

# *Multiscan Projector*

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**Installation Manual for Dealers****GB**

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

**Manuel d'installation destiné aux  
revendeurs****FR**

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****ES**

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

## VPH-D50HTU VPH-D50HTM

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# Installation

## Installation Procedures

By default, this projector is adjusted for 100-inch (4:3 aspect ratio) 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 Change the polarity according to the projection patterns. (*page 20 (GB)*)  
↓
- ③ Install the projector and screen. (*page 9 (GB)*)  
↓
- ④ Reset the registration data to factory setting. (*page 100 (GB)*)  
↓
- ⑤ Adjust the CRT conversion angle. (*page 23 (GB)*)  
↓
- ⑥ Adjust the lens focus and flapping of the lens. (*page 60 (GB)*)  
↓
- ⑦ Adjust the registrations. (*page 66 (GB)*)  
↓
- ⑧ Connect other equipment. (*page 30 (GB)*)  
↓
- ⑨ Adjust each input signal. (*pages 89 (GB) to 95 (GB)*)
  - Fine adjustment for the registrations. (*pages 89 (GB) and 92 (GB)*)
  - Adjust the size or shift of the picture. (*pages 90 (GB), 92 (GB) and 93 (GB)*)
  - Adjust the blanking. (*pages 91 (GB) and 93 (GB)*)

# Installation Diagrams

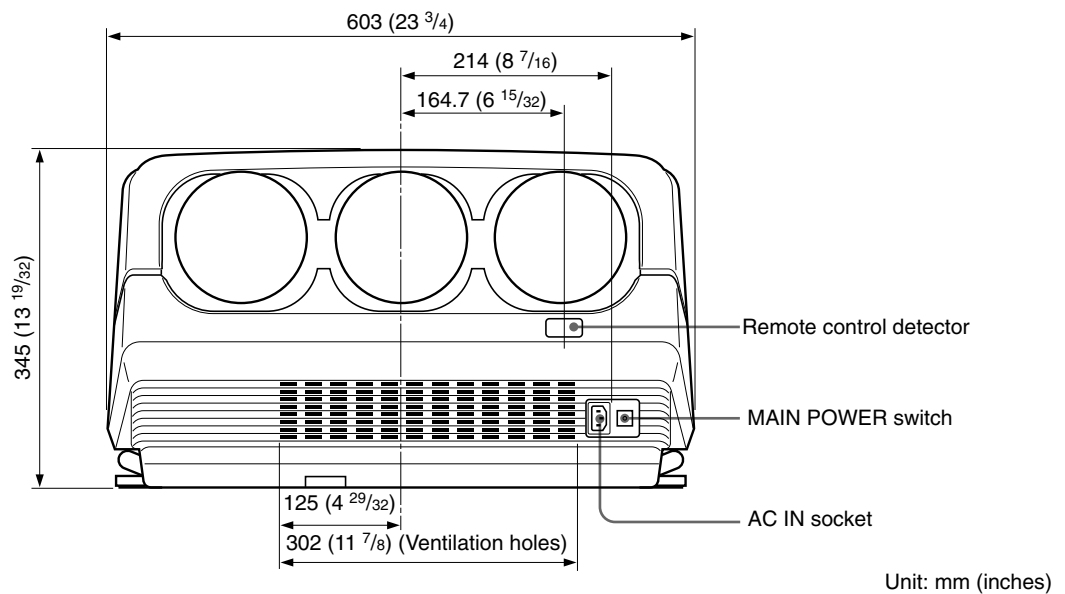
## Necessary Clearance for Installation and Maintenance

Make sure to provide enough room for maintenance service. Install the projector, making reference to the dimensions below.

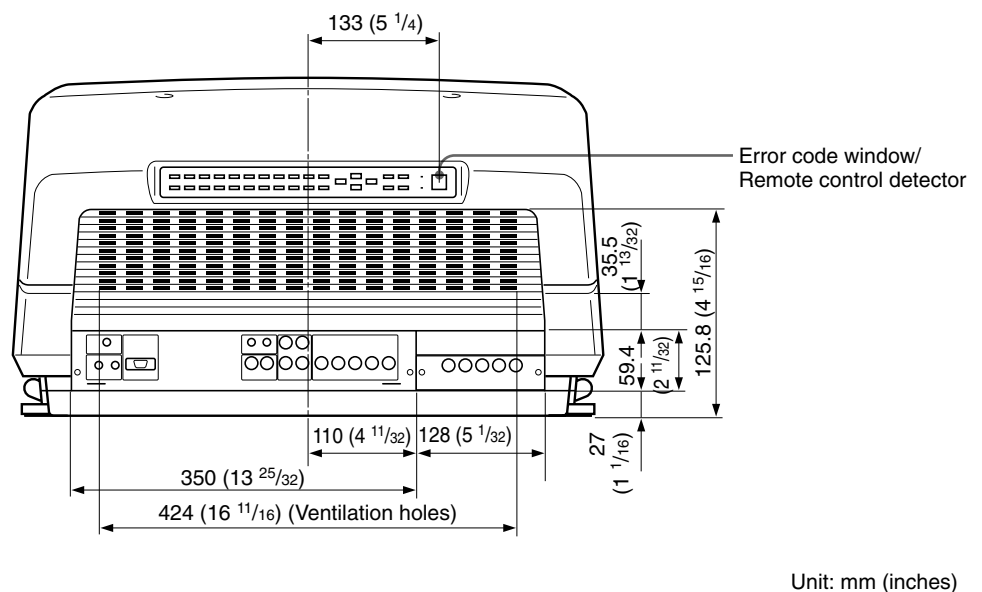
There should be a space of at least 30 cm (1 <sup>3</sup>/<sub>16</sub> inches) around the ventilation holes. Never block the holes with any material.

Installation

### Front



### Rear

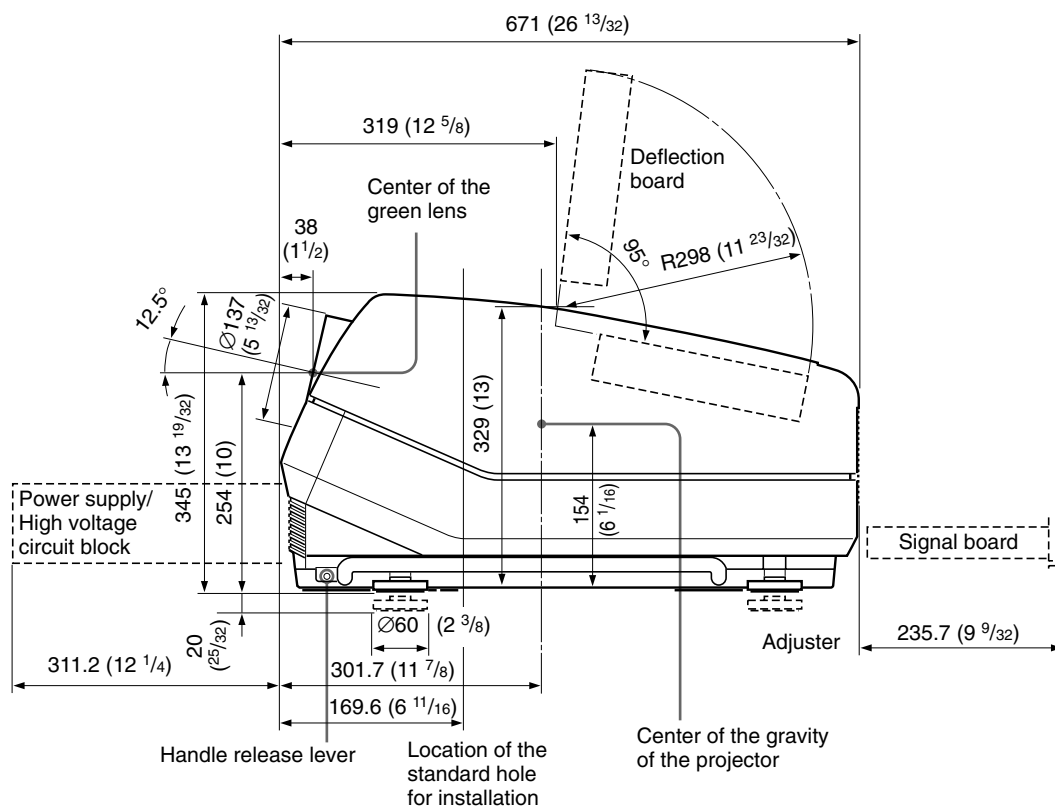


**The standard hole for installation on the bottom surface is useful for reference when measuring for installation.** There are seven holes on the bottom surface of the projector. For ceiling installation using the optional PSS-70 Projector Suspension Support, use five holes to attach the PSS-70. The other two holes are spare ones.

- Use only the M8 meter screws of 10 mm ( $13/32$  inches) to 30 mm ( $1\ 3/16$  inches) long for the attachment holes for the PSS-70.
- When attaching the PSS-70, use the M8 meter screws of 20 mm ( $25/32$  inches) supplied with the PSS-70.



# Side



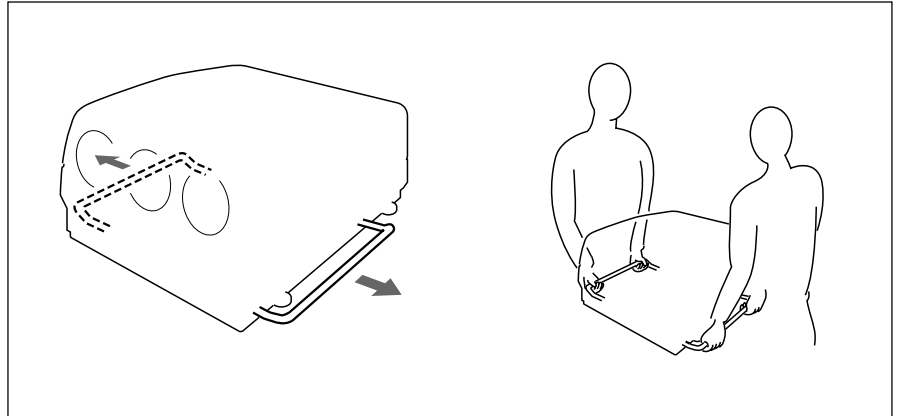
Unit: mm (inches)

### Using the Handles to Carry the Projector

You can carry the projector by using the side (right and left) handles. Taking out the unit from the carton or moving the unit requires more than one person.

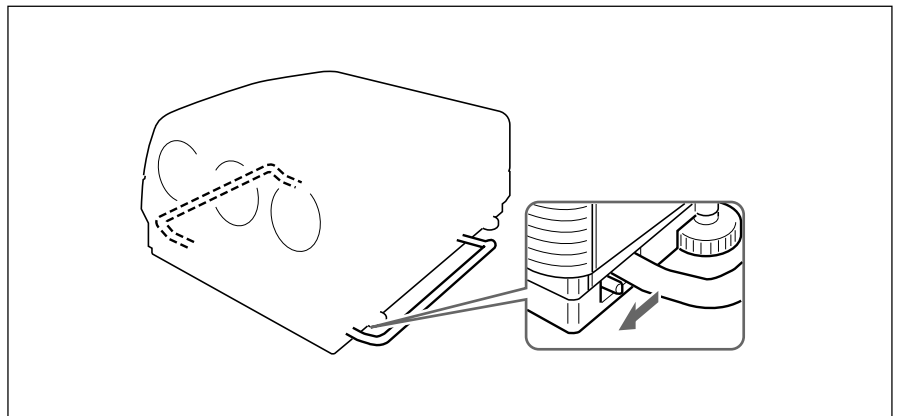
#### Using the handles

Pull out the side handles.



#### Putting away the handles

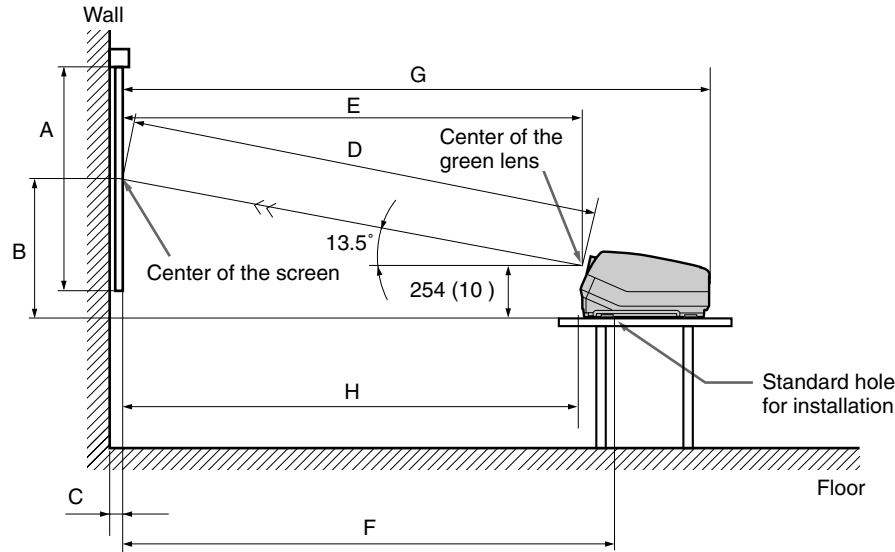
Pull the handle release lever under each handle towards you. The handle is automatically retracted.





## Floor Installation Using Front Projection Flat Screen

Be sure that the projector is level to the floor.



B: Difference in height between the projector's bottom surface and the center of the screen  
 E: Horizontal distance between the center of the screen and the center of the green lens  
 F: Horizontal distance between the center of the screen and the standard hole for installation

Tolerances

B:  $\pm 5\%$

Other measurements: 0% to +5%

### Screen with 4:3 aspect ratio

The distances in gray are the factory preset settings. Unit:mm (inches)

Screen size (inches)	60	70	80	90	100	120	150	180	200	250
A (Vsize)	914 (36)	1067 (42)	1219 (48)	1372 (54)	1524 (60)	1829 (72)	2286 (90)	2743 (108)	3048 (120)	3810 (150)
B (Hcent)	710 (28)	777 (30 <sup>5</sup> / <sub>8</sub> )	845 (33 <sup>3</sup> / <sub>8</sub> )	912 (36)	980 (38 <sup>5</sup> / <sub>8</sub> )	1114 (43 <sup>7</sup> / <sub>8</sub> )	1320 (52)	1526 (60 <sup>1</sup> / <sub>8</sub> )	1662 (65 <sup>1</sup> / <sub>2</sub> )	2005 (79)
C (Width)					28 <sup>a)</sup> (1 <sup>1</sup> / <sub>8</sub> )	32 <sup>b)</sup> (1 <sup>5</sup> / <sub>16</sub> )	32 <sup>c)</sup> (1 <sup>5</sup> / <sub>16</sub> )			
D (TD)	1956 (77)	2240 (88 <sup>1</sup> / <sub>4</sub> )	2529 (99 <sup>5</sup> / <sub>8</sub> )	2816 (110 <sup>7</sup> / <sub>8</sub> )	3102 (122 <sup>1</sup> / <sub>4</sub> )	3673 (144 <sup>5</sup> / <sub>8</sub> )	4551 (179 <sup>1</sup> / <sub>4</sub> )	5425 (213 <sup>5</sup> / <sub>8</sub> )	6012 (236 <sup>3</sup> / <sub>4</sub> )	7466 (294)
E (Xlens)	1902 (74 <sup>7</sup> / <sub>8</sub> )	2179 (85 <sup>7</sup> / <sub>8</sub> )	2459 (96 <sup>7</sup> / <sub>8</sub> )	2738 (107 <sup>7</sup> / <sub>8</sub> )	3016 (118 <sup>7</sup> / <sub>8</sub> )	3571 (140 <sup>5</sup> / <sub>8</sub> )	4424 (174 <sup>1</sup> / <sub>4</sub> )	5274 (207 <sup>5</sup> / <sub>8</sub> )	5844 (230 <sup>1</sup> / <sub>8</sub> )	7257 (285 <sup>3</sup> / <sub>4</sub> )
F (Lhole)	2033 (80 <sup>1</sup> / <sub>8</sub> )	2310 (91)	2591 (102)	2869 (113)	3148 (124)	3703 (145 <sup>7</sup> / <sub>8</sub> )	4556 (179 <sup>3</sup> / <sub>8</sub> )	5405 (212 <sup>7</sup> / <sub>8</sub> )	5976 (235 <sup>3</sup> / <sub>8</sub> )	7389 (291)
G (Lmax)	2535 (99 <sup>7</sup> / <sub>8</sub> )	2812 (110 <sup>3</sup> / <sub>4</sub> )	3092 (121 <sup>3</sup> / <sub>4</sub> )	3371 (132 <sup>3</sup> / <sub>4</sub> )	3649 (143 <sup>3</sup> / <sub>4</sub> )	4204 (165 <sup>5</sup> / <sub>8</sub> )	5057 (199 <sup>1</sup> / <sub>8</sub> )	5907 (232 <sup>5</sup> / <sub>8</sub> )	6477 (255 <sup>1</sup> / <sub>8</sub> )	7890 (310 <sup>3</sup> / <sub>4</sub> )
H (Lfront)	1864 (73 <sup>1</sup> / <sub>2</sub> )	2141 (84 <sup>3</sup> / <sub>8</sub> )	2421 (95 <sup>3</sup> / <sub>8</sub> )	2700 (106 <sup>3</sup> / <sub>8</sub> )	2978 (117 <sup>3</sup> / <sub>8</sub> )	3533 (139 <sup>1</sup> / <sub>8</sub> )	4386 (172 <sup>3</sup> / <sub>4</sub> )	5236 (206 <sup>1</sup> / <sub>4</sub> )	5806 (228 <sup>5</sup> / <sub>8</sub> )	7219 (284 <sup>1</sup> / <sub>4</sub> )

a) Sony VPS-80FH and VPS-100FH

b) Sony VPS-100FM

c) Sony VPS-120FH and VPS-120FM

# Installation Diagrams

## Screen with 16:9 aspect ratio

Unit:mm (inches)

Screen size (inches)	60	70	80	90	100	120	150	180	200
A (Vsize)	747 (29 1/2)	872 (34 3/8)	996 (39 1/4)	1121 (44 1/4)	1245 (49 1/8)	1494 (58 7/8)	1868 (73 5/8)	2241 (88 1/4)	2490 (98 1/8)
B (Hcent)	746 (29 3/8)	820 (32 3/8)	893 (35 1/4)	967 (38 1/8)	1040 (41)	1188 (46 7/8)	1412 (55 5/8)	1636 (64 1/2)	1785 (70 3/8)
D (TD)	2109 (83 1/8)	2421 (95 3/8)	2734 (107 3/4)	3047 (120)	3358 (132 1/4)	3988 (157)	4942 (194 5/8)	5897 (232 1/4)	6532 (257 1/4)
E (Xlens)	2050 (80 3/4)	2354 (92 3/4)	2659 (104 3/4)	2962 (116 5/8)	3265 (128 5/8)	3877 (152 5/8)	4804 (189 1/4)	5733 (225 3/4)	6350 (250)
F (Lhole)	2182 (86)	2486 (98)	2791 (109 7/8)	3094 (121 7/8)	3397 (133 3/4)	4009 (157 7/8)	4936 (194 3/8)	5865 (231)	6482 (255 1/4)
G (Lmax)	2683 (105 3/4)	2987 (117 5/8)	3292 (129 5/8)	3595 (141 5/8)	3898 (153 1/2)	4510 (177 5/8)	5437 (214 1/8)	6366 (250 3/4)	6983 (275)
H (Lfront)	2012 (79 1/4)	2316 (91 1/4)	2621 (103 1/4)	2924 (115 1/8)	3227 (127 1/8)	3839 (151 1/4)	4766 (187 3/4)	5695 (224 1/4)	6312 (248 1/2)

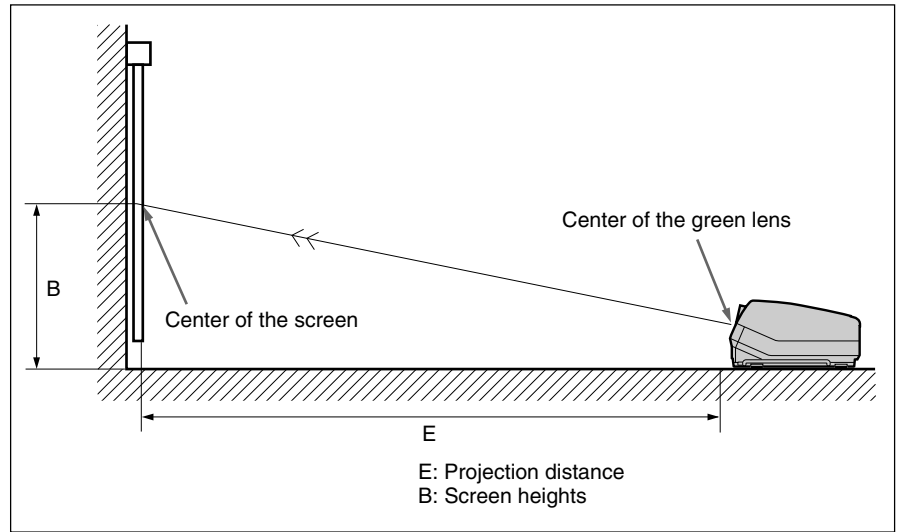
## When the Screen Size is not Mentioned in the Tables

You can calculate the installation measurements described below when you use the screen whose size is not mentioned in the tables on pages 9 (GB), 10 (GB) and 12 (GB), 13 (GB).

Check your installation conditions:

- Screen size to be used (S)
- Installation measurements at the end of the manual, EL and BL for larger screen size and ES and BS for smaller screen size

*See the tables on pages 105 (GB) to 113 (GB).*



Now you can calculate the installation measurements as follows:

$$E \text{ (mm)} = ES + ((S - \text{smaller screen size}) \times (EL - ES) \times 0.1)$$

$$B \text{ (mm)} = BS + ((S - \text{smaller screen size}) \times (BL - BS) \times 0.1) + 254$$

### Example: when using 124-inch screen

According to the tables on pages 106 (GB) and 107 (GB), the values E and B are as follows:

$$ES = 3571, BS = 860 \text{ (As the smaller screen size is 120 inch.)}$$

$$EL = 3856, BL = 929 \text{ (As the smaller screen size is 130 inch.)}$$

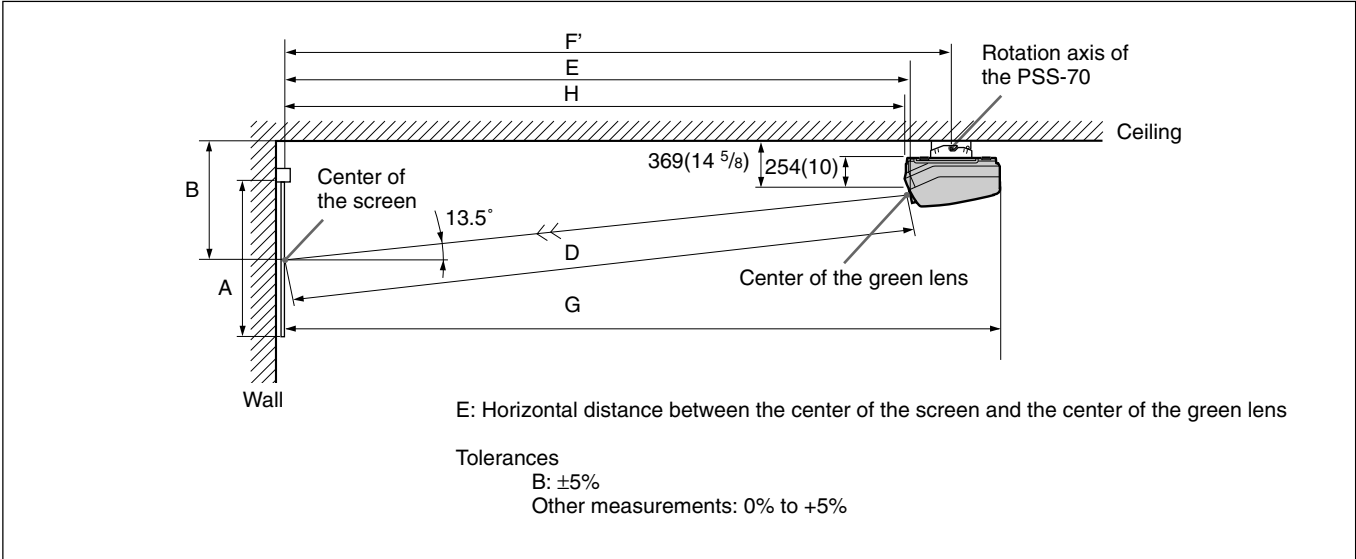
Therefore,

$$E \text{ (mm)} = 3571 + ((124 - 120) \times (3856 - 3571) \times 0.1) = 3685 \text{ (mm)}$$

$$B \text{ (mm)} = 860 + ((124 - 120) \times (929 - 860) \times 0.1) + 254 = 1142 \text{ (mm)}$$

Ceiling Installation Using Front Projection Flat Screen

Use the PSS-70 Projector Suspension Support (not supplied).



Screen with 4:3 aspect ratio										Unit:mm (inches)
Screen size (inches)	60	70	80	90	100	120	150	180	200	250
A (Vsize)	914 (36)	1067 (42)	1219 (48)	1372 (54)	1524 (60)	1829 (72)	2286 (90)	2743 (108)	3048 (120)	3810 (150)
B (Hcent)	825 (32 1/2)	892 (35 1/8)	960 (37 7/8)	1027 (40 1/2)	1094 (43 1/8)	1229 (48 3/8)	1435 (56 1/2)	1640 (64 5/8)	1777 (70)	2120 (83 1/2)
D (TD)	1956 (77)	2240 (88 1/4)	2529 (99 5/8)	2816 (110 7/8)	3102 (122 1/4)	3673 (144 5/8)	4551 (179 1/4)	5425 (213 5/8)	6012 (236 3/4)	7466 (294)
E (Xlens)	1902 (74 7/8)	2179 (85 7/8)	2459 (96 7/8)	2738 (107 7/8)	3016 (118 7/8)	3571 (140 5/8)	4424 (174 1/4)	5274 (207 5/8)	5844 (230 1/8)	7257 (285 3/4)
F' (Lpss)	2166 (85 3/8)	2442 (96 1/4)	2723 (107 1/4)	3001 (118 1/4)	3280 (129 1/4)	3835 (151)	4688 (184 5/8)	5537 (218 1/8)	6108 (240 1/2)	7521 (296 1/8)
G (Lmax)	2535 (99 7/8)	2812 (110 3/4)	3092 (121 3/4)	3371 (132 3/4)	3649 (143 3/4)	4204 (165 5/8)	5057 (199 1/8)	5907 (232 5/8)	6477 (255 1/8)	7890 (310 3/4)
H (Lfront)	1864 (73 1/2)	2141 (84 3/8)	2421 (95 3/8)	2700 (106 3/8)	2978 (117 3/8)	3533 (139 1/8)	4386 (172 3/4)	5236 (206 1/4)	5806 (228 5/8)	7219 (284 1/4)

**Necessary parts modifications**  
Changing the polarity used for “Ceiling installation, front projection”  
For details, see “Changing the Polarity” on page 20 (GB).

## Screen with 16:9 aspect ratio

Unit:mm (inches)

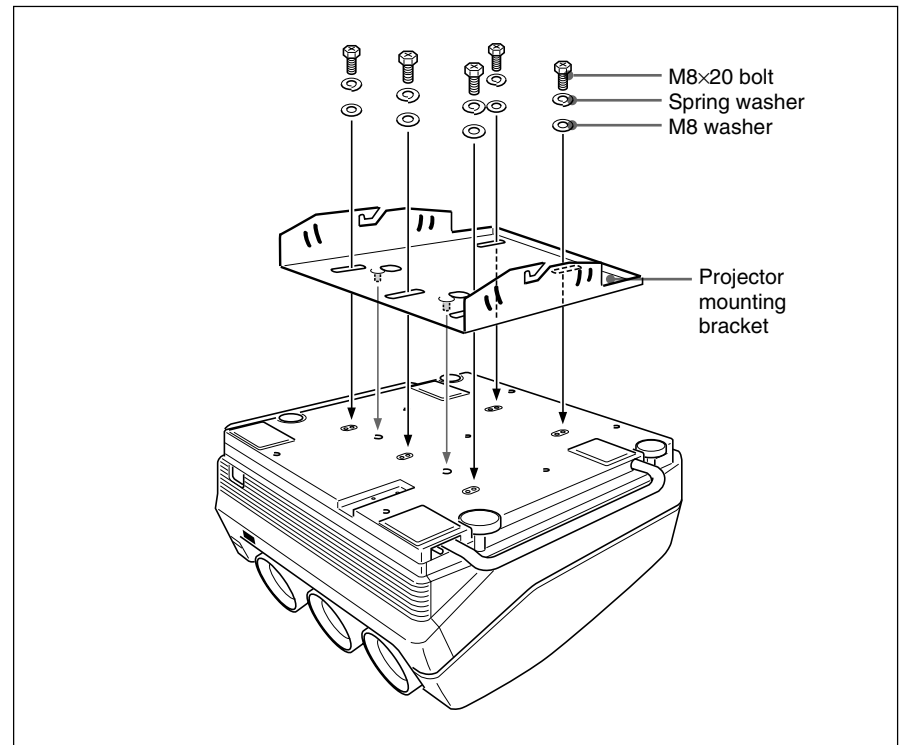
Screen size (inches)	60	70	80	90	100	120	150	180	200
A (Vsize)	747 (29 1/2)	872 (34 3/8)	996 (39 1/4)	1121 (44 1/4)	1245 (49 1/8)	1494 (58 7/8)	1868 (73 5/8)	2241 (88 1/4)	2490 (98 1/8)
B (Hcent)	861 (34)	935 (36 7/8)	1008 (39 3/4)	1082 (42 5/8)	1155 (45 1/2)	1303 (51 3/8)	1527 (60 1/8)	1751 (69)	1900 (74 7/8)
D (TD)	2109 (83 1/8)	2421 (95 3/8)	2734 (107 3/4)	3047 (120)	3358 (132 1/4)	3988 (157)	4942 (194 5/8)	5897 (232 1/4)	6532 (257 1/4)
E (Xlens)	2050 (80 3/4)	2354 (92 3/4)	2659 (104 3/4)	2962 (116 5/8)	3265 (128 5/8)	3877 (152 5/8)	4804 (189 1/4)	5733 (225 3/4)	6350 (250)
F' (Lhole)	2314 (91 1/8)	2618 (103 1/8)	2923 (115 1/8)	3226 (127 1/8)	3529 (139)	4141 (163 1/8)	5068 (199 5/8)	5997 (236 1/8)	6614 (260 1/2)
G (Lmax)	2683 (105 3/4)	2987 (117 5/8)	3292 (129 5/8)	3595 (141 5/8)	3898 (153 1/2)	4510 (177 5/8)	5437 (214 1/8)	6366 (250 3/4)	6983 (275)
H (Lfront)	2012 (79 1/4)	2316 (91 1/4)	2621 (103 1/4)	2924 (115 1/8)	3227 (127 1/8)	3839 (151 1/4)	4766 (187 3/4)	5695 (224 1/4)	6312 (248 1/2)

## Attaching the PSS-70 Projector Suspension Support

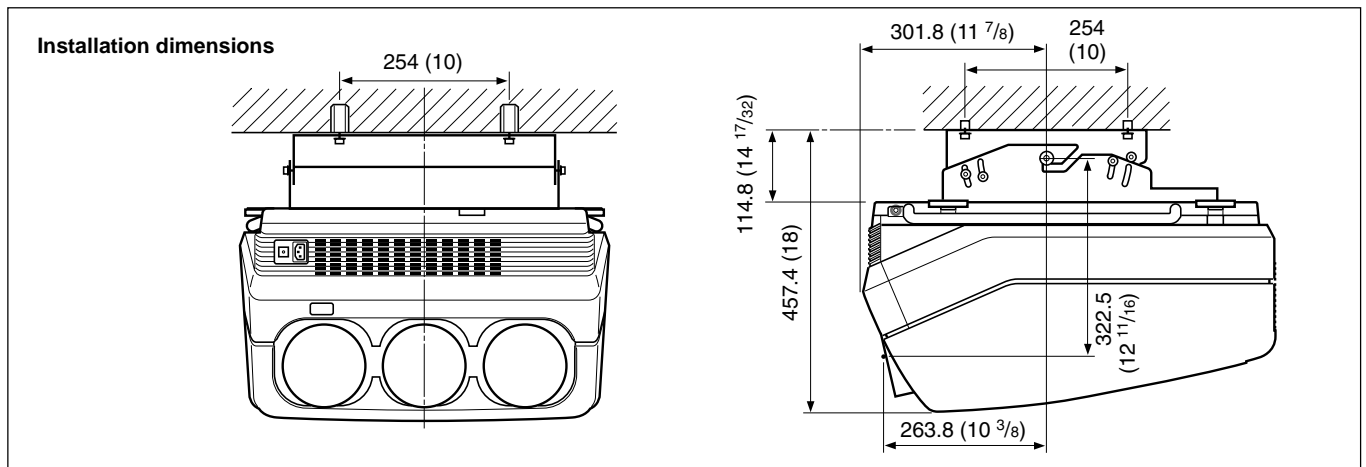
Attach the projector mounting bracket to the bottom surface of the projector.

Use five each of the M8×20 bolts, M8 washers and spring washers, all of which are supplied with the PSS-70.

- 1** Align the two projections on the projector mounting bracket with the receptacles on the bottom surface of the projector.
- 2** Fasten the five bolts and washers to fix the mounting bracket to the five holes for attaching the PSS-70 on the bottom surface of the projector.



For attaching the PSS-70 to the ceiling, refer to the Installation Manual of the PSS-70 Projector Suspension Support.



