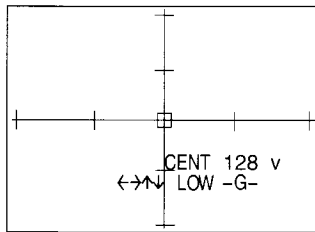
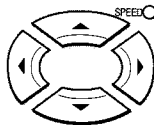


- 3 Press the ADJ.G button.



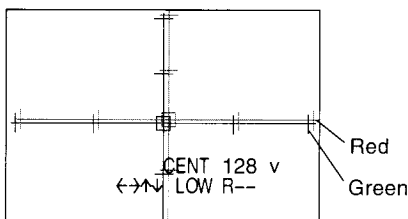
The adjustment color display shows "G" and a green line can be adjusted.

- 4 Align the center of the green line with the center of the screen with the arrow buttons.



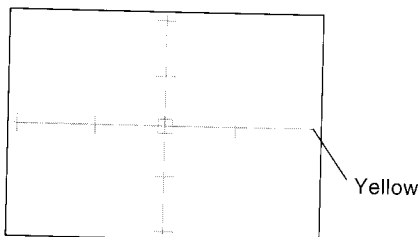
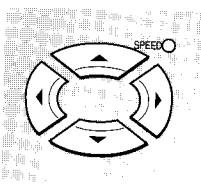
- : Moves up.
- : Moves down.
- : Moves right.
- : Moves left.

- 5 Press the ADJ.R button.



The adjustment color display changes to "R" and a red line can be adjusted.

## 6 Move the red line to align it with the green line with the arrow buttons.

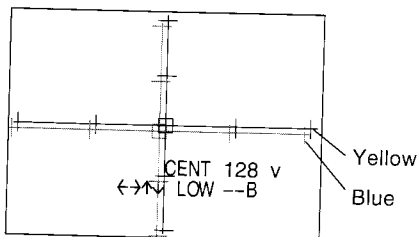
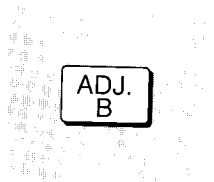


Watch the inside of the center square while moving the lines.

When the red line and the green line are aligned, they change to a yellow line.

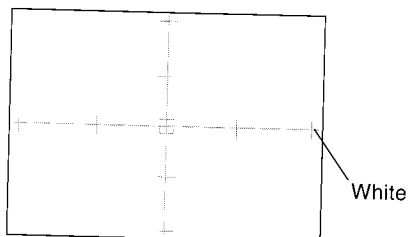
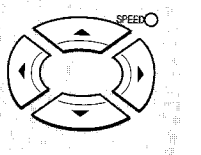
Move the red line to make this yellow line.

## 7 Press the ADJ.B button.



The adjustment color display changes to "B" and a blue line can be adjusted.

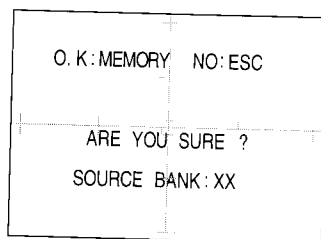
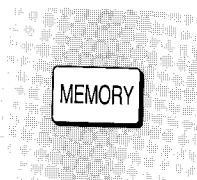
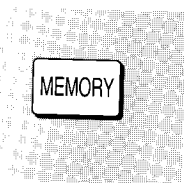
## 8 Move the blue line to align it with the yellow line with the arrow buttons.



When the blue line and the yellow line are aligned, they turn white.

Move the blue line to make this white line.

## 9 Press the MEMORY button.



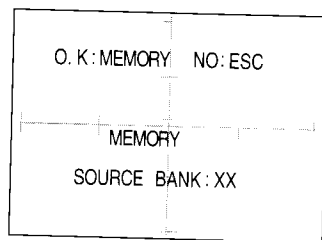
When making only this adjustment, press the MEMORY button.

When making other adjustments, press the corresponding adjustment button.

The confirmation screen is displayed.

To store the adjustment into memory, press the MEMORY button.

If you do not want to store it, press the ESC button.



The adjustment is stored into memory.

When the storing is complete, the screen returns to the initial one in service adjustment mode.

# LINEARITY ADJUSTMENT (Making the picture linearity uniform)

Adjust the picture size balance left and right, top and bottom, then adjust it in the center and the edge.

## Picture Size Adjustment in the Left and Right, Top and Bottom

The left half and right half of the picture and the top half and the bottom half of the picture are adjusted to the same size.

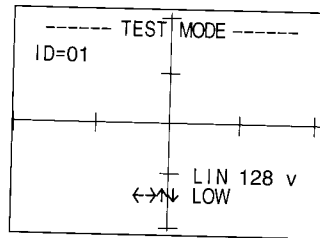
**[Preparation]**

Select the input source to adjust for with the A, B, C, D, or E button.

- 1 Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.**



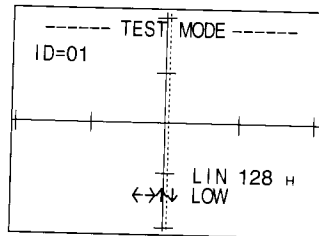
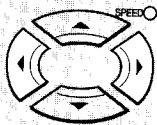
- 2 Press the LIN button.**



The projector goes into linearity adjustment mode. In this example, the left side of the picture is longer than the right side.

**Attention** Do not press the ADJ.R, ADJ.G, or ADJ.B button. They put the projector into a different adjustment mode.

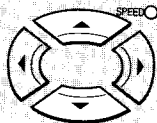
- 3 Adjust so that the left side size and the right side size are the same with the arrow (◀ / ▶) buttons.**



If the left side is longer than the right side, when you make this adjustment, the center position moves to the left side.

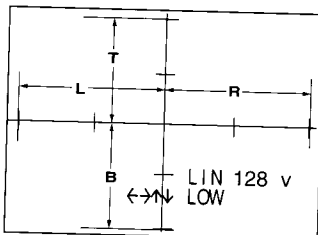
The red, green, and blue center positions all move, so align them with the static convergence adjustment.

- 4 Adjust so that the top size and the bottom size are the same with the arrow (▲ / ▼) buttons.**



The center positions do not move in this step.

- 5 Check the picture size adjustment.**



Make the left side size (L) and the right side size (R) the same dimensions. Make the top size (T) and the bottom (B) the same dimensions.

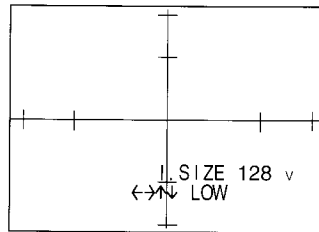
When this adjustment is complete, continue on to the picture center section and edge section size adjustment.



## Picture Size Adjustment in the Center and the Edge

Make the center section and edge section the same size horizontally and vertically.

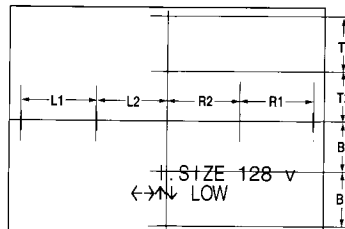
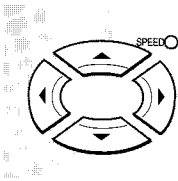
### 6 In linearity adjustment mode, press the FUNC. button.



The I.SIZE adjustment screen is displayed. In this example, the center section is larger than the edge section both horizontally and vertically.

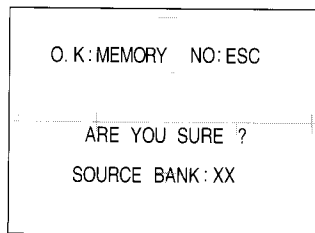
- Pressing the FUNC. button again returns the projector to the left and right top and bottom size adjustment.

### 7 With the arrow buttons, make the center section and the edge section the same size horizontally and vertically.



- Make L1, L2, R1, and R2 the same dimensions.
- Make T1, T2, B1, and B2 the same dimensions.

### 8 Press the MEMORY button.



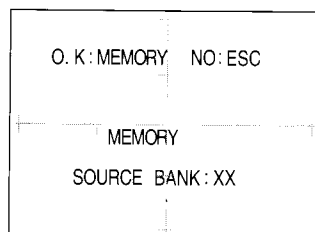
When making only this adjustment, press the MEMORY button.

When making other adjustments, press the corresponding adjustment button.

The confirmation screen is displayed.

To store the adjustment into memory, press the MEMORY button.

If you do not want to store it, press the ESC button.



The adjustment is stored into memory.

When the storing is complete, the screen returns to the initial one in service adjustment mode.

# PICTURE DISTORTION ADJUSTMENT

The picture distortion adjustments are the picture tilt, bow distortion, pin-cushion distortion, and the keystone distortion.

## Picture Tilt Adjustment

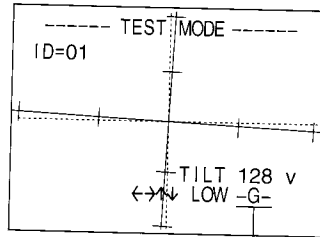
### [Preparation]

Select the input source to adjust for with the A, B, C, D, or E button.

- 1 Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.



- 2 Press the TILT button.



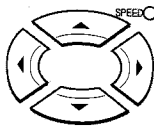
The figure above shows an example in which both vertical line and horizontal line are tilted.

- 3 Press the ADJ.G button.



The adjustment color display changes to "G".

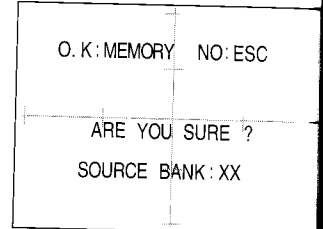
- 4 With the arrow buttons, adjust so that the lines are horizontal and vertical.



▲ / ▼ : adjust so that horizontal lines are horizontal.

◀ / ▶ : adjust so that vertical lines are vertical.

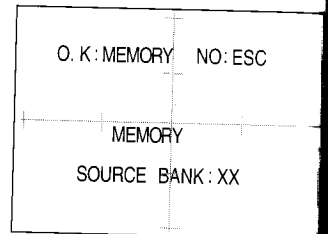
- 5 Press the MEMORY button.



The confirmation screen is displayed.

To store the adjustment into memory, press the MEMORY button.

If you do not want to store it, press the ESC button.



The adjustment is stored into memory and the screen returns to the initial one in service adjustment mode.

**Note**

It does not matter which adjustment, picture tilt or bow distortion, you make first. Adjust them alternately as necessary.

## Bow Distortion Adjustment

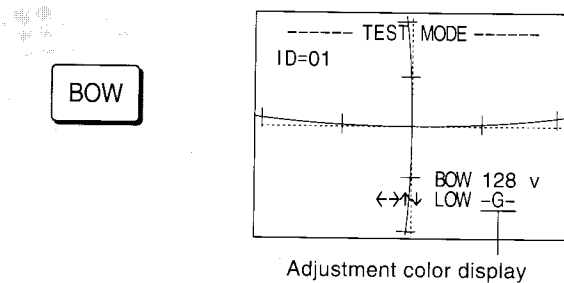
**[Preparation]**

Select the input source to be adjusted for with the A, B, C, D, or E button.

**1** Press the **TEST** button and hold it down for about three seconds to put the projector into service adjustment mode.



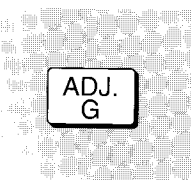
**2** Press the **BOW** button.



Adjustment color display

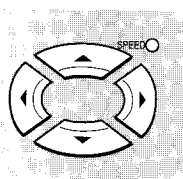
The figure above shows an example in which both vertical line and horizontal line are bowed.

**3** Press the **ADJ.G** button.



The adjustment color display changes to "G".

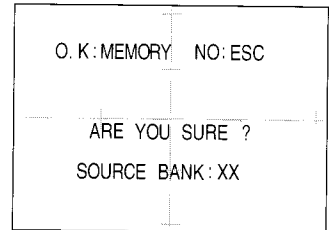
**4** With the arrow buttons, adjust so that lines are straight.



↔ : adjust so that horizontal lines are straight.

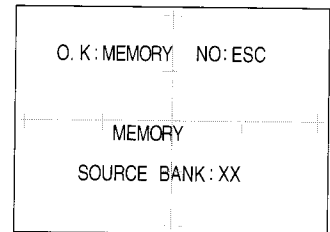
↕ : adjust so that vertical lines are straight.

**5** Press the **MEMORY** button.



The confirmation screen is displayed. To store the adjustment into memory, press the MEMORY button.

If you do not want to store it, press the ESC button.



The adjustment is stored into memory, and the screen returns to the initial one in service adjustment mode.

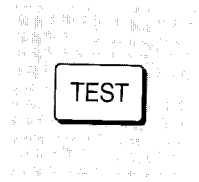
# PICTURE DISTORTION ADJUSTMENT (Continued)

## Pin-cushion Distortion Adjustment

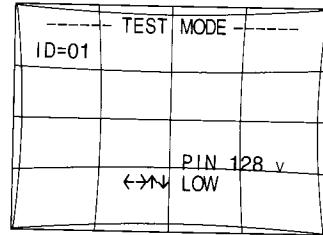
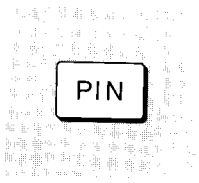
### [Preparation]

Select the input source to adjust for with the A, B, C, D, or E button.

- 1 Press the **TEST** button and hold it down for about three seconds to put the projector into service adjustment mode.

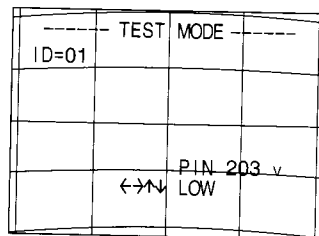
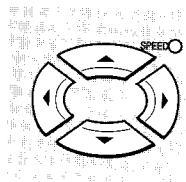


- 2 Press the **PIN** button.



This is an example with pin-cushion distortion top and bottom and right and left.

- 3 With the arrow buttons, adjust so that lines are straight.

