SONY

Multiscan Projector

Installtion Manual for Dealers

Before operating the unit, please read this manual
thoroughly and retain it for future reference.

Manuel d'installation destiné aux revendeurs

Avant de mettre cet appareil en exploitation, veuillez lire
attentivement ce manuel et le ranger en lieu sûr aux fins
de consultation ultérieure.

Manual de instalación para proveedores

Antes de utilizar la unidad, lea este manual en su
totalidad y consérvelo para realizar consultas.

SuperGraphics

VPH-1292Q/1292QM

380060521

Others

Installation Procedures

By default, this projector is adjusted for 120-inch front projection on the floor/desk. If you install the projector in other conditions, you have to change some settings. Therefore, installation procedures depend on the screen size or type, and installation method.

① Verify the conditions of installation, such as angle of optical axis, projection distance, height of the projector and screen.

↓

② Adjust the ring spacers. *(page 18(E))*

↓

③ Install the projector and screen. *(page 5(E))*

↓

④ Reset the cross-hatch to factory setting. *(page 88(E))*

↓

⑤ Adjust the CRT conversion angle. *(page 20(E))*

↓

⑥ Change the polarity according to the projection patterns. *(page 22(E))*

↓

⑦ Adjust the lens focus, magnetic focus and AQP (Axis Quadrupole) / DQP (Diagonal Quadrupole). *(page 48(E))*

↓

⑧ Adjust the registrations. *(page 56(E))*

↓

⑨ Connect other equipment. *(page 28(E))*

↓

⑩ Adjust the each input signal.
  • Fine adjustment for the magnetic focus and registrations. *(pages 80(E) and 82(E))*
  • Adjust the size or shift of the picture. *(pages 81(E), 83(E) and 84(E))*
  • Adjust the blanking. *(pages 81(E) and 84(E))*

Installation Diagrams

Necessary Clearance for Installation and Maintenance

When installing the projector, be sure to provide enough room for maintenance service, as illustrated below.

Front

Ventilation holes

248.5 (9 ^{7}/$_8$)

AC IN socket

Front remote control detector

Grip release button

MAIN POWER switch

Grip release button

Dimenter for grip rotation ⌀220 (⌀=8 ^{3}/$_4$)

13 (^{17}/$_{32}$)

59.5 (2 ^{3}/$_8$)

13 (^{17}/$_{32}$)

260.5 (10 ^{3}/$_8$)

746 (29 ^{3}/$_8$)

Unit: mm (inches)

Rear

Ventilation holes

Rear remote control detector

Power indicator

Grip release button

STANBY indicator

90 (3 ^{5}/$_8$)

Grip release button

254 (10)

254 (10)

13 (^{17}/$_{32}$)

13 (^{17}/$_{32}$)

Unit: mm (inches)
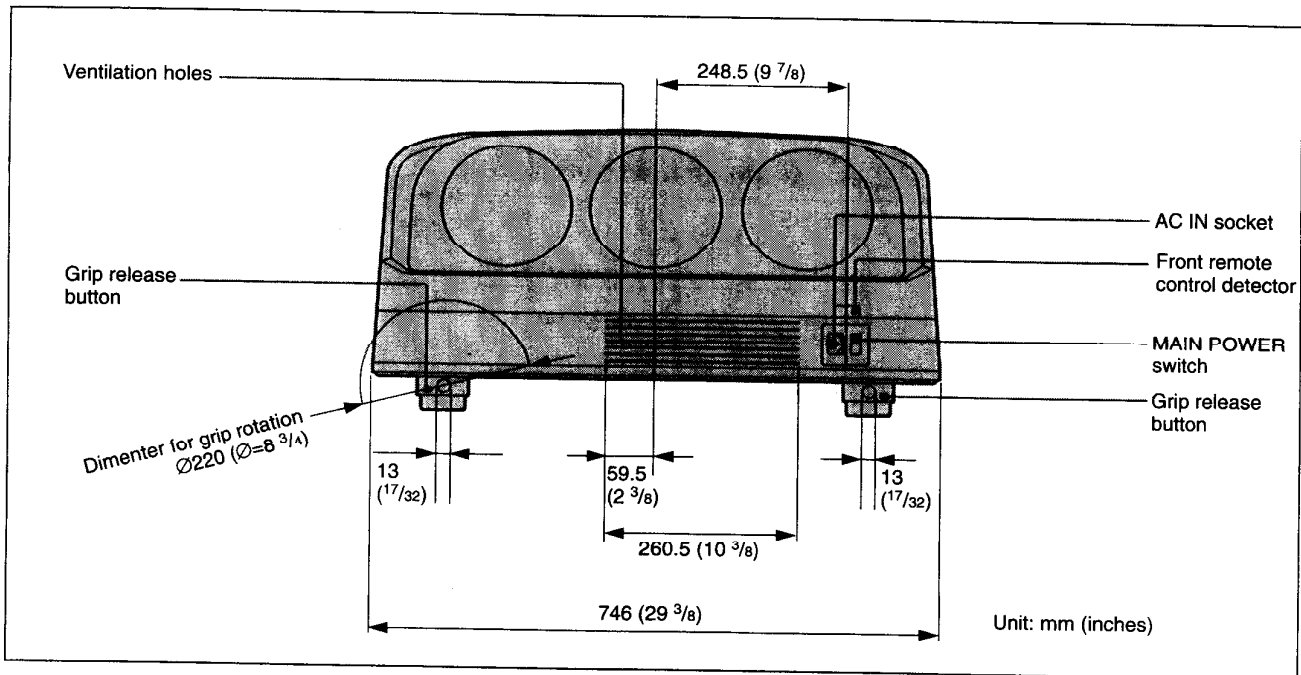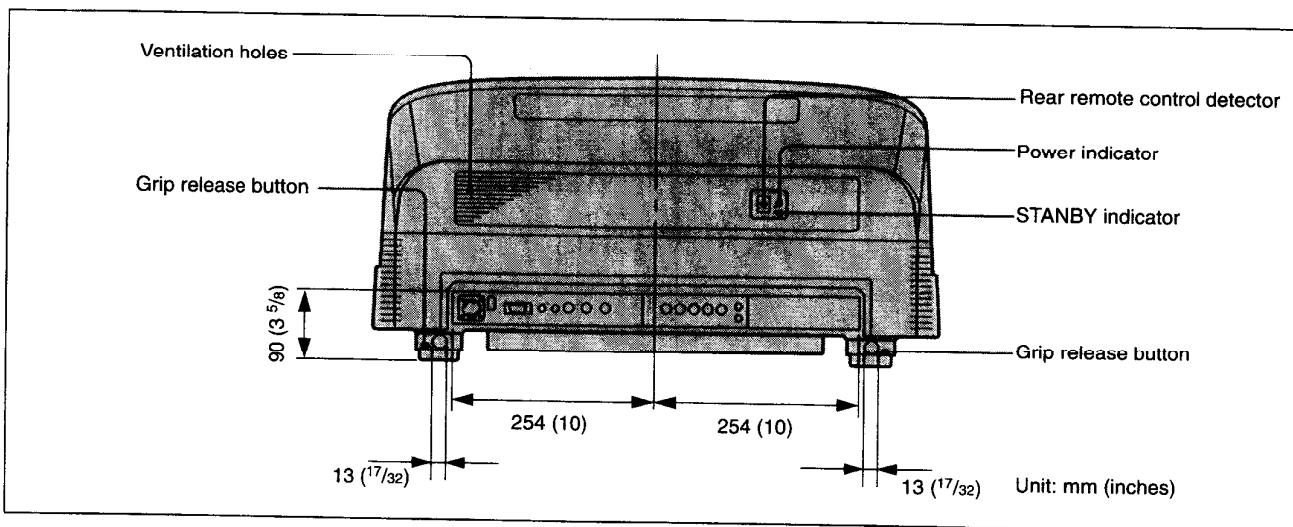
Installation Diagrams

Bottom

The center hole on the bottom surface is useful for reference when measuring for installation. For normal installation, use the seven holes to fix the projector.

Note

Use only the M8 metric screws (38mm (1 $^1/_2$ inches) to 42mm (1 $^{11}/_{16}$ inches) long) for the attachment holes.

When using the optional PSS-1270 Projector Suspension Unit, use the screws supplied with the projector.

830 (32 $^7/_8$) (When the side handles are pulled out.)

630 (24 $^7/_8$)

560 (22 $^1/_8$)

50 (2)

165.2 (6 $^5/_8$)

382.2 (15 $^1/_8$)

210 (8 $^3/_8$) 210 (8 $^3/_8$)

Standard hole for installation

Ventilation holes

219.5 (8 $^3/_4$) 219.5 (8 $^3/_4$)

Unit: mm (inches)
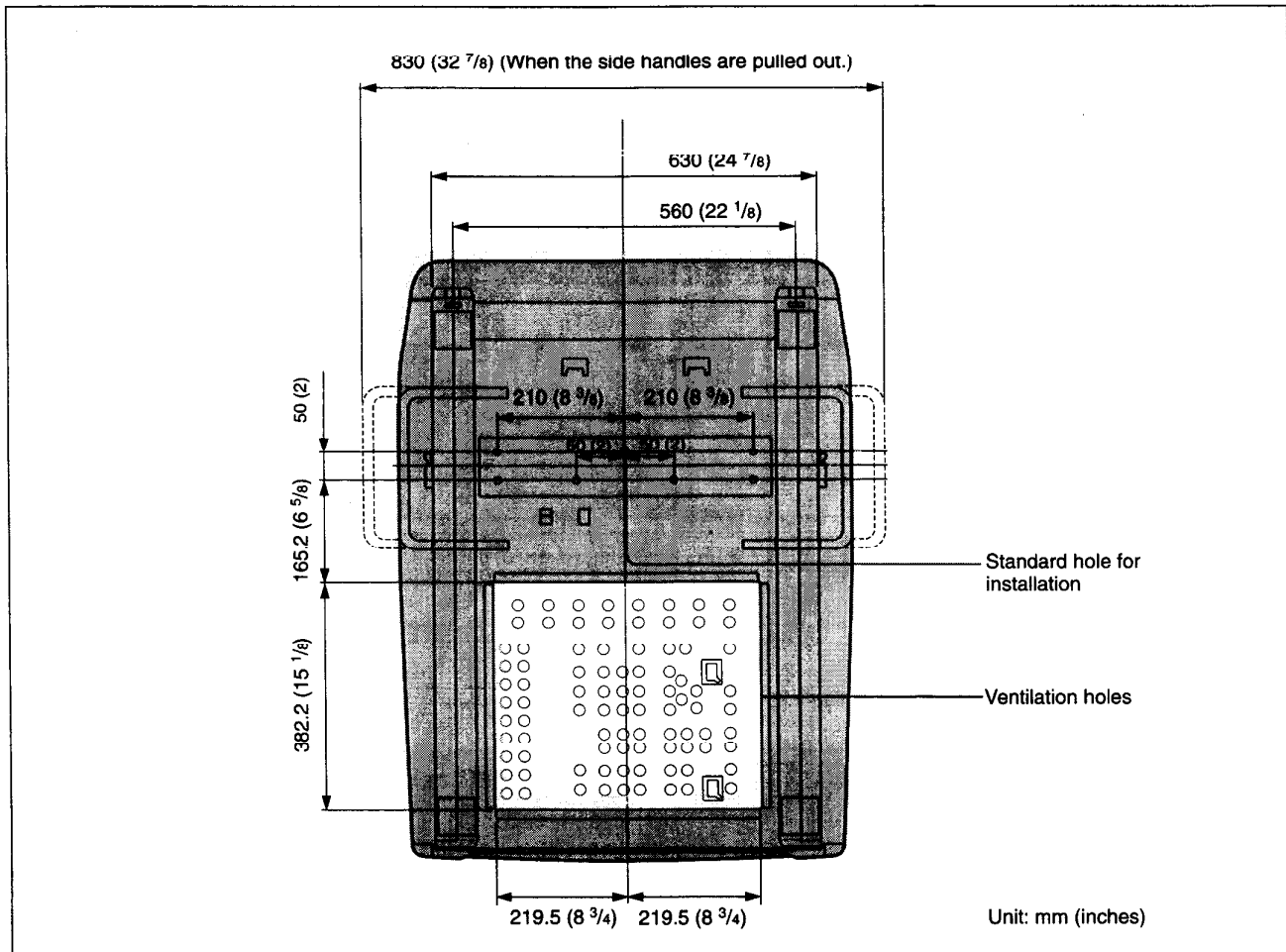
Side

Refer to the diagram below for installation.

1000 (39 3/8)

68 (2 3/4)

Front end of green lens

Center of
projection balance

109.5
(4 3/8)

385.8 (15 1/4)

280 (11 1/8)

11.9°

∅154.4 (∅=6 1/8)

102
(4 1/8)

181 (7 1/4)

60 (2 3/8)

Standard hole for
installation

60 (2 3/8)

247.4 (9 3/4)

18 (23/32)

42.3 (1 11/16)

810 (32)

Rotaion axis of the PSS-1270

Unit: mm (inches)

272.4 (10 3/4)
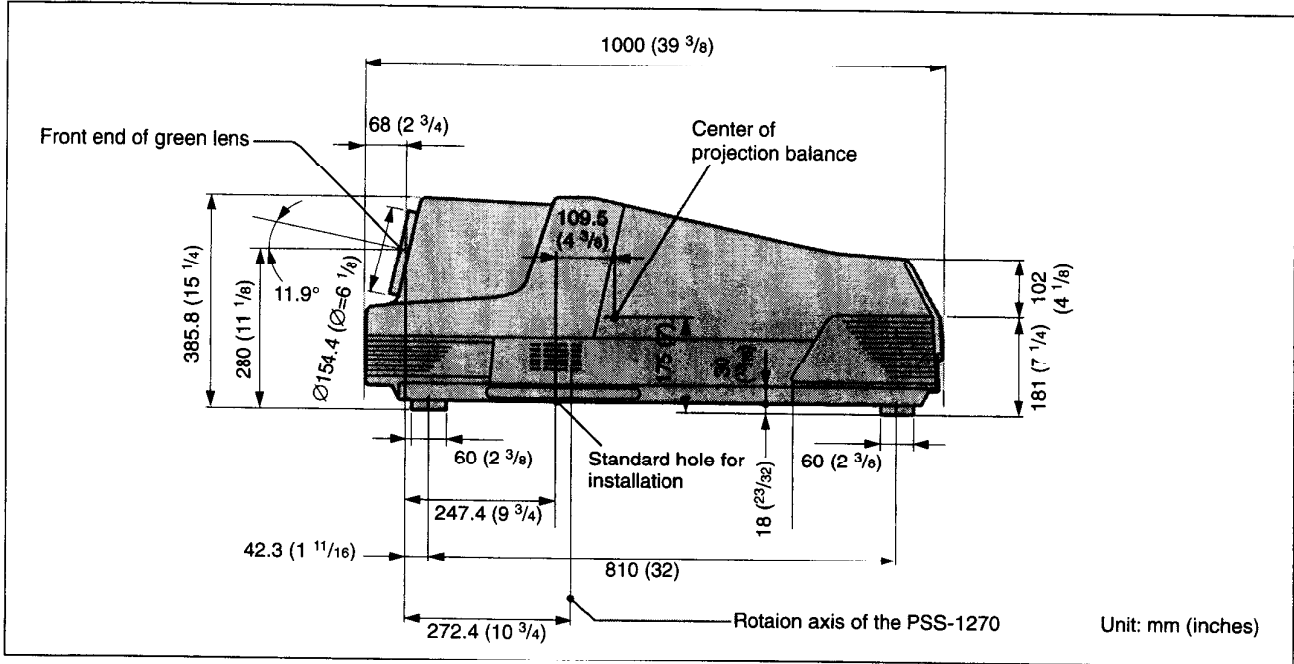
Installation Diagrams

Refer to the diagram below when removing the cover, carrying the projector with the grips and making clearance for the ventiration holes.

Standard hole for installation

Ventilation holes

Food fixing screw

Grip

When removing the cover, it shifts to the botted line.

19 (³/₄)

12 (¹/₂)

133 (5 ¹/₄)

Grip

36 (1 ⁷/₁₆)

70 (2 ⁷/₈)

85 (3 ³/₈)

132.7 (5 ¹/₄)

247.4 (9 ³/₄)

422 (16 ⁵/₈)

165¹⁾ (6 ¹/₂)

137 (5 ¹/₂)

1150 (45 ³/₈)
(When the front and rear grips are inserted.)

137 (5 ¹/₂)

Unit: mm (inches)

¹⁾ Refer this diagram when removing the cover, carrying the projector by using grips and making clearance for ventilation holes.

Carrying the projector

You can carry the projector by using the handle.

Using the side handles

Pull out to use. To put away the side handle, slide it backward.

To put away the side handle, slide it backward.
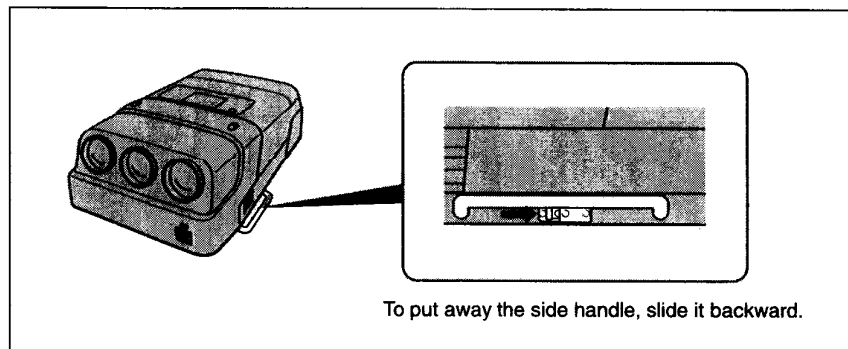
Inserting the front or rear grips
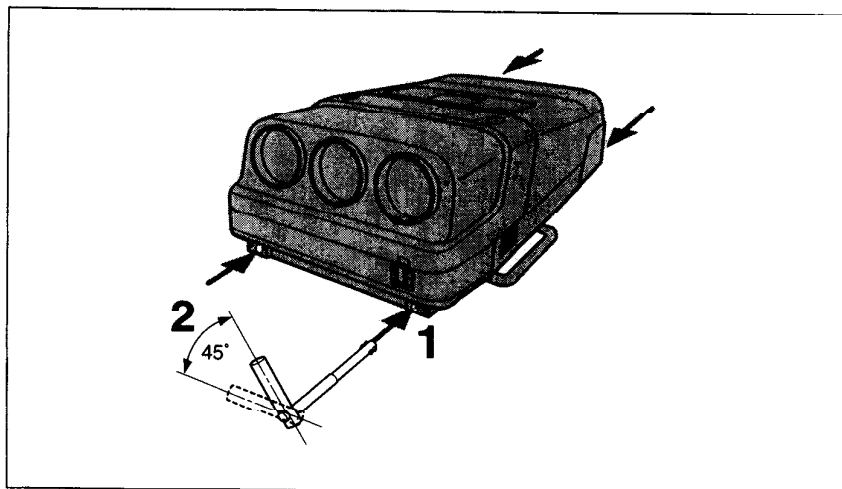
1 Insert the grip as illustrated above.

2 Turn the grip until it is fixed.

Removing the front or rear grips

1 While pressing the grip release button, turn the grip until it is fixed.

2 Pull out the handle.

Installation Diagrams

Floor Installation Using Front Projection Flat Screen

Be sure that the projector is level to the floor.

E: Horizontal distance between the center of the screen and the center of the green lens
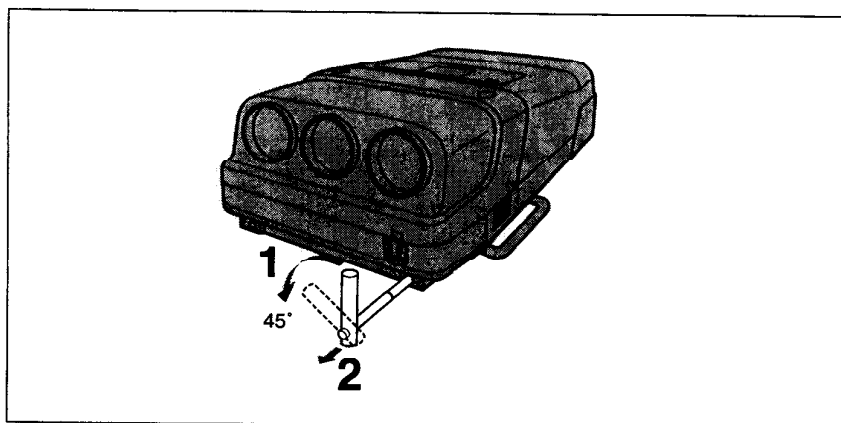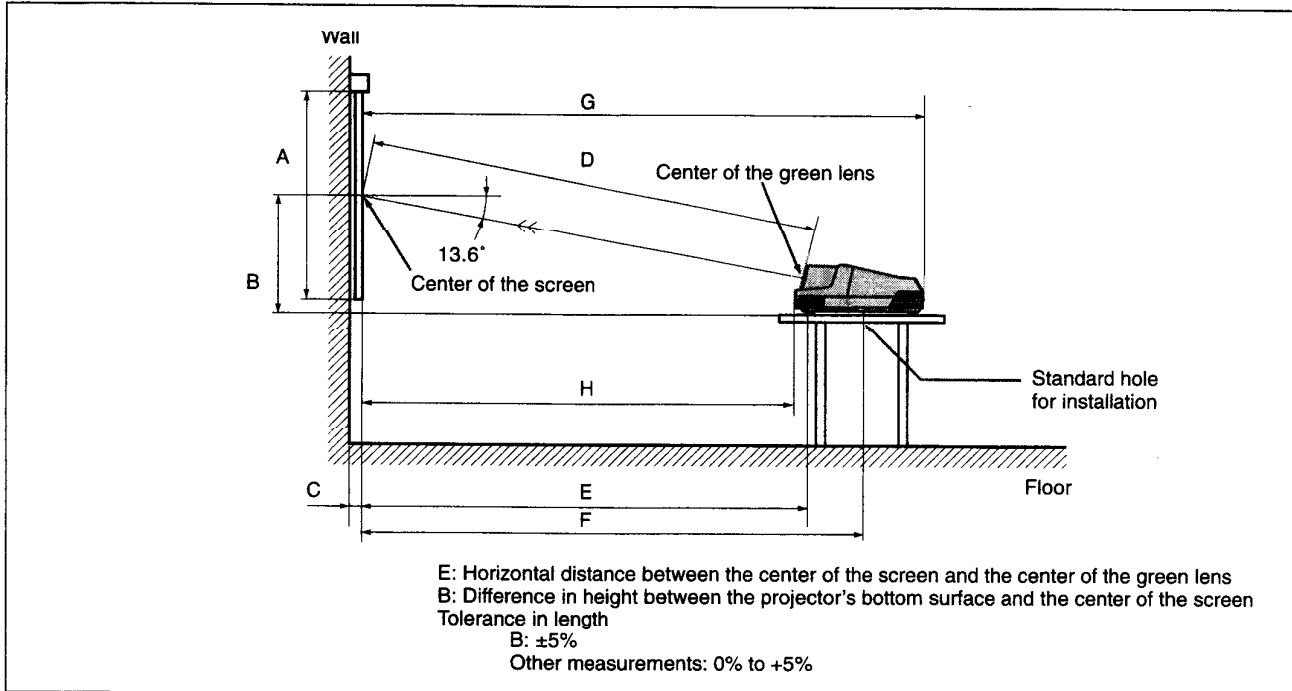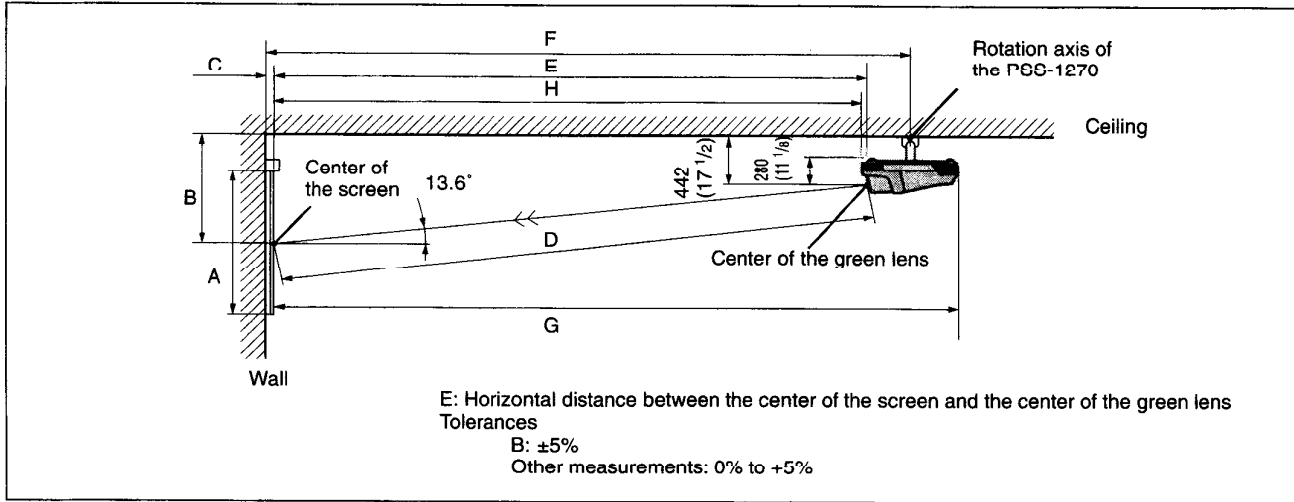B: Difference in height between the projector's bottom surface and the center of the screen
Tolerance in length
    B: ±5%
    Other measurements: 0% to +5%

Unit:mm (inches)

Screen size (inches)	90	100	120	150	180	200	250	300
A (Vsize)	1372 (54 1/8)	1524 (60)	1829 (72 1/8)	2286 (90)	2743 (108)	3048 (120)	3810 (150)	4572 (180)
B (Hcent)	886 (35)	947 (37 3/8)	1071 (42 1/4)	1285 (50 5/8)	1485 (58 1/2)	1618 (63 3/4)	1939 (76 3/8)	2284 (90)
C (Width)		28a) (1 1/8)	32b) (1 5/16)					
D (TD)	2587 (101 7/8)	2847 (112 1/8)	3373 (132 7/8)	4285 (168 3/4)	5137 (202 1/4)	5702 (224 1/2)	7065 (278 1/4)	8533 (336)
E (Xlens)	2514 (199)	2767 (109)	3278 (129 1/8)	4165 (164)	4993 (196 5/8)	5542 (218 1/4)	6867 (270 3/8)	8294 (326 5/8)
F (LHole)	2762 (108 3/4)	3015 (118 3/4)	3526 (138 7/8)	4412 (173 3/4)	5240 (206 3/8)	5790 (228)	7114 (280 1/8)	8541 (336 3/8)
G (Lmax)	3446 (135 3/4)	3699 (145 3/4)	4210 (165 7/8)	5097 (200 3/4)	5925 (233 3/8)	6474 (255)	7799 (307 1/8)	9226 (363 1/4)
Spacer								
(Red – L)	–10	–9.5	–9	–8	–7.5	–7	–3.5	–13.5
(Red – C)	15.5	14.5	13.5	12.5	12.5	12.5	15	4
(Green – L)	–12.5	–12	–11	–10	–10	–9.5	–9	–9
(Green – C)	12.5	12	11	10	10	9.5	9	9
(Blue – L)	10	9.5	9	8	7.5	7	3.5	13.5
(Blue – C)	–15.5	–14.5	–13.5	–12.5	–12.5	–12.5	–15	–4

a) Sony VPS-100FH
b) Sony VPS-120FH

Ceiling Installation Using Front Projection Flat Screen

E: Horizontal distance between the center of the screen and the center of the green lens
Tolerances
    B: ±5%
    Other measurements: 0% to +5%

Unit:mm (inches)

Screen size (inches)	90	100	120	150	180	200	250	300
A (Vsize)	1372 (54 1/8)	1524 (60)	1829 (72 1/8)	2286 (90)	2743 (108)	3048 (120)	3810 (150)	4572 (180)
B (Hcent)	1048 (41 3/8)	1109 (43 3/4)	1233 (48 5/8)	1447 (57)	1647 (64 7/8)	1780 (70 1/8)	2101 (82 3/4)	2446 (96 3/8)
C (Width)		28a) (1 1/8)	32b) (1 5/16)					
D (TD)	2587 (101 7/8)	2847 (112 1/8)	3373 (132 7/8)	4285 (168 3/4)	5137 (202 1/4)	5702 (224 1/2)	7065 (278 1/4)	8533 (336)
E (Xlens)	2514 (99)	2767 (109)	3278 (129 1/8)	4165 (164)	4993 (196 5/8)	5542 (218 1/4)	6867 (270 3/8)	8294 (326 5/8)
F (LHole)	2787 (109 3/4)	3040 (119 3/4)	3551 (139 7/8)	4437 (174 3/4)	5265 (207 3/8)	5815 (229)	7139 (281 1/8)	8566 (337 1/4)
G (Lmax)	3446 (135 3/4)	3699 (145 3/4)	4210 (165 7/8)	5097 (200 3/4)	5925 (233 3/8)	6474 (255)	7799 (307 1/8)	9226 (363 1/4)
Spacer								
(Red – L)	–10	–9.5	–9	–8	–7.5	–7	–3.5	–13.5
(Red – C)	15.5	14.5	13.5	12.5	12.5	12.5	15	4
(Green – L)	–12.5	–12	–11	–10	–10	–9.5	–9	–9
(Green – C)	12.5	12	11	10	10	9.5	9	9
(Blue – L)	10	9.5	9	8	7.5	7	3.5	13.5
(Blue – C)	–15.5	–14.5	–13.5	–12.5	–12.5	–12.5	–15	–4

a) Sony VPS-100FH
b) Sony VPS-120FH

Necessary parts modifications
Changing the polarity on the L and ED board.
For details, see "Changing the Polarity" on page 22 (E).

Installation Diagrams
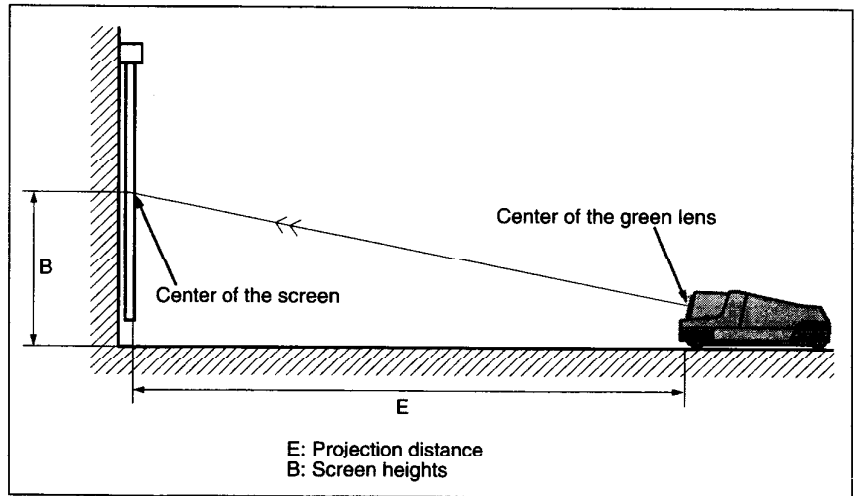
When the Screen Size is not Mentioned on the Tables

You can calculate the installation measurements with the tables on pages 102 (E) to 113 (E) (nonstandard installation) when you use the screen whose size is not mentioned in the tables on pages 10 (E), 11 (E) and 13 (E).

About the installation measurements

Check your installation conditions:
* Screen size (S)
* Installation measurements in the tables both for larger screen size (EL) and for smaller one (ES)
  See the tables on pages 102 (E) to 113 (E).

