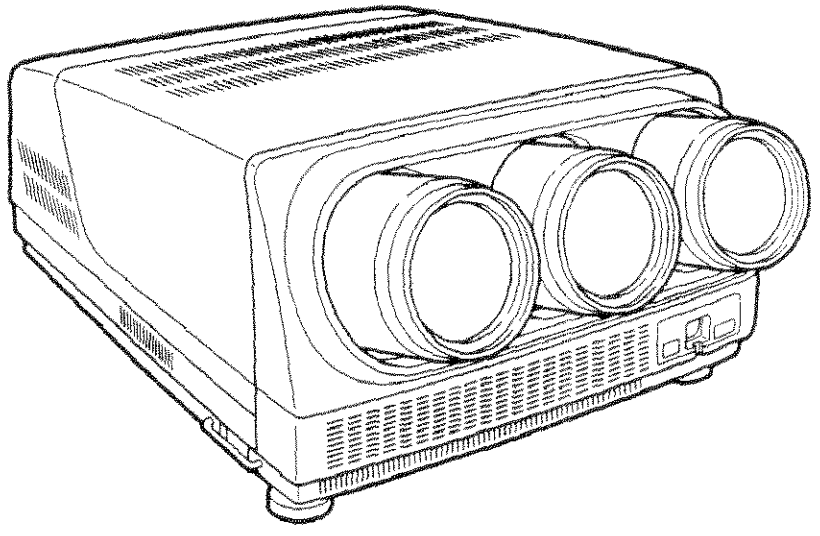
MITSUBISHI

MITSUBISHI GRAPHICS PROJECTOR VS-1281 SET-UP & INSTALLATION MANUAL



For installation and wiring works of Mitsubishi Graphics Projector VS-1281, ask your local Mitsubishi Service Center or qualified electrician.

MITSUBISHI ELECTRICS AMERICA, INC
5665 PLAZA DRIVE, CYPRESS, CALIFORNIA 90630

871D208A40

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CHAPTER II (continued)

APPENDIX & ADDENDUM'S

CHAPTER I

Product Description

Product Features

(1) Auto-scanning video projector for multimedia use.

Compatible to almost all video signals used at the present. Automatic detection of horizontal scanning frequencies of 15 to 103 kHz, and vertical scanning frequency of 40 to 150 Hz. Applicable to international color systems NTSC, PAL, and SECAM.

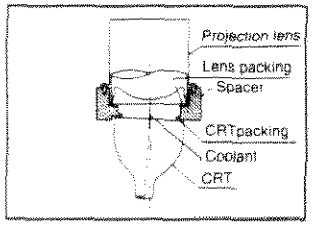
(2) High luminance (optical output 900 peak lumen), high resolution (1600 dots x 1200 lines).

By the use of 7-inch electromagnetic focus impregnated cathode ray tube, the focus characteristic of the beam spot is enhanced even at high luminance, and pictures of high luminance and high resolution are achieved.
To achieve this resolution, large aperture lens (F1.1), a high definition picture is reproduced sharply in every corner of the screen, and a sharper picture is obtained by the use of digital focus circuit capable of adjusting nine focal points independently on the screen.

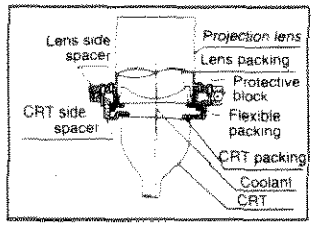
(3) Compatible to a wide range of screen sizes from 70 to 300 inches (70 to 200 inches for rear projection).

A new focus optical coupling (FOC) mechanism is developed for keeping constant coupling always between the CRT and lens. As a result, it is applicable to a wide range of screen sizes while maintaining a high contrast performance.

Conventional optical coupling system



FOC system



★Optical coupling
The CRT and lens are integrated optically (improves contrast), by injecting a liquid having the same optical refractive index as the glass between the CRT and lens. In the past, it was difficult to vary the inch size in the optical coupling mechanism.

(4) True digital convergence circuit

A true digital convergence circuit by a newly developed gate array is incorporated. The curve interpolation system is employed, that is, the correction data is automatically calculated in each line, and the plane distortion is corrected by a smooth curve. As compared with the linear interpolation system, density modulation is notably decreased, and the precision of adjustment is enhanced. Further providing an easy adjusting function, each color can be adjusted by correction of only 25 points, and up to 200,000 correction points can be calculated automatically, thus shortening the adjusting time.

(5) Color reproducibility is dramatically improved by dichroic coating and new color lens.

For green CRT lens, dichroic coating and new color lenses are used. For blue CRT lens, dichroic coating is also applied, and the color reproducibility is substantially enhanced.

(6) MSB (Mitsubishi Super Beam forming) system is employed in the deflection yoke, and the peripheral resolution is also improved.

Product Features

(7) The aspect ratio is selectable between 4:3 and 16:9 to get along with the age of new wide screen.

(8) Having RS-232C, RS-422A and RS-485 terminals, various controls are possible from the computer.

(9) Built-in test patterns.

Product Specification

(1) Electric Specification

Model name		VS-1281
Projection method		Front projection (floor mount), Front projection (ceiling mount), Rear projection
Projection size		Front projection: 70 to 300 inches, Rear projection: 70 to 200 inches
Projection tube		7-inch electromagnetic focus impregnated cathode projection tube
Optical system		Flexible optical coupling
Lens		F1.1 eight-piece hybrid lens (green: new color lens), multi-coating (green, blue: dichroic coating)
Optical output		900 peak lumen
Resolution	Horizontal	1600 dots
	Vertical	1200 lines
Scanning frequency	Horizontal	15 k to 103 kHz
	Vertical	40 to 150 Hz
Input		RGB/ input (BNC terminal), 2 systems R/ 0.7 Vp-p 72 dB 75 ohms terminated (★) ★G/ 0.7 Vp-p 72 dB 75 ohms terminated (★) B/ 0.7 Vp-p 72 dB 75 ohms terminated (★) Ho/Cs: Compound synchronous input 0.3 to 4 Vp-p positive, negative polarity Horizontal synchronous input 0.3 to 4 Vp-p positive, negative polarity Vertical synchronous input 0.3 to 4 Vp-p positive, negative polarity (★) One system only terminal resistance on/off enabled ★Green ON sync input enabled Composite input (BNC terminal), one system Y/C input
Power source		AC 120 V (50/60 Hz)
Current consumption		8 A
Power cord		4 m plug-in type
Overall dimensions		25.07"×15"×34.4" (W×H×D inches)
Weight		Approx. 167.2 lbs.
Package dimensions		31.6"×18.1"×39.06" (W×H×D inches)
Package weight		Approx. 215 lbs.

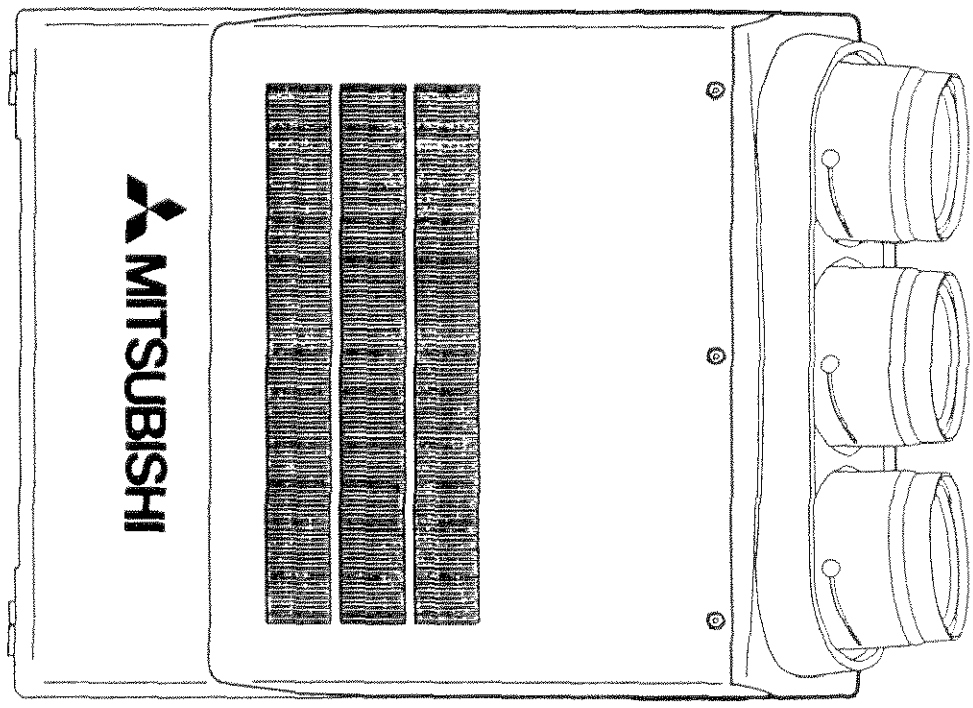
Product Specification

(1) Electric Specification (continued)

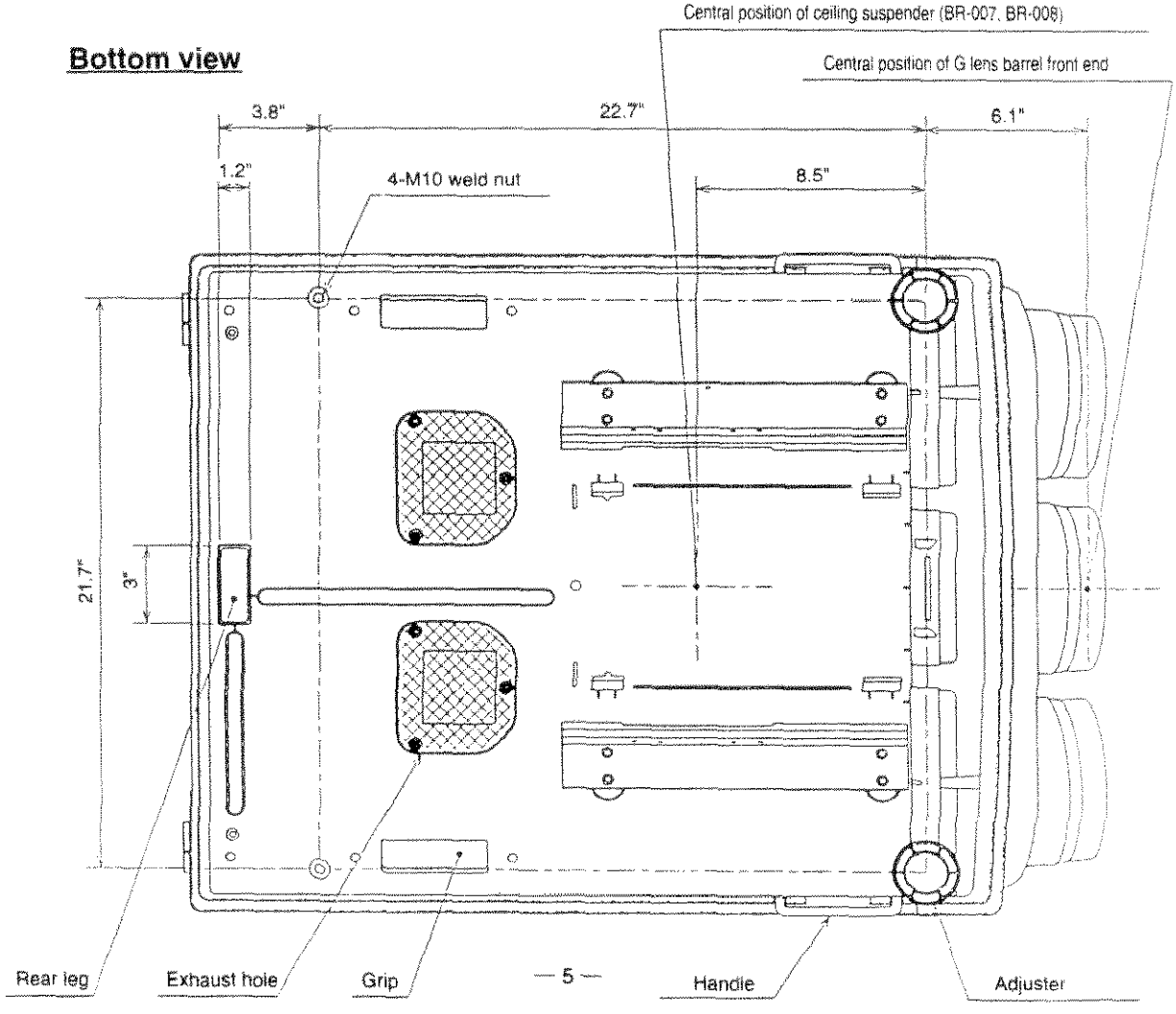
Environmental conditions	Operating temperature –20~95 degrees F Operating humidity –20~80%
	Storing temperature –5~130 degrees F Storing humidity –10~90% Altitude 6,561,68 feet or less
Installation conditions	Don't use in the following conditions: –Places exposed to direct sunlight, alpha-ray, ultraviolet ray. –Places exposed to dust, rainwater, salt water, etc. –Corrosive atmosphere with H_2O, SO_2, etc. –Use in inverted state, laid position, slope of 5 or less, vibration.
Accessories	Wireless and wired remote control unit, power cord (12.8 ft), connection code for wired remote control unit, swing and tilt angle adjuster for rear projection (3 types x 2 pcs), battery (UM3 x 4 cells), operating instructions, warranty card Set-up and Instllation Manual (this booklet)