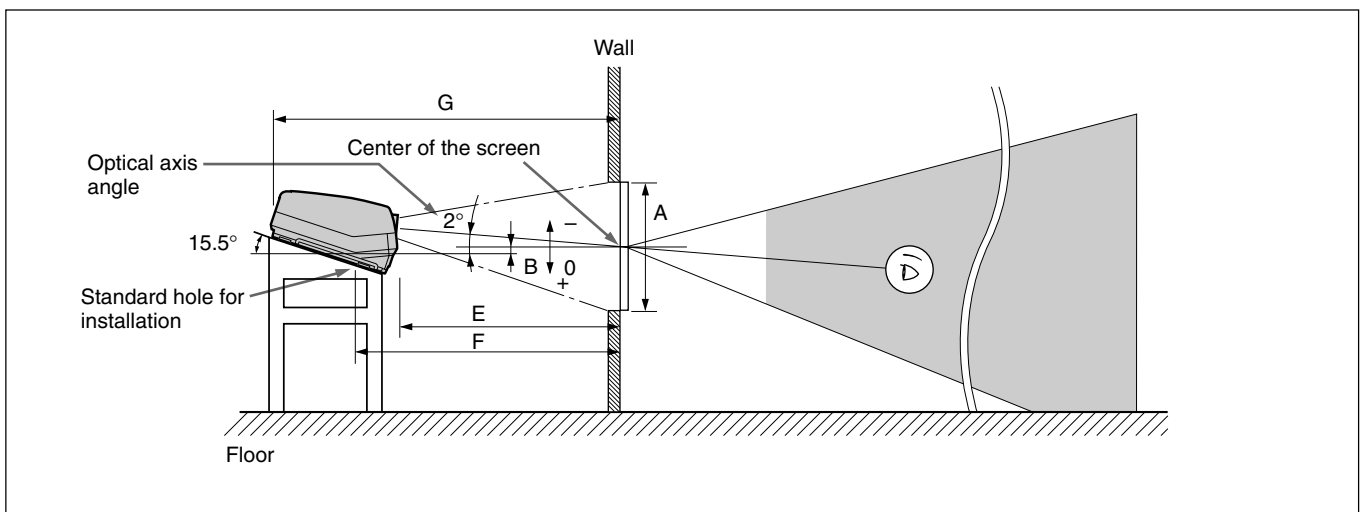
## Floor Installation Using Rear Projection Flat Screen

### 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 varies depending on the height of the screen and your line of sight.

### When the optical axis angle is 2°



### Screen with 4:3 aspect ratio

Unit: mm (inches)

Screen size (inches)	60	70	80	90	100	120	150	180	200	250
A (Vsize)	914 (36)	1067 (42)	1219 (48)	1372 (54)	1524 (60)	1829 (72)	2286 (90)	2743 (108)	3048 (120)	3810 (150)
B (Hcent)	140 (5 5/8)	130 (5 1/4)	120 (4 3/4)	110 (4 3/8)	100 (4)	80 (3 1/4)	49 (1 15/16)	18 (23/32)	-3 (-1/8)	-54 (-2 1/8)
E (Xlens)	1977 (77 7/8)	2265 (89 1/4)	2556 (100 3/4)	2846 (112 1/8)	3136 (123 1/2)	3712 (146 1/4)	4599 (181 1/8)	5482 (215 7/8)	6075 (239 1/4)	7544 (297 1/8)
F (Lhole)	2172 (85 5/8)	2460 (96 7/8)	2751 (108 3/8)	3041 (119 3/4)	3331 (131 1/8)	3907 (153 7/8)	4794 (188 3/4)	5677 (223 5/8)	6270 (246 7/8)	7739 (304 3/4)
G (Lmax)	2655 (104 5/8)	2943 (115 7/8)	3234 (127 3/8)	3524 (138 3/4)	3814 (150 1/4)	4390 (172 7/8)	5277 (207 7/8)	6160 (242 5/8)	6753 (265 7/8)	8222 (323 3/4)

### Necessary parts modifications

Changing the polarity used for "Floor installation, rear projection"

For details, see "Changing the Polarity" on page 20 (GB).

# Installation Diagrams

## Screen with 16:9 aspect ratio

Unit:mm (inches)

Screen size (inches)	60	70	80	90	100	120	150	180	200
A (Vsize)	747 (29 1/2)	872 (34 3/8)	996 (39 1/4)	1121 (44 1/4)	1245 (49 1/8)	1494 (58 7/8)	1868 (73 5/8)	2241 (88 1/4)	2490 (98 1/8)
B (Hcent)	135 (5 3/8)	124 (5)	113 (4 1/2)	102 (4 1/8)	91 (3 5/8)	69 (2 3/4)	35 (1 7/16)	1 (1/16)	-21 (-27/32)
E (Xlens)	2132 (84)	2447 (96 3/8)	2764 (108 7/8)	3079 (121 1/4)	3394 (133 5/8)	4030 (158 3/4)	4994 (196 3/4)	5960 (234 3/4)	6601 (260)
F (Lhole)	2327 (91 5/8)	2642 (104 1/8)	2959 (116 1/2)	3274 (129)	3589 (141 3/8)	4225 (166 3/8)	5189 (204 3/8)	6155 (242 3/8)	6796 (267 5/8)
G (Lmax)	2810 (110 5/8)	3125 (123 1/8)	3442 (135 5/8)	3757 (148)	4072 (160 3/8)	4708 (185 3/8)	5672 (223 3/8)	6638 (261 3/8)	7279 (186 5/8)



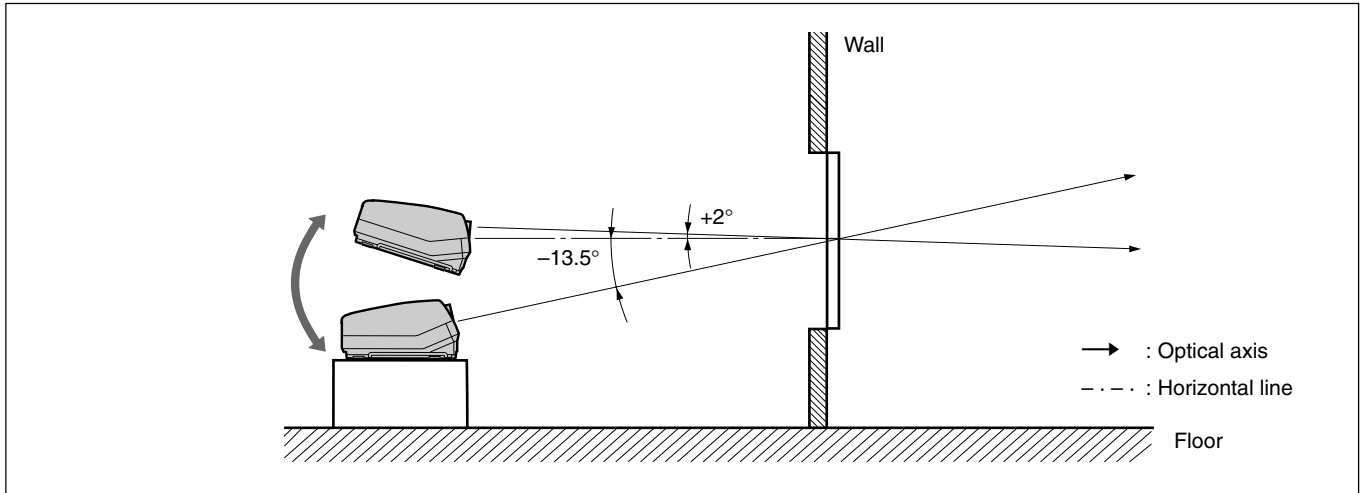
## Variable Range of the Optical Axis Angle in Rear Projection

You can change the optical axis angle within the following ranges by adjusting flapping of the lens.

For adjusting flapping of the lens, see “Adjusting flapping of the green lens” on page 62 (GB).

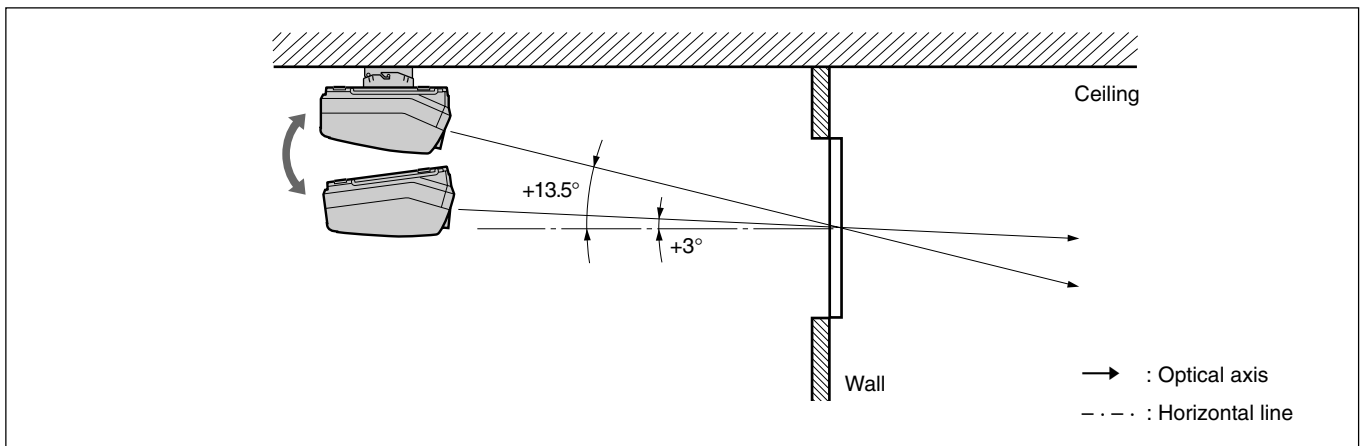
### On floor installation

You can install the projector within an angle of optical axis  $-13.5^\circ$  to  $+2^\circ$ .



### On ceiling installation

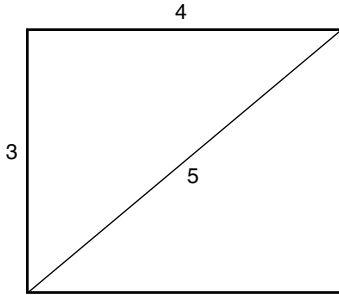
You can install the projector within an angle of optical axis  $+3^\circ$  to  $+13.5^\circ$ .



## Notes on Screen

### 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 width, height, and diagonal is 4:3:5.



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

Calculate at the conversion rate of 25.4 mm to the inch.

$$\text{Height (mm)} = \text{Screen size} \times 25.4 \times \frac{3}{5}$$

$$\text{Width (mm)} = \text{Screen size} \times 25.4 \times \frac{4}{5}$$

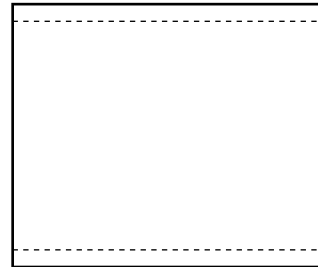
### Screen size and dimensions

Screen size (inches) (Diagonal)	Height (mm)	Width (mm)
60	914	1219
70	1067	1422
80	1219	1626
90	1372	1829
100	1524	2032
120	1829	2438
150	2286	3048
180	2743	3658
200	3048	4064
250	3810	5080

### Screens with an aspect ratio other than 4:3

#### When the height is greater

Calculate the screen size with 4:3 aspect ratio from the screen height as shown below. Install the projector and screen in accordance with the screen size obtained.



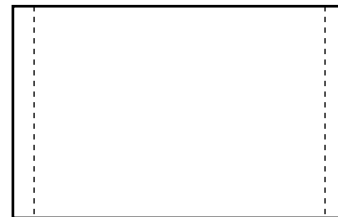
--- : Screen whose aspect ratio is 4:3

$$\text{Screen size (inch)} = (\text{height (mm)} \times \frac{5}{3}) \times \frac{1}{25.4}$$

**Example:** When the screen height is 1500 mm  
 $(1500 \text{ (mm)} \times \frac{5}{3}) \times \frac{1}{25.4} = \text{Approx. 98 inches}$

#### When the width is greater

Calculate the screen size with 4:3 aspect ratio 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

$$\text{Screen size (inch)} = (\text{width (mm)} \times \frac{5}{4}) \times \frac{1}{25.4}$$

**Example:** When the screen width is 2000 mm  
 $(2000 \text{ (mm)} \times \frac{5}{4}) \times \frac{1}{25.4} = \text{Approx. 98 inches}$

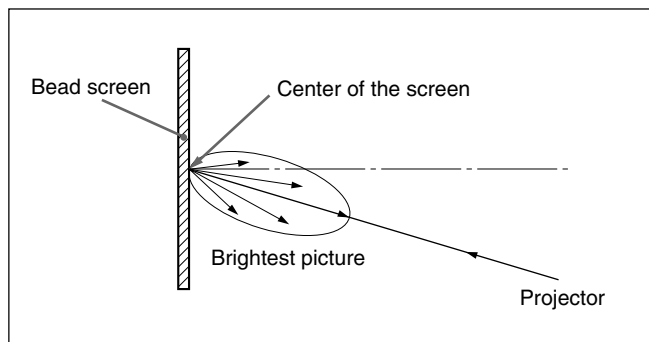
### Screen with 16:9 aspect ratio

Screen size (inches) (Diagonal)	Height (mm)	Width (mm)
60	747	1328
70	872	1549
80	996	1771
90	1121	1992
100	1245	2214
120	1494	2656
150	1868	3320
180	2241	4572
200	2490	4427

## Types of screen

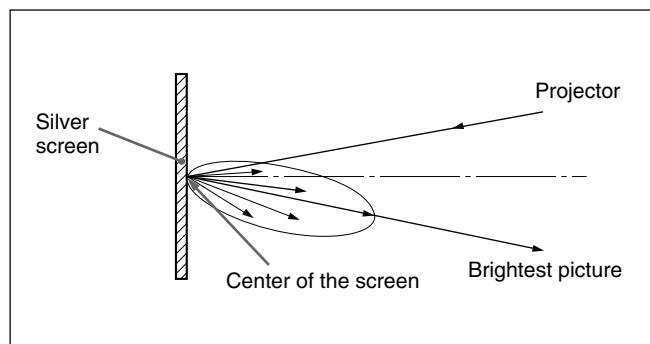
### Front projection screen for floor installation

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



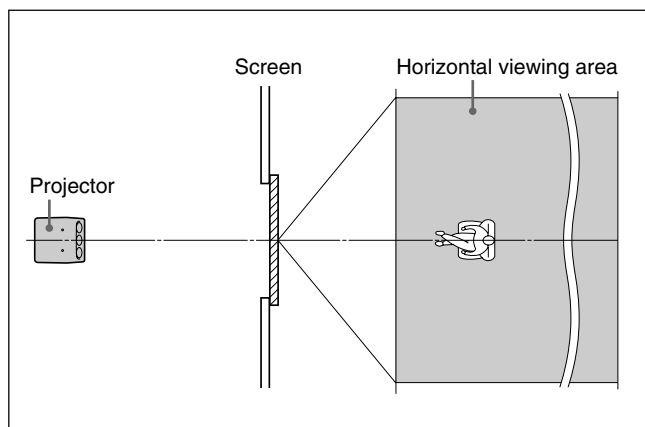
### Front projection screen for ceiling installation

The silver screen is recommended. You can get a picture that is two to four times brighter than that of the white screens.



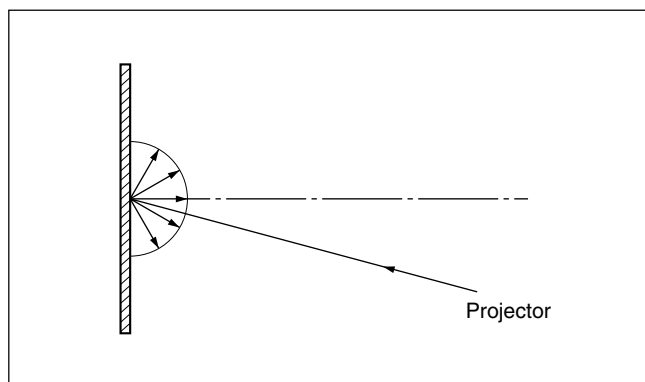
### Rear projection screen

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



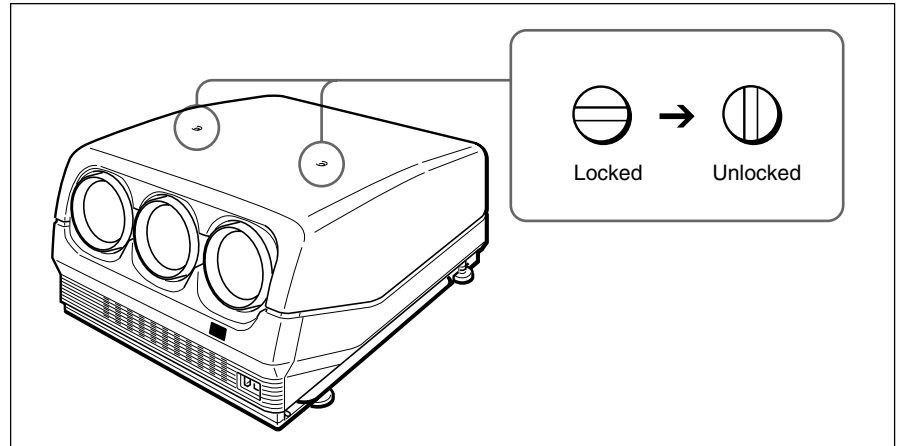
### White screen

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.

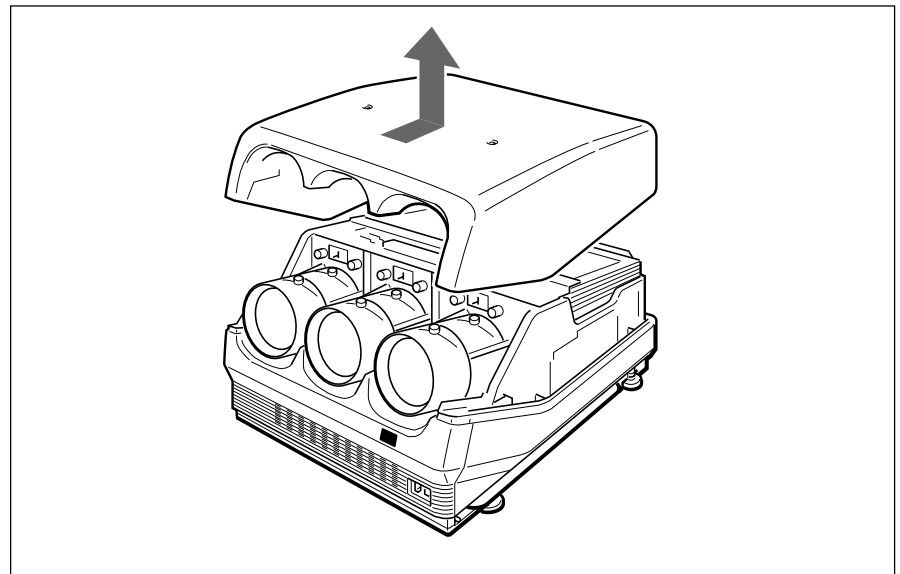


## Removing the Upper Cover

- 1** Turn off the main power of the projector.
- 2** Unlock the two screws on the projector by using a screwdriver or a coin edge, and then open the upper cover.



- 3** Slide the upper cover towards the rear and lift it to remove.



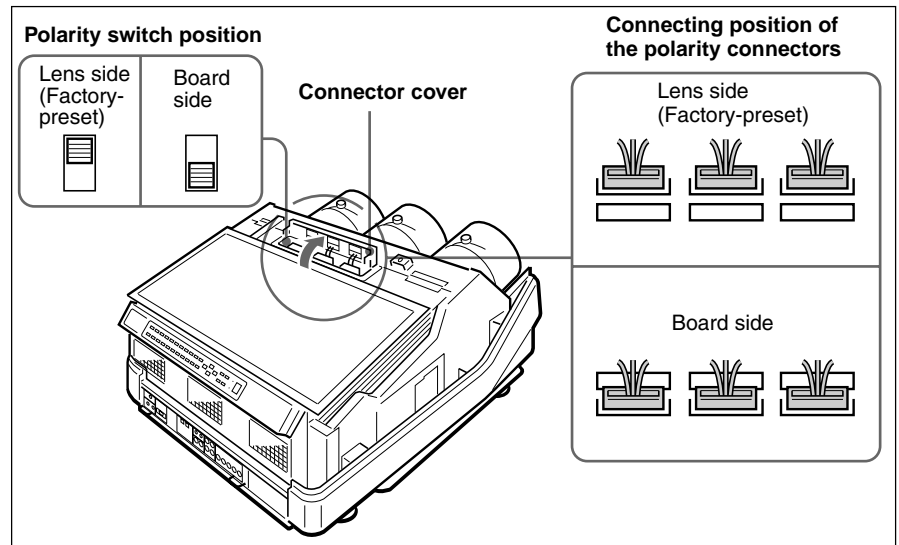
## Changing the Polarity

The polarity of the projector is adjusted to use the projector for front projection on the floor.

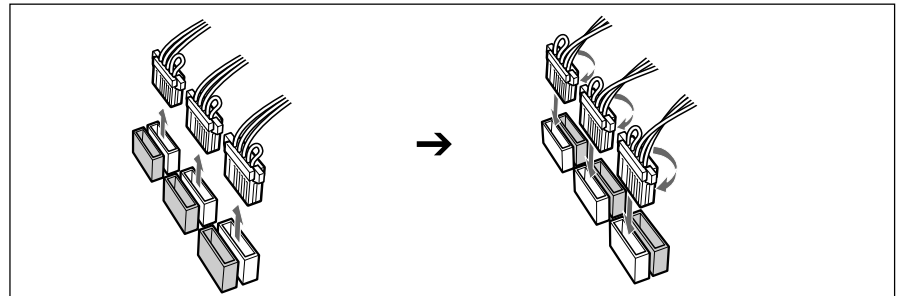
When the projector is installed on the ceiling or used in rear projection, it is necessary to change the settings of the polarity switch and the polarity connectors.

## How to change the polarity

- 1** Turn off the power of the projector.
- 2** Remove the upper cover.  
*For how to remove the upper cover, see page 20 (GB).*
- 3** Press to open the connector cover.
- 4** Check the polarity switch position and the connecting position of the polarity connectors.  
*For the installation methods of the projector and the settings of the switch and the connectors, see the diagram on the next page.*



- 5** Change the switch position and/or the connecting position of the connectors, if necessary.  
**Polarity switch:** Set to the lens side or board side position.  
**Polarity connectors:** Disconnect the three connectors, then turn them over (180°) and reinsert into the receptacles on the lens side or the board side.



- 6** Make sure to insert the connectors correctly and to set the switch to the correct position, then restore the connector cover and the upper cover.

### Note

If the connector cover does not shut firmly, the power of the projector is not turned on.

Installation methods and settings of the polarity switch and the polarity connectors

Installation methods	Position of the switch	Connecting position of the connectors	On-screen display by default (See below.)
Front projection, floor	L	L	Correct
Front projection, ceiling	B	B	<b>C</b>
Rear projection, floor	L	B	<b>A</b>
Rear projection, ceiling	B	L	<b>B</b>
Others	Display letters on the screen so that you can determine which changes to make. <i>For on-screen display and necessary changes, see below.</i>		

L: Lens side  
B: Board side

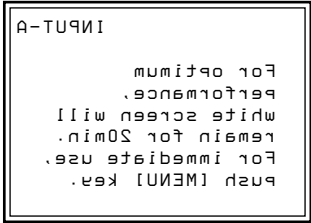
Note

When installing the projector, make sure to leave space of more than 30 cm (12 inches) between the wall or floor and the ventilation holes of the projector.

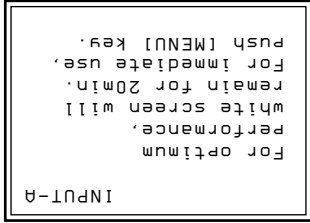
Polarity and on-screen display

When the projector is installed on the ceiling or used in rear projection without changing the polarity, one of the following on-screen displays appears. In this case, you have to change the polarity corresponding to the installation methods.

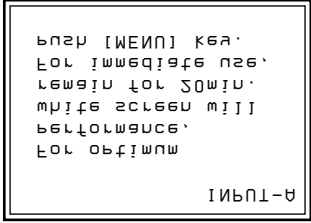
**A The letters are backward.**  
Change the connecting position of the polarity connectors.



**B The letters are upside down.**  
Change the polarity switch position.



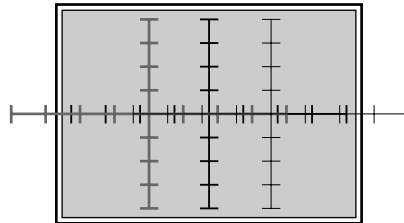
**C The letters are upside down and backward.**  
Change the polarity switch position and the connecting position of the polarity connectors.



## Adjusting the CRT Conversion Angle

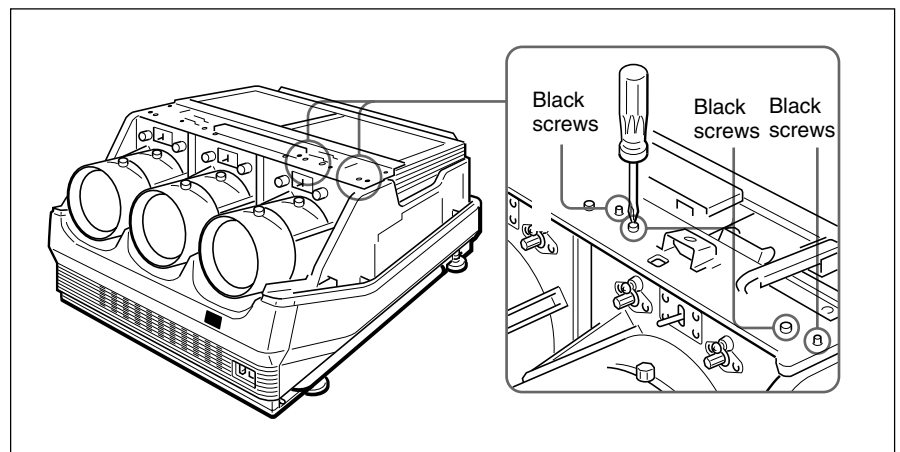
Adjust the CRT conversion angle so that the three CRT images converge exactly.

- 1** Remove the upper cover.  
*For how to remove the upper cover, see page 20 (GB).*
- 2** Turn on the power of the projector.
- 3** Set the remote control to the service adjustment mode.  
*For details, see "Preparation" on page 35 (GB).*
- 4** Reset the green, red and blue centering.  
*For details, see "Resetting the Data" on page 99 (GB).*
- 5** Make sure that the on-screen display is shown as follows:
  - The center of the green HATCH pattern aligns with the horizontal center of the screen.
  - The center of the red and blue HATCH patterns align at even intervals from the green HATCH pattern.



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

- 6** Loosen the four red CRT fixing screws (black) by using the Philips screwdriver. Make sure not to remove the screws.



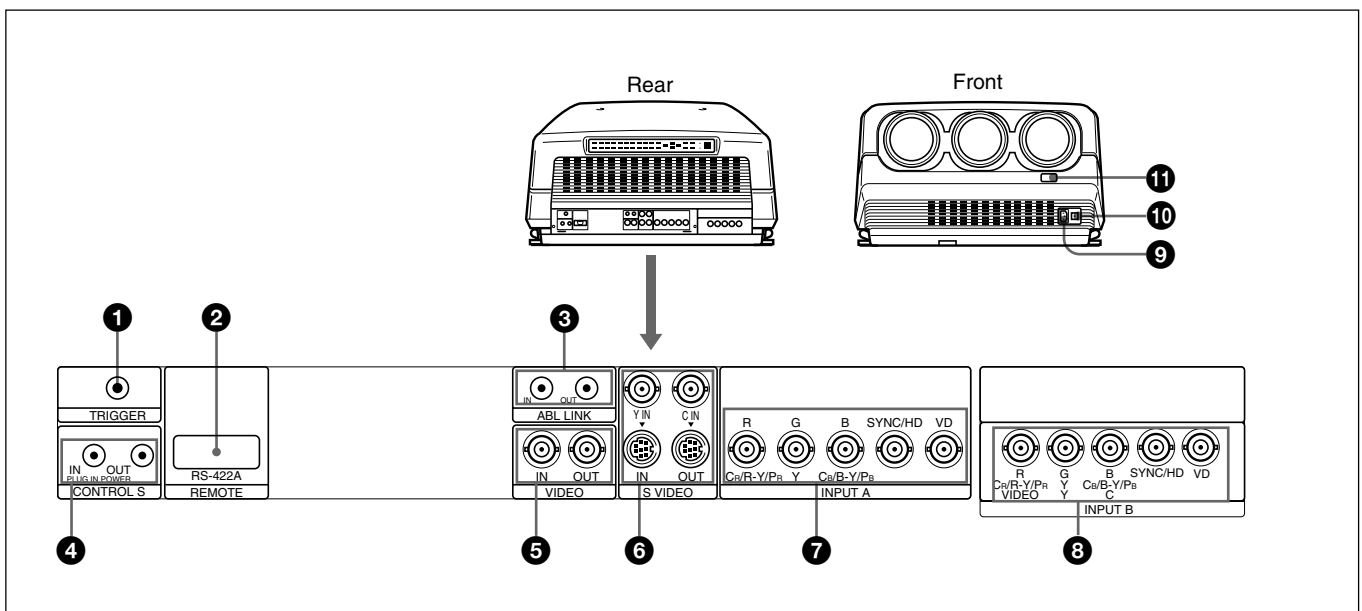
(continued)

- 7** Move the red lens right and left to adjust the CRT conversion angle so that the vertical line of the red HATCH pattern converges with that of the green pattern.
- 8** When the HATCH pattern aligns with the green pattern correctly, tighten the four CRT fixing screws loosened in step **6**.
- 9** Repeat steps **6** to **8** to loosen the four blue CRT fixing screws (black), adjust the blue CRT conversion angle and tighten the four CRT fixing screws.



# Connections

## Location and Function of Connectors



### Rear

#### ① TRIGGER connector (minijack)

When the projector is turned on, 12 V is output and when it is turned off, 0 V is output. However, the connector is not used as the power source since the power is not output.

#### ② RS-422A REMOTE connector (D-sub 9-pin)

Used to expand the system connections using the RS-422A interface.

Before using the connector, remove the red cap.

#### ③ ABL (Automatic Brightness Limiter) LINK IN/OUT jacks (minijack)

When connecting multiple projectors, connects the ABL LINK OUT jack to the ABL LINK IN jack on another projector. You can synchronize the brightness limiting point among the projectors, allowing to make the whole screen brightness uniform.

## Location and Function of Connectors

### ④ CONTROL S jacks

#### IN/PLUG IN POWER (5 V) jack (stereo minijack):

Connects to the CONTROL S OUT jack of other Sony equipment. Also connects to the CONTROL S OUT jack of the supplied remote control with the supplied remote control cable (stereo cable) to be used as a wired remote control. In this case, this jack supplies 5 V to the remote control as power source.

**OUT jack (stereo minijack):** Connects to the CONTROL S IN jack of other Sony equipment.

#### Note

When using this jack, the remote control detector on the projector does not function.

### ⑤ VIDEO IN/OUT connectors

**VIDEO IN connector (BNC type):** Connects to the composite video output of the video equipment.

**VIDEO OUT connector (BNC type):** Connects to the composite video input of a color monitor.

### ⑥ S VIDEO IN/OUT connectors

**Y IN, C IN connectors (BNC type):** Connects to the Y and C video outputs of the video equipment.

**S VIDEO IN/OUT connectors (4-pin, mini-DIN type):** Connects to the S video output or input connector of the video equipment.

#### Note

The S VIDEO IN connector is disconnected when a cable is connected to the Y/C IN connectors.

### ⑦ INPUT A connectors (BNC type)

**R/C<sub>R</sub>/R-Y/P<sub>R</sub>, G/Y, B/C<sub>B</sub>/B-Y/P<sub>B</sub>, SYNC/HD, VD connectors:** Connect to the video equipment outputs.

According to the connected equipment, the RGB (R, G, B), component (R-Y, G, B-Y) or HDTV (P<sub>R</sub>, Y, P<sub>B</sub>) signal is selected.

### ⑧ INPUT B connectors (BNC type)

**R/C<sub>R</sub>/R-Y/P<sub>R</sub>/VIDEO, G/Y Y/Y, B/C<sub>B</sub>/B-Y/P<sub>B</sub>/C, SYNC/HD, VD connectors:** Connect to the video equipment outputs. According to the connected equipment, the RGB (R, G, B), component (R-Y, G, B-Y), HDTV (P<sub>R</sub>, Y, P<sub>B</sub>), S VIDEO, VIDEO signal is selected.

## Front

### ⑨ AC IN socket

Connect the supplied AC power cord.

### ⑩ MAIN POWER switch

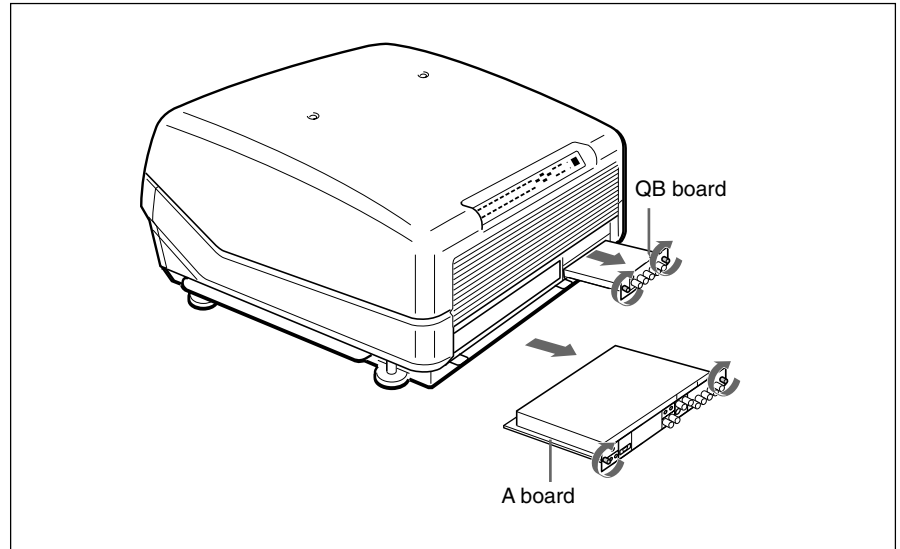
### ⑪ Front remote control detector

# Switching the Connectors

Depending on the connections of the computer and color monitor to the projector, it may be necessary to switch the 75-ohm terminate connectors on the A board and the sync 75-ohm terminate connectors and sync separate connector on the QB board at the rear of the projector.