Center of the green lens

Center of the screen

B

E

E: Projection distance
B: Screen heights

Now you can calculate the installation measurements as follows:
E (mm) = ES + ((S − smaller screen size) × (EL − ES) × 0.1)
B (mm) = E × 0.241 + 280

Example: when using 124-inch screen
According to the tables on page 104 (E), the values ES and EL are as follows:

    ES = 3279 (As the smaller screen size is 120 inch.)
    EL = 3570 (As the larger screen size is 130 inch.)

Therefore,
    E (mm) = 3279 + ((124 − 120) × (3570 − 3279) × 0.1) = 3395 (mm)
    B (mm) = 3395 × 0.241 + 280 = 1098 (mm)

Note
With nonstandard installation, the optical axis angle (TA) is fixed as follows:
* When using the front projection screen: 13.6° (B/E = 0.2419)
* When using the front projection screen: −2° (B/E = −0.0349)

What is the optical axis angle?

The optical axis angle is the angle between the horizontal level line and the straight line from the center of the projector's green lens to the center of the screen. When using a rear projection screen, you can get the brightest picture when the center of the screen is aligned with a straight line extension of the center of the green lens.

Therefore, the most suitable optical axis angle (a) varies depending on the height of the screen and your line of sight.

With the standard installation, set up the projector and screen such that this angle is between 0° and 2°.

When the optical axis angle is 2°
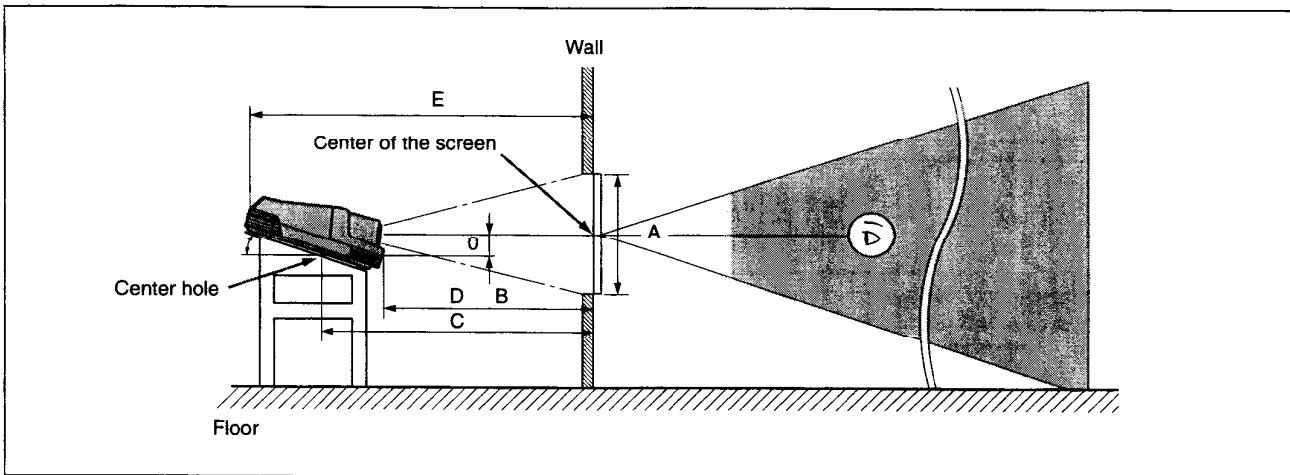
Unit: mm (inches)

Screen size (inches)	90	100	120	150	180	200	250	300
A (Vsize)	1372 (54 $^1/_8$)	1524 (60)	182 (72 $^1/_8$)	2286 (90)	2743 (108)	3048 (120)	3810 (150)	4572 (180)
B (Hcent)	102 (4 $^1/_8$)	93 (3 $^3/_4$)	74 (3)	43 (1 $^3/_4$)	13 ($^{17}/_{32}$)	–6 (–$^1/_4$)	–53 (–2 $^1/_8$)	–104 (–4 $^1/_8$)
C (Lhole)	2873 (113 $^1/_8$)	3132 (123 $^3/_8$)	3653 (143 $^7/_8$)	4558 (179 $^1/_2$)	5402 (212 $^3/_4$)	5964 (234 $^7/_8$)	7316 (288 $^1/_8$)	8772 (345 $^3/_8$)
D (Xlens)	2567 (101 $^1/_8$)	2826 (111 $^3/_8$)	3348 (131 $^7/_8$)	4252 (167 $^1/_2$)	5097 (202 $^3/_4$)	5659 (222 $^7/_8$)	7011 (276 $^1/_8$)	8467 (333 $^3/_8$)
E (Lmax)	3535 (139 $^1/_4$)	3794 (149 $^1/_2$)	4316 (170)	5220 (205 $^5/_8$)	6065 (238 $^7/_8$)	6627 (261)	7979 (314 $^1/_8$)	9435 (371 $^1/_2$)
Spacer								
(Red – L)	3	3.5	4.5	5.5	6	6	–7.5	–7.5
(Red – C)	–9	–9	–8.5	–8	–8	–8	6.5	6.5
(Green – L)	–6	–6.5	–6.5	–7	–7	–7	–7	–7
(Green – C)	6	6.5	6.5	7	7	7	7	7
(Blue – L)	–3	–3.5	–4.5	–5.5	–6	–6	7.5	7.5
(Blue – C)	9	9	8.5	8	8	8	–6.5	–6.5

Necessary parts modifications

Changing the polarity on the L and ED board.

For details, see "Changing the Polarity" on page 22 (E).
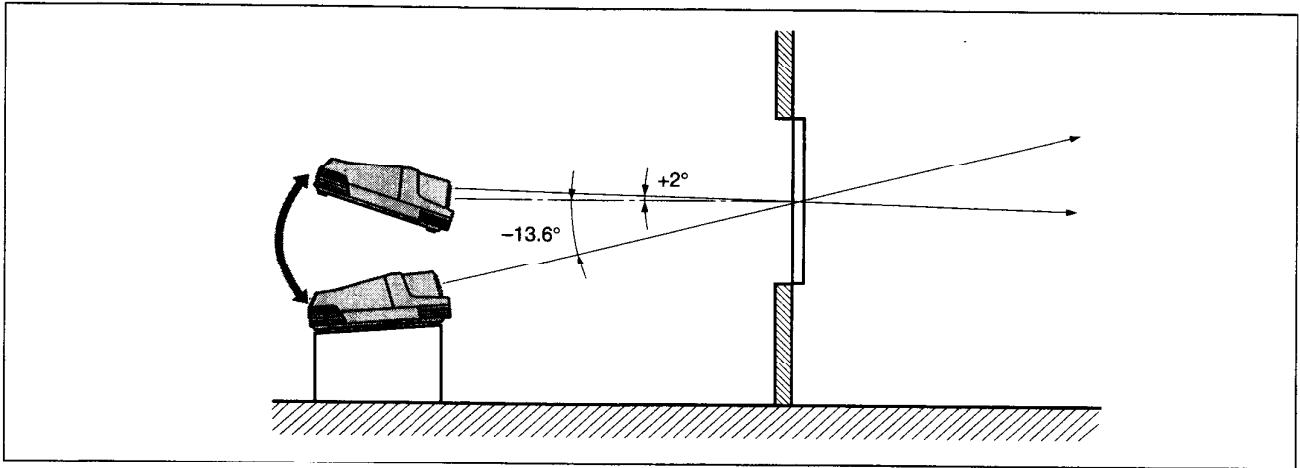
Installation Diagrams

Variable Range of the Optical Axis Angle in Rear Projection

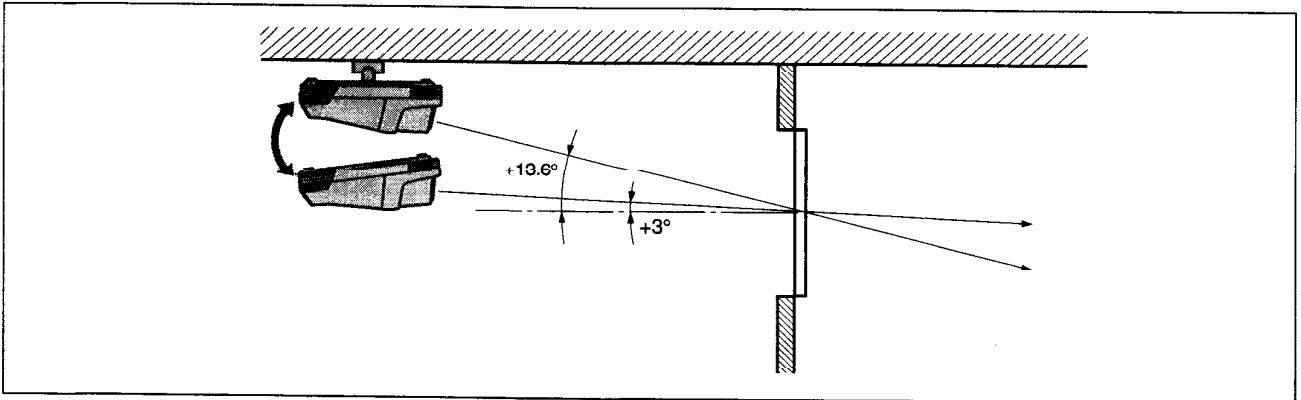You can adjust the optical axis angle by using the ring spacers.

On floor installation
You can install the projector within an angle of optical axis +2° to –13.6°.

On ceiling installation
You can install the projector within an angle of optical axis +3° to +13.6°.

Screen Size

The screen size is the diagonal length of the screen in inches, while the aspect ratio of the screen is 4:3. The ratio of the screen height, width, and diagonal is 3:4:5. If you use a screen whose size is not given in the table below, you can calculate the screen height and width from the screen size (inches) as follows.

Height (mm) = Screen size × 25.4 × $^3/_5$
Width (mm) = Screen size × 25.4 × $^4/_5$

Screen size and dimensions

Screen size (inches) (Diagonal)	Height (mm)	Width (mm)
100	1524	2032
120	1829	2438
150	2286	3048
180	2743	3058
200	3048	4064
250	3810	5080
300	4572	6096

Screens with an Aspect Ratio Other Than 4:3

When the height is greater

Calculate the approximate screen size from the screen height as shown below. Install the projector and screen in accordance with the screen size obtained.

--- : Screen whose aspect ratio is 4:3
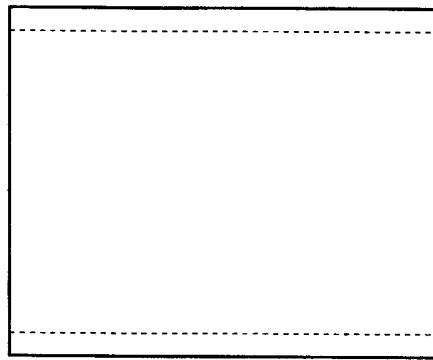
Screen size (inch) = (height (mm) × $^5/_3$) × $^1/_{25.4}$
Example: When the screen height is 1500 mm
(1500 (mm) × $^5/_3$) × $^1/_{25.4}$ = 98 inches

When the width is greater

Calculate the approximate screen size from the screen width as shown below. Install the projector and screen in accordance with the screen size obtained.

---: Screen whose aspect ratio is 4:3
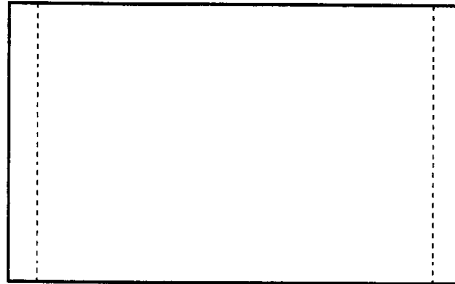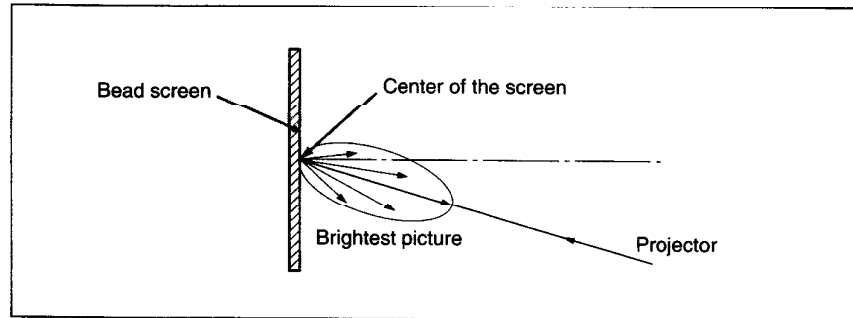
Screen size (inch) = (height (mm) × $^5/4$) × $^1/25.4$
Example: When the screen height is 2000 mm
(2000 (mm) × $^5/4$) × $^1/25.4$ = 98 inches

Types of Screen

## Front projection screen for floor installation

The bead screen is recommended. A screen of this type reflects the brightest light.

Bead screen   Center of the screen

Brightest picture   Projector

Front projection screen for ceiling installation

The silver screen is recommended. You can get a picture that is two to four times brighter.

Silver screen   Projector

Center of the screen   Brightest picture
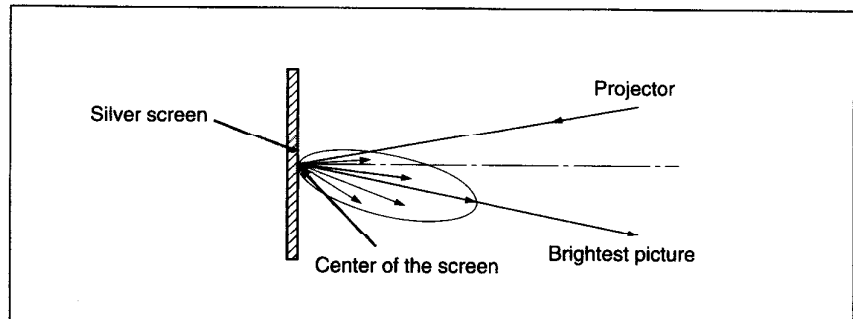
Rear projection screen

A screen manufactured using two sheets, the fresnel and lenticular, is recommended for a bright and clear full-screen picture projection.
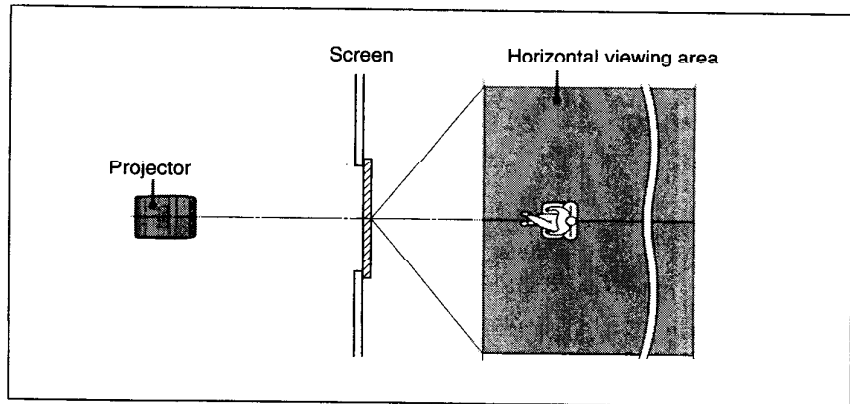
White screen

When viewers watch the projected picture in a wide area, you can obtain a picture that appears equally bright from all parts of the room using the white screen for both floor and ceiling installations. Note that you will not be able to get a clear picture in this case unless the room is dark.
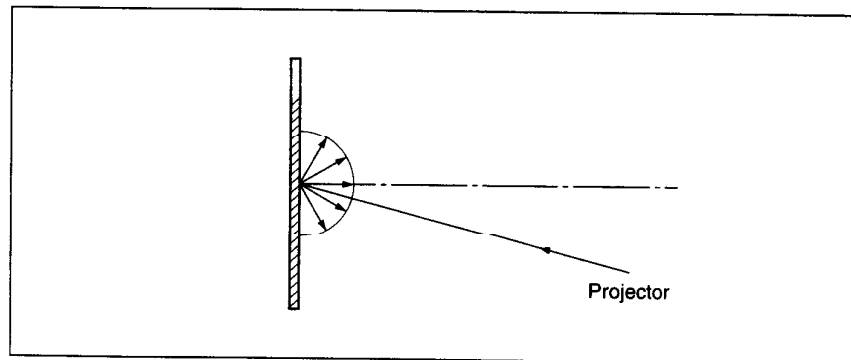
Modifying Parts

Removing the Front Cover

1 Turn off the main power.

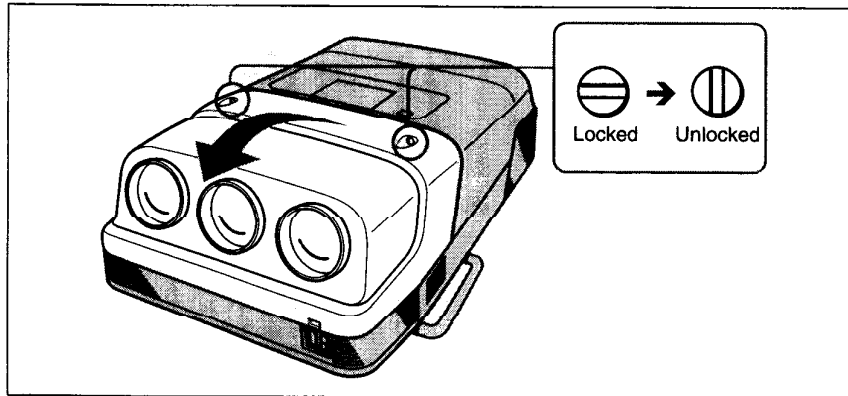**2** Unlock the two screws on the projector by using a screwdriver or a coin edge, and then remove the front cover.

Locked   Unlocked

Changing the Ring Spacers
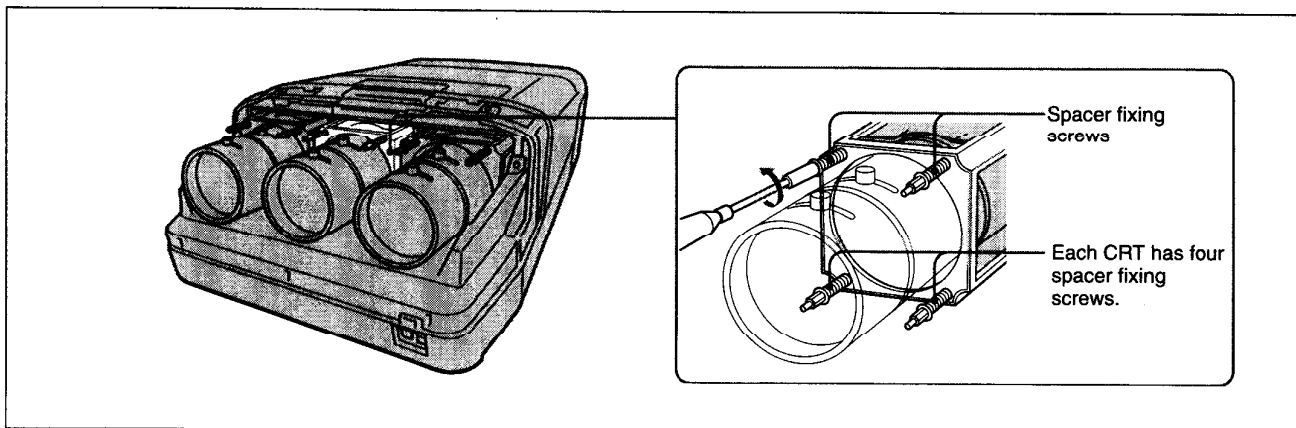
Adjust the ring spacers in accordance with the screen size and optical axis angle.
For the value of the appropriate ring spacers, see the table on pages 102 (E) to 113 (E).

To adjust the ring spacers, follow the procedure below.

1 Remove the front cover.

2 Loosen the spacer fixing screws of the green CRT.

Spacer fixing screws

Each CRT has four spacer fixing screws.

3 Rotate the ring spacer C of the green CRT until the appropriate value is set to pointer.

Marker

Ring spacer L
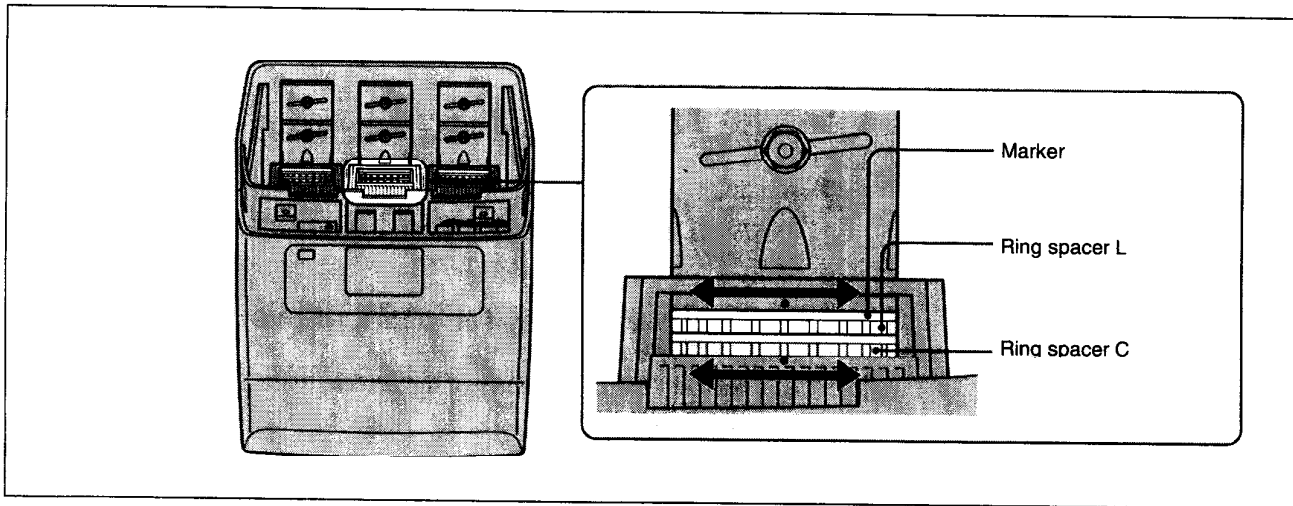
Ring spacer C

4 Rotate the ring spacer L of the green CRT until the appropriate value is in the marker.

5 Push in and tighten the spacer fixing screws.

6 Repeat steps **2** to **5**, until you adjust the ring spacer C and L for the red and blue CRTs.

7 Replace the front cover.

Adjusting the CRT Conversion Angle

Adjust the CRT conversion angle so that the three CRT images converge exactly. This adjustment is for the red and blue CRTs.

1 Remove the front cover.
For details, see "Removing the Front Cover" on page 18 (E).
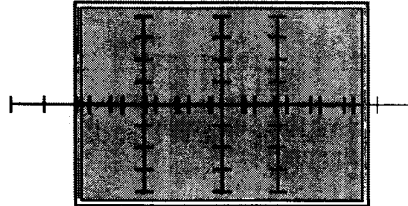
2 Reset the green centering.
For details, see "Resetting the Standard Data to the Factory Preset Levels" on page 89 (E).

3 Make sure that the center of the green hatch pattern aligns with the center of the screen.
If it does not align the center of the screen, there may be some problem with the installation.

4 Make sure that the centers of the red and blue hatch patterns align at even intervals from the green hatch pattern.
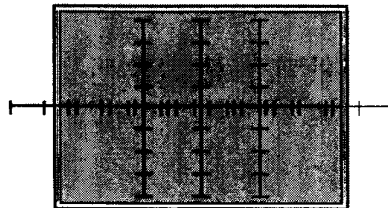
5 Loosen the red CRT fixing screws.

6 Insert the screwdriver into one of the adjustment holes, according to the screen size.

For screens less than 90 inches.

Loosen the red CRT fixing screws.

For screens more than 220 inches.

For screens from 90 inches to 220 inches.
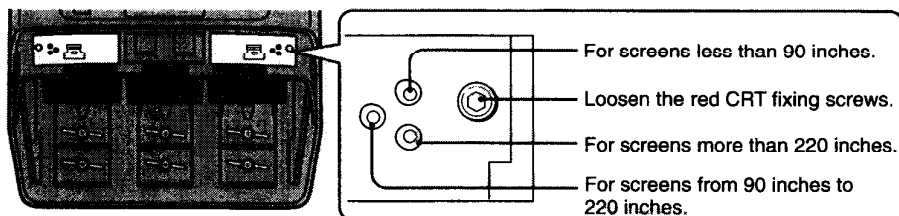
When using the screens larger than 220 inches, adjust the centering by ZONE adjustment after adjusting with the adjustment hole for more than 220 inches.

7 Turn the screwdriver until the vertical line of the red cross-hatch pattern converges with the green pattern.

8 Tighten the CRT fixing screws.

9 Repeat steps **6** to **9** for the blue CRT.

Modifying Parts

Changing the Polarity

By default, this projector is preset for use in front projection when installed on the floor/desk. When the projector is installed on the ceiling or used in rear projection, you have to change the polarity of CRT corresponding to the installation methods.
For details, see the table on next page.

Change the polarity to obtain the correct picture.

[A] The letters are backward.
Change the connectors on the ED board.
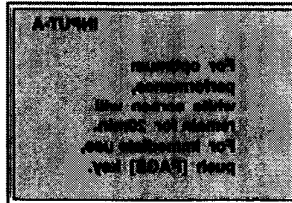
[B] The letters are upside down.
Change the switch position on the L board.
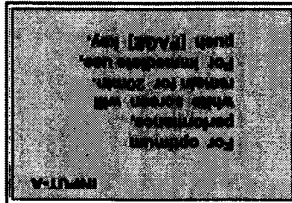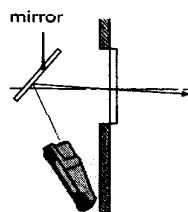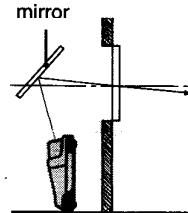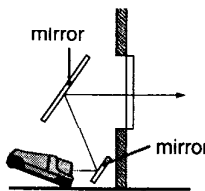
[C] The letters are upside down and backward.
Change the switch position on the L board and the connectors on the ED board.
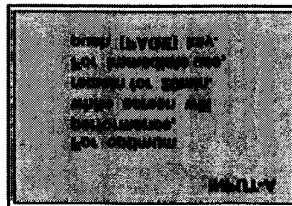
Change polarity according to the installation method, described below.

Installation methods	Change on L board	Change on ED board	On-screen display (See page 22 (E))
Front projection, ceiling	Y	Y	C
Rear projection, floor	N	Y	A
Rear projection, ceiling	Y	N	B
Rear projection using mirrors			
①Using a mirror	N	N	Correct picture

②Using a mirror	Y	Y	C

③Using two mirrors	N	Y	A

Others	Display letters on the screen so that you can determine which changes to make.

Y: Necessary
N: Not necessary

Modifying Parts

How to change the polarity

1 Turn off the power.

2 Remove the front cover.
For details, see "Removing the Front Cover" on page 18 (E).

3 Change switches or connectors.
L board: Set to the desired position.
      NOR: Normal picture
      INV: Invert the picture vertically.
ED board: Reinsert the connectors after turning them over (180°).
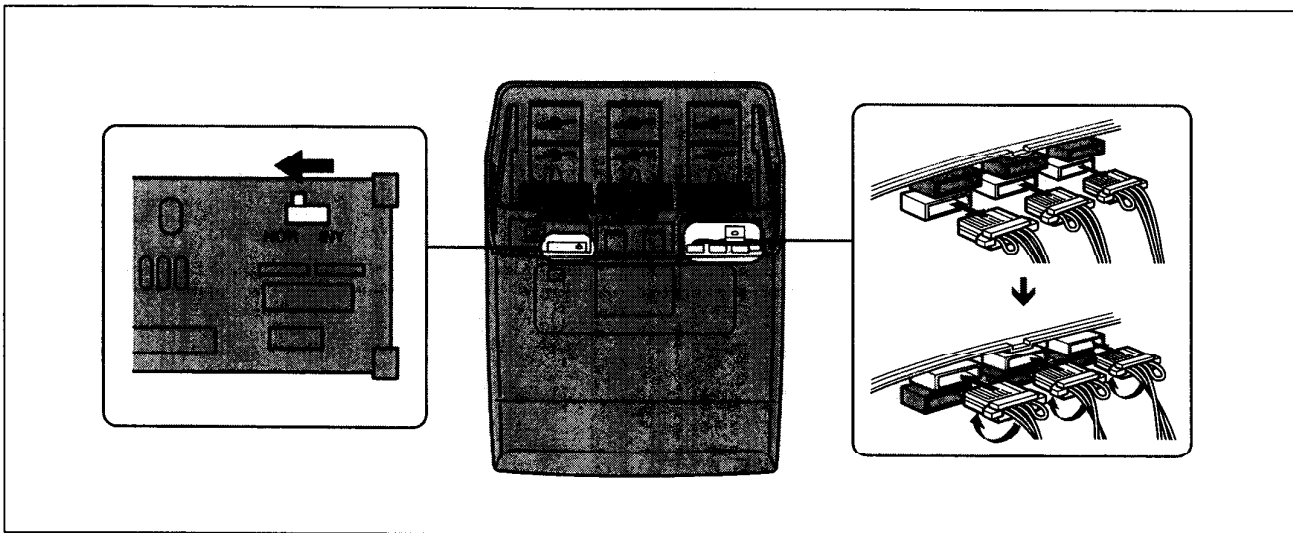
4 Make sure to insert the connectors firmly, then restore the front cover.

Note
After changing the polarity, the center of the picture may be off from the center of
the screen. In this case, adjust the registration and centering for the screen.

When using a composite or Y/C input video signal, you can get high quality picture contrast by switching the DYNAMIC PIC SW on the BA board. (This switch is set to OFF at the factory).

1 Remove the front cover.
For details, see "Removing the Front Cover" on page 18 (E).

2 Remove the hood.

① Loose the fixing screws.
② Pull up the hood and slide it backward.

①

To open the cover, push the part marked "PUSH" and slide the cover.

Loose the fixing screws.

Note
To close the cover, slide it backward into position.