(2) Dimensions and Cabinet Specifications

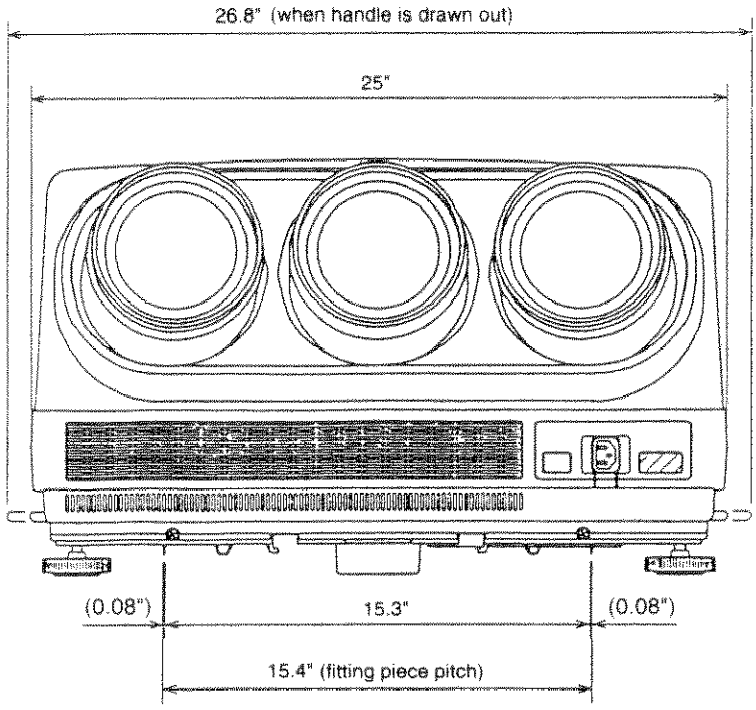
Top view



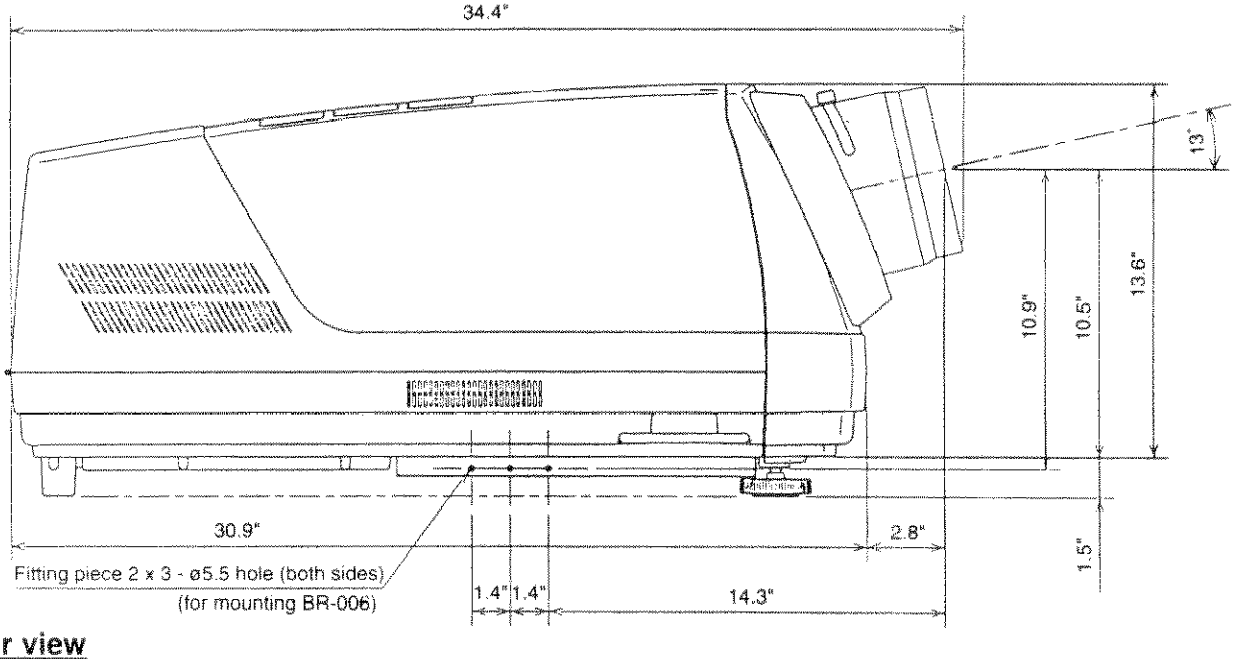
Bottom view



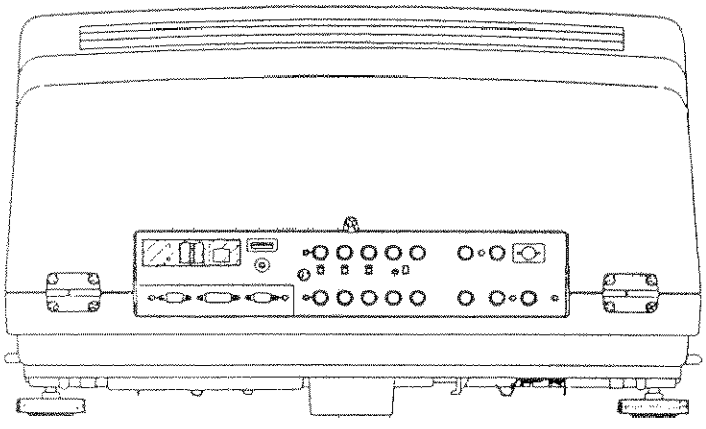
Front view



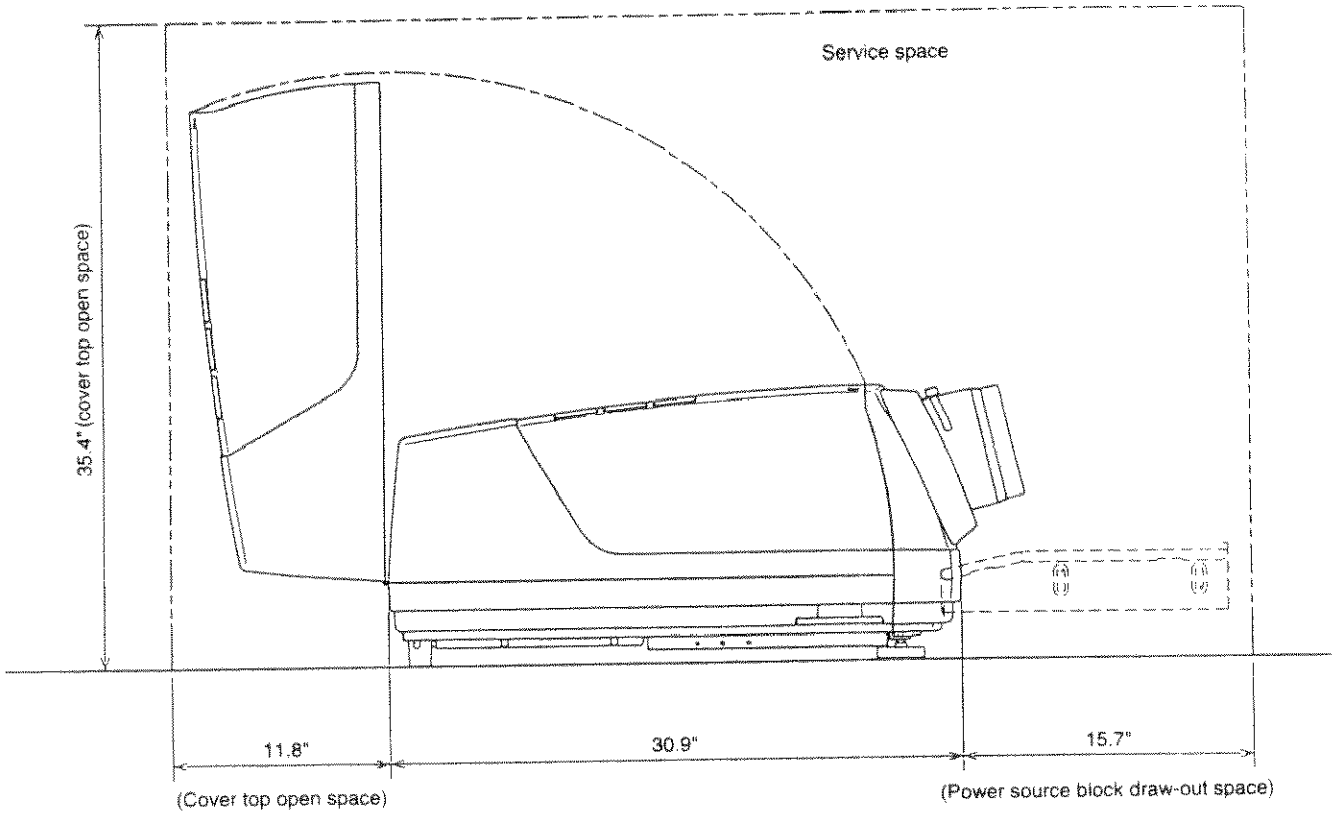
Side view



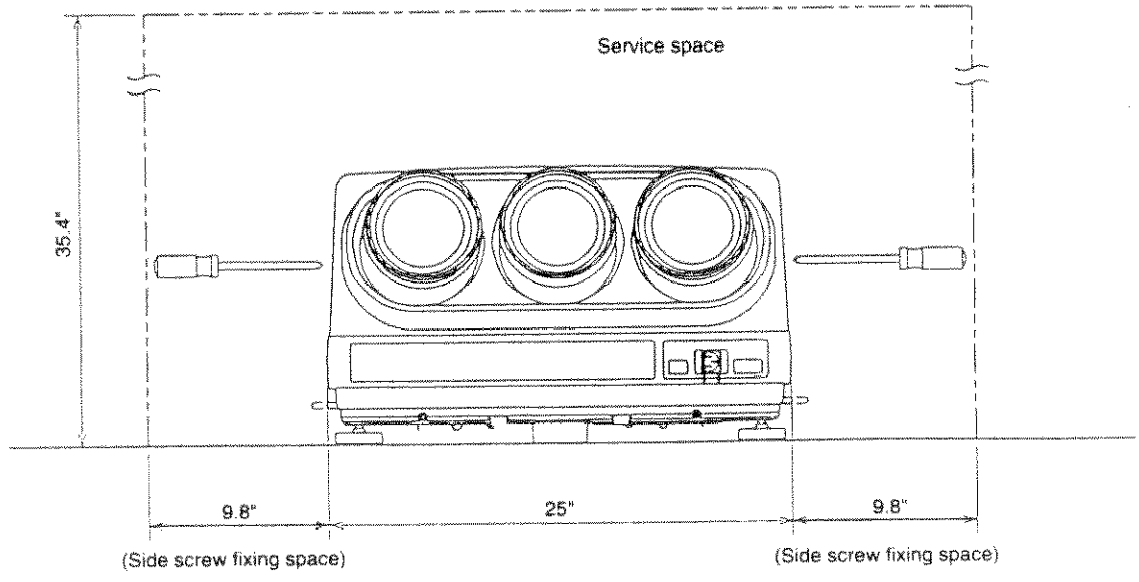
Rear view



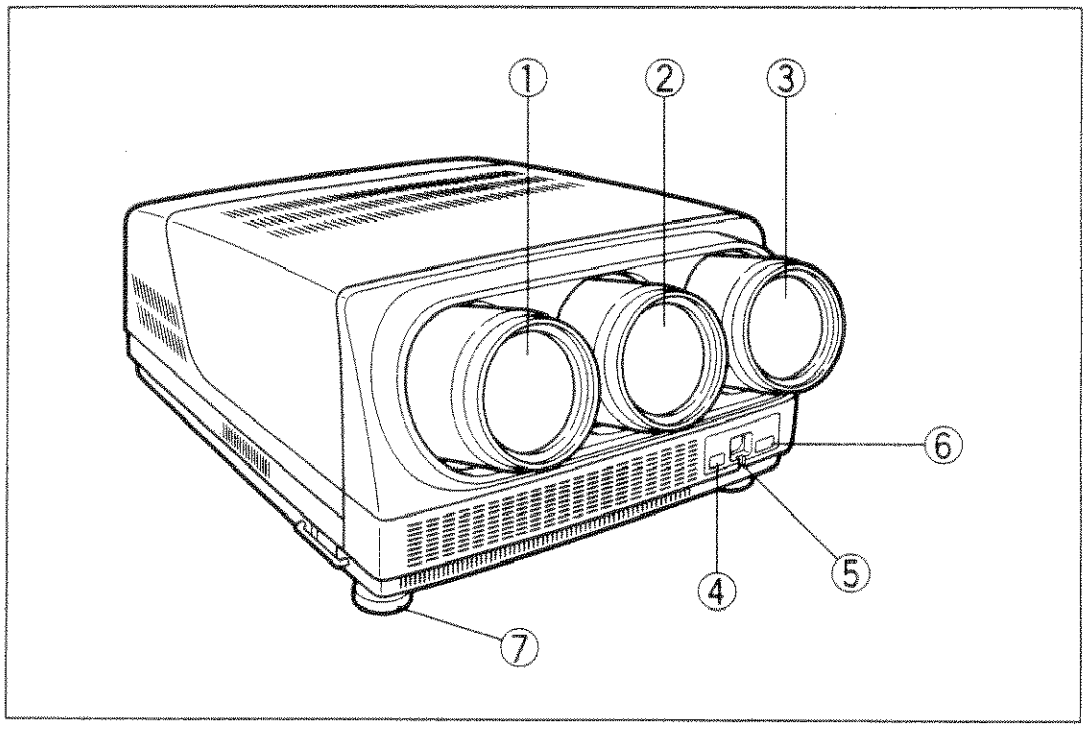
Side view



Front view

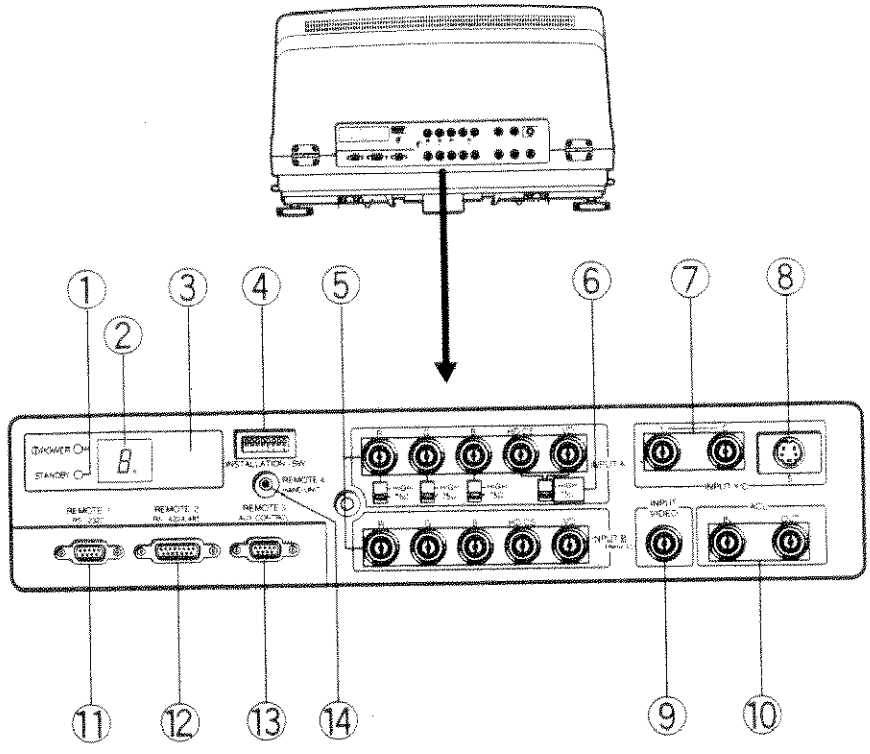


Overview of Graphics Projector



1. Blue lens
2. Green lens
3. Red lens
4. Main power switch
5. AC socket
6. Remote control sensor
7. Foot adjustment

Overview of the Back Panel



1. Stand-by, power indicator
2. 7 segment LED display
3. Rear remote control sensor (for wireless control system)
4. Installation switch
5. Input A, B terminals
6. Input A 75 ohm high impedance switches
7. Input Y/C terminals
8. S input terminal (mini DIN 4-pin)
9. Input VIDEO terminal (BNC)
10. ACL interlock terminals (BNC)
11. Remote 1 terminal (9-pin)
12. Remote 2 terminal (15-pin)
13. Remote 3 terminal (9-pin)
14. Remote 4 terminal (3.5 mini jack)

Remote Control General Instructions

When using the remote control to operate the Projector, follow these procedures:

1. The operating area of the remote control is linked to distance. When close to the projector, the effective transmit area is wider.
2. Point the top of the remote control toward the equipment.
3. Press the appropriate button or to select desired input signal.
4. If anything interrupts the remote control and the remote control sensor, the remote control may not work well.
5. Don't leave the remote control cable connected to either the projector or the remote control. If the cable is connected to the remote control, infra red signal is not emmited and when connected to the projector, the remote control sensor is disabled.

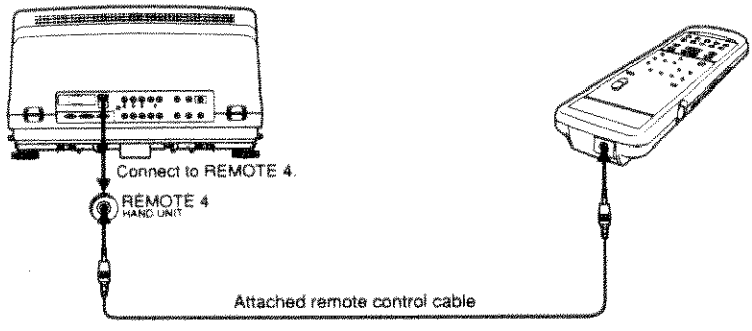
Guidelines for using batteries

1. Do not use a new battery with an old battery.
2. Do not heat, take apart, or throw batteries in fire.

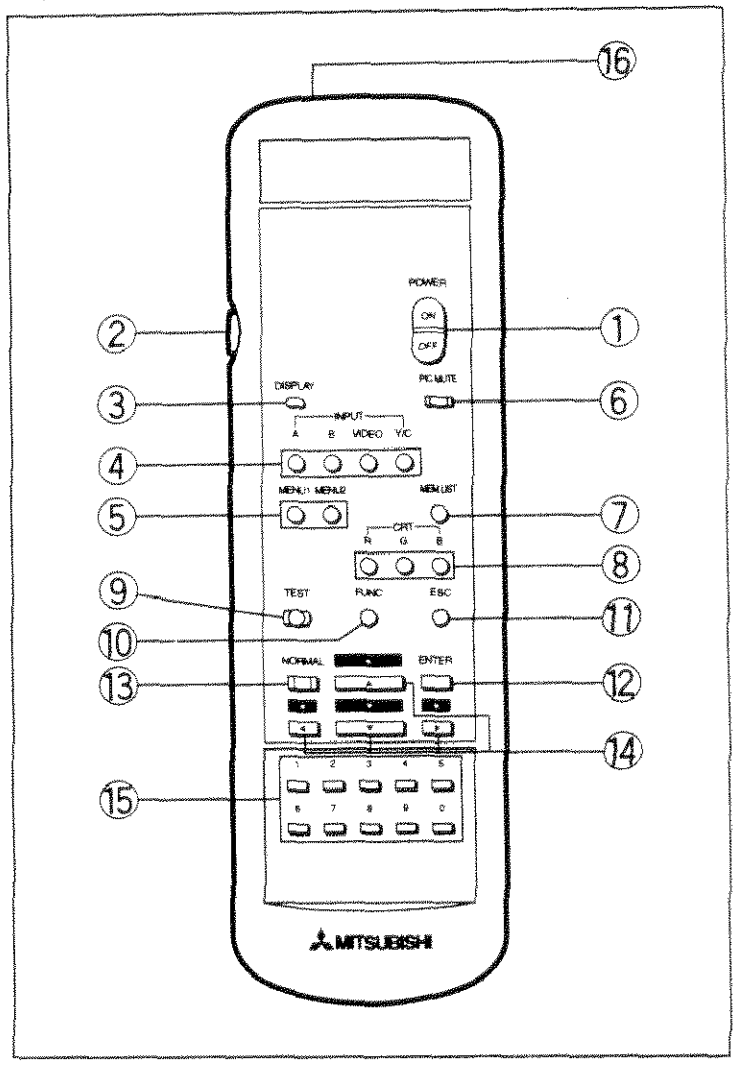
Using the wired remote control

If two or more projectors are used in close proximity, independent control of each Projector can be achieved by connecting a remote control unit to each Projector via the provided remote control cable. If the use of wired remote is not needed, wireless remote control can be used.

Connecting the remote control to the Projector



Remote Control Buttons and Functions



Overview of the Remote Control

Before using the remote control
Turn the Projector's main power switch to"ON";the stand-by indicator on the rear lights in red.

1. Power Button (POWER)
Press "ON" to switch the Projector from "stand-by" to "power-on." Press "OFF" to switch back to "stand-by". When the Projector is "ON", the green power indicator will be illuminated on the rear panel.

2. Illumination Button
Use to light up the remote controls. If you do not operate the remote control within about 30 seconds or push the button again, the remote control's illumination will turn off.

3. Display Button (DISPLAY)
Use to display the selected input source (INPUT-A,B,VIDEO,Y/C) and the memory's name on the screen. The on-screen display disappears after 5 seconds.

4. Input Buttons (INPUT)
Use to select the input source you wish to watch: INPUT-A/B/VIDEO/Y/C.

5. Menu Buttons (MENU1,MENU2)

Use to display the on-screen menu system: MENU 1, MENU 2.

6. Picture Mute Button (PIC MUTE)

Use to erase the picture temporarily (picture mute). With the picture mute "ON," the green power indicator on the rear of the set will flash.

7. Memory List Button (MEM LIST)

If the Projector has been programed to display a number of memory data of near or same frequency, the last used memory data is selected by the projector the next time such a signal is fed to the projector. If one of the other memory data is required, pressing this button will display all such names of the memory data.

8. CRT (R,G,B) Buttons

Press once to remove a given color from each picture tube. Press again to get back the color. Also use to select the desired color when you adjust focus or convergence in MENU 2.

9. Test Button (TEST)

Use to switch between the test signals used for picture adjustment and the input source.

10. Function Button (FUNC)

Use to change the video function in MENU 1, or to move the cursor or lock/unlock the memory data in "INPUT SETTING" of MENU 2.

11. Escape Button (ESC)

Press to return to the previous screen in an on-screen menu mode.

12. Enter Button (ENTER)

Used to accept selection of a highlighted menu item.

13. Normal Button (NORMAL)

Use this button to reset all of the displayed items to the standard levels in MENU 1 mode (picture adjustment) and MENU 2 mode.

14. △▽◁▷ Buttons

Use to select a menu item or adjust setting in an on-screen menu mode.

15. Number Buttons (0-9)

To be used for future expansion of the system.

16. Wired Remote Control Terminal

Use to connect the provided remote control cable for wired control system.
"Connecting the remote control to the Projector." When you use several projectors in a multi-screen system, you can operate each projector separately if you use the wired remote control.

Basic Connections

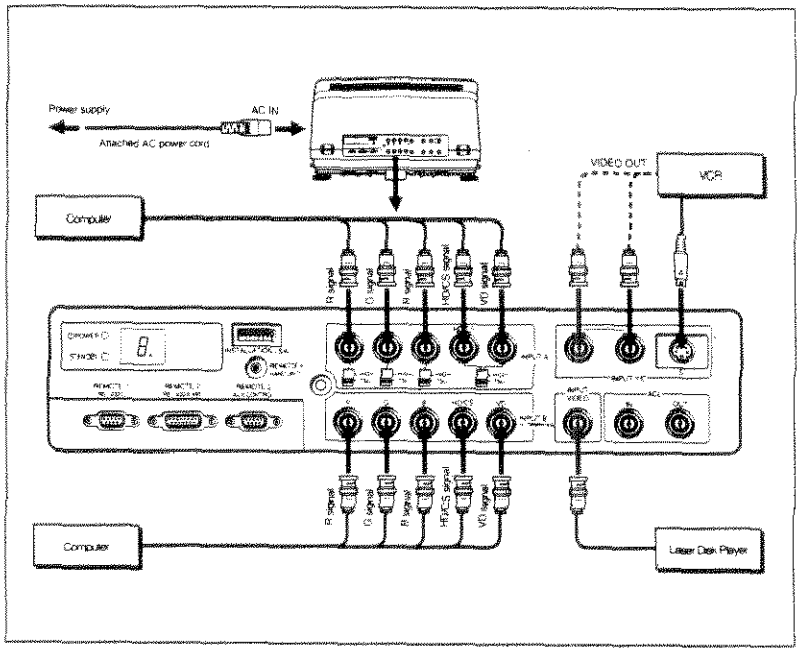
This section explains:

- **Graphics Projector + equipment, and**
- **Graphics Projector + equipment + switcher**

>Important: Make sure that your equipment *is turned off before connection.*
Choose the cable suitable for connection depending on the type of terminals.
For details of connections, refer to the operating manual of each component.

Graphics Projector+equipment

You can connect up to 4 sources to your Projector without using a switcher.



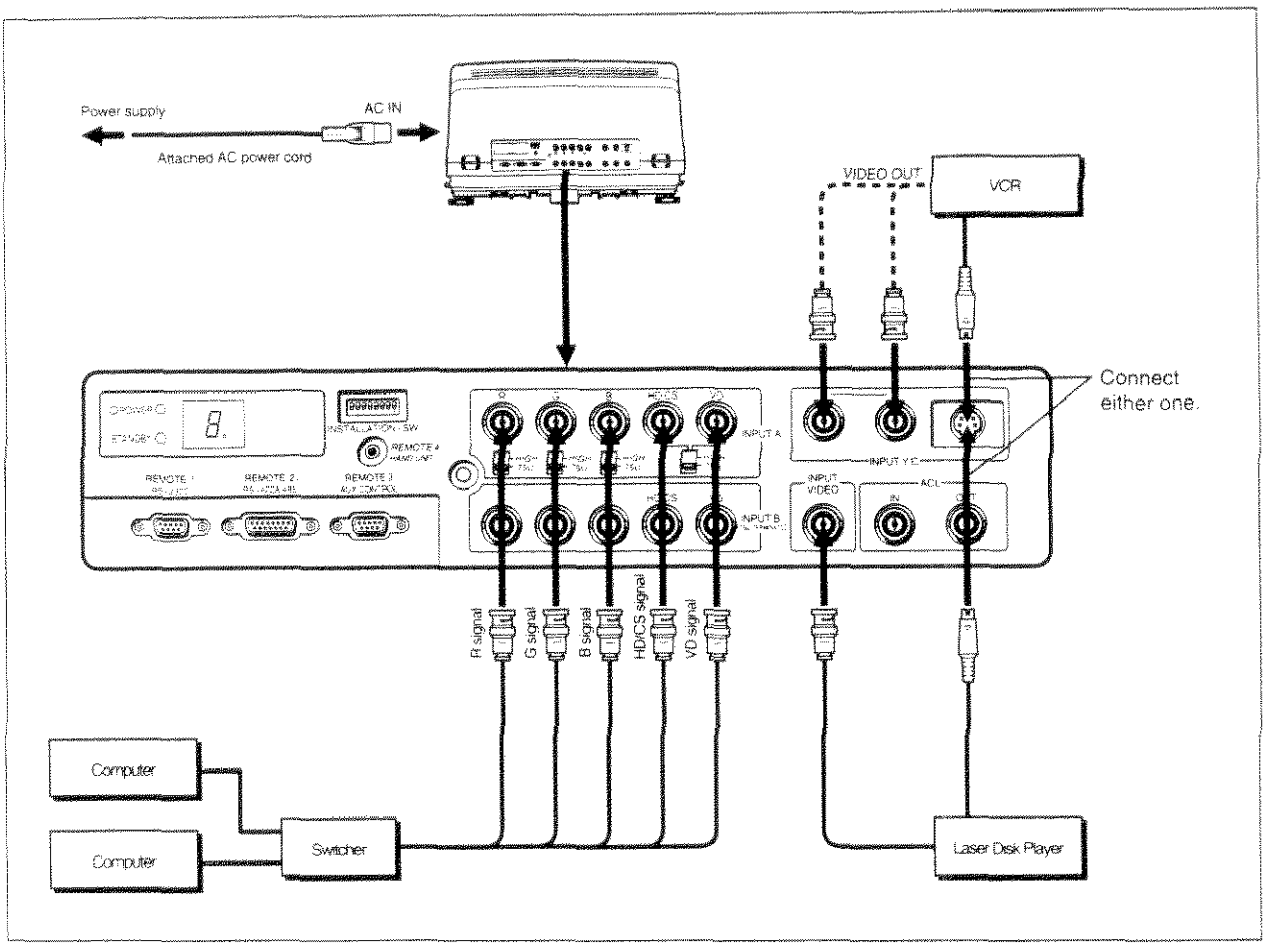
>Important: If you connect the cables to both S terminal of Y/C terminal and BNC terminal, the signal from S terminal has priority over the one from BNC terminal.