## Removing the A Board

- 1** Loosen the two screws on each board at the rear of the projector to remove the connector panel.



- 2** Switch the connectors on the A board and the QB board.  
*For details, see pages 28 (GB) and 29 (GB).*
- 3** Replace the A board by reversing step 1.

# Switching the Connectors

## INPUT A: Setting the A board

### CN1001, CN1002 and CN1003 connectors

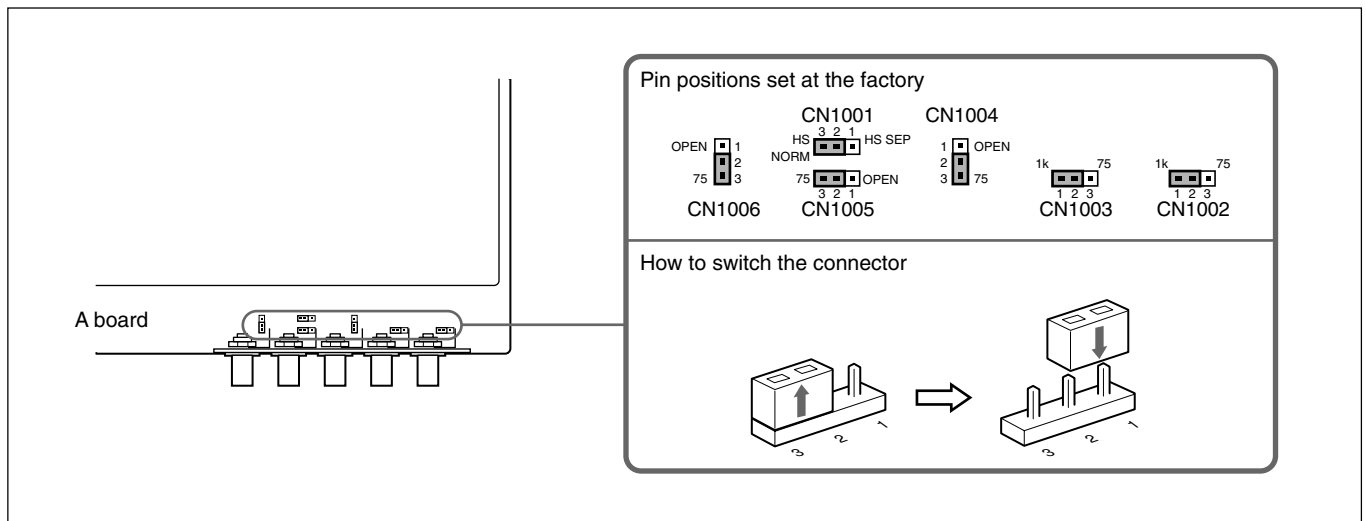
**Sync 75-ohm terminate connector:** Normally set to “1K”. Set the CN1002 and CN1003 to “75” when the sync output signal is terminated at 75 ohms.

**Sync separate connector:** Set the CN1001 to change the sync on green signal to the separate sync signal. Set it to “HS SEP” when the HDTV external sync signal, etc. is input.

### CN1004, CN1005 and CN1006 connectors

**75-ohm (pin position 3):** This position is selected at the factory.

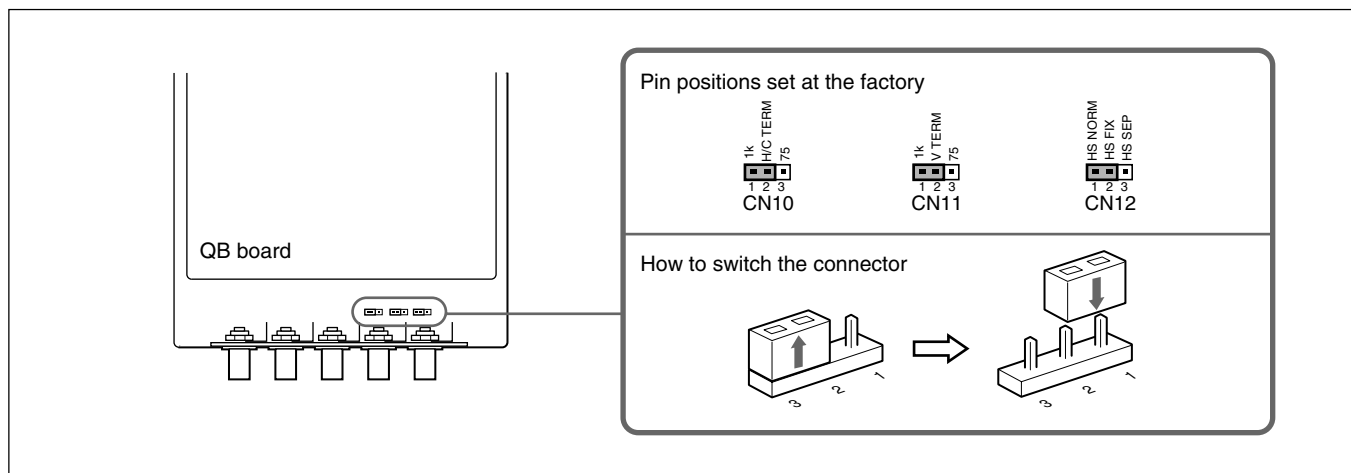
**OPEN (pin position 1):** Set to this position when the input signal is distributed into other equipment using a branch connector and is terminated at 75 ohms on that equipment.



## INPUT B: Setting the QB board

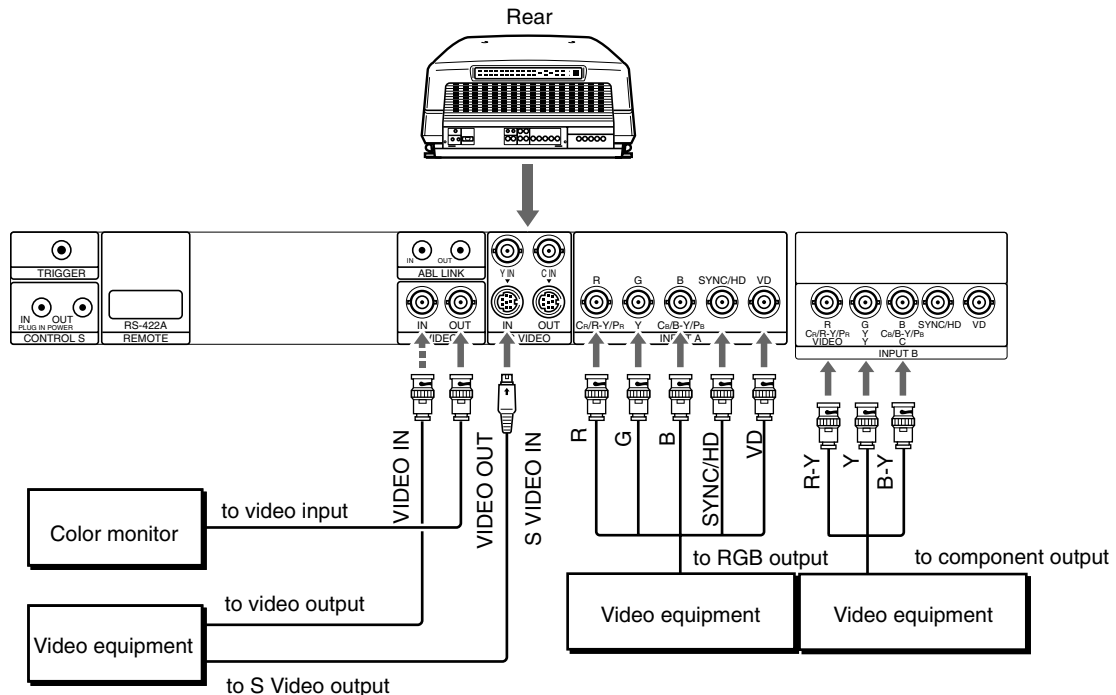
**Sync 75-ohm terminate connector:** Normally set to “1K”. Set the CN10 and CN11 to “75” when the sync output signal is terminated at 75 ohms.

**Sync separate connector:** Set the CN12 to change the sync on green signal to the separate sync signal. Set it to “HS SEP” when the HDTV external sync signal, etc. is input.



# Connecting Directly to the Projector

When multiple input sources are connected to the projector



## Setting up

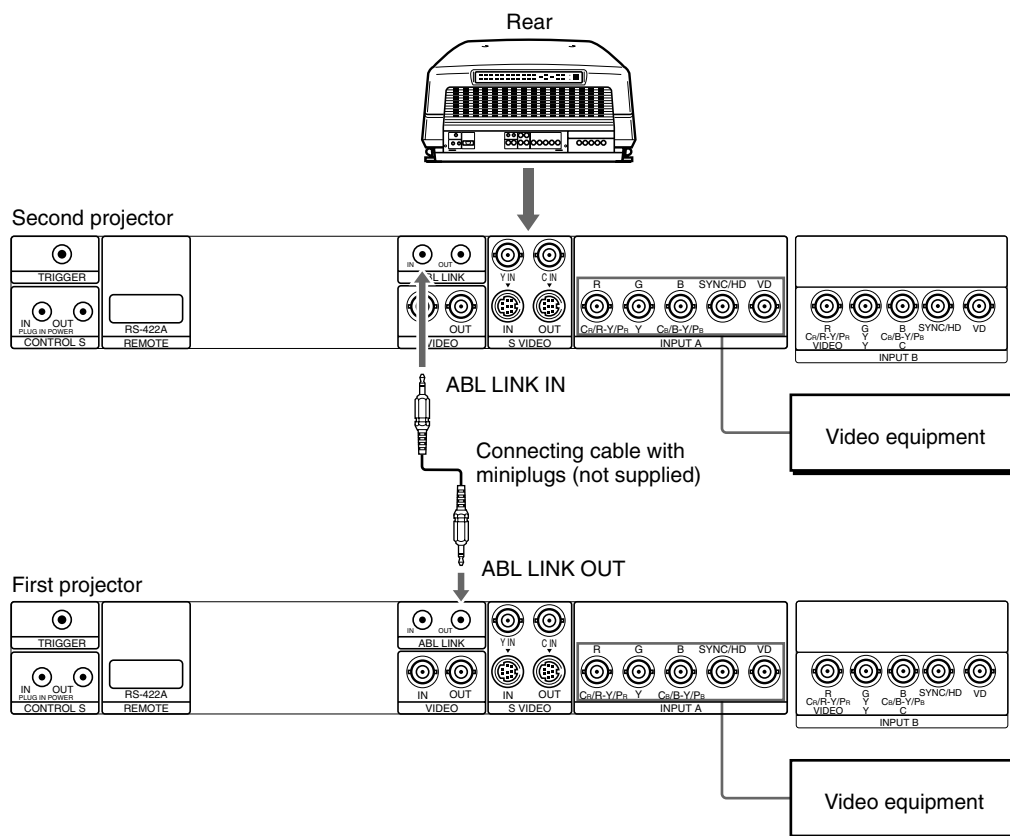
- Set INPUT-A in the SET SETTING menu to RGB and INPUT-B to COMPONENT.  
*For details, see “The SET SETTING Menu” on page 48 (GB).*
- Select VIDEO or S VIDEO by pressing the INPUT SELECT keys on the remote control or by setting VIDEO in the INPUT SELECT menu.  
*For details, see “The INPUT SELECT Menu” on page 42 (GB).*
- Switch the 75-ohm terminate connectors according to the connections of the computer and color monitor.  
*For details, see “Switching the Connectors” on page 27 (GB).*

# Using the Linked ABL Function

## What is linked ABL function?

The ABL (Automatic Brightness Limiter) function is incorporated with the projector. The ABL function prevents CRT burn by controlling the brightness of the screen if it becomes too high.

If you connect the ABL LINK jacks of each projector when connecting multiple projectors to display a multi-screen, the ABL functions on all projectors once the ABL functions on any one projector. The linked ABL function allows the multi-screen's brightness uniform.



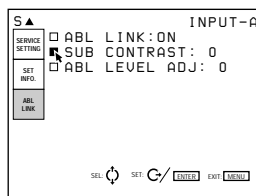
## Setting up

Set ABL LINK in the ABL LINK menu to ON.

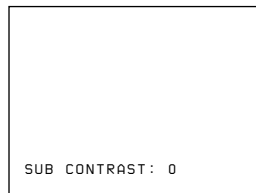
For details, see "The ABL LINK Menu" on page 54 (GB).

## Adjusting the ABL LINK

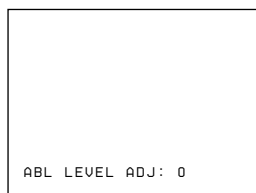
- 1** Set the remote control to the service adjustment mode.  
*For details, see “Preparation” on page 35 (GB).*
- 2** Set the CONTRAST levels of all projectors to the same level.
- 3** Adjust the brightness of each projector to make its black level uniform.
- 4** Input an external signal to display the 1/16 window pattern.
- 5** Display the ABL LINK menu, select SUB CONTRAST with the **▲** or **▼** key, then press the ENTER key.  
*For details, see “The ABL LINK Menu” on page 54 (GB).*



- 6** Press the **▲** or **▼** key to adjust the projector so that the brightness looks the same as that of the darkest projector, then press the ENTER key.



- 7** Repeat steps **4** to **6** on each projector so that the brightness of all projectors looks the same.
- 8** Input an external signal to display the all white pattern.
- 9** Select ABL LEVEL ADJ in the ABL LINK menu, then press the ENTER key.
- 10** Press the **▲** or **▼** key to adjust the projector so that the brightness looks the same as that of the darkest projector, then press the ENTER key.



- 11** Repeat steps **8** to **10** on each projector so that the brightness of all projectors looks the same.
- 12** Set ABL LINK in the ABL LINK menu to ON, then press the ENTER key.  
If the ABL functions on any one projector, the brightness of all projectors becomes uniform.



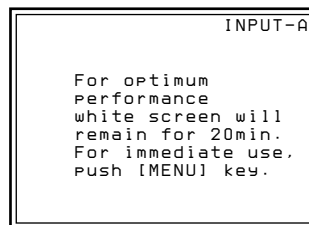
# ***Before adjustment***

## **Adjustment Procedures**

### **Warm-up before 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 warm-up starts, the message will disappear temporarily and will appear subsequently for 5 seconds every 30 seconds.



Press the MENU key to cancel the warm-up, if you wish to see the picture immediately.

You may also set the projector for a shorter, longer or no warm-up period. For details, see “Changing the Initialization Period” on page 103 (GB).

## Adjustment procedures

Perform each adjustment with the supplied remote control before connecting to the external equipment. After the adjustment, save the data. Next, perform fine adjustment for each input signal connected to the projector.

Follow the procedure below.

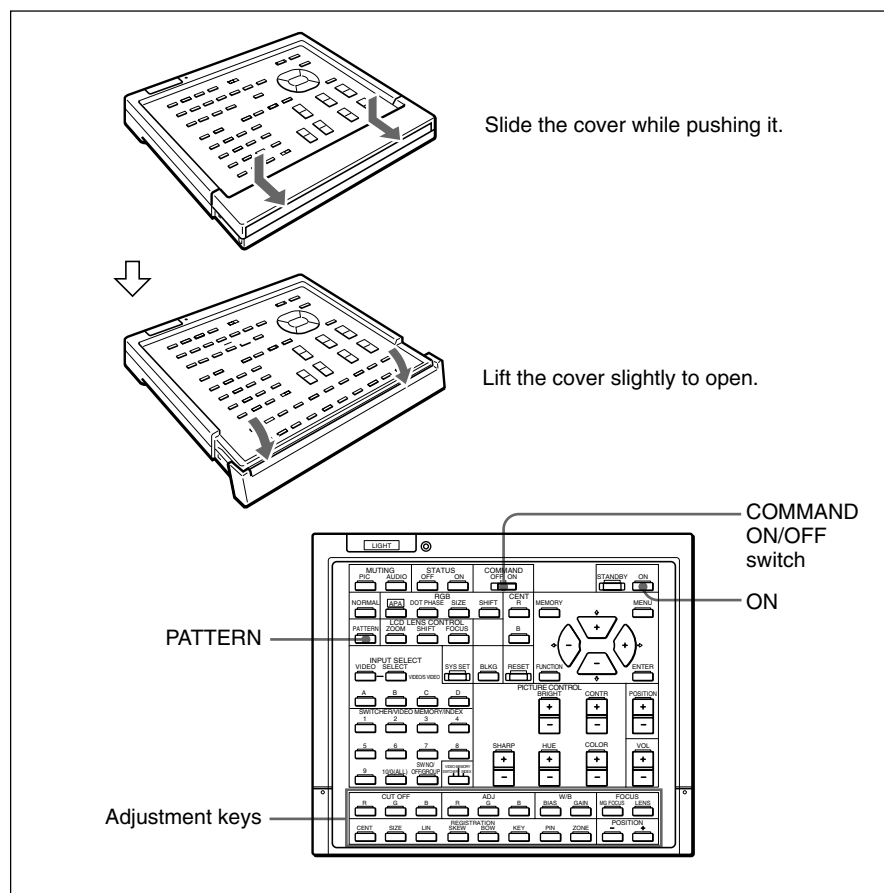
- ① Prepare the remote control. (*page 35 (GB)*)  
↓
- ② Set the remote control to the service adjustment mode. (*page 35 (GB)*)  
↓
- ③ Adjust roughly without input signal. (*pages 60 (GB) to 87 (GB)*)  
↓
- ④ Save the adjustment data as the standard data. (*page 88 (GB)*)  
↓
- ⑤ Adjust fine for each input signal. (*pages 89 (GB) to 95 (GB)*)  
↓
- ⑥ Activate the memory protection of the remote control. (*page 101 (GB)*)  
↓
- ⑦ Adjust the picture. (*page 102 (GB)*)



# For Remote Control RM-PJ1001

All adjustments, except focusing the lens and adjusting flapping of the lens, can be made with the supplied remote control RM-PJ1001. 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.

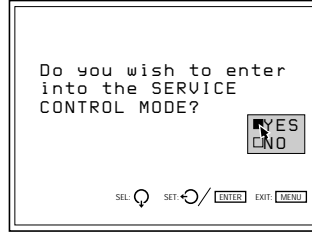
## Preparation



- 1 Insert three of the supplied AA size batteries (R6) with the polarities lined up correctly.  
*For details, see “Battery installation” on page 36 (GB).*
- 2 Connect the remote control to the projector.  
*See “Connecting the remote control to the projector” on page 37 (GB).*
- 3 Make sure that the COMMAND ON/OFF switch on the remote control is set to ON.
- 4 Turn on the MAIN POWER switch on the projector, and then press the ON key on the remote control.
- 5 Open the panel cover of the adjustment keys.



- 6** Press the keys in the following order:  
ENTER → ENTER →  →  → ENTER

The following display appears.



- 7** Press the  or  key to select YES, then press the ENTER key.

The protection on the adjustment keys is removed and the service adjustment keys are enabled (service adjustment mode).

After the adjustment, reactivate the protection.

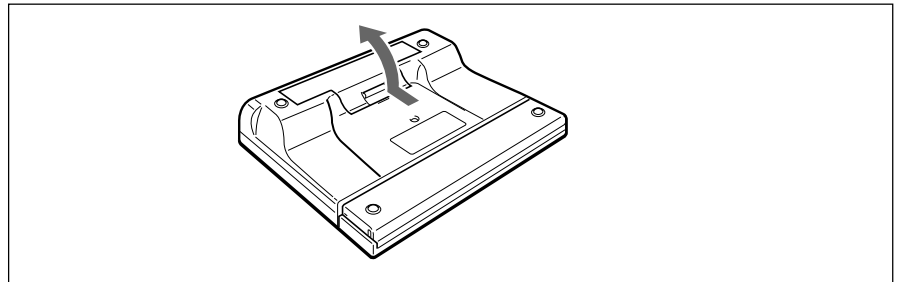
For details, see "Protecting the Setting" on page 101 (GB).

### Notes for wireless remote control operation

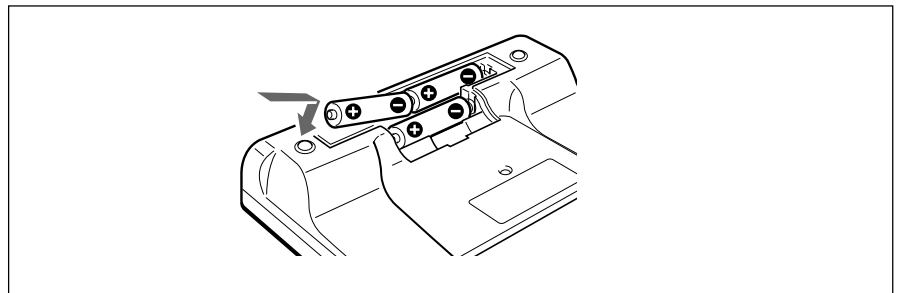
- Be sure that there are no obstructions between the remote control and the projector.
- Operating range is limited. The shorter the distance between the remote control and the projector, the wider the angle in which the remote control can control the projector.

## Battery installation

- 1** Push to open the lid.



- 2** Install three size AA (R6) batteries (supplied) with the correct polarity.

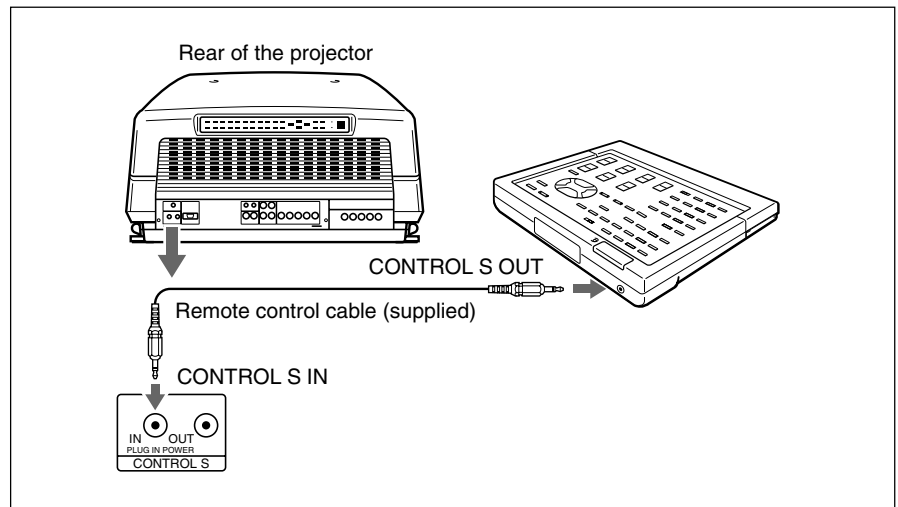


- 3** Replace the lid.

### 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



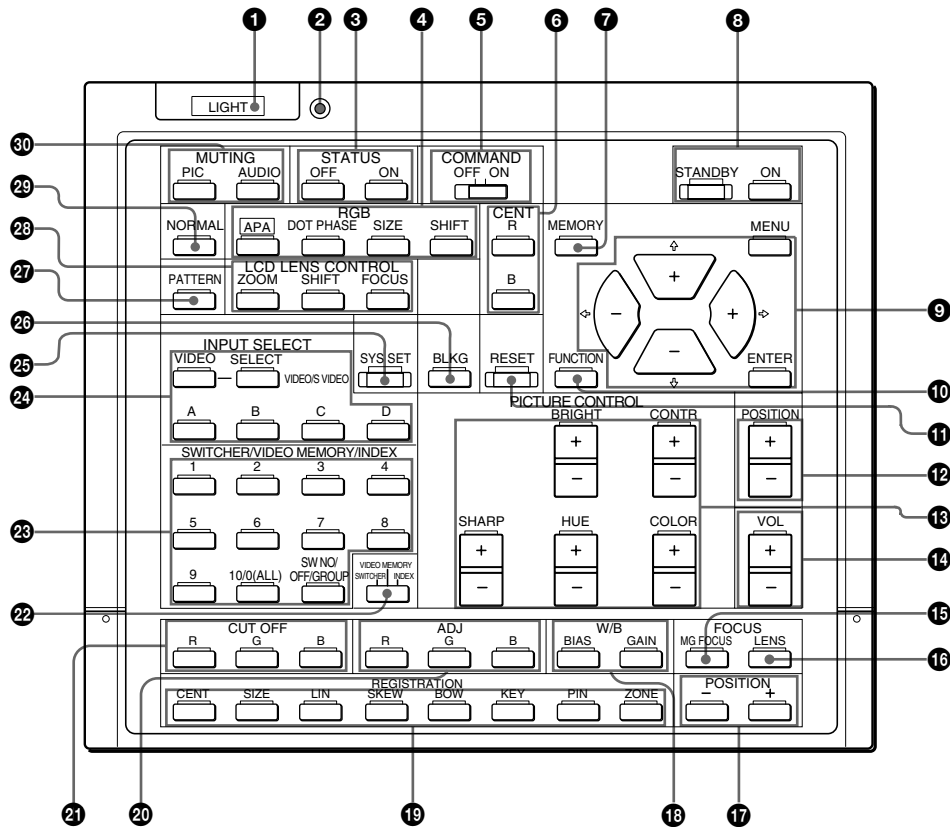
### Note

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

### Notes

- The VOL +/- **14**, MG FOCUS **15**, FOCUS LENS **16**, INPUT SELECT C and D **24**, LCD LENS CONTROL **28** and AUDIO MUTING **30** keys do not function with this projector.
- The W/B BIAS/GAIN **18**, REGISTRATION **19**, ADJ R/G/B **20** and CUT OFF R/G/B **21** keys function only in service adjustment mode.



### 1 LIGHT button

Illuminates the key indicators when the COMMAND switch **5** is set to ON. If the COMMAND switch is set to OFF, only the COMMAND switch is illuminated.

The key indicators turn off if you press the LIGHT button again.

If you do not press any key for more than 30 seconds, the indicators also turn off automatically.

When the remote control is connected to the CONTROL S IN/PLUG IN POWER jack of the projector via the remote control cable, the power is supplied to the remote control from the projector.

### 2 Transmission indicator

Lights each time you press a key. If it does not light, replace the batteries with new ones.

### 3 STATUS ON/OFF keys

Press OFF to eliminate the on-screen display.  
Press ON to restore the on-screen display.

### Note

The menus and warning messages appear even if the OFF key is pressed.

**④ RGB keys**

Enter the adjustment mode for the input signal.

**APA:** This key does not function with this projector.

**DOT PHASE:** This key does not function with this projector.

**SIZE:** Enters the size adjustment mode for the input signal. Next adjust the size of the picture using the four arrow keys.

◀ : to reduce horizontal size

▶ : to expand horizontal size

⬆ : to expand vertical size

⬇ : to reduce vertical size

Press the MEMORY key **⑦** to store the adjusted value and display the adjusted picture.

**SIFT:** Enters the shift adjustment mode for the input signal. Next adjust the position of the picture using the four arrow keys. The picture shifts in the direction of the arrow on the pressed key.

Press the MEMORY key **⑦** to store the adjusted value and display the adjusted picture.

**⑤ COMMAND ON/OFF switch**

No keys on the remote control except the LIGHT key **①** function when this switch is set to OFF. This saves battery power.

**⑥ CENT R/B keys**

Enter the centering adjustment mode of the red and blue.

**R:** Press to enter the red centering adjustment mode.

**B:** Press to enter the blue centering adjustment mode. Perform the centering adjustment using the four arrow keys.

**⑦ MEMORY key**

Stores various adjusted data into memory.

**⑧ ON/STANDBY keys**

Turn on and off the projector when the MAIN POWER switch on the projector is set to ON.

**⑨ Menu operation keys**

Used for various adjustment functions and for menu operations.

**MENU:** Displays the main menu. Press it again to turn off the menu.

**Arrow keys:** Adjusts the value or selects the item in the menu.

**ENTER:** Stores the settings in the menu.

**⑩ FUNCTION key**

This key does not function with this projector.

**⑪ RESET key**

Resets the adjusted levels to the factory preset or service adjusted levels.

**⑫ POSITION +/- keys**

Select the position to be adjusted on the screen in focus, registration or blanking adjustment mode.

Also, set V SHIFT to WIDE or NARROW in the RGB input signal's SHIFT adjustment mode.

**⑬ PICTURE CONTROL keys**

Adjust the picture conditions: CONTR (contrast), BRIGHT (brightness), COLOR, HUE and SHARP (sharpness).

**⑭ VOL +/- keys**

These keys do not function with this projector.

**⑮ MG FOCUS key**

This key does not function with this projector.

**⑯ FOCUS LENS key**

This key does not function with this projector.

**⑰ POSITION +/- keys**

Function the same as the POSITION +/- **⑫** keys. Select the position to be adjusted on the screen in focus, registration or blanking adjustment mode.

**⑱ W/B (white balance) keys**

Enter the white balance adjustment mode.

**BIAS:** Adjusts cut off.

**GAIN:** Adjusts drive.

**⑲ REGISTRATION keys**

**CENT/SIZE/LIN/SKEW/BOW/KEY/PIN/ZONE**

Select the desired item for registration adjustment with each key, then adjust the item with the arrow keys.

*For details, see "Keys for Adjusting" on page 68 (GB).*

**⑳ ADJ R/G/B (adjust red/green/blue) keys**

Select color to be adjusted when adjusting the focus, registration and white balance adjustments.

**R:** Red signal

**G:** Green signal

**B:** Blue signal

**㉑ 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

### 22 SWITCHER/VIDEO MEMORY/INDEX select switch

**SWITCHER:** This key does not function with this projector.

**VIDEO MEMORY:** To select the preset or adjusted data.

**INDEX:** This key does not function with this projector.

### 23 SWITCHER/VIDEO MEMORY/INDEX keys

Select the video memory number or OFF when the SWITCHER/VIDEO MEMORY/INDEX select switch is set to VIDEO MEMORY.

### 24 INPUT SELECT keys

Select the input signal.

**VIDEO:** The signal input from the VIDEO IN or S VIDEO IN (or Y/C IN) connectors

**SELECT VIDEO/S VIDEO:** Selects the signal input from the VIDEO IN or S VIDEO IN (or Y/C IN) connectors after pressing the VIDEO key.

**A:** The RGB, component or HDTV signal input from the INPUT A connectors

**B:** The RGB, component, HDTV, S video or video signal input from the INPUT B connectors

**C, D:** These keys do not function with this projector.

#### Note

To switch the input signal from the INPUT A or INPUT B to the S VIDEO IN (or Y/C IN) connectors, first press the VIDEO key, then press the SELECT VIDEO/S VIDEO key.

### 25 SYS SET key

This key does not function with this projector.

### 26 BLKG (blanking) key

Enters the blanking adjustment mode.

You can adjust the blanking with the four arrow keys.  
*For details, see "Blanking Adjustment" on pages 91 (GB) and 93 (GB).*

### 27 PATTERN key

Displays the internal test patterns of the projector.

Each press of the key advances the test pattern sequentially.

In the focus, registration or white balance adjustment mode, only the test patterns suitable for the adjustment will be displayed.

*For details, see "Test Patterns" on page 56 (GB).*

### 28 LCD LENS CONTROL keys

These keys do not function with this projector.

### 29 NORMAL key

Erases the test pattern or cancels the various adjustment modes.

### 30 MUTING keys

**PIC (Picture):** Cuts off the picture. To restore the picture, press the key again.

**AUDIO:** This key does not function with this projector.



# Using the MENU

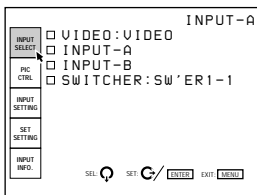
The projector is equipped with an on-screen menu for making various adjustments and settings.

The language used in the menu can be changed to French, German, Italian, Spanish, Japanese or Chinese.

For details, see “LANGUAGE” on page 49 (GB).

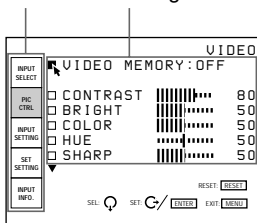
## Basic Menu Operation

- 1 Press the MENU key.  
The menu display appears.  
The menu presently selected is highlighted in blue.



- 2 Use the ↓ or ↑ keys to select a menu, then press the → key or the ENTER key.  
The selected menu appears.  
The setting items that are indicated in white cannot be selected.

Menu items    Setting items



- 3 Use the ↓ or ↑ keys to select a setting item, then press the → key or the ENTER key.  
The adjustment menu or the setting menu (pop-up menu) appears.

### If there are two or more pages for a menu

The ▼ indication appears below the bottom item.  
To go to the next page, move the cursor to the bottom item with the ↓ key, then press the ↓ key.  
To go back to the previous page, move the cursor to the top item with the ↑ key, then press the ↑ key.

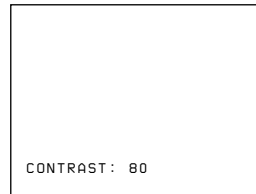
- 4 Make adjustment or setting on the menu.

### To change the adjustment level

To increase the level, press the ↑ or → key.

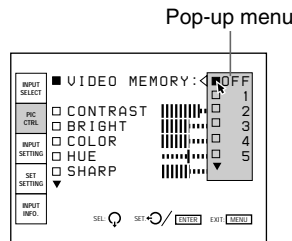
To decrease the level, press the ↓ or ← key.

Then press the ENTER key to store the level. The original screen is restored.