② Pull up the hood and slide it backward.
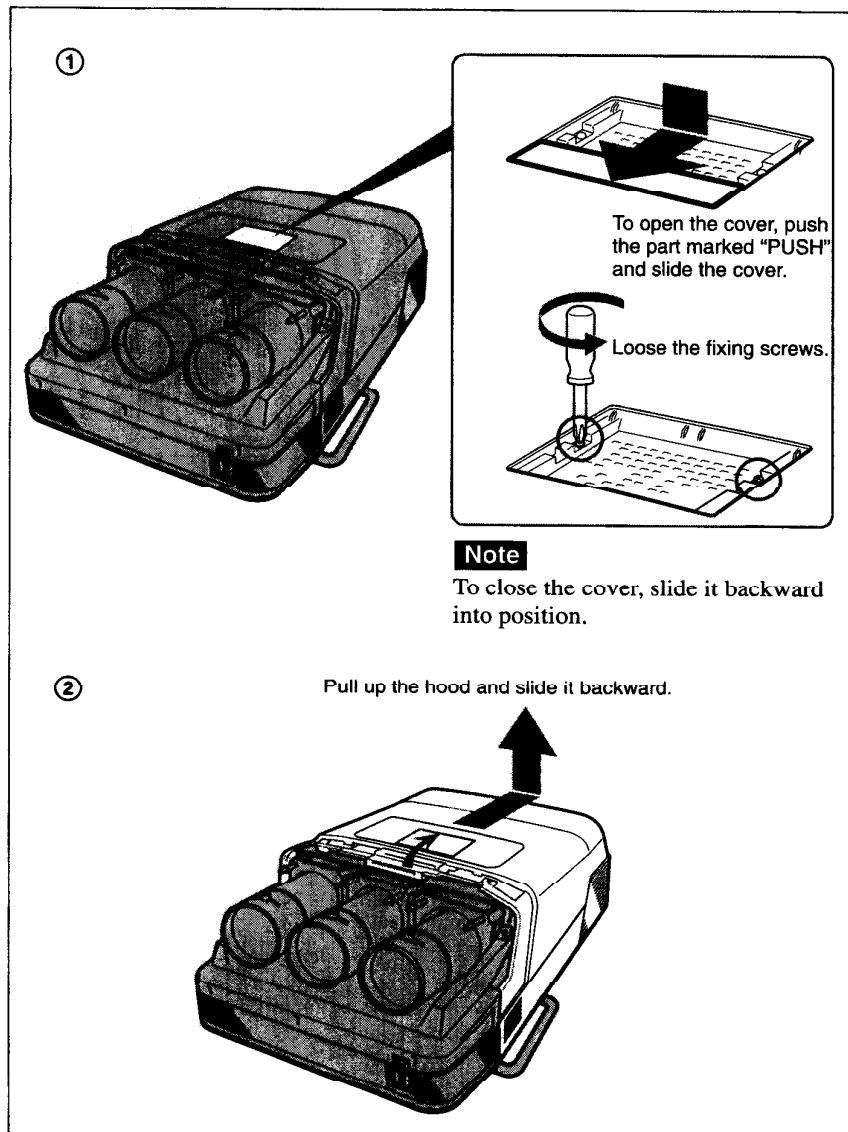
3 Loosen the three screws on the upper part of the connector panel, and then remove the frame.
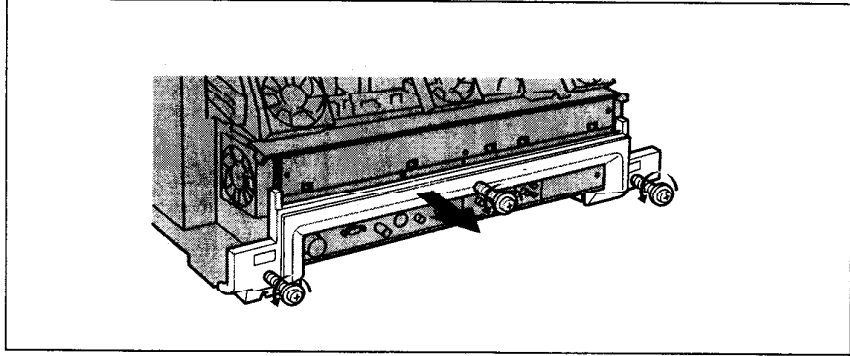
4 Remove the two screws on the upper cover of the connector panel, and remove the cover.
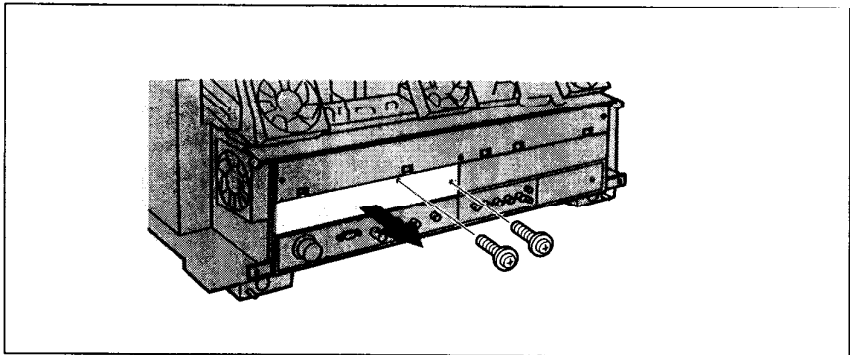
5 Pull the BA board out toward you and set the SW 1: DYNAMIC PIC SW on the board to ON.

SW1: DYNAMIC PIC SW

ON
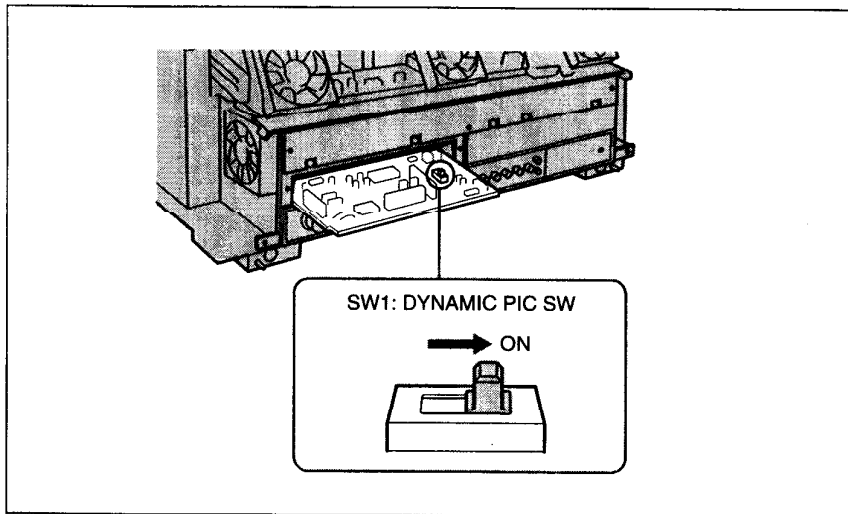
6 Replace the parts following steps **1** to **4** in reverse.

Location and Function of Connectors
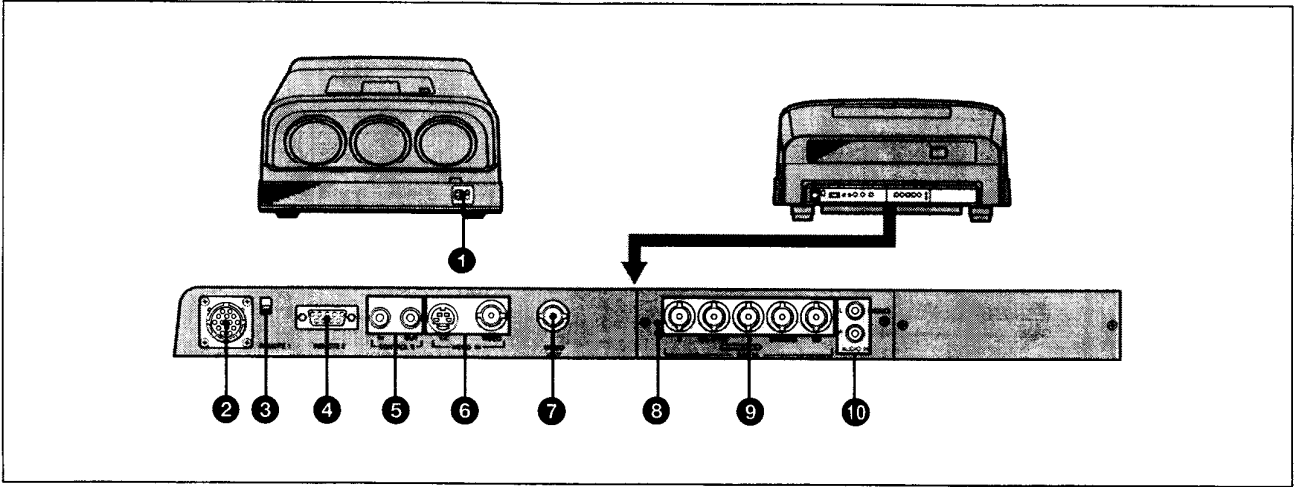
❶ AC IN socket
Connect the supplied AC power cord here. This socket accepts 120V AC power (for the VPH-1292Q) or 220 to 240V AC (for the VPH-1292QM).

❷ REMOTE 1 connector (14-pin, male)
Connects to the REMOTE 1 connector of the optional PC-1271/1271M Signal Interface Switcher.

❸ 5 BNC switch
Normally, set to the NORMAL.
If you wish to project a high resolution picture using the PC-1271/1271M Signal Interface Switcher, set to the 5BNC position.
For details, see "When Projecting the High Resolution Pictures" on page 34 (E).

❹ REMOTE 2 connector (9-pin, female)
Connects to the RS-422 interface for communication with a computer.

❺ CONTROL S IN/OUT jacks (phono type)
Connects to the CONTROL S connector of other Sony equipment. You can control the whole system with a single remote control.
CONTROL S IN: Connects to CONTROL S OUT jack of the supplied remote control to be used as a wired remote control.
Note
When using this connector, the remote control detector on the projector does not function.

❻ VIDEO IN connectors
Y/C (4-pin, mini-DIN type): Connects to the Y/C video output (S VIDEO OUT) of a VCR.
VIDEO (BNC type): Connects to the composite video output of the video equipment.
Note
The VIDEO connector is disconnected automatically when a cable is connected to the Y/C connecter.

❼ VIDEO OUT connector (BNC type)
Connects to the video input of a color monitor.
This output signal is the loop-through output from the input signal to the VIDEO IN connectors.

❽ Indicator
Lights when INPUT A mode is selected.

❾ RGB IN connectors (BNC type)
R, G/G SYNC, B, SYNC/HD, VD connectors:
Connects to the RGB outputs of a computer or a video camera.

❿ AUDIO IN L/R jacks (phono type)
Not used.

You can expand the system connections by installing the optional interface board on INPUT A or B section, or in combination shown in the examples below.

When a color monitor is not connected to the computer
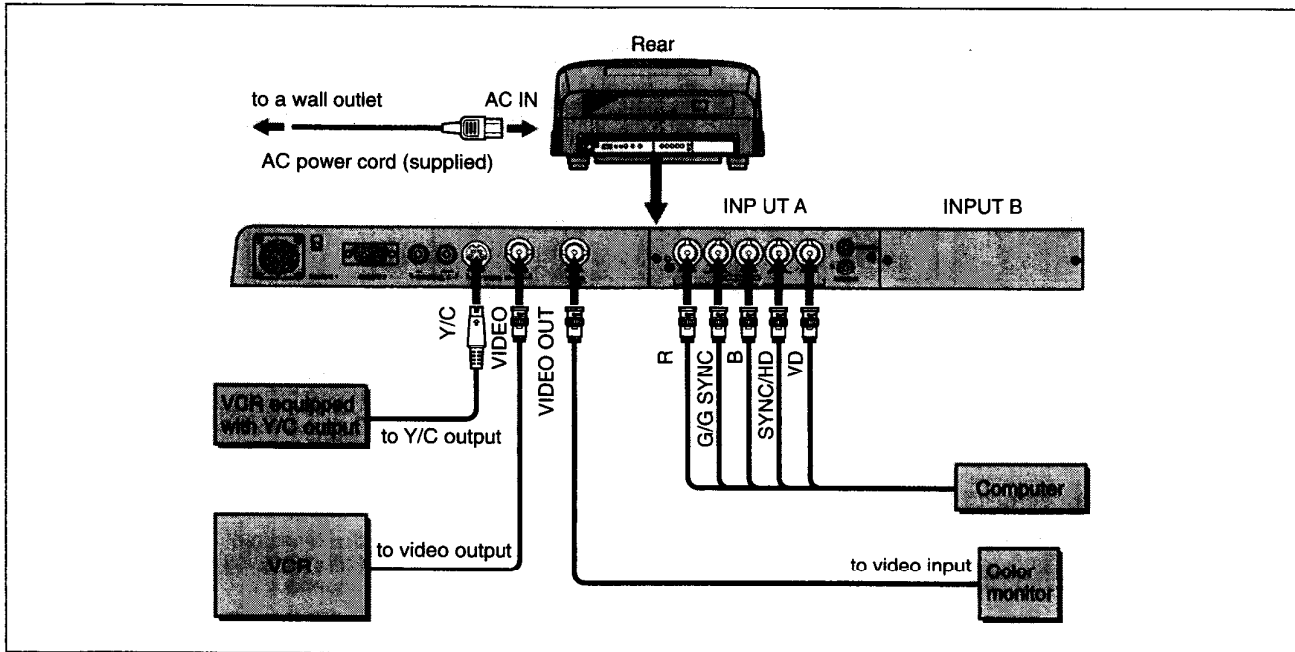
Notes
- The VIDEO connector is disconnected automatically when a cable is connected to the Y/C connector.
- The external sync signal has priority over the internal sync signal. However, when the external sync signal is not stable, the internal sync signal has priority.

When a color monitor is connected to the computer

Use the IFU-1271/1271M Signal Interface Unit.

Rear

to a wall outlet   AC IN

AC power cord (supplied)

INPUT A   INPUT B

Y/C

VIDEO

VIDEO OUT

R

G/G SYNC

B

SYNC/HD

VD

to Y/C output

to video output

to video input

to RGB OUT

to RGB OUT

to RGB input

to RGB IN (IFB-11)

to RGB output
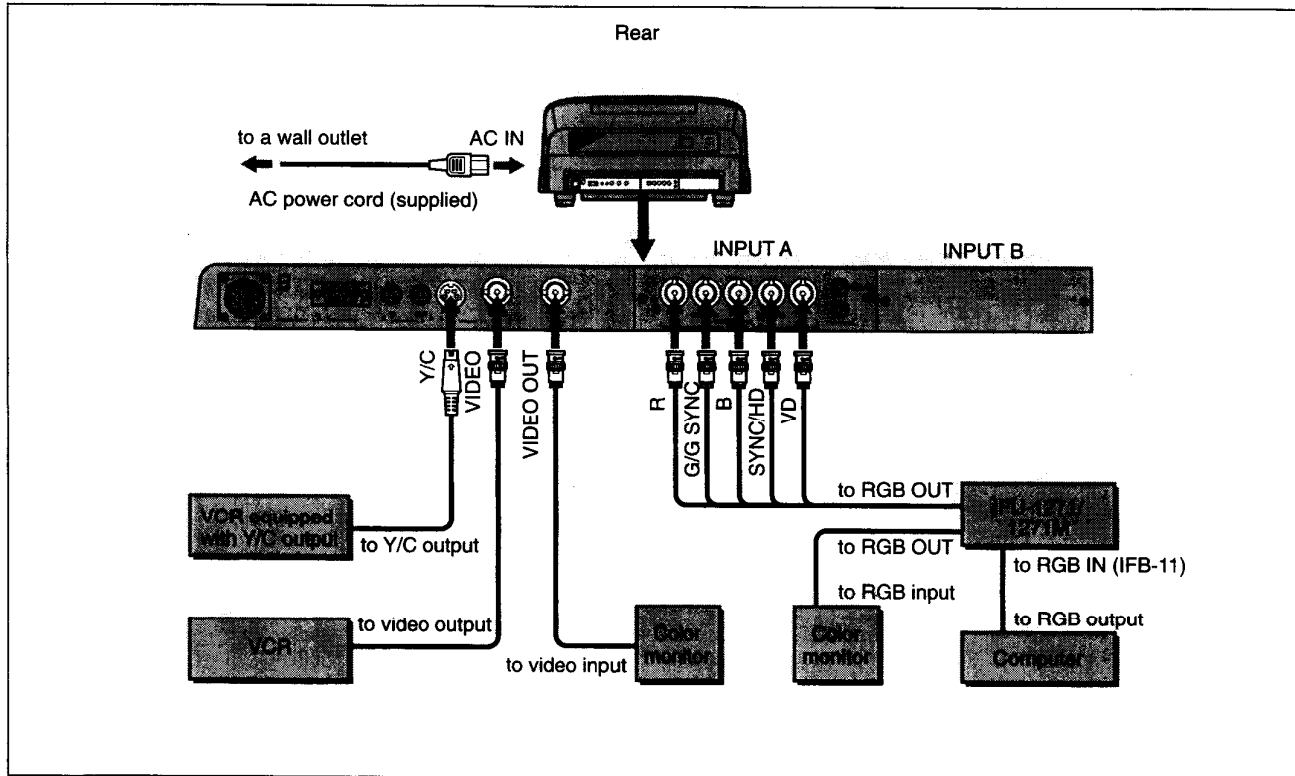
Connecting Directly to the Projector

When a computer is connected to the projector using the SIC-series connecting cable

Install the optional interface board to the INPUT A or INPUT B section.
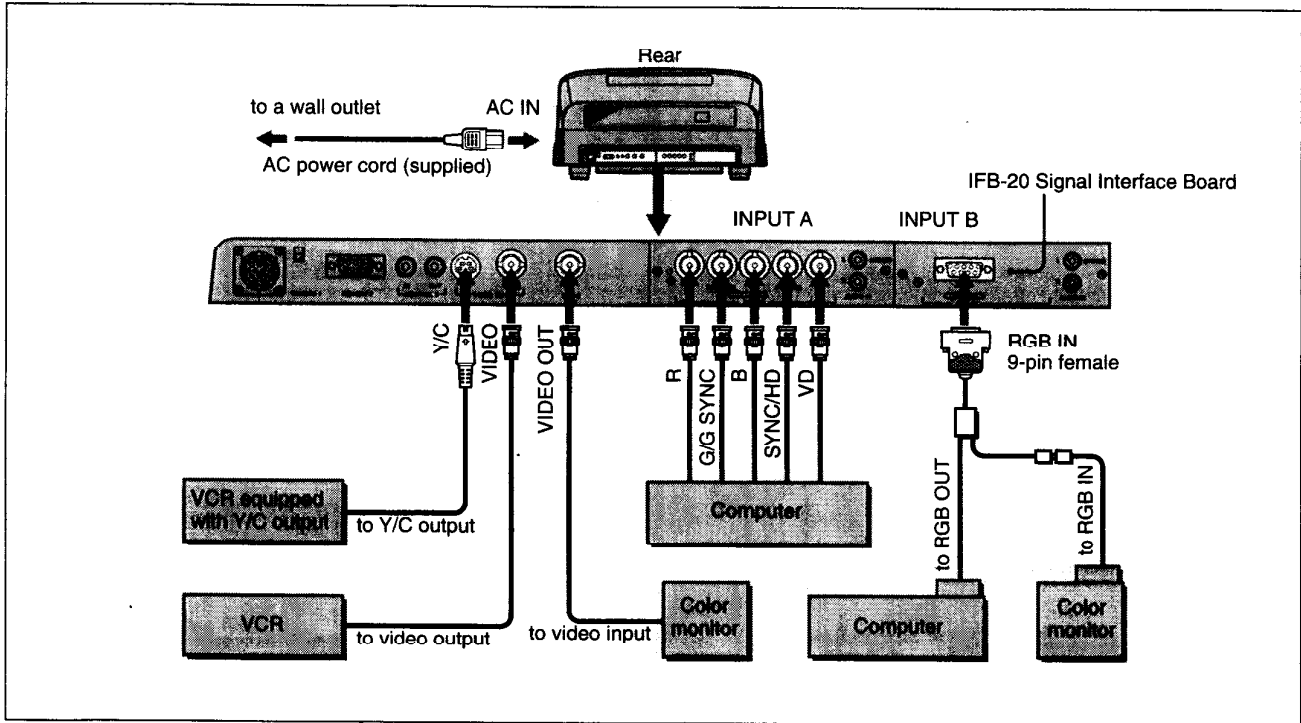
Note

Use the standard SIC cable. Be sure not to extend the length of the cable. Otherwise, the picture may be distorted.

Installing the optional interface board

1 Loosen the two screws on the INPUT A or INPUT B panel and pull out the board toward you. (The screws are retained in the hole, to prevent them from getting lost.)

2 Insert the optional interface board and tighten the screws.

Connecting When the Projector Is Away From Other Equipment

Use the IFU-1271/1271M Signal Interface Unit or the PC-1271/1271M Signal Interface Switcher (not supplied).

Connecting a computer using the BNC cable
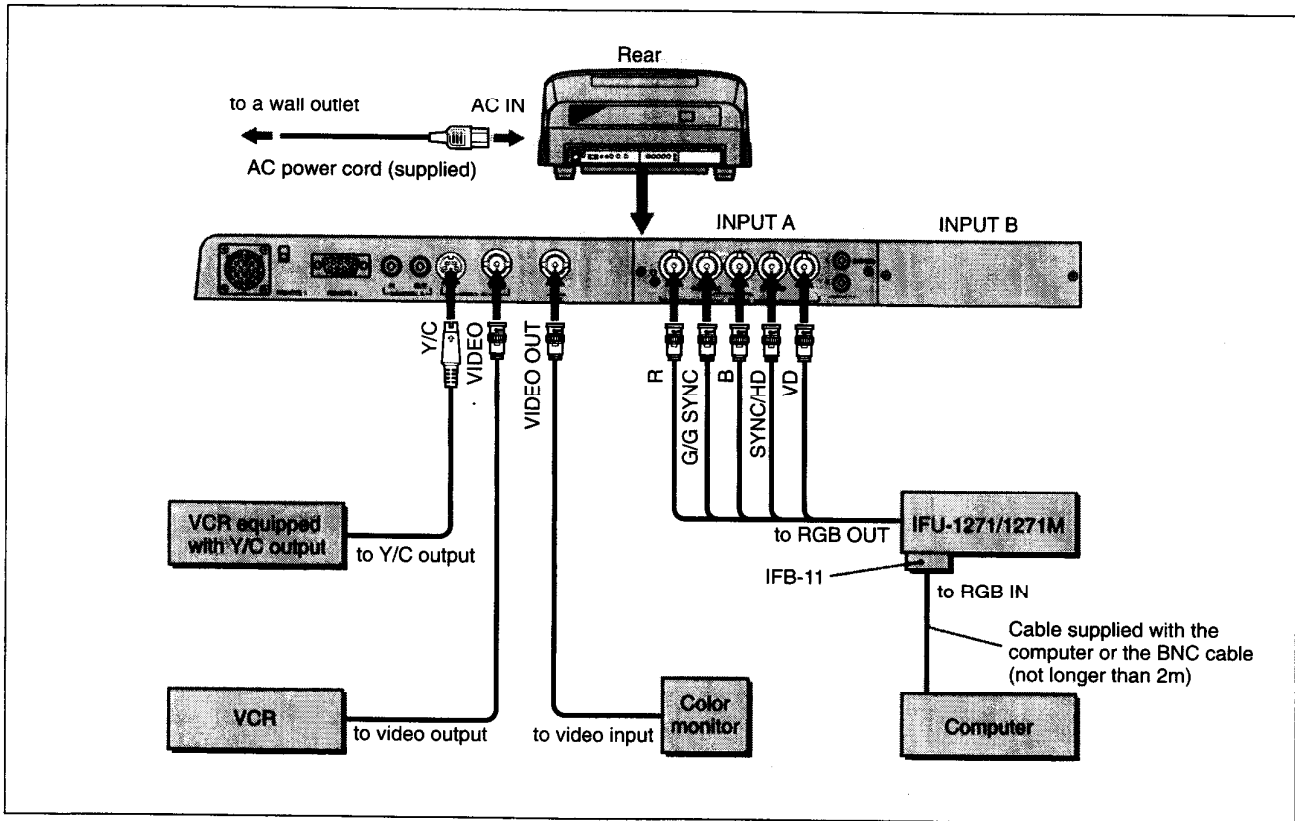
Note

When using a color monitor, connect the RGB input on the monitor to the RGB OUT connectors on the IFU-1271/1271M Signal Interface Unit.

Connecting the computer using the SIC-series connecting cable
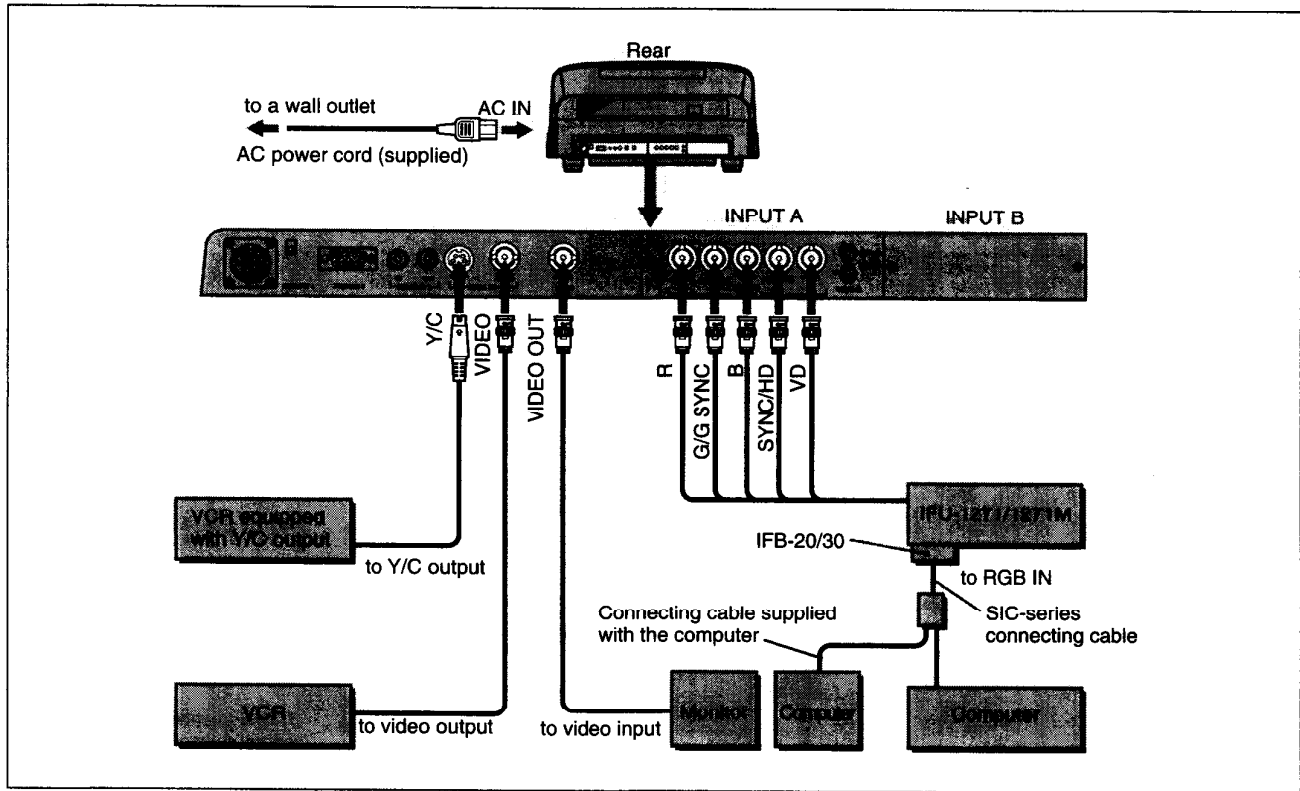
Note

To prevent the signal loss, be careful with the length and thickness of the cable when projecting the high resolution picture.

Connecting More Than Four Input Sources

When you use the PC-1271/1271M Signal Interface Switcher (not supplied), you can connect easily more than four input sources. Connect the projector to the PC-1271/1271M using the CCQ-BRS or SIC-M connecting cable.

You can select up to 16 inputs by pressing the SWITCHER/INDEX keys on the remote control or the SWITCHER keys on the control panel of the projector.
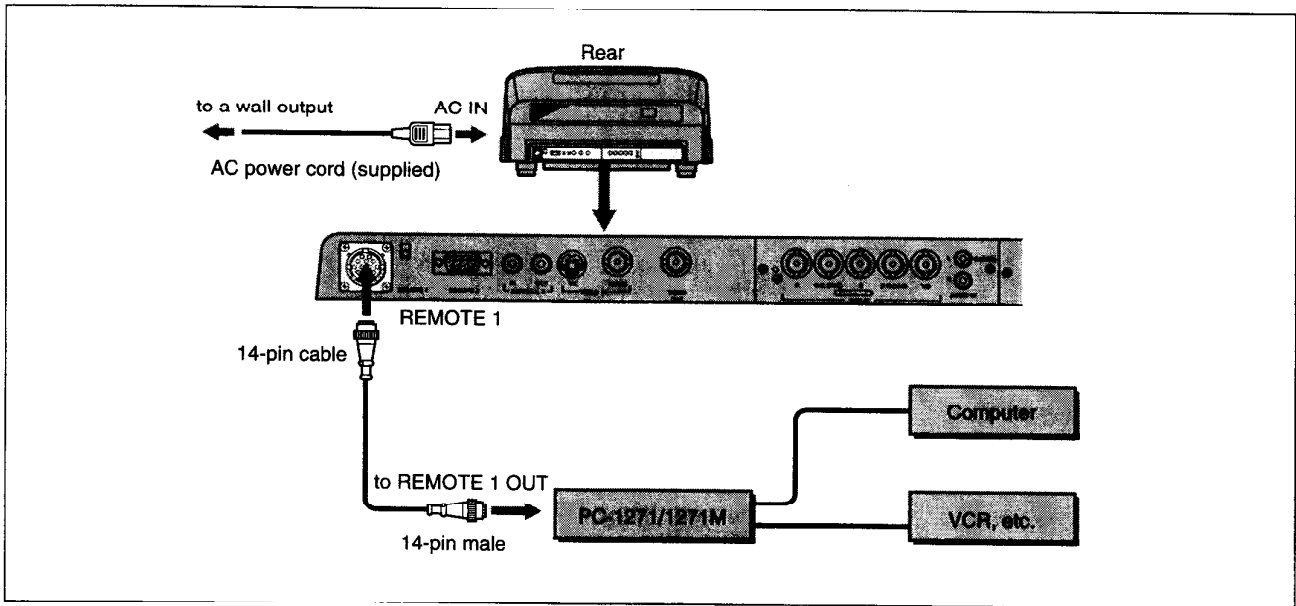
Choose the appropriate cable from the following table.

1 m	2 m	5 m	10 m	15 m	25 m	50 m
–	CCQ-2BRS	CCQ-5BRS	CCQ-10BRS	–	CCQ-25BRS	CCQ-50BRS
SIC-M-1	–	SIC-M-5	–	SIC-M-15	SIC-M-25	SIC-M-50

Notes
- Insert the female and male plugs of the CCQ-BRS or SIC-M cable correctly.
- You can extend the CCQ-BRS or SIC-M cable up to 50 m.
- You can connect other equipment to the VIDEO IN and RGB IN connectors even when the switcher is connected.

Using the SWITCHER/INDEX (SWITCHER) keys

When using the remote control, set the SWITCHER/INDEX select switch to SWITCHER. Press a number key between 1 and 8 to select the input number of the switcher. When two switchers are connected, use the SECOND key. To control the second switcher (SINGLE/SECOND/OTHER switch on the switcher is set to SECOND), first press SECOND key and then a number key.

Connecting More Than Four Input Sources

When Projecting the High Resolution Pictures

When projecting the video signal which is above 70 MHz or projecting the high resolution pictures such as the computer graphics (CG), you should set the projector to the high resolution mode by switching the 5BNC switch.
To set the projector to the high resolution mode, set the 5BNC switch on the rear panel of the projector to 5BNC.

Note

Before this setting, turn off the power.

1 Set the 5BNC switch on the rear panel to 5BNC.
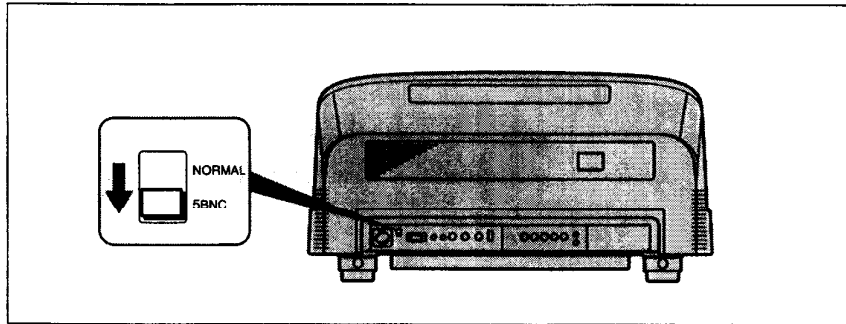
2 Connect the REMOTE 1 connectors of the projector and switcher with the CCQ-BRS or SIC-M cable.