How to connect the BNC connector:

1. Put the BNC connector into the terminal.
2. Turn the BNC connector clockwise.

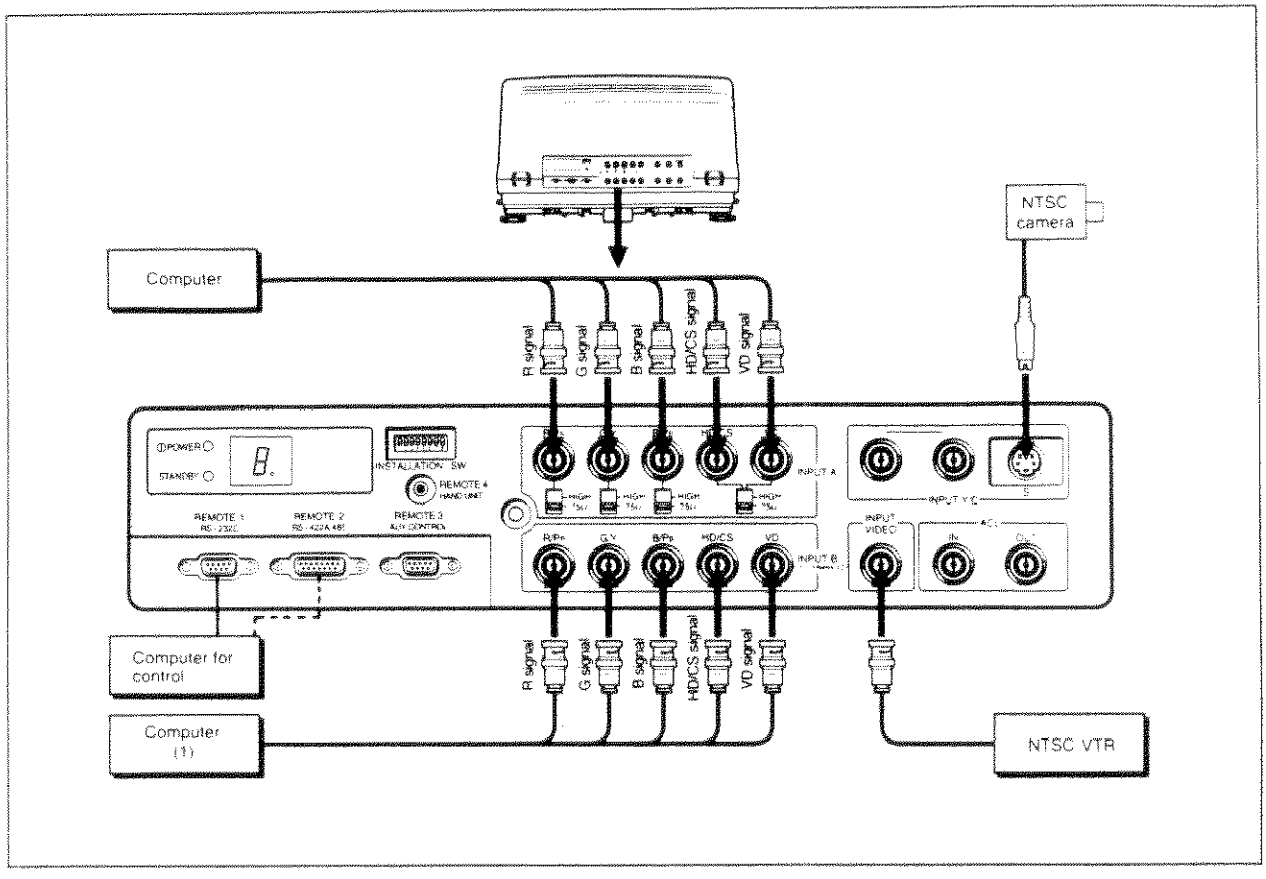
Graphics Projector + Equipment + Switcher

Should it be necessary to connect more than 4 signal sources to your Projector, a switcher is used as shown below. By using a switcher, your Projector can memorize settings required to display up to 30 signals.



System Set-up Example

When controlling the main body by computer

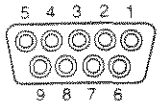


★See attached sheets for program examples and commands of computer for control.

RS-232C, RS-422A and RS-485

Pin assignment & Configuration

REMOTE 1:



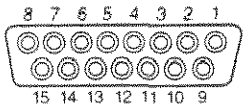
RS-232C [D-SUB-9PIN]

You can control the Projector from your personal computer by connecting an RS-232C cable to the Projector.
This Projector's REMOTE 1 terminal is configured as a DTE (Data Terminal Equipment)device.
Use a cross cable to directly connect your personal computer to the Projector.
This Projector's RS-232C connector conforms to the "Pin Assignment" of an IBM compatible PC.

★Before using this terminal, please consult your Mitsubishi dealer or Mitsubishi Authorized Warranty Service center.

PIN NO.	CODE	NAME	I/O	REMARKS
1	CD	Carrier Detect	Input	(N.C.) Not connected
2	RD	Receive Data	Input	
3	SD	Send Data	Output	
4	ER	Equipment Ready	Output	Internal connecting to PIN 6
5	SG	Signal Ground		
6	DR	Data Set Ready	Input	Internal connecting to PIN 4
7	RS	Request to Send	Output	Internal connecting to PIN 8
8	CS	Clear to Send	Input	Internal connecting to PIN 7
9	CI	Ring Indicator	Input	(N.C.) Not connected

REMOTE 2:



RS-422A/485 [D-SUB-15PIN]

- Communication by RS-422A format
- Communication by RS-485 format

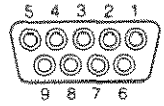
★Before using this terminal, please consult your Mitsubishi dealer or Mitsubishi Authorized Warranty Service center.

NO.	SIGNAL	I/O	LOGIC	422A	485	I/F-SW
1	TXA/TRA	OUTPUT /INPUT OUTPUT	POS.	○	○	○
2	RXA	INPUT	POS.	○		○
3	GND			○	○	○
4	VD	OUTPUT				
5	IFCLKB	OUTPUT	NEG.			○
6	IFDOB	OUTPUT	NEG.			○
7	IFCSB	OUTPUT	NEG.			○
8	IFDIB	INPUT	NEG.			○
9	TXB/TRB	OUTPUT /INPUT OUTPUT	NEG.	○	○	○
10	RXB	INPUT	NEG.	○		○
11	RC	INPUT				○
12	IFCLKA	OUTPUT	POS.			○
13	IFDOA	OUTPUT	POS.			○
14	IFCSA	OUTPUT	POS.			○
15	IFDIA	INPUT	POS.			○

Note: ★PIN No. 1.9
For RS-422A transmission, TXA and TXB (transmit A and B) output.
For RS-485 Transmission, TRA and TRB (transmit-receive A and B) input-output.

REMOTE 3: AUX CONTROL [D-SUB-9-PIN]

Available when using the remote control for basic operation of the sequencer (contact relay).



★Before using this terminal, please consult your Mitsubishi dealer or Mitsubishi Authorized Warranty Service center.

PIN NO.	NAME (abbreviated)	FUNCTION	SEQUENCER	SC
1	GND	Main unit GND	○	○(PIN 1)
2	$\overline{\text{WIRED}}$	Forced wired control ON/OFF	○	—
3	$\overline{\text{W.-POWER}}$	Power ON/OFF control in forced wired ON	○	—
4	$\overline{\text{W.-INPUT1}}$	Forced wired input switch (Refer to the separate table)	○	—
5	$\overline{\text{W.-INPUT2}}$		○	—
6	$\overline{\text{W.-PIC MUTE}}$	Picture mute ON/OFF in forced wired ON	○	—
7	SC power control output	SC power control output	—	○(PIN 7)
8	Remote control signal output	Remote control signal output	—	○(PIN 9)
9	Remote control signal input	Remote control signal input	—	○(PIN 2)

Note: Disconnect (open) the terminals which are marked with a hyphen(-).

Control via the sequencer:

1. When WIRED connects to GND, wired control of the Projector will be enabled. (You can also set the SWITCH 2 to ON with the service DIP-SW of the Projector).
   In this situation, you can control the functions (a～c) below only via the sequencer, not with the remote control or personal computer.
   a. Power on/off
   b. Input Swith
   c. Picture Mute

Functions other than a～c are still operable with the remote control or personal computer.

CONTROL SIGNAL				OPERATING CONDITION		
$\overline{\text{W-POWER}}$ (PIN13)	$\overline{\text{W-INPUT1}}$ (PIN14)	$\overline{\text{W-INPUT2}}$ (PIN15)	$\overline{\text{W-PIC MUTE}}$ (PIN16)	MAIN SW ON	INPUT	PIC MUTE
OPEN	*	*	*	STAND BY	—	—
GND	OPEN	OPEN	OPEN	POWER ON	INPUT A	OFF
GND	OPEN	GND	OPEN	POWER ON	INPUT B	OFF
GND	GND	OPEN	OPEN	POWER ON	VIDEO	OFF
GND	GND	GND	OPEN	POWER ON	Y/C	OFF
GND	OPEN	OPEN	GND	POWER ON	INPUT A	ON
GND	OPEN	GND	GND	POWER ON	INPUT B	ON
GND	GND	OPEN	GND	POWER ON	VIDEO	ON
GND	GND	GND	GND	POWER ON	Y/C	ON

Note: Items marked(*)can be set to GND or OPEN.
$\overline{\text{W-POWER}}$, $\overline{\text{W-INPUT 1}}$ and $\overline{\text{W-INPUT 2}}$ can also be set with the Installation Switch of the Projector.

REMOTE 4: HAND UNIT[ϕ 3.5 JACK]

REMOTE 4 is the terminal for connecting the remote control and the Projector with a control cable. When the plug is inserted into the terminal of the Projector, this Projector *can not recive the infrared signal from the remote control.* Also, when the plug is inserted into the remote control, the infrared signal is not emitted from the remote control.

Dip Switch Settings

When installing this Projector, it can be initialized to a predefined state by means of the INSTALLATION SWITCH.

- Before using this terminal, please consult your Mitsubishi dealer or Mitsubishi Authorized Warranty Service Center.

SWITCH NO.	NAME (abbreviated)	FUNCTIONS	INITIAL SETTING
1	IN-DISP	Input display ON/OFF	ON
2	WIRED	Forced wired control ON/OFF	OFF
3	W.-POWER	Controling power ON/OFF when the forced wired "ON"	OFF
4	W.-INPUT1	Switching input sources when the forced wired "ON"	OFF
5	W.-INPUT2		OFF
6	(N.C.)	(empty)	OFF
7	GASR	ON/OFF when selecting Grouping ASR mode	OFF
8	485-TERM	Termination resistance ON/OFF when connecting RS-485 Set to "OFF" when connecting RS-422A	OFF

Explanation of SW

SW1: By turning ON, input terminals selected in POWER ON and INPUT SWITCH and the called memory data name are displayed.

SW2: By turning ON, forced wired control turns ON and DIP SW 3～5 (REMOTE 3 PIN No. 3～6) functions operate. Also by turning ON, POWER of the remote controller, the input switch and PICMUTE do not operate.

SW3: By turning ON when SW2 is ON, power turns ON immediately when turning ON MAIN SW.

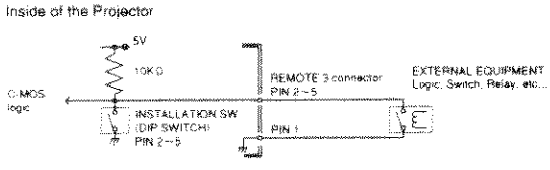
SW4, 5: When SW2 is ON, input can be switched by combining SW 4, 5 ON/OFF.

SW6: Unused SW (Usually OFF)

SW7: Turn ON when grouping ASR mode is used.

SW8: Turn ON only when RS-485 (REMOTE 2) is used and finish end is necessary.

- SWITCH 2～5 are connected in parallel to pins 2～5 of the terminal REMOTE 3. Switch ON is GND, and Switch OFF is OPEN(resistance pull-up 5V). ON is prior to OFF.



Operation state		Installation SW setting		
In MAIN SW ON	INPUT	SW3 (W.-POWER)	SW4 (W.-INPUT1)	SW5 (W.-INPUT2)
STAND-BY	—	OFF	*	*
POWER ON	INPUT A	ON	OFF	OFF
POWER ON	INPUT B	ON	OFF	ON
POWER ON	VIDEO	ON	ON	OFF
POWER ON	Y/C	ON	ON	ON

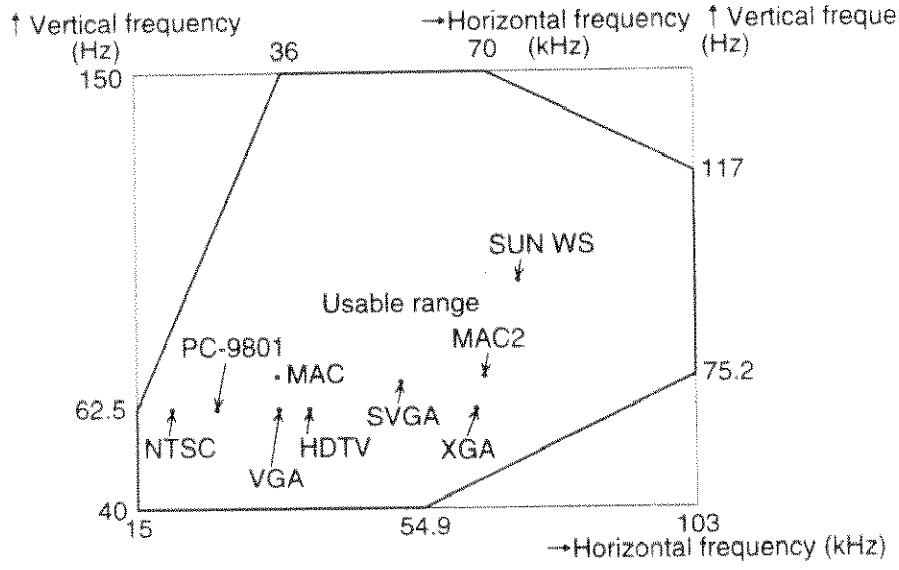
Simple control of the Projector can be achieved by a combination of the installation switch and REMOTE 3 connector settings.

Examples of use:

1. To have the Projector switch on and select input A the moment it is plugged in, set the SWITCHES 2 & 3 to ON, SWITCHES 4 & 5 to OFF. No control via REMOTE 3 connector.
2. In case the Projector is turned on when you insert the AC power cord into the power supply the selection on the input source will be done by the Sequencer, input signal selection controlled via pins 4 & 5 of the REMOTE 3 connector.
3. To have the Projector turned on/off and input source selected by a sequencer connected to REMOTE 3, set the SWITCH 2 to ON, the SWITCHES 3～5 to OFF. The sequencer controls signal selection via pins 3～5 of REMOTE 3.
4. To have the Projector turned on/off with a sequencer and always select input B, set the SWITCHES 2 & 5 to ON, the SWITCHES 3 & 4 to OFF. The sequencer controls the Projector from pin 3 of REMOTE 3.

Frequency Range and Timing Signal

Signals within the following frequency range are usable.



Caution: Signals out of the following frequency range must not be used:

Horizontal frequency 15k to 103 kHz

Vertical frequency 40 to 150 Hz

operate apparently, but should never be used because it may lead to trouble if used out of the usable range.

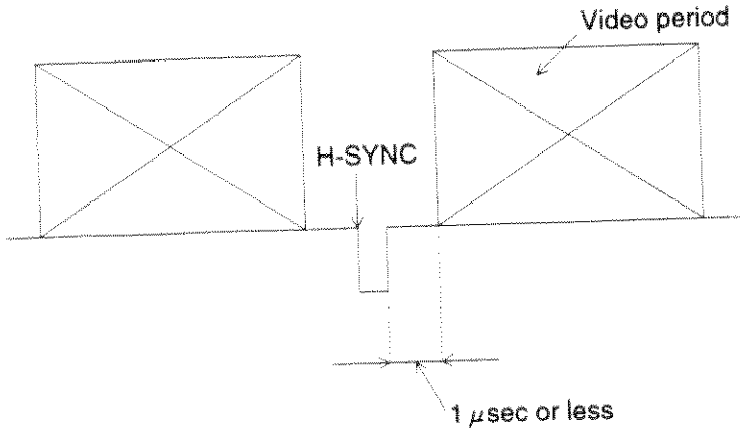
Those of scanning line number 1370 or more are not pictured. (Scanning line number: Horizontal frequency/Vertical frequency)

Timing of Picture and SYNC

If the timing of picture and SYNC is in the following conditions, the picture is not displayed correctly.

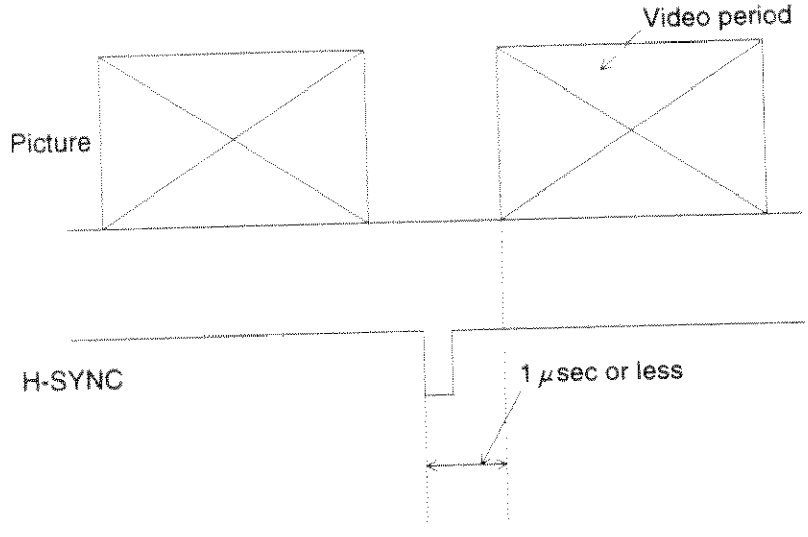
1. Wiring of three-wire method (SYNC on green)

○ Back porch is 1 μ or less.



2. Wiring of four-wire or five-wire method.
(No sync signal in video signal) (Separate SYNC).

○ SYNC width + back porch is 1 μ or less.



Screen Selection

Please purchase a commercial screen. When selecting the screen, consider the following conditions.

1) Use a flat screen.

This video projector is basically designed to be used with a flat screen. Select an easy-to-install flat screen.

2) Beaded screen or white screen

Various screens are available depending on the screen material and surface finish. The beaded screen and white screen are wide in viewing field angle, and can be seen from anywhere. In particular, the beaded screen has a large screen gain, and presents a brighter image surface than the white screen. (The screen gain is 1 in white, and about 2 in beaded).
Besides, there are aluminum foil screens, aluminum fabric screens, etc. Select according to the application.

It must be also noted that the screen with a high gain may be limited in the viewing field range in vertical or horizontal direction, or may cause uneven colors.

3) Difference by mounting method

The screen also varies with the mounting method. Use the most suited type for the application.

(1) Panel type
The screen is free from sagging or creases, and has uniform surface. The panel type screen is recommended.

(2) Power winding type
It can be wound up easily by switch operation when not in use.
It is protected from dust and damage.
(If wound up for along time, a winding mark may be formed. In such a case, hang down for a while).

(3) Spring winding type
An inexpensive folding type screen.

4) Set up a black margin around the screen

To prevent cut-off of peripheral image, the video projector is designed to project the picture about 5% larger than the effective screen size. Conceal the peripheral image by surrounding the screen with a black margin.

5) Others

- Screens cannot be cleaned.
  Generally, "stain" and "flaw" on the screen surface cannot be repaired. In particular, in the case of beaded screen, cleaning is difficult because beads may be snapped off.
  (Dust only lightly with feather duster or soft cloth).
- Install the screen so as to be replaced easily.
  The screen must be replaced if strained or "flawed". Consider the convenience of replacement when installing.