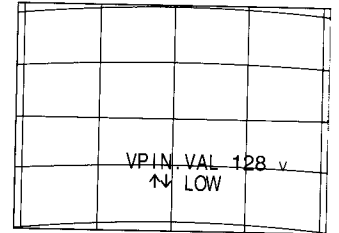


- ◀ / ▶ : adjust so that vertical lines at the left and right edges are straight.
- ▲ / ▼ : adjust so that the horizontal lines at the top and bottom edges are straight.

The pin-cushion distortion at the top and bottom of the screen is unbalanced due to the angle of projection from the projector onto the screen. Therefore, even if you adjust the bottom horizontal line to be a straight line, there may be pin-cushion distortion and barrel distortion at the top of the screen. Adjust with the (▲/▼) buttons so that the top and bottom edge horizontal lines are distorted in the same direction and about the same amount, as in the figure.

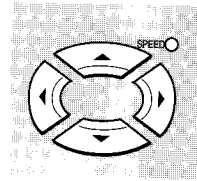
- 4 Press the **FUNC.** button.

FUNC.



The projector goes into the mode for adjusting the balance between the top and bottom pin-cushion distortion.

- 5 Adjust with the arrow (▲/▼) buttons.



- Adjust the balance so that the top edge and bottom edge horizontal lines are straight.
- If neither the top edge nor the bottom edge horizontal lines becomes straight, adjust the balance so that the top and bottom have symmetrical pin-cushion or barrel distortion, then press the FUNC. button and repeat the adjustment in step 3.

- 6 To make just this adjustment, press the **MEMORY** button twice.

MEMORY

- The adjustment is stored into memory.
- When making other adjustments, press the corresponding adjustment button.

**Note**

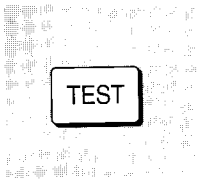
It does not matter which adjustment is made first, pin-cushion distortion or keystone distortion. Adjust so that the top and bottom edges and the left and right edges are straight lines and parallel. Sometimes even after the pin-cushion distortion adjustment and keystone distortion adjustment, the top and bottom edges and the left and right edges are not straight lines not and some distortion remains. Since this remaining distortion can be corrected as necessary with the precise adjustment explained from the next page on, use the pin-cushion distortion adjustment and keystone distortion adjustment to minimize distortion as much as possible.

# Keystone Distortion Adjustment

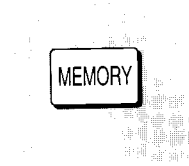
**[Preparation]**

Select the input source to adjust for with the A, B, C, D, or E button.

**1** Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.

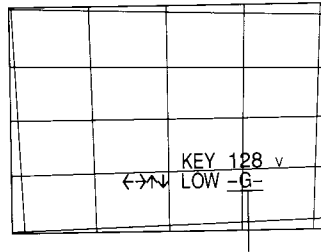


**5** To make just this adjustment, press the MEMORY button twice.



- The adjustment is stored into memory.
- When making other adjustments, press the corresponding adjustment button.

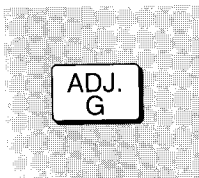
**2** Press the KEY button.



Adjustment color display

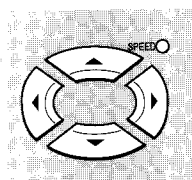
The figure above shows an example in which there is keystone distortion top, bottom, left, and right.

**3** Press the ADJ.G button.



The adjustment color display changes to "G".

**4** With the arrow buttons, adjust so that lines are straight and parallel.



- ◀ / ▶ : adjust so that the left and right edge vertical lines are straight and parallel.
- ▲ / ▼ : adjust so that top and bottom horizontal lines are straight and parallel.

# PICTURE DISTORTION PRECISE ADJUSTMENT (GREEN)

This section explains how to precisely adjust the green picture distortion.

## Picture Distortion Precise Adjustment

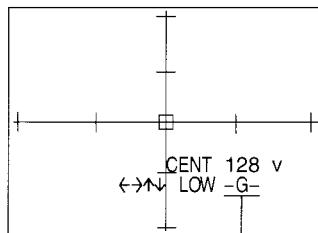
The same dynamic convergence adjustment functions as for red and blue are also present for green. You can precisely adjust the green picture distortion using these functions.

**[Preparation]**

Select the input source to adjust for with the A, B, C, D, or E button.

**1** Press the **TEST** button and hold it down for about three seconds to put the projector into service adjustment mode.

**2** Press the **CONV** button.



Adjustment color display

**3** Press the **ADJ.G** button.



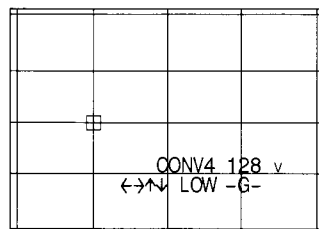
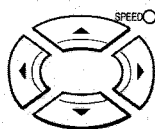
The adjustment color display changes to "G".

**4** Press the **FUNC.** button.

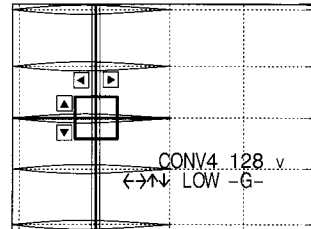


The location to adjust can be selected now. The marker in the center of the picture flashes.

**5** Press the arrow (**▲**) button.

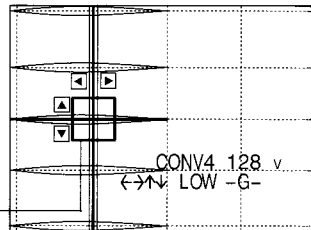
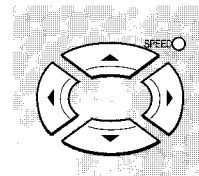


**6** Press the **FUNC.** button.



The marker stops flashing, and the selected location can be adjusted now.

**7** Adjust with the arrow buttons.



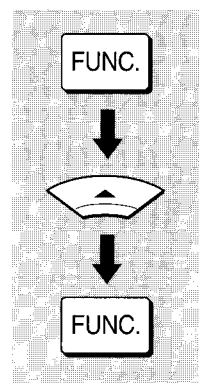
Marker

The picture makes the movements with the fine solid lines in the figure above.

The thick solid lines show the state after adjustment. The marker in the figure above is larger than the actual marker.

- Paying attention to the horizontal line intersecting the marker, adjust it to be a straight line.
- Make the gaps between the vertical line intersecting the marker and the neighboring lines on its left and right the same.

**8** Repeat steps 4 to 6 to change the adjustment location and adjust **CONV5 – CONV23**.



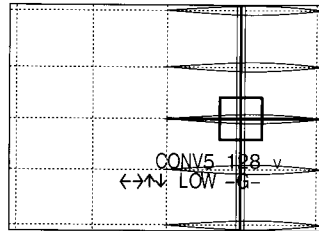
State in which the adjustment location can be moved (marker flashing)

Move to the next adjustment location.

State in which the adjustment can be made. (The marker stops flashing.)

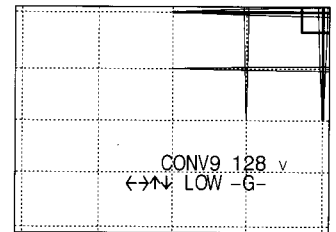
# 9 Adjust CONV5 – CONV23 with the arrow buttons.

CONV5 location adjustment



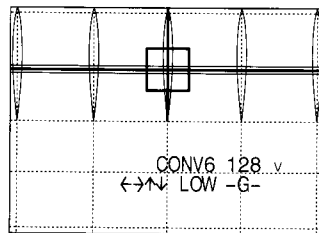
- Paying attention to the horizontal line intersecting the marker, adjust it to be a straight line.
- Make the gaps between the vertical line intersecting the marker and the neighboring lines on its left and right the same.

CONV9 location adjustment



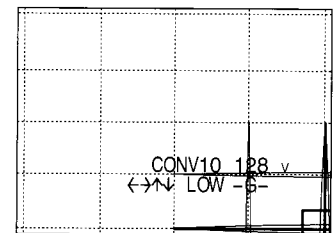
- Paying attention to the vertical line intersecting the marker, adjust it to be vertical.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

CONV6 location adjustment



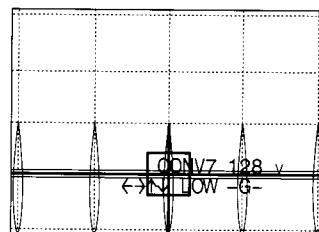
- Paying attention to the vertical line intersecting the marker, adjust it to be a straight line.
- Make the gaps between the horizontal line intersecting the marker and the neighboring lines on its top and bottom the same.

CONV10 location adjustment



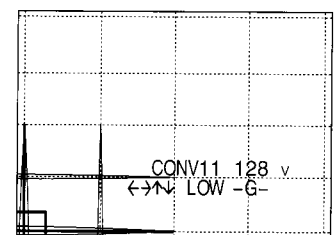
- Paying attention to the vertical line intersecting the marker, adjust it to be vertical.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

CONV7 location adjustment



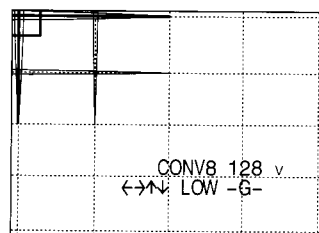
- Paying attention to the vertical line intersecting the marker, adjust it to be a straight line.
- Make the gaps between the horizontal line intersecting the marker and the neighboring lines on its top and bottom the same.

CONV11 location adjustment



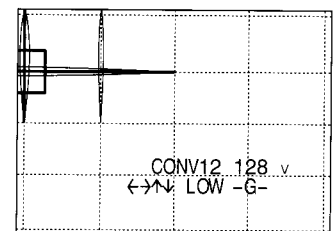
- Paying attention to the vertical line intersecting the marker, adjust it to be vertical.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

CONV8 location adjustment



- Paying attention to the vertical line intersecting the marker, adjust it to be vertical.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

CONV12 location adjustment



- Paying attention to the vertical line intersecting the marker, adjust it to be straight line.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

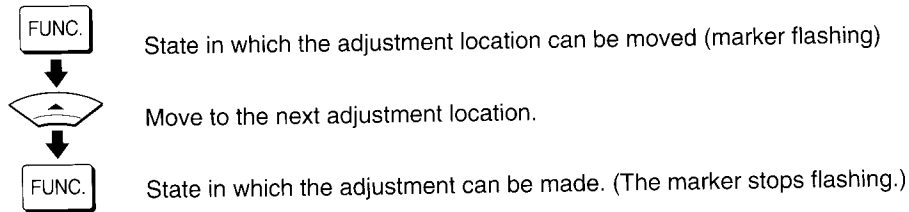
PICTURE DISTORTION AND CONVERGENCE ADJUSTMENT

Continued

# PICTURE DISTORTION PRECISE ADJUSTMENT (GREEN) (Continued)

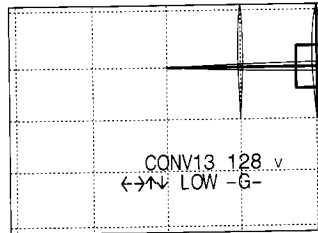
## Picture Distortion Precise Adjustment (continued)

Change the adjustment locations in order to adjust up to CONV23.



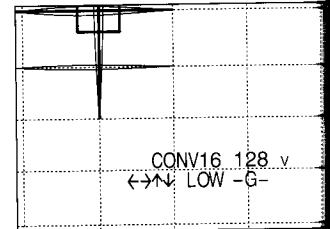
### 9 Adjust up to CONV23 with the arrow buttons.

CONV13 location adjustment



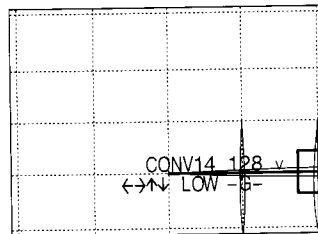
- Paying attention to the vertical line intersecting the marker, adjust it to be a straight line.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

CONV16 location adjustment



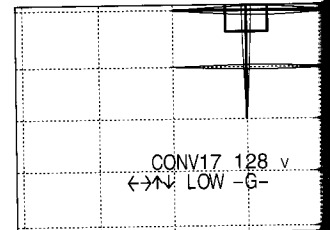
- Paying attention to the vertical line intersecting the marker, adjust it to be vertical.
- Paying attention to the horizontal line intersecting the marker, adjust it to be a straight line.

CONV14 location adjustment



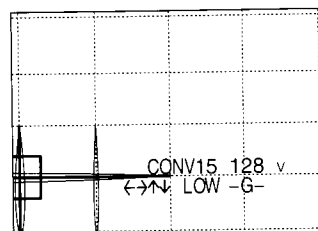
- Paying attention to the vertical line intersecting the marker, adjust it to be a straight line.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

CONV17 location adjustment



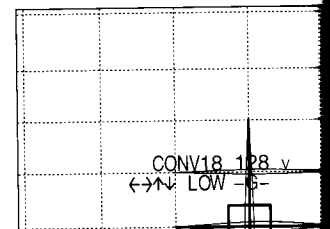
- Paying attention to the vertical line intersecting the marker, adjust it to be vertical.
- Paying attention to the horizontal line intersecting the marker, adjust it to be a straight line.

CONV15 location adjustment



- Paying attention to the vertical line intersecting the marker, adjust it to be a straight line.
- Paying attention to the horizontal line intersecting the marker, adjust it to be horizontal.

CONV18 location adjustment



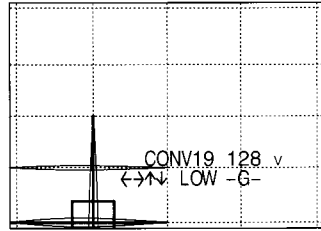
- Paying attention to the vertical line intersecting the marker, adjust it to be vertical.
- Paying attention to the horizontal line intersecting the marker, adjust it to be a straight line.