3 Connect the RGB IN connectors of the projector and the MONITOR OUT connectors of the switcher with five BNC cables.
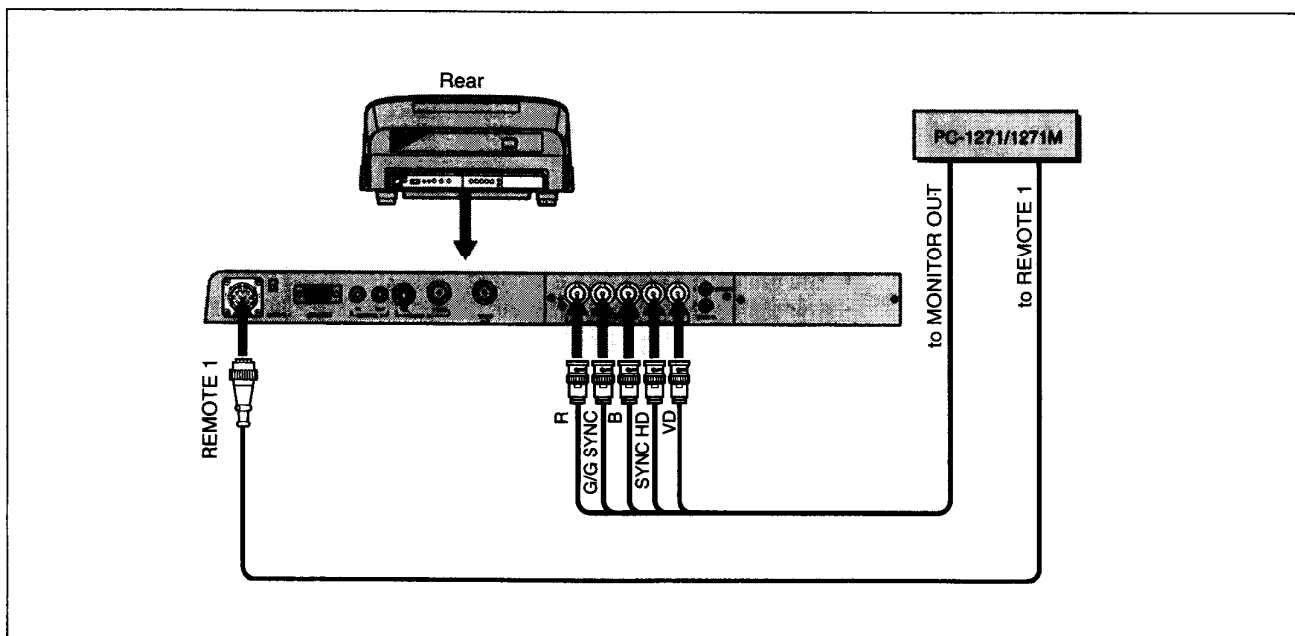
Adjustment Procedures

Before Starting Adjustment

Before adjusting the registration, make sure to turn on the projector and allow it to warm up for 20 minutes.

The projector is designed with a warm-up period of about 20 minutes after turning on the power. During this period, it displays a white screen with the message shown below. 35 seconds after the warming up starts, the message will disappear temporarily and will appear subsequently for 5 seconds every 30 seconds.
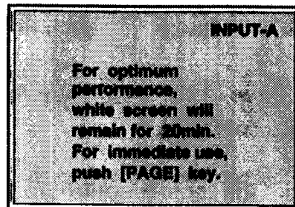
Press the PAGE key to cancel the warming up, if you wish to see the picture immediately.

You may also set the projector for a shorter or no warming up period.
For details, see "Changing the Initialization Period" on page 93 (E).

Perform each adjustment with the supplied remote control before connecting to the external equipment. After the adjustment, save the data. Next, adjust for each input signal precisely.

Follow the procedure below.

①Prepare the remote control. *(page 36 (E))*
↓
②Adjust roughly without input signal. *(page 49 (E))*
↓
③Save the adjustment data as the standard data. *(page 77 (E))*
↓
④Adjust fine for each input signal. *(page 80 (E))*
↓
⑤Activate the memory protection of the remote control. *(page 91 (E))*
↓
⑥Adjust the picture. *(page 92 (E))*

All adjustments, except focusing the lens, can be made with the supplied remote control.

Normally, the adjustment keys on the remote control are inoperable to prevent accidental adjustments. Cancel the protection before adjusting. Since the remote control uses infrared, you can use it without a wire. However, in order to correctly control the projector, you should connect the remote control to the projector with the supplied remote control cable.

Preparation

1 Insert three of the supplied AA size batteries (R6) with the polarities lined up correctly.

2 Connect the remote control to the projector.

3 Turn on the MAIN POWER switch on the projector, and then press the POWER ON key on the remote control.

4 Remove the panel cover of the adjustment keys.

Open with a coin or a similar.
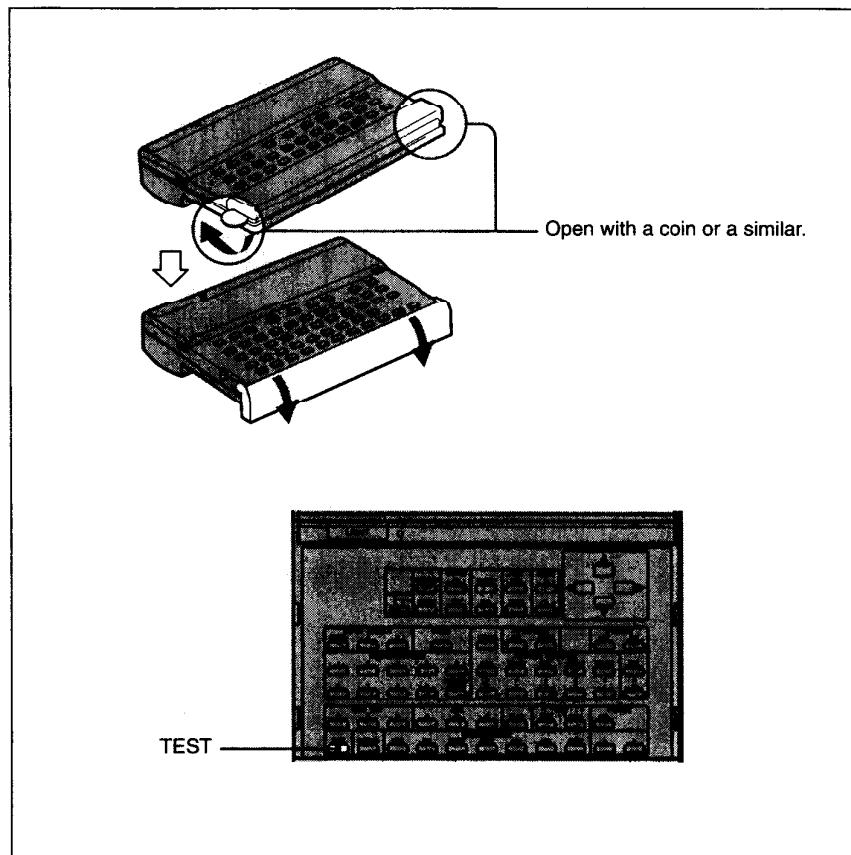
TEST

Adjustments

5 Hold down the TEST key for 5 seconds.

The following display appears.
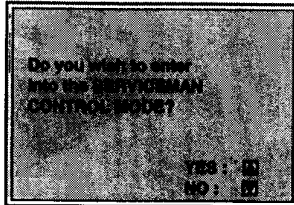
6 Press the ▲ key.

The protection on the adjustment keys is removed and the keys are enabled.
After the adjustment, reactivate the protection.
For details, see "Protecting the Setting" on page 91 (E).

Notes for wireless remote control operation

- Be sure that there are no obstructions between the remote control and the projector.
- Operating range is limited. The shorter the distance between the remote control and the projector, the wider the angle in which the remote control can control the projector.

Battery installation

1 Push to open the lid.
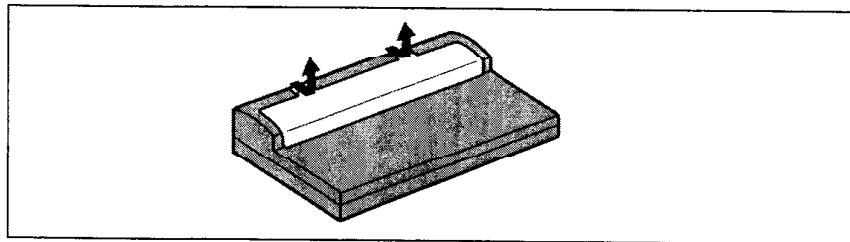
2 Install three AA (R6) batteries with the correct polarity.
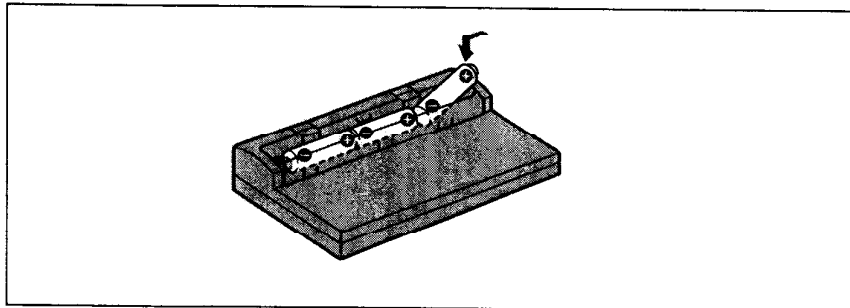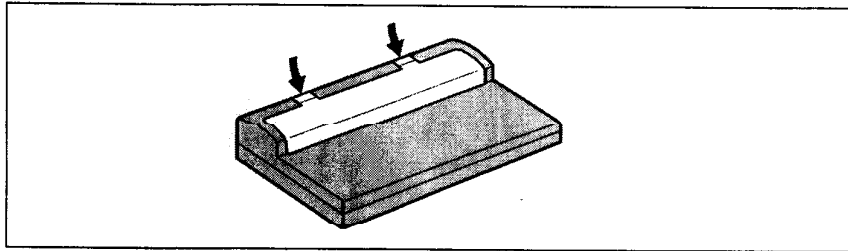
3 Replace the lid.

Notes on batteries

• If the projector does not operate properly, the batteries might be worn out. Replace all three of them with new ones.
• The life of the batteries depends on frequency of usage and how often you use the LIGHT button. If they are worn out quickly, replace them with new alkaline batteries.
• To avoid damage from possible battery leakage, remove the batteries when the remote control will not be used for a long time.

Connecting the remote control to the projector

Rear of the projector

CONTROL S IN

CONTROL S OUT

Remote control cable (supplied)
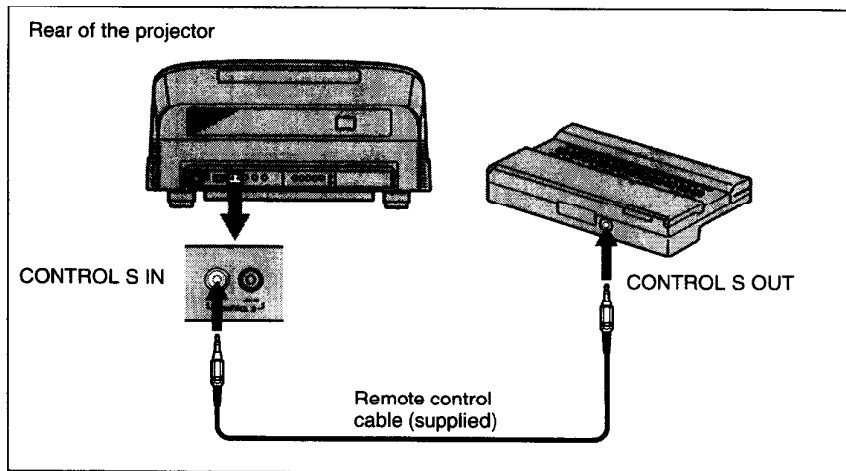
Note

When you connect the remote control to the projector as mentioned above, the remote control detector of the projector does not function. For wireless operation, be sure to disconnect both plugs from the projector and the remote control.

Keys on the Remote Control
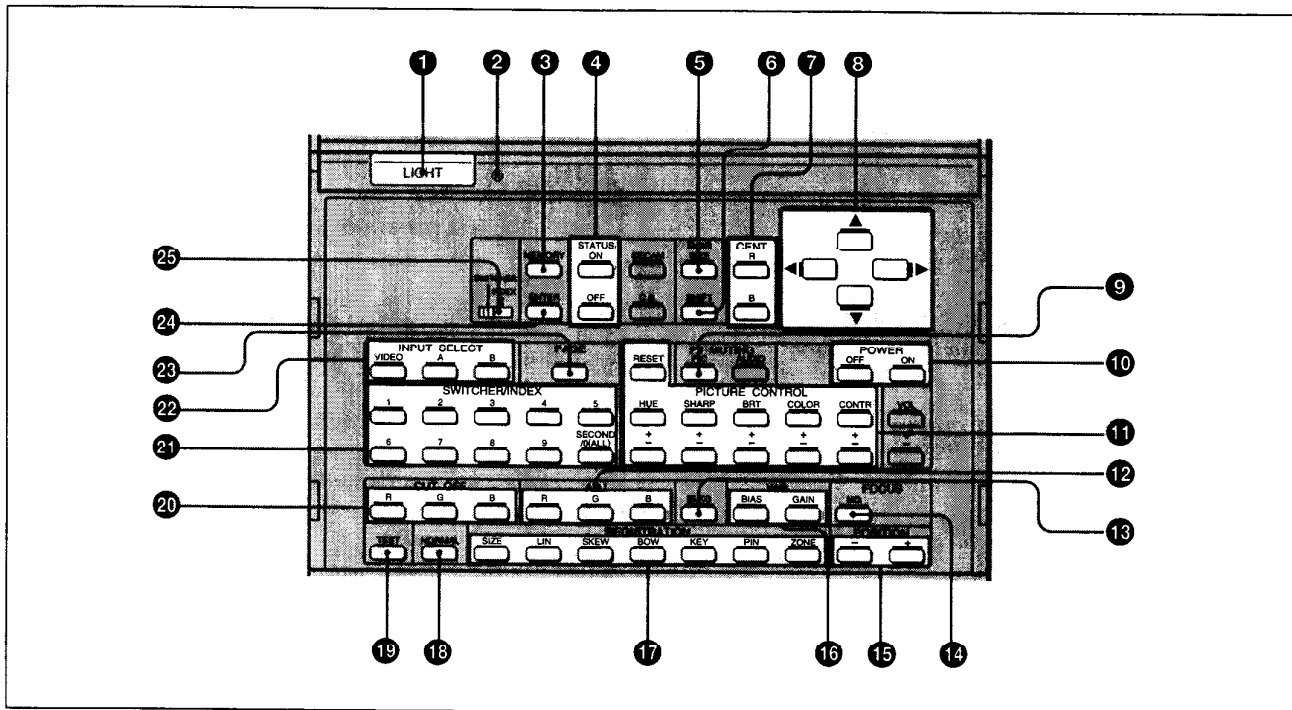
❶ LIGHT button

Illuminates the key indicators on the remote control. If you do not use the keys for approximately 30 seconds, the light automatically goes out.

❷ Transmission indicator

Lights each time you press a key.

❸ MEMORY key

Stores various adjustment data into memory.

❹ STATUS ON/OFF key

ON: Restores the on-screen display.
OFF: Removes the on-screen display.

Note

The PAGE display appears even when you press the OFF key.

❺ RGB SIZE key

Adjusts the size of the picture for the video and RGB signal inputs.
To adjust the size, press this key. You can adjust the size of the picture with the four arrow keys. After adjustment, save the data by pressing the MEMORY key.

◀: Reduces the horizontal size.
▶: Expands the horizontal size.
▲: Expands the vertical size.
▼: Reduces the vertical size.

6 RGB SHIFT key

Adjusts the shift of the picture for the RGB signal input.
To adjust the shift, press this key. You can adjust the shift of the picture with the four arrow keys. The picture shifts according to the direction of the arrow. After adjustment, save the data by pressing the MEMORY key.

Note

This key does not function with the composite or Y/C video signal input.

7 CENT R/B keys

Adjust the centering of the red and blue.
You can adjust the centering with the four arrow keys.
CENT R: Enters the red centering adjustment mode.
CENT B: Enters the blue centering adjustment mode.

8 Arrow keys

Used for various adjustment functions.

9 PJ MUTING PIC key

Cuts off the picture. To restore the picture, press the key again or the CONTR + key.

10 POWER ON/OFF keys

Turn the projector on and off.

11 PICTURE CONTROL keys

Adjust picture condition. hue, sharpness, brightness, color, and contrast. To restore the standard levels, press the RESET key.

12 ADJ R/G/B (adjust red/green/blue) keys

Select color to be adjusted when adjusting the registration.

13 BLKG (blanking) key

Enters the blanking adjustment mode.
You can adjust the blanking with the four arrow keys.
For details, see "Adjusting the Blanking" on page 76 (E).

14 FOCUS MG key

Enters each of the magnetic focus, AQP and DQP adjustment mode.
For details, see "Adjusting the Focus" on page 48 (E).

15 POSITION +/– keys

Used for adjusting zone and blanking.
For details, see "Releasing the Blanking" on page 59 (E) and "Adjusting the Blanking" on page 76 (E).

16 W/B (white balance) keys

Enter the white balance adjustment mode.
BIAS: Adjusts cut off.
GAIN: Adjusts drive.

17 REGISTRATION keys SIZE/LIN/SKEW/BOW/KEY/PIN/ZONE

Select the desired item for adjusting registration. You cannot adjust the registration with the four arrow keys, ADJ keys and POSITION +/– keys.
For details, see "Adjusting the Registration" on page 56 (E).

18 NORMAL key

Cancels the test pattern or serviceman control mode.

19 TEST key

Displays the internal test patterns.
Each time you press this key. 8 test patterns appear sequentially on the screen. When adjusting registration and white balance, appropriate patterns will appear for each adjustment.
For details, see "Test Patterns" on page 46 (E).

20 CUT OFF keys

Select the color to be turned off when adjusting the registration. Press again to turn on the color.
R: Red signal
G: Green signal
B: Blue signal

21 SWITCHER/INDEX keys
When the SWITCHER/INDEX select switch is set to SWITCHER

Designate the input from switcher when the PC-1271/1271M Signal Interface Switcher is connected. The SECOND key is used when two switchers are connected.
To select the input from the second switcher (when the SINGLE/SECOND/OTHER switch on the switcher is set to SECOND), press a number key between 1 and 8 after pressing the SECOND key.
When the SWITCHER/INDEX select switch is set to INDEX

These keys function when the optional IFB-101 Interface Board is installed and multiple projectors are connected.
For details, refer to the Operating Instructions of the IFB-101.

@ INPUT SELECT keys

Select the input signal.
VIDEO: The signal input from the VIDEO IN (Y/C or VIDEO) connectors
A: The signal input from the RGB IN connectors
B: The signal input from the connectors of B section (when the optional interface unit is installed)

@ PAGE key

Displays and switches between the following five on-screen displays. (You can adjust parameters only on PAGE 1, 2, 3, and 5.)
PAGE 1: Displays the status of STATUS ON/OFF and PIC MUTING ON/OFF.
PAGE 2: Displays the picture conditions parameters; contrast, color, brightness, sharpness and hue.
PAGE 3: Displays the color temperature, clamp setting and vertical shift range.
PAGE 4: Displays the input signal conditions; fH, fV, H/C-sync, V-sync, Sync on Green, input signal, and registration memory block assignment.
PAGE 5: Display the current use time of each cathode-ray tube (CRT) and the baud rate setting for communicating via the RS-422.
For details of these pages, see "PAGE Displays" on next page.

@ ENTER key

Functions when the optional IFB-101 Interface Board is attached and multiple projectors are connected.
For details, refer to the Operating Instructions of the IFB-101.

@ SWITCHER/INDEX select switch

Selects the SWITCHER/INDEX key function.
When using the switcher as the input selector, set to SWITCHER. When using the IFB-101 Interface Board and multiple projectors, set to INDEX.

PAGE Displays

Press the PAGE key to display the following five on-screen displays. You can adjust the parameters on PAGE 1, 2, 3 or 5.
The display changes in the following order every time you press the PAGE key:
PAGE 1 → PAGE 2 → PAGE 3 → PAGE 4 → PAGE 5
└──────────── Original screen ────────────┘
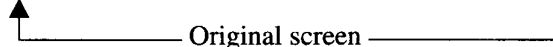
PAGE 1
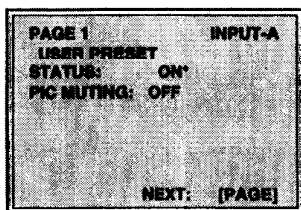
STATUS: ON/OFF
The setting is stored even when the power is turned off. If the on-screen display does not appear, check that STATUS ON is displayed.

PIC MUTING: ON/OFF
Whenever the power is turned on, PIC MUTING is set to OFF. If the picture does not appear, check that PIC MUTING is set to ON.

"---" indicates that the control does not function with the current input signal.
To change the settings, adjust with the appropriate keys.

PAGE 2
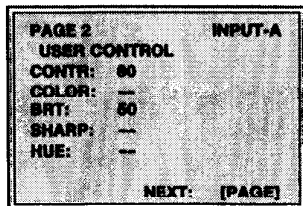
Picture settings; contrast, color, brightness, sharpness and hue are displayed.
The levels can be changed independently for the signal input from different input connectors. (You can check from the message displayed in the upper right corner of the screen).

"---" indicates that the control does not function with the current input signal. (In this case, the input signal is RGB.)
To change the levels, use the PICTURE CONTROL key.

PAGE 3
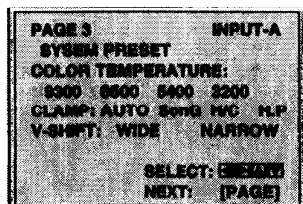
The color temperature, clamp and V-shift adjustment mode settings are displayed.
The selected item blinks in green.
To change the setting, adjust by pressing the ◄, ►, ▲ and ▼ keys.

COLOR TEMPERATURE: 9300/6500/5400/3200
Select the appropriate color temperature according to your application and the picture source.
The color temperature of the projector is preset to 6500 at the factory.

V-SHIFT: WIDE/NARROW

The V-shift of the projector is preset to WIDE at the factory. When some particular RGB signals are input to projector, the picture may be distorted vertically. In this case, set to NARROW. Adjustable range in the lower direction will become narrow.
If the horizontal frequency of the signal is too high, the V-SHIFT is automatically set to NARROW.
For details of the clamp setting, see "Correcting the Luminance of the Picture – Clamp Setting" on page 87 (E).

Notes

* "CLAMP" and "V-SHIFT" are not displayed when the input mode is VIDEO.
* If the horizontal frequency of the input signal (fH) is more than 100 kHz, V-SHIFT is automatically set to NARROW and its setting is not displayed.

PAGE 4
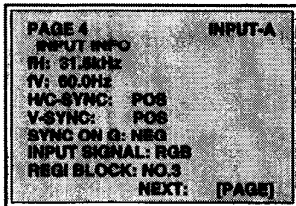
The signal input conditions are displayed.
fH: Horizontal frequency of the input signal
fV: Vertical frequency of the input signal

You can select "**POS** (positive)" or "**NEG** (negative)" for following settings:
H/C-SYNC: Polarity of the H/C-SYNC
V-SYNC: Polarity of the V-SYNC
SYNC ON G: Polarity of the SYNC on the Green

•When POS (NEG) is displayed in green:
  The picture is being projected using its sync signal.
•When POS (NEG) is displayed in white:
  The picture is being projected without using its sync signal.

INPUT SIGNAL: Current input signal
  Y/C: S video input signal from VIDEO IN
  RGB: RGB input signal
  NTSC: NTSC input signal from VIDEO IN
  PAL: PAL input signal from VIDEO IN
  SECAM: SECAM input signal from VIDEO IN
  B & W: Black and white input signal from VIDEO IN
  Internal oscillation: Internal oscillation mode (No signal is input.)
  IDTV: Input signal from the optional IFB-3000
  HDTV:Input signal from the optional IFB-1300 (when installing the IFB-1300 to the projector)
  COMPONENT: Input signal from the optional IFB-1200 (when installing the IFB-1200 to the projector)

REGI BLOCK: The registration memory block number to which the input signal is assigned.
  For details, see the table on page 78 (E).

PAGE 5
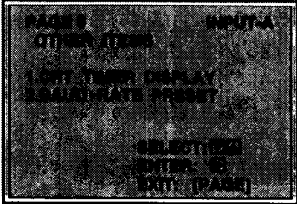
You can select the current usage time display and the baud rate[1] setting display.

The selected item blinks in green.

To display either page, select the item with the ▲ and ▼ keys, and then press the ▶ key.

When the "1. CRT TIMER DISPLAY" is selected
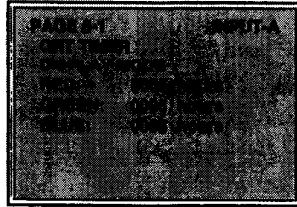
The use time of each cathode-ray tube is displayed in one-hour intervals.

RED: Use time of red CRT

GREEN: Use time of green CRT

BLUE: Use time of blue CRT

When the "2. BAUD RATE PRESET" is selected
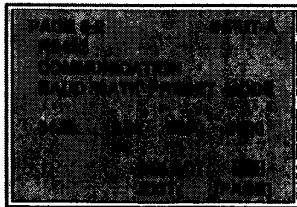
The baud rate setting for communication through the RS-422 cable is displayed.

The selected item blinks in green. To change the setting, press the ◀ and ▶ keys.

1) The baud rate setting designates the data communication speed via RS-422 between the projector and computer. Set the appropriate baud rate to match speed of the connected computer.

Screen messages

Color codes
Four colors are used in the letters of on-screen display.

Color	Meaning
Green	Function and condition, item being selected on PAGE display
Cyan	Operation guide and messages
Yellow	Caution and error messages
White	Item being adjusted, item not being selected on PAGE display

Error message
When an error occurs, the following messages will appear.

Message	Meaning
Not applicable!	The key does not function in the current mode.
PIC MUTING	Picture muting mode is on. If you wish to adjust the picture controls, press the PJ MUTING PIC key to cancel the PIC MUTING mode.
Overflow!	The setting is outside the adjustable range limits.
NO INPUT	No signal has been received.
OFF	On-screen display STATUS is set to OFF. To restore the on-screen display, press the STATUS ON key.
Overcorrection	When adjusting registrations, some settings are overcorrected. Reset them to the factory preset data. Then, check that the projector is correctly installed.

PAGE Displays and Test Patterns

Test Patterns

In each adjustment mode, an appropriate test pattern appears. In addition, you can display other test patterns by pressing the TEST key.

List of test patterns

Cross hair
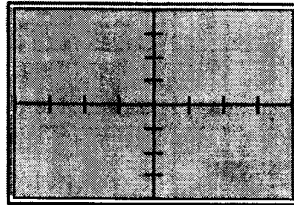
Hatch (9 × 9)
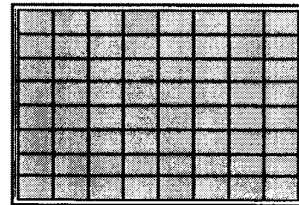
Hatch (reverse)
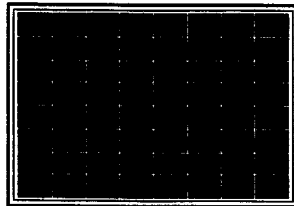
Dot
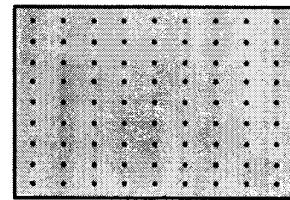
H
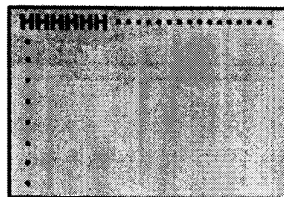
H (reverse) (for adjusting the magnet focus only)

White
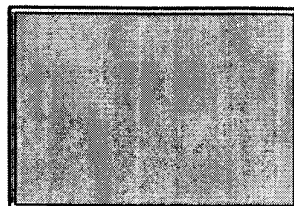
Window
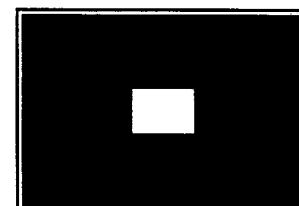
PLUGE[1]
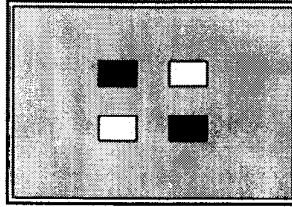
Note

The outside bold line stands for the edge of the screen.

The bold line
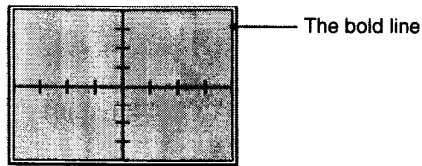
Test pattern in each mode

Mode	By pressing the TEST key, the patterns cycle through the following order.	
Normal	Cross hair → Hatch (9 × 9) → Hatch reverse → Dot → H → White → Window → PLUGE → Cross hair → ...	

Registration
    SIZE
    LIN
    SKEW
    BOW
	Cross hair ←→ Hatch (9 × 9)	Select the desired one.

KEY PIN	Hatch (5 × 5) ←→ Hatch (9 × 9)	Select the desired one.
ZONE	Hatch (9 × 9) + Cursor	

White balance
    BIAS
    GAIN
	PLUGE
	Window ←→ White	

BLKG	Hatch (9 × 9)	
CENT RGB	Cross hair ←→ Hatch (5 x 5)	Select the desired one.
MG (magnetic) FOCUS	H → H (reverse) → Hatch (9 × 9) → Hatch (reverse) → Dot → H → ...	

1) PLUGE is an abbreviation for Picture Line Up Generating Equipment.

Adjusting the Focus

Follow the procedure below.

① Remove the front cover. *(page 18 (E))*

↓

② Set the remote control to the serviceman adjustment mode. *(page 36 (E))*

↓

③ Select the NO INPUT mode. *(page 49 (E))*

↓

④ Display the H-pattern. *(page 49 (E))*

↓

⑤ Reset both CONTR (contrast) and BRT (brightness) levels. *(page 49 (E))*

↓

⑥ Adjust the green lens focus. *(page 49 (E))*

↓

⑦ Adjust the green magnetic focus, AQP (Axis Quadrupole) and DQP (Diagonal Quadrupole). *(pages 51 (E) to 54 (E))*
Repeat steps ⑥ and ⑦ until the green CRT focuses.

↓

⑧ Adjust the red lens focus. *(page 55 (E))*

↓

⑨ Adjust the red magnetic focus, AQP (Axis quadrupole) and DQP (Diagonal quadrupole). *(page 55 (E))*
Repeat steps ⑧ and ⑨ until you finish the red focus adjustment.

↓

⑩ Adjust the blue lens focus. *(page 55 (E))*

↓

⑪ Adjust the blue magnetic focus, AQP (Axis quadrupole) and DQP (Diagonal quadrupole). *(page 55)*
Repeat steps ⑩ and ⑪ until you finish the blue focus adjustment.

↓

Proceed to the registration adjustment.

Adjusting the green lens focus

1 Remove the front cover.

2 Set the remote control to the serviceman adjustment mode.
For details, see "Preparation" on page 36 (E).

3 Press the INPUT SELECT A, B or VIDEO key until "NO INPUT" appears.
Or, set the SWITCHER/INDEX select switch to SWITCHER, and then press a number key from 1 to 8 corresponding to a line that is not connected to a signal.