### To select an item

Use the ↓ or ↑ key to select an item in a pop-up menu, then press the ← key or the ENTER key. The selected setting is stored and the pop-up menu disappears.



For details on setting individual items, see the relevant menu pages.

### To clear the menu display

Press the MENU key.

The menu display also disappears automatically if no key is pressed for about one minute.

### To reset the settings that have been adjusted

Press the RESET key. “Reset complete!” appears on the screen and the settings appearing on the screen will be reset to the factory preset or service adjusted levels.

### Memory of the settings

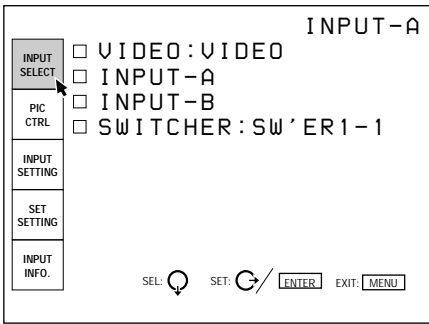
The settings in the menus are automatically stored in the projector memory. You can also store the settings by pressing the MEMORY key.

Before adjustment

# Using the MENU

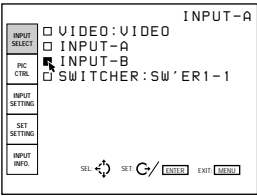
## The INPUT SELECT Menu

The INPUT SELECT menu is used for selecting the input signal.  
Items that can be selected are highlighted in green.  
You cannot select the items indicated in white.



## INPUT-B

Selects signal input from the INPUT B connectors.



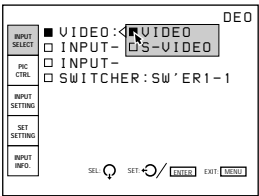
**Note**  
If the setting of INPUT-B in the SET SETTING menu is incorrect, the picture may be distorted.  
*For details, see page 48 (GB).*

## SWITCHER

The switcher can not be selected.

## VIDEO

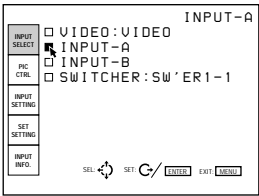
Selects signal input from the VIDEO IN or S VIDEO IN (or Y/C IN) connectors.



Select VIDEO or S-VIDEO in the pop-up menu.

## INPUT-A

Selects signal input from the INPUT A connectors.

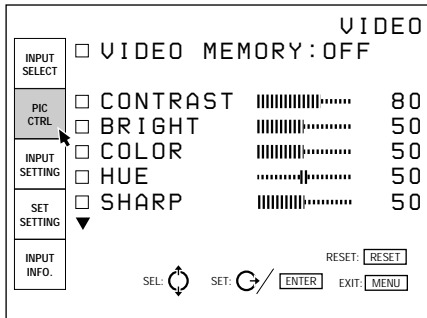


**Note**  
If the setting of INPUT-A in the SET SETTING menu is incorrect, the picture may be distorted.  
*For details, see page 48 (GB).*

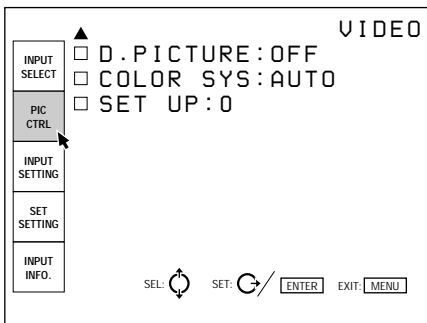
## The PIC CTRL (Picture Control) Menu

The PIC CTRL menu is used for adjusting the picture. Items that can be adjusted are highlighted in green. You cannot select the items indicated in white.

### Page 1

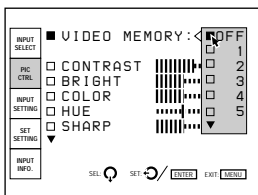


### Page 2



## VIDEO MEMORY

Selects a memory number of the adjusted picture levels.



Select a number from 1 to 10 in the pop-up menu, then the picture levels that have been adjusted will be stored in the number of the projector's memory. If you want to reset the data to the input signal, select OFF.

The items to be stored in the VIDEO MEMORY are shown in the table of the memory architecture under “Input memory” (except for the items, “clamp position” and “registration”). (page 97 (GB))

## CONTRAST

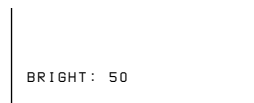
Adjusts the picture contrast.



The higher the setting, the greater the contrast.  
The lower the setting, the lower the contrast.

## BRIGHT (brightness)

Adjusts the picture brightness.



The higher the setting, the brighter the picture.  
The lower the setting, the darker the picture.

## COLOR

Adjusts color intensity.



The higher the setting, the greater the intensity.  
The lower the setting, the lower the intensity.

## HUE

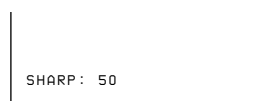
Adjusts skin tones.



At high settings, the picture becomes greenish.  
At low settings, the picture becomes purplish.

## SHARP (sharpness)

Adjusts the picture sharpness.



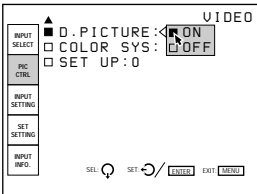
The higher the setting, the sharper the picture.  
The lower the setting, the softer the picture.

Before adjustment

# Using the MENU

## D. (Dynamic) PICTURE

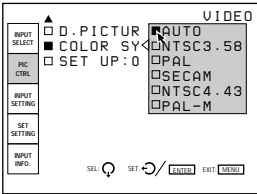
Emphasizes the black of the composite video, S video (Y/C) or component signal.



- ON:** Emphasizes the black to produce a bolder “dynamic” picture.
- OFF:** Reproduces the dark portions of the picture accurately, in accordance with the source signal.

## COLOR SYS (System)

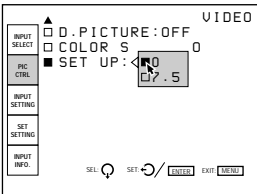
Selects the color system of the composite video or S video (Y/C) signal.



- Normally, set to AUTO.
- If the picture is distorted or colorless, select the color system according to the input signal.

## SET UP

Changes the set up level (standard black level) to 0 IRE or 7.5 IRE according to the NTSC source signal.



- 0 IRE:** Normally, set to this position.
- 7.5 IRE:** Set to this position when the black color is too light.

## Input signals and adjustable/setting items

Item	Input signal			
	Video or S video (Y/C)	Component	HDTV	RGB
CONTRAST	Y	Y	Y	Y
BRIGHT	Y	Y	Y	Y
COLOR	Y	Y	Y	N
HUE	Y (NTSC <sub>3.58</sub> /NTSC <sub>4.43</sub> system only)	N	Y	N
SHARP	Y	Y	Y	N
D. PICTURE	Y	Y	N	N
COLOR SYS	Y	N	N	N
SET UP	Y (NTSC <sub>3.58</sub> /NTSC <sub>4.43</sub> system only)	N	N	N

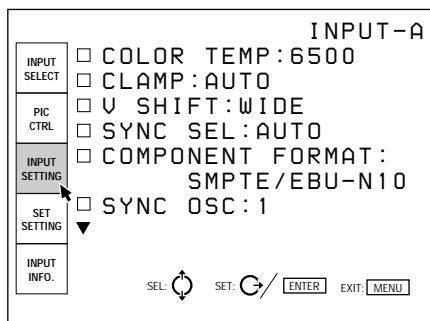
Y: Adjustable/can be set  
N: Not adjustable/cannot be set

## The INPUT SETTING Menu

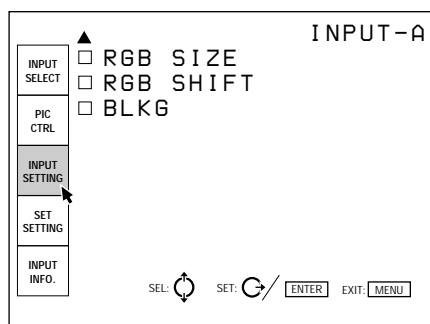
The INPUT SETTING menu is used to adjust the input signal.

Items that can be adjusted are displayed in green. You cannot select the items indicated in white.

### Page 1

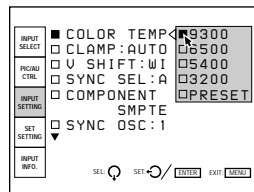


### Page 2



## COLOR TEMP (Temperature)

Selects the appropriate color temperature according to your application and the input source signal.

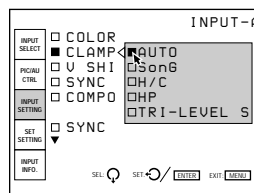


If you wish to make the color of a particular input signal uniform to that of a color monitor, select PRESET, then adjust the white balance.

For details, see “Adjusting the White Balance” on page 94 (GB).

## CLAMP

Corrects the luminance of the input picture.



CLAMP is used as a standard for setting the black level of a picture correctly. The standard position of the clamp depends on the kind of sync signal being used. Normally, the projector CPU judges the signal and sets the position automatically. However, the CPU can misjudge the signal because of noise. If the luminance of the picture seems to be incorrect, the clamp position may need to be changed.

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

**SonG:** Set to this position if the black seems too light or greenish.

**H/C:** Set to this position if the picture is too dark or luminance is unstable.

**HP:** If the luminance is still incorrect after changing to the SonG or H/C position, set to this position and perform the H-SHIFT adjustment.

**TRI-LEVEL S:** Set to this position if the picture is dark when using the tri-level sync.

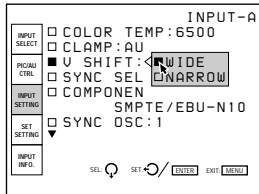
### Note

If the luminance is still incorrect after changing the clamp setting, check the input signal and the connections.

# Using the MENU

## V (Vertical) SHIFT

Sets the adjustable range of the vertical shift of the input signal.



**WIDE:** Normally, set to this position (factory preset).

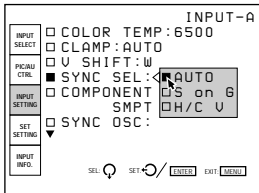
**NARROW:** When some signal such as a superimposed signal with unstable vertical sync. signal is input, the picture may be distorted vertically. In this case, set to this position. Adjustable range in the lower direction will become narrow.

### Note

When the video, S video or component signal is input, V SHIFT is fixed to NARROW.

## SYNC SEL (select)

Selects the sync signal.



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

**SonG:** Set to this position if you project the picture using the sync on G signal.

**H/C V:** Set to this position if you project the picture using the external sync signal.

## When an HDTV signal is input

You can select the items below instead of the above items.

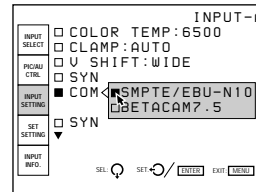
**INT:** Set to this position when using the internal sync signal.

**EXT (C):** Set to this position when using the external composite sync signal.

**EXT (HV):** Set to this position when using the external horizontal/vertical sync signal.

## COMPONENT FORMAT

Selects the format of the component input signal.

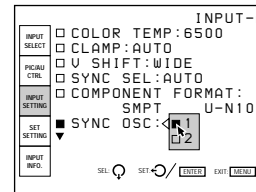


**SMPTE/EBU-N10:** Set to this position if the input signal is the SMPTE or EBU-N10 format component signal.

**BETACAM7.5:** Set to this position if the input signal is the Betacam format component signal.

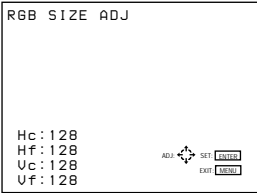
## SYNC OSC (oscillation)

Normally, set to 1. When synchronization is distorted according to the type of the input signal, set to 2.



## RGB SIZE

Adjusts the picture size of the input signal.

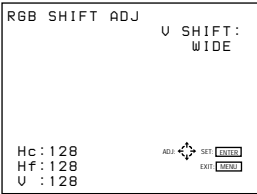


Use the ◀ or ▶ key to adjust the horizontal size.  
Use the ▲ or ▼ key to adjust the vertical size.

Hc and Hf show the size adjustment levels for the horizontal direction and Vc and Vf show those for the vertical direction. The higher the setting level, the greater the picture size.

## RGB SHIFT

Adjusts the picture position of the input signal.

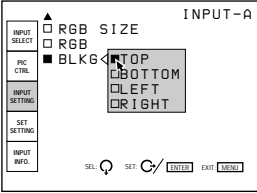


Use the ◀ or ▶ key to adjust the horizontal position.  
Use the ▲ or ▼ key to adjust the vertical position.

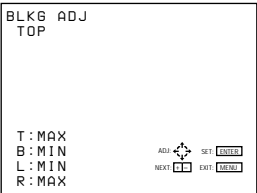
Hc and Hf show the shift adjustment levels for the horizontal direction and V shows the level for the vertical direction.

## BLKG (Blanking)

Cuts off the excess parts if the displayed picture is larger than the screen.



Select the part to be adjusted among TOP, BOTTOM, LEFT and RIGHT, then press the ▶ key or the ENTER key to display the blanking adjustment screen.



Use the ▲ or ▼ key to adjust the TOP and BOTTOM parts.  
Use the ◀ or ▶ key to adjust the LEFT and RIGHT parts.

## Input signals and adjustable/setting items

Items	Input signal			
	Video or S video (Y/C)	Component	HDTV	RGB
COLOR TEMP	Y	Y	Y	Y
CLAMP	N	N	Y	Y
V SHIFT	N	N	Y	Y
SYNC SEL	N	N	Y	Y
COMPONENT FORMAT	N	Y	N	N
SYNC OSC	Y	Y	Y	Y
RGB SIZE	Y	Y	Y	Y
RGB SHIFT	Y	Y	Y	Y
BLKG	Y	Y	Y	Y

Y: Adjustable/can be set  
N: Not adjustable/cannot be set

# Using the MENU

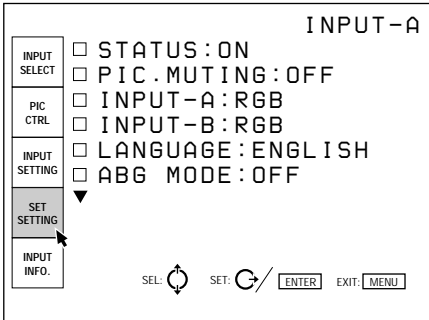
## The SET SETTING Menu

The SET SETTING menu is used for changing the default settings of the projector.

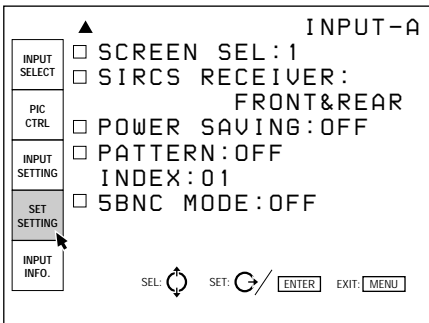
Items that can be adjusted are highlighted in green.

You cannot select the items indicated in white.

### Page 1

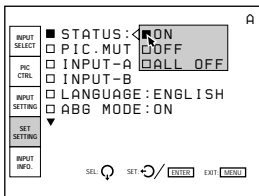


### Page 2



## STATUS

Selects the on-screen display mode.

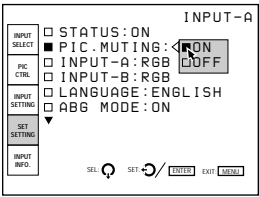


- ON:** Shows all of the on-screen displays.
- OFF:** Turns off the on-screen displays except for “NO INPUT,” “PIC MUTING,” warning messages and menu displays.
- ALL OFF:** Turns off all of the on-screen displays except for warning messages and menu displays.

## PIC. (Picture) MUTING

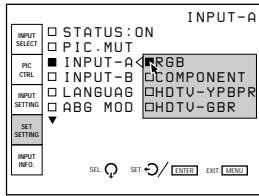
Set to ON to cut off the picture.

When set to ON, “PIC MUTING” appears on the screen.



## INPUT-A

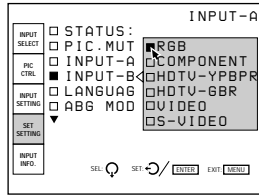
Selects the signal input from the INPUT A connectors.



- RGB:** Inputs the RGB signal.
- COMPONENT:** Inputs the component (Y/R-Y/B-Y, Y/Cb/Cr) signal.
- HDTV-YPBPR:** Inputs the HDTV (YP<sub>B</sub>Pr) signal.
- HDTV-GBR:** Inputs the HDTV(GBR) signal.

## INPUT-B

Selects the signal input from the INPUT B connectors.

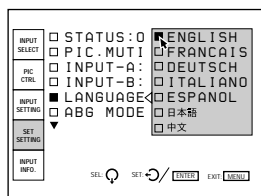


- RGB:** Inputs the RGB signal.
- COMPONENT:** Inputs the component (Y/R-Y/B-Y, Y/Cb/Cr) signal.
- HDTV-YPBPR:** Inputs the HDTV (YP<sub>B</sub>Pr) signal.
- HDTV-GBR:** Inputs the HDTV(GBR) signal.
- VIDEO:** Inputs the composite video signal.
- S-VIDEO:** Inputs the S video signal.



## LANGUAGE

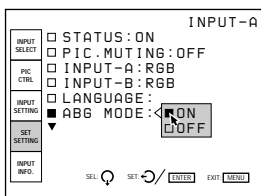
Selects the language used in the on-screen displays.



Available languages are: English, French, German, Italian, Spanish, Japanese and Chinese.

## ABG (Automatic Background) MODE

Normally, set to ON (factory setting). Cutoff luminance will be set to a certain level. Set to OFF if you want to erase the horizontal luminescent line for cutoff level detection that may appear at the upper part of the picture.

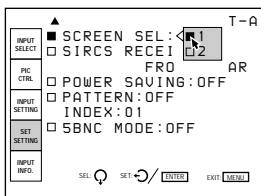


### Note

When ABG MODE is set to OFF, the black level of the white balance may change.

## SCREEN SEL (Select)

Selects the screen to be used.

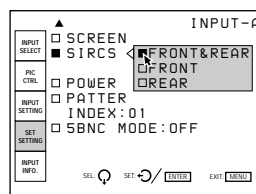


1: Bead screen

2: Mat screen

## SIRCS RECEIVER

Selects the remote control detectors on the front and rear of the projector, if the wireless remote control does not operate correctly due to the influence of a fluorescent lamp, etc.



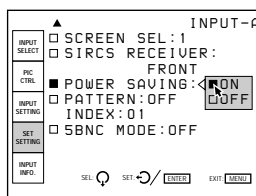
**FRONT & REAR:** Activates both the front and rear detectors.

**FRONT:** Activates the front detector only.

**REAR:** Activates the rear detector only.

## POWER SAVING

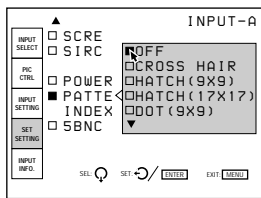
When set to ON, the projector goes into the power saving mode if no signal is input for 10 minutes. The screen enters cut-off mode. The power saving mode is canceled when a signal is input or whenever any key is pressed.



# Using the MENU

## PATTERN

Selects the type of the test pattern to be displayed.



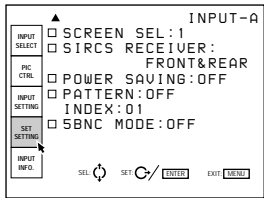
Selectable patterns are: CROSS HAIR, HATCH (9 × 9), HATCH (17 × 17), DOT (9 × 9), H, H INV (inverse), ME, ME INV (inverse), ALL WHITE, WINDOW, WINDOW&LINE and COLOR BAR (service adjustment mode).

Set to OFF when you do not want to display a test pattern.

For displaying the test patterns, see “Test Patterns” on page 56 (GB).

## INDEX (Index number)

The index number of this projector is set to 01.

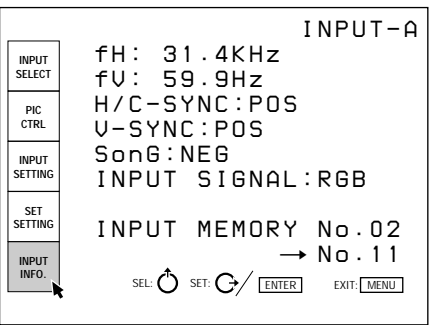


## 5BNC MODE

This menu does not function with this projector.

## The INPUT INFO. (Information) Menu

The INPUT INFO. menu displays the information on the current input signal.



## fH (Horizontal frequency)

Indicates the horizontal frequency of the input signal. This indication is not an absolute value, but is only used as a reference.

## fV (Vertical frequency)

Indicates the vertical frequency of the input signal. This indication is not an absolute value, but is only used as a reference.

## H/C (Horizontal/Composite)-SYNC

Indicates the polarity of the horizontal or composite sync signal. When the picture is being projected using this type of sync signal, the POS (NEG) is displayed in green. When the picture is being projected without using this type of sync signal, the POS (NEG) is displayed in white.

**POS:** The polarity of the sync signal is positive.

**NEG:** The polarity of the sync signal is negative.

— —: No sync signal is input.

## V (Vertical)-SYNC

Indicates the polarity of the vertical or composite sync signal.

When the picture is being projected using this type of sync signal, the POS (NEG) is displayed in green.

When the picture is being projected without using this type of sync signal, the POS (NEG) is displayed in white.

**POS:** The polarity of the sync signal is positive.

**NEG:** The polarity of the sync signal is negative.

-- -: No sync signal is input.

## SonG (Sync on Green)

Indicates the polarity of the sync on Green. When the picture is being projected using this type of sync signal, the NEG is displayed in green. When the picture is being projected without using this type of sync signal, the NEG is displayed in white.

**NEG:** The polarity of the sync signal is negative.

-- -: No sync signal is input.

## INPUT SIGNAL

Displays the type of current input signal.

**NTSC 3.58:** NTSC<sub>3.58</sub> input signal

**PAL:** PAL input signal

**SECAM:** SECAM input signal

**NTSC 4.43:** NTSC<sub>4.43</sub> input signal

**PAL-M:** PAL-M input signal

**B/W:** Black and white input signal

**Y/C:** S video input signal

**RGB:** RGB input signal

**COMPONENT:** Component (Y/R-Y/B-Y, Y/C<sub>B</sub>/C<sub>R</sub>) input signal

**HDTV YPBPR:** HDTV YP<sub>B</sub>P<sub>R</sub> input signal

**HDTV GBR:** HDTV GBR input signal

**IDTV:** When ON is selected.

## INPUT MEMORY No.

The upper number is the memory number of the data automatically loaded when the current signal is input.

The lower number is the new memory number in which the adjustment data of the current input signal is stored. The existent memory number is displayed in green, and a new memory number in yellow.

For details, see "Memory structure" on page 96 (GB).

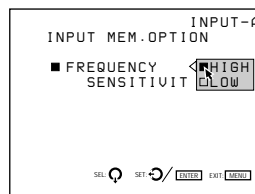
By default seven basic data are stored in the following memory numbers.

Memory number	Preset signal frequencies		Types of the input signal
	fH	fV	
00	15.7 kHz	60 Hz	Video (NTSC <sub>3.58</sub> )
01	24.8 kHz	56 Hz	RGB
02	31.5 kHz	60 Hz	RGB
03	48.3 kHz	60 Hz	RGB
04	64.0 kHz	60 Hz	RGB
05	31.5 kHz	60 Hz	IDTV (NTSC <sub>3.58</sub> )
06	33.8 kHz	60 Hz	HDTV (Y/P <sub>B</sub> /P <sub>R</sub> )

## FREQUENCY SENSITIVITY

Selects the sensitivity to the frequency deviation of the input signal, with which the INPUT MEMORY data is switched automatically. This item can be selected only for RGB input signals.

Press the **➡** key or the ENTER key on the INPUT INFO menu, and the INPUT MEM. OPTION menu appears. Press the **➡** key or the ENTER key again to show the frequency sensitivity options.



**HIGH:** This position is selected at the factory.

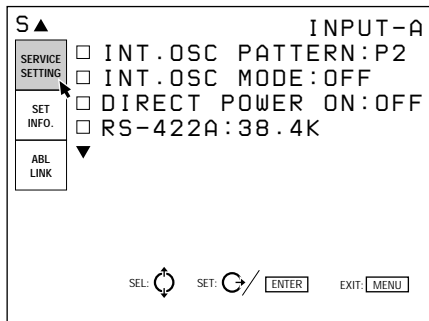
**LOW:** Set to this position if the input signal is unstable or flickers. This phenomenon may appear during variable speed playback by the VCR, etc.

# Using the MENU

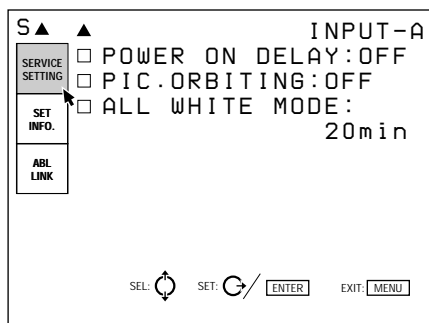
## The SERVICE SETTING Menu

The SERVICE SETTING menu is used for adjustments performed in service adjustment mode. "S" appears at the top left corner of the menu, indicating service adjustment mode.

### Page 1



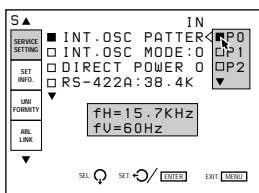
### Page 2



## INT. (internal) OSC (oscillation) PATTERN

Selects the oscillation frequency pattern generated with the internal oscillator.

The horizontal and vertical frequencies for the selected pattern are displayed in the pop-up menu on the screen.



**P0:** fH = 15.7 kHz, fV = 60 Hz

**P1:** fH = 24.8 kHz, fV = 56 Hz

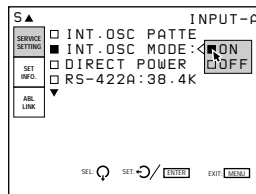
**P2:** fH = 31.5 kHz, fV = 60 Hz

**P3:** fH = 48.3 kHz, fV = 60 Hz

**P4:** fH = 64.0 kHz, fV = 60 Hz

## INT. (internal) OSC (ocillation) MODE

Set to ON to activate the internal oscillator.

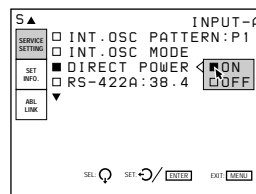


### Note

When no signal is input, you cannot select this item.

## DIRECT POWER ON

Set to ON to turn on the projector by pressing the MAIN POWER switch on the projector. Set to OFF to enter standby mode by pressing the MAIN POWER switch.

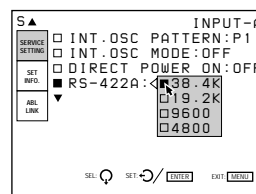


### Note

When the projector is in standby mode (it is turned off by pressing the POWER OFF key on the remote control) with DIRECT POWER ON set to ON, the projector will be turned on automatically if the power interruption occurred and has been restored.

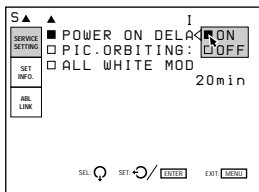
## RS-422A

Sets the communication baud rate for the RS-422A terminal to 38.4K, 19.2K, 9600 or 4800.



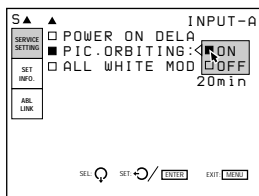
## POWER ON DELAY

When connecting multiple projectors, set to ON to turn on the projectors sequentially one by one.



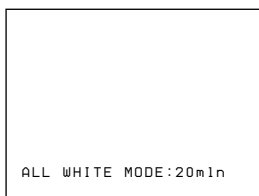
## PIC. (picture) ORBITING

Set to ON to activate the function which shifts the picture slightly to reduce CRT burn.



## ALL WHITE MODE

Sets the duration of all white mode during a warm-up period.



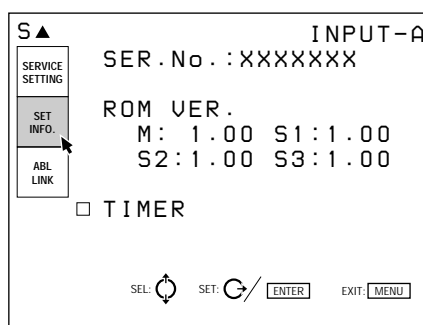
Use the **▲**, **▼**, **◀** or **▶** key to set the duration in 1 minute increments from 0 to 99 minutes.

To set the projector to display the picture immediately after the projector is turned on, set the duration to “0 min.”

For details, see “Changing the Initialization Period” on page 103 (GB).

## The SET INFO. (information) Menu

The SET INFO. menu displays the information on the projector such as the serial number, a ROM version, the use time of the projector.



### SER. (serial) No.

Indicates the serial number of the projector.

### ROM VER. (version)

Indicates the ROM version (M, S1, S2 and S3) used for the projector.

### TIMER

Indicates the use time of the projector and that of each CRT.



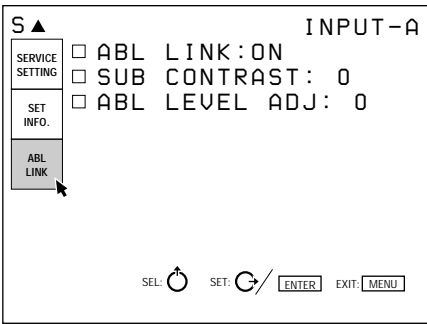
**OPERATION TIMER:** Indicates the total use time of the projector.

**CRT TIMER:** Indicates the use time of the red, green and blue CRTs, respectively.

# Using the MENU

## The ABL (Automatic Brightness Limiter) LINK Menu

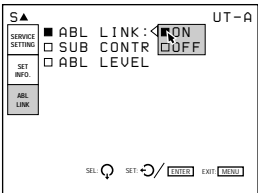
The ABL LINK menu is used for adjusting to make the brightness of the multi-screen uniform when connecting multiple projectors.



For details, see “Using the Linked ABL Function” on page 31 (GB).

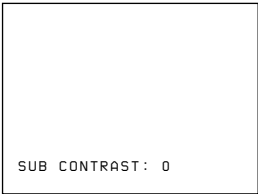
## ABL LINK

When set to ON, the ABL (Automatic Brightness Limiter; to control the brightness of the picture when it is too high) functions on all projectors once the ABL functions on any projector.



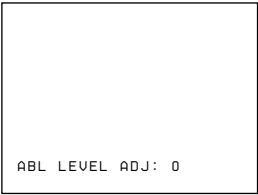
## SUB CONTRAST

When ABL LINK is set to ON, adjust the brightness of each projector so that the brightness of all projectors looks the same.



## ABL LEVEL ADJ (adjust)

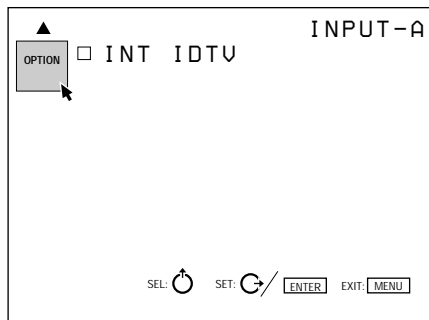
When ABL LINK is set to ON, adjust the brightness of each projector so that the brightness of all projectors looks the same.



Before adjustment

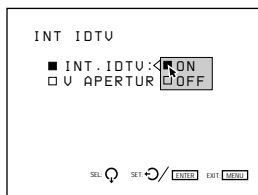
## The OPTION Menu

The density and sharpness in the vertical direction of the input signal can be adjusted.



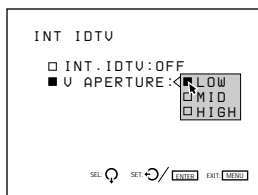
### INT. (internal) IDTV

Set to ON to project the video, S video, component or RGB (15 kHz) signal at double density.



### V. (vertical) APERTURE

Corrects the sharpness in the vertical direction. You can set the sharpness to the LOW, MID (middle) or HIGH level.