**Note**

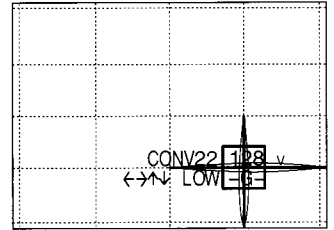
You shift from one adjustment location to the next with the (▲) button, but you can also return in the reverse direction by pressing the (▼) button. However, since the adjustments are in order, if you return to a location and re-adjust it, it may be necessary to re-adjust subsequent locations. For example, if the vertical line curve for CONV6 is re-adjusted, the CONV12, CONV20, CONV21, and CONV13 vertical lines are curved at the same time, it is necessary to adjust with particular care and attention the locations with lower numbers.

**CONV19 location adjustment**



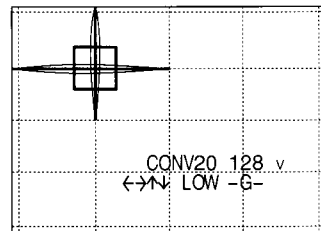
- Adjust the vertical line intersecting the marker to be vertical.
- Adjust the horizontal line intersecting the marker to be a straight line.

**CONV22 location adjustment**



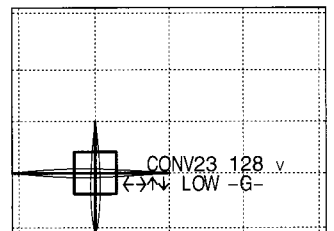
- Adjust the vertical and horizontal lines intersecting the marker to be straight lines.

**CONV20 location adjustment**



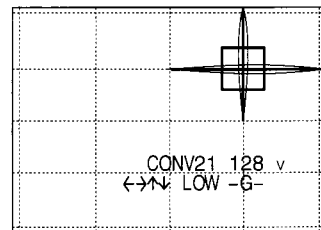
- Adjust the vertical and horizontal lines intersecting the marker to be straight lines.

**CONV23 location adjustment**



- Adjust the vertical and horizontal lines intersecting the marker to be straight lines.

**CONV21 location adjustment**

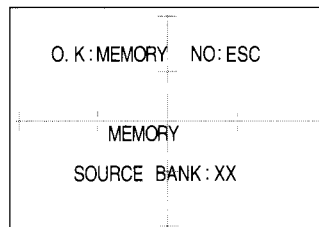
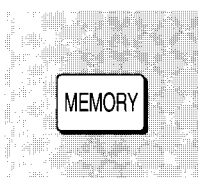
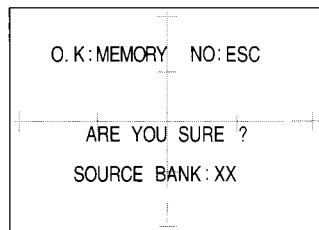
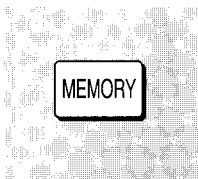


- Adjust the vertical and horizontal lines intersecting the marker to be straight lines.

The picture distortion precise adjustments are these CONV4-CONV23.

PICTURE DISTORTION AND CONVERGENCE ADJUSTMENT

**10 Press the MEMORY button.**



When making only this adjustment, press the MEMORY button.

When making other adjustments, press the corresponding adjustment button.

The confirmation screen is displayed.

To store the adjustment into memory, press the MEMORY button.

If you do not want to store it, press the ESC button.

The adjustment is stored into memory.

When the storing is complete, the screen returns to the initial one in service adjustment mode.

# DYNAMIC CONVERGENCE ADJUSTMENT

The dynamic convergence adjustment adjusts the red and blue distortion and overlays them on the green.

## Dynamic Convergence Adjustment

This section explains how to adjust the red. Adjust the blue in the same manner. By switching the adjustment color at the same location, you can proceed with the red and blue adjustments in parallel.

### [Preparation]

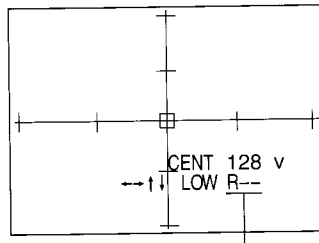
Select the input source to adjust for with the A, B, C, D, or E button.

**1** Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.

**2** Press the CONV button.

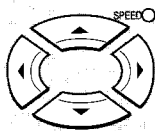


**3** Press the ADJ.R button.



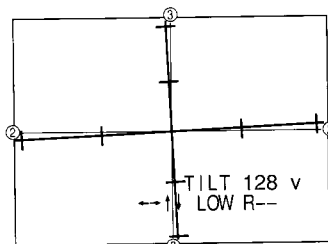
The adjustment color is red (R).

**4** Adjust so that the red overlays the green with the arrow buttons.



Paying attention to the center of the screen, adjust so that the red overlays the green.

**5** Press the TILT button.



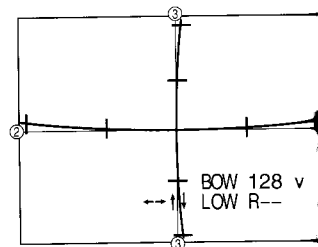
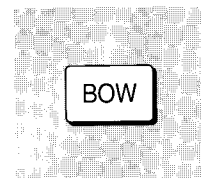
② and ③ are labelled to explain the points for attention. The fine solid line is green and the thick solid line is red. The figure above shows an example in which the red is tilted both vertically and horizontally.

**6** Adjust with the arrow buttons.

▲/▼ : adjust the red horizontal line tilt and align with the green paying attention to the left-right ② positions. If the line is displaced in the same direction at both the left and right ends, correct this with the bow adjustment, which is the next step.

◀/▶ : adjust the red vertical line tilt and align with the green paying attention to the top-bottom ③ positions. If the line is displaced in the same direction at both the top and bottom ends, correct this with the bow adjustment, which is the next step.

**7** Press the BOW button.



The fine solid line is green and the thick solid line is red.

The figure shows an example in which the red is bowed in both the vertical and horizontal directions.

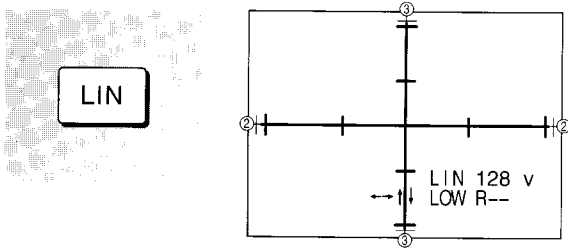
**8** Adjust with the arrow buttons.

▲/▼ : adjust the red horizontal line bow and align with the green paying attention to the left-right ② positions. If the line is displaced in the opposite direction at the left and right ends, correct this with the tilt adjustment, which was the previous step.

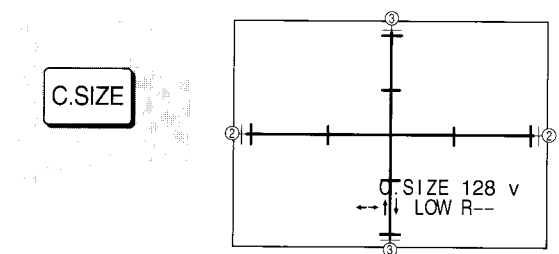
◀/▶ : adjust the red vertical line bow and align with the green paying attention to the top-bottom ③ positions. If the line is displaced in the opposite direction at the top and bottom ends, correct this with the tilt adjustment, which was the previous step.

- It does not matter which adjustment, picture tilt or bow distortion, you make first. Repeat the adjustments as necessary until the vertical line at the top and bottom ③ positions and the horizontal line at the left and right ② positions align with the green.

## 9 Press the LIN button.

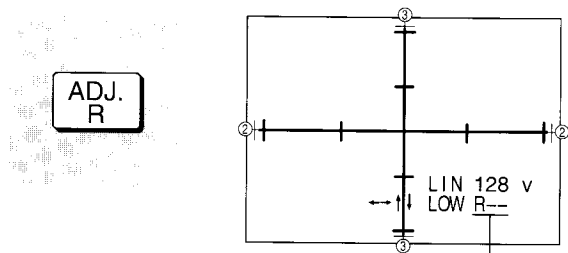


## 12 Press the C.SIZE button.



On this screen, the fine solid line is green and the thick solid line is red.  
The figure shows an example in which the red is smaller than the green both vertically and horizontally.

## 10 Press the ADJ.R button.



The adjustment color is red (R).

- Always press the ADJ.R button. If you do not display "R", the green and blue move.

On this screen, the fine solid line is green and the thick solid line is red.

The figure shows an example in which the red linearity is off from the green both vertically and horizontally.

## 11 Adjust with the arrow buttons.

▲/▼ : adjust the red vertical linearity and align with the green paying attention to the top-bottom ③ positions. If the line is displaced in the opposite direction at the top and bottom ends, correct this with the C.SIZE adjustment, which is the next step.

◀/▶ : adjust the red horizontal linearity and align with the green paying attention to the left-right ② positions. If the line is displaced in the opposite direction at the left and right ends, correct this with the C.SIZE adjustment, which is the next step.

## 13 Adjust with the arrow buttons.

▲/▼ : adjust the red vertical size and align with the green paying attention to the top-bottom ③ positions. If the line is displaced in the same direction at both the top and bottom ends, correct this with the LIN adjustment, which was the previous step.

◀/▶ : adjust the red horizontal size and align with the green paying attention to the left-right ② positions. If the line is displaced in the same direction at both the left and right ends, correct this with the LIN adjustment, which was the previous step.

- It does not matter which adjustment, LIN or C.SIZE, you make first. Repeat the adjustments as necessary until the horizontal lines at the top and bottom ③ positions and the vertical lines at the left and right ② positions align with the green. If you re-adjust the linearity, always re-select the adjustment color.

### Confirmation

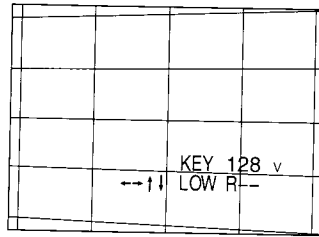
With the steps adjusting the CENT, TILT, BOW, LIN, and C.SIZE, you have completed the work processes for aligning the red and green at the screen center, ② (two positions left and right), and ③ (two positions top and bottom) positions. Check that they are adequately aligned before proceeding to the adjustments on the next page.

# DYNAMIC CONVERGENCE ADJUSTMENT (Continued)

## Dynamic Convergence Adjustment (Continued)

Continued from the previous page.

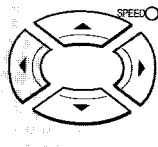
### 14 Press the KEY button.



The figure shows an example in which the red has top and bottom keystone distortion and is off the green.

- Check the adjustment color display "R".

### 15 Adjust with the arrow (▲/▼) buttons.



▲/▼: adjust the red top and bottom keystone distortion. Paying attention to the four corners of the screen, make the vertical displacement of the red from the green as small as possible. The displacement of the red from the green is different at the different corners, so allocate so that no one corner is too extremely displaced.

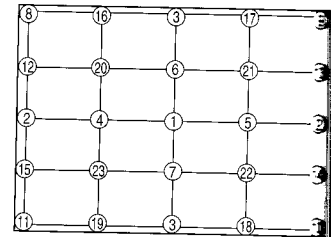
**Attention**

Pressing ◀/▶ buttons changes the green left and right keystone distortion, so do not use those buttons now.

### 16 Press the CONV button.



### 17 Press the FUNC. button.



This makes it possible to shift the adjustment location. (The marker flashes.)

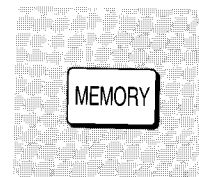
### 18 Adjust the red convergence at locations ④ to ⑳ in the figure.

The adjustment method is exactly the same as the picture distortion precise adjustment method explained earlier for green.

### 19 When the red convergence adjustment is complete, adjust the blue convergence in the same manner.

To adjust the blue, press the ADJ.B button to set the adjustment color to blue "B".

### 20 Press the MEMORY button twice to store the adjustment state into memory.



If you return to normal reception mode without storing the adjustments into memory, the adjustments return to their previous state.

# CONVERGENCE ADJUSTMENT DATA FILE OPERATIONS (SUMMARY)

## Convergence Adjustment Data File Operations

You can copy or delete the convergence adjustment data stored in any of the memory banks. The following pages explain the procedures.

### ■ Copying adjustment data

You can increase adjustment efficiency by copying the convergence adjustment data stored in any memory bank to a different bank.

### ■ Deleting adjustment data

When you switch the deflection yoke polarity, deleting the convergence adjustment data raises the adjustment efficiency.

#### Adjustment items for which data can be copied or deleted

- Static convergence adjustment
- Linearity adjustment
- Red and blue picture size adjustment
- Picture tilt adjustment
- Bow distortion adjustment
- Keystone distortion adjustment
- Pin-cushion distortion adjustment
- Dynamic convergence adjustment
- CRT focus adjustment

# COPYING CONVERGENCE ADJUSTMENT DATA

This section explains how to copy adjustment data.

## Copying Adjustment Data

You can increase adjustment efficiency by copying the convergence adjustment data stored in any memory bank to a different bank.

### Attention

It is not possible to set adjustment data that is being made or that has been just finished as the copy source before storing it into memory. Press the MEMORY button once to store the adjustment data into memory before copying.

- 1 Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.



- 2 Press the MENU button.



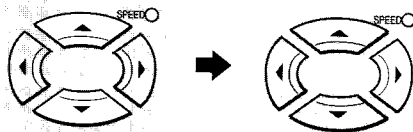
---- MAIN MENU ----

ID MODE  
VIDEO  
SERVICE  
SPECIAL  
MEM CONV  
MEM SOURCE

select: ↑↓← exit: ESC

The MAIN MENU screen is displayed.

- 3 Select "MEM CONV" with the arrow (▲/▼) buttons and press the arrow (▶) button.

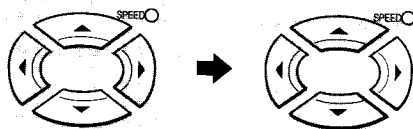


-- CONV MODE --

DATA COPY  
DATA DELETE

select: ↑↓← exit: ESC

- 4 Select "DATA COPY" with the arrow (▲/▼) buttons and press the arrow (▶) button.