"NO INPUT" appears on the screen.
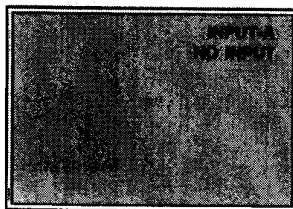
4 Press the TEST key on the control until the H-pattern appears.
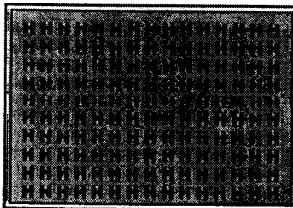
5 Press the RESET so that their adjustment levels are reset. (The CONTR level is 80, and the BRT level is 50.)

6 Press the CUT OFF R and B keys to display the green signal only.

7 Loosen the G1 screw, slide it so that the letters H at the center of the screen is in focus, and then tighten the screw.

(Continued)

8 Adjust the corner-focus.

Loosen the G2 screw, slide it so that the edge of the letter H at all four corners of the screen (Pay attention to the gray areas illustrated below.) are in focus, and then tighten the screw.

Repeat steps **2** and **3** until the green focus adjustment is completed.
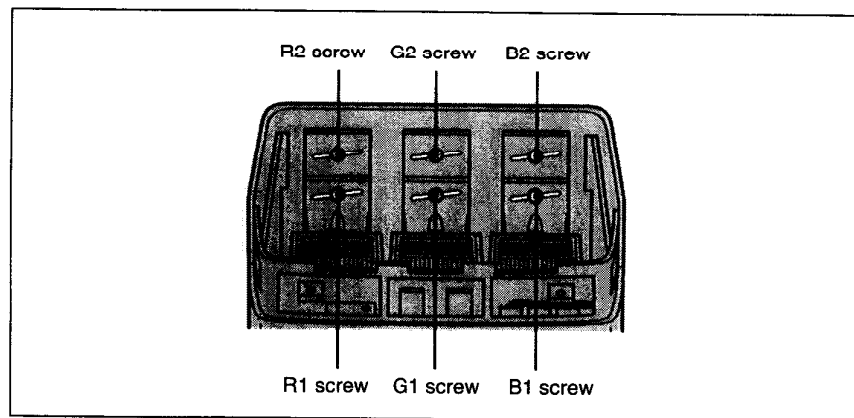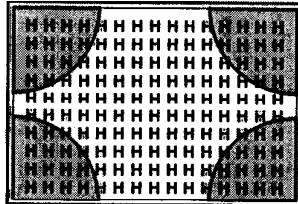
Hint for the lens focus adjustment

The letter "H" is made up of dots. Adjust the focus so that dots of the letter "H" can be clearly seen as illustrated below.
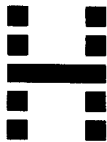
Proceed to the green magnetic focus adjustment.

Adjusting the green magnetic focus

After adjusting the lens focus, adjust the magnetic focus.

1 Press the FOCUS MG key.

The H-pattern appears on the screen, and the center of the screen lights for a moment.

2 Press the ◄ or ► key so that the letter H is in focus at the center of the screen.

3 Press the POSITION + key until "G-V" appears at the upper left of the screen.
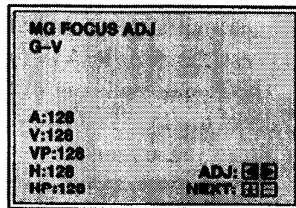
Note

The on-screen display overlaps with the H-pattern.

4 Adjust the focus on the upper and lower sides.
When the upper and lower sides of the screen are in focus, go to step **5**.
① Press the ◄ or ► key to set the focus value to MIN.
  The H-pattern is de-focused in upper and lower sides of the screen.
② Press the POSITION + key until "V-PHASE" appears on the upper left of the screen.
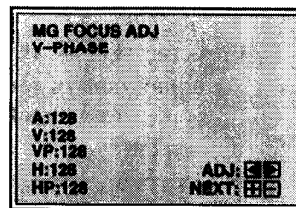
Notes

- The on-screen display overlaps with H-pattern.
- When adjusting, pay attention to the areas which blink immediately after you change the adjustment mode.

③ Press the ◄ or ► key to de-focus the upper and lower sides of the screen equally.
④ Press the POSITION – key until "G-V" appears on the upper left of the screen.
⑤ Press the ◄ or ► key so that the upper and lower sides of the screen are in focus.
  Repeat steps ② to ⑤ until the upper and lower sides of the screen are in focus precisely. *(Continued)*

5 Press the POSITION + key until "G-H" appears at the upper left of the screen.
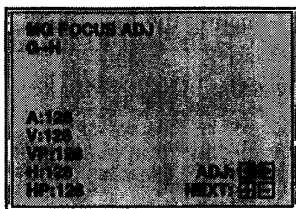
Note

The on-screen display overlaps with the H-pattern.

6 Adjust the focus on the right and left sides.
When the right and left sides of the screen are in focus, go to "Adjusting the green AQP/DQP" on next page.
① Press the ◄ or ► key to set the focus value to MIN.
The H-pattern is out of focus at the right and left sides of the screen.
② Press the POSITION + key until "H-PHASE" appears at the upper left of the screen.
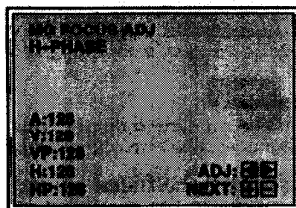
Notes

• The on-screen display overlaps with the H-pattern.
• When adjusting, pay attention to the areas which blink immediately after you change the adjustment mode.

③ Press the ◄ or ► key so that the right and left sides of the screen are equally out of focus.
④ Press the POSITION – key until "G-H" appears at the upper left of the screen.
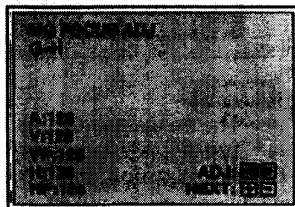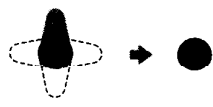
Note

• The on-screen display overlaps with the H-pattern.

⑤ Press the ◄ or ► key so that the right and left sides of the screen are in focus.
Repeat steps ② to ⑤ until the right and left sides of the screen are precisely in focus.

Proceed to the green AQP/DQP adjustment.

Adjusting the green AQP/DQP

After adjusting the magnetic focus, adjust the AQP (Axis Quadrupole) and DQP (Diagonal Quadrupole).

What is the AQP/DQP adjustment?

AQP adjustment

Correct the vertical or horizontal distortion of the spot.

DQP adjustment

Correct the diagonal distortion of the spot.

You can also correct the distortion above.

Adjust the AQP and DQP with the following procedure.

1 Press the INPUT SELECT A, B or VIDEO key on the remote control so that "NO INPUT" appears.

2 Press the FOCUS MG key.

3 Press the POSITION + key until "ADJ AQP/DQP" appears at the upper left of the screen.
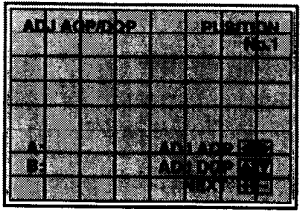
(Continued)

Adjusting the Focus

4 Correct the focus for the each part of the screen.
① Press the ◄ or ► key to optimize the AQP.
② Press the ▲ or ▼ key to optimize the DQP.
③ Press the POSITION + key so that the part to be corrected cycles to the next part of the screen in the order illustrated below.
When you press the POSITION – key, the part to be corrected cycles through the reverse order.
Repeat steps ① to ③ until you correct all the AQP and DQP for every part of the screen.
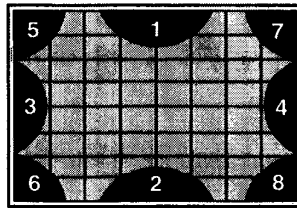
Proceed to adjust the red lens focus.

Adjusting the Red and Blue Focus

Adjusting the red lens focus

1 Press the CUT OFF G and B keys to display the red signal only.

2 Loosen the R1 screw, slide it so that the letters H at the center of the screen is in focus, and then tighten the screw.
*For details. see page 50 (E).*

3 Loosen the R2 screw, slide it so that the edge of the letter H at all four corners of the screen (pay attention to the gray areas illustrated below) are in focus, and then tighten the screw.
Repeat steps **2** and **3** until the red focus adjustment is completed.

Proceed to adjust the red magnetic focus, AQP and DQP.

Adjusting the red magnetic focus, AQP and DQP

After adjusting the lens focus. adjust the magnetic focus. AQP and DQP.
To adjust them, perform the same procedure as for the green focus adjustment.
For details, see "Adjusting the green magnetic focus" and "Adjusting the green AQP/DQP" on page 51 (E) to 53 (E).

Note
You do not have to adjust the red vertical and horizontal phase for the magnetic focus.

Proceed to adjust the blue focus.

Adjusting the blue lens focus

1 Press the CUT OFF G and R keys to display the blue signal only.

2 Loosen the B1 screw, slide it so that the letters H at the center of the screen is in focus, and then tighten the screw.
*For details, see page 50 (E).*

3 Loosen the B2 screw, slide it so that the edge of the letter H at all four corners of the screen (pay attention to the gray areas illustrated below) are in focus, and then tighten the screw.
Repeat steps **2** and **3** until the blue focus adjustment is completed.

Adjusting the blue magnetic focus, AQP and DQP

After adjusting the lens focus, adjust the magnetic focus, AQP and DQP. To adjust them, perform the same procedure as for the green focus adjustment.
For details, see "Adjusting the green magnetic focus" and "Adjusting the green AQP/DQP" on page 51 (E) to 53 (E).

Note
You do not have to adjust the blue vertical and horizontal phase for the magnetic focus.

Proceed to adjust the registration.

Adjusting the Registration

① Mark the center of the screen. *(page 57 (E))*
  ↓
② Set the remote control to the serviceman adjustment mode.
  (page 36 (E))
  ↓
③ Select the NO INPUT mode. *(page 57 (E))*
  ↓
④ Reset the data to the factory preset level. (Only if the adjustment data
  has been modified before) *(page 88 (E))*
  ↓
⑤ Release the blanking adjustment. *(page 59 (E))*
  ↓
⑥ Adjust the green registration. *(page 61 (E))*
   1 Centering adjustment
   2 SIZE and LIN adjustments
   3 SKEW and BOW adjustments
   4 KEY and PIN adjustments
  ↓
⑦ Adjust the red registration. *(page 68 (E))*
   1 Centering adjustment
   2 SIZE and LIN adjustments
   3 SKEW and BOW adjustments
   4 KEY and PIN adjustments
   5 ZONE adjustments
  ↓
⑧ Adjust the blue registration. *(page 75 (E))*
   1 Centering adjustment
   2 SIZE and LIN adjustments
   3 SKEW and BOW adjustments
   4 KEY and PIN adjustments
   5 ZONE adjustment
  ↓
⑨ Adjust the blanking. *(page 76 (E))*
  ↓
⑩ Save the adjusted data as the standard data. *(page 77 (E))*
  ↓
⑪ Adjust fine for each input signal. *(page 80 (E))*
   1 Adjustment of video input signal
   2 Adjustment of RGB input signal
   3 White balance adjustment
  ↓
⑫ Activate the protection of the remote control. *(page 91 (E))*
  ↓
⑬ Adjust the picture. *(page 92 (E))*
  ↓
  Complete

1 Mark the center of the screen.
Measure the height and width of the screen to decide the center.
Marking five points with the white tape, as illustrated below, will help
you adjust registration.
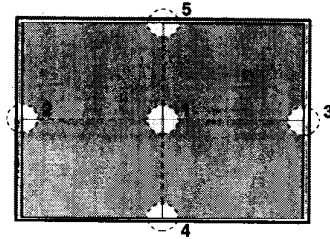
2 Set the remote control to the serviceman adjustment mode.
For details, see "For Remote Control" on page 36 (E).

3 Press the INPUT SELECT A, B or VIDEO key until "NO INPUT"
appears.
Or, set the SWITCHER/INDEX select switch to SWITCHER and then
press the number key from 1 to 8, corresponding to a line that is not
connected to a signal.
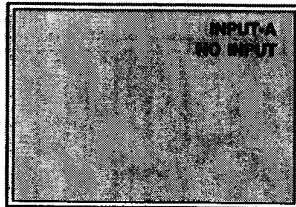
4 Reset the data to the factory preset level.
(Only when you have adjusted the registration and have saved the
adjustment data.)
For details, see "Resetting the Data" on page 88 (E).

Notes
• The center of the screen and the center of the cross hair pattern can be aligned
by performing the centering adjustment.
For details, see "Green centering adjustment" on page 61 (E).
• When the optical axis angle is smaller, the hatch pattern becomes trapezoidal.
Perform the keystone adjustment to correct the distortion.
For details, see "Green KEY and PIN adjustments" on page 66 (E).

Adjusting the Registration

- Arrow (◄/►/▲/▼) keys

- CUT OFF R/G/B keys
  ADJ R/G/B keys
  TEST key
  NORMAL key
  REGISTRATION (SIZE/LIN/SKEW/
  BOW/KEY/PIN/ZONE) keys
  POSITION keys
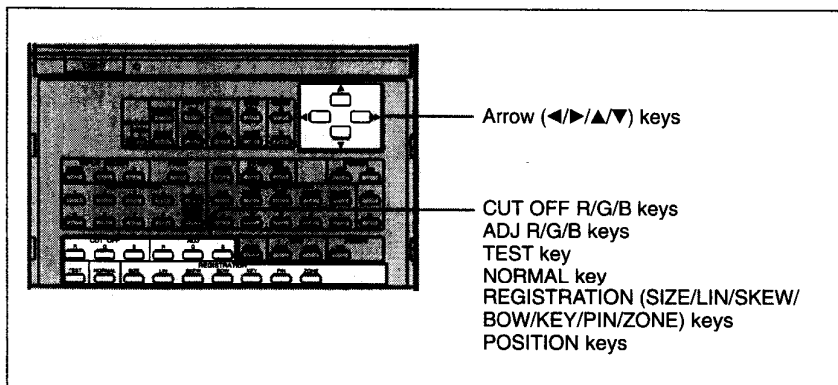
Indicated on the control	Adjustment Items
SIZE	Size
LIN	Linearity
SKEW	Skew
BOW	Bow
KEY	Keystone
PIN	Pincushion
ZONE	Centering, zone

The registration adjustment is difficult if the entire test pattern is not
visible. Follow the procedure below to make the whole test pattern visible.

Arrow (◄/►/▲/▼) keys
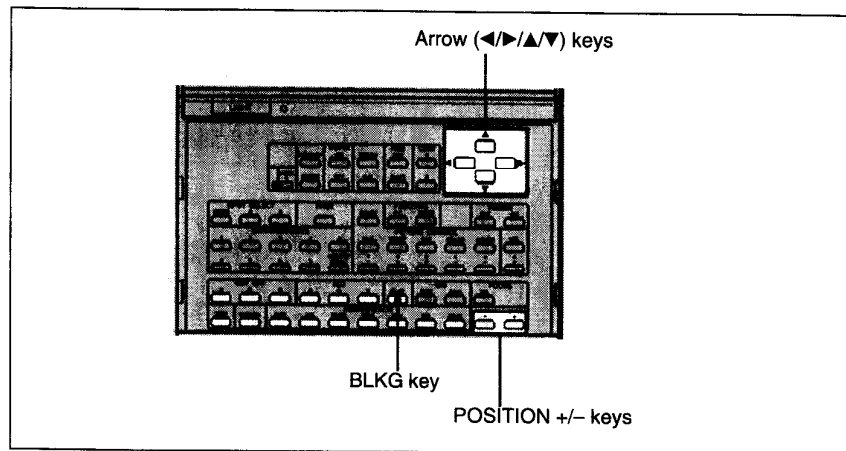
BLKG key

POSITION +/– keys

1 Press the BLKG key to enter the blanking adjustment mode.

BLKG ADJ
UPPER

ADJ:
NEXT:
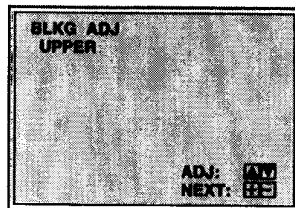
2 Press the TEST key to display the hatch pattern.

3 Press the POSITION +/– keys to select the part to be adjusted.

• When you press the + key, the position cycles through the following
order.

UPPER → LOWER → LEFT → RIGHT → UPPER → ...

• When you press the – key, the position cycles in reverse order.

(Continued)

4 Press the arrow keys repeatedly until "Overflow!" appears on the screen for each position.

▲:UPPER ▼:LOWER ◄:LEFT ►:RIGHT
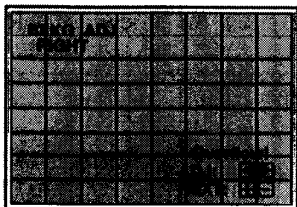
What is blanking?

Blanking is used to mask the picture. The picture size of this projector is adjusted at the factory to fit a 120-inch screen. Depending on the installation method, it is necessary to reduce or increase the masking to fit the picture to the screen. Here, reduce the masking to the minimum (the picture is projected at the largest size), and after the registration adjustment is complete, perform the blanking adjustment to fit the screen used.

Note

There may be a rainbow-like vertical band on the right side or a diagonal line on the upper part of the screen. They can be changed with the blanking adjustment later, leave them alone for now.

For details, see "Adjusting the Blanking" on page 76 (E).

Adjusting the Green Registration

Adjust the green registration first.

When adjusting green, do not greatly change the ZONE adjustment. If you change the green ZONE in the large range considerably, the adjustment for red and blue may be difficult.

Green centering adjustment

Adjust so that the center of the test pattern is aligned with the center of the screen.

1 Press the ZONE key.

The hatch pattern and the cursor appear.

If the cursor is not centered, use the POSITION key to center the cursor on the screen.

2 Press the ADJ G key.

3 Press the CUT OFF R and B keys to display green only.

4 Press the arrow keys to align the center of the hatch pattern with the center of the screen.

Notes

- For the green centering adjustment, the ZONE adjustment is only for the center zone.
- If the test pattern is off the center of the screen by a large amount, check that the ring spacers are adjusted correctly or that the projector is installed correctly.

Green SIZE and LIN (linearity) adjustment

Adjust the picture size with respect to the screen, and the picture's up, down, left and right balance.

1 Press the LIN key.

You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 Press the ADJ G key.

Pay attention only to the bold lines as illustrated below (the ends of the vertical and horizontal lines).
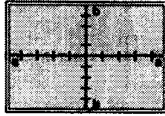
3 Adjust with the ◄ and ► keys until parts (ⓐ) on the right and left are of equal length.
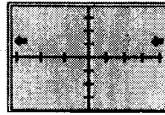
◄: The left and right vertical lines are shifted to the left while the vertical lines remain unmoved.
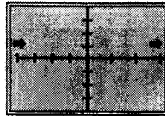
►: The left and right vertical lines are shifted to the right while the vertical center lines remain unmoved.

4 Press the SIZE key.

5 Adjust with the ◄ and ► keys until parts (ⓐ) on the left and right are 15 to 20 mm long.
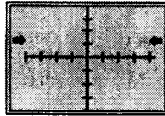
◄: The horizontal scale is reduced.
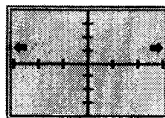
►: The horizontal scale is expanded.

6 If they are not aligned, press the LIN key and repeat steps **3** to **5**.

7 If the cross-hair pattern is off-centered on the screen, adjust the centering again and repeat steps **1** to **6** for the horizontal scale adjustment.
For details of the centering adjustment, see "Green centering adjustment" on page 61 (E).

8 Press the LIN key.

9 Adjust with the ▲ and ▼ keys until parts (ⓑ) at the top and bottom are equal length.

▲: The upper and lower horizontal lines are shifted upward while the horizontal center line remains unmoved.

▼: The upper and lower horizontal lines are shifted downward while the horizontal center line remains unmoved.

10 Press the SIZE key.

11 Adjust with the ▲ and ▼ keys until parts (ⓐ) on the top and bottom are about 15 to 20 mm ($^{19}/_{32}$ to $^{13}/_{16}$ inches)long.
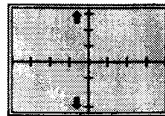
▲: The vertical scale is expanded.
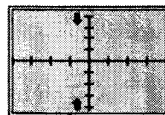
▼: The vertical scale is reduced.

12 If they are not aligned, repeat steps **8** to **11**.

13 If the cross-hair pattern is off-centered on the screen, adjust the centering again and then repeat steps **8** to **12** for the vertical scale adjustment.
For details of the centering adjustment, see "Green centering adjustment" on page 61 (E).

14 After the adjustment is complete, press the MEMORY key to save the adjustment data.

Green SKEW and BOW adjustments

Display the cross pattern and adjust the bow-like or skew distortion of the horizontal and vertical center lines to make them parallel to the screen edges.
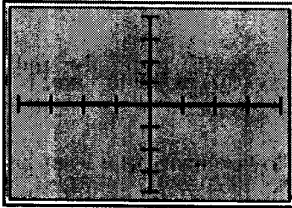
[A] Horizontal line adjustment

If the horizontal line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the vertical line (bold line).

1 Press BOW key.
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 Adjust the distortion as illustrated below with the ▲ and ▼ keys.
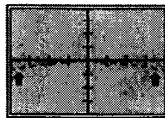
▲: The left and right ends of the horizontal line are adjusted so that they curve upward while the center remains unchanged.

▼: The left and right ends of the horizontal line are adjusted so that they curve downward while the center remains unchanged.

3 Press the SKEW key.

4 Adjust the distortion as illustrated below with the ▲ and ▼ keys.
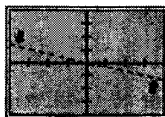
▲: The horizontal line rotates counter-clockwise, rotating around the center.
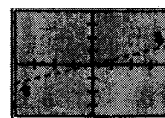
▼: The horizontal line rotates clockwise, rotating around the center.

5 Repeat steps **1** to **4** until the horizontal lines become parallel to the screen's edges.

6 When the adjustment is complete, press the MEMORY key to save the adjustment data.

B Vertical line adjustment

If the vertical line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the horizontal line (bold line).

1 Press BOW key.
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 Adjust the distortion as illustrated below with the ◄ and ► keys.
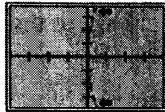
◄: The upper and lower ends of vertical the line are adjusted so that they curve towards the left while the center remains unchanged.

►: The upper and lower ends of the vertical line are adjusted so that they curve towards the right while the center remains unchanged.

3 Press the SKEW key.

4 Adjust the distortion as illustrated below with the ◄ and ► keys.
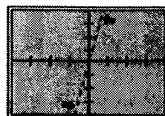
◄: The vertical line rotates counter-clockwise, rotating around the center.
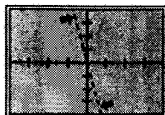
►: The vertical line rotates clockwise, rotating around the center.

5 Repeat steps **1** to **4** until the vertical lines become parallel to the screen's edges.

6 After the adjustment is complete, press the MEMORY key to save the adjustment data.

Adjusting the Registration

Green KEY (keystone) and PIN (pincushion) adjustments

Adjust the trapezoidal distortion and the pin-cushion distortion in the vertical and horizontal directions.

[A] Horizontal line adjustment
If the picture's boarders are as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that they are parallel (bold line).

1 Press KEY key.
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 Adjust the distortion as illustrated below with the ▲ and ▼ keys.

▲: The lines spread apart on the right side and come together on the left side while the center remains unmoved.

▼: The lines spread apart on the left side and come together on the right side while the center remains unmoved.

3 Press the PIN key.

4 Adjust the distortion as illustrated below with the ▲ and ▼ keys.

▲: The ends of the top and bottom lines spread apart while the center remains unmoved.

▼: The ends of the top and bottom lines come together while the center remains unmoved.

5 Repeat steps **1** to **4** until the horizontal lines become parallel to the screen edges.

6 After the adjustment is complete, press the MEMORY key to save the adjustment data.

B Vertical line adjustment

If the picture's boarders are as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that they are parallel (bold line).

1 Press the KEY key.

2 Adjust the distortion as illustrated below with the ◄ and ► keys.

◄: The lines spread apart at the bottom and come together at the top while the center remains unmoved.

►: The lines spread apart at the top and come together at the bottom while the center remains unmoved.

3 Press the PIN key.

4 Adjust the distortion as illustrated below with the ◄ and ► keys.
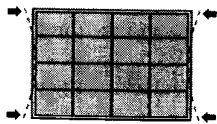
◄: The ends of the left and right side lines come together while the center remains unmoved.

►: The ends of the left and right lines spread apart while the center remains unmoved.

5 Repeat steps **1** to **4** until the vertical lines become parallel to the screen edges.

6 After the adjustment is complete, press the MEMORY key to save the adjustment data.

The green registration adjustment is all completed.
Proceed to the adjustment for the red signal.

Adjusting the Registration

Adjust the red signal so that it converges with the green signal and is seen as yellow.
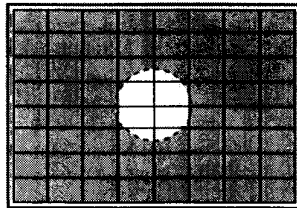
Red centering adjustment

Adjust so that the red test pattern center is aligned with that of the green pattern.

1 Press the ZONE key.

The hatch pattern and the cursor appear.

If the cursor is not centered, press the POSITION key so that the cursor position is at the center of the screen.

2 Press the ADJ R key.

3 Press the CUT OFF B key to display green and red.

4 Press the arrow keys to align the red hatch pattern center with that of the green pattern.

Note

At this time, adjust the ZONE for the center zone only.

Red SIZE and LIN (linearity) adjustments

1 Press the LIN key.
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 Press the ADJ R key.
Pay attention only to the encircled portions in the illustrations below.
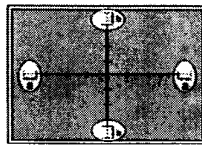
3 Adjust with the ◄ and ► keys until the parts (ⓐ) on the left and right are of equal length.
◄: The left and right vertical lines are shifted to the left while the vertical center line remains unmoved.
►: The left and right vertical lines are shifted to the right while the vertical center line remains unmoved.

4 Press the SIZE key.

5 Adjust with the ◄ and ► keys so that the red and green lines in the right and left encircled portions converge.
◄: The horizontal scale is reduced.
►: The horizontal scale is expanded.

6 If the lines do not converge, press the LIN key and then repeat steps **3** to **5**.

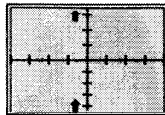**7** If the cross-hair pattern is off-centered on the screen, adjust the centering again and repeat steps 1 to 6 for the horizontal scale adjustment.
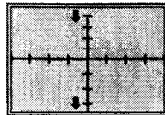*For details of the centering adjustment, see "Red centering adjustment" on page 68 (E).*

8 Press the LIN key.

**9** Adjust with the ▲ and ▼ keys until parts (ⓑ) at the top and bottom are of equal length.
▲: The upper and lower horizontal lines are shifted upward while the horizontal center line remains unmoved.
▼: The upper and lower horizontal lines are shifted downward while the horizontal center line remains unmoved.

10 Press the SIZE key.

11 Adjust with the ▲ and ▼ keys so that the red and green lines at the top and bottom circled portions converge.
▲: The vertical scale is expanded.
▼: The vertical scale is reduced.

12 If the lines do not converge, repeat steps **8** to **11**.

13 If the cross-hair pattern is off-centered on the screen, adjust the centering again and repeat steps **8** to **12** for the vertical scale adjustment.
*For details of the centering adjustment, see "Red centering adjustment" on page 68 (E).*

14 After the adjustment is complete, press the MEMORY key to save the adjustment data.

# Adjusting the Registration

Red SKEW and BOW adjustments
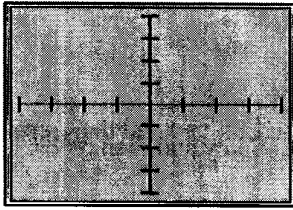
[A] Horizontal line adjustment

If the horizontal line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the vertical line (bold line).

1 Press BOW key.

You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 Adjust the distortion as illustrated below with the ▲ and ▼ keys.

▲: The left and right ends of the horizontal line are adjusted so that they curve upward while the center remains unchanged.
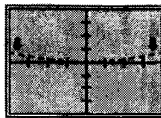
▼: The right and left ends of the horizontal line are adjusted so that they curve downward while the center remains unchanged.

3 Press the SKEW key.

4 Adjust the distortion as illustrated below with the ▲ and ▼ keys.
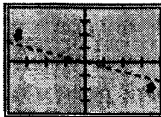
▲: The horizontal line rotates counter-clockwise, rotating around the center.
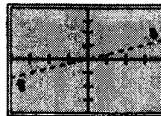
▼: The horizontal line rotates clockwise, rotating around the center.

5 Repeat steps **1** to **4** until the red horizontal line converges with the green line.

6 When the adjustment is complete, press the MEMORY key to save the adjustment data.
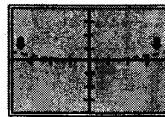
B Vertical line adjustment

If the vertical line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the vertical line (bold line).

1 Press BOW key.
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

**2** Adjust the distortion as illustrated below with the ◀ and ▶ keys.

◀: The upper and lower ends of the vertical line are adjusted so that they curve towards the left while the center remains unchanged.
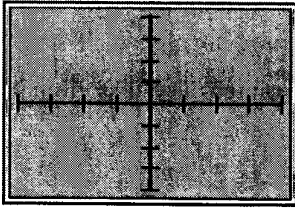
▶: The upper and lower ends of the vertical line are adjusted so that they curve towards the right while the center remains unchanged.

3 Press the SKEW key.

4 Adjust the distortion as illustrated below with the ◀ and ▶ keys.

◀: The vertical line rotates counter-clockwise, rotating around the center.

▶: The vertical line rotates clockwise, rotating around the center.

5 Repeat steps **1** to **4** until the red vertical line converges with the green line.

6 When the adjustment is complete, press the MEMORY key to save the adjustment data.

Adjusting the Registration

Red KEY (keystone) and PIN (pincushion) adjustments

A Horizontal line adjustment

If the picture's boarders are as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that they are parallel (bold line).

1 Press the KEY key.
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 Adjust the distortion as illustrated below with the ▲ and ▼ keys.

▲: The lines spread apart on the right side and come together on the left side while the center remains unmoved.

▼: The lines spread apart on the left side and come together on the right side while the center remains unmoved.

3 Press the PIN key.

4 Adjust the distortion as illustrated below with the ▲ and ▼ keys.

▲: The ends of the top and bottom lines spread apart while the center remains unmoved.

▼: The ends of the top and bottom lines come together while the center remains unmoved.

5 Repeat steps **1** to **4** until the red horizontal lines converge with the green lines.

**6** After the adjustment is complete, press the MEMORY key to save the adjustment data.

B Vertical line adjustment

If the picture's boarders are as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that they are parallel (bold line).

1 Press the KEY key.
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

**2** Adjust the distortion as illustrated below with the ◄ and ► keys.

◄: The lines spread apart at the bottom and come together at the top while the center remains unmoved.

►: The lines spread apart at the top and come together at the bottom while the center remains unmoved.

3 Press the PIN key.

4 Adjust distortion as illustrated below with the ◄ and ► keys.
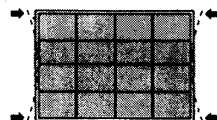
◄: The ends of the left and right side lines come together while the center remains unmoved.
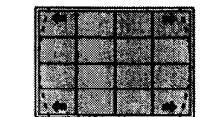
►: The ends of the left and right lines spread apart while the center remains unmoved.

5 Repeat steps **1** to **4** until the vertical lines converge with the green lines.

6 After the adjustment is complete, press the MEMORY key to save the adjustment data.

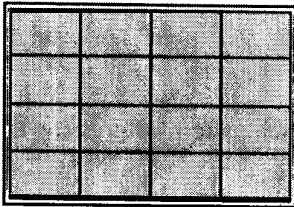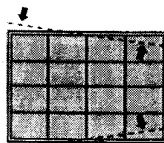### Red ZONE adjustment

Adjust ZONE after the red lines have converged with the green lines. Before adjusting ZONE, you should have completed the adjustments described in pages 68 (E) to 73 (E).