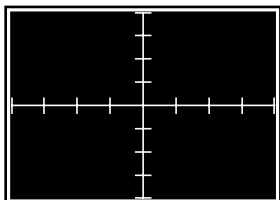


# Test Patterns

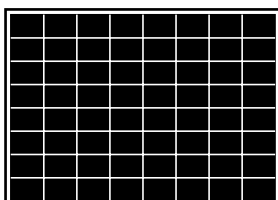
## Test Patterns

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

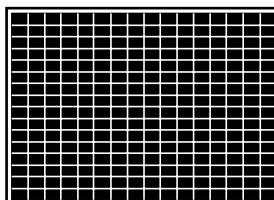
❶ CROSS HAIR



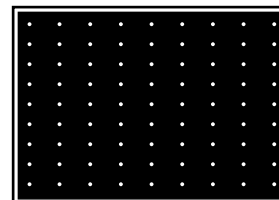
❷ HATCH (9 x 9)



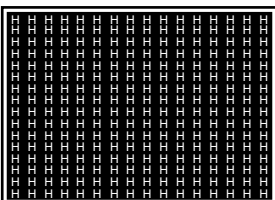
❸ HATCH (17 x 17)



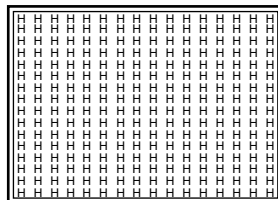
❹ DOT (9 x 9)



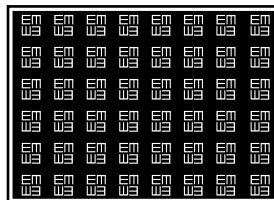
❺ H



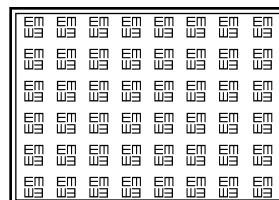
❻ H INV (inverse)



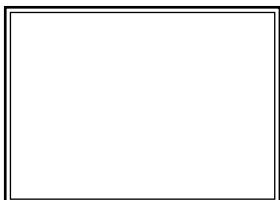
❼ ME



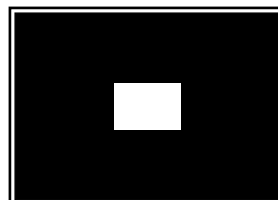
❽ ME INV (inverse)



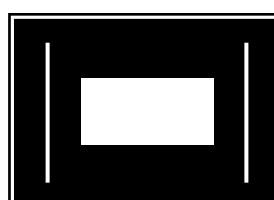
❾ ALL WHITE



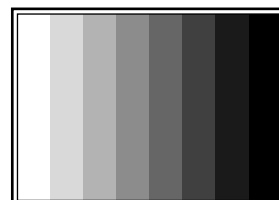
❿ WINDOW



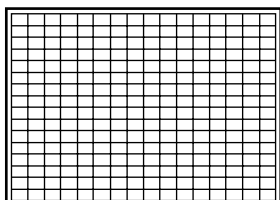
⓫ WINDOW&LINE



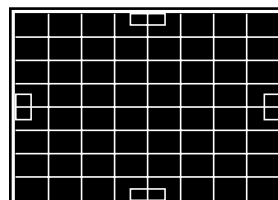
⓬ COLOR BAR



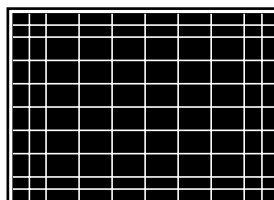
⓭ HACT INV (invert) (17 x 17) (for adjusting registration only)



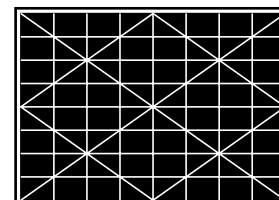
⓮ Sub-pattern 1 (subsidiary adjustment pattern 1) (for adjusting SIZE, LIN, SKEW and BOW only)



⓯ Sub-pattern 2 (subsidiary adjustment pattern 2) (for adjusting KEY and PIN only)



⓰ CROSS (9 x 9) (for adjusting ZONE only)



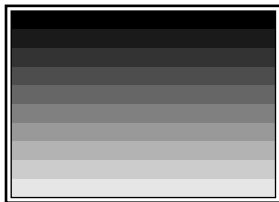
Before adjustment



17 PLUGE (for adjusting  
BIAS only)



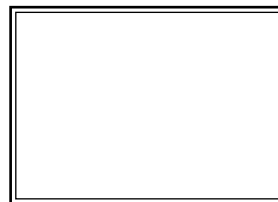
18 Stair step (for adjusting  
GAIN only)



19 5 IRE  
(for adjusting BIAS only)



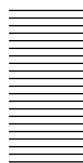
20 100 IRE  
(for adjusting GAIN and  
BIAS only)



The patterns 1 to 12 appear in numerical order when pressing the  
PATTERN key in service adjustment mode.

The patterns 13 to 20 appear in specified adjustment modes only.

The outmost bold line of each pattern in the illustration stands for the edge  
of the screen.



Before adjustment

Test Patterns in Each Mode

The patterns cycle through the following order by pressing the PATTERN key.

Adjustment mode	Test pattern
CENT	CROSS HAIR → HATCH (9 × 9) → HATCH (17 × 17) → HATCH INV (17 × 17) → External signal / HATCH (17 × 17) → External signal → CROSS HAIR ...
SIZE LIN SKEW BOW	CROSS HAIR → Sub-pattern 1 → HATCH (17 × 17) → HATCH INV (17 × 17) → External signal / HATCH (17 × 17) → External signal → CROSS HAIR ...
KEY PIN KEY BALANCE PIN BALANCE	HATCH (9 × 9) → Sub-pattern 2 → HATCH (17 × 17) → HATCH INV (17 × 17) → External signal / HATCH (17 × 17) → External signal → HATCH (9 × 9) ...
ZONE	HATCH (9 × 9) → CROSS (9 × 9) → HATCH (17 × 17) → HATCH INV (17 × 17) → External signal / HATCH (9 × 9) → External signal → HATCH (9 × 9) ...
GAIN	Stair step → 100 IRE → WINDOW → External signal → Stair step ...
BIAS	PLUGE → 5 IRE → 100 IRE → External signal → PLUGE...
BLKG	External signal / HATCH (17 × 17) ↔ External signal
RGB SIZE RGB SHIFT	External signal ↔ External signal / HATCH (17 × 17)
Service adjustment mode	Test patterns ❶ to ❷ shown on page 56 (GB).
User adjustment mode	CROSS HAIR → HATCH (9 × 9) → ME → COLOR BAR → CROSS HAIR ...

Before adjustment

# Adjustments

## Adjusting the Focus

### Focus Adjustment Procedure

#### Before starting the adjustments

- Make sure that the projector is installed correctly and the CRT conversion angle is adjusted correctly.
- When the picture is larger than the screen or is projected from the rear of the screen, roughly adjust the registration before proceeding to the focus adjustment.

#### Procedure

- ① Remove the upper cover. *(page 20 (GB))*  
↓
- ② Set the remote control to the service adjustment mode. *(page 35 (GB))*  
↓
- ③ Select the NO INPUT mode. *(page 60 (GB))*  
↓
- ④ Select the internal oscillation pattern (fH = 31.5 kHz). *(page 60 (GB))*  
↓
- ⑤ Display the H-pattern. *(page 60 (GB))*  
↓
- ⑥ Reset both CONTRAST and BRIGHT levels. *(page 61 (GB))*  
↓
- ⑦ Adjust the green lens focus. *(page 61 (GB))*  
↓
- ⑧ Adjust flapping of the green lens. *(page 62 (GB))*  
↓
- ⑨ Adjust the red lens focus. *(page 64 (GB))*  
↓
- ⑩ Adjust flapping of the red lens. *(page 64 (GB))*  
↓
- ⑪ Adjust the blue lens focus. *(page 65 (GB))*  
↓
- ⑫ Adjust flapping of the blue lens. *(page 65 (GB))*  
↓

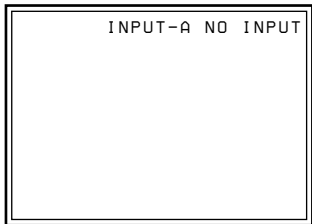
**Proceed to the registration adjustment.**

## Adjusting the Green Focus

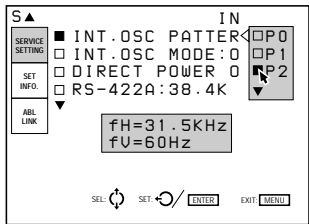
### 1 Adjusting the green lens focus

- 1 Remove the upper cover.  
*For how to remove the upper cover, see page 20 (GB).*
- 2 Set the remote control to the service adjustment mode.  
*For details, see “Preparation” on page 35 (GB).*
- 3 Press one of the INPUT SELECT keys on the remote control corresponding to a line that is not connected to a signal.  
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.

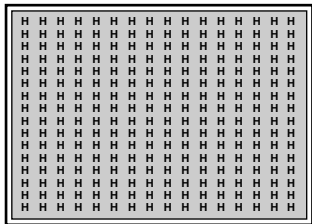
“NO INPUT” appears on the screen.



- 4 Display the SERVICE SETTING menu and set INT. OSC PATTERN to P2 (fH = 31.5 kHz).  
*For details, see “The SERVICE SETTING Menu” on page 52 (GB).*



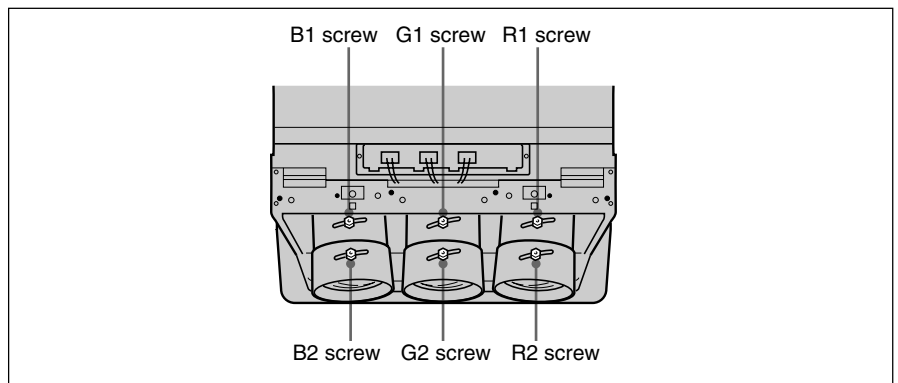
- 5 Reset the centering adjustment data of the green signal.  
*For details, see “Resetting the Data” on page 99 (GB).*
- 6 Press the NORMAL key on the remote control to turn off the test pattern.
- 7 Press the PATTERN key on the remote control until the H-pattern appears.



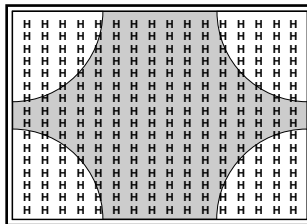
- 8** Reset the CONTRAST and BRIGHT levels.  
 The CONTR level resets to 80 by pressing the RESET key after pressing the PICTURE CONTROL CONTR key.  
 The BRIGHT level resets to 50 by pressing the RESET key after pressing the PICTURE CONTROL BRIGHT key.  
*For details, see “Adjusting the Picture Quality” on page 102 (GB).*

- 9** Press the CUT OFF R and B keys to display the green signal only.

- 10** Adjust the center-focus.  
 Loosen the G1 screw, slide it so that the letters H at the center of the screen are in focus, and then tighten the screw.



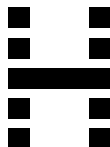
- 11** Adjust the corner-focus.  
 Loosen the G2 screw, slide it so that the letters H at all four corners of the screen (white areas illustrated below) are in focus, and then tighten the screw.  
 Repeat steps **10** and **11** until the green focus adjustment is completed.  
 (If the corner-focus cannot be adjusted completely, adjust it again after finishing the flapping adjustment of the green lens.)



### 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.

Placing a white paper over the front of the screen will make it easier to see the dots.

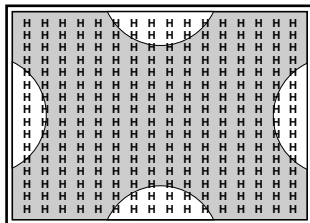


**Proceed to the adjustment for flapping of the green lens.**

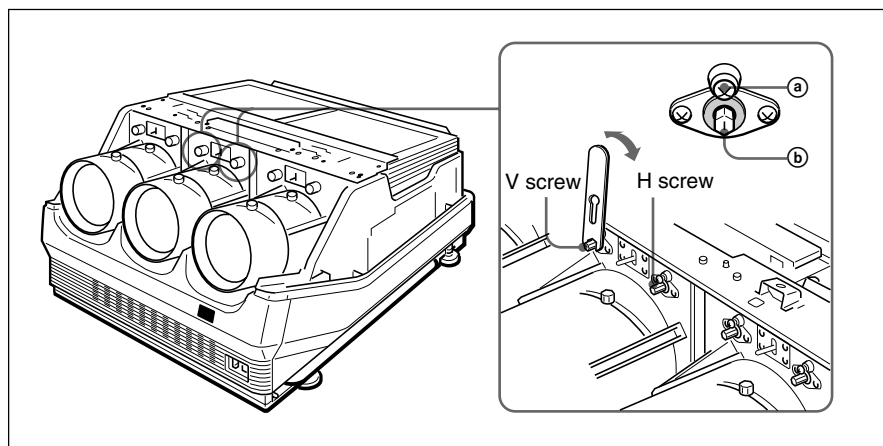
### 2 Adjusting flapping of the green lens

After finishing the lens focus adjustment, adjust flapping of the green lens (angle of the green CRT) so that the upper and lower parts, and the left and right parts of the screen are equally in focus.

- 1 Place a white paper over the front of the screen. Note whether the focal surfaces on the upper, lower, left and right parts of the screen appear to be leaning forward or backward.



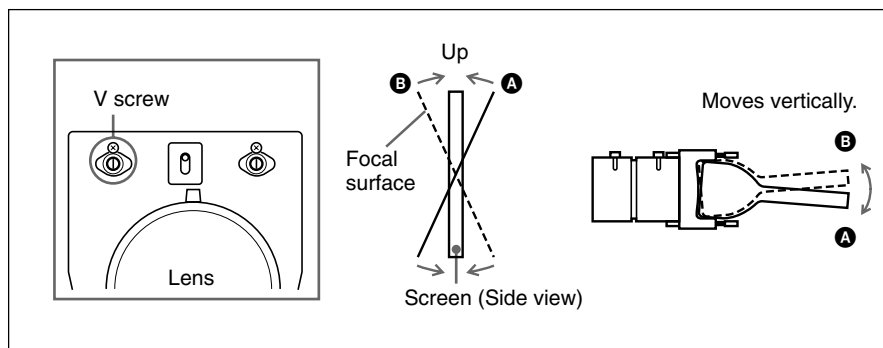
- 2 Adjust the focus on the upper and lower parts with the V screw on the green CRT using the supplied tool.  
Loosen the screw for fixing the washer (a), then turn the V screw (b).  
Make sure to tighten the screw to fix the washer after adjustment.



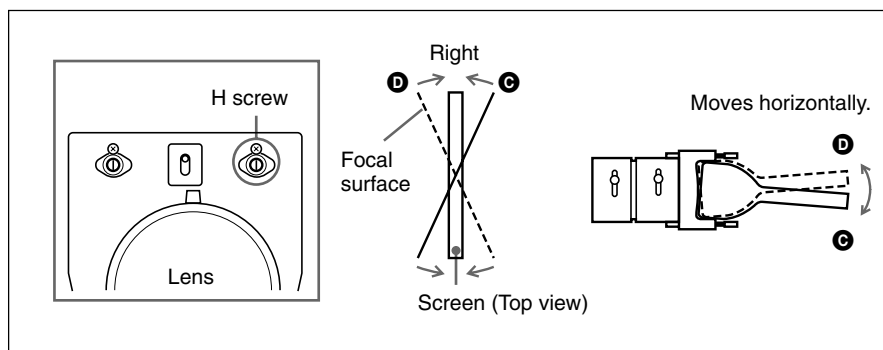
#### Note

Normally, adjust only the V screw for the green CRT. Adjusting the H screw is required only for non-standard installation.  
For flapping adjustments of the red and blue lenses, adjust both the H and V screws.

By turning the V screw, the CRT moves vertically to adjust the vertical tilt of the focal surface.



By turning the H screw, the CRT moves horizontally to adjust the horizontal tilt of the focal surface.



Repeat the above process until the upper and lower parts and the right and left parts of the screen are in focus.

**Proceed to the red lens focus adjustment if the green signal is completely in focus.**

### Adjusting the Red and Blue Focus

---

#### **3** Adjusting the red lens focus

- 1** Reset the centering adjustment data of the red signal.  
*For details, see “Resetting the data” on page 99 (GB).*
- 2** Press the PATTERN key until the H-pattern is displayed.
- 3** Press the CUT OFF G and B keys to display the red signal only.
- 4** Loosen the R1 screw, slide it so that the letters H at the center of the screen are in focus, then tighten the screw.  
*For details, see “Adjusting the green lens focus” on page 60 (GB).*
- 5** Loosen the R2 screw, slide it so that the letters H at all four corners of the screen are in focus, then tighten the screw.  
Repeat steps **4** and **5** until the red focus adjustment is completed.

**Proceed to adjust flapping of the red lens.**

#### **4** Adjusting flapping of the red lens

After adjusting the red lens focus, adjust flapping of the red lens (angle of the red CRT).

Check the tilt of the focal surfaces at the upper, lower, left and right parts of the screen, then adjust the focus with the H and V screws on the red CRT.

*For details, see “Adjusting flapping of the green lens” on page 62 (GB).*

**Proceed to the blue lens focus adjustment if the red signal is completely in focus.**



---

## **5 Adjusting the blue lens focus**

- 1** Reset the centering adjustment data of the blue signal.  
*For details, see “Resetting the data” on page 99 (GB).*
- 2** Press the PATTERN key until the H-pattern is displayed.
- 3** Press the CUT OFF G and R keys to display the blue signal only.
- 4** Loosen the B1 screw, slide it so that the letters H at the center of the screen are in focus, then tighten the screw.  
*For details, see “Adjusting the green lens focus” on page 60 (GB).*
- 5** Loosen the B2 screw, slide it so that the letters H at all four corners of the screen are in focus, then tighten the screw.  
Repeat steps **4** and **5** until the blue focus adjustment is completed.

**Proceed to adjust flapping of the blue lens.**

---

## **6 Adjusting flapping of the blue lens**

After adjusting the blue lens focus, adjust flapping of the blue lens (angle of the blue CRT).

Check the tilt of the focal surfaces at the upper, lower, left and right parts of the screen, then adjust the focus with the H and V screws on the blue CRT.

*For details, see “Adjusting flapping of the green lens” on page 62 (GB).*

**Proceed to adjust the registration if the blue signal is completely in focus.**

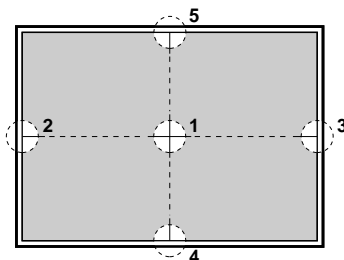
# Adjusting the Registration

## Procedure

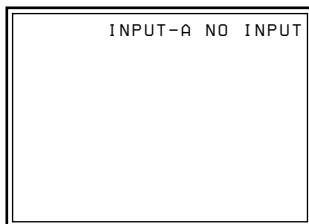
- ① Mark the center of the screen. *(page 67 (GB))*  
↓
  - ② Set the remote control to the service adjustment mode.  
*(page 35 (GB))*  
↓
  - ③ Select NO INPUT mode. *(page 67 (GB))*  
↓
  - ④ Select the internal oscillation pattern to be used for the registration adjustment. *(page 67 (GB))*  
↓
  - ⑤ Reset the registration data to the factory preset levels. (Only if the adjustment data has been modified before) *(page 99 (GB))*  
↓
  - ⑥ Adjust the green registration. *(pages 69 (GB) to 77 (GB))*
    - 1 CENT adjustment
    - 2 SIZE and LIN adjustments
    - 3 SKEW and BOW adjustments
    - 4 KEY and PIN adjustments
    - 5 KEY BALANCE and PIN BALANCE adjustments↓
  - ⑦ Adjust the red registration. *(pages 78 (GB) to 86 (GB))*
    - 1 CENT adjustment
    - 2 SIZE and LIN adjustments
    - 3 SKEW and BOW adjustments
    - 4 KEY and PIN adjustments
    - 5 KEY BALANCE and PIN BALANCE adjustments
    - 6 ZONE adjustment↓
  - ⑧ Adjust the blue registration. *(page 87 (GB))*
    - 1 CENT adjustment
    - 2 SIZE and LIN adjustments
    - 3 SKEW and BOW adjustments
    - 4 KEY and PIN adjustments
    - 5 KEY BALANCE and PIN BALANCE adjustments
    - 6 ZONE adjustment↓
  - ⑨ Save the adjusted data as the standard data. *(page 88 (GB))*  
↓
  - ⑩ Adjust fine for each input signal. *(pages 89 (GB) to 95 (GB))*
    - 1 Adjustment of video input signal
    - 2 Adjustment of RGB input signal
    - 3 White balance adjustment↓
  - ⑪ Activate the protection of the remote control. *(page 101 (GB))*  
↓
  - ⑫ Adjust the picture. *(page 102 (GB))*  
↓
- Complete**

## Preparation

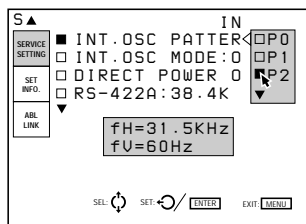
- 1 Mark the center of the screen.  
Measure the height and width of the screen to determine the center.  
Marking five points with white tape, as illustrated below, will help you adjust registration.



- 2 Set the remote control to the service adjustment mode.  
*For details, see “For Remote Control” on page 35 (GB).*
- 3 Press one of the INPUT SELECT keys corresponding to a line that is not connected to a signal so that “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 Display the SERVICE SETTING menu, select INT. OSC PATTERN, then select the frequency to be used for the adjustment.  
*For details, see “The SERVICE SETTING Menu” on page 52 (GB).*



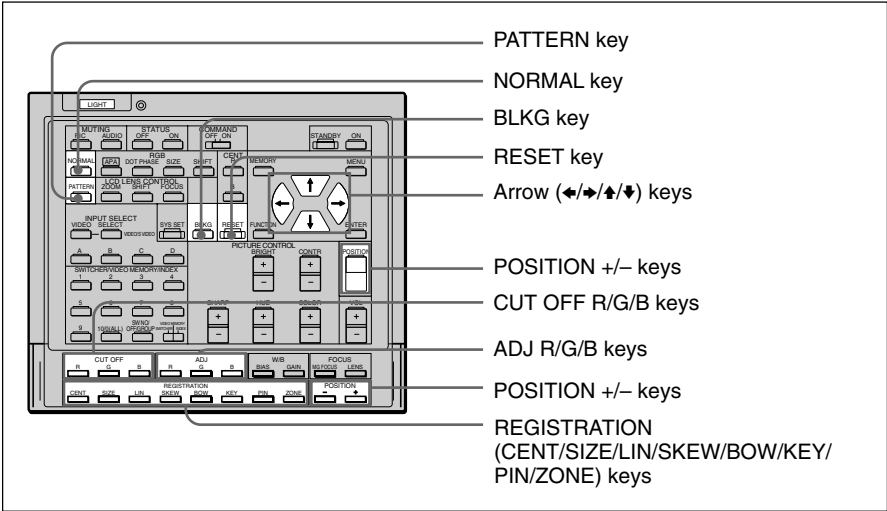
- 5 Reset the standard data to the factory preset level.  
(Only when you have adjusted the registration and have saved the adjustment data.)  
*For details, see “Resetting the Data” on page 99 (GB).*

### 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 CENT (centering) adjustment” on page 69 (GB).*
- When the optical axis angle is smaller, the HATCH pattern becomes trapezoidal. Perform the KEY (keystone) adjustment to correct the distortion.  
*For details, see “Green KEY and PIN adjustments” on page 74 (GB).*

# Adjusting the Registration

## Keys for Adjusting



### Indications on the REGISTRATION keys and the adjustment items

Indicated on the control	Adjustment Items
CENT	Centering
SIZE	Size
LIN	Linearity
SKEW	Skew
BOW	Bow
KEY	Keystone, Keystone balance
PIN	Pincushion, Pincushion balance
ZONE	Zone

## Adjusting the Green Registration

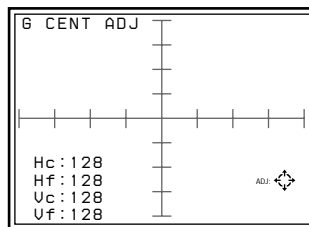
**Be sure to adjust the green registration first.**

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.

### 1 Green CENT (centering) adjustment

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

- 1** Press the CENT key.  
The CROSS HAIR pattern and the cursor appear.
- 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 CROSS HAIR pattern with the center of the screen.

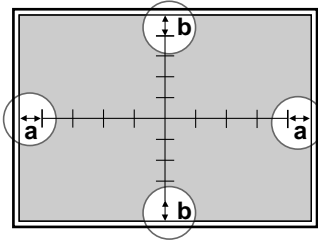


#### Notes

- If the test pattern is off-centered by a large amount, check if the projector is installed or adjusted correctly.
- If the upper, lower, left or right part of the screen is de-focused, check if flapping of the lenses is adjusted correctly.

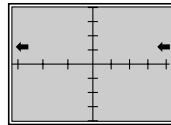
*For details, see “Adjusting flapping of the green lens” on page 62 (GB).*

## 2 Green SIZE and LIN (linearity) adjustment

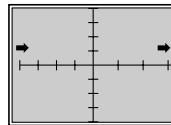


Adjust the picture size with respect to the screen, and the picture's up, down, left and right balance.

- 1** Press the LIN key.  
The CROSS HAIR pattern appears.  
You can also change to the  $9 \times 9$  HATCH pattern by pressing the PATTERN key.
- 2** Press the ADJ G key.  
Pay attention only to the encircled portions illustrated on the left.
- 3** Adjust with the ◀ and ▶ keys until parts (a) (distances from the right and left ends of the screen to the first vertical lines) are of equal length.

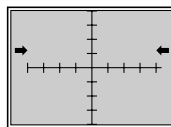


◀ : The left and right vertical lines are shifted to the left while the vertical center line remains unmoved.

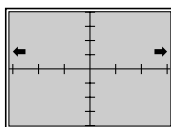


▶ : The left and right vertical lines are shifted to the right while the vertical center line remains unmoved.

- 4** Press the SIZE key.
- 5** Adjust with the ◀ and ▶ keys until parts (a) on the left and right are 15 to 20 mm long.



◀ : The horizontal scale is reduced.



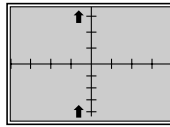
▶ : The horizontal scale is expanded.

- 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.

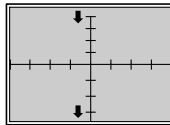
*For details of the centering adjustment, see "Green CENT (centering) adjustment" on page 69 (GB).*

**8** Press the LIN key.

**9** Adjust with the ▲ and ▼ keys until parts (b) (distances from the top and bottom ends of the screen to the first horizontal lines) are of equal length.



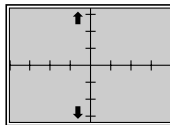
▲ : The upper and lower horizontal lines are shifted upward while the horizontal center line remains unmoved.



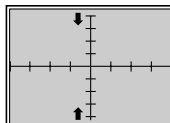
▼ : The upper and lower horizontal lines are shifted downward while the horizontal center line remains unmoved.

**10** Press the SIZE key.

**11** Adjust with the ▲ and ▼ keys until parts (b) at the top and bottom are about 15 to 20 mm long.



▲ : The vertical scale is expanded.



▼ : The vertical scale is reduced.

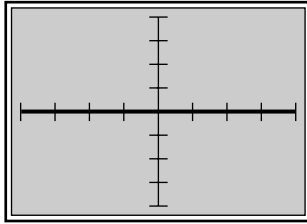
**12** If they are not aligned, repeat steps **8** to **11**.

**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 CENT (centering) adjustment” on page 69 (GB).*

## 3 Green SKEW and BOW adjustments

Adjust the bow-like or skew distortion of the horizontal and vertical center lines to make them parallel to the screen edges.

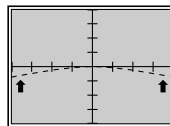


### A Horizontal line adjustment

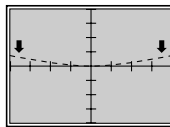
If the horizontal line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the vertical line (bold line illustrated on the left).

- 1 Press the BOW key.  
The CROSS HAIR pattern appears.  
You can also change to the  $9 \times 9$  HATCH pattern by pressing the PATTERN key.

- 2 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.



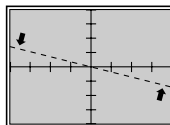
$\uparrow$  : The left and right ends of the horizontal line curve upward while the center remains unchanged.



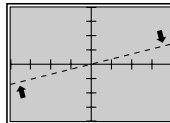
$\downarrow$  : The left and right ends of the horizontal line curve downward while the center remains unchanged.

- 3 Press the SKEW key.

- 4 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.



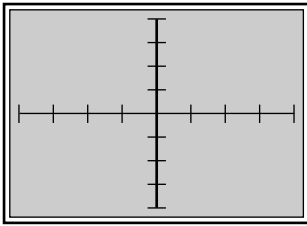
$\uparrow$  : The horizontal line rotates counter-clockwise, rotating around the center.



$\downarrow$  : The horizontal line rotates clockwise, rotating around the center.

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



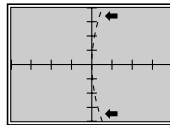


## **B** Vertical line adjustment

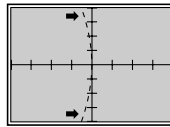
If the vertical line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the horizontal line (bold line illustrated on the left).

- 1** Press the BOW key.  
The CROSS HAIR pattern appears.  
You can also change to the  $9 \times 9$  HATCH pattern by pressing the PATTERN key.

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



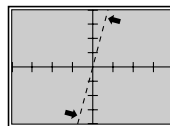
◀ : The upper and lower ends of the vertical line curve towards the left while the center remains unchanged.



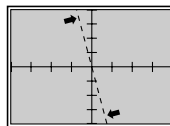
▶ : The upper and lower ends of the vertical line curve towards the right while the center remains unchanged.

- 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.

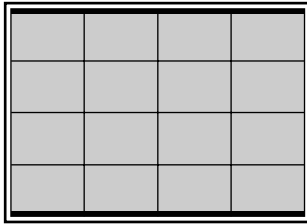


▶ : The vertical line rotates clockwise, rotating around the center.

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

### 4 Green KEY (keystone) and PIN (pincushion) adjustments

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

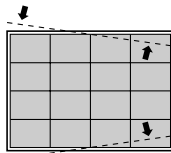


#### A Horizontal line adjustment

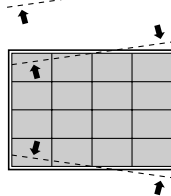
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

- 1 Press the KEY key.  
The HATCH pattern appears.

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



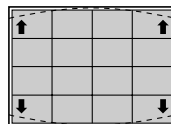
**▲** : The lines spread apart on the right side and come together on the left side while the center remains unmoved.



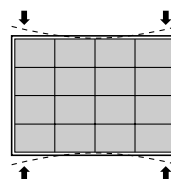
**▼** : The lines spread apart on the left side and come together on the right side while the center remains unmoved.

- 3 Press the PIN key.

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

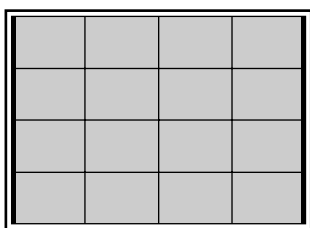


**▲** : The ends of the top and bottom lines spread apart while the center remains unmoved.



**▼** : 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.

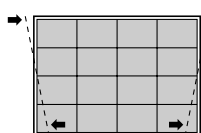


## **B Vertical line adjustment**

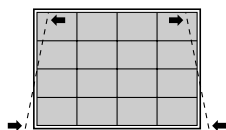
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

- 1** Press the KEY key.  
The HATCH pattern appears.

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



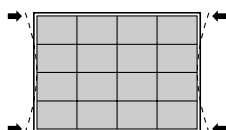
◀ : The lines spread apart at the bottom and come together at the top while the center remains unmoved.



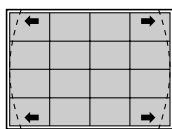
▶ : The lines spread apart at the top and come together at the bottom while the center remains unmoved.

- 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.

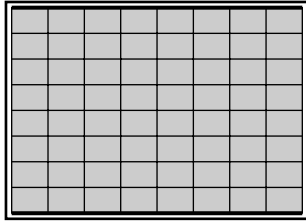


▶ : The ends of the left and right lines spread apart while the center remains unmoved.

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

## 5 Green KEY (keystone) BALANCE and PIN (pincushion) BALANCE

Adjust the trapezoidal and pincushion distortion which may still remain even after completing the KEY and PIN adjustments.

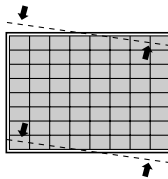


### A Horizontal line adjustment

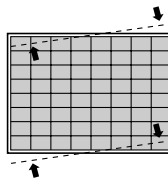
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

- 1 Press the KEY key twice.  
The  $9 \times 9$  HATCH pattern appears.

- 2 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.



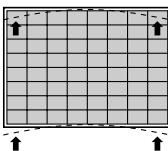
$\uparrow$  : The right ends of the lines are raised and the left ends are lowered while the center remains unmoved.



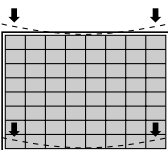
$\downarrow$  : The left ends of the lines are raised and the right ends are lowered while the center remains unmoved.

- 3 Press the PIN key twice.

- 4 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.

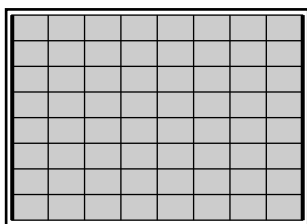


$\uparrow$  : The ends of the top and bottom lines curve upward while the center remains unmoved.



$\downarrow$  : The ends of the lines curve downward while the center remains unmoved.

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

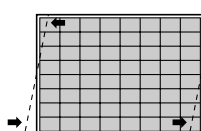


## **B Vertical line adjustment**

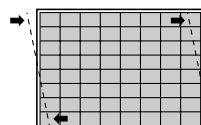
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

**1** Press the KEY key twice.  
The  $9 \times 9$  HATCH pattern appears.

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



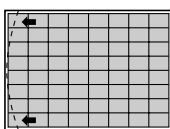
◀: The upper ends of the lines move towards the left and the lower ends move towards the right while the center remains unmoved.



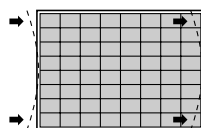
▶: The upper ends of the lines move towards the right and the lower ends move towards the left while the center remains unmoved.

**3** Press the PIN key twice.

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



◀: The upper and lower ends of the lines curve towards the left while the center remains unmoved.



▶: The upper and lower ends of the lines curve towards the right 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 Red Registration

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

#### Note

When you have adjusted the red registration data and have saved the adjustment data, reset the red centering to the factory preset level.  
*For the procedure to reset, see page 99 (GB).*

### 6 Red CENT (centering) adjustment

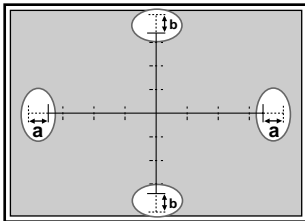
Adjust so that the center of the red CROSS HAIR pattern is aligned with that of the green CROSS HAIR pattern.