---- CONV COPY ----

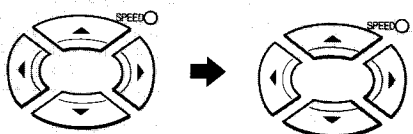
BANK1: fh15~19kHz  
BANK2: fh19~26kHz  
BANK3: fh26~34kHz  
BANK4: fh34~45kHz  
BANK5: fh45~60kHz  
BANK6: fh60~80kHz  
BANK7: fh80~100kHz

From: 01 To: 01

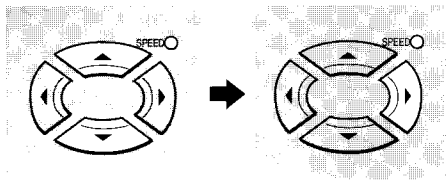
select: ↑↓← exit: ESC

"BANK1" is selected as the copy source and the copy destination.

- 5 With the arrow (▲/▼) buttons, select the copy source, then press the arrow (◀) button.



## 6 Select the copy destination bank with the arrow (▲/▼) buttons and press the arrow (▶) button.



```
--- CONV COPY ---  
BANK1: fH15~19kHz  
BANK2: fH19~26kHz  
BANK3: fH26~34kHz  
BANK4: fH34~45kHz  
BANK5: fH45~60kHz  
BANK6: fH60~80kHz  
BANK7: fH80~100kHz  
From: 03 To: 04  
select: f/←→ exit: ESC
```

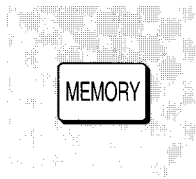
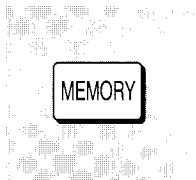
This shows an example in which the copy source is BANK3 and the copy destination is BANK4.

When you execute this, the BANK3 adjustment data is copied into BANK4.

### Attention

Be careful to select the copy source and copy destination, as their adjustment data may be lost if you make an error in the selection.

## 7 Press the MEMORY button.



O. K: MEMORY NO: ESC

ARE YOU SURE ?

From: 03 To: 04

The confirmation screen is displayed.  
To execute the copy, press the MEMORY button.  
To not copy, press the ESC button.

O. K: MEMORY NO: ESC

MEMORY

SOURCE BANK: 04

“MEMORY” appears and the copy starts.  
When the copy is complete, the screen returns to the initial one in service adjustment mode.

\* Put the projector into reception mode and switch to the input source for the copied bank, put the projector into service adjustment mode, and adjust the convergence.

# DELETING CONVERGENCE ADJUSTMENT DATA

This section explains how to delete adjustment data.

## Deleting Adjustment Data

When you switch the deflection yoke polarity, deleting the convergence adjustment data raises the adjustment efficiency.

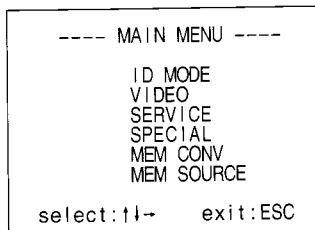
### Attention

You can not return deleted adjustment data to its original state.

- 1 Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.

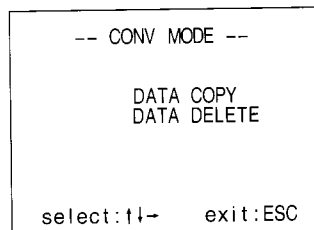
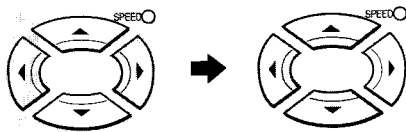


- 2 Press the MENU button.

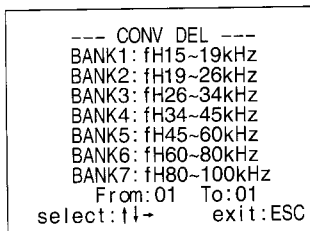
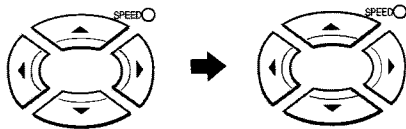


The MAIN MENU screen is displayed.

- 3 Select "MEM CONV" with the arrow (▲/▼) buttons and press the arrow (▶) button.

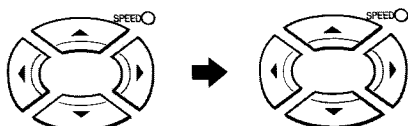


- 4 Select "DATA DELETE" with the arrow (▲/▼) buttons and press the arrow (▶) button.



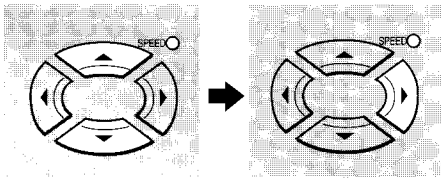
"BANK1" is selected as the bank to be deleted.

- 5 With the arrow (▲/▼) buttons, select the bank to start deletion with and press the arrow (◀) button.





**6** With the arrow (▲/▼) buttons, select the bank to end deletion with and press the arrow (▶) button.

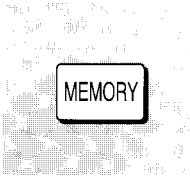


```

--- CONV DEL ---
BANK1: fH15~19kHz
BANK2: fH19~26kHz
BANK3: fH26~34kHz
BANK4: fH34~45kHz
BANK5: fH45~60kHz
BANK6: fH60~80kHz
BANK7: fH80~100kHz
      From: 03 To: 04
select: ↑→   exit: ESC
    
```

This figure shows an example of deleting from "BANK3" to "BANK4".  
When you execute this operation, all the BANK3 and BANK4 picture distortion and convergence adjustment data becomes 128.

**7** Press the MEMORY button.

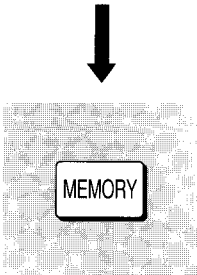


```

O. K: MEMORY NO: ESC

ARE YOU SURE ?
From: 03 To: 04
    
```

The confirmation screen is displayed.  
To execute the deletion, press the MEMORY button.  
If you do not want to delete, press the ESC button.



The deleting starts.  
When the deleting is complete, the screen returns to the initial one in service adjustment mode.

\* Switch to the input source for the deleted bank, put the projector into service adjustment mode, and adjust the convergence.

**Note**

To delete one bank, select that bank with the arrow (▲/▼) buttons, press the arrow (◀) button, then press the arrow (▶) button. This assigns the same number for "From" and "To".

# WHITE BALANCE ADJUSTMENT

This is the color temperature adjustment for when the picture is bright and when it is dark.

## White Balance Adjustment

The color temperature balance for when the picture is bright and when it is dark is called the white balance. This projector is equipped with three color temperatures 9300K, 6500K, and 3200K and one custom type for service adjustment. The color temperature can be selected for each input source.

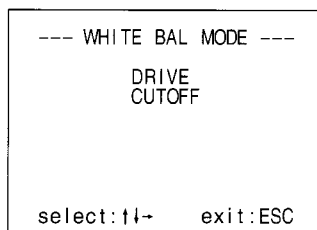
### [Preparation]

Set "COLOR TEMPERATURE" to "CUSTOM" according to the user adjustment mode "ENVIRONMENT (SYSTEM) SETTING", then press the MEMORY button to store it into memory.

**1** Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.

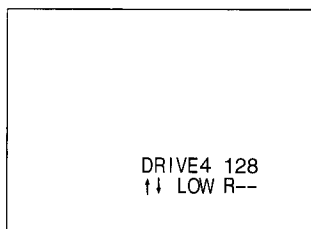
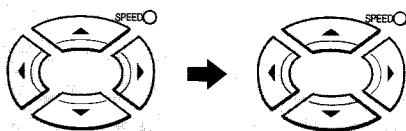


**2** Press the W/B button.



- The menu is displayed on the input source screen.
- This adjustment can not be made with the test pattern.

**3** Select the "DRIVE" with the arrow (▲/▼) buttons and press the arrow (▶) button.



The DRIVE4 adjustment mode screen appears.

DRIVE1-DRIVE3 are the adjustment modes for 9300K-3200K, so make sure you have the correct mode.

**4** Select the color to be brightened or darkened with the ADJ.R or ADJ.B button.

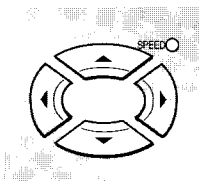


Red adjustment

Blue adjustment

You can not use the ADJ.G button.

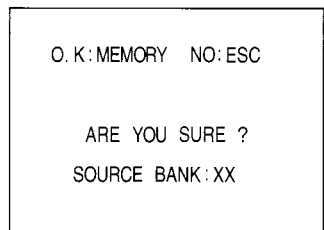
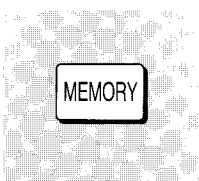
## 5 Adjust the selected color with the arrow (▲/▼) buttons.



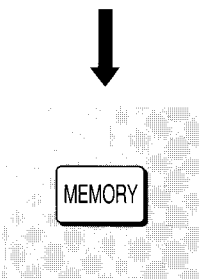
- Increasing the red brightness and decreasing the blue brightness lowers the color temperature.
- Decreasing the red brightness and increasing the blue brightness raises the color temperature.

**6** In the step where DRIVE4 is adjusted, check the color temperature when the picture is dark. To re-adjust the color temperature for when the picture is dark too, press the ESC button, return to the WHITE BAL MODE picture, select "CUTOFF" with the (▼) button or the (▲) button, and press the (▶) button to put the projector into CUTOFF4 adjustment mode and adjust.

## 7 Press the MEMORY button.



The confirmation screen is displayed. To store the adjustment state into memory, press the MEMORY button. If you do not want to store it into memory, press the ESC button.



The "MEMORY" display appears and the adjustment state is stored into memory. When the storing is complete, the screen returns to the initial one in service adjustment mode.

### Notes

- To select other adjustment item without storing the adjustment data in memory, press the ESC button repeatedly until the screen returns to the initial one in service adjustment mode.
- 9300K, 6500K, and 3200K can also be re-adjusted by selecting in the user adjustment mode "ENVIRONMENT (SYSTEM) SETTING" and storing into memory in the same manner. However, since these three color temperatures all function for all the input sources, do not adjust unless you are sure you need to. When re-adjusting, first put the projector into adjustment mode and record the initial adjustment data so you will be able to return to the initial state if necessary.

# TRIMMING ADJUSTMENT

This section explains how to trim if the projected picture is larger than the screen.

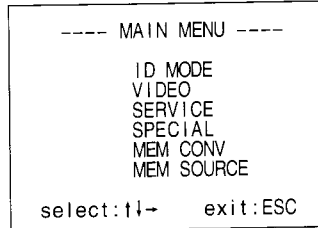
## Trimming Adjustment Method

Sometimes the picture size for video or other input is larger than the screen size (overscanning). In this case, the image sticks out from the screen and is projected onto the wall or the like, making the entire image unattractive, so the portion of the image sticking out from the screen is trimmed away.

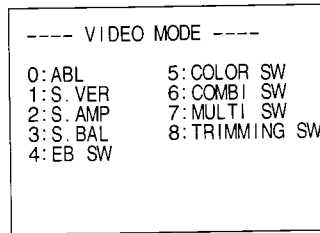
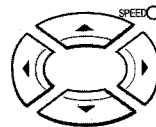
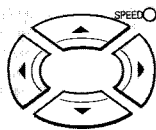
- 1 Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.



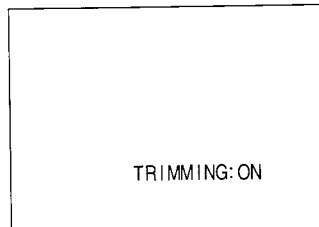
- 2 Press the MENU button.



- 3 With the arrow (▲/▼) buttons, select "VIDEO", then press the arrow (▶) button.



- 4 Press number button 8.



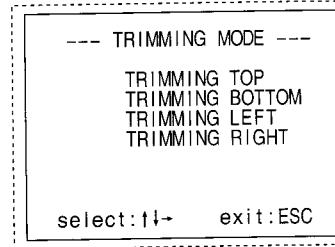
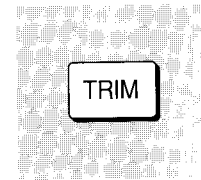
Set "TRIMMING" to "ON".  
Each time number button 8 is pressed, "ON" and "OFF" alternates.

- 5 Press the ESC button three times.

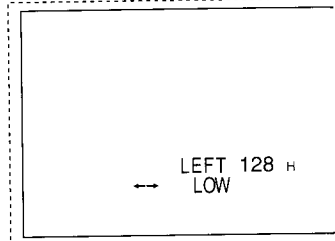
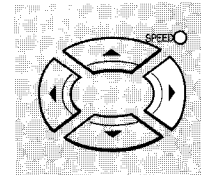
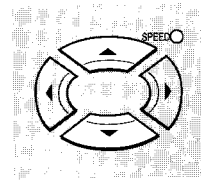


The MAIN MENU screen disappears.

- 6 Press the TRIM button.



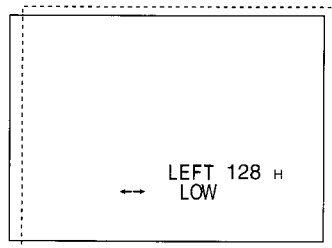
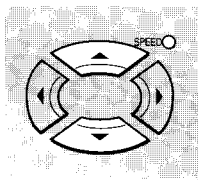
- 7 With the arrow (▲/▼) buttons, select the location to trim, then press the arrow (▶) button.



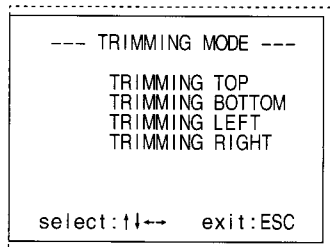
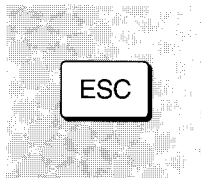
The projector goes into trim adjustment mode.

The screen shows an example in which the left side (TRIMMING LEFT) is selected.