1 Press the ZONE key.
The hatch pattern and the cursor appear.
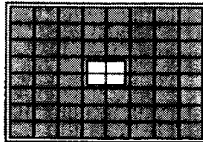
2 Press the POSITION key to select the part to be adjusted.

When you press the + key, the cursor moves in the numerical order as illustrated.
When you press the – key, the cursor moves in the reverse order.
The selected position number appears in the upper right corner.
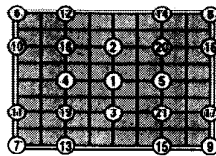
3 Adjust the red line distortion in the cursor positioning area with the arrow keys.

4 After the adjustment is complete, press the MEMORY key to save the adjustment data.

The registration adjustment is complete.
Proceed to the registration adjustment of the blue signal.

Adjust the blue signal so that it converges with the red signal which has been adjusted. When the blue and red test patterns converge, the pattern is seen as magenta.

Blue centering adjustment

Adjust so that the blue test pattern center is aligned with that of the red pattern.

1 Press the ZONE key.

The hatch pattern and the cursor appear.

If the cursor is not centered, press the POSITION key so that the cursor position is at the center of the screen.

2 Press the ADJ B key.

3 Press the CUT OFF G key to display blue and red.

4 Press the arrow keys to align the blue hatch pattern center with that of the green pattern.

Note
At this time, adjust the ZONE for center zone only.

Blue SIZE, LIN (linearity), SKEW, BOW, KEY (keystone), PIN (pincushion) and ZONE adjustments

Adjust so that the blue signal converges with the red signal in each adjustment. The procedures are the same as for adjusting the red registration.
For details, see pages 68 (E) to 74 (E).
Make sure that "ADJ B" appears on the screen when adjusting the blue signal.
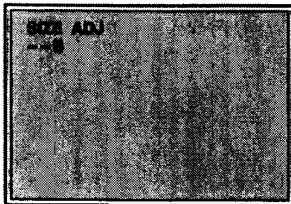
After the blue adjustment is complete, press the MEMORY key to save the adjustment data.

Adjusting the Blanking

After adjusting the registration, adjust the blanking to erase the rainbow-like vertical band on the right side or a diagonal line in the upper part of the screen.

1 Press the BLKG key.
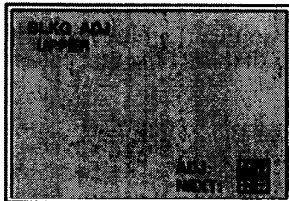
2 Press the TEST key to display the hatch pattern.

3 Press the POSITION +/– key to select the part to be adjusted.

- When you press the + key, the position cycles through the following order:

  UPPER →LOWER → LEFT → RIGHT → UPPER ...

- When you press the – key, the position cycles in reverse order.

4 Adjust with the arrow keys.
- Press the ▲ and ▼ keys to adjust the UPPER and LOWER parts.

  The diagonal line in the upper part will disappear with the UPPER adjustment.

- Press the ◄ and ▼ keys to adjust the LEFT and RIGHT parts.

  The rainbow-like vertical band on the right side will disappear with the RIGHT adjustment.

5 After the adjustment is complete, press the MEMORY key to save the adjustment data.

Saving the Standard Registration Data

After adjusting all the registrations for the green, red and blue signals, save the adjustment data as the standard data for the projector.

1 Press the MEMORY key and release it.

The adjustment data is saved in the memory as an internal signal with a horizontal frequency of approximately 34 kHz.
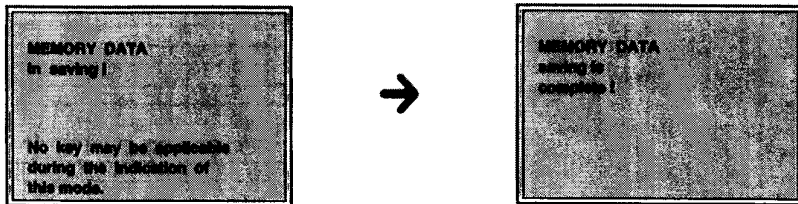
2 Hold down the MEMORY key for more than 3 seconds.

The message appears and the projector enters the standard data saving mode.
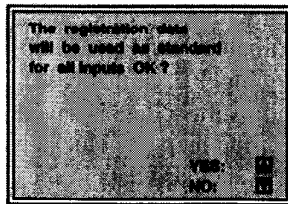
3 Press the ▲ key (for YES).

All the registration data will be converted into the internal signal data and are saved as standard data.

Notes

- All keys except for the MEMORY key do not function while saving the data.
- If the adjustment data is saved as the standard data, the registration data with other horizontal frequencies will be converted into the standard data if they have not been saved before.

Adjusting the Registration

Memory structure

This projector saves the adjustment data in one of eight memory blocks, on the horizontal frequency of the input signal.
The divided registration memory blocks are provided for each of acceptable horizontal frequency, as below.

Registration memory block	Horizontal frequency (fH)
1	15 kHz – 20 kHz
2	20 kHz – 32 kHz
3	32 kHz – 45 kHz
4	45 kHz – 58 kHz
5	58 kHz – 73 kHz
6	73 kHz – 85 kHz
7	85 kHz – 105 kHz
8	105 kHz 135 kHz

When a signal is input, the projector automatically recognizes its horizontal frequency and selects the appropriate memory blocks.
When adjusting registrations without input signal, the registration is adjusted with the projector's internal signal; horizontal frequency of approximately 34 kHz. So the adjustment data is saved in registration memory block 2, in this case.
If the adjustment data is saved as the standard data, the factory preset data for all of the memory blocks will be changed to reflect the new settings.
Since the standard data in the current installation condition is saved, you can easily adjust each input signal next time.
The following steps show the typical procedure for how to use the standard data and when to save the data.

1 After installation, adjust registrations without an input signal and save the adjustment data.

2 Save the adjustment data as the standard data.

3 Adjust for each input signal and save the adjustment data.

For reference – Memory architecture

	Contents	Data source	How to save the data
Channel memory	Picture control	Input channel	Press the MEMORY key. Switch the input connector. Turn the projector off with the remote control.
Status memory	RGB SIZE, SHIFT Blanking Clump Color temperature V-SHIFT	H/ V frequency of the input signal Sync signal status	Press the MEMORY key. Turn the projector off with the remote control.
Registration memory	Registration Magnetic focus	Registration memory block (Horizontal frequency of the input signal)	Press the MEMORY key. Switch the input connector. Change the horizontal frequency.
Color temperature memory	W/B Bias and gain	Color temperature setting	Turn the projector off with the remote control.

One projector can store only one value in memory for AQP, DQP, baud rate, CRT timer and STATUS ON/OFF.

Note
After the adjustment is complete, be sure to press the MEMORY key or turn the projector off with the remote control.

Fine Adjustment for Each Input Signal

After the registration adjustment is performed without an input source and the adjustment data is saved as the standard data, input an external signal and fine adjust for each input signal.

Adjusting the Video Input Signal

1 Connect to the VIDEO IN jack on the projector or to the PC-1271/1271M Signal Interface Switcher with the IFB-1000 Signal Interface Board.

2 Press the INPUT SELECT VIDEO key on the remote control. Or, set the SWITCHER/INDEX select switch to SWITCHER, and then designate the input source number by pressing the number keys from 1 to 8.

3 Press the PAGE key repeatedly until PAGE 4 appears.
Check that the horizontal frequency of the input signal ("fH") indicates 15.7 kHz.

4 Adjust the magnetic focus for each input signal.

Fine magnetic focus adjustment

1 Press the TEST key to display the H pattern.

2 If necessary, fine adjust the magnetic focus.
For details of the adjustment procedure, see "Adjusting the green magnetic focus" on page 51 (E).

3 Press the MEMORY key to save the adjustment data.

Notes
- Do not hold down the MEMORY key for a few seconds.
- When you adjust the input signal corresponding to the registration memory blocks 1 and 2, the blue and red magnetic focus automatically becomes out of focus immediately after the magnetic focus adjustment mode is canceled. With this function, you can obtain the picture which has the optimized white/black balance.
- When you give priority to the spot focus over the white balance of the picture, adjust the magnetic focus to the level you can get by subtracting the value listed in the table below from the optimized magnetic focus level.

| | Color temperature | | | | | | | |
| | 9300 | | 6500 | | 5400 | | 3200 | |
Values of magnetic focus	BLUE ALL	RED ALL	BLUE ALL	RED ALL	BLUE ALL	RED ALL	BLUE ALL	RED ALL
Block 1	+40	−10	+40	−10	+40	−10	±0	−10
Block 2	+20	±0	+20	±0	+20	±0	±0	±0

Example
- Color temperature: 9300
- Registration memory block: block 1
- Red adjustment focus level: 130

To optimize the picture, subtract the value above from the adjustment level.
130 − (−10) − 140
Therefore, adjust the red magnetic focus level to 140.

Fine registration adjustment

1 Press the TEST key to display the hatch pattern.

2 If necessary, fine adjust the registrations.
For details of the adjustment procedure, see "Adjusting the Registration" on pages 56 (E) to 79 (E).

3 Press the MEMORY key to save the adjustment data.

SIZE adjustment

Adjust the picture size if it does not fit on the screen.

1 Press the RGB SIZE key.

2 Adjust the picture size with the arrow keys.
▲: The vertical size is expanded.
▼: The vertical size is reduced.
▶: The horizontal size is expanded.
◀: The horizontal size is reduced.

3 Press the MEMORY key to save the adjustment data.

Blanking adjustment

If the displayed picture is larger than the screen, cut off the excess parts.

1 Press the BLKG key.

2 Press the POSITION +/– key to select the part to be adjusted.

• When you press the + key, the position cycles through the following order:

UPPER → LOWER → LEFT → RIGHT → UPPER...

• When you press the – key, the position cycles in reverse order.

3 Adjust with the arrow keys.
• Press the ▲ and ▼ keys to adjust the UPPER and LOWER positions.
• Press the ◀ and ▶ keys to adjust the LEFT and RIGHT positions.

4 Press the MEMORY key to save the adjustment data.

Note

When you connect multiple video input sources to the projector, such as the switcher, adjust the picture size and blanking for each signal input source.
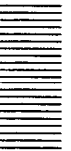
Fine Adjustment for Each Input Signal

Adjusting the RGB Input Signal

1 Connect to the RGB IN connector on the projector or the PC-1271/1271M Signal Interface Switcher with the optional interface board.

2 Press the INPUT SELECT A or B key on the remote control. Or, set the SWITCHER/INDEX select switch to SWITCHER, and then designate the input source number by pressing the number keys from 1 to 8.

3 Press the PAGE key repeatedly until PAGE 4 appears to check the horizontal frequency ("fH") of the input signal.
If "fH" shows 32 – 45 kHz (the range of registration memory block 3), you do not need to fine adjust.

4 Adjust the magnetic focus for each input signal.
For details, see "Adjusting the green magnetic focus" on page 51 (E).

Fine magnetic focus adjustment

1 Press the TEST key to display the H pattern.

2 If necessary, fine adjust the magnetic focus.
For details of the adjustment procedure, see "Adjusting the green magnetic focus" on page 51 (E).

3 Press the MEMORY key to save the adjustment data.

Fine registration adjustment

1 Press the TEST key to display the hatch pattern.

2 If necessary, fine adjust registrations.
For details of the adjustment procedure, see "Adjusting the Registration" on pages 56 (E) to 79 (E).

3 When you connect the multiple RGB input sources, group them according to the horizontal frequency by checking the "fH" on PAGE 4.

4 Fine adjust registrations for each group.
Press the MEMORY key and release it to save the adjustment data.
The adjusted data will be saved normally.

Hint for the adjustment

The projector saves the registration adjustment data in one of eight registration memory blocks according to the horizontal frequency of the input signals. *(For details, see "Memory structure" on page 78 (E).)* When multiple signals are used, you need to fine adjust registrations for each block. If multiple input signal are grouped into the same memory block, adjust for any one of them. You can check in which block the signal is grouped with PAGE 4. *(For details, see page 43 (E).)*

RGB SIZE adjustment

Adjust the picture size if it does not fit the screen.

1 Press the RGB SIZE key.

2 Adjust the picture size with the arrow keys.
   ▲: The vertical size is expanded.
   ▼: The vertical size is reduced.
   ▶: The horizontal size is expanded.
   ◀: The horizontal size is reduced.
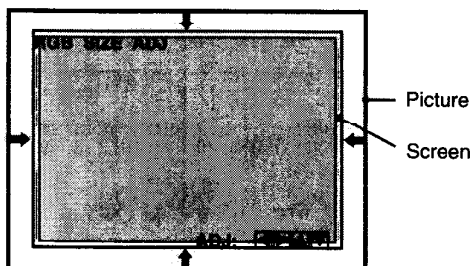
— Picture

— Screen

3 Press the MEMORY key to save the adjustment data.

Fine Adjustment for Each Input Signal

RGB SHIFT adjustment

If the picture needs to be shifted to fit on the screen, adjust the RGB SHIFT.

1 Press the RGB SHIFT key.

2 Adjust the shift with the arrow keys.
   ▲: The picture size is shifted upward.
   ▼: The picture size is dhifted downward.
   ◀: The picture size is leftward.
   ▶: Thepicture size is rightward.

Screen

Picture

3 Press the MEMORY key to save the adjustment data.

Blanking adjustment

If the displayed picture is larger than the screen, cut off the excess parts.

1 Press the BLKG key.

2 Press the POSITION +/– key to select the part to be adjusted.

   • When you press the + key, the position cycles through the following order:

   UPPER → LOWER → LEFT → RIGHT → UPPER ...

   • When you press the – key, the position cycles in reverse order.

3 Adjust with the arrow keys.
   • Press the ▲ and ▼ keys to adjust the UPPER and LOWER positions.
   • Press the ◀ and ▶ keys to adjust the LEFT and RIGHT positions.

4 Press the MEMORY key to save the adjustment data.

Note
When you connect multiple video input sources to the projector, such as the switcher, adjust the picture size, shift and blanking for each RGB signal that needs different characteristics. The characteristics are shown in PAGE 4.

Adjusting the White Balance

The color temperatures are preset at the factory to 9300K, 6500K, 5400K and 3200K. However, if you change these levels or set a color temperature other than the factory-preset levels, you can adjust the white balance and save it in the memory.

Setting the white balance

1 Display the same input signal on the projector and the color monitor.

2 Press the PAGE key repeatedly until PAGE 3 appears.

```
PAGE 3                    INPUT-A
SYSTEM PRESET
COLOR TEMPERATURE:
   9300   6500   5400   3200
CLAMP: AUTO  8ooO  H/C   H.P
V-SHIFT:  WIDE        NARROW

              SELECT:
              NEXT:    [PAGE]
```
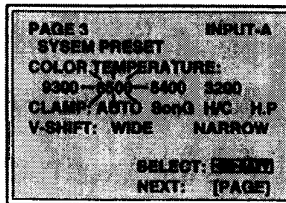
3 Press the arrow key to select 9300, 6500, 5400 or 3200, the nearest color temperature to that of the color monitor or the desired one. Normally set to 6500. Select the appropriate color temperature according to your application and the picture source.

4 Press the MEMORY key to save the adjustment data.

Adjusting the white balance

If you wish to make the color of a particular input signal (eg.HDTV system picture) uniform to that of the color monitor, you can adjust the white balance.
Display the same input signal on the projector and the monitor.

Adjusting the black level

1 Press the W/B BIAS key.

The PLUGE pattern appears.
The contrast and the brightness levels of the projector are automatically set to 80 and 50 respectively.

2 Hold down the TEST key for more than 5 minutes.

"WHITE BALANCE BIAS ADJ" appears at the upper left of the screen.

3 Press the ADJ R, G or B key to select the color to be adjusted. When selecting the color, pay attention to the black part of the picture displayed on the screen and note which color stands out compared to that of the monitor.

(Continued)

4 Press the ◀ or ▶ key so that the black part in the picture on the screen looks the same as that of the monitor.
If the brightness of that part does not look the same as that of the monitor, adjust the other colors by pressing the ADJ R, G or B key and arrow keys.

5 Press the MEMORY key to save the adjustment data.

Adjusting the white level

1 Press the W/B GAIN key.

The window pattern appears.
The contrast and the brightness levels of the projector are automatically set to 80 and 50, respectively.

2 Hold down the TEST key for more than 5 minutes.

"WHITE BALANCE GAIN ADJ" appears at the upper left of the screen.

3 Press the ADJ R, G or B key to select the color to be adjusted.
When selecting the color, pay attention to the white part of the picture displayed on the screen and note which color stands out compared to that of the monitor.

4 Press the ◀ or ▶ key so that the white part in the picture on the screen looks the same as that of the monitor.
If the brightness does not look the same as that of the monitor, adjust the other colors by pressing the ADJ R, G or B key and the arrow keys.

5 Press the MEMORY key to save the adjustment data.

When using multiple projectors
Input the same signal to the based projector and the projector to be adjusted.
Set COLOR TEMPERATURE on PAGE 3 display to the same position on both projectors, and then operate the procedures described above to make the black and white colors uniform between the based projector and the projector to be adjusted.

Notes
- When adjusting the white balance, use the external color monitor for the reference of the color.
- To adjust the white balance easily, set the STATUS in the PAGE 1 to OFF so that the on-screen display disappears when adjusting the white balance.
- You can adjust the white balance more easily if you set the COLOR level to MIN to display the black and white picture.

Clamp is used as a standard for setting the black level of the picture correctly. The standard position of the clamp depends on the kind of the sync signal. Normally the CPU judges the signal and sets the clamp position automatically.

However, the CPU may misjudge the signal because of noise. If the luminance of the picture seems to be incorrect (too dark, the black color is too light, or the luminance is unstable), the clamp position may need to be changed.

Change the clamp position following the procedure below.

1 Press the PAGE key repeatedly until the PAGE 3 appears.
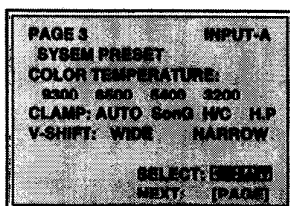
2 Select the clamp position by pressing the ◀, ▶, ▲ and ▼ keys.

AUTO: Automatic setting mode. Normally, set to this position.

S on G: If the black color is too light or seems to be green, set to this position.

H/C: If the picture is too dark or the luminance is unstable, set to this position.

H.P: If the luminance is still incorrect after changing the clamp setting to "S on G" or "H/C", set to this position and perform the H-SHIFT adjustment.

3 Press the MEMORY key to store the adjustment data.

If the luminance is still incorrect after changing the clamp setting

There may be a problem with the input signal or the connection. Check the input signal.

There are two ways to reset the data; the data reset and factory preset value.

Data reset

The data is reset to the previously saved data (the data before the adjustment).

Factory preset

The data is reset to the factory preset value. You can reset to the factory preset values only after a data reset.

1 Select the adjustment mode to be reset.

2 Press the ◀ and ▶ keys simultaneously.

The following display appears.
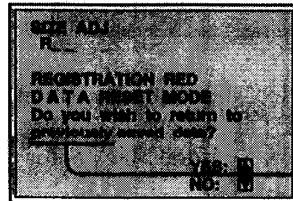
Check that "previously" appears here. (eg. To reset all the red indication adjustment data to the previously saved data)

3 Press the ▲ key.
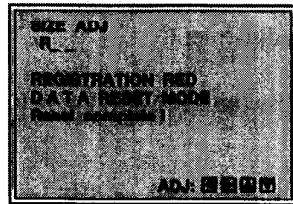
All the red registration adjustment data will be reset to the previously saved data.
(Previous data reset)

4 Press the ◀ and ▶ keys simultaneously again.

The following display appears.
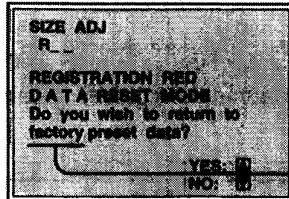
Check that "factory" appears here.
(eg. To reset all the red indication adjustment data to the factory preset level)

5 Press the ▲ key.

All red registration adjustment data will be reset to the factory preset level.
(Factory preset)

Resetting the Standard Data to the Factory Preset Levels

If you wish to adjust and save the registration data, reset the data to the factory preset levels before adjusting the registration.

1 Press the CENT R and B keys simultaneously to enter the green centering adjustment mode.

2 Follow the steps **2** to **5** on pages 88 (E) to 89 (E).

The centering adjustment data of the red, green and blue signals are reset to the factory preset levels.

3 Press the SIZE key.

4 Press the ADJ G key, and then execute the factory preset.

The SIZE, LIN, SKEW, BOW, KEY, PIN and ZONE adjustment data of the green signal is reset to the factory preset levels.

5 Press the ADJ R key, and then execute the factory preset.

The SIZE, LIN, SKEW, BOW, KEY, PIN and ZONE adjustment data of the red signal are reset to the factory preset levels.

6 Press the ADJ B key, and then execute the factory preset.

The SIZE, LIN, SKEW, BOW, KEY, PIN and ZONE adjustment data of the blue signal are reset to the factory preset levels.

7 Press the BLKG key.

(Continued)

8 Press the TEST key, and then execute the factory preset.

The UPPER, LOWER, LEFT and RIGHT blanking adjustment data are reset to the factory preset levels.

The standard data are reset to the factory preset levels.
Then start adjusting the registration.

For reference – Mode data reset correspondence

Mode	Data to be reset
RGB size	H-size and V-size
RGB shift	H-shift and V-shift
G-centering	Centering data for all colors
R-centering	Not applicable
B-centering	Not applicable
Size, Linearity Skew, Bow Keystone Pincushion	All the registration data for the selected color (including the Zone data)
Zone	Zone data for the selected color is set to the middle adjustment level (128).
Blanking	UPPER/LOWER/LEFT/RIGHT side blanking data
Gain, Bias	All the Bias and Gain data for all colors at the current color temperature
Magnetic focus	Magnetic focus data for the memory block corresponding to the current horizontal frequency (fH)
AQP/DQP	All the AQP/DQP data

ZONE data reset

The ZONE data reset allows to set the ZONE data of all the positions to 128, middle adjustment level. Reset the ZONE data if wavelike distortion occurs with the outermost line of the hatch pattern or the red and blue lines do not converge when adjusting registration (only when the projector is not installed on the floor using a 120-inch front type screen). After resetting the ZONE data, adjust the KEY and PIN and then adjust the ZONE again.

When you turn off the projector with the remote control, the adjustment keys become inoperable in order to prevent the users from accidentally changing the registration adjustments.
It is also possible to make the keys inoperable while the power is on in the following way.

1 Hold down the NORMAL key for at least 3 seconds.
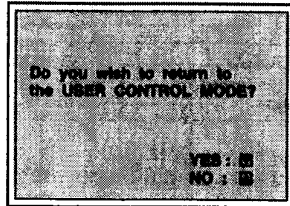
2 Press the ▲ key.

The adjustment keys are now inoperable.

Adjust the picture for your preference. The adjustment data can be saved in the memory.

1 Adjust with the PICTURE CONTROL +/– keys.

CONTR	Picture contrast
COLOR	Color intensity
BRT	Brightness
SHARP	Sharpness
HUE	Hue

The adjustment levels are digitally displayed with a range of MIN, 1, 2, ... 99, MAX.
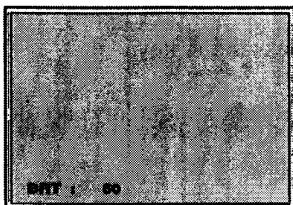
2 Press the MEMORY key to save the data.

Restoring the factory preset levels

Press the RESET key.

The factory preset levels appear on the screen.
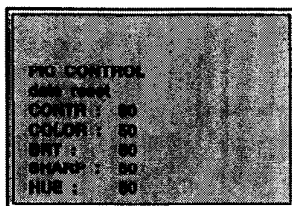
Notes
- The COLOR, SHARP and HUE keys do not function on the pictures input from the RGB IN connectors.
- The HUE and COLOR keys do not function if the input signal is black and white.
- The HUE key does not function with the PAL or SECAM color input source.

Dynamic picture mode (only for the video input pictures)
You can get high quality picture contrast by switching the DYNAMIC PIC SW or the BA board.
For details, see "Setting the Dynamic Picture" on page 25 (E).

Changing the Initialization Period

You can set the desired warm up time for the projector in 1 minute increments.

1 Set the remote control to the serviceman adjustment mode.
For details, see "For Remote Control" on page 36 (E).

2 Hold down the POWER ON key on the remote control for 5 seconds.

The following display appears.
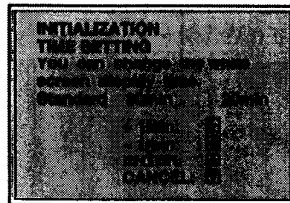
3 Press the ◄ and ► keys to set the desired minutes.
◄: Increases by 1 minute.
►: Decreases by 1 minute.
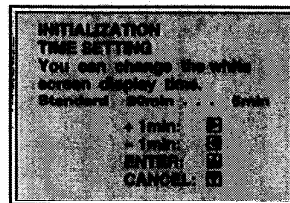
4 Press the ▲ key.

The display disappears.

To cancel the setting
Press the ▼ key instead of the ▲ key in step **4** above.

To set it so that the signal input from the connected equipment appears on the screen immediately after the power is turned on
Set the initializing period to "0 min".

Even when you set "STATUS" setting in the PAGE 1 to OFF, "OFF" indication is still displayed on the screen.
To turn it off, follow the procedure below.

1 Press the PAGE key until the PAGE 1 display appears.

2 Press the STATUS OFF key.

3 Hold down the STATUS OFF key for more than 5 seconds.

An asterisk (*) appears as illustrated below.
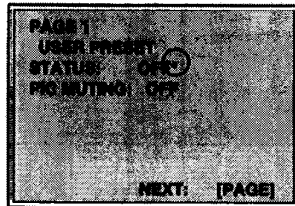
Asterisk (*) appears.

To turn on "OFF" indication
Press the STATUS OFF key until the asterisk (*) disappears.

Use the list below to check the meaning of the messages displayed on the screen.
The list is divided into sections according to the location which the message appears. First check the location in the following diagram, then refer to the alphabetic listing to find the message.
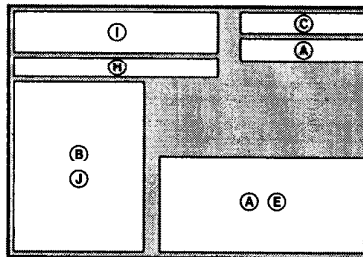
Ⓓ, Ⓕ, Ⓖ and Ⓚ listed below appear all over on the screen.

Ⓐ Caution messages

• **Not applicable!**	• The key does not function in the current mode.
• Overflow!	• The setting is outside the adjustable range limits.
• **PIC MUTING**	• Picture muting mode is on.
• **Input is not VIDEO.**	• The input signal is not VIDEO.
• **Input is not NTSC.**	• The input signal is not NTSC.
• **Input is not RGB.**	• The input signal is not RGB.
• Input is B & W.	• The input signal is black and white.
• **OFF**	• On-screen display STATUS is set to OFF.
• **NO INPUT**	• No input signal
• **Overcorrection**	• When adjusting registrations, some settings are overcorrected.

Ⓑ PIC CONTROL data

• **CONTR (CONTRAST)**	• Contrast
• **COLOR**	• Color
• **BRT (BRIGHTNESS)**	• Brightness
• **SHARP (SHARPNESS)**	• Sharpness
• **HUE**	• Hue
• **PIC CONTROL data reset**	• Resets the PIC CONTROL data.

Ⓒ Input signal

• **VIDEO**	• Input from VIDEO IN
• **INPUT-A**	• Input from RGB IN
• **INPUT-B**	• Input from an optional interface board
• **SW'ER x-y (switcher x=1-2, y=1-8)**	• Input from an optional switcher
• ID No.xx	• The ID number of the optional IFB-101 (when the IFB-101 is installed.)
• **OTHER**	• An optional switcher is in the OTHER mode.

Others

List of Messages

D PAGE

Subtitle

• USER PRESET	• User preset
• USER CONTROL	• User control
• SYSTEM PRESET	• System preset
• INPUT INFO (INPUT INFORMATION)	• Input information

PAGE 1

• STATUS ON/OFF	• On-screen display on/off
• PIC MUTING ON/OFF	• Picture muting mode on/off

PAGE 2

• CONTR (CONTRAST)	• Contrast
• COLOR	• Color
• BRT (BRIGHTNESS)	• Brightness
• SHARP (SHARPNESS)	• Sharpness
• HUE	• Hue
• PIC CONTROL data reset	• Resets the PIC CONTROL data.

PAGE 3

• COLOR TEMPERATURE: 9300/ 6500/5400/3200	• Color temperature is set to 9300/6500/5400/3200 manually adjusted by Qualified Sony Service Personnel.
• CLAMP: AUTO / S on G / H/C / H.P	• Clamp position is set to automatic/internal/external sync signal/ horizontal deflection pulse position.
• V-SHIFT: WIDE/NARROW	• The adjustable range of vertical shift is wide/narrow.

PAGE 4

• INPUT SIGNAL	• Input signal
• Y/C	• S video input signal from VIDEO IN
• RGB	• RGB input signal
• NTSC	• NTSC input signal from VIDEO IN
• PAL	• PAL input signal from VIDEO IN
• SECAM	• SECAM input signal from VIDEO IN
• B & W	• Black and white input signal from VIDEO IN
• IDTV	• IDTV input signal from the IFB-3000
• HDTV	• HDTV input signal from the IFB-1300
• COMPONENT	• Component input signal from the IFB-1200

• **fH**	• Horizontal frequency
• **fV**	• Vertical frequency
• **Internal oscillation**	• Internal oscillation mode (No signal is input.)
• **H/C-SYNC**	• Horizontal sync signal or composite sync signal
• **V-SYNC**	• Vertical sync signal
• **SYNC ON G**	• Composite sync signal
• **H/C-SYNC: POS/NEG/ ---**	• The polarity of the H/C-SYNC is positive/negative/not input.
• **V-SYNC:POS/NEG/ ---**	• The polarity of the V-SYNC is positive/negative/not input.
• **SYNC ON G:NEG/ ---**	• The polarity of the SYNC ON G is negative/not input.
• **REGI BLOCK: No.x**	• The input signal is grouped into the registration memory block No.x.

PAGE 5

• **1. CRT TIMER DISPLAY**	• CRT use time display mode
• **2. BAUD RATE PRESET**	• Baud rate setting display

PAGE 5-1

• **CRT TIMER DISPLAY MODE** 　　**RED: xxxx hours** 　　**GREEN: xxxx hours** 　　**BLUE: xxxx hours**	• CRT use time display mode • Red CRT use time: xxxx hours • Green CRT use time: xxxx hours • Blue CRT use time: xxxx hours

PAGE 5-2

• **RS-422 COMMUNICATION BAUD RATE PRESET MODE 38.4K/19.2K/ 9600/4800**	• The baud rate is set to 38.4k/19.2k/9600/4800 baud when communicating via the RS-422.