- 1 Press the CENT key.  
The CROSS HAIR pattern and the cursor appear.
- 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 center of the red CROSS HAIR pattern with that of the green pattern.

#### Notes

- If the red vertical line is not aligned with that of the green pattern, adjust the red CRT conversion angle again.  
*For details, see “Adjusting the CRT Conversion Angle” on page 23 (GB).*
- If the upper, lower, left or right part of the screen is de-focused, adjust flapping of the red lens again.  
*For details, see “Adjusting flapping of the red lens” on page 64 (GB).*

### 7 Red SIZE and LIN (linearity) adjustments



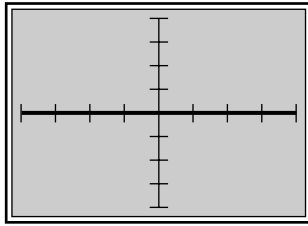
- 1 Press the LIN key.  
The CROSS HAIR pattern appears.  
You can also change to the  $9 \times 9$  HATCH pattern by pressing the PATTERN key.
- 2 Press the ADJ R key.  
Pay attention only to the encircled portions in the illustration on the left.
- 3 Adjust with the ◀ and ▶ keys until the parts (a) 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 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 CENT (centering) adjustment” on page 78 (GB).*
  - 8** Press the LIN key.
  - 9** Adjust with the ▲ and ▼ keys until parts (b) 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 encircled 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 CENT (centering) adjustment” on page 78 (GB).*

## 8 Red SKEW and BOW adjustments

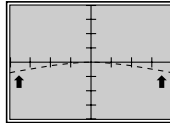


### A Horizontal line adjustment

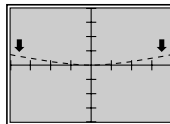
If the horizontal line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the vertical line (bold line illustrated on the left).

- 1 Press the BOW key.  
The CROSS HAIR pattern appears.  
You can also change to the  $9 \times 9$  HATCH pattern by pressing the PATTERN key.

- 2 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.



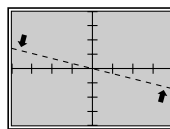
$\uparrow$  : The left and right ends of the horizontal line curve upward while the center remains unchanged.



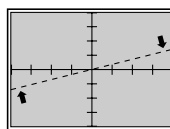
$\downarrow$  : The right and left ends of the horizontal line curve downward while the center remains unchanged.

- 3 Press the SKEW key.

- 4 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.



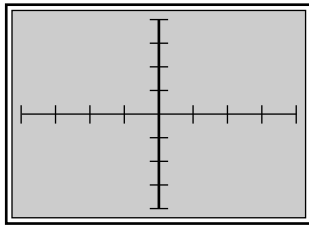
$\uparrow$  : The horizontal line rotates counter-clockwise, rotating around the center.



$\downarrow$  : 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.



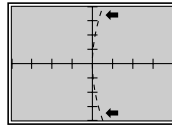


## B Vertical line adjustment

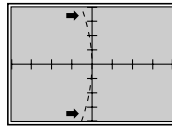
If the vertical line of the picture is as shown by the dotted line in the illustrations below, adjust it with the corresponding arrow key so that it is perpendicular to the vertical line (bold line illustrated on the left).

- 1 Press the BOW key.  
The CROSS HAIR pattern appears.  
You can also change to the  $9 \times 9$  HATCH pattern by pressing the PATTERN key.

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



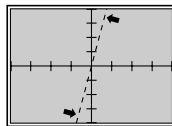
◀ : The upper and lower ends of the vertical line curve towards the left while the center remains unchanged.



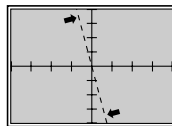
▶ : The upper and lower ends of the vertical line curve towards the right while the center remains unchanged.

- 3 Press the SKEW key.

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



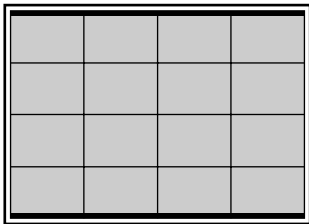
◀ : The vertical line rotates counter-clockwise, rotating around the center.



▶ : 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.

9 Red KEY (keystone) and PIN (pincushion) adjustments

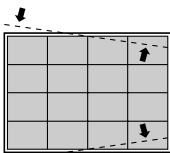


A Horizontal line adjustment

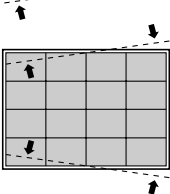
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

1 Press the KEY key.  
The HATCH pattern appears.

2 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.



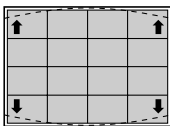
$\uparrow$  : The lines spread apart on the right side and come together on the left side while the center remains unmoved.



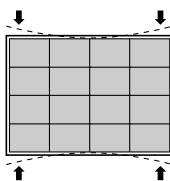
$\downarrow$  : The lines spread apart on the left side and come together on the right side while the center remains unmoved.

3 Press the PIN key.

4 Adjust the distortion as illustrated below with the  $\uparrow$  and  $\downarrow$  keys.

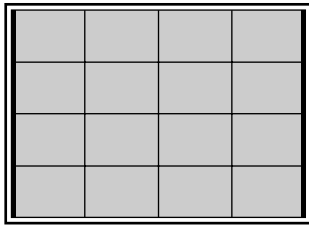


$\uparrow$  : The ends of the top and bottom lines spread apart while the center remains unmoved.



$\downarrow$  : 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.

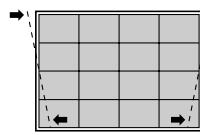


## B Vertical line adjustment

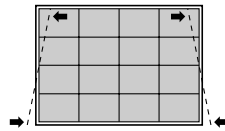
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

**1** Press the KEY key.  
The HATCH pattern appears.

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



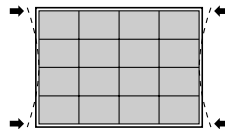
◀ : The lines spread apart at the bottom and come together at the top while the center remains unmoved.



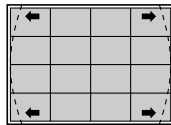
▶ : The lines spread apart at the top and come together at the bottom while the center remains unmoved.

**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.

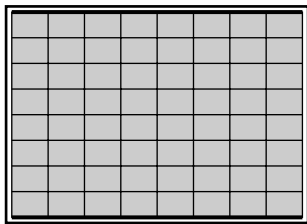


▶ : The ends of the left and right lines spread apart while the center remains unmoved.

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

**10 Red KEY (keystone) BALANCE and PIN (pincushion) BALANCE**

Adjust the trapezoidal and pincushion distortion which may still remain even after completing the KEY and PIN adjustments.

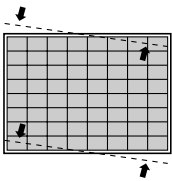


**A Horizontal line adjustment**

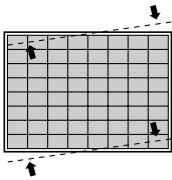
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

**1** Press the KEY key twice.  
The 9 × 9 HATCH pattern appears.

**2** Adjust the distortion as illustrated below with the **↑** and **↓** keys.



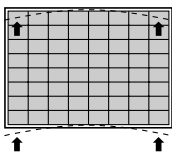
**↑** : The right ends of the lines are raised and the left ends are lowered while the center remains unmoved.



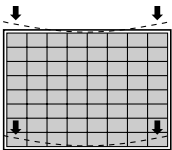
**↓** : The left ends of the lines are raised and the right ends are lowered while the center remains unmoved.

**3** Press the PIN key twice.

**4** Adjust the distortion as illustrated below with the **↑** and **↓** keys.

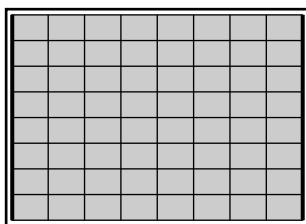


**↑** : The ends of the top and bottom lines curve upward while the center remains unmoved.



**↓** : The ends of the lines curve downward while the center remains unmoved.

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

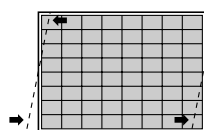


## B Vertical line adjustment

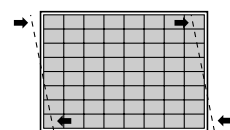
If the picture's borders are as shown by the dotted line in the illustrations below, adjust them with the corresponding arrow key so that they are parallel (bold lines illustrated on the left).

- 1 Press the KEY key twice.  
The  $9 \times 9$  HATCH pattern appears.

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



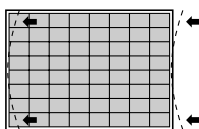
◀ ▶ : The upper ends of the lines move towards the left and the lower ends move towards the right while the center remains unmoved.



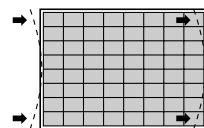
▶ ◀ : The upper ends of the lines move towards the right and the lower ends move towards the left while the center remains unmoved.

- 3 Press the PIN key twice.

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



◀ ◀ : The upper and lower ends of the lines curve towards the left while the center remains unmoved.



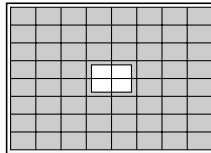
▶ ▶ : The upper and lower ends of the lines curve towards the right while the center remains unmoved.

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

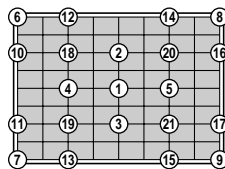
## 11 Red ZONE adjustment

Adjust red ZONE after the red lines have converged with the green lines by performing the adjustments **6** to **10**.

- 1 Press the ZONE key.  
The 9 × 9 HATCH pattern and the cursor appear.



- 2 Press the POSITION +/- keys 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 at the upper right corner.



If you press the ZONE key again in ZONE adjustment mode, you can move the cursor to the desired position with the  $\uparrow$ ,  $\downarrow$ ,  $\leftarrow$ ,  $\rightarrow$  keys. When you press the ZONE key again after selecting the position, the projector enters the adjustment mode of that position.

- 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 red registration adjustment is complete.**  
**Proceed to the registration adjustment of the blue signal.**

## Adjusting the Blue Registration

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.

### Note

When you have adjusted the blue registration data and have saved the adjustment data, reset the blue centering to the factory preset level.

*For the procedure to reset, see page 99 (GB).*

## 12 Blue CENT (centering) adjustment

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

- 1 Press the CENT key.  
The CROSS HAIR pattern and the cursor appear.
- 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 center of the blue CROSS HAIR pattern with that of the red pattern.

### Notes

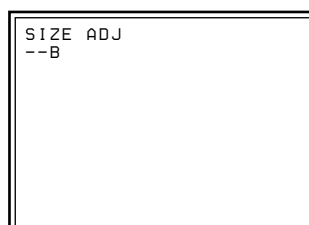
- If the blue vertical lines are not aligned with those of the red pattern, adjust the CRT conversion angle again.  
*For details, see “Adjusting the CRT Conversion Angle” on page 23 (GB).*
- If the upper, lower, left or right part of the screen is de-focused, adjust flapping of the lens again.  
*For details, see “Adjusting flapping of the green lens” on page 62 (GB).*

## 13 Blue SIZE, LIN (linearity), SKEW, BOW, KEY (keystone), PIN (pincushion) KEY BALANCE, PIN BALANCE 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 78 (GB) to 86 (GB).*

Make sure that “-- B” appears on the screen when adjusting the blue signal.



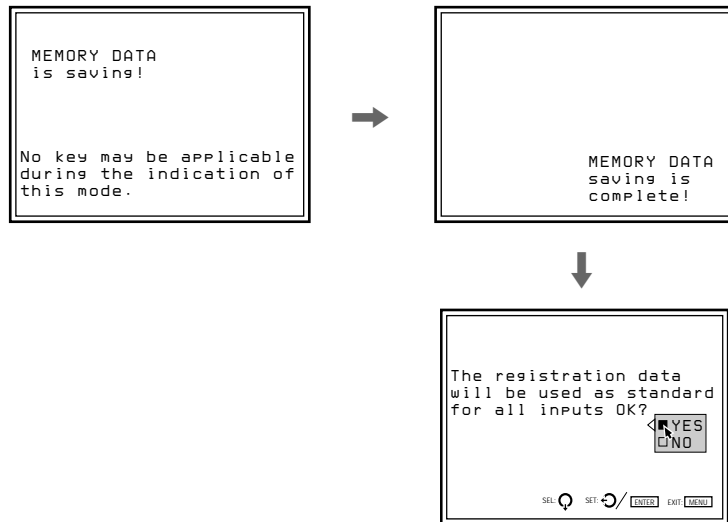
The blue adjustment is complete. Save the adjustment data as the standard data.

# Adjusting the Registration

## 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 Hold down the MEMORY key for more than 5 seconds.  
The adjustment data is saved in the memory as the data for the frequency selected in INT. OSC PATTERN of the SERVICE SETTING menu, and the projector enters the standard data saving mode.



- 2 Press the  $\blacktriangledown$  or  $\blacktriangle$  key to select YES, then press the ENTER key.  
All the registration data will be converted into internal signal data and are saved as standard data.

### Notes

- No keys function while the data is being saved.
- If the adjustment data is saved as the standard data, the registration data stored in INPUT MEMORY will be converted into the standard data.



# 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** Input the video signal to the VIDEO IN connector on the projector or to the signal interface board installed to the INPUT B section.
- 2** Select the video input source by pressing the INPUT SELECT VIDEO and SELECT keys or the INPUT SELECT B key on the remote control.
- 3** Display the INPUT INFO menu to check that the horizontal frequency of the input signal (fH) indicates 15.7 kHz.  
To display the INPUT INFO menu, press the MENU key, select INPUT INFO with the  $\blacktriangle$  or  $\blacktriangledown$  key, then press the ENTER key.

## Fine registration adjustment

- 1** Press the PATTERN key to display the CROSS HAIR pattern.
- 2** If necessary, fine adjust the registrations.  
*For details of the adjustment procedure, see “Adjusting the Registration” on pages 66 (GB) to 87 (GB).*
- 3** Press the MEMORY key and release it to save the adjustment data.

### Note

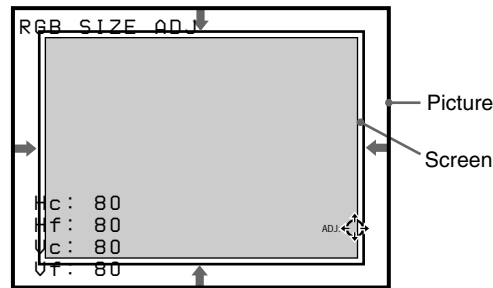
Do not hold down the MEMORY key in step **3**.

## Fine Adjustment for Each Input Signal

### SIZE adjustment

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

- 1 Press the RGB SIZE key.  
(Use the RGB SIZE key even for the signal other than RGB.)
- 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.

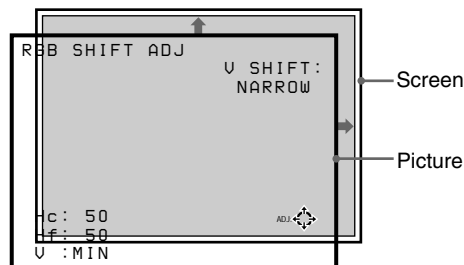


- 3 Press the MEMORY key to save the adjustment data.

### SHIFT adjustment

If the picture needs to be shifted to fit the screen, adjust the position of the picture.

- 1 Press the RGB SHIFT key.  
(Use the RGB SHIFT key even for the signal other than RGB.)
- 2 Adjust the shift with the arrow keys.
  - ↑ : The picture is shifted upward.
  - ↓ : The picture is shifted downward.
  - : The picture is shifted rightward.
  - ← : The picture is shifted leftward.



#### Note

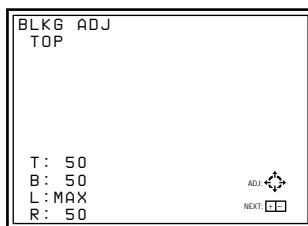
When the video signal is input, V SHIFT is automatically fixed to NARROW and the adjustable range of the horizontal shift will become narrower than that of the RGB signal.

- 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 +/- keys to select the part to be adjusted.
  - When you press the + key, the position cycles through the following order:  
TOP → BOTTOM → LEFT → RIGHT → TOP...
  - When you press the – key, the position cycles in reverse order.



- 3** Adjust with the arrow keys.
  - Press the ↑ and ↓ keys to adjust the TOP and BOTTOM 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<sup>2</sup>, such as when using the switcher, adjust the picture size, picture shift and blanking for each input connector.

## Adjusting the RGB Input Signal

- 1** Input the RGB signal to the INPUT A connectors on the projector or to the signal interface board installed to the INPUT B section.
- 2** Press the INPUT SELECT A or B key on the remote control to select the RGB input signal.
- 3** Fine adjust the registration if necessary.  
*For details, see “Adjusting the Registration” on pages 66 (GB) to 88 (GB).*

## Fine Adjustment for Each Input Signal

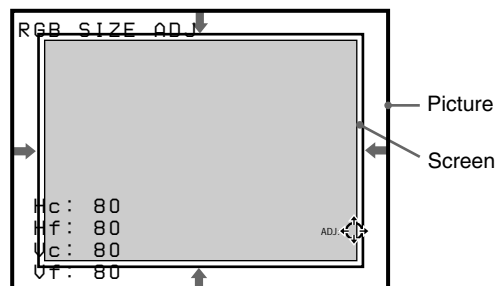
### Fine registration adjustment

- 1 Press the PATTERN key to display the CROSS HAIR pattern.
- 2 If necessary, fine adjust the registration.  
*For details, see “Adjusting the Registration” on pages 66 (GB) to 88 (GB).*
- 3 When you connect two or more RGB input sources, fine adjust the registration for each input signal.
- 4 Press the MEMORY key and release it to save the adjustment data.

### 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.



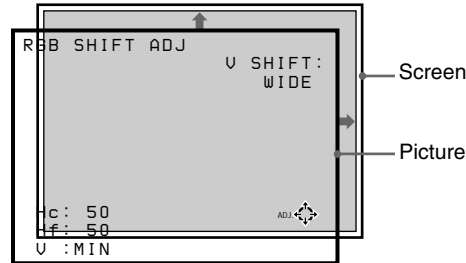
- 3 Press the MEMORY key to save the adjustment data.

### SHIFT adjustment

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

- 1 Press the RGB SHIFT key.
- 2 Select the adjustable range of the vertical shift (V SHIFT) with the POSITION +/- keys.
  - WIDE:** Normally, set to this position.
  - NARROW:** Set to this position to make the adjustable range in the vertical direction narrow.

- 3 Adjust the shift with the arrow keys.
  - ▲ : The picture is shifted upward.
  - ▼ : The picture is shifted downward.
  - ➡ : The picture is shifted rightward.
  - ⬅ : The picture is shifted leftward.

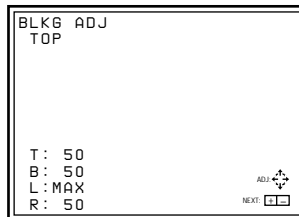


- 4 Press the MEMORY key to save the adjustment data.

## 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 +/- keys to select the part to be adjusted.
  - When you press the + key, the position cycles through the following order:  
TOP → BOTTOM → LEFT → RIGHT → TOP ...
  - When you press the – key, the position cycles in reverse order.



- 3 Adjust with the arrow keys.
  - Press the ▲ and ▼ keys to adjust the TOP and BOTTOM 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 two or more RGB input sources to the projector, such as when using the switcher, adjust the picture size, picture shift and blanking for each RGB signal that has a different characteristic. The characteristics are shown in the INPUT INFO menu.

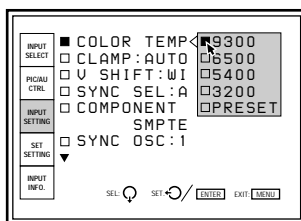
## Fine Adjustment for Each Input Signal

### 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 Press the MENU key, select INPUT SETTING with the  $\blacktriangle$  or  $\blacktriangledown$  key, then press the ENTER key.  
The INPUT SETTING menu is displayed.
- 2 Press the  $\blacktriangle$  or  $\blacktriangledown$  key to select COLOR TEMP, then press the ENTER key.
- 3 Press the  $\blacktriangle$  or  $\blacktriangledown$  key to select the desired color temperature, then press the ENTER key.



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 (BIAS adjustment)

- 1 Reset the CONTRAST level to 80 and BRIGHT level to 50.  
*For details, see "Adjusting the Picture Quality" on page 102 (GB).*
- 2 Press the W/B BIAS key.  
The PLUGE pattern appears. Press the PATTERN key repeatedly to display the external signal.
- 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.

- 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 the ◀ or ▶ key.
- 5 Press the MEMORY key to save the adjustment data.

### Adjusting the white level (GAIN adjustment)

- 1 Reset the CONTRAST level to 80 and BRIGHT level to 50.  
*For details, see “Adjusting the Picture Quality” on page 102 (GB).*
- 2 Press the W/B GAIN key.  
When the GAIN adjustment is followed by the BIAS adjustment, the external signal appears automatically.  
When you start with the GAIN adjustment, the stair step pattern appears. Press the PATTERN key repeatedly to display the external signal.
- 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 ◀ or ▶ key.
- 5 Press the MEMORY key to save the adjustment data.

### When using multiple projectors

Input the same signal to the base projector and the projector to be adjusted. Set COLOR TEMP in the INPUT SETTING menu to the same position on both projectors, and then follow the procedures described above to make the black and white colors uniform between the base projector and the projector to be adjusted.

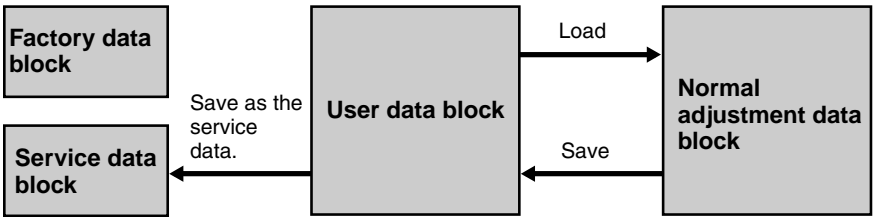
#### Notes

- When adjusting the white balance, use the external color monitor for the reference of the color.
- To adjust the white balance easily without the on-screen display, press the STATUS OFF key on the remote control or set the STATUS option in the SET SETTING menu to OFF.
- You can adjust the white balance more easily if you set the color level to MIN to display the black and white picture.

# Saving the Adjustment Data

## Memory structure

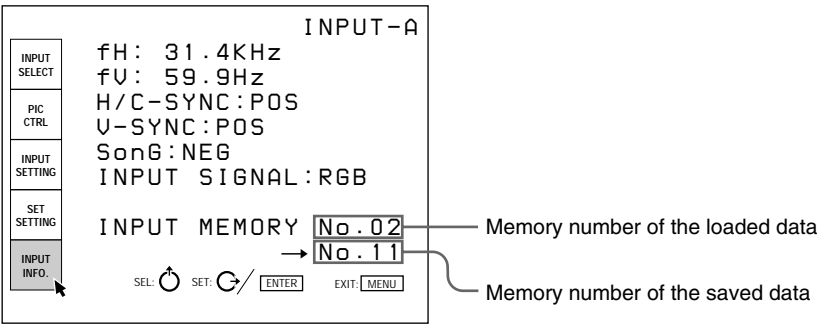
The memory structure of this projector consists of three memory blocks and a normal adjustment data block.



**Factory data block:** The seven basic adjustment data for different types of signals shown in the table on page 97 (GB) are preset at the factory. The adjustment data in this block cannot be changed.

**Service data block:** The seven basic adjustment data for different types of signals shown in the table on page 97 (GB) are preset at the factory. The data saved in the user data block can be saved as the service data.

**User data block:** The seven basic adjustment data for different types of signals shown in the table on page 97 (GB) are preset at the factory. When a new signal is input, the data that has the nearest frequency is automatically selected from among the seven basic data and the existing data saved as input memory and loaded. If any of the data for the signal is adjusted, the data is saved as an input memory in one of the memory numbers 00 to 49. (If no data is adjusted, it is not saved.) The adjustment data for each input signal, if any one of the signal input conditions—vertical or horizontal frequency, type of sync signal, type of input signal and input connector—is different, is saved in different memory number as an individual input memory. The memory number of the loaded data and that of the saved data are displayed as "INPUT MEMORY No." on the INPUT INFO menu. If the same signal has already been input, the same memory number appears on two rows.



**Normal adjustment data block:** The data during adjustment is temporarily saved in this block. When you press the ENTER or MEMORY key after adjustment, the adjustment data is stored in the user data block.



## Standard registration data and the input memory

If the adjusted registration data is saved as the standard data after installing the projector, the registration data for all of the input memories will be changed to reflect the new data in that installation condition. Therefore, you can easily adjust the registration for each input signal.

*For the procedure of how to save the standard data, see page 88 (GB).*

## Preset data at the factory

The projector presets seven types of basic data in memory numbers 00 to 06 of the factory data and service data blocks.

Memory number	Horizontal frequency (fH)	Vertical frequency (fV)	Type of the input signal
00	15.7 kHz	60 Hz	Video (NTSC <sub>3.58</sub> )
01	24.8 kHz	56 Hz	RGB
02	31.5 kHz	60 Hz	RGB
03	48.3 kHz	60 Hz	RGB
04	64.0 kHz	60 Hz	RGB
05	31.5 kHz	60 Hz	IDTV (NTSC <sub>3.58</sub> )
06	33.8 kHz	60 Hz	HDTV (Y/P <sub>B</sub> /P <sub>R</sub> )

## Memory architecture

The following adjustment data will be saved in three memory blocks.

Memory	Adjustment data	Number of memories
Input memory	Picture control (CONTRAST, BRIGHT, COLOR, HUE, SHARP) SIZE/SHIFT Blanking Color temperature Clamp position V SHIFT Registration	Memory numbers 00–49 (50 at maximum)
Color temperature memory	White balance (BIAS/GAIN data for each color temperature of each screen)	Four color temperature settings (9300K/6500K/5400K/3200K)
Setting memory	Baud rate, CRT timer, STATUS ON/OFF, language, index, video memory, etc.	One for each projector

Picture aspect data of the video memory preset at the factory

The following picture aspect data are preset at the factory.

NO.	Picture aspect
OFF (IDTV ON)	4:3 (1.33:1)/Standard TV
OFF (IDTV OFF)	4:3 (1.33: 1)/Standard TV
1	1.66:1/European Vista (IDTV ON)
2	16:9 (1.78:1)/wide (IDTV ON)
3	1.85:1/American Vista (IDTV ON)
4	2:1 (IDTV ON)
5	2.35:1 (Cinema scope (IDTV ON)
6	1.66:1/European Vista (IDTV OFF)
7	16:9 (1.78:1)/wide (IDTV OFF)
8	1.85:1/American Vista (IDTV OFF)
9	2:1 (IDTV OFF)
10	2.35:1 (Cinema scope (IDTV OFF)

Video memory architecture

The data is memoized:

- When the MEMORY key is pressed
- When the input signal is changed
- When the input channel is changed
- When the adjustment mode is changed

Memory	Adjustment data	Number of memories
Video memory	Color temperature, D. picture, V shift, Set up, Component format, V aperture, Picture control (CONTRAST, BRIGHT, COLOR, HUE, SHARP), RGB size, RGB shift, Blanking	Memory numbers 1 to 10

# Resetting the Data

There are three ways to reset the data, as shown below.

## Factory data reset

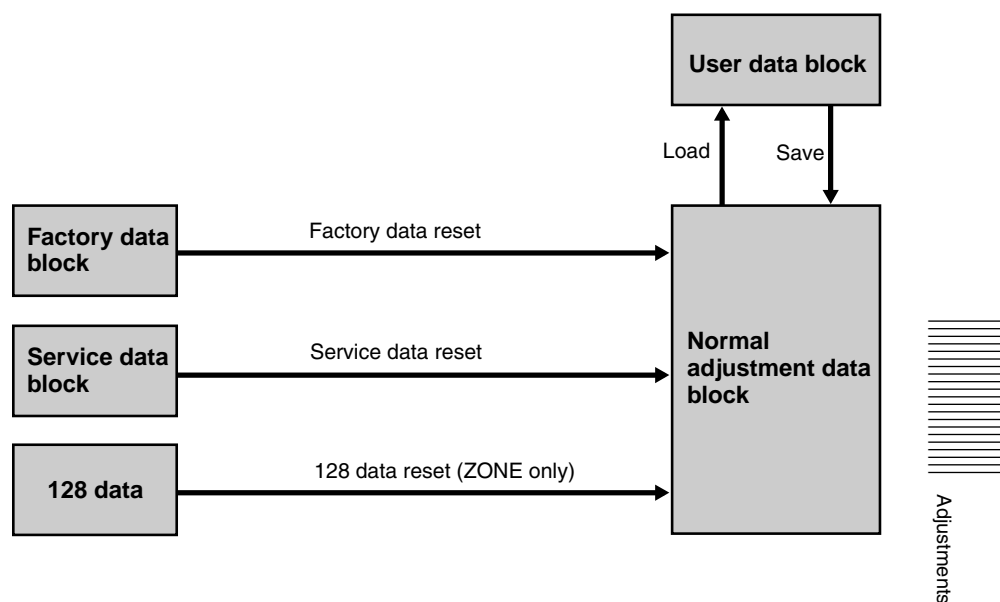
Resets to the factory preset data saved in the factory data block.

## Service data reset

Resets to the data saved in the service data block.

## 128 data reset (ZONE only)

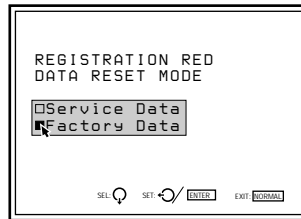
Resets the ZONE adjustment data to 128.



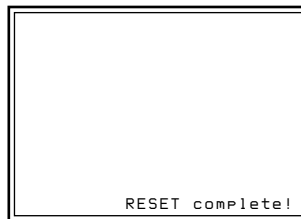
## Resetting the Data

### Resetting the data

- 1 Select the adjustment mode to be reset.
- 2 Press the RESET key.  
The following display appears. (Example: To reset the red registration data to the factory preset data)



- 3 Press the  $\uparrow$  or  $\downarrow$  key to select the reset mode, then press the ENTER key.  
To cancel reset mode, press the NORMAL key.



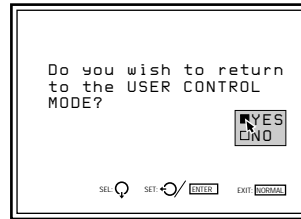
All red registration adjustment data will be reset to the factory preset data.

# Protecting the Setting

When you turn off the projector with the remote control, the adjustment keys become inoperable in order to prevent users from accidentally changing the adjustments (user mode).

It is also possible to make the keys inoperable while the power is on in the following way.

- 1** Press the keys on the remote control in the following order:  
ENTER → ENTER → ▲ → ▼ → ENTER  
The following display appears.



- 2** Press the ▲ or ▼ key to select “YES,” then press the ENTER key.

The adjustment keys on the remote control become inoperable (user mode).

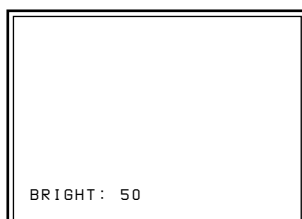
# Adjusting the Picture Quality

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

- 1 Adjust with the PICTURE CONTROL +/- keys.

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

The adjustment levels are digitally displayed with a range of MIN, 1, 2, ... 99, MAX.



- 2 Press the MEMORY key to save the data.

## Dynamic picture mode (only for the video or component input pictures)

You can get high-quality picture contrast by setting D.PICTURE to ON in the PIC CTRL menu.

For details, see "PIC CTRL (Picture Control) Menu" on page 43 (GB).

## Restoring the initial data

- 1 Press the PICTURE CONTROL key of the item which you want to reset to the initial data.
- 2 Press the RESET key.  
The selected item is reset to the initial data.

### Notes

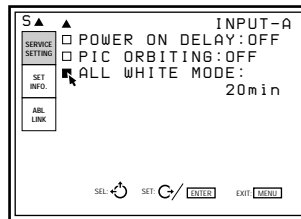
- The COLOR, SHARP and HUE keys do not function on the pictures input from the RGB IN connectors.
- The HUE and COLOR keys do not function if the input signal is black and white.
- The HUE key does not function with the PAL or SECAM color input source.

# Others

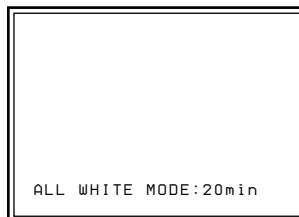
## Changing the Initialization Period

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

- 1** Set the remote control to the service adjustment mode.  
*For details, see “For Remote Control” on page 35 (GB).*
- 2** Press the MENU key, select SERVICE SETTING by pressing the ↓ or ↑ key, and press the ENTER key.  
The SERVICE SETTING menu appears.
- 3** Press the ↓ or ↑ key to select ALL WHITE MODE (Page 2), then press the ENTER key.



- 4** Press the ↑, ↓, ← or → key to set the desired period.  
You can set it to 0–99 minutes.



- 5** Press the MEMORY key to save the setting.

### To cancel the setting

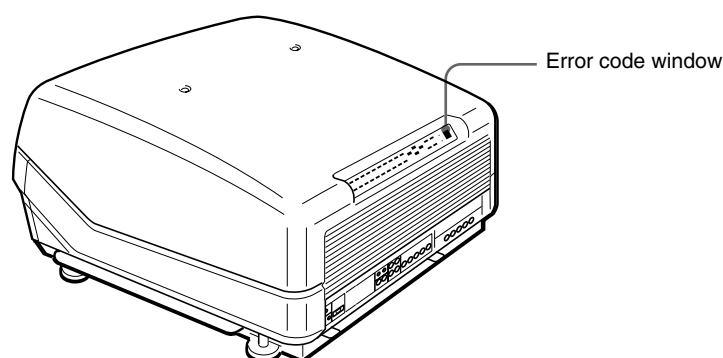
Press the MENU key in step 3.