**8** Adjust the trimming position with the arrow ( ◀ / ▶ ) buttons.



**9** Press the ESC button.

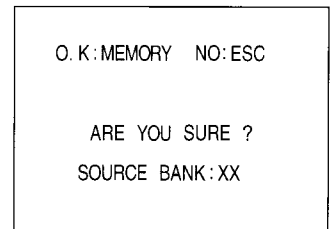
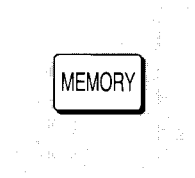


The TRIMMING MODE screen returns.

**10** With the arrow ( ▲ / ▼ ) buttons, select the next location to trim, then press the arrow ( ▶ ) button.

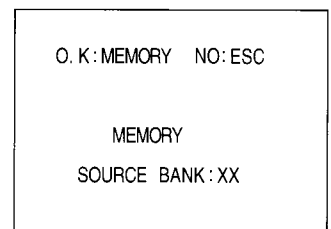
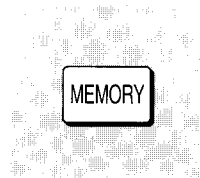
Adjust the top, bottom, left, and right.

**11** Press the MEMORY button.



The confirmation screen is displayed. To store the adjustment state into memory, press the MEMORY button.

To not store it into memory, press the ESC button.



"MEMORY" appears and the adjustment state is stored into memory.

When the storing is complete, the screen returns to the initial one in service adjustment mode.

**Notes**

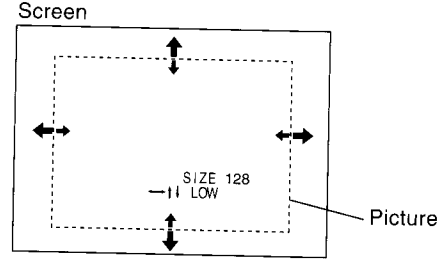
- To select other adjustment item without storing the adjustment data in memory, press the ESC button repeatedly until the screen returns to the initial one in service adjustment mode.
- Generally set "TRIMMING" to "OFF" for RGB input sources (work stations or computers signal). When the picture has troubles such as losing of the edges etc., check whether "TRIMMING" is not set to "ON".

# PICTURE SIZE AND POSITION ADJUSTMENT

This section explains how to adjust the projected image.

## Picture Size Adjustment

You can adjust the size of the picture to match the screen.



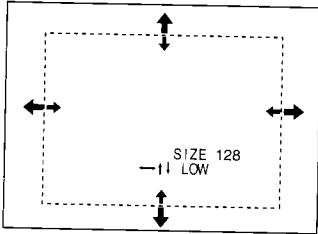
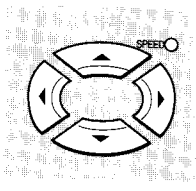
### [Preparations]

- This adjustment can be made also in service adjustment mode.
- Select the input source to adjust for with the A, B, C, D, or E button.

### 1 Press the SIZE button.

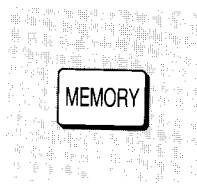


### 2 Adjust the picture size by pressing the arrow buttons.



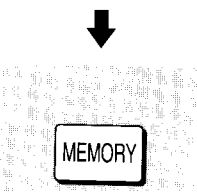
- : Enlarges the picture vertically.
- : Reduces the picture vertically.
- : Enlarges the picture horizontally.
- : Reduces the picture horizontally.

### 3 Press the MEMORY button.



O.K: MEMORY NO: ESC  
 ARE YOU SURE ?  
 SOURCE BANK: XX

The confirmation screen is displayed.  
 To store the adjustment into memory, press the MEMORY button.  
 If you do not want to store it, press the ESC button.\*



O.K: MEMORY NO: ESC  
 MEMORY  
 SOURCE BANK: XX

The set picture size is stored into memory.  
 This setting is retained in the memory even after the power is turned off.

**Note**

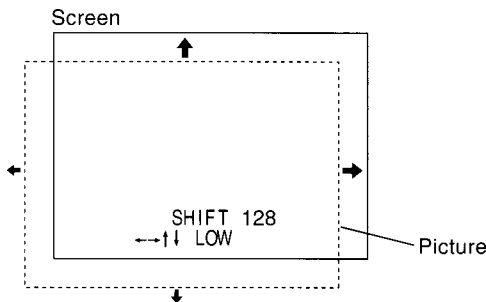
During adjustment in step 2, if you press the SPEED button to switch the display to "HI", the adjustment speed is increased. Pressing the SPEED button again returns the adjustment to its original speed.

**Note**

The adjustments are kept until you turn the power off even if the ESC button is pressed not to store it. They are finally stored into memory together with other adjustments when you make them memorized. If you want to avoid storing it in memory, turn the power off before memorizing them. This applies to all other adjustments.

## Picture Position Adjustment

You can adjust the picture position to match the screen.



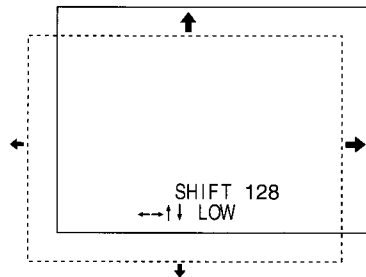
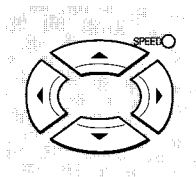
**[Preparations]**

- This adjustment can be made also in service adjustment mode.
- Select the input source to adjust for with the A, B, C, D, or E button.

### 1 Press the SHIFT button.



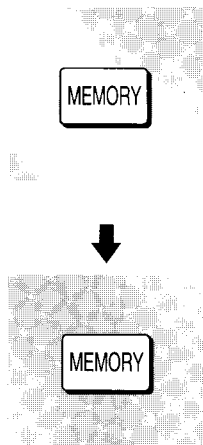
### 2 Adjust the picture position by pressing the arrow buttons.



- : Moves the picture up.
- : Moves the picture down.
- : Moves the picture right.
- : Moves the picture left.

The vertical position adjustment is not possible for VIDEO signals from equipment connected to the A, B and C input terminals.

### 3 Press the MEMORY button.



O. K : MEMORY NO : ESC

ARE YOU SURE ?

SOURCE BANK : XX

The confirmation screen is displayed. To store the adjustment into memory, press the MEMORY button.

If you do not want to store it, press the ESC button.\*

O. K : MEMORY NO : ESC

MEMORY

SOURCE BANK : XX

The set picture position is stored into memory. This setting is retained in the memory even after the power is turned off.

# PICTURE QUALITY ADJUSTMENT

This section explains how to adjust the projected picture quality.

## Picture Quality Adjustment

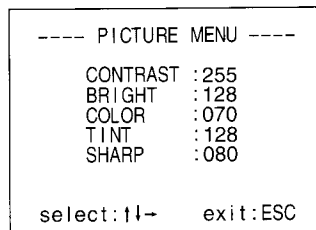
Adjustment items

Contrast ..... CONTRAST  
 Brightness ..... BRIGHT  
 Color ..... COLOR  
 Tint ..... TINT  
 Sharpness ..... SHARP

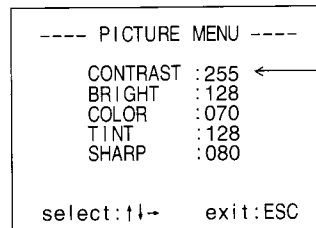
**[Preparations]**

- This adjustment can not be made in service adjustment mode. End service adjustment mode.
- Select the input source to adjust for with the A, B, C, D, or E button.

### 1 Press the PIC MENU button.

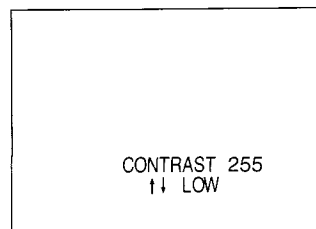


### 2 Press the arrow (▲/▼) buttons to select the adjustment item.



The color of the selected item changes.

### 3 Press the arrow (▶) button.

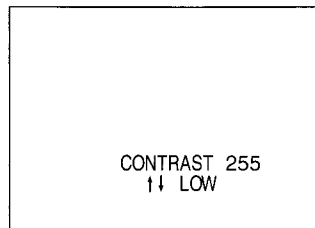
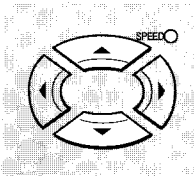




**Note**

- The TINT adjustment is **not possible** for PAL and SECAM signals.
- The COLOR, TINT, SHARP adjustments are not possible for RGB signals from equipment connected to the D or E input terminal
- During adjustment in step 4, if you press the SPEED button to switch the display to "HI", the adjustment speed is increased. Pressing the SPEED button again returns the adjustment to its original speed.

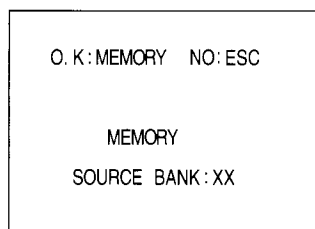
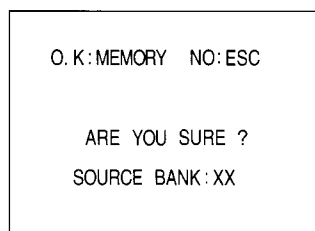
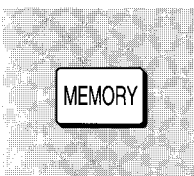
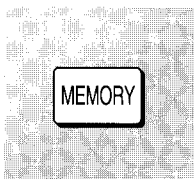
## 4 Adjust the picture quality by pressing the arrow (▲/▼) buttons.



|                        |   |
|------------------------|---|
| CONTRAST<br>(Contrast) | ▲ Makes the contrast higher.<br>▼ Makes the contrast lighter. |
| BRIGHT<br>(Brightness) | ▲ Makes the image brighter.<br>▼ Makes the image darker.      |
| COLOR<br>(Color)       | ▲ Makes the color darker.<br>▼ Makes the color lighter.       |
| TINT<br>(Tint)         | ▲ Makes the image greener.<br>▼ Makes the image redder.       |
| SHARP<br>(Sharpness)   | ▲ Makes the image sharper.<br>▼ Makes the image softer.       |

- To adjust other items, press the **ESC** button. This returns you to step 2, so repeat steps 2 through 4.
- During adjustment, pressing the **PIC RESET** button returns the adjustments to their default values and displays the screen in step 2.

## 5 Press the MEMORY button.



The confirmation screen is displayed.

To store the adjustment into memory, press the MEMORY button.

If you do not want to store them, press the ESC button.

The setting values are stored into memory.

They are retained in the memory even after the power is turned off.

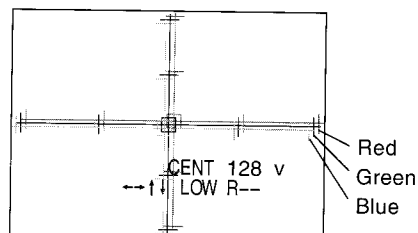
# CONVERGENCE ADJUSTMENT

Explains how to adjust if the colors do not line up with each other.

## Convergence Adjustment

This projector forms images with three beams of light, red, green, and blue (the three primary colors of light). The convergence adjustment adjusts the three colors to converge properly and project beautiful color images. The convergence does not normally need to be adjusted but if the convergence is out of adjustment, adjust it with the procedure below.

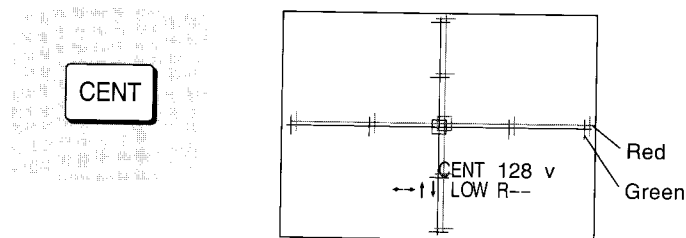
Note that this adjustment differs from those in service adjustment mode in buttons to use.



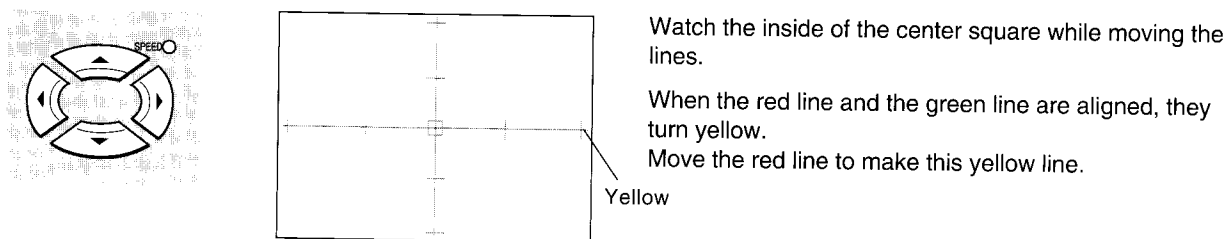
**[Preparation]**

Select the input source to adjust for with the A, B, C, D, or E button.

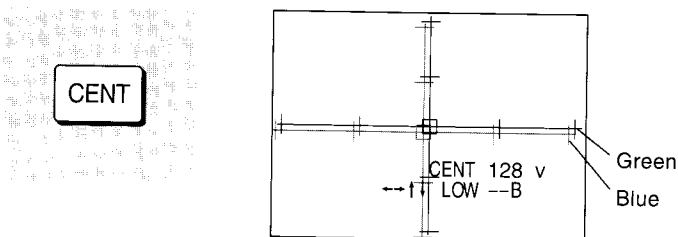
### 1 Press the CENT button.



### 2 Move the red line with the arrow buttons to align it with the green line.



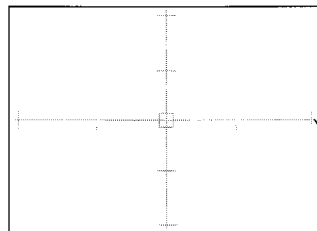
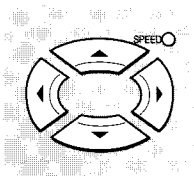
### 3 Press the CENT button.