E Operation

• **YES: ▲**	• Press ▲ for "Yes".
• **NO: ▼**	• Press ▼ for "No".
• **SELECT: ◄ ►**	• Press ◄ or ► key to select.
• **SELECT: ◄ ► ▲ ▼**	• Press ◄, ►, ▲ or ▼ key to select.
• **ADJ: ◄ ► ▲ ▼**	• Press ◄, ►, ▲ or ▼ key to adjust.
• **ADJ: ◄ ►**	• Press ◄ or ► key to adjust.
• **ADJ: ▲ ▼**	• Press ▲ or ▼ key to adjust.
• **NEXT: [+] [–]**	• Press [+] key to move the cursor to the next position. • Press [–] key to move the cursor to the previous position.
• **NEXT: [PAGE]**	• Press PAGE key to go to the next page.
• **EXIT: [PAGE]**	• Press PAGE key to exit the PAGE mode.
• **EXIT: [NORMAL]**	• Press NORMAL key to exit the TEST mode.
• **ENTER: ►**	• Press ► key to execute the selected item.
• **ENTER: ▲**	• Press ▲ key to execute the selected item.
• **CANCEL: ▼**	• Press ▼ key to cancel the setting.

List of Messages

🇫 Memory data

• **MEMORY DATA in saving**	• Saving data in memory.
• **MEMORY DATA saving is complete!**	• Saving data in memory is completed.
• **No key may be applicable during the indication of this mode**	• When in this mode (MEMORY DATA saving), no key functions.
• **The registration data will be used as standard for all inputs OK?**	• Is it OK to use the stored data as the standard data for all inputs?

🇬 Data reset

• **Do you wish to return to factory preset data?**	• Do you wish to reset the data to the factory preset data?
• **Do you wish to return to previously saved data?**	• Do you wish to reset the data to the previously saved data?
• **Reset complete!**	• Resetting has been completed.
• **RGB SIZE DATA RESET MODE**	• RGB or video input size data resetting mode
• **RGB SHIFT DATA RESET MODE**	• RGB input shift data resetting mode
• **BLANKING DATA RESET MODE**	• Blanking data resetting mode
• **CENTERING ALL COLOR DATA RESET MODE**	• Centering data (all colors) resetting mode
• **W/B GAIN & BIAS ALL COLOR DATA RESET MODE**	• Gain and Bias (all colors) data resetting mode
• **REGISTRATION (RED/GREEN/ BLUE) DATA RESET MODE**	• Registration (red, green or blue) data resetting mode

🇭 Raster

• **RASTER R G B**	• Red, green and blue are projected.
• **RASTER R – –**	• Only red is projected.
• **RASTER – G –**	• Only green is projected.
• **RASTER – – B**	• Only blue is projected.
• **RASTER R G –**	• Red and green are projected.
• **RASTER R – B**	• Red and blue are projected.
• **RASTER – G B**	• Green and blue are projected.

🇮 Adjustment

• **RGB SIZE ADJ**	• RGB or video input size adjustment mode
• **RGB SHIFT ADJ**	• RGB input shift adjustment mode
• **R CENT ADJ**	• Red centering adjustment mode
• **G CENT ADJ**	• Green centering adjustment mode
• **B CENT ADJ**	• Blue centering adjustment mode
• **SIZE ADJ**	• Size adjustment mode
• **fine**	• Picture size fine adjustment mode for green
• **LIN (LINEARITY) ADJ**	• Linearity adjustment mode
• **SKEW ADJ**	• Skew adjustment mode
• **BOW ADJ**	• Bow adjustment mode

• **KEY (KEYSTONE) ADJ**	• Keystone adjustment mode
• **PIN (PINCUSHION) ADJ**	• Pincushion adjustment mode
• **ZONE ADJ**	• Zone adjustment mode
• **BLKG ADJ UPPER/LOWER/LEFT/ RIGHT**	• Blanking adjustment (upper, lower, left, or right) mode
• **BIAS ADJ**	• White balance bias adjustment mode
• **GAIN ADJ**	• White balance gain adjustment mode
• **MG FOCUS ADJ**	• Magnetic focus adjustment mode
• **ADJ AQP/DQP**	• AQP/DQP adjustment mode

⬛ Adjustment data

• **H: xxx**	• Horizontal adjustment level (xxx = MIN, 1, 2, ... 254, 255, MAX)
• **V: xxx**	• Vertical adjustment level (xxx = MIN, 1, 2, ... 254, 255, MAX)
• **Hf: xxx**	• Centering adjustment level for horizontal direction (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **Hc: xxx**	• Centering adjustment level for horizontal direction (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **Vf: xxx**	• Centering adjustment level for vertical direction (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **Vc: xxx**	• Centering adjustment level for vertical direction (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **A: xxx**	• General settings of magnetic focus adjustment level (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **VP: xxx**	• Magnetic focus adjustment level for the vertical phase (V-phase) (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **HP: xxx**	• Magnetic focus adjustment level for the horizontal phase (H-phase) (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **A: xxx**	• AQP adjustment level (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.
• **D: xxx**	• DQP adjustment level (xxx = MIN, 1, 2, ... 254, 255, MAX) Use the arrow keys to increment or decrement this number.

Others

List of Messages

K Others

• **For optimum performance, white screen will remain for 20 min. For immediate use, push [PAGE] key.**	• For optimum performance, white screen will remain for 20 min. For immediate use, press the PAGE key.
• **INITIALIZATION TIME SETTING**	• Initialization time setting mode
• **You can change the white screen display time.**	• You can change the white screen display time. Standard 20 min ... xx min.
• **Do you wish to enter into the SERVICEMAN CONTROL MODE?**	• Do you wish to enter into the service personnel control mode?
• **Do you wish to return to the USER CONTROL MODE?**	• Do you wish to return to the user control mode?
• **PROTECT MODE ON! You cannot enter into the SERVICEMAN CONTROL MODE.**	• You cannot enter the serviceman control mode because the remote control is protected.

About error codes

When a critical operational error occurs, the power will be automatically turned off and the error code will light up on the error code window inside the front cover. You can check the code without removing the cover. Refer to the chart below for the meanings.

Error code window (inside the cover)
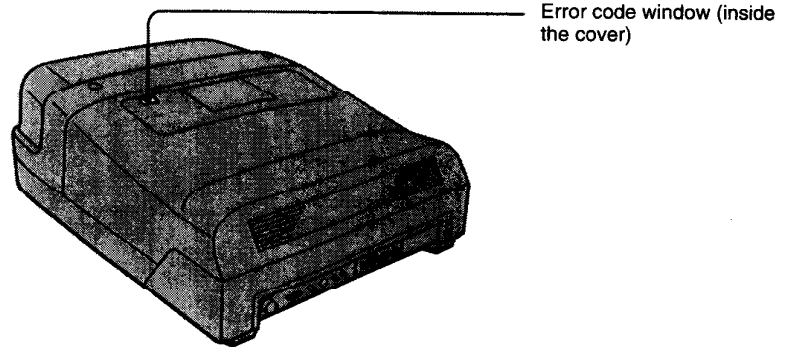
Y: Error occurrence

Error Code	FAN stop	(H stop) 115V down	IK-over	V-stop	HV-over	Power down
01.....	Y	–	–	–	–	–
02.....	–	Y	–	–	–	–
03.....	Y	Y	–	–	–	–
04.....	–	–	Y	–	–	–
05.....	Y	–	Y	–	–	–
06.....	–	Y	Y	–	–	–
07.....	Y	Y	Y	–	–	–
08.....	–	–	–	Y	–	–
09.....	Y	–	–	Y	–	–
0A.....	–	Y	–	Y	–	–
0b.....	Y	Y	–	Y	–	–
0C.....	–	–	Y	Y	–	–
0d.....	Y	–	Y	Y	–	–
0E.....	–	Y	Y	Y	–	–
0_.....	Y	Y	Y	Y	–	–
10.....	–	–	–	–	Y	–
11.....	Y	–	–	–	Y	–
12.....	–	Y	–	–	Y	–
13.....	Y	Y	–	–	Y	–
14.....	–	–	Y	–	Y	–
15.....	Y	–	Y	–	Y	–
16.....	–	Y	Y	–	Y	–
17.....	Y	Y	Y	–	Y	–
18.....	–	–	–	Y	Y	–
19.....	Y	–	–	Y	Y	–

Error Code	FAN stop	(H stop) 115V down	IK-over	V-stop	HV-over	Power down
1A.....	–	Y	–	Y	Y	–
1b.....	Y	Y	–	Y	Y	–
1C.....	–	–	Y	Y	Y	–
1d.....	Y	–	Y	Y	Y	–
1E.....	–	Y	Y	Y	Y	–
1_.....	Y	Y	Y	Y	Y	–
20.....	–	–	–	–	–	Y

Notes

- When the error code lights up, all the previous adjustment data will be cleared.
- The error code disappears when the MAIN POWER switch is turned off and the power cord is disconnected.
- The error code lights up every time the power is turned on until the critical operational error cause is returned to normal.

Others

Wall — Center of the pattern (factory preset position); C (dVoff (+)); D (TD); B (Ylens); a (TA); G (Yhole); Screen center; A (Set angle (+)); E (Xlens); F (Xhole)
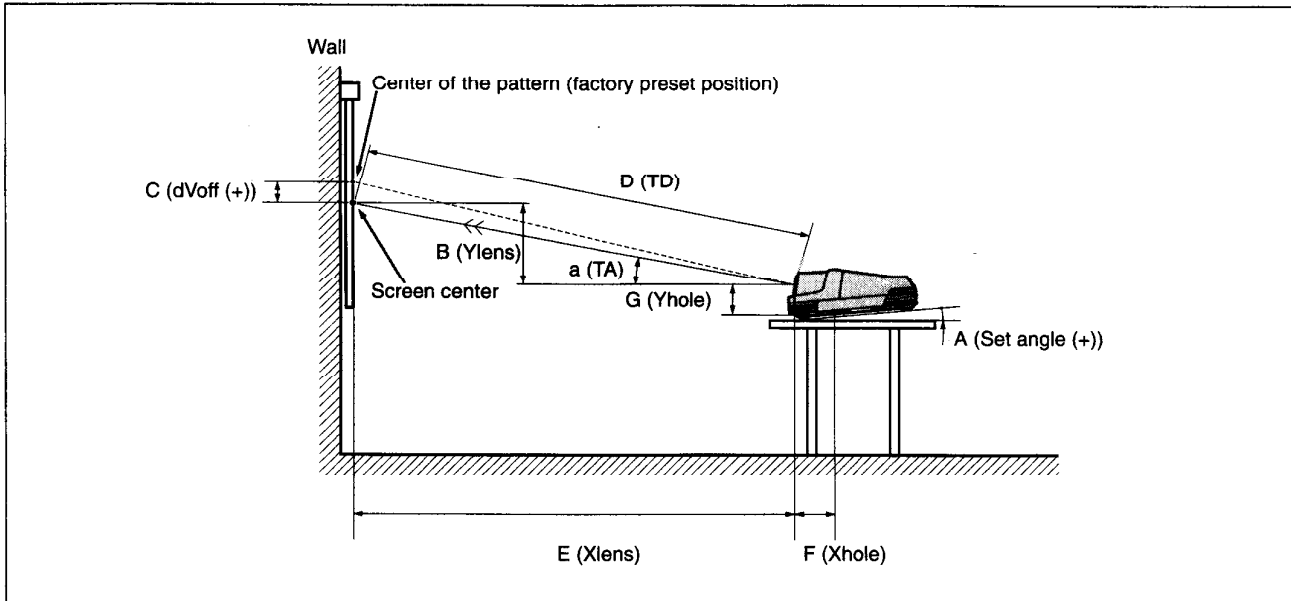
Unit: mm (inches) for F Xhole and G Yhole only

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
B / E	0.2419	0.2126	0.1944	0.1763	0.1584	0.1405	0.1228	0.1051	0.0875	0.0699	0.0524	0.0349	0.0175	0.0000	−0.0175	−0.0349
A Angle	0.0°	1.6°	2.6°	3.6°	4.5°	5.4°	6.4°	7.3°	8.2°	9.1°	10.0°	10.9°	11.9°	12.8°	13.7°	14.6°
F Xhole	247.4 (9 3/4)	254.5 (10 1/8)	258.9 (10 1/4)	263.2 (10 3/8)	267.3 (10 5/8)	271.1 (10 3/4)	274.9 (10 7/8)	278.6 (11)	282.2 (11 1/8)	285.8 (11 3/8)	289.2 (11 1/2)	292.6 (11 5/8)	296.0 (11 3/4)	299.2 (11 7/8)	302.4 (12)	305.5 (12 1/8)
G Yhole	262.0 (10 3/8)	255.1 (10 1/8)	250.7 (9 7/8)	246.1 (9 3/4)	241.7 (9 5/8)	237.4 (9 3/8)	233.0 (9 1/4)	228.5 (9)	224.1 (8 7/8)	219.5 (8 3/4)	214.9 (8 1/2)	210.3 (8 3/8)	205.6 (8 1/8)	200.8 (8)	196.0 (7 3/4)	191.1 (7 5/8)

When using the 90 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	2515 (99 1/8)	2529 (99 5/8)	2536 (99 7/8)	2543 (100 1/8)	2549 (100 3/8)	2554 (100 5/8)	2558 (100 3/4)	2562 (100 7/8)	2565 (101)	2567 (101 1/8)	2569 (101 1/4)	2570 (101 1/4)	2570 (101 1/4)	2570 (101 1/4)	2569 (101 1/4)	2568 (101 1/8)
B Ylens	606 (23 7/8)	538 (21 1/4)	493 (19 1/2)	448 (17 3/4)	404 (16)	359 (14 1/4)	314 (12 3/8)	269 (10 5/8)	224 (8 7/8)	180 (7 1/8)	135 (5 3/8)	90 (3 5/8)	45 (1 13/16)	0 (0)	−45 (−1 13/16)	−90 (−3 5/8)
D TD	2587 (101 7/8)	2585 (101 7/8)	2584 (101 3/4)	2582 (101 3/4)	2581 (101 5/8)	2579 (101 5/8)	2577 (101 1/2)	2576 (101 1/2)	2575 (101 3/8)	2574 (101 3/8)	2573 (101 3/8)	2572 (101 1/4)	2571 (101 1/4)	2570 (101 1/4)	2570 (101 1/4)	2569 (101 1/4)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	3 (1/8)	7 (9/32)	10 (19/32)	14 (9/16)	17 (11/16)	21 (27/32)	24 (31/32)	28 (1 1/8)	32 (1 5/16)	35 (1 7/16)	39 (1 9/16)	42 (1 11/16)
Spacer																
Red–L	−10	−9	−8	−7	−6	−5	−4	−2.5	−1	0	1	2	2.5	2.5	3	3
Red–C	15.5	15	15	15.5	16	16.5	17.5	−17.5	−16	−14.5	−13.5	−12.5	−11.5	−10.5	−9.5	−9
Green–L	−12.5	−11.5	−11	−10.5	−10.5	−10	−9.5	−9.5	−9	−8.5	−8	−8	−7.5	−7	−6.5	−6.5
Green–C	12.5	11.5	11	10.5	10.5	10	9.5	9.5	9	8.5	8	8	7.5	7	6.5	6.5
Blue–L	10	9	8	7	6	5	4	2.5	1	0	−1	−2	−2.5	−2.5	−3	−3
Blue–C	−15.5	−15	−15	−15.5	−16	−16.5	−17.5	17.5	16	14.5	13.5	12.5	11.5	10.5	9.5	9

When using the 100 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	2768 (109)	2783 (109 5/8)	2791 (110)	2799 (110 1/4)	2805 (110 1/2)	2811 (110 3/4)	2816 (110 7/8)	2820 (111 1/8)	2823 (111 1/4)	2826 (111 1/4)	2827 (111 3/8)	2829 (111 3/8)	2829 (111 3/8)	2829 (111 3/8)	2828 (111 3/8)	2826 (111 3/8)
B Ylens	667 (26 3/8)	592 (23 3/8)	543 (21 1/2)	494 (19 1/2)	444 (17 1/2)	395 (15 5/8)	346 (13 5/8)	296 (11 3/4)	247 (9 3/4)	198 (7 7/8)	148 (5 7/8)	99 (4)	49 (1 15/16)	0 (0)	−49 (−1 15/16)	−99 (−4)
D TD	2847 (112 1/8)	2845 (112 1/8)	2844 (112)	2842 (112)	2840 (111 7/8)	2839 (111 7/8)	2837 (111 3/4)	2835 (111 5/8)	2834 (111 5/8)	2833 (111 5/8)	2831 (111 1/2)	2830 (111 1/2)	2829 (111 1/2)	2829 (111 3/8)	2828 (111 3/8)	2828 (111 3/8)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	3 (1/8)	7 (9/32)	11 (7/16)	15 (19/32)	19 (3/4)	23 (29/32)	27 (1 1/8)	31 (1 1/4)	35 (1 7/16)	39 (1 9/16)	43 (1 3/4)	47 (1 7/8)
Spacer																
Red–L	−9.5	−8.5	−7.5	−6.5	−5.5	−4.5	−3	−1.5	0	1	2	2.5	3	3.5	3.5	3.5
Red–C	14.5	14.5	14.5	15	15.5	16.5	17.5	−17	−15.5	−14	−13	−12	−11	−10	−9.5	−9
Green–L	−12	−11	−11	−10.5	−10	−9.5	−9.5	−9	−9	−8.5	−8	−8	−7.5	−7	−7	−6.5
Green–C	12	11	11	10.5	10	9.5	9.5	9	9	8.5	8	8	7.5	7	7	6.5
Blue–L	9.5	8.5	7.5	6.5	5.5	4.5	3	1.5	0	−1	−2	−2.5	−3	−3.5	−3.5	−3.5
Blue–C	−14.5	−14.5	−14.5	−15	−15.5	−16.5	−17.5	17	15.5	14	13	12	11	10	9.5	9

When using the 110 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	3025 (119 1/8)	3041 (119 3/4)	3050 (120 1/8)	3058 (120 1/2)	3065 (120 3/4)	3071 (121)	3077 (121 1/8)	3081 (121 3/8)	3085 (121 1/2)	3087 (121 5/8)	3089 (121 3/4)	3091 (121 3/4)	3091 (121 3/4)	3091 (121 3/4)	3090 (121 3/4)	3088 (121 5/8)
B Ylens	729 (28 3/4)	646 (25 1/2)	593 (23 3/8)	539 (21 1/4)	486 (19 1/4)	432 (17 1/8)	378 (15)	324 (12 7/8)	270 (10 3/4)	216 (8 5/8)	162 (6 1/2)	108 (4 3/8)	54 (2 1/4)	0 (0)	−54 (−2 1/4)	−108 (−4 3/8)
D TD	3111 (122 1/2)	3109 (122 1/2)	3107 (122 3/8)	3106 (122 3/8)	3104 (122 1/4)	3102 (122 1/8)	3100 (122 1/8)	3098 (122)	3096 (122)	3095 (121 7/8)	3094 (121 7/8)	3093 (121 7/8)	3092 (121 3/4)	3091 (121 3/4)	3090 (121 3/4)	3090 (121 3/4)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	3 (1/8)	7 (9/32)	11 (7/16)	16 (21/32)	20 (13/16)	25 (1)	29 (1 3/16)	33 (1 5/16)	38 (1 1/2)	42 (1 11/16)	47 (1 7/8)	51 (2 1/8)
Spacer																
Red–L	−9	−8	−7.5	−6.5	−5	−4	−2.5	−0.5	1	2	3	3.5	3.5	4	4	4
Red–C	14	14	14.5	15	15.5	16.5	18	−16.5	−15	−13.5	−12.5	−11.5	−10.5	−10	−9	−8.5
Green–L	−11.5	−11	−10.5	−10	−10	−9.5	−9	−9	−8.5	−8.5	−8	−8	−7.5	−7	−7	−6.5
Green–C	11.5	11	10.5	10	10	9.5	9	9	8.5	8.5	8	8	7.5	7	7	6.5
Blue–L	9	8	7.5	6.5	5	4	2.5	0.5	−1	−2	−3	−3.5	−3.5	−4	−4	−4
Blue–C	−14	−14	−14.5	−15	−15.5	−16.5	−18	16.5	15	13.5	12.5	11.5	10.5	10	9	8.5

Others

List of the Projection Distance by Angle of Optical Axis

When using the 120 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	3279	3297	3307	3316	3324	3330	3336	3341	3344	3347	3350	3351	3351	3351	3350	3348
	(129 1/8)	(129 7/8)	(130 1/4)	(130 5/8)	(130 7/8)	(131 1/8)	(131 1/8)	(131 5/8)	(131 3/4)	(131 7/8)	(131 7/8)	(132)	(132)	(132)	(132)	(131 7/8)
B Ylens	791	701	643	585	526	468	410	351	293	234	176	117	59	0	−59	−117
	(31 1/4)	(27 5/8)	(25 3/8)	(23 1/8)	(20 3/4)	(18 1/2)	(16 1/4)	(13 7/8)	(11 5/8)	(9 1/4)	(7)	(4 5/8)	(2 3/8)	(0)	(−2 3/8)	(−4 5/8)
D TD	3373	3371	3369	3367	3365	3363	3361	3359	3357	3356	3354	3353	3352	3351	3350	3350
	(132 7/8)	(132 3/4)	(132 3/4)	(132 5/8)	(132 1/2)	(132 1/2)	(132 3/8)	(132 1/4)	(132 1/4)	(132 1/8)	(132 1/8)	(132 1/8)	(132)	(132)	(132)	(132)
C dVoff	0	0	0	0	3	7	12	17	22	27	31	36	41	46	51	56
	(0)	(0)	(0)	(0)	(1/8)	(9/32)	(1/2)	(11/16)	(7/8)	(1 1/8)	(1 1/4)	(1 7/16)	(1 5/8)	(1 13/16)	(2 1/8)	(2 1/4)
Spacer																
Red–L	−9	−8	−7	−6	−4.5	−3	−1.5	0	1.5	3	3.5	4	4	4.5	4.5	4.5
Red–C	13.5	14	14	14.5	15.5	16.5	−17.5	−16	−14.5	−13	−12	−11	−10	−9.5	−9	−8.5
Green–L	−11	−10.5	−10	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8	−7.5	−7.5	−7	−7	−6.5
Green–C	11	10.5	10	10	9.5	9.5	9	9	8.5	8.5	8	7.5	7.5	7	7	6.5
Blue–L	9	8	7	6	4.5	3	1.5	0	−1.5	−3	−3.5	−4	−4	−4.5	−4.5	−4.5
Blue–C	−13.5	−14	−14	−14.5	−15.5	−16.5	17.5	16	14.5	13	12	11	10	9.5	9	8.5

When using the 130 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	3570	3589	3600	3610	3618	3625	3632	3637	3641	3644	3647	3648	3649	3648	3647	3645
	(140 5/8)	(141 3/8)	(141 3/4)	(142 1/4)	(142 1/2)	(142 3/4)	(143)	(143 1/4)	(143 3/8)	(143 1/2)	(143 5/8)	(143 3/4)	(143 3/4)	(143 3/4)	(143 5/8)	(143 1/2)
B Ylens	861	763	700	637	573	510	446	382	319	255	191	127	64	0	−64	−127
	(34)	(30 1/8)	(27 5/8)	(25 1/8)	(22 5/8)	(20 1/8)	(17 5/8)	(15 1/8)	(12 5/8)	(10 1/8)	(7 5/8)	(5)	(2 5/8)	(0)	(−2 5/8)	(−5)
D TD	3673	3670	3668	3666	3664	3661	3659	3657	3655	3653	3652	3650	3649	3648	3647	3647
	(144 5/8)	(144 1/2)	(144 1/2)	(144 3/8)	(144 5/32)	(144 1/4)	(144 1/8)	(144)	(144)	(143 7/8)	(143 7/8)	(143 3/4)	(143 3/4)	(143 3/4)	(143 5/8)	(143 5/8)
C dVoff	0	0	0	0	3	8	13	19	24	29	34	39	45	50	55	60
	(0)	(0)	(0)	(0)	(1/8)	(11/32)	(17/32)	(3/4)	(31/32)	(1 3/16)	(1 3/8)	(1 9/16)	(1 13/16)	(2)	(2 1/4)	(2 3/8)
Spacer																
Red–L	−8.5	−7.5	−6.5	−5.5	−4	−2.5	−0.5	1.5	2.5	3.5	4	4.5	4.5	5	5	5
Red–C	13	13.5	14	14.5	15.5	17	−17	−15	−13.5	−12	−11.5	−10.5	−10	−9.5	−9	−8.5
Green–L	−10.5	−10.5	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8	−8	−7.5	−7.5	−7	−7	−6.5
Green–C	10.5	10.5	10	9.5	9.5	9	9	8.5	8.5	8	8	7.5	7.5	7	7	6.5
Blue–L	8.5	7.5	6.5	5.5	4	2.5	0.5	−1.5	−2.5	−3.5	−4	−4.5	−4.5	−5	−5	−5
Blue–C	−13	−13.5	−14	−14.5	−15.5	−17	17	15	13.5	12	11.5	10.5	10	9.5	9	8.5

Others

When using the 140 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	3861	3882	3894	3904	3913	3921	3927	3933	3938	3941	3944	3945	3946	3946	3944	3942
	(152 1/8)	(152 7/8)	(153 3/8)	(153 3/4)	(154 1/8)	(154 3/8)	(154 5/8)	(154 7/8)	(155 1/8)	(155 1/4)	(155 3/8)	(155 3/8)	(155 3/8)	(155 3/8)	(155 3/8)	(155 1/4)
B Ylens	932	825	757	688	620	551	482	413	345	276	207	138	69	0	−69	−138
	(36 3/4)	(32 1/2)	(29 7/8)	(27 1/8)	(24 1/2)	(21 3/4)	(19)	(16 3/8)	(13 5/8)	(10 7/8)	(8 1/4)	(5 1/2)	(2 3/4)	(0)	(−2 3/4)	(−5 1/2)
D TD	3972	3969	3967	3965	3962	3959	3957	3955	3953	3951	3949	3948	3947	3946	3945	3944
	(156 3/8)	(156 1/4)	(156 1/4)	(156 1/8)	(156)	(156)	(155 7/8)	(155 3/4)	(155 5/8)	(155 5/8)	(155 1/2)	(155 1/2)	(155 3/8)	(155 3/8)	(155 3/8)	(155 3/8)
C dVoff	0	0	0	0	4	9	15	20	26	31	37	42	48	54	59	65
	(0)	(0)	(0)	(0)	(3/16)	(3/8)	(19/32)	(13/16)	(1 1/16)	(1 1/4)	(1 1/2)	(1 11/16)	(1 15/16)	(2 1/4)	(2 3/8)	(2 5/8)
Spacer																
Red–L	−8.5	−7	−6	−5	−3.5	−1.5	0.5	2.5	3.5	4.5	4.5	5	5	5	5	5
Red–C	13	13.5	14	14.5	16	18	−16	−14	−12.5	−11.5	−11	−10	−9.5	−9	−8.5	−8
Green–L	−10.5	−10	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8	−8	−7.5	−7.5	−7	−7	−6.5
Green–C	10.5	10	10	9.5	9.5	9	9	8.5	8.5	8	8	7.5	7.5	7	7	6.5
Blue–L	8.5	7	6	5	3.5	1.5	−0.5	−2.5	−3.5	−4.5	−4.5	−5	−5	−5	−5	−5
Blue–C	−13	−13.5	−14	−14.5	−16	−18	16	14	12.5	11.5	11	10	9.5	9	8.5	8

When using the 150 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	4166	4188	4201	4212	4222	4230	4237	4243	4248	4252	4255	4257	4257	4257	4255	4253
	(164 1/8)	(165)	(165 1/2)	(165 7/8)	(166 1/4)	(166 5/8)	(166 7/8)	(167 1/8)	(167 3/8)	(167 1/2)	(167 5/8)	(167 5/8)	(167 5/8)	(167 5/8)	(167 5/8)	(167 1/2)
B Ylens	1005	890	817	743	669	595	520	446	372	297	223	149	74	0	−74	−149
	(39 5/8)	(35 1/8)	(32 1/4)	(29 3/8)	(26 3/8)	(23 1/2)	(20 1/2)	(17 5/8)	(14 3/4)	(11 3/4)	(8 7/8)	(5 7/8)	(3)	(0)	(−3)	(−5 7/8)
D TD	4285	4282	4280	4277	4275	4272	4269	4267	4265	4263	4261	4259	4258	4257	4256	4255
	(168 3/4)	(168 5/8)	(168 1/2)	(168 1/2)	(168 3/8)	(168 1/4)	(168 1/8)	(168)	(168)	(167 7/8)	(167 3/4)	(167 3/4)	(167 3/4)	(167 5/8)	(167 5/8)	(167 5/8)
C dVoff	0	0	0	0	5	11	16	22	28	34	40	46	52	58	64	70
	(0)	(0)	(0)	(0)	(7/32)	(7/16)	(21/32)	(7/8)	(1 1/8)	(1 3/8)	(1 5/8)	(1 13/16)	(2 1/8)	(2 3/8)	(2 5/8)	(2 7/8)
Spacer																
Red–L	−8	−7	−6	−4.5	−2.5	0	2	3.5	4.5	5	5	5.5	5.5	5.5	5.5	5.5
Red–C	12.5	13	14	15	17	−17	−15	−13	−12	−11	−10.5	−10	−9.5	−9	−8.5	−8
Green–L	−10	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8.5	−8	−8	−7.5	−7.5	−7	−7	−7
Green–C	10	10	9.5	9.5	9	9	8.5	8.5	8.5	8	8	7.5	7.5	7	7	7
Blue–L	8	7	6	4.5	2.5	0	−2	−3.5	−4.5	5	−5	−5.5	−5.5	−5.5	−5.5	−5.5
Blue–C	−12.5	−13	−14	−15	−17	17	15	13	12	11	10.5	10	9.5	9	8.5	8

List of the Projection Distance by Angle of Optical Axis

When using the 160 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	4444 (175)	4467 (176)	4481 (176 1/2)	4493 (177)	4503 (177 3/8)	4512 (177 3/4)	4520 (178)	4526 (178 1/4)	4532 (178 1/2)	4536 (178 5/8)	4539 (178 3/4)	4540 (178 7/8)	4541 (178 7/8)	4541 (178 7/8)	4539 (178 3/4)	4536 (178 5/8)
B Ylens	1072 (42 1/4)	950 (37 1/2)	871 (34 3/8)	792 (31 1/4)	713 (28 1/8)	634 (25)	555 (21 7/8)	476 (18 3/4)	397 (15 5/8)	317 (12 1/2)	238 (9 3/8)	159 (6 3/8)	79 (3 1/8)	0 (0)	−79 (−3 1/8)	−159 (−6 3/8)
D TD	4571 (180)	4567 (179 7/8)	4565 (179 3/4)	4562 (179 5/8)	4559 (179 5/8)	4556 (179 1/2)	4554 (179 3/8)	4551 (179 1/4)	4549 (179 1/8)	4547 (179 1/8)	4545 (179)	4543 (178 7/8)	4542 (178 7/8)	4541 (178 7/8)	4540 (178 3/4)	4539 (178 3/4)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	5 (7/32)	12 (1/2)	18 (23/32)	24 (31/32)	30 (1 3/16)	36 (1 7/16)	43 (1 3/4)	49 (1 15/16)	55 (2 1/4)	62 (2 1/2)	68 (2 3/4)	74 (3)
Spacer																
Red–L	−8	−6.5	−5.5	−3.5	−1.5	1	3	4	5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Red–C	12.5	13	14	15.5	17.5	−16	−14	−12.5	−11.5	−10.5	−10	−9.5	−9	−8.5	−8.5	−8
Green–L	−10	−9.5	−9.5	−9.5	−9	−9	−8.5	−8.5	−8.5	−8	−8	−7.5	−7.5	−7.5	−7	−7
Green–C	10	9.5	9.5	9.5	9	9	8.5	8.5	8.5	8	8	7.5	7.5	7.5	7	7
Blue–L	8	6.5	5.5	3.5	1.5	−1	−3	−4	−5	−5.5	−5.5	−5.5	−5.5	−5.5	−5.5	−5.5
Blue–C	−12.5	−13	−14	−15.5	−17.5	16	14	12.5	11.5	10.5	10	9.5	9	8.5	8.5	8