Change of Projection Mode, Screen Size

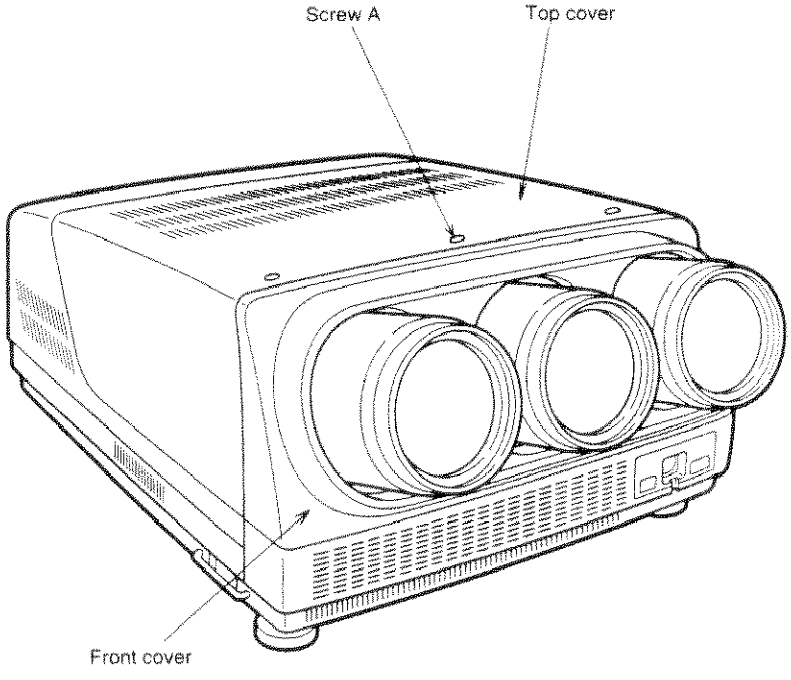
The video projector is adjusted for front projection, floor mount, and 100-inch size at the time of shipping from the factory. For different screen size, ceiling mount, or rear projection, adjust in the following procedure before installation.

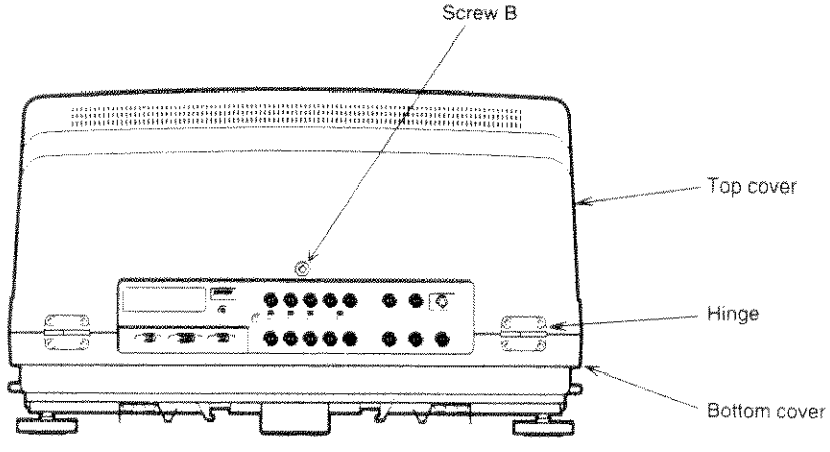
1) Removal of Top Cover and Front Cover

(1) First, remove screw B on rear side of top cover.

(2) Loosen three screws A on top of the top cover by twisting 90 degrees using hexagonal wrench.

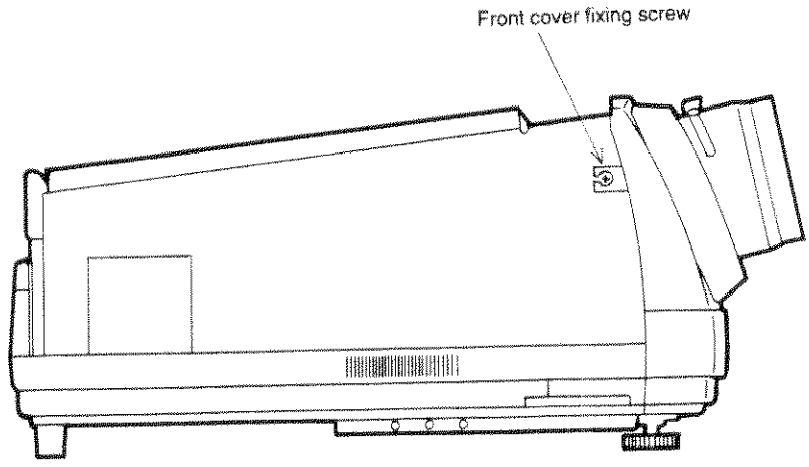
(3) Lift and open top cover.





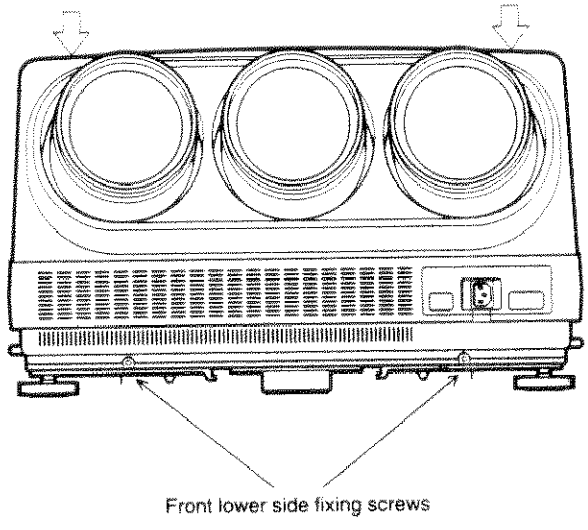
(4) Rotate and open top cover more than 90 degrees about the hinge.
In this state, slide the top cover sideways (1.2" to 1.6") and detach.

(5) Loosen front cover fixing screws (right and left).



(6) Remove two front lower side fixing screws of front cover.

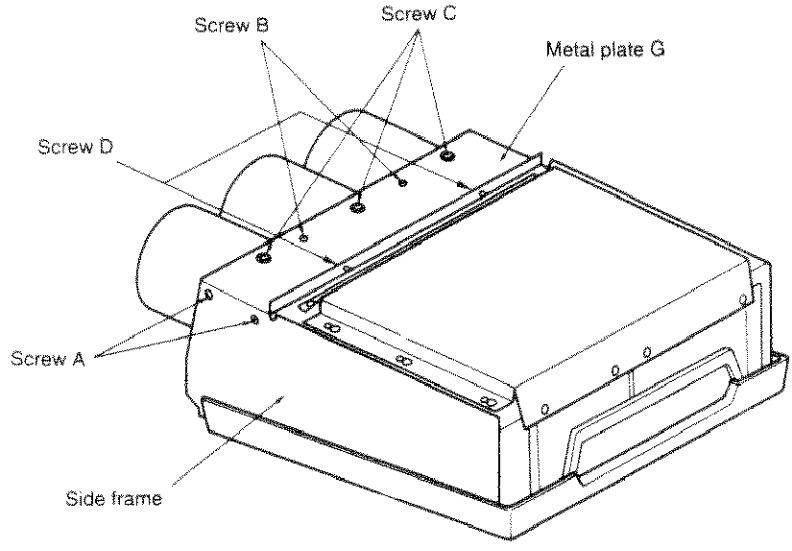
(7) Lift front cover, slide out and remove.



2) Change of Swing & Tilt angle of CRT

It is set at front M before shipping.

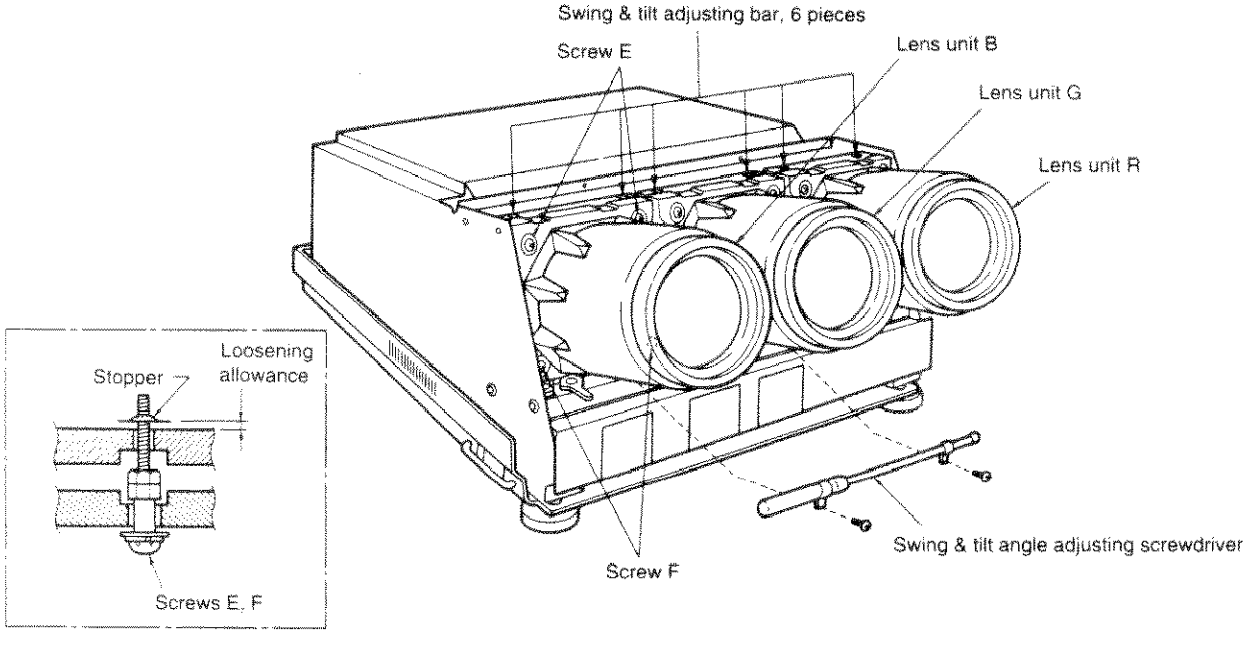
(1) Remove metal plate G from the top of the lens unit.
1) Remove four screws A in total from right and left sides.
2) Remove three screws C.
3) Remove two shaft screws B.
4) Remove two screws D.
5) Open side frame slightly outside, and detach metal plate G.
★ Two grounding wires are fastened with screws to metal plate G, and be careful when removing.



Caution! Follow the procedure below.

(2) Using the swing & tilt angle adjusting screwdriver contained in the lens lower part, loosen two screws F at the lower side of the lens unit B until they hit against the stopper and are no longer turned.

(3) Using the same screwdriver, loosen two screws E at the upper side of the lens unit uniformly on right and left side until they are stopped by stopper.
※ Loosen alternately right and left in two or three times gradually. Do not loosen one side in a stretch up to the stopper.



(4) Rotate and set the swing & tilt angle adjusting bar in the direction as shown in Fig. 1, corresponding to the desired screen size according to the standard installation configuration in 4 on page 23.(it is set at M size before shipping). In the case of rear projection, replace with the furnished swing & tilt adjusting bar for rear projection.

- If the adjusting bar does not rotate:
  The space between the lens side frame and CRT side frame is sealed with coolant, and the volume is kept constant. Accordingly, when the frame upper part is opened by loosening screws 1, 2, the frame lower part is closed. If the frame lower part is not opened sufficiently for rotation of the adjusting bar, open the frame lower part wider in the following procedure, and then attempt to rotate the adjusting bar again.

- If the right side adjusting bar A does not rotate:
  Lossen slightly the opposite side screw 1 of the adjusting bar A, then the area around the screw 4 of the frame opens. Tighten screw 1 until the adjusting bar A rotates.

- If the left side adjusting bar B does not rotate:
  Loosen slightly the opposite side screw 2 of the adjusting bar B, then the area around the screw 3 of the frame opens. Tighten screw 2 until the adjusting bar B rotates.

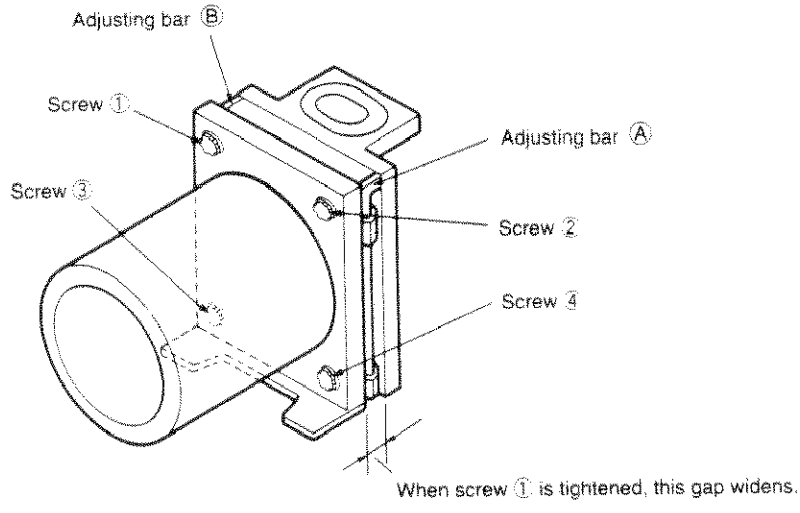
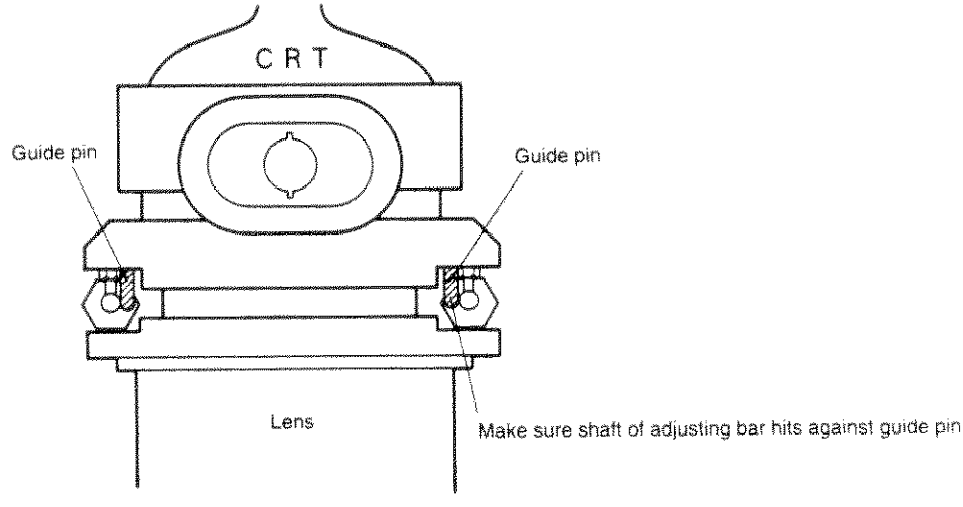


Fig. 1



At this time, make sure the hexagonal face of the swing & tilt angle adjusting bar securely contacts with the lens frame as shown in Fig. 2, and that the shaft of adjusting bar hits against guide pin as shown in.

(5) To tighten, first temporarily clamp two screws at the upper side of lens unit by means of swing & tilt angle adjusting screwdriver.

★Tighten right and left side alternately in two or three times gradually.

(6) Then tighten two lower side screws of lens unit with the same screwdriver.

★Tighten right and left side alternately in two or three times gradually.

(7) Finally tighten securely two upper side screws of lens unit.

(8) As for lens units G and R, change the swing & tilt angle in the same procedure as in steps (2) to (7).

POSITION S : FRONT 70" TO 85"
REAR 70" TO 119"
POSITION M : FRONT 86" TO 119"
REAR 70 TO 120"
POSITION L : FRONT 120 TO 300"
REAR 120 TO 200"

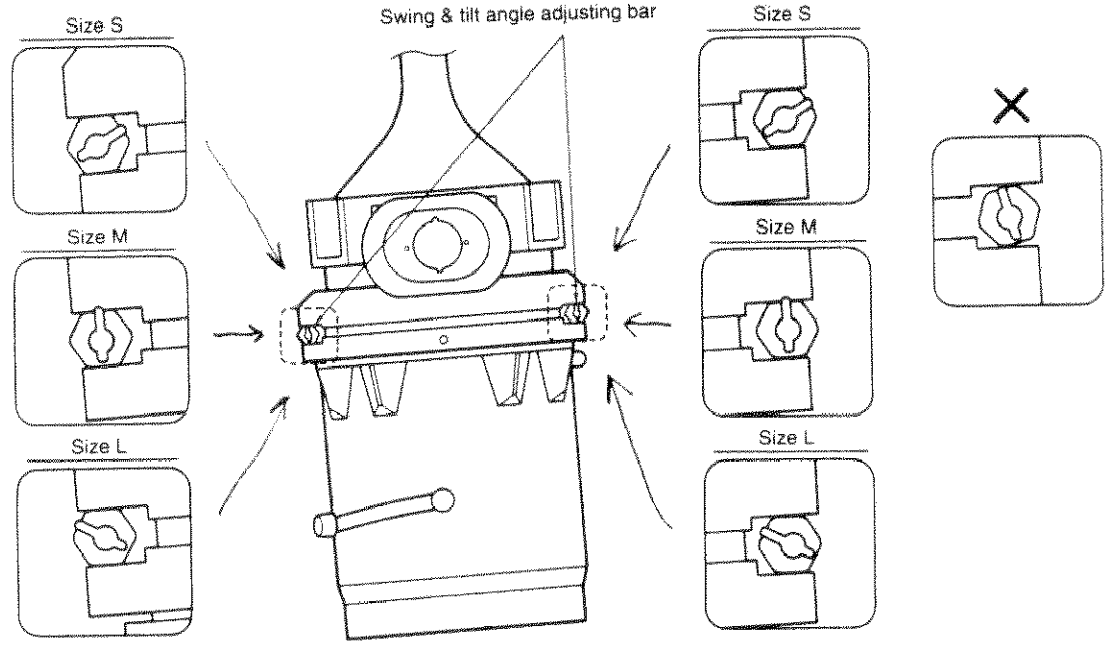
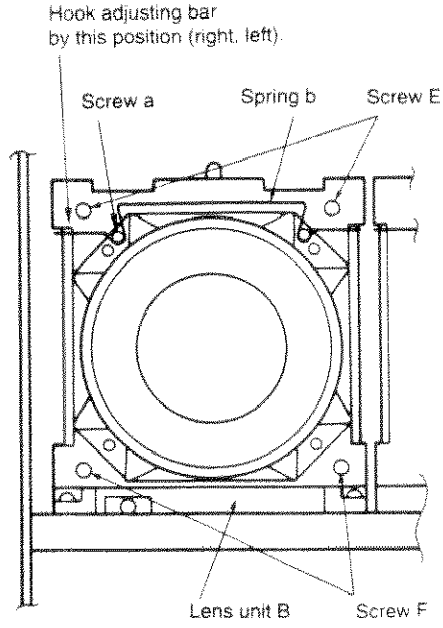


Fig.2 Change of swing & tilt angle

Rear Projection

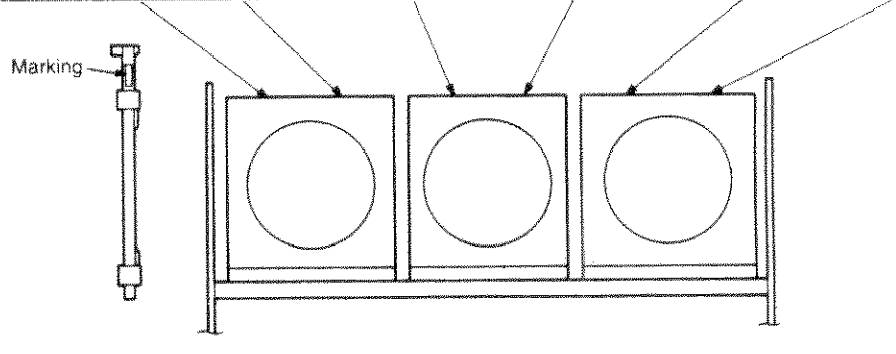
Generally the rear projection angle is set at 0 degrees or at 6 degrees. At this time, replace the swing & tilt angle adjusting bar.

(9) Loosen two lower screws of lens unit B until stopped by stopper.
(10) Remove two screws a from the base of the lens.
(11) Take off spring b which holds the swing & tilt angle adjusting bar.
(12) Side upward and detach two swing & tilt angle adjusting bars.
(13) Insert swing & tilt adjusting bar for rear projection with the specified marking side in Table 4 upward.
Insert the lower side of the swing & tilt adjusting bar between guide pins to have bottom contact.



If the frame lower part opens only slightly and the lower part of the adjusting bar cannot be inserted, widen the opening of the frame lower part in the same procedure as in (4) "If adjusting bar does not rotate", and insert the adjusting bar.

(14) Attach the spring b removed at step (11) with two screws a.
(15) Set in the swing & tilt angle suited to the desired screen side by using the swing & tilt angle adjusting bar according to Standard installation configuration in Section 4.
(16) Tighten lens screws E in the procedure of (5) to (7).
(17) Set the swing & tilt angle in the same procedure (9) to (16) also in the lens units G and R.