**Note**

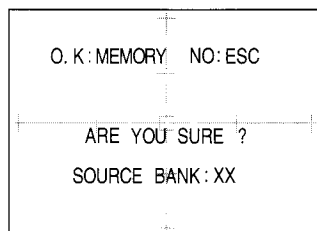
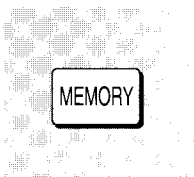
During adjustment in steps 2 and 4, if you press the SPEED button to switch the display to "HI", the adjustment speed is increased. Pressing the SPEED button again returns the adjustment to its original speed.

**4 Move the blue line with the arrow buttons to align it with the green line.**

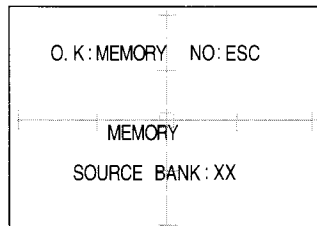


When the blue line and the green line are aligned, they turn cyan.  
Move the blue line to make this cyan line.

**5 Press the MEMORY button.**



The confirmation screen is displayed.  
To store the adjustment into memory, press the MEMORY button.  
If you do not want to store it, press the ESC button.



The convergence adjustment is stored into memory.  
This setting is retained in the memory even after the power is turned off.

# ENVIRONMENT (SYSTEM) SETTINGS

This section explains various settings for the usage conditions.

## System Settings

In addition to the picture adjustments, there are a number of adjustment items that are set according to the usage conditions. Follow the procedure below to set only the necessary items.

To shift the white sections of the image towards red or towards blue (color temperature adjustment).

• • • COLOR TEMPERATURE:  
9300 6500 3200 CUSTOM

To correct for pictures that are too bright, too dark, or have for uneven brightness (clamp adjustment).

• • • CLAMP: AUTO HD

To select whether this projector is connected to a computer or to a hi-vision device.

• • • SOURCE E MODE: RGB YPbPr

### [Preparations]

- This adjustment can not be made in service adjustment mode. End service adjustment mode.
- Select the input source to set with the A, B, C, D, or E button.

## 1 Press the MENU button.

MENU

```
PAGE1 - SYSTEM PRESET -  
COLOR TEMPERATURE:  
9300 6500 3200 CUSTOM  
CLAMP: AUTO HD  
SOURCE E MODE: RGB YPbPr
```

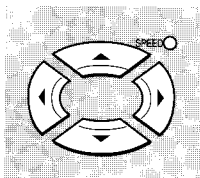
```
select: ↑↓←→  
next: MENU exit: ESC
```

Each time the MENU button is pressed, the screen changes.

→ PAGE1 → PAGE2 → PAGE3 →

To return to normal pictures or to put out the picture display, press the ESC button.

## 2 Select the item to set with the arrow (▲/▼) buttons, then set it with the arrow (◀/▶) buttons.



```
PAGE1 - SYSTEM PRESET -  
COLOR TEMPERATURE:  
9300 6500 3200 CUSTOM  
CLAMP: AUTO HD  
SOURCE E MODE: RGB YPbPr
```

← The color of the selected item changes.

```
select: ↑↓→←  
next: MENU exit: ESC
```

### COLOR TEMPERATURE: 9300 6500 3200 CUSTOM

The normal color temperature setting is "6500".

Setting the color temperature to "9300" makes the white sections of the image more blue and setting the color temperature to "3200" makes the white sections more red.

"CUSTOM" sets a color temperature adjusted in service adjustments.

### CLAMP: AUTO HD

Normally, set to "AUTO".

If the picture is too bright or too dark or has uneven brightness, set to "HD".

Do not set "HD" for a signal source with which the "HD" setting makes green seem darker.

### SOURCE E MODE: RGB YPbPr

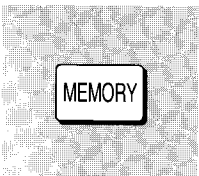
Sets whether a computer or a hi-vision device is connected to the input terminal selected with INPUT SELECT E button.

RGB output computer or workstation: "RGB"

YPbPr hi-vision device: "YPbPr"

- SOURCE E MODE setting is done if it is once made for any of input sources only.

## 3 Press the MEMORY button.



```
O. K: MEMORY NO: ESC
```

```
ARE YOU SURE ?
```

```
SOURCE BANK: XX
```

The confirmation screen is displayed.

To store the settings into memory, press the MEMORY button.

If you do not want to store them, press the ESC button.

```
O. K: MEMORY NO: ESC
```

```
MEMORY
```

```
SOURCE BANK: XX
```

The settings are stored into memory.

These are retained in the memory even after the power is turned off.

# INPUT SOURCE DATA DISPLAY

You can check input source data with on-screen display.

## Input Source State Display (INFORMATION)

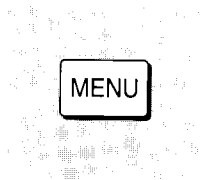
```
PAGE2
--- INFORMATION ---
fH: 31.5kHz
fV: 60.2Hz
INPUT: RGB1
CONV BANK: 03
SOURCE BANK: 03
TIMER: 000087H

next: MENU exit: ESC
```

### [Preparations]

- This procedure is not possible in service adjustment mode. End service adjustment mode.
- Select the input source to check with the A, B, C, D, or E button.

## 1 Press the MENU button to display PAGE2 screen.



```
PAGE2
--- INFORMATION ---
fH: 31.5kHz
fV: 60.2Hz
INPUT: RGB1
CONV BANK: 03
SOURCE BANK: 03
TIMER: 000087H

next: MENU exit: ESC
```

The state of the current input signal is displayed.

|               |   |
|---------------|---|
| fH :          | approximation for the signal's horizontal synchronization frequency |
| fV :          | approximation for the signal's vertical synchronization frequency   |
| INPUT :       | connector name for the current input source                         |
| CONV BANK :   | convergence data bank number  |
| SOURCE BANK : | adjustment data bank number   |
| TIMER :       | approximation of total hours this projector has been used           |

## 2 To display PAGE3 screen, press the MENU button; to close the display, press the ESC button.

#### Note

Each time the MENU button is pressed, the screen changes.

→ PAGE1 → PAGE2 → PAGE3 →

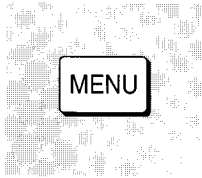
To return to normal projection or to close the on-screen display, press the ESC button.

## Input Source List Display (SOURCE LIST)

```
PAGE3 -- SOURCE LIST --
01 fH: ... kHz fV: ... Hz
02 fH: 25kHz fV: 54Hz
03 fH: 33kHz fV: 60Hz
04 fH: 42kHz fV: 71Hz
05 fH: 64kHz fV: 60Hz
06 fH: 71kHz fV: 72Hz
07 fH: ... kHz fV: ... Hz

sel↑ next:MENU exit:ESC
```

### 1 Press the MENU button to display PAGE3 screen.



```
PAGE3 -- SOURCE LIST --
01 fH: ... kHz fV: ... Hz
02 fH: 25kHz fV: 54Hz
03 fH: 33kHz fV: 60Hz
04 fH: 42kHz fV: 71Hz
05 fH: 64kHz fV: 60Hz
06 fH: 71kHz fV: 72Hz
07 fH: ... kHz fV: ... Hz

sel↑ next:MENU exit:ESC
```

A list of the source banks being used appears and the synchronization frequency for each is displayed. For source banks not being used, the frequency is displayed as "..."

- You can check all thirty source banks by pressing the arrow (▲/▼) buttons.

### 2 Press the ESC button to close the display.

#### Notes

- Each time the power is turned on or the input is switched, the projector detects the synchronization frequency of the selected input source, and applies the appropriate source bank to the input source. If there is no source bank for the detected frequency, a new source bank is created. The maximum number of source banks is 30.
- "SOURCE BANK:31" is a dedicated bank for hi-vision; it is set at the factory regardless of user usage.

# **FILE OPERATIONS ON ADJUSTMENT DATA STORED IN SOURCE BANKS (SUMMARY)**

## **File Operations on Adjustment Data Stored in Source Banks**

You can copy, delete, and move the adjustment data stored in any of the source banks. These operations are explained from the next page on.

### ■ **Adjustment data copy**

You can increase adjustment efficiency by copying the adjustment data stored in one source bank to a different bank. Adjust the newly input source based on the copied adjustment values.

### ■ **Adjustment data delete**

The maximum number of source banks is 30. When a new 31st source is input and its data adjusted, this data is written over one of the already existing source banks. In such a case, delete (reset) unnecessary source bank adjustment data, then input the new source.

### ■ **Adjustment data move**

Source banks can be moved. This is useful for changing the source bank order found in the SOURCE LIST display and for filling in vacant banks. This operation is not necessarily required.

#### **Adjustment items that can be copied, deleted, and moved**

- **Picture size adjustment**
- **Picture position adjustment**
- **Contrast adjustment**
- **Brightness adjustment**
- **Color adjustment**
- **Tint adjustment**
- **Sharpness adjustment**
- **Color temperature setting and adjustment**
- **Clamp setting**
- **Trimming setting and adjustment**



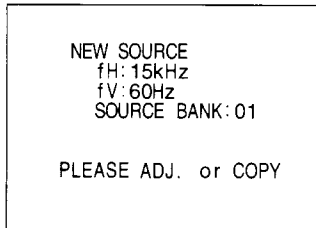
# SOURCE BANK DATA COPY

This section explains how to copy the picture adjustment data.

## Adjustment Data Copy

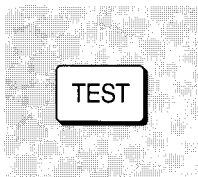
You can increase adjustment efficiency by copying the adjustment data stored in any source bank to a different bank.

[When a new source is input . . . ]

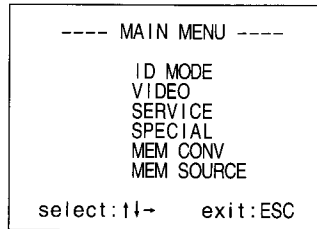
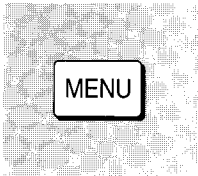


This display shows that it is a new input source (NEW SOURCE). Normally, the picture size, picture position, picture quality, etc. are adjusted, but here we will copy the data. This explanation uses an example copying the source 02 data to source 01.

**1** Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.

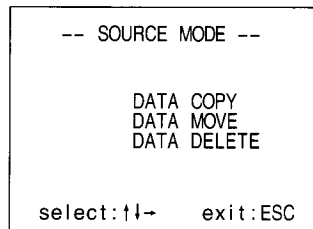
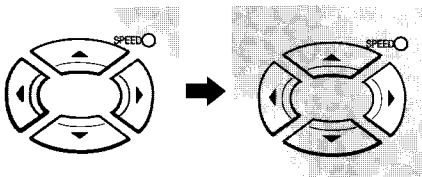


**2** Press the MENU button.



The MAIN MENU screen is displayed.

**3** With the arrow (▲/▼) buttons, select “MEM SOURCE”, then press the arrow (▶) button.

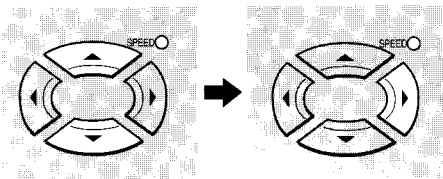


# SOURCE BANK DATA COPY (Continued)

## Adjustment Data Copy (Continued)

Continued from the previous page

- 4** With the arrow (▲/▼) buttons, select "DATA COPY", then press the arrow (▶) button.

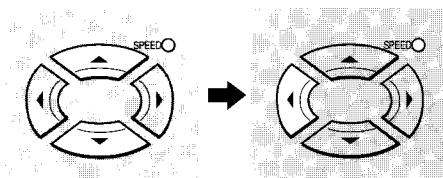


```

-- SOURCE COPY --
01 fH: ... kHz fV: ... Hz
02 fH: 25kHz fV: 54Hz
03 fH: 33kHz fV: 60Hz
04 fH: 42kHz fV: 71Hz
05 fH: 64kHz fV: 60Hz
06 fH: 71kHz fV: 72Hz
07 fH: ... kHz fV: ... Hz
    From: 01 To: 01
select: ↑↔ exit: ESC
    
```

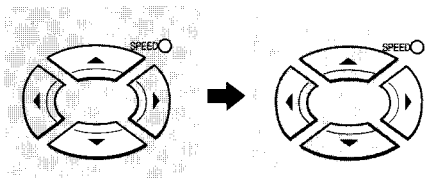
Source 01 shows "... "at "fH" and "fV" as a vacant bank.

- 5** With the arrow (▲/▼) buttons, select "02" as the copy source, then press the arrow (◀) button.



\* This explanation uses an example copying the source 02 data to source 01.

- 6** With the arrow (▲/▼) buttons, select "01" as the copy destination, then press the arrow (▶) button.



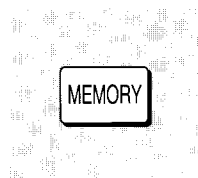
```

-- SOURCE COPY --
01 fH: ... kHz fV: ... Hz
02 fH: 25kHz fV: 54Hz
03 fH: 33kHz fV: 60Hz
04 fH: 42kHz fV: 71Hz
05 fH: 64kHz fV: 60Hz
06 fH: 71kHz fV: 72Hz
07 fH: ... kHz fV: ... Hz
    From: 02 To: 01
select: ↑↔ exit: ESC
    
```

Check that the display changes to "From:02 To:01".

From: copy source  
To: copy destination

- 7** Press the MEMORY button.



```

O. K: MEMORY NO: ESC

ARE YOU SURE ?

From: 02 To: 01
    
```

The confirmation screen is displayed.

If you do not want to copy, press the ESC button.

## 8 Press the MEMORY button again.



```
O. K: MEMORY NO: ESC

MEMORY

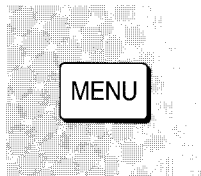
From: 02 To: 01
```

“MEMORY” appears, and the data is copied.

When the copying is complete, the screen returns to the initial one in service adjustment mode.