When using the 170 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	4717 (185 3/4)	4742 (186 3/4)	4756 (187 3/8)	4769 (187 7/8)	4780 (188 1/4)	4790 (188 5/8)	4798 (189)	4805 (189 1/4)	4810 (189 3/8)	4815 (189 5/8)	4818 (189 3/4)	4820 (189 3/4)	4820 (189 7/8)	4820 (189 3/4)	4818 (189 3/4)	4815 (189 5/8)
B Ylens	1139 (44 7/8)	1008 (39 3/4)	925 (36 1/2)	841 (33 1/8)	757 (29 7/8)	673 (26 1/2)	589 (23 1/4)	505 (20)	421 (16 5/8)	337 (13 3/8)	253 (10)	168 (6 5/8)	84 (3 3/8)	0 (0)	−84 (−3 3/8)	−168 (−6 5/8)
D TD	4852 (191 1/8)	4848 (190 7/8)	4845 (190 7/8)	4843 (190 3/4)	4840 (190 5/8)	4837 (190 1/2)	4834 (190 3/8)	4831 (190 1/4)	4829 (190 1/8)	4826 (190 1/8)	4824 (190)	4823 (189 7/8)	4821 (189 7/8)	4820 (189 3/4)	4819 (189 3/4)	4818 (189 3/4)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	6 (1/4)	12 (1/2)	19 (3/4)	25 (1)	32 (1 5/16)	39 (1 9/16)	45 (1 13/16)	52 (2 1/8)	59 (2 3/8)	65 (2 5/8)	72 (2 7/8)	79 (3 1/8)
Spacer																
Red–L	−7.5	−6	−4.5	−2.5	0	2.5	4	5	5.5	5.5	6	6	6	6	6	5.5
Red–C	12.5	13.5	14.5	16.5	−17	−14.5	−13	−12	−11	−10.5	−9.5	−9.5	−9	−8.5	−8	−8
Green–L	−10	−9.5	−9.5	−9	−9	−9	−8.5	−8.5	−8	−8	−8	−7.5	−7.5	−7.5	−7	−7
Green–C	10	9.5	9.5	9	9	9	8.5	8.5	8	8	8	7.5	7.5	7.5	7	7
Blue–L	7.5	6	4.5	2.5	0	−2.5	−4	−5	−5.5	−5.5	−6	−6	−6	−6	−6	−5.5
Blue–C	−12.5	−13.5	−14.5	−16.5	17	14.5	13	12	11	10.5	9.5	9.5	9	8.5	8	8

Others

When using the 180 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	4993	5020	5035	5049	5060	5070	5079	5086	5092	5097	5100	5102	5103	5102	5100	5097
	(196 5/8)	(197 3/4)	(198 1/4)	(198 7/8)	(199 1/4)	(199 5/8)	(200)	(200 1/4)	(200 1/2)	(200 3/4)	(200 7/8)	(200 7/8)	(201)	(200 7/8)	(200 7/8)	(200 7/8)
B Ylens	1205	1067	979	890	802	713	624	535	446	356	267	178	89	0	−89	−178
	(47 1/2)	(42 1/8)	(38 5/8)	(35 1/8)	(31 5/8)	(28 1/8)	(24 5/8)	(21 1/8)	(17 5/8)	(14 1/8)	(10 5/8)	(7 1/8)	(3 5/8)	(0)	(−3 5/8)	(−7 1/8)
D TD	5137	5132	5130	5127	5123	5120	5117	5114	5112	5109	5107	5105	5104	5102	5101	5100
	(202 1/4)	(202 1/8)	(202)	(201 7/8)	(201 3/4)	(201 5/8)	(201 1/2)	(201 3/8)	(201 1/4)	(201 1/4)	(201 1/8)	(201)	(201)	(200 7/8)	(200 7/8)	(200 7/8)
C dVoff	0	0	0	0	6	13	20	27	34	41	48	55	62	69	76	84
	(0)	(0)	(0)	(0)	(1/4)	(17/32)	(13/16)	(1 1/8)	(1 3/8)	(1 5/8)	(1 15/16)	(2 1/4)	(2 1/2)	(2 3/4)	(3)	(3 3/8)
Spacer																
Red–L	−7.5	−5.5	−4	−1.5	1.5	3.5	4.5	5.5	5.5	6	6	6	6	6	6	6
Red–C	12.5	13.5	15	17.5	−16	−13.5	−12	−11	−10.5	−10	−9.5	−9	−9	−8.5	−8	−8
Green–L	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−7.5	−7.5	−7.5	−7	−7
Green–C	10	9.5	9.5	9	9	8.5	8.5	8.5	8	8	8	7.5	7.5	7.5	7	7
Blue–L	7.5	5.5	4	1.5	−1.5	−3.5	−4.5	−5.5	−5.5	−6	−6	−6	−6	−6	−6	−6
Blue–C	−12.5	−13.5	−15	−17.5	16	13.5	12	11	10.5	10	9.5	9	9	8.5	8	8

When using the 190 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	5268	5297	5313	5327	5339	5349	5359	5366	5372	5377	5381	5383	5384	5383	5381	5378
	(207 1/2)	(208 5/8)	(209 1/4)	(209 3/4)	(210 1/4)	(210 5/8)	(211)	(211 3/8)	(211 5/8)	(211 3/4)	(211 7/8)	(212)	(212)	(212)	(211 7/8)	(211 3/4)
B Ylens	1272	1126	1033	939	846	752	658	564	470	376	282	188	94	0	−94	−188
	(50 1/8)	(44 3/8)	(40 3/4)	(37)	(33 3/8)	(29 5/8)	(26)	(22 1/4)	(18 5/8)	(14 7/8)	(11 1/8)	(7 1/2)	(3 3/4)	(0)	(−3 3/4)	(−7 1/2)
D TD	5419	5415	5412	5409	5406	5402	5399	5396	5393	5390	5388	5386	5385	5383	5382	5381
	(213 3/8)	(213 1/4)	(213 1/8)	(213)	(212 7/8)	(212 3/4)	(212 5/8)	(212 1/2)	(212 3/8)	(212 1/4)	(212 1/4)	(212 1/8)	(212)	(212)	(212)	(211 7/8)
C dVoff	0	0	0	0	6	14	21	28	36	43	51	58	65	73	81	88
	(0)	(0)	(0)	(0)	(1/4)	(9/16)	(27/32)	(1 1/8)	(1 7/16)	(1 3/4)	(2 1/8)	(2 3/8)	(2 5/8)	(2 7/8)	(3 1/4)	(3 1/2)
Spacer																
Red–L	−7	−5	−3	0	2.5	4.5	5	5.5	6	6	6	6	6	6	6	6
Red–C	12.5	14	15.5	−17.5	−14.5	−12.5	−11.5	−10.5	−10	−9.5	−9.5	−9	−8.5	−8.5	−8	−8
Green–L	−9.5	−9.5	−9	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−7.5	−7.5	−7.5	−7	−7
Green–C	9.5	9.5	9	9	9	8.5	8.5	8.5	8	8	8	7.5	7.5	7.5	7	7
Blue–L	7	5	3	0	−2.5	−4.5	−5	−5.5	−6	−6	−6	−6	−6	−6	−6	−6
Blue–C	−12.5	−14	−15.5	17.5	14.5	12.5	11.5	10.5	10	9.5	9.5	9	8.5	8.5	8	8

Others

List of the Projection Distance by Angle of Optical Axis

When using the 200 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	5543 (218 1/4)	5573 (219 1/2)	5590 (220 1/8)	5605 (220 3/4)	5618 (221 1/4)	5629 (221 5/8)	5638 (222)	5646 (222 3/8)	5653 (222 5/8)	5658 (222 7/8)	5662 (223)	5664 (223)	5665 (223 1/8)	5664 (223)	5662 (223)	5658 (222 7/8)
B Ylens	1338 (52 3/4)	1185 (46 3/4)	1087 (42 7/8)	988 (39)	890 (35 1/8)	791 (31 1/4)	692 (27 1/4)	593 (23 3/8)	495 (19 1/2)	396 (15 5/8)	297 (11 3/4)	198 (7 7/8)	99 (4)	0 (0)	−99 (−4)	−198 (−7 7/8)
D TD	5702 (224 1/2)	5697 (224 3/8)	5694 (224 1/4)	5691 (224 1/8)	5688 (224)	5684 (223 7/8)	5680 (223 3/4)	5677 (223 5/8)	5674 (223 1/2)	5672 (223 3/8)	5669 (223 1/4)	5667 (223 1/8)	5665 (223 1/8)	5664 (223)	5663 (223)	5662 (223)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	7 (9/32)	14 (9/16)	22 (7/8)	30 (1 3/16)	38 (1 1/2)	45 (1 13/16)	53 (2 1/8)	61 (2 1/2)	69 (2 3/4)	77 (3 1/8)	85 (3 3/8)	93 (3 3/4)
Spacer																
Red–L	−7	−4.5	−2	1.5	4	5	5.5	6	6.5	6.5	6.5	6.5	6.5	6.5	6	6
Red–C	12.5	14	17	−16	−13.5	−12	−11	−10.5	−10	−9.5	−9	−9	−8.5	−8.5	−8	−8
Green–L	−9.5	−9.5	−9	−9	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−7.5	−7.5	−7.5	−7	−7
Green–C	9.5	9.5	9	9	8.5	8.5	8.5	8.5	8	8	8	7.5	7.5	7.5	7	7
Blue–L	7	4.5	2	−1.5	−4	−5	−5.5	−6	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6	−6
Blue–C	−12.5	−14	−17	16	13	12	11	10.5	10	9.5	9	9	8.5	8.5	8	8

When using the 210 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	5816 (229)	5847 (230 1/4)	5865 (231)	5881 (231 5/8)	5894 (232 1/8)	5906 (232 5/8)	5916 (233)	5924 (233 1/4)	5931 (233 5/8)	5937 (233 3/4)	5941 (234)	5943 (234)	5944 (234 1/8)	5943 (234)	5941 (234)	5937 (233 3/4)
B Ylens	1404 (55 3/8)	1243 (49)	1140 (45)	1037 (40 7/8)	934 (36 7/8)	830 (32 3/4)	726 (28 5/8)	623 (24 5/8)	519 (20 1/2)	415 (16 3/8)	311 (12 1/4)	208 (8 1/4)	104 (4 1/8)	0 (0)	−104 (−4 1/8)	−208 (−8 1/4)
D TD	5983 (235 5/8)	5978 (235 3/8)	5975 (235 1/4)	5972 (235 1/8)	5968 (235)	5964 (234 7/8)	5960 (234 3/4)	5957 (234 5/8)	5954 (234 1/2)	5951 (234 3/8)	5949 (234 1/4)	5947 (234 1/8)	5945 (234 1/8)	5943 (234)	5942 (234)	5941 (234)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	7 (9/32)	15 (19/32)	23 (29/32)	31 (1 1/4)	39 (1 9/16)	47 (1 7/8)	56 (2 1/4)	64 (2 5/8)	72 (2 7/8)	81 (3 1/4)	89 (3 5/8)	97 (3 7/8)
Spacer																
Red–L	−6.5	−3.5	−0.5	3	4.5	5.5	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6
Red–C	12.5	15	−18	−14.5	−12.5	−11.5	−10.5	−10	−9.5	−9.5	−9	−8.5	−8.5	−8	−8	−7.5
Green–L	−9.5	−9	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7	−7
Green–C	9.5	9	9	9	8.5	8.5	8.5	8	8	8	8	7.5	7.5	7.5	7	7
Blue–L	6.5	3.5	0.5	−3	−4.5	−5.5	−6	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6
Blue–C	−12.5	−15	18	14.5	12.5	11.5	10.5	10	9.5	9.5	9	8.5	8.5	8	8	7.5

Others

When using the 220 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	6093	6126	6144	6161	6175	6187	6197	6206	6213	6219	6223	6226	6226	6226	6223	6219
	(239 7/8)	(241 1/4)	(242)	(242 5/8)	(243 1/8)	(243 5/8)	(244)	(244 3/8)	(244 5/8)	(244 7/8)	(245)	(245 1/8)	(245 1/8)	(245 1/8)	(245 1/8)	(244 7/8)
B Ylens	1471	1302	1194	1086	978	870	761	652	544	435	326	217	109	0	−109	−217
	(58)	(51 3/8)	(47 1/8)	(42 7/8)	(38 5/8)	(34 3/8)	(30)	(25 3/4)	(21 1/2)	(17 1/4)	(12 7/8)	(8 5/8)	(4 3/8)	(0)	(−4 3/8)	(−8 5/8)
D TD	6268	6262	6259	6256	6252	6248	6244	6240	6237	6234	6232	6229	6227	6226	6224	6223
	(246 7/8)	(246 5/8)	(246 1/2)	(246 3/8)	(246 1/4)	(246)	(245 7/8)	(245 3/4)	(245 5/8)	(245 1/2)	(245 3/8)	(245 1/4)	(245 1/4)	(245 1/8)	(245 1/8)	(245)
C dVoff	0	0	0	0	7	16	25	33	41	50	59	67	76	84	93	102
	(0)	(0)	(0)	(0)	(9/32)	(21/32)	(1)	(1 5/16)	(1 5/8)	(2)	(2 3/8)	(2 3/4)	(3)	(3 3/8)	(3 3/4)	(4 1/8)
Spacer																
Red–L	−6	−2.5	1.5	4	5.5	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	−7.5
Red–C	13	16	−16	−13.5	−12	−11	−10.5	−10	−9.5	−9	−9	−8.5	−8.5	−8	−8	6.5
Green–L	−9.5	−9	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7	−7
Green–C	9.5	9	9	9	8.5	8.5	8.5	8	8	8	8	7.5	7.5	7.5	7	7
Blue–L	6	2.5	−1.5	−4	−5.5	−6	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	7.5
Blue–C	−13	−16	16	13.5	12	11	10.5	10	9.5	9	9	8.5	8.5	8	8	−6.5

When using the 230 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	6345	6380	6399	6416	6431	6443	6454	6463	6471	6477	6481	6484	6485	6484	6481	6477
	(249 7/8)	(251 1/4)	(252)	(252 5/8)	(253 1/4)	(253 3/4)	(254 1/8)	(254 1/2)	(254 7/8)	(255)	(255 1/4)	(255 3/8)	(255 3/8)	(255 3/8)	(255 1/4)	(255 1/8)
B Ylens	1533	1356	1244	1131	1019	906	793	679	566	453	340	226	113	0	−113	−226
	(60 3/8)	(53 1/2)	(49)	(44 5/8)	(40 1/8)	(35 3/4)	(31 1/4)	(26 3/4)	(22 3/8)	(17 7/8)	(13 1/2)	(9)	(4 1/2)	(0)	(−4 1/2)	(−9)
D TD	6528	6522	6519	6515	6511	6507	6503	6499	6496	6493	6490	6488	6486	6484	6482	6481
	(257)	(256 7/8)	(256 3/4)	(256 5/8)	(256 3/8)	(256 1/4)	(256 1/8)	(255 7/8)	(255 3/4)	(255 5/8)	(255 5/8)	(255 1/2)	(255 3/8)	(255 3/8)	(255 1/4)	(255 1/4)
C dVoff	0	0	0	0	7	16	25	34	43	52	61	70	79	88	97	106
	(0)	(0)	(0)	(0)	(9/32)	(21/32)	(1)	(1 3/8)	(1 3/4)	(2 1/8)	(2 1/2)	(2 7/8)	(3 1/8)	(3 1/2)	(3 7/8)	(4 1/4)
Spacer																
Red–L	−5.5	−1	2.5	4.5	5.5	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Red–C	13.5	17.5	−15	−12.5	−11.5	−10.5	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8	−8	−7.5
Green–L	−9.5	−9	−9	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9.5	9	9	8.5	8.5	8.5	8.5	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	5.5	1	−2.5	−4.5	−5.5	6	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5
Blue–C	−13.5	−17.5	15	12.5	11.5	10.5	10	9.5	9.5	9	9	8.5	8.5	8	8	7.5

Others

When using the 240 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	6600	6635	6655	6673	6689	6702	6713	6723	6730	6737	6741	6744	6744	6744	6741	6737
	(259 7/8)	(261 1/4)	(262 1/8)	(262 3/4)	(263 3/8)	(263 7/8)	(264 3/8)	(264 3/4)	(265)	(265 1/4)	(265 1/2)	(265 1/2)	(265 5/8)	(265 1/2)	(265 1/2)	(265 1/4)
B Ylens	1594	1410	1294	1177	1059	942	824	707	589	471	353	236	118	0	−118	−236
	(62 7/8)	(55 5/8)	(51)	(46 3/8)	(41 3/4)	(37 1/0)	(32 1/8)	(27 7/0)	(23 1/4)	(18 5/0)	(14)	(9 3/8)	(4 3/4)	(0)	(−4 3/4)	(−9 3/8)
D TD	6789	6784	6780	6776	6772	6768	6763	6760	6756	6753	6750	6748	6746	6744	6742	6741
	(267 3/8)	(267 1/8)	(267)	(266 7/8)	(266 5/8)	(266 1/2)	(266 3/8)	(266 1/4)	(266)	(265 7/8)	(265 7/8)	(265 3/4)	(265 5/8)	(265 1/2)	(265 1/2)	(265 1/2)
C dVoff	0	0	0	0	7	17	26	35	44	54	63	73	82	92	101	111
	(0)	(0)	(0)	(0)	(9/32)	(11/16)	(1 1/16)	(1 7/16)	(1 3/4)	(2 1/4)	(2 1/2)	(2 7/8)	(3 1/4)	(3 5/8)	(4)	(4 3/8)
Spacer																
Red–L	−4.5	0.5	3.5	5	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Red–C	14	−17	−14	−12	−11	−10.5	−10	−9.5	−9	−9	−8.5	−8.5	−8.5	−8	−8	−7.5
Green–L	−9	−9	−9	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9	9	9	8.5	8.5	8.5	8.5	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	4.5	−0.5	−3.5	−5	−6	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5	−6.5
Blue–C	−14	17	14	12	11	10.5	10	9.5	9	9	8.5	8.5	8.5	8	8	7.5

When using the 250 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	6868	6905	6926	6944	6960	6974	6986	6996	7004	7010	7015	7017	7018	7018	7015	7010
	(270 3/8)	(271 7/8)	(272 3/4)	(273 1/2)	(274 1/8)	(274 5/8)	(275 1/8)	(275 1/2)	(275 3/4)	(276)	(276 1/4)	(276 3/8)	(276 3/8)	(276 3/8)	(276 1/4)	(276)
B Ylens	1659	1468	1346	1225	1102	980	858	735	613	490	368	245	123	0	−122	−245
	(65 3/8)	(57 7/8)	(53)	(48 1/4)	(43 1/2)	(38 5/8)	(33 7/8)	(29)	(24 1/4)	(19 3/8)	(14 1/2)	(9 3/4)	(4 7/8)	(0)	(−4 7/8)	(−9 3/4)
D TD	7065	7059	7055	7052	7047	7042	7038	7034	7031	7027	7024	7022	7019	7018	7016	7015
	(278 1/4)	(278)	(277 7/8)	(277 5/8)	(277 1/2)	(277 3/8)	(277 1/8)	(277)	(276 7/8)	(276 3/4)	(276 5/8)	(276 1/2)	(276 3/8)	(276 3/8)	(276 1/4)	(276 1/4)
C dVoff	0	0	0	0	7	17	27	37	46	56	66	76	86	96	106	116
	(0)	(0)	(0)	(0)	(9/32)	(11/16)	(1 1/8)	(1 1/2)	(1 13/16)	(2 1/4)	(2 5/8)	(3)	(3 1/2)	(3 7/8)	(4 1/4)	(4 5/8)
Spacer																
Red–L	−3.5	2	4.5	5.5	6	6.5	6.5	7	7	7	7	6.5	6.5	6.5	6.5	6.5
Red–C	15	−15.5	−13	−11.5	−10.5	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8	−8	−8	−7.5
Green–L	−9	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9	9	9	8.5	8.5	8.5	8	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	3.5	−2	−4.5	−5.5	−6	−6.5	−6.5	−7	−7	−7	−7	−6.5	−6.5	−6.5	−6.5	−6.5
Blue–C	−15	15.5	13	11.5	10.5	10	9.5	9.5	9	9	8.5	8.5	8	8	8	7.5

When using the 260 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	7158 (281 7/8)	7197 (283 3/8)	7218 (284 1/4)	7238 (285)	7254 (285 5/8)	7268 (286 1/4)	7281 (286 3/4)	7291 (287 1/8)	7300 (287 1/2)	7306 (287 3/4)	7311 (287 7/8)	7314 (288)	7315 (288)	7314 (288)	7311 (287 7/8)	7307 (287 3/4)
B Ylens	1729 (68 1/8)	1530 (60 1/4)	1403 (55 1/4)	1276 (50 1/4)	1149 (45 1/4)	1022 (40 1/4)	894 (35 1/4)	766 (30 1/4)	639 (25 1/4)	511 (20 1/8)	383 (15 1/8)	255 (10 1/8)	128 (5 1/8)	0 (0)	−128 (−5 1/8)	−255 (−10 1/8)
D TD	7364 (290)	7357 (289 3/4)	7353 (289 5/8)	7350 (289 3/8)	7345 (289 1/4)	7340 (289)	7335 (288 7/8)	7331 (288 3/4)	7328 (288 1/2)	7324 (288 3/8)	7321 (288 1/4)	7318 (288 1/4)	7316 (288 1/8)	7314 (288)	7312 (288)	7311 (287 7/8)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	8 (11/32)	18 (23/32)	29 (1 3/16)	39 (1 9/16)	48 (1 15/16)	59 (2 3/8)	69 (2 3/4)	79 (3 1/8)	90 (3 5/8)	99 (4)	110 (4 3/8)	120 (4 3/4)
Spacer																
Red–L	−2	3.5	5	6	6.5	6.5	7	7	7	7	7	6.5	6.5	6.5	6.5	−7.5
Red–C	16.5	−14	−12	−11	−10.5	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8	−8	−8	6.5
Green–L	−9	−9	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9	9	8.5	8.5	8.5	8.5	8	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	2	−3.5	−5	−6	−6.5	−6.5	−7	−7	−7	−7	−7	−6.5	−6.5	−6.5	−6.5	7.5
Blue–C	−16.5	14	12	11	10.5	10	9.5	9.5	9	9	8.5	8.5	8	8	8	−6.5
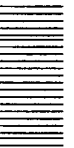
When using the 270 inch screen

Unit: mm (inches)

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	7445 (293 1/8)	7485 (294 3/4)	7508 (295 5/8)	7528 (296 3/8)	7545 (297 1/8)	7560 (297 3/4)	7572 (298 1/4)	7583 (298 5/8)	7592 (299)	7599 (299 1/4)	7604 (299 3/8)	7607 (299 1/2)	7608 (299 5/8)	7607 (299 1/2)	7604 (299 3/0)	7599 (299 1/4)
B Ylens	1798 (70 7/8)	1591 (62 3/4)	1459 (57 1/2)	1327 (52 1/4)	1195 (47 1/8)	1062 (41 7/8)	930 (36 5/8)	797 (31 1/2)	664 (26 1/4)	531 (21)	399 (15 3/4)	266 (10 1/2)	133 (5 1/4)	0 (0)	−133 (−5 1/4)	−266 (−10 1/2)
D TD	7659 (301 5/8)	7652 (301 3/8)	7648 (301 1/8)	7644 (301)	7639 (300 3/4)	7634 (300 5/8)	7629 (300 3/8)	7625 (300 1/4)	7621 (300 1/8)	7618 (300)	7614 (299 7/8)	7612 (299 3/4)	7609 (299 5/8)	7607 (299 1/2)	7605 (299 1/2)	7604 (299 3/8)
C dVoff	0 (0)	0 (0)	0 (0)	0 (0)	9 (3/8)	19 (3/4)	30 (1 3/16)	40 (1 5/8)	51 (2 1/8)	61 (2 1/2)	72 (2 7/8)	82 (3 1/4)	93 (3 3/4)	104 (4 1/8)	114 (4 1/2)	125 (5)
Spacer																
Red–L	−0.5	4.5	5.5	6	6.5	6.5	7	7	7	7	7	7	6.5	6.5	6.5	6.5
Red–C	−18	−13	−11.5	−11	−10	−10	−9.5	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−7.5
Green–L	−9	−9	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9	9	8.5	8.5	8.5	8.5	8	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	0.5	−4.5	−5.5	−6	−6.5	−6.5	−7	−7	−7	−7	−7	−7	−6.5	−6.5	−6.5	−6.5
Blue–C	18	13	11.5	11	10	10	9.5	9	9	8.5	8.5	8.5	8	8	8	7.5

When using the 280 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	7726	7768	7792	7813	7830	7846	7859	7870	7879	7887	7892	7895	7896	7895	7892	7887
	(304 1/4)	(305 7/8)	(306 7/8)	(307 5/8)	(308 3/8)	(309)	(309 1/2)	(309 7/8)	(310 1/4)	(310 1/2)	(310 3/4)	(310 7/8)	(310 7/8)	(310 7/8)	(310 3/4)	(310 5/8)
B Ylens	1867	1651	1515	1378	1240	1103	965	827	689	552	414	276	138	0	−138	−276
	(73 1/2)	(65 1/8)	(59 3/4)	(54 3/8)	(48 7/8)	(43 1/2)	(38)	(32 5/8)	(27 1/4)	(21 3/4)	(16 3/8)	(10 7/8)	(5 1/2)	(0)	(−5 1/2)	(−10 7/8)
D TD	7948	7942	7938	7933	7928	7923	7918	7914	7910	7906	7903	7900	7897	7895	7893	7892
	(313)	(312 3/4)	(312 1/2)	(312 3/8)	(312 1/8)	(312)	(311 3/4)	(311 5/8)	(311 1/2)	(311 3/8)	(311 1/8)	(311 1/8)	(311)	(310 7/8)	(310 3/4)	(310 3/4)
C dVoff	0	0	0	0	9	20	31	42	53	64	75	86	97	108	119	130
	(0)	(0)	(0)	(0)	(3/8)	(13/16)	(1 1/4)	(1 11/16)	(2 1/8)	(2 5/8)	(3)	(3 1/2)	(3 7/8)	(4 3/8)	(4 3/4)	(5 1/8)
Spacer																
Red–L	1.5	5	6	6.5	6.5	7	7	7	7	7	7	7	6.5	6.5	6.5	6.5
Red–C	−16	−12.5	−11	−10.5	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−7.5
Green–L	−9	−8.5	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9	8.5	8.5	8.5	8.5	8.5	8	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	−1.5	−5	−6	−6.5	−6.5	−7	−7	−7	−7	−7	−7	−7	−6.5	−6.5	−6.5	−6.5
Blue–C	16	12.5	11	10.5	10	9.5	9.5	9	9	8.5	8.5	8.5	8	8	8	7.5

When using the 290 inch screen

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	8011	8055	8079	8101	8119	8135	8149	8161	8170	8178	8183	8186	8187	8186	8183	8178
	(315 1/2)	(317 1/8)	(318 1/8)	(319)	(319 3/4)	(320 3/8)	(320 7/8)	(321 3/8)	(321 3/4)	(322)	(322 1/4)	(322 3/8)	(322 3/8)	(322 3/8)	(322 1/4)	(322)
B Ylens	1935	1712	1570	1428	1286	1143	1001	858	715	572	429	286	143	0	−143	−286
	(76 1/4)	(67 1/2)	(61 7/8)	(56 1/4)	(50 3/4)	(45)	(39 1/2)	(33 7/8)	(28 1/4)	(22 5/8)	(17)	(11 3/8)	(5 3/4)	(0)	(−5 3/4)	(−11 3/8)
D TD	8242	8235	8230	8226	8220	8215	8210	8206	8201	8198	8194	8191	8188	8186	8184	8183
	(324 1/2)	(324 1/4)	(324 1/8)	(323 7/8)	(323 3/4)	(323 1/2)	(323 1/4)	(323 1/8)	(323)	(322 3/4)	(322 5/8)	(322 1/2)	(322 1/2)	(322 3/8)	(322 1/4)	(322 1/4)
C dVoff	0	0	0	0	10	21	32	44	55	66	78	89	100	112	123	135
	(0)	(0)	(0)	(0)	(13/32)	(27/32)	(1 5/16)	(1 3/4)	(2 1/4)	(2 5/8)	(3 1/8)	(3 5/8)	(4)	(4 1/2)	(4 7/8)	(5 3/8)
Spacer																
Red–L	3	5.5	6	6.5	7	7	7	7	7	7	7	7	7	6.5	6.5	6.5
Red–C	−14.5	−11.5	−11	−10.5	−10	−9.5	−9.5	−9	−9	−8.5	−8.5	−8.5	−8	−8	−8	−7.5
Green–L	−9	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9	8.5	8.5	8.5	8.5	8	8	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	−3	−5.5	−6	−6.5	−7	−7	−7	−7	−7	−7	−7	−7	−7	−6.5	−6.5	−6.5
Blue–C	14.5	11.5	11	10.5	10	9.5	9.5	9	9	8.5	8.5	8.5	8	8	8	7.5

When using the 300 inch screen

<div style="text-align:right">Unit: mm (inches)</div>

a TA (deg)	13.6°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	−1°	−2°
E Xlens	8295	8340	8365	8388	8406	8423	8437	8449	8459	8467	8472	8476	8477	8476	8473	8467
	(326 5/8)	(328 3/8)	(329 3/8)	(330 1/4)	(331)	(331 5/8)	(332 1/4)	(332 3/4)	(333 1/8)	(333 3/8)	(333 5/8)	(333 3/4)	(333 3/4)	(333 3/4)	(333 5/8)	(333 3/8)
B Ylens	2004	1773	1626	1479	1331	1184	1036	888	740	592	444	296	148	0	−148	−296
	(79)	(69 7/8)	(64 1/8)	(58 1/4)	(52 1/2)	(46 5/8)	(40 7/8)	(35)	(29 1/4)	(23 3/8)	(17 1/2)	(11 3/4)	(5 7/8)	(0)	(−5 7/8)	(−11 3/4)
D TD	8533	8526	8522	8517	8511	8506	8501	8496	8491	8488	8484	8481	8478	8476	8474	8472
	(336)	(335 3/4)	(335 1/2)	(335 3/8)	(335 1/8)	(334 7/8)	(334 3/4)	(334 1/2)	(334 3/8)	(334 1/4)	(334 1/8)	(334)	(330 7/8)	(333 3/4)	(330 5/8)	(333 5/8)
C dVoff	0	0	0	0	11	22	34	45	57	69	80	92	104	116	128	139
	(0)	(0)	(0)	(0)	(7/16)	(7/8)	(1 3/8)	(1 13/16)	(2 1/4)	(2 3/4)	(3 1/4)	(3 5/8)	(4 1/8)	(4 5/8)	(5 1/8)	(5 1/2)
Spacer																
Red–L	4	6	6.5	6.5	7	7	7	7	7	7	7	7	7	6.5	6.5	6.5
Red–C	−13.5	−11.5	−10.5	−10	−9.5	−9.5	−9	−9	−9	−8.5	−8.5	−8	−8	−8	−8	−7.5
Green–L	−9	−8.5	−8.5	−8.5	−8.5	−8	−8	−8	−8	−8	−7.5	−7.5	−7.5	−7.5	−7	−7
Green–C	9	8.5	8.5	8.5	8.5	8	8	8	8	8	7.5	7.5	7.5	7.5	7	7
Blue–L	−4	−6	−6.5	−6.5	−7	−7	−7	−7	−7	−7	−7	−7	−7	−6.5	−6.5	−6.5
Blue–C	13.5	11.5	10.5	10	9.5	9.5	9	9	9	8.5	8.5	8	8	8	8	7.5

Others

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