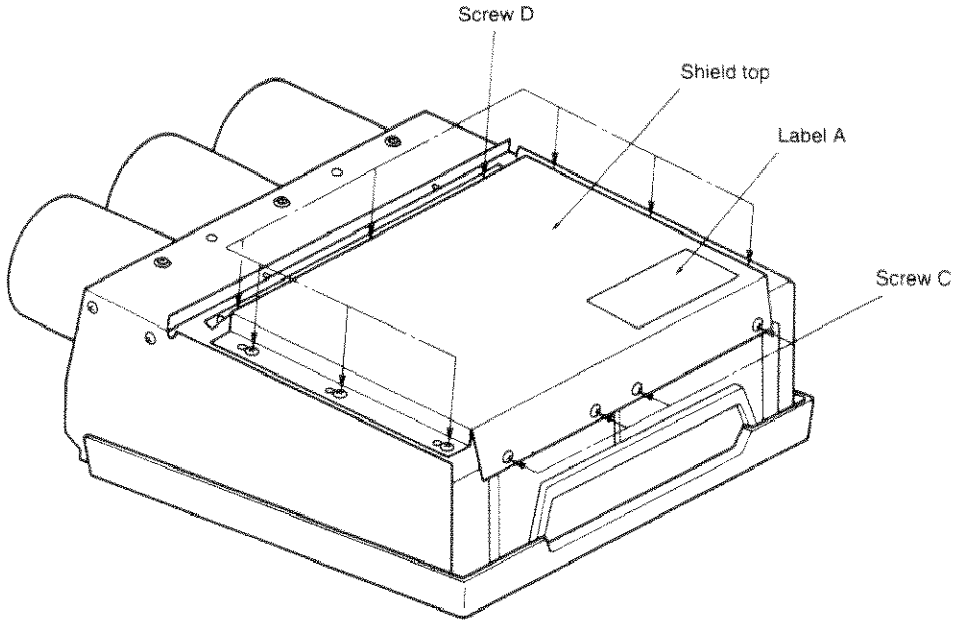
Projection type	Lens unit B		Lens unit G		Lens unit R	
	Marking description		Marking description		Marking description	
Front	R·B (OUT)	R·B (IN)	G	G	R·B (IN)	R·B (OUT)
Rear	R-R·B (OUT)	R-R·B (IN)	R-G	R-G	R-R·B (IN)	R-R·B (OUT)
Insertion position						

3) Change of Projection Mode (Electrical)

It is set in front projection and floor mount before shipping from the factory.
If not changing the projection mode, skip to paragraph 3.

(1) Remove four screws C.

(2) Loosen nine screws D, shift the shield top slightly backward, and remove.



(3) Insert connectors [LH], [LV] of heater-REG board into positions specified in Table 1. Label A is also glued to the set (rear part of top shield).

(4) Remove two screws E, and lift DEFL-H unit.

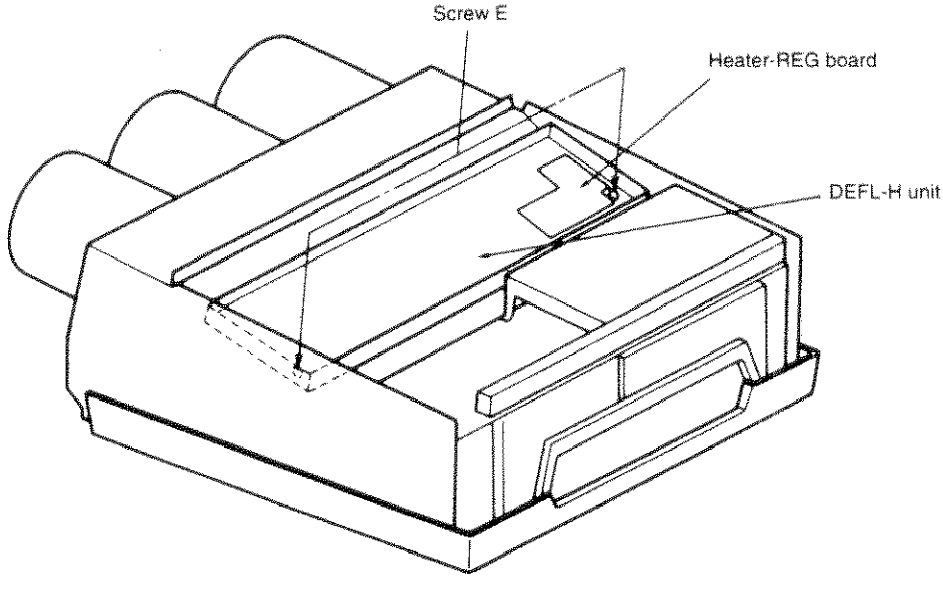
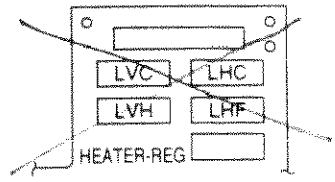


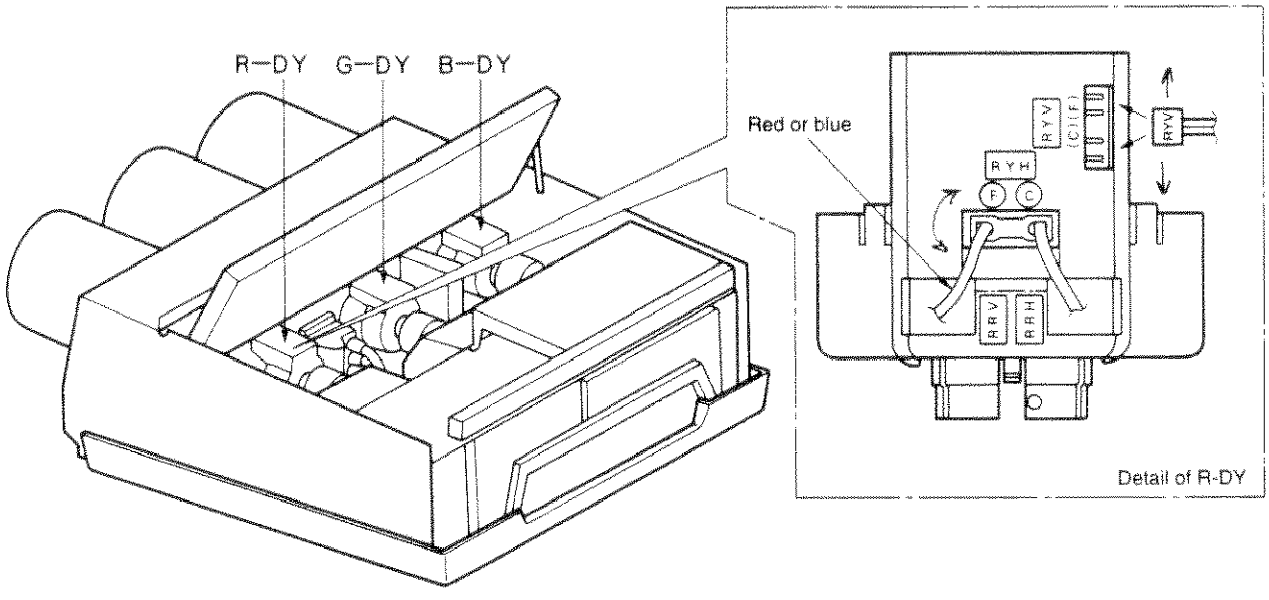
Table 1. Lead connector insertion positions of heater-REG board

Set projection mode	Connector LH	Connector LV	Detail of heater-REG board
Front, floor mount	LHF	LVF	
Front, ceiling mount	LHC	LVC	
Rear, floor mount	LHC	LVF	
Rear, ceiling mount	LHF	LVC	

(5) Insert connectors RYH , GYH , BYH , RYV , GYV , BYV of DY into positions specified in Table 2.

Table 2. Lead connector insertion positions of DY

Set projection mode	Connectors RYH, GYH, BYH	Connectors RYV, GYV, BYV
Front, floor mount	Red lead Ⓕ, blue lead Ⓒ	(F) side
Front, ceiling mount	Red lead Ⓒ, blue lead Ⓕ	(C) side
Rear, floor mount	Red lead Ⓒ, blue lead Ⓕ	(F) side
Rear, ceiling mount	Red lead Ⓕ, blue lead Ⓒ	(C) side



(6) After completion of adjustment, fix DEFL-H unit in reverse procedure, and put on shield top.

4) Change of Concentrating Angle

To change the concentrating angle, change in the lens unit B and lens unit R.

(1) Loosen lower outside screw J of the lens unit B (don't remove).
(2) Change the changeover lever according to the desired screen size as shown in Fig. 3.
(3) Tighten screw J loosened in (1).
(4) Change the concentrating angle also in lens unit R.

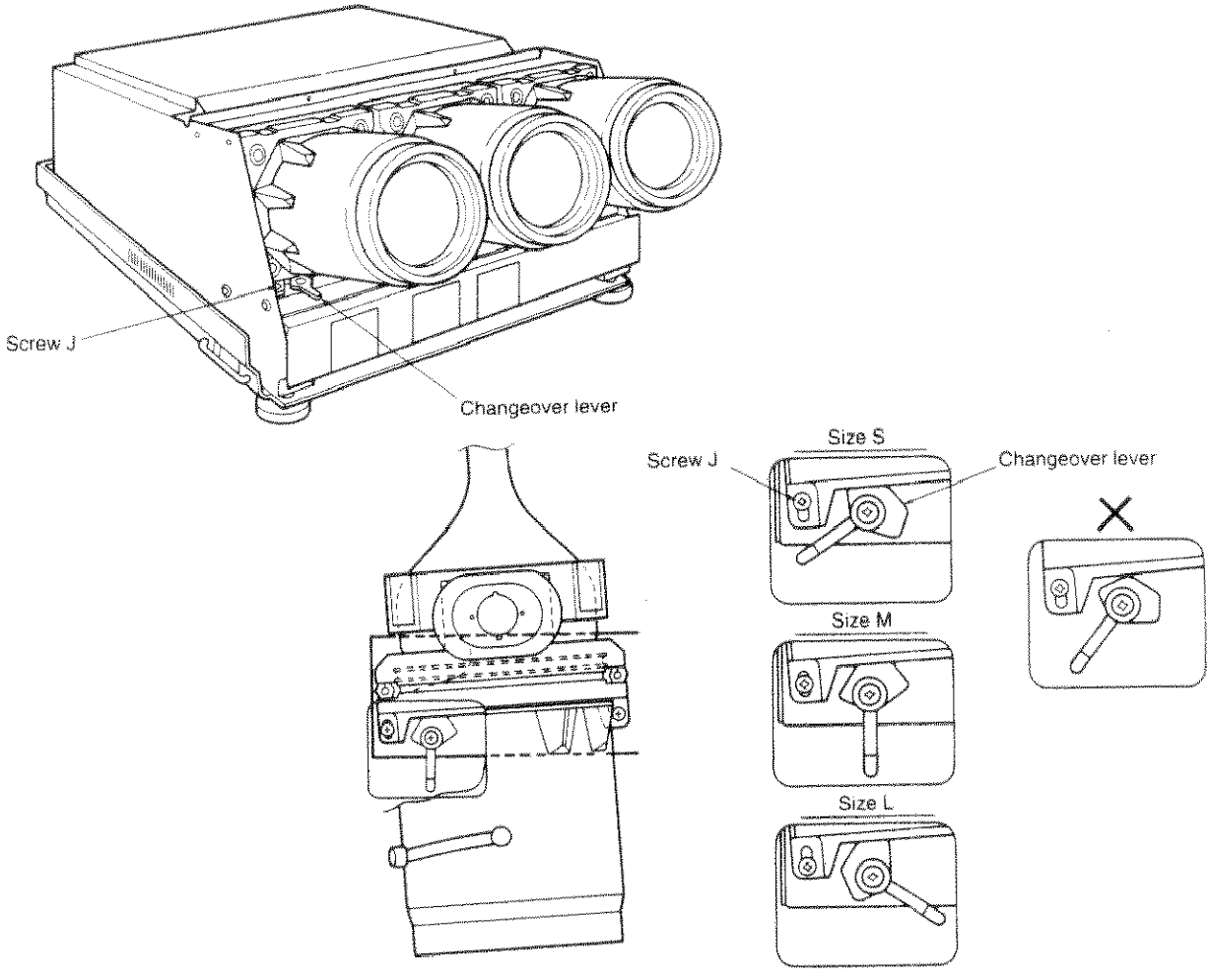


Fig. 3 Change of concentrating angle

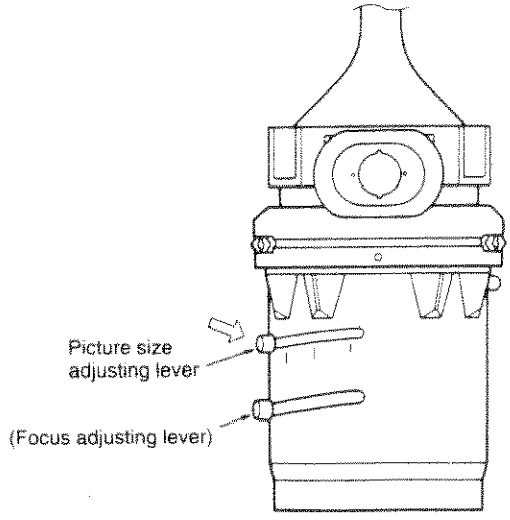
This ends change of swing & tilt angle and change of concentrating angle.

(5) Put back the metal plate G removed at step (1) on page 24 into the original position.
   1) Fit the metal plate G by opening the side frame outward.
   2) Fix three screws C temporarily.
   3) Fit two shaft screws B, and determine the lens unit position.
   4) Tighten three screws C.
   5) Fit two right and left screws (four in all).
   6) Fit two screws.

5) Change of Picture Size

(1) Loosen the knob of the picture size adjusting lever provided in the lens barrel.

(2) Move the lever, adjust to the graduation of the desired picture size, and fix.



6) Fitting of Front Cover and Top Cover

(1) In the reverse procedure of page 19, first put back the front cover.

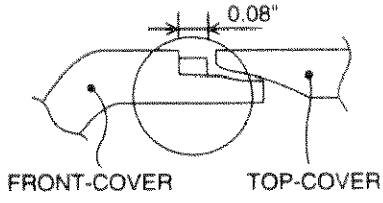
(2) Fix the front cover with two lower screws and two side screws.

(3) Slide the hinge of top cover to the side of the hinge of bottom cover, and fit.

(4) Close top cover.
If the clearance between front cover and top cover is not about 0.08", loosen the fixing screw at the side of front cover and adjust.

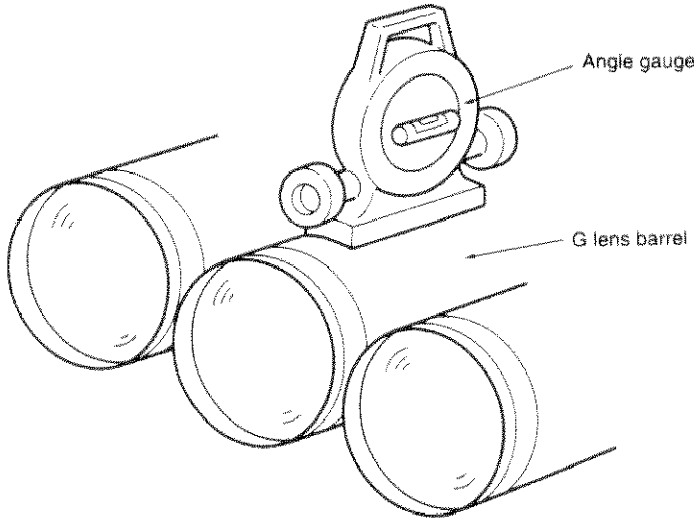
(5) Twist the top screw by 90 degrees, and fix (three screws).

(6) Put back the rear screw.

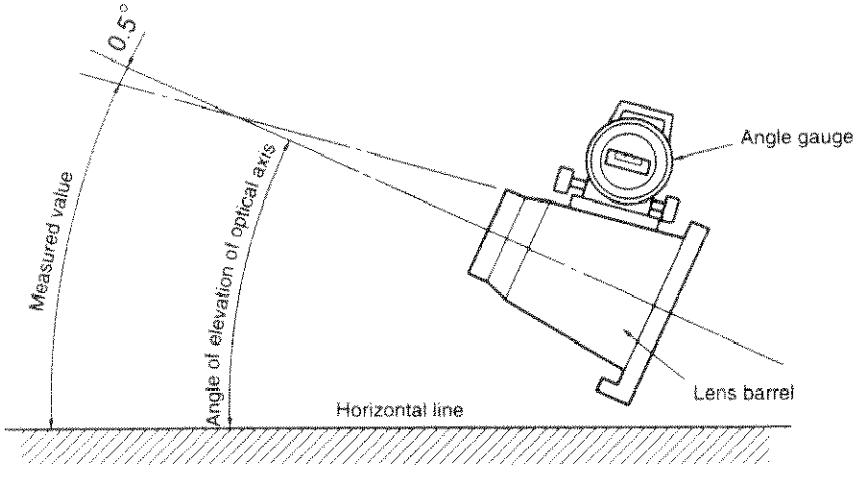


Measuring Method of Optical Axis

Measure the optical axis by detaching the front cover, and putting the angle gauge on the G lens barrel as shown below.

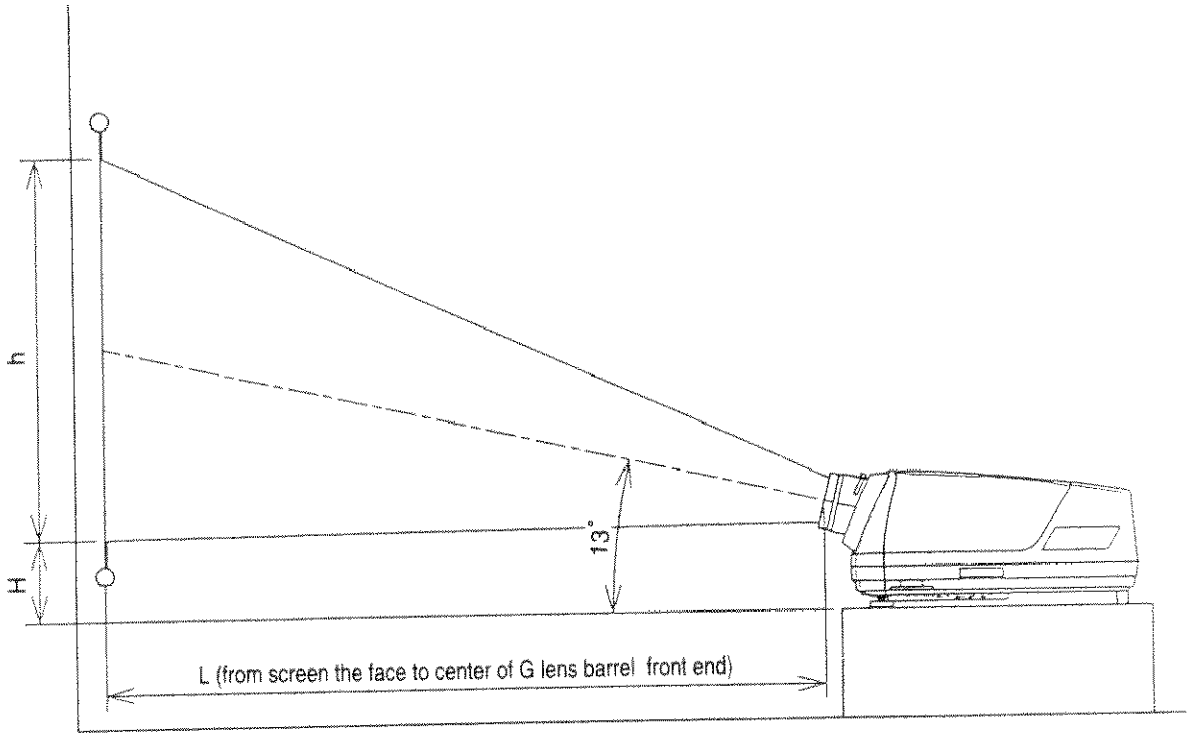


The lens barrel has a slope of 0.5 degrees, and the value adding 0.5 degrees to the measured angle is the angle of elevation of the optical axis.