### Confirmation

End the service adjustment mode, and press the MENU button three times to display the PAGE3 screen.



```
PAGE3 -- SOURCE LIST --
01 fH: 15kHz fV: 60Hz
02 fH: 25kHz fV: 54Hz
03 fH: 33kHz fV: 60Hz
04 fH: 42kHz fV: 71Hz
05 fH: 64kHz fV: 60Hz
06 fH: 71kHz fV: 72Hz
07 fH: ... kHz fV: ...Hz

sel↑↓ next:MENU exit:ESC
```

“fH: 15kHz fV:60 Hz” is displayed at “01” showing that the copied data has been stored to source 01.

\* Press the ESC button to put the projector into reception mode, then check the picture.

# SOURCE BANK DATA DELETE

This section explains how to delete the picture adjustment data.

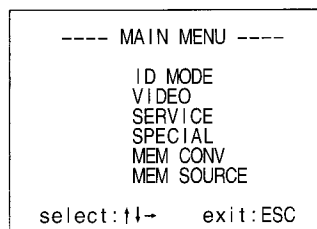
## Adjustment Data Delete

The maximum number of source banks is 30. When a new 31st source is input and its data adjusted, this data is written over one of the already existing source banks. In such a case, delete (reset) unnecessary source bank adjustment data, then input the new source.

- 1 Press the TEST button and hold it down for about three seconds to put the projector into service adjustment mode.

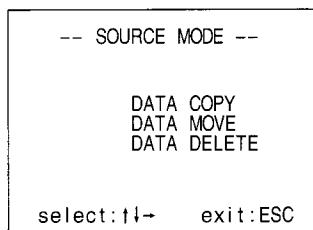
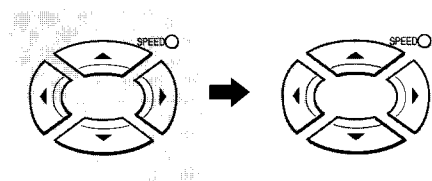


- 2 Press the MENU button.

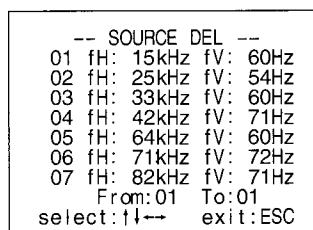
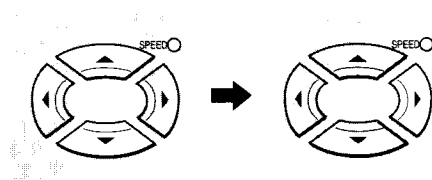


The MAIN MENU screen is displayed.

- 3 With the arrow (▲/▼) buttons, select "MEM SOURCE", then press the arrow (▶) button.

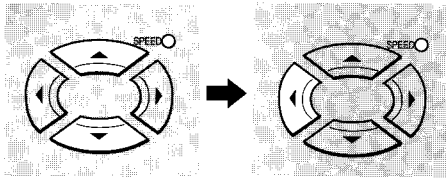


- 4 With the arrow (▲/▼) buttons, select "DATA DELETE", then press the arrow (▶) button.

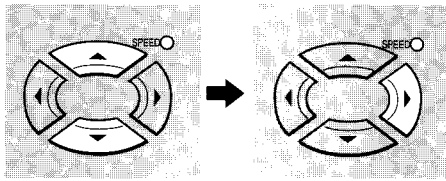


There is data in all the source banks.

**5** With the arrow (▲/▼) buttons, select the first of source banks to delete and press the arrow (◀) button.



**6** With the arrow (▲/▼) buttons, select the last of source banks to delete and press the arrow (▶) button.



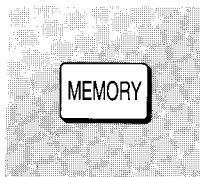
```

-- SOURCE DEL --
01 fH: 15kHz fV: 60Hz
02 fH: 25kHz fV: 54Hz
03 fH: 33kHz fV: 60Hz
04 fH: 42kHz fV: 71Hz
05 fH: 64kHz fV: 60Hz
06 fH: 71kHz fV: 72Hz
07 fH: 82kHz fV: 71Hz
   From:02 To:04
select:↑↓←→ exit:ESC
  
```

This shows an example of deleting from source 02 to source 04.

- Do not set a number for "To" that is smaller than the number for "From".

**7** Press the MEMORY button.



```

O.K:MEMORY NO:ESC

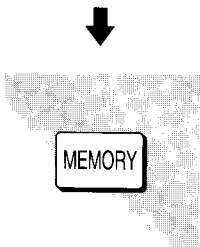
ARE YOU SURE ?

From:02 To:04
  
```

The confirmation screen is displayed.

To execute the deletion, press the MEMORY button.

If you do not want to delete, press the ESC button.



The deleting starts.

When the deleting is complete, the screen returns to the initial one in service adjustment mode.

No

To delete one source bank, select that source bank with the arrow (▲/▼) buttons, press the arrow (◀) button, then press the arrow (▶) button. It assigns the same number for "From" and "To".

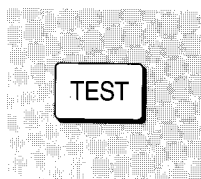
# SOURCE BANK DATA MOVE

This section explains how to move the picture adjustment data.

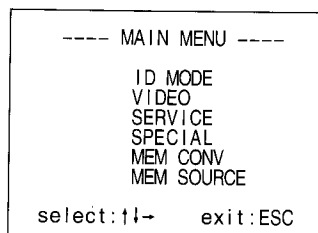
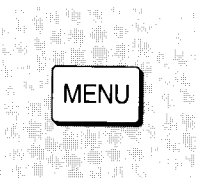
## Adjustment Data Move

Source banks can be moved. This is useful for changing the source bank order found in the SOURCE LIST screen and for filling in vacant banks. This operation is not necessarily required.

- 1 Press the TEST button and hold it down for three about seconds to put the projector into service adjustment mode.

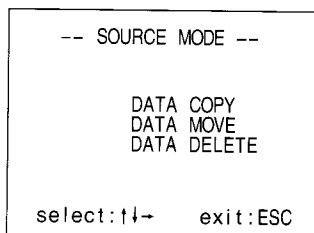
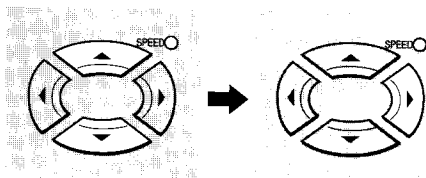


- 2 Press the MENU button.

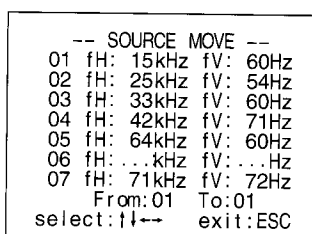
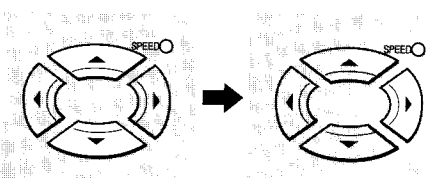


The MAIN MENU screen is displayed.

- 3 With the arrow (▲/▼) buttons, select "MEM SOURCE", then press the arrow (▶) button.

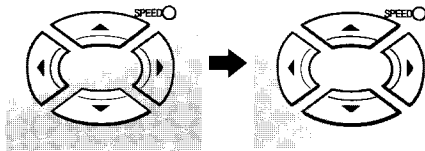


- 4 With the arrow (▲/▼) buttons, select "DATA MOVE", then press the arrow (▶) button.



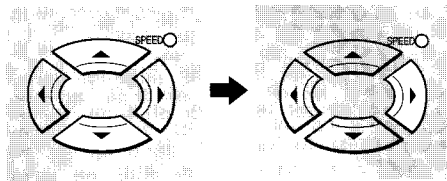
In this example, source "06" is vacant.

**5** With the arrow (▲/▼) buttons, select the move source, then press the arrow (◀) button.



This example moves source 07.

**6** With the arrow (▲/▼) buttons, select the move destination, then press the arrow (▶) button.



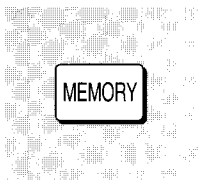
```

-- SOURCE MOVE --
01 fH: 15kHz fV: 60Hz
02 fH: 25kHz fV: 54Hz
03 fH: 33kHz fV: 60Hz
04 fH: 42kHz fV: 71Hz
05 fH: 64kHz fV: 60Hz
06 fH: ...kHz fV: ...Hz
07 fH: 71kHz fV: 72Hz
    From:07 To:06
select:↑↓←→ exit:ESC
  
```

In this example, source "07" is moved to source "06".

The display changes to "From:07 To:06".

**7** Press the MEMORY button.



```

O.K:MEMORY NO:ESC

ARE YOU SURE ?

From:07 To:06
  
```

The confirmation screen is displayed.

To execute the move, press the MEMORY button.

If you do not want to move, press the ESC button.



The move starts.

When the move is complete, the screen returns to the initial one in service adjustment mode.

# CONNECTING MULTIPLE INPUT SOURCES

## Connecting Multiple Input Sources

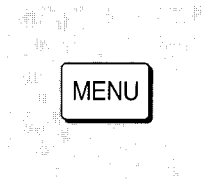
This projector detects the synchronization frequency of the input source and automatically determines the type of signal. Normally, it automatically applies the contents of the adjustments set for each input source, but if input sources have similar synchronization frequencies, they may be treated as the same input, and it may not be possible to adjust as you want for each input source.

When using this projector switching among multiple input sources, the following checks and adjustments make it possible to adjust for each input source.

### [Preparation]

This adjustment can not be made in service adjustment mode. End service adjustment mode.

- 1** Select the input source with the INPUT SELECT button, then press the MENU button twice.



```

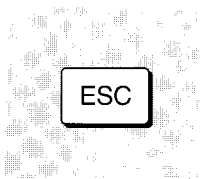
PAGE2
--- INFORMATION ---
fh: XXXXkHz
fv: XXXXHz
INPUT: XXXX
CONV BANK: XX
SOURCE BANK: XX ←
TIMER: XXXXXXH

next:MENU exit:ESC
    
```

The PAGE2 screen is displayed.

Make a note of the number of "SOURCE BANK".

- 2** Press the ESC button to close the display.



- 3** Repeat steps 1 and 2 for all the input sources to use and make a note of their source bank numbers.

| Input source | Source bank No. |
|--------------|-----------------|
| 1            | 1               |
| 2            | 2               |
| 3            | 3               |
| 4            | 4               |
| 5            | 4               |
| 6            | 6               |
| 7            | 7               |
| 8            | 8               |

If the source bank numbers are all different, there is no problem and you may go on using them as they are.

The table on the left is one example of the check results. In this example, input source 4 and input source 5 have the same source bank number. In such a case, proceed to step 4.



---

## 4 Select the input source to adjust with the INPUT SELECT button.

In this example, select input source 5.

---

## 5 Adjust the picture quality etc., then press the MEMORY button.

MEMORY

O. K : MEMORY NO : ESC

ARE YOU SURE ?

SOURCE BANK : 04

---

## 6 Press the FUNC. button.

FUNC.

O. K : MEMORY NO : ESC

ARE YOU SURE ?

SOURCE BANK : XX

The number of "SOURCE BANK" changes to a vacant one.

---

## 7 Press the MEMORY button.

MEMORY

The adjustments are stored into memory, then the projector returns to normal reception mode.

The above operations assign separate source banks to input source 4 and input source 5. When input source 4 or input source 5 is used later, if the picture is not as you want it, press the FUNC. button to select the next source bank.

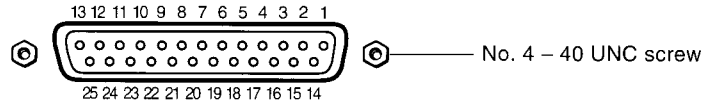
From then on, when you adjust the picture for input source 4 or input source 5 and store the results into memory, press the MEMORY button, not the FUNC. button. If you press the FUNC. button then, the adjustments will be written into another new source bank.

# RS-232C/RS-422 CONTROL

This section explains how to control the projector from external equipment via the RS-232C/RS-422 connectors.

## RS-232C/RS-422 Control

Signals via the D-SUB 25 pin connector of PL02 are input as straight format signals as shown in "Table 1-1 RS-232C connection requirements", and "Table 1-2 RS-422 connection requirements". This is due to the connection system of the projector which crosses the signals inside of the unit.



| Pin No. | Signal name | Content             | Input/output inside of the unit |   | External signal |
|---------|-------------|---------------------|---------------------------------|---|-----------------|
| 2       | RXD         | Receiving data      | Input                           | ← | TXD             |
| 3       | TXD         | Sending data        | Output                          | → | RXD             |
| 4       | CTS         | Consent to send     | Input                           | ← | RTS             |
| 5       | RTS         | Request to send     | Output                          | → | CTS             |
| 6       | DTR         | Data terminal ready | Output                          | → | DSR             |
| 7       | S.G         | Signal ground       | Input                           | ← | S.G             |
| 20      | DSR         | Data set ready      | Input                           | ← | DTR             |

Table 1-1 RS-232C connection requirements

| Pin No. | Signal name | Contents              | Input/output inside of the unit |   | External signal |
|---------|-------------|-----------------------|---------------------------------|---|-----------------|
| 7       | S.G         | Signal ground         | Input                           | ← | S.G             |
| 9       | RXD (+)     | Receiving data        | Input                           | ← | RXD (+)         |
| 10      | RXD (-)     | Receiving data        | Input                           | ← | RXD (-)         |
| 11      | TXD (+)     | Sending data          | Output                          | → | TXD (+)         |
| 12      | TXD (-)     | Sending data          | Output                          | → | TXD (-)         |
| 13      | SEL         | RS422 select terminal | Input                           | ← | S.G             |

Table 1-2 RS-422 connection requirements

The transmission requirements are as shown in "Table 1-3 RS-232C/RS-422 transmission requirements".

| Requirement          | Contents   |
|----------------------|--|
| Communication system | Transmission speed : 4800, Parity bit : None, Data length : 8 bit, Stop bit : 1 bit  |
| Communication format | 1 block should be composed of STX (1 byte)+ID (2 byte)+CMD (3 byte)+ETX (1byte): STX is 02h, ETX is 03h, ID should be alphanumeric characters (0 - F)+ asterisk (*), and CMD be RS-232C/RS-422 command characters (capitals) listed in Tables 2-1. |

Table 1-3 RS-232C/RS-422 transmission requirements

ID is a projector's identification number used when multiple projectors are connected, making it possible to operate them at the same time, and normally is set to "01". Note that if the ID is not set, the projector cannot receive any RS-232C commands. ID is basically composed of hexadecimal characters (0-F), and has variation of 256 settings from "00" to "FF". "\*" represents all of these digits and can be used to operate all the connected projectors. But "\*" can not be allocated to an ID itself of the projector.