**To set the projector so that the input signal from the connected equipment appears on the screen immediately after the power is turned on**

Set the initialization period to “0” in step 4.

# 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 projector. You can check the code without removing the cover. Refer to the chart below for the meanings.



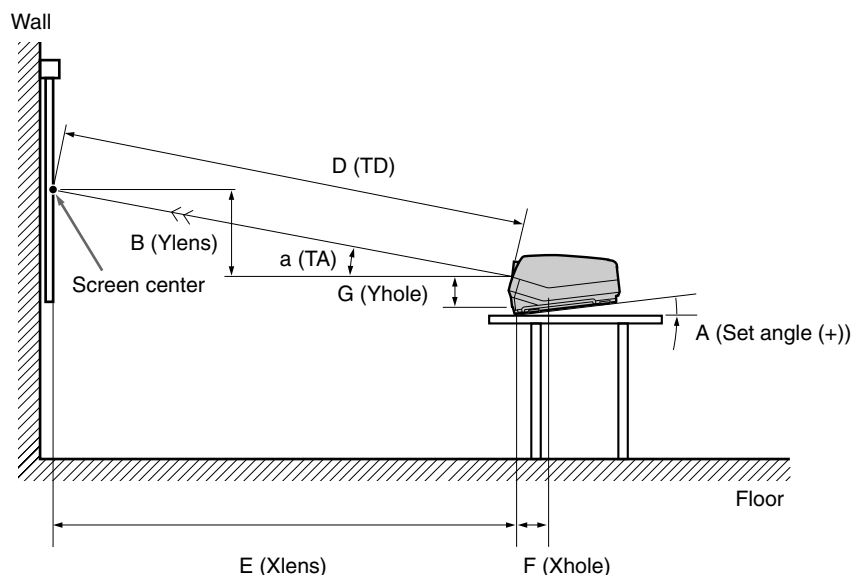
Error code	Item	Meaning
10	—	Abnormal input signal. Check the input signal.
20	Unknown	Abnormalities that do not come under the errors below.
21	POW1 (115)	Abnormal in the $\pm 25$ V, $\pm 15$ V or 115 V line
22	POW2 (115HV)	Abnormal in the $\pm 6$ V, $\pm 200$ V or 115 V (HV) line
25	IFB	Abnormality of the interface board installed to the INPUT B section
27	POLARITY	The connector cover for polarity change does not shut completely.
29	A	Abnormality of the power line on the A board
30	D	Abnormality of the power line on the D board
33	HV	Abnormal high voltage
34	LOT	Abnormal load on a LOT of the PA board
35	H.STOP	Horizontal polarity is not correct.
36	V.STOP	Vertical polarity is not correct.
37	FAN	A fan inside the projector does not work.
40	$\Sigma$ Ik	There is abnormality in the CRTs.
88	CPU RESET	The CPUs on the Y and A boards are reset.

## Notes

- When the error code lights up, the previous adjustment data may 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 is returned to normal.
- Immediately after the MAIN POWER switch is turned on, “88” is displayed for about one second. This is not a problem. The unit resets the CPUs to the initial status during this period.



# List of the Projection Distance by Angle of Optical Axis



Unit: mm (inches) for **F** Xhole and **G** Yhole only

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>B</b> /E	0.2408	0.2126	0.1944	0.1763	0.1584	0.1405	0.1228	0.1051	0.0875	0.1584	0.0524	0.0349	0.0175	0	-0.0175	-0.0349
<b>A</b> Angle	0.0°	1.5°	2.5°	3.5°	4.5°	5.5°	6.5°	7.5°	8.5°	9.5°	10.5°	11.5°	12.5°	13.5°	14.5°	15.5°
<b>F</b> Xhole	132 (5 1/4)	138 (5 1/2)	143 (5 3/4)	147 (5 7/8)	151 (6)	155 (6 1/8)	160 (6 3/8)	164 (6 1/2)	168 (6 5/8)	172 (6 7/8)	176 (7)	180 (7 1/8)	184 (7 1/4)	187 (7 3/8)	191 (7 5/8)	195 (7 3/4)
<b>G</b> Yhole	254 (10)	250 (9 7/8)	248 (9 7/8)	245 (9 3/4)	243 (9 5/8)	240 (9 1/2)	237 (9 3/8)	235 (9 3/8)	232 (9 1/4)	229 (9 1/8)	226 (9)	223 (8 7/8)	219 (8 5/8)	216 (8 5/8)	213 (8 1/2)	209 (8 1/4)

## Screen with 4:3 aspect ratio

### When using the 60 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	1902 (75)	1912 (75 3/8)	1918 (75 5/8)	1924 (75 3/4)	1929 (76)	1933 (76 1/8)	1937 (76 3/8)	1941 (76 1/2)	1943 (76 1/2)	1945 (76 5/8)	1947 (76 3/4)	1948 (76 3/4)	1948 (76 3/4)	1961 (77 1/4)	1969 (77 5/8)	1977 (77 7/8)
<b>B</b> Ylens	456 (18)	406 (16)	373 (14 3/4)	339 (13 3/8)	306 (12 1/8)	272 (10 3/4)	238 (9 3/8)	204 (8 1/8)	170 (6 3/4)	136 (5 3/8)	102 (4 1/8)	68 (2 3/4)	34 (1 3/8)	0 (0)	-34 (-1 3/8)	-69 (-2 3/4)
<b>D</b> TD	1956 (77 1/8)	1955 (77)	1954 (77)	1954 (77)	1953 (77)	1952 (76 7/8)	1952 (76 7/8)	1951 (76 7/8)	1951 (76 7/8)	1950 (76 7/8)	1949 (76 3/4)	1949 (76 3/4)	1948 (76 3/4)	1961 (77 1/4)	1970 (77 5/8)	1978 (77 7/8)

### When using the 70 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	2179 (85 7/8)	2190 (86 1/4)	2197 (86 1/2)	2204 (86 7/8)	2210 (87 1/8)	2215 (87 1/4)	2219 (87 3/8)	2223 (87 5/8)	2226 (87 3/4)	2228 (87 3/4)	2230 (87 7/8)	2231 (87 7/8)	2231 (87 7/8)	2246 (88 1/2)	2256 (88 7/8)	2265 (89 1/4)
<b>B</b> Ylens	523 (20 5/8)	466 (18 3/8)	427 (16 7/8)	389 (15 3/8)	350 (13 7/8)	311 (12 1/4)	272 (10 3/4)	234 (9 1/4)	195 (7 3/4)	156 (6 1/4)	117 (4 5/8)	78 (3 1/8)	39 (1 9/16)	0 (0)	-39 (-1 9/16)	-79 (-3 1/8)
<b>D</b> TD	2240 (88 1/4)	2239 (88 1/4)	2239 (88 1/4)	2238 (88 1/8)	2237 (88 1/8)	2237 (88 1/8)	2236 (88 1/8)	2235 (88)	2234 (88)	2234 (88)	2233 (88)	2232 (88 7/8)	2232 (88 7/8)	2246 (88 1/2)	2256 (88 7/8)	2266 (89 1/4)

# List of the Projection Distance by Angle of Optical Axis

## When using the 80 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	2459 (96 <sup>7</sup> / <sub>8</sub> )	2473 (97 <sup>3</sup> / <sub>8</sub> )	2481 (97 <sup>3</sup> / <sub>4</sub> )	2488 (98)	2494 (98 <sup>1</sup> / <sub>4</sub> )	2500 (98 <sup>1</sup> / <sub>2</sub> )	2505 (98 <sup>5</sup> / <sub>8</sub> )	2509 (98 <sup>7</sup> / <sub>8</sub> )	2513 (99)	2515 (99 <sup>1</sup> / <sub>8</sub> )	2517 (99 <sup>1</sup> / <sub>8</sub> )	2518 (99 <sup>1</sup> / <sub>4</sub> )	2519 (99 <sup>1</sup> / <sub>4</sub> )	2536 (99 <sup>7</sup> / <sub>8</sub> )	2546 (100 <sup>1</sup> / <sub>4</sub> )	2556 (100 <sup>3</sup> / <sub>4</sub> )
<b>B</b> Ylens	591 (23 <sup>3</sup> / <sub>8</sub> )	526 (20 <sup>3</sup> / <sub>4</sub> )	482 (19)	439 (17 <sup>3</sup> / <sub>8</sub> )	395 (15 <sup>5</sup> / <sub>8</sub> )	351 (13 <sup>7</sup> / <sub>8</sub> )	308 (12 <sup>1</sup> / <sub>4</sub> )	264 (10 <sup>1</sup> / <sub>2</sub> )	220 (8 <sup>3</sup> / <sub>4</sub> )	176 (7)	132 (5 <sup>1</sup> / <sub>4</sub> )	88 (3 <sup>1</sup> / <sub>2</sub> )	44 (1 <sup>3</sup> / <sub>4</sub> )	0 (0)	-44 (-1 <sup>3</sup> / <sub>4</sub> )	-89 (-3 <sup>5</sup> / <sub>8</sub> )
<b>D</b> TD	2529 (99 <sup>5</sup> / <sub>8</sub> )	2528 (99 <sup>5</sup> / <sub>8</sub> )	2527 (99 <sup>1</sup> / <sub>2</sub> )	2526 (99 <sup>1</sup> / <sub>2</sub> )	2525 (99 <sup>1</sup> / <sub>2</sub> )	2525 (99 <sup>1</sup> / <sub>2</sub> )	2524 (99 <sup>3</sup> / <sub>8</sub> )	2523 (99 <sup>3</sup> / <sub>8</sub> )	2522 (99 <sup>3</sup> / <sub>8</sub> )	2522 (99 <sup>3</sup> / <sub>8</sub> )	2521 (99 <sup>3</sup> / <sub>8</sub> )	2520 (99 <sup>1</sup> / <sub>4</sub> )	2519 (99 <sup>1</sup> / <sub>4</sub> )	2536 (99 <sup>7</sup> / <sub>8</sub> )	2547 (100 <sup>3</sup> / <sub>8</sub> )	2558 (100 <sup>3</sup> / <sub>4</sub> )

## When using the 90 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	2738 (107 <sup>7</sup> / <sub>8</sub> )	2753 (108 <sup>1</sup> / <sub>2</sub> )	2762 (108 <sup>3</sup> / <sub>4</sub> )	2770 (109 <sup>1</sup> / <sub>8</sub> )	2777 (109 <sup>3</sup> / <sub>8</sub> )	2783 (109 <sup>5</sup> / <sub>8</sub> )	2789 (109 <sup>7</sup> / <sub>8</sub> )	2794 (110)	2797 (110 <sup>1</sup> / <sub>8</sub> )	2800 (110 <sup>1</sup> / <sub>4</sub> )	2803 (110 <sup>3</sup> / <sub>8</sub> )	2804 (110 <sup>1</sup> / <sub>2</sub> )	2804 (110 <sup>1</sup> / <sub>2</sub> )	2823 (111 <sup>1</sup> / <sub>4</sub> )	2835 (111 <sup>5</sup> / <sub>8</sub> )	2846 (112 <sup>1</sup> / <sub>8</sub> )
<b>B</b> Ylens	658 (26)	585 (23 <sup>1</sup> / <sub>8</sub> )	537 (21 <sup>1</sup> / <sub>4</sub> )	488 (19 <sup>1</sup> / <sub>4</sub> )	440 (17 <sup>3</sup> / <sub>8</sub> )	391 (15 <sup>1</sup> / <sub>2</sub> )	342 (13 <sup>1</sup> / <sub>2</sub> )	294 (11 <sup>5</sup> / <sub>8</sub> )	245 (9 <sup>3</sup> / <sub>4</sub> )	196 (7 <sup>3</sup> / <sub>4</sub> )	147 (5 <sup>7</sup> / <sub>8</sub> )	98 (3 <sup>7</sup> / <sub>8</sub> )	49 (1 <sup>15</sup> / <sub>16</sub> )	0 (0)	-49 (-1 <sup>15</sup> / <sub>16</sub> )	-99 (-4)
<b>D</b> TD	2816 (110 <sup>7</sup> / <sub>8</sub> )	2814 (110 <sup>7</sup> / <sub>8</sub> )	2813 (110 <sup>3</sup> / <sub>4</sub> )	2813 (110 <sup>3</sup> / <sub>4</sub> )	2812 (110 <sup>3</sup> / <sub>4</sub> )	2811 (110 <sup>3</sup> / <sub>4</sub> )	2810 (110 <sup>3</sup> / <sub>4</sub> )	2809 (110 <sup>5</sup> / <sub>8</sub> )	2808 (110 <sup>5</sup> / <sub>8</sub> )	2807 (110 <sup>5</sup> / <sub>8</sub> )	2806 (110 <sup>1</sup> / <sub>2</sub> )	2805 (110 <sup>1</sup> / <sub>2</sub> )	2805 (110 <sup>1</sup> / <sub>2</sub> )	2823 (111 <sup>1</sup> / <sub>4</sub> )	2835 (111 <sup>5</sup> / <sub>8</sub> )	2848 (112 <sup>1</sup> / <sub>4</sub> )

## When using the 100 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	3016 (118 <sup>3</sup> / <sub>4</sub> )	3033 (119 <sup>1</sup> / <sub>2</sub> )	3043 (119 <sup>7</sup> / <sub>8</sub> )	3052 (120 <sup>1</sup> / <sub>4</sub> )	3060 (120 <sup>1</sup> / <sub>2</sub> )	3067 (120 <sup>3</sup> / <sub>4</sub> )	3073 (121)	3078 (121 <sup>1</sup> / <sub>4</sub> )	3082 (121 <sup>3</sup> / <sub>8</sub> )	3085 (121 <sup>1</sup> / <sub>2</sub> )	3088 (121 <sup>5</sup> / <sub>8</sub> )	3089 (121 <sup>5</sup> / <sub>8</sub> )	3090 (121 <sup>3</sup> / <sub>4</sub> )	3110 (122 <sup>1</sup> / <sub>2</sub> )	3124 (123)	3136 (123 <sup>1</sup> / <sub>2</sub> )
<b>B</b> Ylens	726 (28 <sup>5</sup> / <sub>8</sub> )	645 (25 <sup>1</sup> / <sub>2</sub> )	591 (23 <sup>3</sup> / <sub>8</sub> )	538 (21 <sup>1</sup> / <sub>4</sub> )	485 (19 <sup>1</sup> / <sub>8</sub> )	431 (17)	377 (14 <sup>7</sup> / <sub>8</sub> )	324 (12 <sup>7</sup> / <sub>8</sub> )	270 (10 <sup>3</sup> / <sub>4</sub> )	216 (8 <sup>5</sup> / <sub>8</sub> )	162 (6 <sup>1</sup> / <sub>2</sub> )	108 (4 <sup>3</sup> / <sub>8</sub> )	54 (2 <sup>1</sup> / <sub>4</sub> )	0 (0)	-55 (-2 <sup>1</sup> / <sub>4</sub> )	-110 (-4 <sup>3</sup> / <sub>8</sub> )
<b>D</b> TD	3102 (122 <sup>1</sup> / <sub>4</sub> )	3101 (122 <sup>1</sup> / <sub>8</sub> )	3100 (122 <sup>1</sup> / <sub>8</sub> )	3099 (122 <sup>1</sup> / <sub>8</sub> )	3098 (122)	3097 (122)	3096 (122)	3095 (121 <sup>7</sup> / <sub>8</sub> )	3094 (121 <sup>7</sup> / <sub>8</sub> )	3093 (121 <sup>7</sup> / <sub>8</sub> )	3092 (121 <sup>3</sup> / <sub>4</sub> )	3091 (121 <sup>3</sup> / <sub>4</sub> )	3090 (121 <sup>3</sup> / <sub>4</sub> )	3110 (122 <sup>1</sup> / <sub>2</sub> )	3124 (123)	3138 (123 <sup>5</sup> / <sub>8</sub> )

## When using the 110 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	3294 (129 <sup>3</sup> / <sub>4</sub> )	3312 (130 <sup>1</sup> / <sub>2</sub> )	3323 (130 <sup>7</sup> / <sub>8</sub> )	3332 (131 <sup>1</sup> / <sub>4</sub> )	3341 (131 <sup>5</sup> / <sub>8</sub> )	3349 (131 <sup>7</sup> / <sub>8</sub> )	3355 (132 <sup>1</sup> / <sub>8</sub> )	3361 (132 <sup>3</sup> / <sub>8</sub> )	3366 (132 <sup>5</sup> / <sub>8</sub> )	3369 (132 <sup>3</sup> / <sub>4</sub> )	3372 (132 <sup>7</sup> / <sub>8</sub> )	3373 (132 <sup>7</sup> / <sub>8</sub> )	3374 (132 <sup>7</sup> / <sub>8</sub> )	3396 (133 <sup>3</sup> / <sub>4</sub> )	3411 (134 <sup>3</sup> / <sub>8</sub> )	3424 (134 <sup>7</sup> / <sub>8</sub> )
<b>B</b> Ylens	793 (31 <sup>1</sup> / <sub>4</sub> )	704 (27 <sup>3</sup> / <sub>4</sub> )	646 (25 <sup>1</sup> / <sub>2</sub> )	588 (23 <sup>1</sup> / <sub>4</sub> )	529 (20 <sup>7</sup> / <sub>8</sub> )	471 (18 <sup>5</sup> / <sub>8</sub> )	412 (16 <sup>1</sup> / <sub>4</sub> )	353 (14)	294 (11 <sup>5</sup> / <sub>8</sub> )	236 (9 <sup>3</sup> / <sub>8</sub> )	177 (7)	118 (4 <sup>3</sup> / <sub>4</sub> )	59 (2 <sup>3</sup> / <sub>8</sub> )	0 (0)	-60 (-2 <sup>3</sup> / <sub>8</sub> )	-120 (-4 <sup>3</sup> / <sub>4</sub> )
<b>D</b> TD	3388 (133 <sup>1</sup> / <sub>2</sub> )	3386 (133 <sup>3</sup> / <sub>8</sub> )	3385 (133 <sup>3</sup> / <sub>8</sub> )	3384 (133 <sup>1</sup> / <sub>4</sub> )	3383 (133 <sup>1</sup> / <sub>4</sub> )	3382 (133 <sup>1</sup> / <sub>4</sub> )	3381 (133 <sup>1</sup> / <sub>8</sub> )	3380 (133 <sup>1</sup> / <sub>8</sub> )	3379 (133 <sup>1</sup> / <sub>8</sub> )	3377 (133)	3376 (133)	3375 (132 <sup>7</sup> / <sub>8</sub> )	3374 (132 <sup>7</sup> / <sub>8</sub> )	3396 (133 <sup>3</sup> / <sub>4</sub> )	3411 (134 <sup>3</sup> / <sub>8</sub> )	3426 (135)

## When using the 120 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	3571 (140 <sup>5</sup> / <sub>8</sub> )	3591 (141 <sup>1</sup> / <sub>2</sub> )	3603 (141 <sup>7</sup> / <sub>8</sub> )	3613 (142 <sup>1</sup> / <sub>4</sub> )	3623 (142 <sup>3</sup> / <sub>4</sub> )	3631 (143)	3638 (143 <sup>1</sup> / <sub>4</sub> )	3644 (143 <sup>1</sup> / <sub>2</sub> )	3649 (143 <sup>3</sup> / <sub>4</sub> )	3653 (143 <sup>7</sup> / <sub>8</sub> )	3656 (144)	3657 (144)	3658 (144 <sup>1</sup> / <sub>8</sub> )	3682 (145)	3698 (145 <sup>5</sup> / <sub>8</sub> )	3712 (146 <sup>1</sup> / <sub>4</sub> )
<b>B</b> Ylens	860 (33 <sup>7</sup> / <sub>8</sub> )	763 (30 <sup>1</sup> / <sub>8</sub> )	700 (27 <sup>5</sup> / <sub>8</sub> )	637 (25 <sup>1</sup> / <sub>8</sub> )	574 (22 <sup>5</sup> / <sub>8</sub> )	510 (20 <sup>1</sup> / <sub>8</sub> )	447 (17 <sup>5</sup> / <sub>8</sub> )	383 (15 <sup>1</sup> / <sub>8</sub> )	319 (12 <sup>5</sup> / <sub>8</sub> )	255 (10 <sup>1</sup> / <sub>8</sub> )	192 (7 <sup>5</sup> / <sub>8</sub> )	128 (5 <sup>1</sup> / <sub>8</sub> )	64 (2 <sup>5</sup> / <sub>8</sub> )	0 (0)	-65 (-2 <sup>5</sup> / <sub>8</sub> )	-130 (-5 <sup>1</sup> / <sub>8</sub> )
<b>D</b> TD	3673 (144 <sup>5</sup> / <sub>8</sub> )	3671 (144 <sup>5</sup> / <sub>8</sub> )	3670 (144 <sup>1</sup> / <sub>2</sub> )	3669 (144 <sup>1</sup> / <sub>2</sub> )	3668 (144 <sup>1</sup> / <sub>2</sub> )	3667 (144 <sup>3</sup> / <sub>8</sub> )	3665 (144 <sup>3</sup> / <sub>8</sub> )	3664 (144 <sup>3</sup> / <sub>8</sub> )	3663 (144 <sup>1</sup> / <sub>4</sub> )	3662 (144 <sup>1</sup> / <sub>4</sub> )	3661 (144 <sup>1</sup> / <sub>4</sub> )	3660 (144 <sup>1</sup> / <sub>8</sub> )	3658 (144 <sup>1</sup> / <sub>8</sub> )	3682 (145)	3699 (145 <sup>3</sup> / <sub>4</sub> )	3715 (146 <sup>3</sup> / <sub>8</sub> )

Others

### When using the 130 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	3856 (151 <sup>7</sup> / <sub>8</sub> )	3877 (152 <sup>3</sup> / <sub>4</sub> )	3890 (153 <sup>1</sup> / <sub>4</sub> )	3901 (153 <sup>5</sup> / <sub>8</sub> )	3911 (154)	3920 (154 <sup>3</sup> / <sub>8</sub> )	3928 (154 <sup>3</sup> / <sub>4</sub> )	3934 (155)	3940 (155 <sup>1</sup> / <sub>8</sub> )	3944 (155 <sup>3</sup> / <sub>8</sub> )	3947 (155 <sup>1</sup> / <sub>2</sub> )	3949 (155 <sup>1</sup> / <sub>2</sub> )	3949 (155 <sup>1</sup> / <sub>2</sub> )	3976 (156 <sup>5</sup> / <sub>8</sub> )	3993 (157 <sup>1</sup> / <sub>4</sub> )	4008 (157 <sup>7</sup> / <sub>8</sub> )
<b>B</b> Ylens	929 (36 <sup>5</sup> / <sub>8</sub> )	824 (32 <sup>1</sup> / <sub>2</sub> )	756 (29 <sup>7</sup> / <sub>8</sub> )	688 (27 <sup>1</sup> / <sub>8</sub> )	619 (24 <sup>3</sup> / <sub>8</sub> )	551 (21 <sup>3</sup> / <sub>4</sub> )	482 (19)	414 (16 <sup>3</sup> / <sub>8</sub> )	345 (13 <sup>5</sup> / <sub>8</sub> )	276 (10 <sup>7</sup> / <sub>8</sub> )	207 (8 <sup>1</sup> / <sub>4</sub> )	138 (5 <sup>1</sup> / <sub>2</sub> )	69 (2 <sup>3</sup> / <sub>4</sub> )	0 (0)	-70 (-2 <sup>7</sup> / <sub>8</sub> )	-140 (-5 <sup>5</sup> / <sub>8</sub> )
<b>D</b> TD	3966 (156 <sup>1</sup> / <sub>4</sub> )	3964 (156 <sup>1</sup> / <sub>8</sub> )	3962 (156)	3961 (156)	3960 (156)	3959 (155 <sup>7</sup> / <sub>8</sub> )	3957 (155 <sup>7</sup> / <sub>8</sub> )	3956 (155 <sup>3</sup> / <sub>4</sub> )	3955 (155 <sup>3</sup> / <sub>4</sub> )	3954 (155 <sup>3</sup> / <sub>4</sub> )	3952 (155 <sup>5</sup> / <sub>8</sub> )	3951 (155 <sup>5</sup> / <sub>8</sub> )	3950 (155 <sup>5</sup> / <sub>8</sub> )	3976 (156 <sup>5</sup> / <sub>8</sub> )	3993 (157 <sup>1</sup> / <sub>4</sub> )	4011 (158)

### When using the 140 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	4140 (163)	4163 (164)	4177 (164 <sup>1</sup> / <sub>2</sub> )	4189 (165)	4200 (165 <sup>3</sup> / <sub>8</sub> )	4209 (165 <sup>3</sup> / <sub>4</sub> )	4218 (166 <sup>1</sup> / <sub>8</sub> )	4225 (166 <sup>3</sup> / <sub>8</sub> )	4230 (166 <sup>5</sup> / <sub>8</sub> )	4235 (166 <sup>3</sup> / <sub>4</sub> )	4238 (166 <sup>7</sup> / <sub>8</sub> )	4240 (167)	4240 (167)	4269 (168 <sup>1</sup> / <sub>8</sub> )	4287 (168 <sup>7</sup> / <sub>8</sub> )	4304 (169 <sup>1</sup> / <sub>2</sub> )
<b>B</b> Ylens	997 (39 <sup>3</sup> / <sub>8</sub> )	885 (34 <sup>7</sup> / <sub>8</sub> )	812 (32)	739 (29 <sup>1</sup> / <sub>8</sub> )	665 (26 <sup>1</sup> / <sub>4</sub> )	592 (23 <sup>3</sup> / <sub>8</sub> )	518 (20 <sup>1</sup> / <sub>2</sub> )	444 (17 <sup>1</sup> / <sub>2</sub> )	370 (14 <sup>5</sup> / <sub>8</sub> )	296 (11 <sup>3</sup> / <sub>4</sub> )	222 (8 <sup>3</sup> / <sub>4</sub> )	148 (5 <sup>7</sup> / <sub>8</sub> )	74 (3)	0 (0)	-75 (-3)	-150 (-6)
<b>D</b> TD	4258 (167 <sup>3</sup> / <sub>4</sub> )	4256 (167 <sup>5</sup> / <sub>8</sub> )	4255 (167 <sup>5</sup> / <sub>8</sub> )	4253 (167 <sup>1</sup> / <sub>2</sub> )	4252 (167 <sup>1</sup> / <sub>2</sub> )	4251 (167 <sup>3</sup> / <sub>8</sub> )	4249 (167 <sup>3</sup> / <sub>8</sub> )	4248 (167 <sup>1</sup> / <sub>4</sub> )	4247 (167 <sup>1</sup> / <sub>4</sub> )	4245 (167 <sup>1</sup> / <sub>4</sub> )	4244 (167 <sup>1</sup> / <sub>8</sub> )	4242 (167 <sup>1</sup> / <sub>8</sub> )	4241 (167)	4269 (168 <sup>1</sup> / <sub>8</sub> )	4288 (168 <sup>7</sup> / <sub>8</sub> )	4306 (169 <sup>5</sup> / <sub>8</sub> )

### When using the 150 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	4424 (174 <sup>1</sup> / <sub>4</sub> )	4449 (175 <sup>1</sup> / <sub>4</sub> )	4464 (175 <sup>3</sup> / <sub>4</sub> )	4477 (176 <sup>3</sup> / <sub>8</sub> )	4488 (176 <sup>3</sup> / <sub>4</sub> )	4498 (177 <sup>1</sup> / <sub>8</sub> )	4507 (177 <sup>1</sup> / <sub>2</sub> )	4515 (177 <sup>7</sup> / <sub>8</sub> )	4521 (178)	4526 (178 <sup>1</sup> / <sub>4</sub> )	4529 (178 <sup>3</sup> / <sub>8</sub> )	4531 (178 <sup>1</sup> / <sub>2</sub> )	4532 (178 <sup>1</sup> / <sub>2</sub> )	4562 (179 <sup>5</sup> / <sub>8</sub> )	4582 (180 <sup>1</sup> / <sub>2</sub> )	4599 (181 <sup>1</sup> / <sub>8</sub> )
<b>B</b> Ylens	1066 (42)	946 (37 <sup>1</sup> / <sub>4</sub> )	868 (34 <sup>1</sup> / <sub>4</sub> )	789 (31 <sup>1</sup> / <sub>8</sub> )	711 (28)	632 (25)	553 (21 <sup>7</sup> / <sub>8</sub> )	475 (18 <sup>3</sup> / <sub>4</sub> )	396 (15 <sup>5</sup> / <sub>8</sub> )	316 (12 <sup>1</sup> / <sub>2</sub> )	237 (9 <sup>3</sup> / <sub>8</sub> )	158 (6 <sup>1</sup> / <sub>4</sub> )	79 (3 <sup>1</sup> / <sub>8</sub> )	0 (0)	-80 (-3 <sup>1</sup> / <sub>4</sub> )	-161 (-6 <sup>3</sup> / <sub>8</sub> )
<b>D</b> TD	4551 (179 <sup>1</sup> / <sub>4</sub> )	4549 (179 <sup>1</sup> / <sub>8</sub> )	4547 (179 <sup>1</sup> / <sub>8</sub> )	4546 (179)	4544 (179)	4543 (178 <sup>7</sup> / <sub>8</sub> )	4541 (178 <sup>7</sup> / <sub>8</sub> )	4540 (178 <sup>3</sup> / <sub>4</sub> )	4538 (178 <sup>3</sup> / <sub>4</sub> )	4537 (178 <sup>5</sup> / <sub>8</sub> )	4535 (178 <sup>5</sup> / <sub>8</sub> )	4534 (178 <sup>5</sup> / <sub>8</sub> )	4532 (178 <sup>1</sup> / <sub>2</sub> )	4562 (179 <sup>5</sup> / <sub>8</sub> )	4582 (180 <sup>1</sup> / <sub>2</sub> )	4602 (181 <sup>1</sup> / <sub>4</sub> )

### When using the 160 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	4707 (185 <sup>3</sup> / <sub>8</sub> )	4734 (186 <sup>1</sup> / <sub>2</sub> )	4749 (187)	4763 (187 <sup>5</sup> / <sub>8</sub> )	4775 (188)	4786 (188 <sup>1</sup> / <sub>2</sub> )	4796 (188 <sup>7</sup> / <sub>8</sub> )	4804 (189 <sup>1</sup> / <sub>4</sub> )	4810 (189 <sup>3</sup> / <sub>8</sub> )	4815 (189 <sup>5</sup> / <sub>8</sub> )	4819 (189 <sup>3</sup> / <sub>4</sub> )	4821 (189 <sup>7</sup> / <sub>8</sub> )	4822 (189 <sup>7</sup> / <sub>8</sub> )	4854 (191 <sup>1</sup> / <sub>8</sub> )	4875 (192)	4894 (192 <sup>3</sup> / <sub>4</sub> )
<b>B</b> Ylens	1135 (44 <sup>3</sup> / <sub>4</sub> )	1006 (39 <sup>5</sup> / <sub>8</sub> )	923 (36 <sup>3</sup> / <sub>8</sub> )	840 (33 <sup>1</sup> / <sub>8</sub> )	756 (29 <sup>7</sup> / <sub>8</sub> )	673 (26 <sup>1</sup> / <sub>2</sub> )	589 (23 <sup>1</sup> / <sub>4</sub> )	505 (20)	421 (16 <sup>5</sup> / <sub>8</sub> )	337 (13 <sup>3</sup> / <sub>8</sub> )	253 (10)	168 (6 <sup>5</sup> / <sub>8</sub> )	84 (3 <sup>3</sup> / <sub>8</sub> )	0 (0)	-85 (-3 <sup>3</sup> / <sub>8</sub> )	-171 (-6 <sup>3</sup> / <sub>4</sub> )
<b>D</b> TD	4842 (190 <sup>3</sup> / <sub>4</sub> )	4840 (190 <sup>5</sup> / <sub>8</sub> )	4838 (190 <sup>1</sup> / <sub>2</sub> )	4837 (190 <sup>1</sup> / <sub>2</sub> )	4835 (190 <sup>3</sup> / <sub>8</sub> )	4833 (190 <sup>3</sup> / <sub>8</sub> )	4832 (190 <sup>1</sup> / <sub>4</sub> )	4830 (190 <sup>1</sup> / <sub>4</sub> )	4829 (190 <sup>1</sup> / <sub>8</sub> )	4827 (190 <sup>1</sup> / <sub>8</sub> )	4826 (190)	4824 (190)	4822 (189 <sup>7</sup> / <sub>8</sub> )	4854 (191 <sup>1</sup> / <sub>8</sub> )	4875 (192)	4897 (192 <sup>7</sup> / <sub>8</sub> )