Standard Installation Configuration

Front Projection, Floor Mount

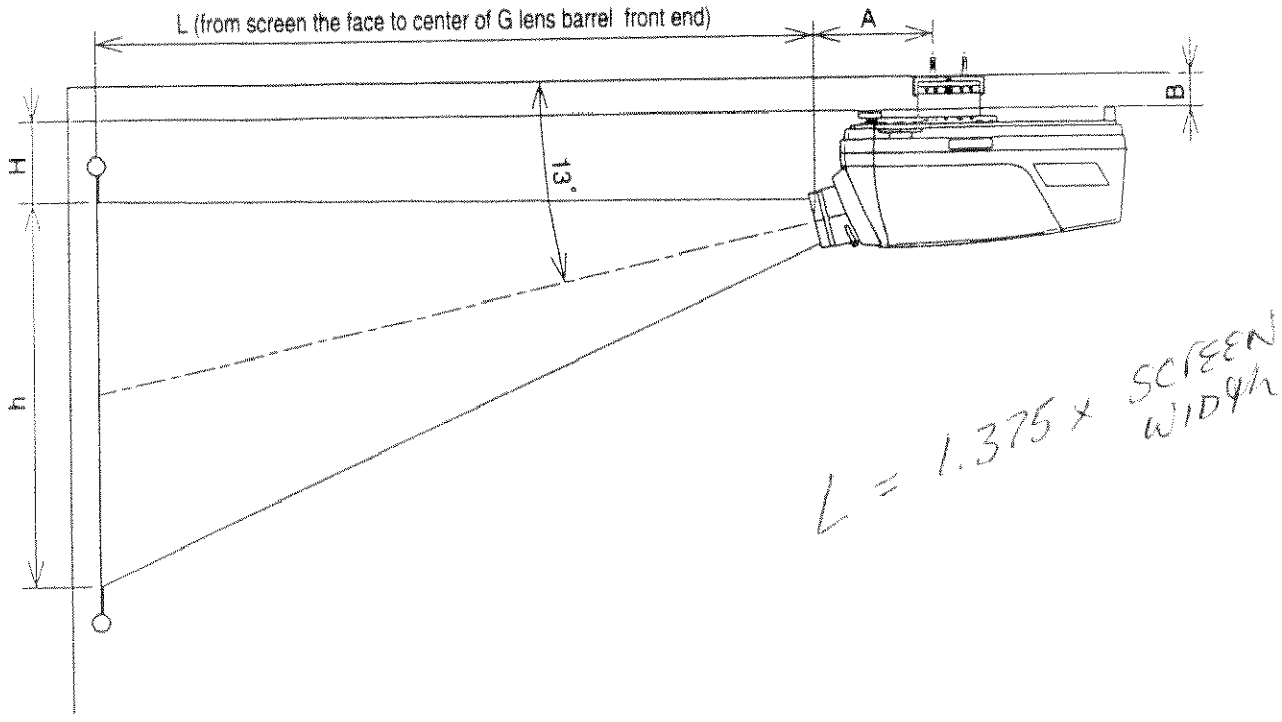


When directly mounting on the floor, if rug or carpet is laid, adequate ventilation is necessary.

Screen size	Size L (inches)	Size H (inches)	Size h (inches)	Concentrating angle	Swing & tilt angle
70"	77.8	9.0	42.0	S	S
80"	88.3	8.4	48.0	S	S
90"	98.7	7.8	54.0	M	M
100"	109.1	7.2	60.0	M	M
110"	119.6	6.6	66.0	M	M
120"	130.2	6.1	72.0	L	L
150"	169.2	4.4	90.0	L	L
180"	193.8	2.8	108.0	L	L
200"	214.8	1.6	120.0	L	L
※ 250"			150.0	L	L
※ 300"			180.0	L	L

※As for 250" - 300", refer to the front projection installation position other than the standard in page 37~41.

Front Projection, Ceiling Mount

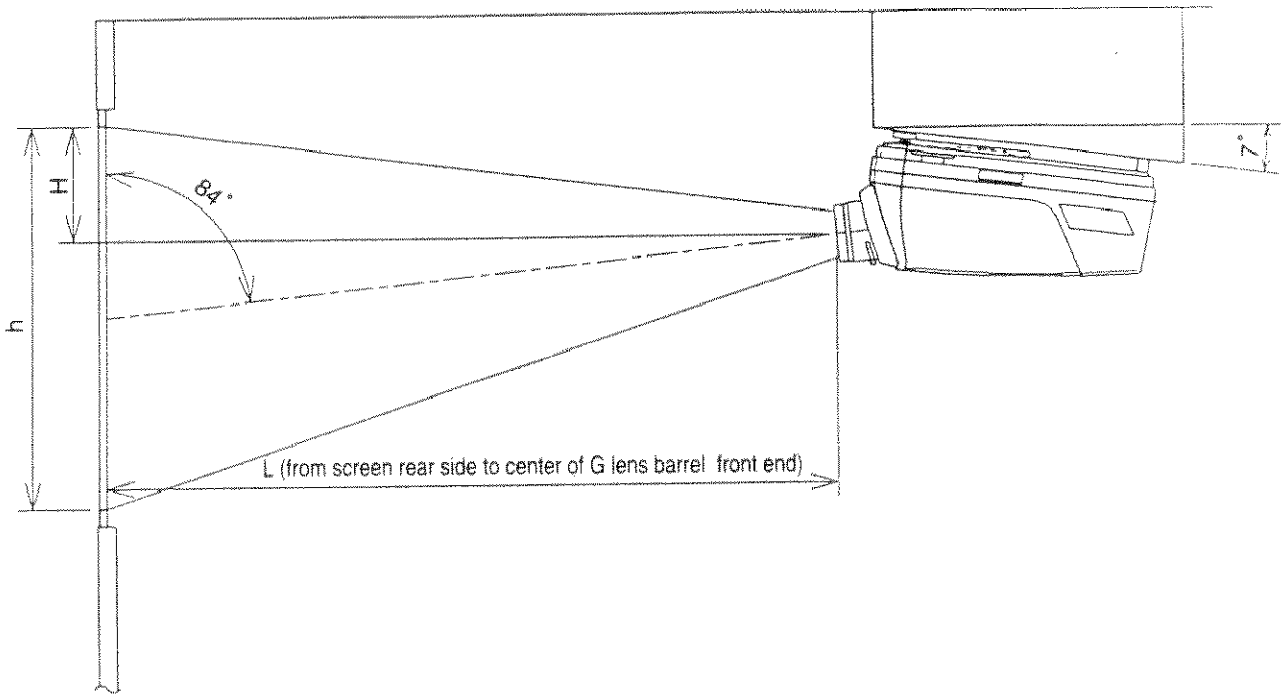


Ceiling Bracket	Size A (inches)	Size B (inches)
BR-006	14.1	0.5
BR-007	12.9	3.7
BR-008	8.7	20.6~30.0 (1 pitch : 0.08)

Screen size	Size L (inches)	Size H (inches)	Size h (inches)	Concentrating angle	Swing & tilt angle
70"	77.8	9.0	42.0	S	S
80"	88.3	8.4	48.0	S	S
90"	98.7	7.8	54.0	M	M
100"	109.1	7.2	60.0	M	M
110"	119.6	6.6	66.0	M	M
120"	130.2	6.1	72.0	L	L
150"	162.2	4.4	90.0	L	L
180"	193.8	2.8	108.0	L	L
200"	214.8	1.6	120.0	L	L
※ 250"			150.0	L	L
※ 300"			180.0	L	L

※As for 250" - 300", refer to the front projection installation position other than the standard in page 37~41.

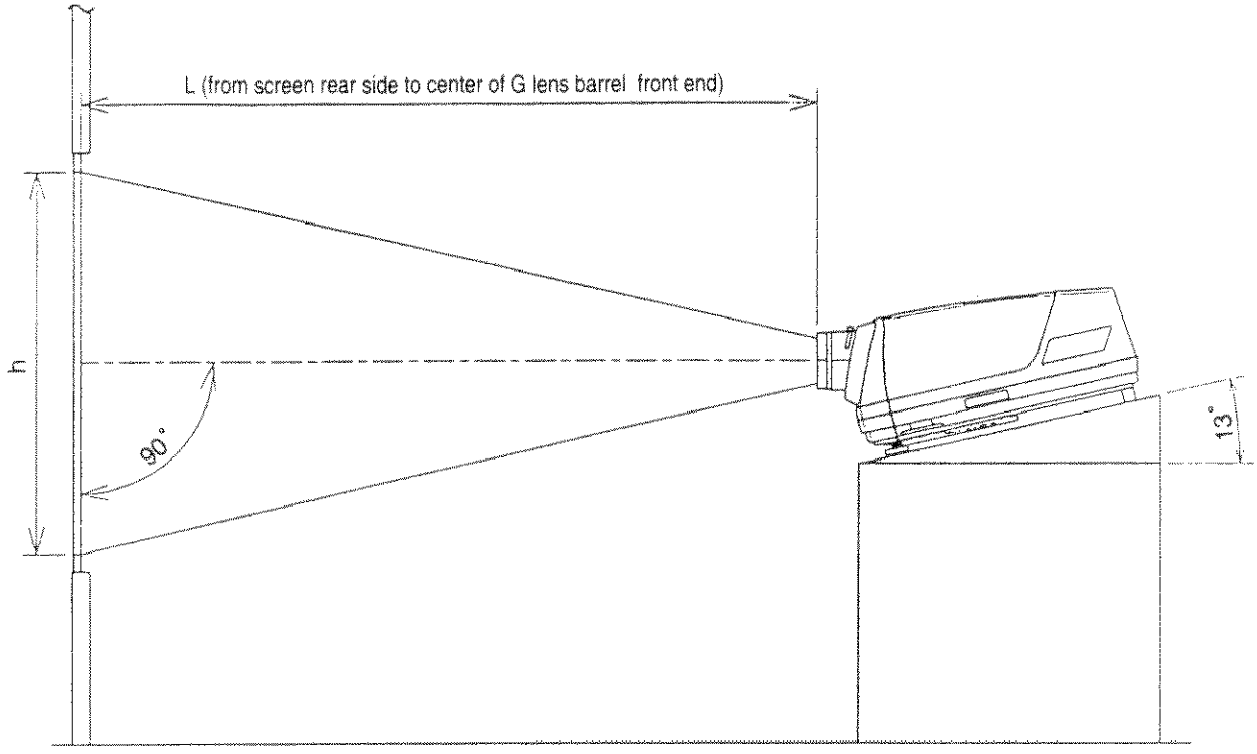
Rear Projection, Ceiling Mount



Screen size	Size L (inches)	Size H (inches)	Size h (inches)	Concentrating angle	Swing & tilt angle
70"	79.4	12.6	42.0	M	M
80"	90.1	14.5	48.0	M	M
90"	100.7	16.4	54.0	M	M
100"	111.3	18.3	60.0	M	M
110"	122.1	20.2	66.0	M	M
120"	132.9	22.0	72.0	M	M

To adjust swing & tilt angle, use angle adjusting bar for rear projection.

Rear Projection, Floor Mount



Screen size	Size L (inches)	Size h (inches)	Concentrating angle	Swing & tilt angle
70"	79.8	42.0	M	S
80"	90.6	48.0	M	S
90"	101.3	54.0	M	S
100"	111.9	60.0	M	S
110"	122.8	66.0	M	S
120"	133.7	72.0	L	L
150"	166.5	90.0	L	L
180"	198.9	108.0	L	L
200"	220.5	120.0	L	L

To adjust swing & tilt angle, use angle adjusting bar for rear projection.

Installation Position other than the Standard

When not installed to the standard installation position, install referring to [Front Projection Installation Position Other Than the Standard] in pages 37～41 in case of front projection, and [Rear Projection Installation Position Other Than the Standard] in pages 42～46 in case of rear projection.

Front projection L dimension list and rear projection L dimension list are calculated by the following formula.

$$L=\{E^2-(h/2-C)^2\}^{1/2}=\{E^2-(h/2-D)^2\}^{1/2}$$

L dimension: Horizontal distance from screen surface (rear surface in case of rear) to G lens barrel tip center
E dimension: Distance from the screen center to G lens barrel tip center (See the below table)
h dimension: Height of screen display area
C dimension: Vertical distance from lower end (upper end) of screen display area to G lens barrel tip center
D dimension: Vertical distance from lower end (upper end) of screen display area to G lens barrel tip center

When installing by middle dimensions not listed in this L dimension list, refer to this formula. However, since vacant part of the L dimension list is in conditions not maintaining VS-1281 performance, do not install in this area.

In installing other than the standard, the main unit must be inclined. Angle adjustment by the adjuster is about ±0.4°.
When not adjusted by the adjuster. place adhesive strong enough to resist the main unit load under the legs. When the main unit is unstable, fix the main unit by using M10 nuts at the main unit rear side.

Calculate optical axis elevation angle of the main unit, and be sure to measure the optical axis elevation angle of the main unit. When the main unit is installed horizontally, optical axis elevation angle is =13°.

$$\text{Optical axis elevation angle } \alpha = \tan^{-1}\{(h/2-C)/L\}=\tan^{-1}\{(h/2-D)/h\}$$

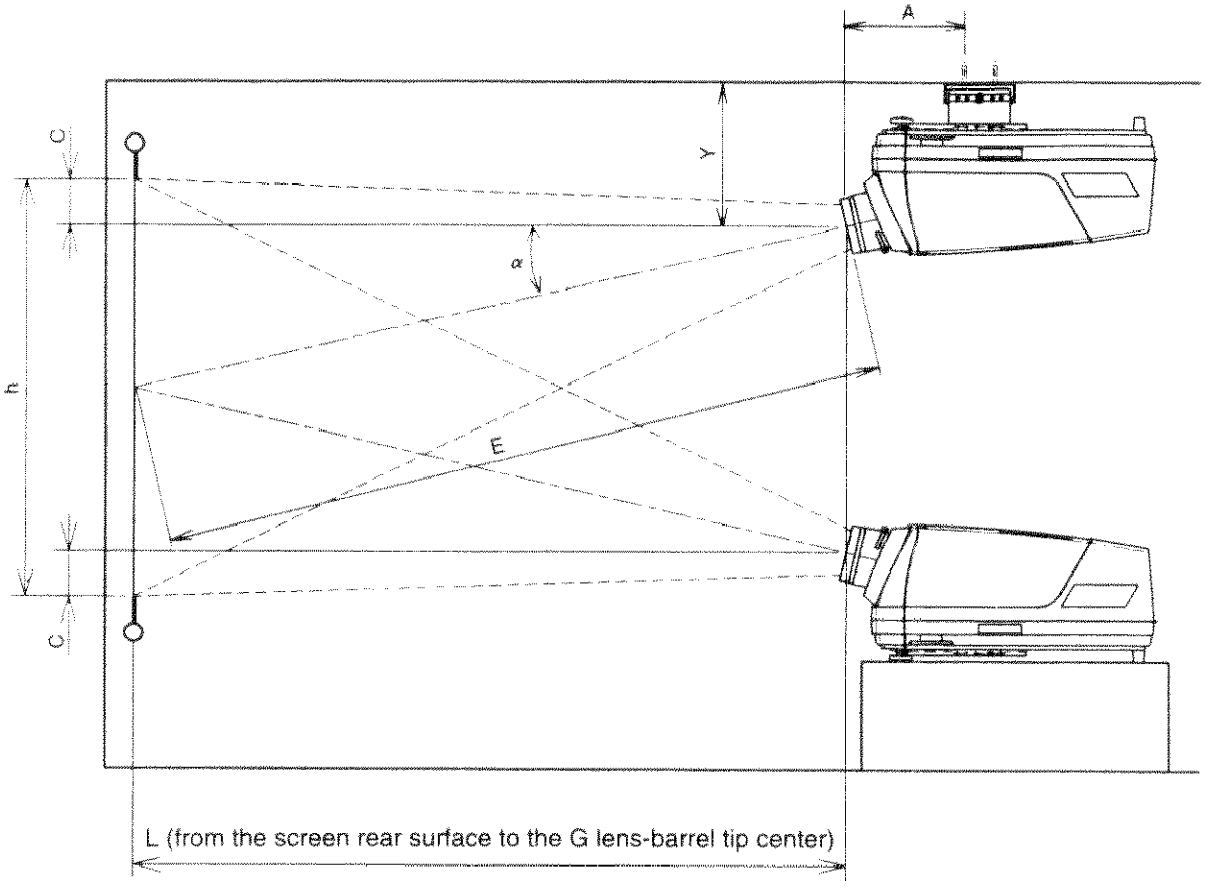
E Dimension List

Screen size	E dimension (inches)	Screen size	E dimension (inches)	Screen size	E dimension (inches)	Screen size	E dimension (inches)
70	79.8	110	122.8	150	166.5	230	252.8
72	82	112	125	155	171.9	235	258
74	84.1	114	127.1	160	177.3	240	263.6
76	86.3	116	129.3	165	182.7	245	269
78	88.4	118	131.5	170	188.1	250	274.4
80	90.6	120	133.7	175	193.5	255	279.8
82	92.7	122	135.9	180	198.9	260	285.2
84	94.8	124	138	185	204.3	265	290.6
86	97	126	140.2	190	209.7	270	295.9
88	99.1	128	142.4	195	215.1	275	301.3
90	101.3	130	144.6	200	220.5	280	306.7
92	103.4	132	146.8	205	226	285	312.1
94	105.5	134	149	210	231.3	290	317.5
96	107.7	136	151.1	215	236.7	295	322.9
98	109.8	138	153.3	220	242.1	300	328.3
100	111.9	140	155.5	225	247.5		
102	114.1	142	157.7				
104	116.3	144	159.9				
106	118.5	146	162.1				
108	120.6	148	164.3				

E dimension does not change even when optical axis elevation angle changes.

Front Projection Installation Position other than Standard

In case of installing other than the standard installation position, refer to the Front Projection L Dimension List.



C dimension : Distance from the G lens-barrel tip center to the screen lower end (upper end)

When ceilling mount, obtain optical axis elevation angle by the below formula, and calculate A and Y dimensions.

Optical axis elevation angle $\alpha = \tan^{-1}\{(h/2 - C)/L\}$

IN BR-006

$Y = 18.8 \times \sin(25.8^\circ + \alpha) + 0.7$ $A = 18.8 \times \cos(25.8^\circ + \alpha) - 0.6$

IN BR-007

$Y = 20.3 \times \sin(31.1^\circ + \alpha) + 1.5$ $A = 20.3 \times \cos(31.1^\circ + \alpha) - 1.7$

IN BR-008

$Y = 20.3 \times \sin(31.1^\circ + \alpha) + ※$ $A = 20.3 \times \cos(31.1^\circ + \alpha) - 5.9$

※ = 18.4 ~ 27.9 (1pich : 0.08)

Front Protection L Dimension List (1)

Swing & tilt angle		S								M																
Concentrating angle		S								M																
Screen size		70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116
h dimension		42	43.2	44.4	45.6	46.8	48	49.2	50.4	51.6	52.8	54	55.2	56.4	57.6	58.8	60	61.2	62.4	63.6	64.8	66	67.2	68.4	69.6
c dimension	19.7																									
	18.7																									
	17.7																									
	16.7																									
	15.7																									
	14.8																									
	13.8																									
	12.8																									
	11.8																									
	10.8									95.8	97.9	100	102													
	9.8									95.7	97.7	99.8	101.8	103.9	106	108	110.1									
	8.9									95.5	97.6	99.6	101.7	103.7	105.8	107.9	109.9									
	7.9	78.8								95.3	97.4	99.4	101.5	103.5	105.6	107.7	109.7	111.8	113.9	116						
	6.9	78.6	80.7	82.7	84.8	86.9				95.1	97.2	99.2	101.3	103.3	105.4	107.5	109.5	111.6	113.7	115.8	117.9	120	122.1			
	5.9	78.4	80.5	82.5	84.6	86.7	88.8	90.8	92.9	94.9	97	99	101.1	103.1	105.2	107.3	109.3	111.4	113.5	115.6	117.7	119.8	121.9	123.9	126.1	
	4.9	78.2	80.3	82.3	84.4	86.5	88.6	90.6	92.6	94.7	96.8	98.8	100.9	102.9	105	107	109.1	111.2	113.3	115.4	117.5	119.5	121.6	123.7	125.8	
	3.9	78	80.1	82.1	84.2	86.3	88.3	90.4	92.4	94.5	96.6	98.6	100.6	102.7	104.8	106.8	108.9	110.9	113	115.1	117.2	119.3	121.4	123.5	125.6	
	2.9	77.8	79.9	81.9	84	86	88.1	90.2	92.2	94.3	96.3	98.4	100.4	102.4	104.5	106.6	108.6	110.7	112.8	114.9	117	119.1	121.1	123.2	125.3	
	2	77.5	79.6	81.7	83.7	85.8	87.9	89.9	92			98.1	100.2	102.2	104.3	106.3	108.4	110.4	112.5	114.6	116.7	118.8	120.9	123	125.1	
	1			81.4	83.5	85.5	87.6	89.7	91.7					101.9	104	106.1	108.1	110.2	112.3	114.4	116.5	118.5	120.6	122.7	124.8	
	0					85.3	87.4	89.4	91.4							105.8	107.8	109.9	112	114.1	116.2	118.3	120.4	122.4	124.6	
	-1								91.2									109.6	111.7	113.8	115.9	118	120.1	122.2	124.3	
	-2																				115.6	117.7	119.8	121.9	124	
	-2.9																						119.5	121.6	123.7	
	-3.9																									
	-4.9																									
	-5.9																									
	-6.9																									
	-7.9																									

Front Protection L Dimension List (2)