When sending a command, take intervals of 100ms at least. If the interval is too short, the command may not be acknowledged correctly and the operation may not work. Especially when sending more than two commands successively which require more processing time such as a power on/off command or an input selecting command, be sure to take 3 to 7 seconds' intervals after sending the second command. On the other hands, a too long interval more than 1 minute may make the acknowledged commands void.

## Lists of Control Items in Each Control Mode

Items which can be controlled are listed according to the control modes in "Table 2-1 Control item list". The list shows the mode where the item can be controlled, remote control code, and RS-232C/RS-422 commands for each item. Some commands in the common mode may not be controlled depending on the selection of the item.

| Item             | Contents in normal mode          | RS-232C/RS-422 CMD |     |     |     |
|------------------|----------------------------------|--------------------|-----|-----|-----|
|                  |                                  | PWR                | PON | POF |     |
| POWER ON/OFF     | Turning the power on/off         | PWR                | PON | POF |     |
| VIDEO            | Selecting video input            | VNA                |     |     |     |
| Y/C              | Selecting Y/C input              | VNB                |     |     |     |
| S-VIDEO          | Selecting S-VIDEO input          | VNC                |     |     |     |
| RGB1             | Selecting RGB1 input             | VND                |     |     |     |
| RGB2             | Selecting RGB2 input             | VNE                |     |     |     |
| YPbPr            | Selecting YPbPr input            | PBR                | PBO | PBF |     |
| MUTE ON/OFF      | Muting the picture               | MSW                | MON | MOF |     |
| MENU             | Switching the displays           | MNU                |     |     |     |
| PICTURE MENU     | Picture adjustment               | PMU                |     |     |     |
| PICTURE REST     | Resetting the picture adjustment | PRS                |     |     |     |
| CENTERING        | Adjusting the centering          | CEN                | CER | CEG | CEB |
| SHIFT            | Adjusting the hor/ver position   | SFT                |     |     |     |
| SIZE             | Adjusting the hor/ver size       | SIZ                |     |     |     |
| SOURCE MODE 1-30 | Source mode                      | SMA                | S01 | →   | S30 |
| TEST MODE        | Switching the test modes         | AJY                |     |     |     |
| ID SET           | Setting ID                       | IDS                |     |     |     |

Table 2-1 control item list (1/8)

| Item          | Contents in test mode          | RS-232C/RS-422 CMD |     |     |  |
|---------------|--------------------------------|--------------------|-----|-----|--|
|               |                                | TST                | SFT | SIZ |  |
| TEST PATTERN  | Switching the test patterns    | TST                |     |     |  |
| SHIFT         | Adjusting the hor/ver position | SFT                |     |     |  |
| SIZE          | Adjusting the hor/ver size     | SIZ                |     |     |  |
| CONV MODE     | Convergence adjustment mode    | CNV                |     |     |  |
| CONV SIZE     | Adjusting convergence size     | CSZ                |     |     |  |
| LIN           | Adjusting linearity            | LIN                |     |     |  |
| TILT          | Adjusting TILT                 | TIL                |     |     |  |
| BOW           | Adjusting BOW                  | BOW                |     |     |  |
| KEY           | Adjusting KEY                  | KEY                |     |     |  |
| PIN           | Adjusting PIN                  | PIN                |     |     |  |
| FOCUS         | Adjusting the focus            | FCS                |     |     |  |
| WHITE BALANCE | Adjusting the white balance    | WHT                |     |     |  |
| TRIMMING ADJ  | Adjusting trimming             | TRM                |     |     |  |
| MENU          | Switching the displays         | MNU                |     |     |  |
| NORMAL MODE   | Canceling test mode            | AJN                |     |     |  |

Table 2-1 control item list (2/8)

## Lists of Control Items in Each Control Mode (Continued)

| Item   | Contents in ID mode | RS-232C/RS-422 CMD |  |  |
|--------|---------------------|--------------------|--|--|
| ID.CLR | Deleting ID         | IDC                |  |  |
| ID.SET | Setting ID          | IDS                |  |  |
| ID.ALL | Input *             | IDA                |  |  |
| 0      | Input 0             | VN0                |  |  |
| 1      | Input 1             | VN1                |  |  |
| 2      | Input 2             | VN2                |  |  |
| 3      | Input 3             | VN3                |  |  |
| 4      | Input 4             | VN4                |  |  |
| 5      | Input 5             | VN5                |  |  |
| 6      | Input 6             | VN6                |  |  |
| 7      | Input 7             | VN7                |  |  |
| 8      | Input 8             | VN8                |  |  |
| 9      | Input 9             | VN9                |  |  |
| A      | Input A             | VNA                |  |  |
| B      | Input B             | VNB                |  |  |
| C      | Input C             | VNC                |  |  |
| D      | Input D             | VND                |  |  |
| E      | Input E             | VNE                |  |  |
| F      | Input F             | VNF                |  |  |

Table 2-1 control item list (3/8)

| Item     | Contents in video mode      | RS-232C/RS-422 CMD |  |  |
|----------|-----------------------------|--------------------|--|--|
| ABL      | Adjusting ABL level         | VN0                |  |  |
| S.VER    | Shading vertical adjustment | VN1                |  |  |
| S.AMP    | Shading amp. adjustment     | VN2                |  |  |
| S.BAL    | Shading balance adjustment  | VN3                |  |  |
| EB.SW    | Black expansion on/off      | VN4                |  |  |
| COLOR SW | Color switch on/off         | VN5                |  |  |
| COMBI    | Combination switch on/off   | VN6                |  |  |
| MULTI    | Multi mode switch on/off    | VN7                |  |  |
| TRIMMING | Trimming mode on/off        | VN8                |  |  |

Table 2-1 control item list (4/8)

| Item         | Contents in service mode          | RS-232C/RS-422 CMD |  |  |
|--------------|-----------------------------------|--------------------|--|--|
| MONITOR      | Monitor selection (Y/B-Y/R-Y/G-Y) | VN0                |  |  |
| BELL FIL     | Bell adjustment                   | VN1                |  |  |
| SECAM R-Y    | Black level (R-Y) adjustment      | VN2                |  |  |
| SECAM B-Y    | Black level (B-Y) adjustment      | VN3                |  |  |
| SUB CONTRAST | Adjusting sub contrast            | VN4                |  |  |

Table 2-1 control item list (5/8)

| Item | Contents in special mode | RS-232C/RS-422 CMD |  |  |
|------|--------------------------|--------------------|--|--|
| 0    | RAM area (040-05F)       | VN0                |  |  |
| 1    | RAM area (060-07F)       | VN1                |  |  |
| 2    | RAM area (080-09F)       | VN2                |  |  |
| 3    | RAM area (0A0-0BF)       | VN3                |  |  |
| 4    | RAM area (0C0-0DF)       | VN4                |  |  |
| 5    | RAM area (0E0-0FF)       | VN5                |  |  |
| 6    | RAM area (100-11F)       | VN6                |  |  |
| 7    | RAM area (120-13F)       | VN7                |  |  |
| 8    | RAM area (140-15F)       | VN8                |  |  |
| 9    | RAM area (160-17F)       | VN9                |  |  |
| A    | RAM area (180-19F)       | VNA                |  |  |
| B    | RAM area (1A0-1BF)       | VNB                |  |  |
| C    | RAM area (1C0-1DF)       | VNC                |  |  |
| D    | RAM area (1E0-1FF)       | VND                |  |  |
| E    | RAM area (200-21F)       | VNE                |  |  |
| F    | RAM area (220-23F)       | VNF                |  |  |

Table 2-1 control item list (6/8)

| Item   | Contents in SOURCE/CONV mode | RS-232C/RS-422 CMD |     |     |
|--------|------------------------------|--------------------|-----|-----|
| UP     | Selecting the item up        | VUP                |     |     |
| DOWN   | Selecting the item down      | VDW                |     |     |
| LEFT   | Selecting items to the left  | VLF                |     |     |
| RIGHT  | Selecting items to the right | VRG                |     |     |
| MEMORY | Memorizing adjustment data   | MEM                | MEO | MES |
| ESCAPE | Canceling the current item   | ESC                |     |     |

Table 2-1 control item list (7/8)

| Item     | Contents in common mode                               | RS-232C/RS-422 CMD |     |     |
|----------|---|--------------------|-----|-----|
| R-ON/OFF | Raster R on/off                                       | RSW                |     |     |
| G-ON/OFF | Raster G on/off                                       | GSW                |     |     |
| B-ON/OFF | Raster B on/off                                       | BSW                |     |     |
| R-SEL    | Selecting raster R                                    | SLR                |     |     |
| G-SEL    | Selecting raster G                                    | SLG                |     |     |
| B-SEL    | Selecting raster B                                    | SLB                |     |     |
| UP       | Adjustment value up vertically/Selecting item up      | VUP                |     |     |
| DOWN     | Adjustment value down vertically/Selecting item down  | VDW                |     |     |
| LEFT     | Adjustment value up horizontally/Selecting item left  | VLF                |     |     |
| RIGHT    | Adjustment value up horizontally/Selecting item right | VRG                |     |     |
| SPEED    | Switching adjustment speeds up and down               | VSP                |     |     |
| MEMORY   | Memorizing adjustment data                            | MEM                | MEO | MES |
| ESCAPE   | Canceling the current item                            | ESC                |     |     |
| FUNCTION | Multi use   | FNC                |     |     |

Table 2-1 control item list (8/8)

# DESCRIPTION OF ABBREVIATIONS

## Description of Abbreviations

Some of on-screen display terms or letters on the remote control buttons are abbreviations. Refer to the table below for the meanings.

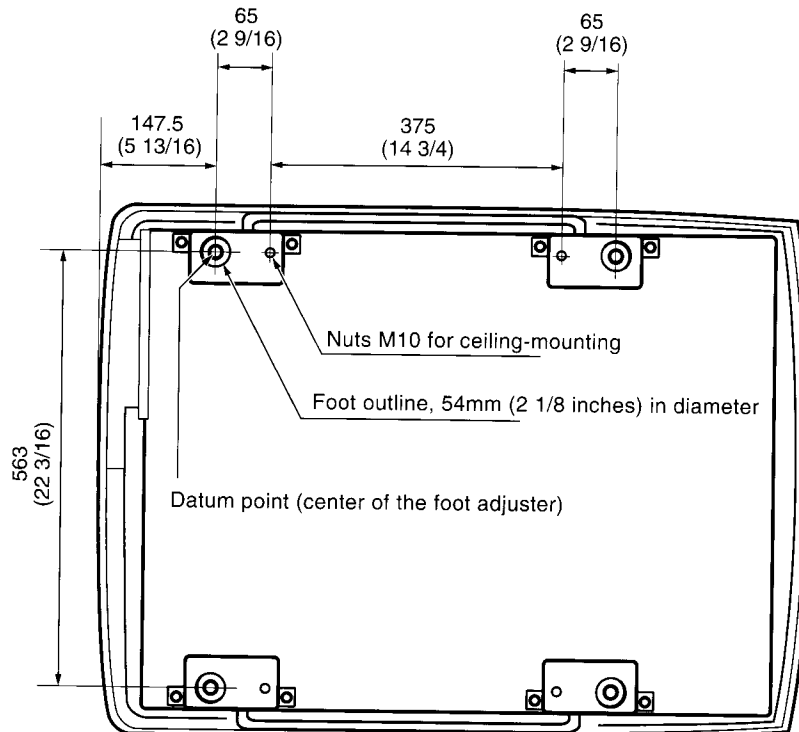
|               |                              |
|---------------|------------------------------|
| ESC           | ESCAPE                       |
| CENT          | CENTERING                    |
| PIC MENU      | PICTURE MENU                 |
| PIC RESET     | PICTURE RESET                |
| FUNC.         | FUNCTION                     |
| C. SIZE       | CONVERGENCE SIZE             |
| LIN           | LINEARITY                    |
| KEY           | KEYSTONE DISTORTION          |
| PIN           | PINCUSHION DISTORTION        |
| CONV          | CONVERGENCE                  |
| W/B           | WHITE BALANCE                |
| TRIM          | TRIMMING                     |
| TEST. P       | TEST PATTERN                 |
| ADJ. R (G, B) | ADJUSTMENT RED (GREEN, BLUE) |
| MEM CONV      | MEMORY CONVERGENCE           |
| MEM SOURCE    | MEMORY SOURCE                |
| CONV BANK     | CONVERGENCE BANK             |
| HI            | HIGH-SPEED                   |
| LOW           | LOW-SPEED                    |
| I. SIZE       | INSIDE SIZE                  |
| C. LIN        | CONVERGENCE LINEARITY        |
| VPIN. BAL     | VERTICAL PINCUSHION BALANCE  |
| BRIGHT        | BRIGHTNESS                   |
| SHARP         | SHARPNESS                    |

# DIMENSIONS

## Dimensions

When the projector is mounted on the ceiling, use four nuts (M10) for ceiling-mounting as shown below.

### Bottom side



\* The values in the parentheses are by inches.

### Attention

- Never use nuts and bolts except the ones shown above to mount the projector on the ceiling.
- The screw depth of the nut for ceiling-mounting (M10) should be  $20\text{mm} \pm 3\text{mm}$  ( $25/32 \pm 1/8$  inches).
- Use the lock washers and flat washers with the bolts for ceiling-mounting to prevent them from becoming loose.
- If the ceiling on which the projector is mounted is weak or the mounting is not perfect, the projector may fall off the ceiling and cause serious damage.

Mount the projector carefully so the mounting securely stands a load of more than 5 times the projector's mass, or an earthquake, or any other movements.