### When using the 170 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	4991 (196 <sup>1</sup> / <sub>2</sub> )	5019 (197 <sup>5</sup> / <sub>8</sub> )	5035 (198 <sup>1</sup> / <sub>4</sub> )	5050 (198 <sup>7</sup> / <sub>8</sub> )	5063 (199 <sup>3</sup> / <sub>8</sub> )	5074 (199 <sup>7</sup> / <sub>8</sub> )	5084 (200 <sup>1</sup> / <sub>4</sub> )	5093 (200 <sup>5</sup> / <sub>8</sub> )	5100 (200 <sup>7</sup> / <sub>8</sub> )	5105 (201)	5109 (201 <sup>1</sup> / <sub>4</sub> )	5111 (201 <sup>1</sup> / <sub>4</sub> )	5112 (201 <sup>3</sup> / <sub>8</sub> )	5146 (202 <sup>5</sup> / <sub>8</sub> )	5168 (203 <sup>1</sup> / <sub>2</sub> )	5188 (204 <sup>3</sup> / <sub>8</sub> )
<b>B</b> Ylens	1203 (47 <sup>3</sup> / <sub>8</sub> )	1067 (42 <sup>1</sup> / <sub>8</sub> )	979 (38 <sup>5</sup> / <sub>8</sub> )	890 (35 <sup>1</sup> / <sub>8</sub> )	802 (31 <sup>5</sup> / <sub>8</sub> )	713 (28 <sup>1</sup> / <sub>8</sub> )	624 (24 <sup>5</sup> / <sub>8</sub> )	535 (21 <sup>1</sup> / <sub>8</sub> )	446 (17 <sup>5</sup> / <sub>8</sub> )	357 (14 <sup>1</sup> / <sub>8</sub> )	268 (10 <sup>5</sup> / <sub>8</sub> )	178 (7 <sup>1</sup> / <sub>8</sub> )	89 (3 <sup>5</sup> / <sub>8</sub> )	0 (0)	-90 (-3 <sup>5</sup> / <sub>8</sub> )	-181 (-7 <sup>1</sup> / <sub>4</sub> )
<b>D</b> TD	5134 (202 <sup>1</sup> / <sub>4</sub> )	5131 (202 <sup>1</sup> / <sub>8</sub> )	5129 (202)	5127 (201 <sup>7</sup> / <sub>8</sub> )	5126 (201 <sup>7</sup> / <sub>8</sub> )	5124 (201 <sup>3</sup> / <sub>4</sub> )	5122 (201 <sup>3</sup> / <sub>4</sub> )	5121 (201 <sup>5</sup> / <sub>8</sub> )	5119 (201 <sup>5</sup> / <sub>8</sub> )	5117 (201 <sup>1</sup> / <sub>2</sub> )	5116 (201 <sup>1</sup> / <sub>2</sub> )	5114 (201 <sup>3</sup> / <sub>8</sub> )	5113 (201 <sup>3</sup> / <sub>8</sub> )	5146 (202 <sup>5</sup> / <sub>8</sub> )	5169 (203 <sup>5</sup> / <sub>8</sub> )	5191 (204 <sup>3</sup> / <sub>8</sub> )

Others

# List of the Projection Distance by Angle of Optical Axis

## When using the 180 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	5274 (207 3/4)	5303 (208 7/8)	5321 (209 1/2)	5336 (210 1/8)	5350 (210 3/4)	5362 (211 1/8)	5373 (211 5/8)	5382 (212)	5389 (212 1/4)	5395 (212 1/2)	5399 (212 5/8)	5401 (212 3/4)	5402 (212 3/4)	5438 (214 1/8)	5461 (215)	5482 (215 5/8)
<b>B</b> Ylens	1272 (50 1/8)	1127 (44 3/8)	1034 (40 3/4)	941 (37 1/8)	847 (33 3/8)	754 (29 3/4)	660 (26)	566 (22 3/8)	471 (18 5/8)	377 (14 7/8)	283 (11 1/4)	189 (7 1/2)	94 (3 3/4)	0 (0)	-95 (-3 3/4)	-191 (-7 5/8)
<b>D</b> TD	5425 (213 5/8)	5422 (213 1/2)	5420 (213 1/2)	5418 (213 3/8)	5417 (213 3/8)	5415 (213 1/4)	5413 (213 1/8)	5411 (213 1/8)	5409 (213)	5408 (213)	5406 (212 7/8)	5404 (212 7/8)	5403 (212 3/4)	5438 (214 1/8)	5462 (215 1/8)	5486 (216)

## When using the 190 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	5559 (218 7/8)	5590 (220 1/8)	5608 (220 7/8)	5625 (221 1/2)	5639 (222 1/8)	5652 (222 5/8)	5663 (223)	5673 (223 3/8)	5680 (223 5/8)	5686 (223 7/8)	5691 (224 1/8)	5693 (224 1/4)	5694 (224 1/4)	5732 (225 3/4)	5756 (226 5/8)	5779 (227 5/8)
<b>B</b> Ylens	1340 (52 7/8)	1188 (46 7/8)	1090 (43)	992 (39 1/8)	893 (35 1/4)	794 (31 3/8)	695 (27 3/8)	596 (23 1/2)	497 (19 5/8)	398 (15 3/4)	298 (11 3/4)	199 (7 7/8)	99 (4)	0 (0)	-100 (-4)	-202 (-8)
<b>D</b> TD	5718 (225 1/8)	5715 (225)	5713 (225)	5711 (224 7/8)	5710 (224 7/8)	5708 (224 3/4)	5706 (224 3/4)	5704 (224 5/8)	5702 (224 1/2)	5700 (224 1/2)	5698 (224 3/8)	5697 (224 3/8)	5695 (224 1/4)	5732 (225 3/4)	5757 (226 3/4)	5782 (227 3/4)

## When using the 200 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	5844 (230 1/8)	5877 (231 1/2)	5896 (232 1/4)	5913 (232 7/8)	5929 (233 1/2)	5942 (234)	5954 (234 1/2)	5964 (234 7/8)	5972 (235 1/8)	5978 (235 3/8)	5983 (235 5/8)	5985 (235 3/4)	5986 (235 3/4)	6026 (237 1/4)	6052 (238 3/8)	6075 (239 1/4)
<b>B</b> Ylens	1408 (55 1/2)	1249 (49 1/4)	1146 (45 5/8)	1043 (41 1/8)	939 (37)	835 (32 7/8)	731 (28 7/8)	627 (24 3/4)	522 (20 5/8)	418 (16 1/2)	314 (12 3/8)	209 (8 1/4)	104 (4 1/8)	0 (0)	-106 (-4 1/4)	-212 (-8 3/8)
<b>D</b> TD	6012 (236 3/4)	6008 (236 5/8)	6006 (236 1/2)	6004 (236 1/2)	6002 (236 3/8)	6000 (236 1/4)	5999 (236 1/4)	5997 (236 1/8)	5995 (236 1/8)	5993 (236)	5991 (235 7/8)	5989 (235 7/8)	5987 (235 3/4)	6026 (237 1/4)	6053 (238 3/8)	6079 (239 3/8)

## When using the 210 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	6127 (241 1/4)	6161 (242 5/8)	6181 (243 3/8)	6199 (244 1/8)	6215 (244 3/4)	6230 (245 3/8)	6242 (245 3/4)	6252 (246 1/4)	6261 (246 1/2)	6267 (246 3/4)	6272 (247)	6275 (247 1/8)	6276 (247 1/8)	6318 (248 3/4)	6344 (249 7/8)	6369 (250 3/4)
<b>B</b> Ylens	1477 (58 1/4)	1310 (51 5/8)	1202 (47 3/8)	1093 (43 1/8)	984 (38 3/4)	876 (34 1/2)	766 (30 1/4)	657 (25 7/8)	548 (21 5/8)	438 (17 1/4)	329 (13)	219 (8 5/8)	110 (4 3/8)	0 (0)	-111 (-4 3/8)	-222 (-8 3/4)
<b>D</b> TD	6302 (248 1/8)	6299 (248)	6297 (248)	6295 (247 7/8)	6293 (247 7/8)	6291 (247 3/4)	6289 (247 5/8)	6287 (247 5/8)	6285 (247 1/2)	6283 (247 3/8)	6281 (247 3/8)	6279 (247 1/4)	6277 (247 1/4)	6318 (248 3/4)	6345 (249 7/8)	6373 (251)

## When using the 220 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	6410 (252 3/8)	6446 (253 7/8)	6467 (254 5/8)	6485 (255 3/8)	6502 (256)	6517 (256 5/8)	6530 (257 1/8)	6541 (257 5/8)	6550 (257 7/8)	6556 (258 1/8)	6561 (258 3/8)	6564 (258 1/2)	6565 (258 1/2)	6609 (260 1/4)	6637 (261 3/8)	6663 (262 3/8)
<b>B</b> Ylens	1546 (60 7/8)	1370 (54)	1257 (49 1/2)	1144 (45 1/8)	1030 (40 5/8)	916 (36 1/8)	802 (31 5/8)	687 (27 1/8)	573 (22 5/8)	458 (18 1/8)	344 (13 5/8)	229 (9 1/8)	115 (4 5/8)	0 (0)	-116 (-4 5/8)	-233 (-9 1/4)
<b>D</b> TD	6593 (259 5/8)	6590 (259 1/2)	6588 (259 3/8)	6585 (259 3/8)	6583 (259 1/4)	6581 (259 1/8)	6579 (259 1/8)	6577 (259)	6575 (258 7/8)	6572 (258 3/4)	6570 (258 3/4)	6568 (258 5/8)	6566 (258 5/8)	6609 (260 1/4)	6638 (261 3/8)	6667 (262 1/2)

### When using the 230 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	6692 (263 1/2)	6730 (265)	6752 (265 7/8)	6771 (266 5/8)	6789 (267 3/8)	6804 (267 7/8)	6818 (268 1/2)	6829 (268 7/8)	6838 (269 1/4)	6846 (269 5/8)	6851 (269 3/4)	6854 (269 7/8)	6855 (270)	6901 (271 3/4)	6930 (272 7/8)	6957 (274)
<b>B</b> Ylens	1614 (63 5/8)	1431 (56 3/8)	1312 (51 3/4)	1194 (47 1/8)	1075 (42 3/8)	956 (37 3/4)	837 (33)	718 (28 3/8)	598 (23 5/8)	479 (18 7/8)	359 (14 1/4)	239 (9 1/2)	120 (4 3/4)	0 (0)	-121 (-4 7/8)	-243 (-9 5/8)
<b>D</b> TD	6884 (271 1/8)	6880 (270 7/8)	6878 (270 7/8)	6876 (270 3/4)	6874 (270 3/4)	6871 (270 5/8)	6869 (270 1/2)	6867 (270 3/8)	6865 (270 3/8)	6862 (270 1/4)	6860 (270 1/8)	6858 (270)	6856 (270)	6901 (271 3/4)	6931 (272 7/8)	6961 (274 1/8)

### When using the 240 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	6975 (274 5/8)	7014 (276 1/4)	7037 (277 1/8)	7057 (277 7/8)	7076 (278 5/8)	7092 (279 1/4)	7106 (279 7/8)	7118 (280 1/4)	7127 (280 5/8)	7135 (281)	7140 (281 1/8)	7143 (281 1/4)	7144 (281 3/8)	7192 (283 1/4)	7223 (284 3/8)	7251 (285 1/2)
<b>B</b> Ylens	1683 (66 3/8)	1491 (58 3/4)	1368 (53 7/8)	1244 (49)	1121 (44 1/4)	997 (39 3/8)	872 (34 3/8)	748 (29 1/2)	624 (24 5/8)	499 (19 3/4)	374 (14 3/4)	249 (9 7/8)	125 (5)	0 (0)	-126 (-5)	-253 (-10)
<b>D</b> TD	7175 (282 1/2)	7171 (282 3/8)	7169 (282 1/4)	7166 (282 1/4)	7164 (282 1/8)	7162 (282)	7159 (281 7/8)	7157 (281 7/8)	7155 (281 3/4)	7152 (281 5/8)	7150 (281 1/2)	7148 (281 1/2)	7145 (281 3/8)	7192 (283 1/4)	7224 (284 1/2)	7255 (285 3/4)

### When using the 250 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	7257 (285 3/4)	7299 (287 3/8)	7322 (288 3/8)	7343 (289 1/8)	7363 (290)	7379 (290 5/8)	7394 (291 1/8)	7406 (291 5/8)	7416 (292)	7424 (292 3/8)	7429 (292 1/2)	7433 (292 3/4)	7434 (292 3/4)	7484 (294 3/4)	7515 (295 7/8)	7544 (297 1/8)
<b>B</b> Ylens	1751 (69)	1551 (61 1/8)	1423 (56 1/8)	1295 (51)	1166 (46)	1037 (40 7/8)	908 (35 3/4)	778 (30 3/4)	649 (25 5/8)	519 (20 1/2)	389 (15 3/8)	260 (10 1/4)	130 (5 1/8)	0 (0)	-131 (-5 1/4)	-263 (-10 3/8)
<b>D</b> TD	7466 (294)	7462 (293 7/8)	7459 (293 3/4)	7457 (293 5/8)	7454 (293 1/2)	7452 (293 1/2)	7449 (293 3/8)	7447 (293 1/4)	7444 (293 1/8)	7442 (293)	7440 (293)	7437 (292 7/8)	7435 (292 3/4)	7484 (294 3/4)	7516 (296)	7549 (297 1/4)

List of the Projection Distance by Angle of Optical Axis

Screen with 16:9 aspect ratio

When using the 60 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
[E] Xlens	2050 (80 3/4)	2062 (81 1/4)	2068 (81 1/2)	2074 (81 3/4)	2080 (82)	2085 (82 1/8)	2089 (82 1/4)	2092 (82 3/8)	2095 (82 1/2)	2097 (82 5/8)	2099 (82 3/4)	2100 (82 3/4)	2100 (82 3/4)	2144 (83 1/4)	2123 (83 5/8)	2132 (84)
[B] Ylens	492 (19 3/8)	438 (17 3/8)	402 (15 7/8)	366 (14 1/2)	329 (13)	293 (11 5/8)	256 (10 1/8)	220 (8 3/4)	183 (7 1/4)	147 (5 7/8)	110 (4 3/8)	73 (3)	37 (1 1/2)	0 (0)	-37 (-1 1/2)	-74 (-3)
[D] TD	2109 (83 1/8)	2108 (83)	2107 (83)	2106 (83)	2106 (83)	2105 (82 7/8)	2104 (82 7/8)	2104 (82 7/8)	2103 (82 7/8)	2102 (82 7/8)	2102 (82 3/4)	2101 (82 3/4)	2101 (82 3/4)	2114 (83 1/4)	2114 (83 5/8)	2133 (84)

When using the 70 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
[E] Xlens	2354 (92 3/4)	2367 (93 1/4)	2375 (93 1/2)	2382 (93 7/8)	2388 (94 1/8)	2393 (94 1/4)	2398 (94 1/2)	2402 (94 5/8)	2405 (94 3/4)	2408 (94 7/8)	2410 (95)	2411 (95)	2411 (95)	2428 (95 5/8)	2438 (96)	2447 (96 3/8)
[B] Ylens	566 (22 3/8)	503 (19 7/8)	462 (18 1/4)	420 (16 5/8)	378 (15)	336 (13 1/4)	294 (11 5/8)	253 (10)	210 (8 3/8)	168 (6 3/4)	126 (5)	84 (3 3/8)	42 (1 11/16)	0 (0)	-43 (-1 11/16)	-86 (-3 3/8)
[D] TD	2421 (95 3/8)	2420 (95 3/8)	2419 (95 1/4)	2418 (95 1/4)	2418 (95 1/4)	2417 (95 1/4)	2416 (95 1/8)	2415 (95 1/8)	2415 (95 1/8)	2414 (95 1/8)	2413 (95 1/8)	2412 (95)	2412 (95)	2428 (95 5/8)	2438 (96)	2449 (96 1/2)

When using the 80 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
[E] Xlens	2659 (104 3/4)	2673 (105 1/4)	2682 (105 5/8)	2690 (106)	2697 (106 1/4)	2703 (106 1/2)	2708 (106 3/4)	2713 (106 7/8)	2717 (107)	2720 (107 1/8)	2722 (107 1/4)	2723 (107 1/4)	2723 (107 1/4)	2742 (108)	2753 (108 1/2)	2764 (108 5/8)
[B] Ylens	639 (25 1/4)	568 (22 7/8)	521 (20 5/8)	474 (18 3/4)	427 (16 7/8)	380 (15)	333 (13 1/8)	285 (11 1/4)	238 (9 3/8)	190 (7 1/2)	143 (5 5/8)	95 (3 3/4)	48 (1 7/8)	0 (0)	-48 (-1 15/16)	-97 (-3 7/8)
[D] TD	2734 (107 3/4)	2733 (107 5/8)	2732 (107 5/8)	2731 (107 5/8)	2730 (107 1/2)	2730 (107 1/2)	2729 (107 1/2)	2728 (107 1/2)	2727 (107 3/8)	2726 (107 3/8)	2725 (107 3/8)	2724 (107 3/8)	2724 (107 1/4)	2724 (108)	2754 (108 1/2)	2766 (109)

When using the 90 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
[E] Xlens	2962 (116 5/8)	2978 (117 3/8)	2988 (117 3/4)	2997 (118)	3005 (118 3/8)	3012 (118 5/8)	3018 (118 7/8)	3023 (119)	3027 (119 1/4)	3030 (119 3/8)	3032 (119 3/8)	3034 (119 1/2)	3034 (119 1/2)	3054 (120 3/8)	3067 (120 7/8)	3079 (121 1/4)
[B] Ylens	713 (28 1/8)	633 (25)	581 (22 7/8)	528 (20 7/8)	476 (18 3/4)	423 (16 3/4)	371 (14 5/8)	318 (12 5/8)	265 (10 1/2)	212 (8 3/8)	159 (6 3/8)	106 (4 1/4)	53 (2 1/8)	0 (0)	-54 (-2 1/8)	-108 (-4 1/4)
[D] TD	3047 (120)	3045 (120)	3044 (119 7/8)	3043 (119 7/8)	3042 (119 7/8)	3041 (119 3/4)	3040 (119 3/4)	3039 (119 3/4)	3038 (119 5/8)	3037 (119 5/8)	3036 (119 5/8)	3035 (119 5/8)	3034 (119 1/2)	3054 (120 3/8)	3068 (120 7/8)	3081 (121 3/8)

When using the 100 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
[E] Xlens	3265 (128 5/8)	3283 (129 1/4)	3293 (129 3/4)	3303 (130 1/8)	3312 (130 1/2)	3319 (130 3/4)	3326 (131)	3331 (131 1/4)	3336 (131 3/8)	3339 (131 1/2)	3342 (131 5/8)	3343 (131 3/4)	3344 (131 3/4)	3366 (132 5/8)	3381 (133 1/8)	3394 (133 5/8)
[B] Ylens	786 (31)	698 (27 1/2)	640 (25 1/4)	582 (23)	525 (20 3/4)	467 (18 3/8)	408 (16 1/8)	350 (13 7/8)	292 (11 1/2)	234 (9 1/4)	175 (7)	117 (4 5/8)	58 (2 3/8)	0 (0)	-59 (-2 3/8)	-119 (-4 3/4)
[D] TD	3358 (132 1/4)	3356 (132 1/4)	3355 (132 1/8)	3354 (132 1/8)	3353 (132 1/8)	3352 (132)	3351 (132)	3349 (132)	3349 (131 7/8)	3347 (131 7/8)	3347 (131 7/8)	3345 (131 3/4)	3345 (131 3/4)	3366 (132 5/8)	3382 (133 1/8)	3396 (133 3/4)

### When using the 110 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	3567 (140 1/2)	3587 (141 1/4)	3598 (141 3/4)	3609 (142 1/8)	3618 (142 1/2)	3626 (142 7/8)	3634 (143 1/8)	3640 (143 3/8)	3645 (143 1/2)	3649 (143 3/4)	3651 (143 3/4)	3653 (143 7/8)	3653 (143 7/8)	3678 (144 7/8)	3694 (145 1/2)	3708 (146)
<b>[B]</b> Ylens	859 (33 7/8)	762 (30 1/8)	699 (27 5/8)	636 (25 1/8)	573 (22 5/8)	510 (20 1/8)	446 (17 5/8)	383 (15 1/8)	319 (12 5/8)	255 (10 1/8)	191 (7 5/8)	128 (5 1/8)	64 (2 5/8)	0 (0)	-65 (-2 5/8)	-130 (-5 5/8)
<b>[D]</b> TD	3669 (144 1/2)	3667 (144 3/8)	3666 (144 3/8)	3664 (144 3/8)	3663 (144 1/4)	3662 (144 1/4)	3661 (144 1/4)	3660 (144 1/8)	3659 (144 1/8)	3657 (144)	3656 (144)	3655 (144)	3654 (143 7/8)	3678 (144 7/8)	3694 (145 1/2)	3710 (146 1/8)

### When using the 120 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	3877 (152 5/8)	3898 (153 1/2)	3911 (154)	3922 (154 1/2)	3933 (154 7/8)	3942 (155 1/4)	3949 (155 1/2)	3956 (155 3/4)	3961 (156)	3966 (156 1/8)	3968 (156 1/4)	3970 (156 3/8)	3971 (156 3/8)	3998 (157 1/2)	4014 (158 1/8)	4030 (158 3/4)
<b>[B]</b> Ylens	934 (36 7/8)	829 (32 5/8)	760 (30)	692 (27 1/4)	623 (24 5/8)	554 (21 7/8)	485 (19 5/8)	416 (16 3/8)	347 (13 3/4)	277 (11)	208 (8 1/4)	139 (5 1/2)	69 (2 3/4)	0 (0)	-70 (-2 7/8)	-141 (-5 5/8)
<b>[D]</b> TD	3998 (157)	3985 (157)	3984 (156 7/8)	3983 (156 7/8)	3982 (156 7/8)	3981 (156 3/4)	3979 (156 3/4)	3978 (156 5/8)	3976 (156 5/8)	3976 (156 1/2)	3973 (156 1/2)	3972 (156 1/2)	3972 (156 3/8)	3998 (157 1/2)	4015 (158 1/8)	4032 (158 7/8)

### When using the 130 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	4186 (164 7/8)	4210 (165 3/4)	4223 (166 3/8)	4236 (166 7/8)	4247 (167 1/4)	4256 (167 5/8)	4265 (168)	4272 (168 1/4)	4278 (168 1/2)	4282 (168 5/8)	4286 (168 3/4)	4287 (168 7/8)	4288 (168 7/8)	4317 (170)	4335 (170 3/4)	4352 (171 3/8)
<b>[B]</b> Ylens	1009 (39 3/4)	895 (35 1/4)	821 (32 3/8)	747 (29 1/2)	673 (26 1/2)	598 (23 3/8)	524 (20 5/8)	449 (17 3/4)	374 (14 3/4)	299 (11 7/8)	225 (8 7/8)	150 (6)	75 (3)	0 (0)	-76 (-3)	-152 (-6)
<b>[D]</b> TD	4306 (169 5/8)	4304 (169 1/2)	4303 (169 1/2)	4301 (169 3/8)	4300 (169 3/8)	4298 (169 1/4)	4297 (169 1/4)	4296 (169 1/8)	4294 (169 1/8)	4293 (169 1/8)	4291 (169)	4290 (169)	4289 (168 7/8)	4317 (170)	4336 (170 3/4)	4355 (171 1/2)

### When using the 140 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	4496 (177 1/8)	4521 (178 1/8)	4536 (178 5/8)	4549 (179 1/8)	4561 (179 5/8)	4571 (180)	4580 (180 3/8)	4588 (180 3/4)	4594 (180 7/8)	4599 (181 1/8)	4603 (181 1/4)	4605 (181 3/8)	4605 (181 3/8)	4636 (182 5/8)	4656 (183 3/8)	4674 (184 1/8)
<b>[B]</b> Ylens	1084 (42 3/4)	961 (37 7/8)	882 (34 3/4)	802 (31 5/8)	722 (28 1/2)	643 (25 3/8)	562 (22 1/4)	482 (19)	402 (15 7/8)	322 (12 3/4)	241 (9 1/2)	161 (6 3/8)	80 (3 1/4)	0 (0)	-81 (-3 1/4)	-163 (-6 1/2)
<b>[D]</b> TD	4625 (182 1/8)	4622 (182)	4621 (182)	4619 (181 7/8)	4618 (181 7/8)	4616 (181 3/4)	4615 (181 3/4)	4613 (181 3/4)	4612 (181 5/8)	4610 (181 5/8)	4609 (181 1/2)	4607 (181 1/2)	4606 (181 3/8)	4636 (182 5/8)	4656 (183 3/8)	4677 (184 1/8)

### When using the 150 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	4804 (189 1/4)	4831 (190 1/4)	4847 (190 7/8)	4861 (191 1/2)	4874 (192)	4885 (192 3/8)	4894 (192 3/4)	4903 (193 1/8)	4904 (193 3/8)	4914 (193 1/2)	4918 (193 3/4)	4920 (193 3/4)	4921 (193 3/4)	4954 (195 1/8)	4975 (195 7/8)	4994 (196 3/4)
<b>[B]</b> Ylens	1158 (45 5/8)	1027 (40 1/2)	942 (37 1/8)	857 (33 3/4)	772 (30 1/2)	687 (27 7/8)	601 (23 3/4)	515 (20 3/8)	430 (17)	344 (13 3/8)	258 (10 1/4)	172 (6 7/8)	86 (3 1/2)	0 (0)	-87 (-3 1/2)	-174 (-6 7/8)
<b>[D]</b> TD	4942 (194 5/8)	4939 (194 1/2)	4938 (194 1/2)	4936 (194 3/8)	4934 (194 3/8)	4933 (194 1/4)	4931 (194 1/4)	4930 (194 1/8)	4928 (194 1/8)	4926 (194)	4925 (194)	4923 (193 7/8)	4922 (193 7/8)	4954 (195 1/8)	4976 (196)	4997 (196 3/4)

Others

# List of the Projection Distance by Angle of Optical Axis

## When using the 160 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	5113 (201 3/8)	5142 (202 1/2)	5158 (203 1/8)	5173 (203 3/4)	5187 (204 1/4)	5199 (204 3/4)	5209 (205 1/8)	5218 (205 1/2)	5225 (205 3/4)	5230 (206)	5234 (206 1/8)	5236 (206 1/4)	5237 (206 1/4)	5272 (207 5/8)	5295 (208 1/2)	5315 (209 3/8)
<b>[B]</b> Ylens	1223 (48 5/8)	1093 (43 1/8)	1003 (39 1/2)	912 (36)	822 (32 3/8)	731 (28 7/8)	640 (25 1/4)	548 (21 5/8)	457 (18)	366 (14 1/2)	274 (10 7/8)	183 (7 1/4)	91 (3 5/8)	0 (0)	-92 (-3 3/4)	-186 (-7 3/8)
<b>[D]</b> TD	5259 (207 1/8)	5257 (207)	5255 (207)	5253 (206 7/8)	5251 (206 3/4)	5250 (206 3/4)	5248 (206 5/8)	5246 (206 5/8)	5245 (206 1/2)	5243 (206 1/2)	5241 (206 3/8)	5240 (206 3/8)	5238 (206 1/4)	5272 (207 5/8)	5295 (208 1/2)	5318 (209 1/2)

## When using the 170 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	5422 (213 1/2)	5453 (214 3/4)	5470 (215 3/8)	5486 (216)	5501 (216 5/8)	5513 (217 1/8)	5524 (217 1/2)	5533 (217 7/8)	5541 (218 1/4)	5547 (218 3/8)	5551 (218 5/8)	5553 (218 3/4)	5554 (218 3/4)	5591 (220 1/4)	5615 (221 1/8)	5637 (222)
<b>[B]</b> Ylens	1307 (51 1/2)	1159 (45 3/4)	1063 (41 7/8)	967 (38 1/8)	871 (34 3/8)	775 (30 3/8)	678 (26 3/4)	582 (23)	485 (19 1/8)	388 (15 3/8)	291 (11 1/2)	194 (7 3/4)	97 (3 7/8)	0 (0)	-98 (-3 7/8)	-197 (-7 3/4)
<b>[D]</b> TD	5578 (219 5/8)	5575 (219 1/2)	5573 (219 1/2)	5571 (219 3/8)	5569 (219 3/8)	5567 (219 1/4)	5566 (219 1/8)	5564 (219 1/8)	5562 (219)	5560 (219)	5558 (218 7/8)	5557 (218 7/8)	5555 (218 3/4)	5591 (220 1/4)	5616 (221 1/8)	5640 (222 1/8)

## When using the 180 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	5733 (225 3/4)	5765 (227)	5784 (227 3/4)	5801 (228 3/8)	5816 (229)	5829 (229 1/2)	5841 (230)	5850 (230 3/8)	5858 (230 3/4)	5864 (231)	5869 (231 1/8)	5871 (231 1/4)	5872 (231 1/4)	5912 (232 3/4)	5937 (233 3/4)	5960 (234 3/4)
<b>[B]</b> Ylens	1382 (54 1/2)	1225 (48 3/4)	1124 (44 3/8)	1023 (40 3/8)	921 (36 3/8)	819 (32 3/8)	717 (28 1/4)	615 (24 1/4)	513 (20 1/4)	410 (16 1/4)	308 (12 1/8)	205 (8 1/8)	103 (4 1/8)	0 (0)	-104 (-4 1/8)	-208 (-8 1/4)
<b>[D]</b> TD	5897 (232 1/4)	5894 (232 1/8)	5892 (232)	5890 (232)	5888 (231 7/8)	5886 (231 3/4)	5884 (231 3/4)	5883 (231 5/8)	5881 (231 5/8)	5879 (231 1/2)	5877 (231 3/8)	5875 (231 3/8)	5873 (231 1/4)	5912 (232 3/4)	5938 (233 7/8)	5963 (234 7/8)

## When using the 190 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	6042 (238)	6076 (239 1/4)	6096 (240)	6113 (240 3/4)	6129 (241 3/8)	6143 (241 7/8)	6155 (242 3/8)	6166 (242 3/4)	6174 (243 1/8)	6181 (243 3/8)	6185 (243 5/8)	6188 (243 5/8)	6189 (243 3/4)	6230 (245 3/8)	6257 (246 3/8)	6281 (247 3/8)
<b>[B]</b> Ylens	1456 (57 3/8)	1292 (50 7/8)	1185 (46 3/4)	1078 (42 1/2)	971 (38 1/4)	863 (34)	756 (29 7/8)	648 (25 5/8)	540 (21 3/8)	432 (17 1/8)	324 (12 7/8)	216 (8 5/8)	108 (4 3/8)	0 (0)	-109 (-4 3/8)	-219 (-8 3/4)
<b>[D]</b> TD	6215 (244 3/4)	6212 (244 5/8)	6210 (244 1/2)	6208 (244 1/2)	6206 (244 3/8)	6204 (244 1/4)	6202 (244 1/4)	6200 (244 1/8)	6198 (244)	6196 (244)	6194 (243 7/8)	6192 (243 7/8)	6190 (243 3/4)	6230 (245 3/8)	6258 (246 3/8)	6285 (247 1/2)

## When using the 200 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>[E]</b> Xlens	6350 (250)	6386 (251 1/2)	6406 (252 1/4)	6425 (253)	6442 (253 5/8)	6456 (254 1/4)	6469 (254 3/4)	6480 (255 1/8)	6489 (255 1/2)	6496 (255 3/4)	6500 (256)	6503 (256 1/8)	6504 (256 1/8)	6548 (257 7/8)	6575 (258 7/8)	6601 (260)
<b>[B]</b> Ylens	1531 (60 3/8)	1357 (53 1/2)	1245 (49 1/8)	1133 (44 5/8)	1020 (40 1/4)	907 (35 3/4)	794 (31 3/8)	681 (26 7/8)	568 (22 3/8)	454 (18)	341 (13 1/2)	227 (9)	114 (4 1/2)	0 (0)	-115 (-4 5/8)	-231 (-9 1/8)
<b>[D]</b> TD	6532 (257 1/4)	6528 (257 1/8)	6526 (257)	6524 (256 7/8)	6522 (256 7/8)	6520 (258 3/4)	6518 (256 5/8)	6516 (256 5/8)	6513 (256 1/2)	6511 (256 3/8)	6509 (256 3/8)	6507 (256 1/4)	6505 (256 1/8)	6548 (257 7/8)	6576 (259)	6605 (260 1/8)



## When using the 210 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	6658 (262 1/4)	6696 (263 5/8)	6717 (264 1/2)	6737 (265 1/4)	6754 (266)	6770 (266+ 5/8)	6783 (267 1/8)	6794 (267 1/2)	6804 (267 7/8)	6811 (268 1/4)	6816 (268 3/8)	6819 (268 1/2)	6820 (268 1/2)	6865 (270 3/8)	6894 (271 1/2)	6921 (272 1/2)
<b>B</b> Ylens	1606 (63 1/4)	1423 (56 1/8)	1306 (51 1/2)	1188 (46 7/8)	1070 (42 1/8)	951 (37 1/2)	833 (32 7/8)	714 (28 1/8)	595 (23 1/2)	476 (18 3/4)	357 (14 1/8)	238 (9 3/8)	119 (4 3/4)	0 (0)	-120 (-4 3/4)	-242 (-9 5/8)
<b>D</b> TD	6849 (269 3/4)	6845 (269 1/2)	6843 (269 1/2)	6841 (269 3/8)	6838 (269 1/4)	6836 (269 1/4)	6834 (269 1/8)	6832 (269)	6830 (269)	6827 (268 7/8)	6825 (268 3/4)	6823 (268 5/8)	6821 (268 5/8)	6865 (270 3/8)	6896 (271 1/2)	6926 (272 3/4)

## When using the 220 inch screen

Unit: mm (inches)

a TA (deg)	13.5°	12°	11°	10°	9°	8°	7°	6°	5°	4°	3°	2°	1°	0°	-1°	-2°
<b>E</b> Xlens	6966 (274 1/4)	7005 (275 7/8)	7028 (276 3/4)	7048 (277 1/2)	7067 (278 1/4)	7083 (278 7/8)	7097 (279 1/2)	7108 (279 7/8)	7118 (280 1/4)	7126 (280 5/8)	7131 (280 3/4)	7134 (280 7/8)	7135 (281)	7183 (282 7/8)	7213 (284)	7241 (285 1/8)
<b>B</b> Ylens	1681 (56 1/4)	1489 (58 5/8)	1366 (53 7/8)	1243 (49)	1119 (44 1/8)	995 (39 1/4)	871 (34 3/8)	747 (29 1/2)	623 (24 5/8)	498 (19 5/8)	374 (14 3/4)	249 (9 7/8)	125 (5)	0 (0)	-126 (-5)	-253 (-10)
<b>D</b> TD	7116 (282 1/8)	7162 (282)	7159 (281 7/8)	7157 (281 7/8)	7155 (281 3/4)	7152 (281 5/8)	7150 (281 1/2)	7148 (281 1/2)	7145 (281 3/8)	7143 (281 1/4)	7141 (281 1/4)	7138 (281 1/8)	7136 (281)	7183 (282 7/8)	7214 (284 1/8)	7246 (285 3/8)

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