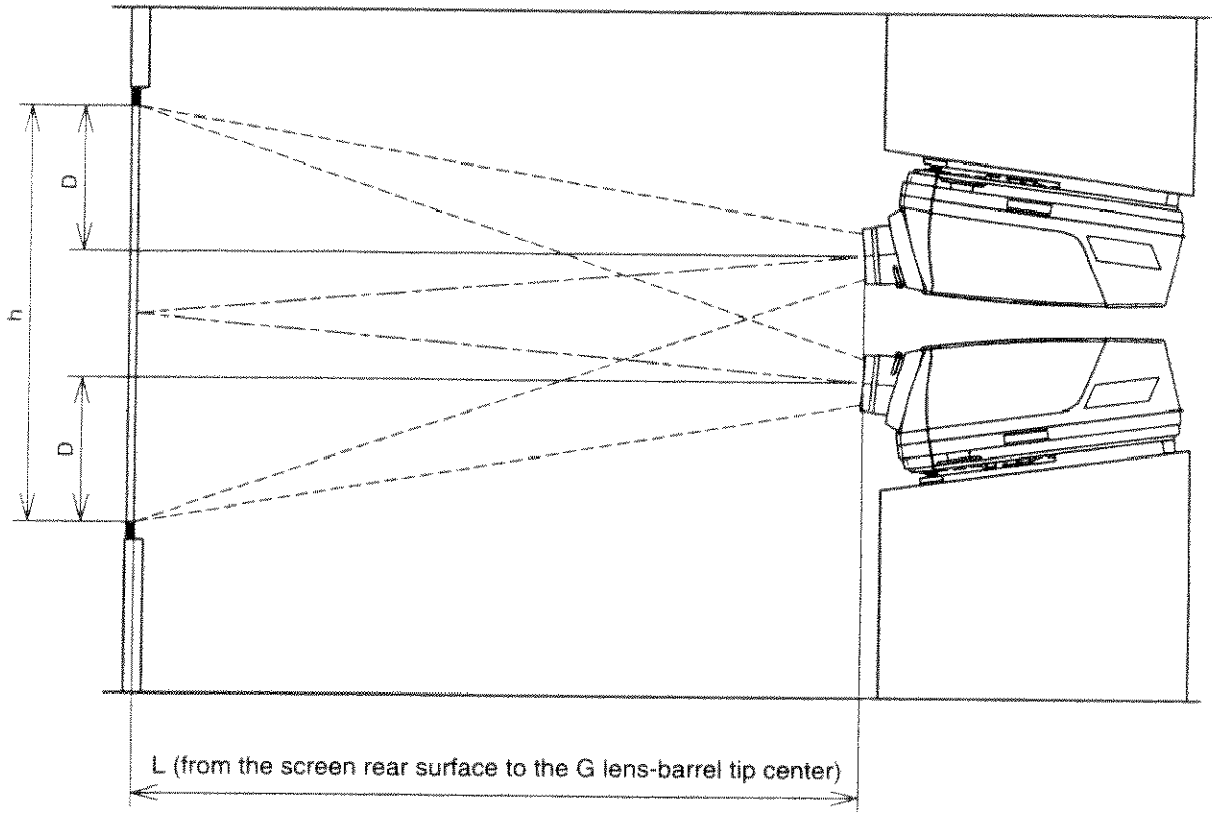
Swing & tilt angle		M	L																					
Concentrating angle		M	L																					
Screen size		118	120	122	124	126	128	130	132	134	136	138	140	142	144	146	148	150	155	160	165	170	175	180	185
h dimension		70.8	72	73.2	74.2	75.6	76.8	78	79.2	80.4	81.6	82.8	84	85.2	86.4	87.6	88.8	90	93	96	99	102	105	108	111
c dimension	19.7																								
	18.7		132.5	134.7	136.8																				
	17.7		132.4	134.5	136.6	138.8	140.9	143	145.1	147.3	149.4	151.5													
	16.7		132.3	134.4	136.5	138.6	140.7	142.9	145	147.1	149.2	151.3	153.4	155.6	157.7	159.8	161.9								
	15.7		132.1	134.3	136.4	138.5	140.6	142.7	144.8	147	149.1	151.2	153.3	155.4	157.5	159.6	161.7	163.9	169.1						
	14.8		132	134.1	136.2	138.3	140.4	142.6	144.7	146.8	148.9	151	153.1	155.2	157.3	159.5	161.6	163.7	168.9	174.1					
	13.8		131.8	133.9	136	138.2	140.3	142.4	144.5	146.6	148.7	150.8	152.9	155.1	157.2	159.3	161.4	163.5	168.7	173.9	179.2				
	12.8		131.6	133.8	135.9	138	140.1	142.2	144.3	146.4	148.5	150.7	152.7	154.9	157	159.1	161.2	163.3	168.5	173.8	179	184.2			
	11.8		131.5	133.6	135.7	137.8	139.9	142	144.1	146.2	148.3	150.5	152.6	154.7	156.8	158.9	161	163.1	168.3	173.6	178.7	184	189.2		
	10.8		131.3	133.4	135.5	137.6	139.7	141.8	143.9	146.1	148.1	150.3	152.4	154.5	156.6	158.7	160.8	162.9	168.1	173.3	178.5	183.8	189	194.2	
	9.8		131.1	133.2	135.3	137.4	139.5	141.6	143.7	145.9	147.9	150.1	152.2	154.3	156.4	158.5	160.6	162.7	167.9	173.1	178.3	183.6	188.7	193.9	199.1
	8.9		130.9	133	135.1	137.2	139.3	141.4	143.5	145.6	147.7	149.9	151.9	154.1	156.2	158.3	160.4	162.5	167.7	172.9	178.1	183.3	188.5	193.7	198.9
	7.9		130.7	132.8	134.9	137	139.1	141.2	143.3	145.4	147.5	149.6	151.7	153.8	155.9	158.1	160.1	162.3	167.5	172.7	177.9	183.1	188.3	193.5	198.7
	6.9		130.5	132.6	134.7	136.8	138.9	141	143.1	145.2	147.3	149.4	151.5	153.6	155.7	157.8	159.9	162	167.2	172.5	177.6	182.9	188.1	193.2	198.4
	5.9	128.1	130.2	132.4	134.4	136.6	138.6	140.8	142.9	145	147.1	149.2	151.3	153.4	155.5	157.6	159.7	161.8	167	172.2	177.4	182.6	187.8	193	198.2
	4.9	127.9	130	132.1	134.2	136.3	138.4	140.5	142.6	144.7	146.8	148.9	151	153.1	155.2	157.4	159.4	161.6	166.7	172	177.2	182.4	187.6	192.7	197.9
	3.9	127.7			134	136.1	138.2	140.3	142.4	144.5	146.6	148.7	150.8	152.9	155	157.1	159.2	161.3	166.5	171.7	176.9	182.1	187.3	192.5	197.7
	2.9	127.4						140	142.1	144.2	146.3	148.4	150.5	152.7	154.7	156.9	158.9	161.1	166.2	171.5	176.6	181.9	187.1	192.2	197.4
	2	127.2									146.1	148.2	150.3	152.4	154.5	156.6	158.7	160.8	166	171.2	176.4	181.6	186.8	192	197.2
	1	126.9												152.1	154.2	156.3	158.4	160.5	165.7	170.9	176.1	181.3	186.5	191.7	196.9
	0	126.6														156.1	158.1	160.3	165.4	170.7	175.8	181.1	186.2	191.4	196.6
	-1	126.4																160	165.2	170.4	175.6	180.8	186	191.1	196.3
	-2	126.1																	164.9	170.1	175.3	180.5	185.7	190.9	196
	-2.9	125.8																		169.8	175	180.2	185.4	190.6	195.8
	-3.9																				174.7	179.9	185.1	190.3	195.5
	-4.9																								
	-5.9																								
	-6.9																								
	-7.9																								

Front Protection L Dimension List (3)

Swing & tilt angle		L																							
Concentrating angle		L																							
Screen size		190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	
h dimension		114	117	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168	171	174	177	180	
C dimension	19.7																								
	18.7																								
	17.7																								
	16.7																								
	15.7																								
	14.8																								
	13.8																								
	12.8																								
	11.8																								
	10.8																								
	9.8																								
	8.9	204.1	209.3	214.5	219.7	224.9	230.1																		
	7.9	203.9	209.1	214.3	219.4	224.6	229.8	235	240.2	245.3															
	6.9	203.6	208.8	214	219.2	224.4	229.6	234.8	239.9	245.1	250.3	255.5	260.6												
	5.9	203.4	208.6	213.8	219	224.1	229.3	234.5	239.7	244.8	250	255.2	260.4	265.6	270.8										
	4.9	203.2	208.3	213.5	218.7	223.9	229.1	234.3	239.4	244.6	249.8	254.9	260.1	265.3	270.5	275.7	280.8								
	3.9	202.9	208.1	213.3	218.4	223.6	228.8	234	239.2	244.3	249.5	254.7	259.9	265	270.2	275.4	280.6	285.7	290.9						
	2.9	202.6	207.8	213	218.2	223.4	228.6	233.7	238.9	244.1	249.2	254.4	259.6	264.8	270	275.1	280.3	285.5	290.6	295.8					
	2	202.4	207.6	212.7	217.9	223.1	228.3	233.5	238.6	243.8	249	254.1	259.3	264.5	269.7	274.9	280	285.2	290.4	295.6	300.7	305.9			
	1	202.1	207.3	212.5	217.6	222.8	228	233.2	238.4	243.5	248.7	253.9	259.1	264.2	269.4	274.6	279.7	284.9	290.1	295.3	300.5	305.6	310.8	316	
	0	201.8	207	212.2	217.4	222.6	227.7	232.9	238.1	243.2	248.4	253.6	258.8	264	269.1	274.3	279.5	284.6	289.8	295	300.2	305.3	310.5	315.7	
	-1	201.5	206.7	211.9	217.1	222.3	227.5	232.6	237.8	243	248.1	253.3	258.5	263.7	268.9	274	279.2	284.4	289.5	294.7	299.9	305	310.2	315.4	
	-2	201.3	206.4	211.6	216.8	222	227.2	232.3	237.5	242.7	247.9	253	258.2	263.4	268.6	273.8	278.9	284.1	289.3	294.4	299.6	304.8	309.9	315.1	
	-2.9	201	206.2	211.3	216.5	221.7	226.9	232.1	237.2	242.4	247.6	252.7	257.9	263.1	268.3	273.5	278.6	283.8	289	294.1	299.3	304.5	309.7	314.8	
	-3.9	200.7	205.9	211	216.2	221.4	226.6	231.8	236.9	242.1	247.3	252.4	257.6	262.8	268	273.2	278.3	283.5	288.7	293.9	299	304.2	309.4	314.5	
	-4.9																								
	-5.9																								
	-6.9																								
	-7.9																								

Rear Projection Installation Position other than Standard

In case of installation is not a standard installation position, refer to the Rear Projection L Dimension List.



D dimension : Perpendicular distance from the G lens barrel tip center to the screen lower end (upper end)

When using the ceiling hanging metal fitting BR-006, BR-007 and BR-008, use these in the range of 10° ~16° optical axis elevation angle.

Optical axis elevation angle = $\tan^{-1}\{(h/2 - D)/L\}$

☆For rear projection, adjust the swing & tilt angle and the concentrating angle stated in [Rear Projection L Dimension List] with the swing & tilt angle adjusting bar for rear.

☆If the swing & tilt angle adjusting bar for rear is not used, rear projection performance if greatly decreased.

Rear Protection L Dimension List (1)

Swing & tilt angle		"S" on the upper side of ≈≈ line, "M" on the lower side of ≈≈ line												
Concentrating angle		M												
Screen size		70	72	74	76	78	80	82	84	86	88	90	92	94
h dimension		42	43.2	44.4	45.6	46.8	48	49.2	50.4	51.6	52.8	54	55.2	56.4
D dimension	44.3													
	43.3													
	42.3													
	41.3													
	40.4													
	39.4													
	38.4													
	37.4													
	36.4													
	35.4													
	34.4													
	33.5													
	32.5													105.4
	31.5											101.2	103.3	105.5
	30.5										99	101.2	103.3	105.5
	29.5									96.9	99.1	101.2	103.4	105.5
	28.5							92.6	94.8	97	99.1	101.2	103.4	105.5
	27.6						90.5	92.7	94.8	97	99.1	101.3	103.4	105.5
	26.6					88.4	90.6	92.7	94.8	97	99.1	101.3	103.4	105.5
	25.6				86.3	88.4	90.6	92.7	94.8	97	99.1	101.3	103.4	105.5
	24.6		82	84.1	86.3	88.4	90.6	92.7	94.8	97	99.1	101.2	103.3	105.5
	23.6	79.8	82	84.1	86.3	88.4	90.6	92.7	94.8	97	99.1	101.2	103.3	105.4
	22.6	79.8	82	84.1	86.3	88.4	90.6	92.7	94.8	97	99.1	101.2	103.3	105.4
	21.7	79.8	82	84.1	86.3	88.4	90.6	92.7	94.8	96.9	99	101.1	103.2	105.3
	20.7	79.8	82	84.1	86.3	88.4	90.5	92.6	94.7	96.9	99	101.1	103.2	105.2
	19.7	79.8	82	84.1	86.2	88.3	90.5	92.6	94.7	96.8	98.9	101	103.1	105.2
	18.7	79.8	82	84.1	86.2	88.3	90.4	92.5	94.6	96.7	98.8	100.9	103	105.1
	17.7	79.8	81.9	84	86.1	88.2	90.4	92.5	94.5	96.7	98.8	100.8	102.9	105
	16.7	79.7	81.9	84	86.1	88.2	90.3	92.4	94.5	96.6	98.7	100.7	102.8	104.9
	15.7	79.7	81.8	83.9	86	88.1	90.2	92.3	94.4	96.5	98.6	100.6	102.7	104.8
	14.8	79.6	81.7	83.8	85.9	88	90.1	92.2	94.3	96.4	98.4	100.5	102.6	104.7
	13.8	79.5	81.6	83.7	85.8	87.9	90	92.1	94.2	96.3	98.3	100.4	102.5	104.5
	12.8	79.4	81.5	83.6	85.7	87.8	89.9	92	94	96.1	98.2	100.3	102.3	104.4
	11.8													
	10.8													
	9.8													
	8.9													
	7.9													
	6.9													
	5.9													
	4.9													

Be sure to use the swing & tilt angle adjusting bar for rear, for swing & tilt angle.

Rear Protection L Dimension List (2)

Swing & tilt angle		"S" on the upper side of ≈≈ line, "M" on the lower side of ≈≈ line												
Concentrating angle		M												
Screen size		96	98	100	102	104	106	108	110	112	114	116	118	120
h dimension		57.6	58.8	60	61.2	62.4	63.6	64.8	66	67.2	68.4	69.6	70.8	72
D dimension	44.3													
	43.3												131.3	
	42.3											129.1	131.3	
	41.3										126.9	129.2	131.4	
	40.4									124.8	127	129.2	131.4	
	39.4								122.6	124.8	127	129.2	131.4	
	38.4							120.5	122.7	124.9	127.1	129.3	131.5	
	37.4						118.3	120.5	122.7	124.9	127.1	129.3	131.5	
	36.4				113.9	116.1	118.4	120.6	122.7	124.9	127.1	129.3	131.5	
	35.4			111.8	114	116.2	118.4	120.6	122.8	124.9	127.1	129.3	131.5	
	34.4		109.7	111.8	114	116.2	118.4	120.6	122.8	125	127.1	129.3	131.5	
	33.5	107.6	109.7	111.9	114.1	116.2	118.5	120.6	122.8	125	127.1	129.3	131.5	
	32.5	107.6	109.8	111.9	114.1	116.3	118.5	120.6	122.8	125	127.1	129.3	131.5	
	31.5	107.6	109.8	111.9	114.1	116.3	118.5	120.6	122.8	124.9	127.1	129.3	131.4	
	30.5	107.7	109.8	111.9	114.1	116.3	118.5	120.6	122.8	124.9	127.1	129.3	131.4	
	29.5	107.7	109.8	111.9	114.1	116.2	118.4	120.6	122.7	124.9	127	129.2	131.4	
	28.5	107.7	109.8	111.9	114.1	116.2	118.4	120.6	122.7	124.9	127	129.2	131.3	
	27.6	107.7	109.8	111.9	114.1	116.2	118.4	120.5	122.7	124.8	127	129.1	131.3	
	26.6	107.7	109.8	111.9	114	116.2	118.3	120.5	122.6	124.8	126.9	129.1	131.1	133.2
	25.6	107.6	109.7	111.8	114	116.1	118.3	120.4	122.6	124.7	126.8	129	131.1	133.3
	24.6	107.6	109.7	111.8	113.9	116.1	118.2	120.4	122.5	124.6	126.8	128.9	131.1	133.2
	23.6	107.6	109.7	111.7	113.9	116	118.2	120.3	122.4	124.6	126.7	128.8	131	133.1
	22.6	107.5	109.6	111.7	113.8	115.9	118.1	120.2	122.4	124.5	126.6	128.8	130.7	132.8
	21.7	107.4	109.5	111.6	113.7	115.9	118	120.2	122.3	124.4	126.5	128.7	130.8	132.9
	20.7	107.4	109.5	111.5	113.7	115.8	117.9	120.1	122.2	124.3	126.4	128.6	130.7	132.8
	19.7	107.3	109.4	111.5	113.6	115.7	117.8	120	122.1	124.2	126.3	128.4	130.6	132.7
	18.7	107.2	109.3	111.4	113.5	115.6	117.7	119.8	122	124.1	126.2	128.3	130.4	132.5
	17.7	107.1	109.2	111.3	113.4	115.5	117.6	119.7	121.8	123.9	126.1	128.2	130.3	132.4
	16.7	107	109.1	111.1	113.2	115.4	117.5	119.6	121.7	123.8	125.9	128.1	130.2	132.3
	15.7	106.9	109	111	113.1	115.2	117.4	119.5	121.6	123.7	125.8	127.9	130	132.1
	14.8	106.8	108.8	110.9	113	115.1	117.2	119.3	121.4	123.5	125.6	127.8	129.9	132
	13.8	106.6	108.7	110.7	112.8	114.9	117.1	119.2	121.3	123.4	125.5	127.6	129.7	131.8
	12.8	106.5	108.5	110.6	112.7	114.8	116.9	119	121.1	123.2	125.3	127.4	129.5	131.6
	11.8											127.3	129.4	131.5
	10.8													
	9.8													
	8.9													
	7.9													
	6.9													
	5.9													
	4.9													

Rear Protection L Dimension List (3)

Swing & tilt angle		L												
Concentrating angle		L												
Screen size		120	122	124	126	128	130	132	134	136	138	140	142	144
h dimension		72	73.2	74.4	75.6	76.8	78	79.2	80.4	81.6	82.8	84	85.2	86.4
D dimension	82.7													
	80.7													
	78.7													
	76.8													
	74.8													
	72.8													
	70.9													
	68.9													
	66.9													
	65													
	63													
	61													
	59.1													
	58.1													
	57.1													
	56.1													
	55.1													159.4
	54.1												157.3	159.5
	53.1											155.1	157.4	159.6
	52.2										153	155.2	157.4	159.6
	51.2									150.8	153	155.2	157.5	159.7
	50.2								148.6	150.8	153.1	155.3	157.5	159.7
	49.2							146.5	148.7	150.9	153.1	155.3	157.6	159.8
	48.2						144.3	146.5	148.8	151	153.2	155.4	157.6	159.8
	47.2					142.1	144.4	146.6	148.8	151	153.2	155.4	157.6	159.8
	46.3				140	142.2	144.4	146.6	148.9	151	153.3	155.5	157.7	159.9
	45.3			137.8	140	142.2	144.5	146.7	148.9	151.1	153.3	155.5	157.7	159.9
	44.3		135.6	137.8	140.1	142.3	144.5	146.7	148.9	151.1	153.3	155.5	157.7	159.9
	43.3	133.5	135.7	137.9	140.1	142.3	144.5	146.7	148.9	151.1	153.3	155.5	157.7	159.9
	42.3	133.5	135.7	137.9	140.2	142.3	144.6	146.7	149	151.1	153.3	155.5	157.7	159.9
	41.3	133.6	135.8	138	140.2	142.4	144.6	146.8	149	151.1	153.3	155.5	157.7	159.9
	40.4	133.6	135.8	138	140.2	142.4	144.6	146.8	149	151.1	153.3	155.5	157.7	159.9
	39.4	133.6	135.8	138	140.2	142.4	144.6	146.8	149	151.1	153.3	155.5	157.7	159.8
	38.4	133.6	135.9	138	140.2	142.4	144.6	146.8	149	151.1	153.3	155.5	157.7	159.8
	37.4	133.7	135.9	138	140.2	142.4	144.6	146.8	149	151.1	153.3	155.4	157.6	159.8
	36.4	133.7	135.9	138	140.2	142.4	144.6	146.7	148.9	151.1	153.3	155.4	157.6	159.7
	35.4	133.7	135.9	138	140.2	142.4	144.6	146.7	148.9	151	153.2	155.4	157.6	159.7
	34.4	133.7	135.8	138	140.2	142.3	144.5	146.7	148.9	151	153.2	155.3	157.5	159.6
	33.5	133.6	135.8	138	140.2	142.3	144.5	146.6	148.8	151	153.1	155.3	157.5	159.6
	32.5	133.6	135.8	138	140.1	142.3	144.5	146.6	148.8	150.9	153.1	155.2	157.4	159.5
	31.5	133.6	135.8	137.9	140.1	142.2	144.4	146.5	148.7	150.9	153	155.2	157.3	159.5
	30.5	133.5	135.7	137.9	140	142.2	144.4	146.5	148.7	150.8				
	29.5	133.5	135.7	137.8	140	142.1	144.3							
	28.5	133.5	135.6											
	27.6													

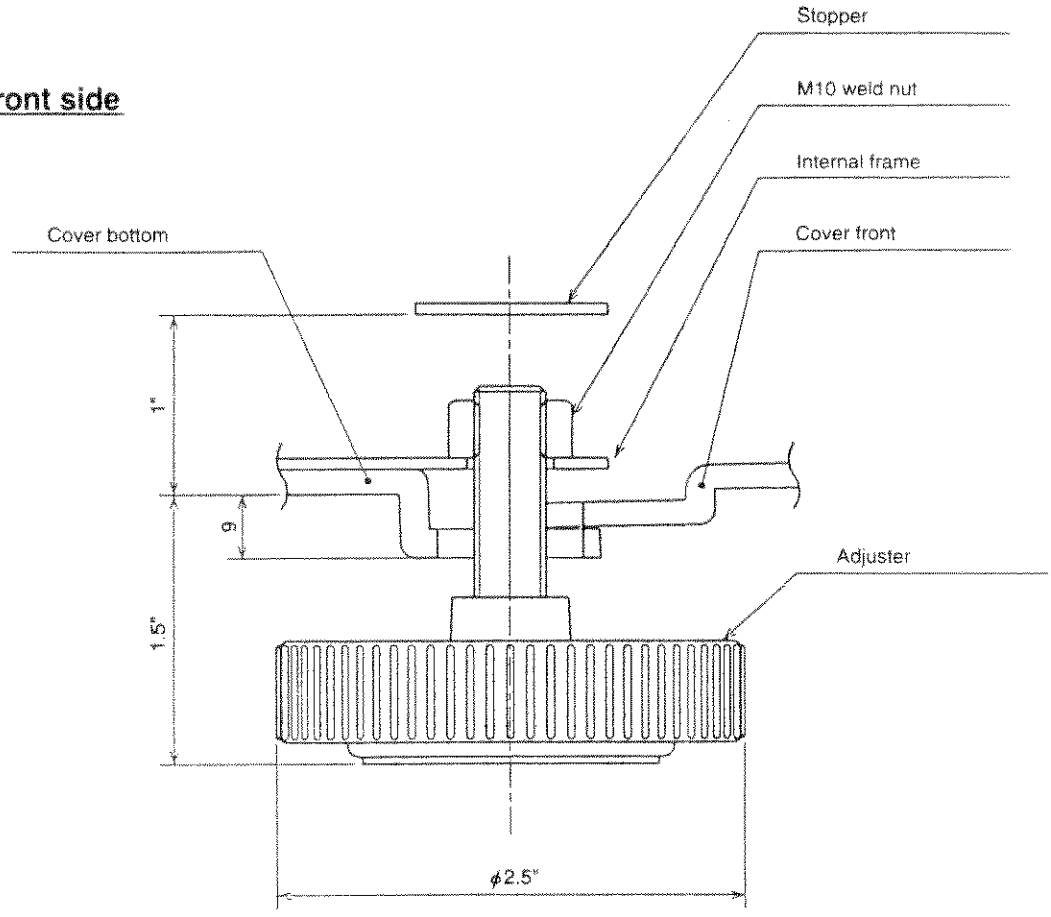
Rear Protection L Dimension List (4)

Swing & tilt angle		L												
Concentrating angle		L												
Screen size		146	148	150	155	160	165	170	175	180	185	190	195	200
h dimension		87.6	88.8	90	93	96	99	102	105	108	111	114	117	120
D dimension	82.7													219.3
	80.7													219.5
	78.7												214.2	219.7
	76.8											208.8	214.3	219.9
	74.8										203.4	209	214.5	220
	72.8										203.6	209.1	214.6	220.1
	70.9									198.2	203.7	209.3	214.8	220.2
	68.9									198.3	203.9	209.4	214.9	220.3
	66.9							187.4	193	198.5	204	209.5	215	220.4
	65							187.6	193.1	198.6	204.1	209.6	215	220.5
	63						182.2	187.7	193.2	198.7	204.2	209.6	215.1	220.5
	61					176.8	182.3	187.8	193.3	198.8	204.2	209.7	215.1	220.5
	59.1				171.4	176.9	182.4	187.9	193.4	198.8	204.3	209.7	215.1	220.5
	58.1			165.9	171.5	177	182.5	188	193.4	198.9	204.3	209.7	215.1	220.5
	57.1		163.8	166	171.5	177.1	182.5	188	193.4	198.9	204.3	209.7	215.1	220.5
	56.1	161.6	163.8	166.1	171.6	177.1	182.6	188	193.5	198.9	204.3	209.7	215.1	220.5
	55.1	161.7	163.9	166.1	171.6	177.1	182.6	188.1	193.5	198.9	204.3	209.7	215.1	220.5
	54.1	161.8	164	166.2	171.7	177.2	182.6	188.1	193.5	198.9	204.3	209.7	215.1	220.4
	53.1	161.8	164	166.3	171.7	177.2	182.6	188.1	193.5	198.9	204.3	209.7	215.1	220.4
	52.2	161.9	164.1	166.3	171.8	177.2	182.7	188.1	193.5	198.9	204.3	209.7	215	220.4
	51.2	161.9	164.1	166.3	171.8	177.3	182.7	188.1	193.5	198.9	204.2	209.6	215	220.3
	50.2	162	164.1	166.4	171.8	177.3	182.7	188.1	193.5	198.9	204.2	209.6	215	220.3
	49.2	162	164.2	166.4	171.8	177.3	182.7	188.1	193.5	198.8	204.2	209.6	214.9	220.2
	48.2	162	164.2	166.4	171.8	177.3	182.7	188.1	193.5	198.8	204.2	209.5	214.9	220.2
	47.2	162.1	164.2	166.4	171.8	177.3	182.7	188.1	193.4	198.8	204.1	209.5	214.8	220.1
	46.3	162.1	164.2	166.5	171.9	177.3	182.6	188.1	193.4	198.7	204.1	209.4	214.8	220.1
	45.3	162.1	164.2	166.5	171.8	177.3	182.6	188	193.4	198.7	204	209.4	214.7	220
	44.3	162.1	164.3	166.5	171.8	177.2	182.6	188	193.3	198.7	204	209.3	214.6	220
	43.3	162.1	164.2	166.4	171.8	177.2	182.6	188	193.3	198.6	203.9	209.3	214.6	219.9
	42.3	162.1	164.2	166.4	171.8	177.2	182.5	187.9	193.2	198.6	203.9	209.2	214.5	219.8
	41.3	162.1	164.2	166.4	171.8	177.2	182.5	187.9	193.2	198.5	203.8	209.1	214.4	219.7
	40.4	162	164.2	166.4	171.7	177.1	182.4	187.8	193.1	198.4	203.7	209.1	214.4	219.6
	39.4	162	164.2	166.4	171.7	177.1	182.4	187.8	193.1	198.4	203.7	209	214.3	219.5
	38.4	162	164.1	166.3	171.7	177	182.3	187.7	193	198.3	203.6	208.9	214.2	219.4
	37.4	162	164.1	166.3	171.6	177	182.3	187.6	192.9	198.2	203.5	208.8	214.1	219.4
	36.4	161.9	164.1	166.2	171.6	176.9	182.2	187.5	192.8	198.1	203.4	208.7		
	35.4	161.9	164	166.2	171.5	176.8	182.1	187.5	192.7	198	203.3			
	34.4	161.8	164	166.1	171.4	176.8	182.1	187.4	192.7	197.9				
	33.5	161.8	163.9	166.1	171.4	176.7								
	32.5	161.7	163.8	166										
	31.5	161.6												
	30.5													
	29.5													
	28.5													
	27.6													

Structure of M10 Weld Nut

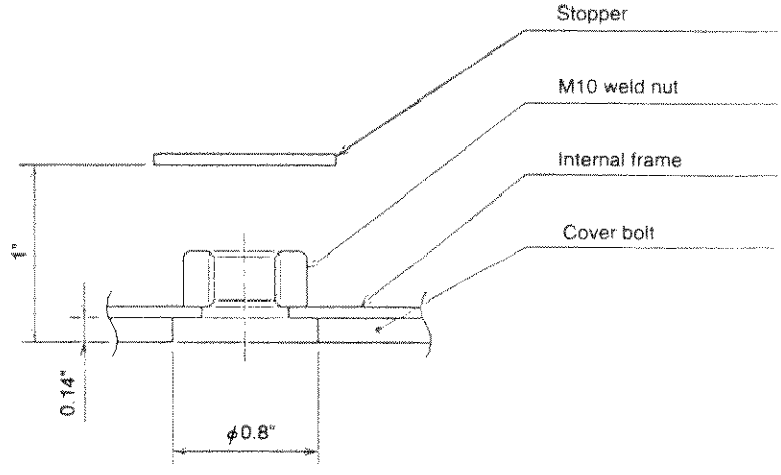
There are four weld nuts (M10) in the bottom for floor mount fixing (including adjuster). Use them when fixing the set. The weld nut has a stopper at 1 inch inside position.
Do not drive in the screw more that 1 inch.

Front side



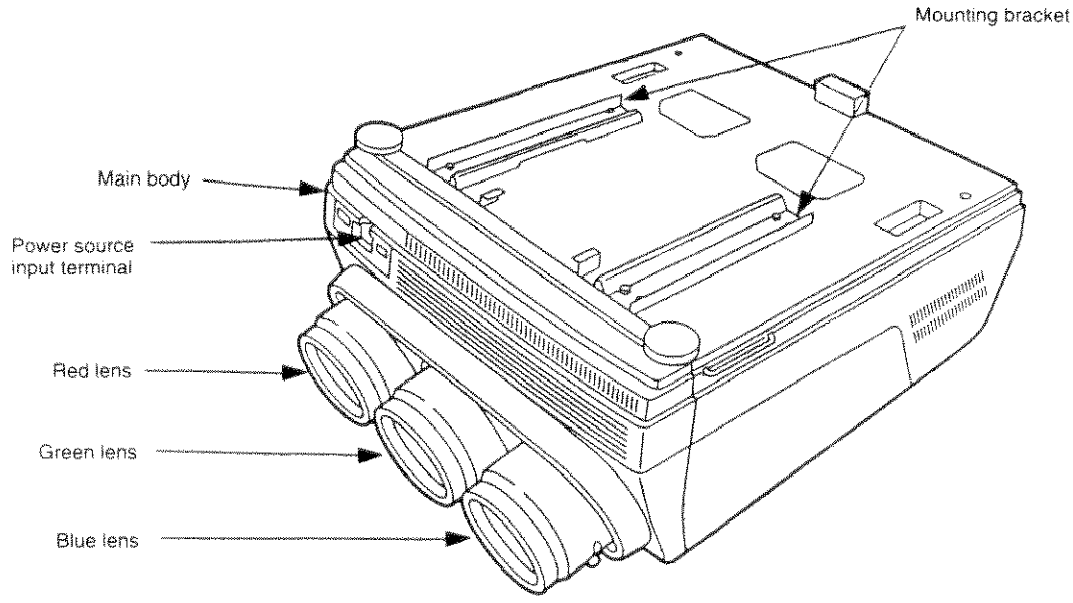
The adjuster is inserted to the full depth in packaged state in order to fix during transportation. When mounting on the floor, draw out to the position shown above. (The adjusting range is ±20 inches).
When packaging again, insert the adjuster to the full depth.

Rear side



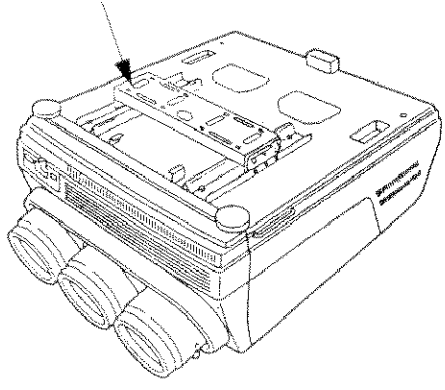
Installation Guide

1) Projector

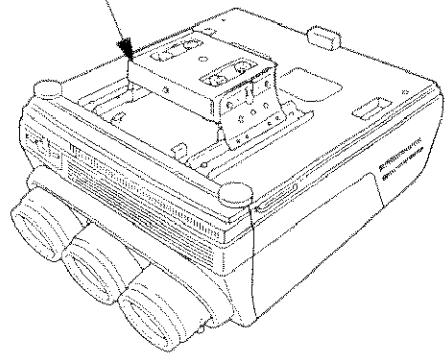


2) Ceiling bracket (optional)

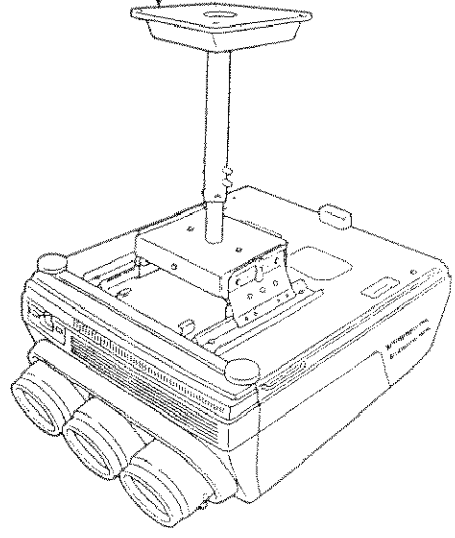
Celing suspender (BR-006)



Celing suspender (BR-007)



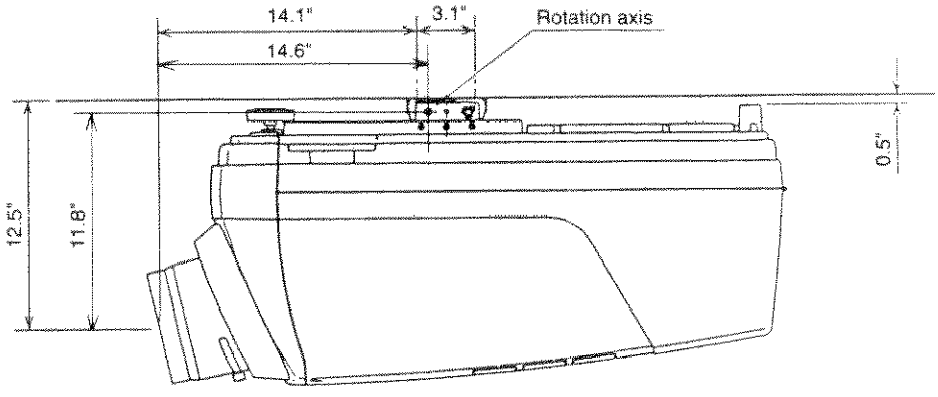
Celing suspender (BR-008)



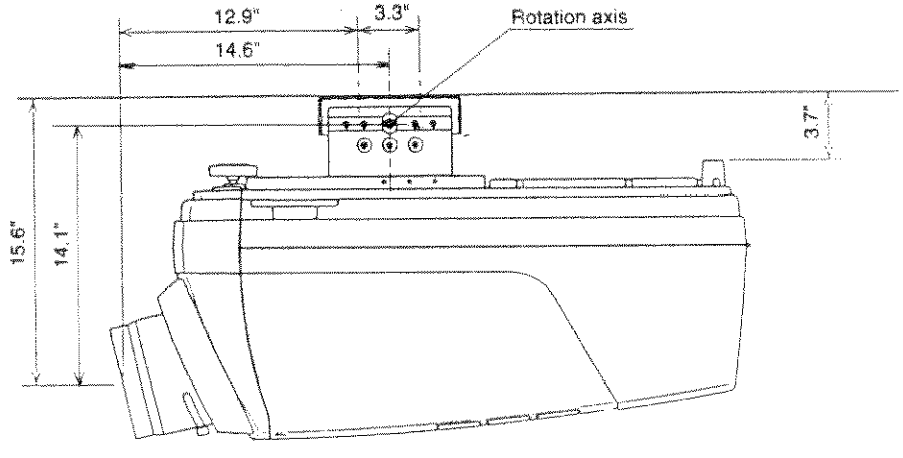
Mounting Bracket Types

The ceiling bracket is optional. Use a proper unit depending on the place of installation.

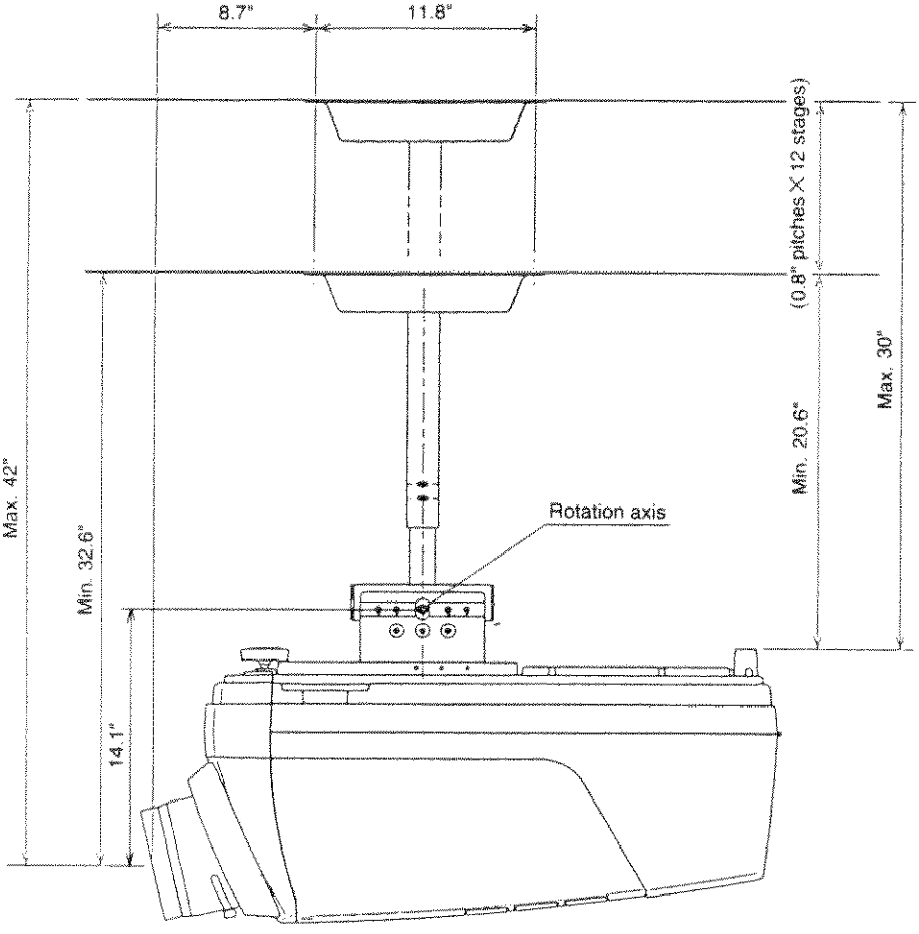
BR-006



BR-007



BR-008


8.7"
11.8"
(0.8" pitches X 12 stages)
Max. 30"
Min. 20.6"
Max. 42"
Min. 32.6"
14.1"
Rotation axis

Installation Cautions

1. Mount on the ceiling with particular care so as to withstand the load of the projector and screen sufficiently and safely, without being loosened by vibration. If the strength is insufficient, reinforce sufficiently to be free from safety problems. If the reinforcement is not enough or a screw is loosened, the projector may fall.

2. The weight of the projector and ceiling bracket is shown below. Select a place with a sufficient strength for withstanding the weight. Install so as to conform to the safety factor of 5 or more.

Video Projector		167 lbs.
Ceiling bracket	.....BR-006	3.0 lbs.
〃	.....BR-007	6.6 lbs.
〃	.....BR-008	23.76 lbs.

3. The ceiling bracket for mounting the projector on the ceiling is optionally prepared, but bolts and nuts should be purchased by properly selecting from the commercial pieces in consideration of strength and safety of the site.

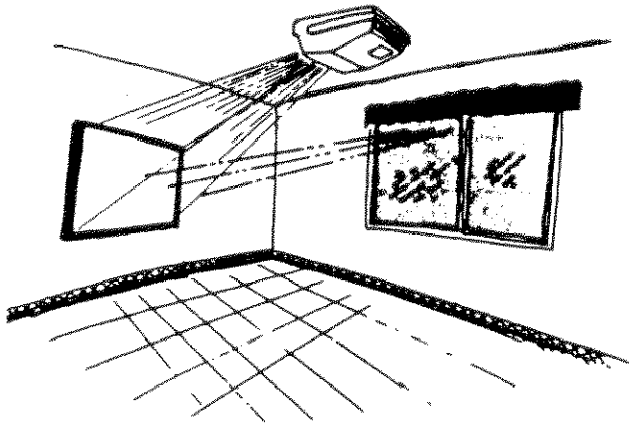
4. Keep the projector away from fire alarm or the like.

5. To install the projector and screen, avoid places exposed to heat, steam or smoke.

6. Project screen away from direct lighting or sunlight.

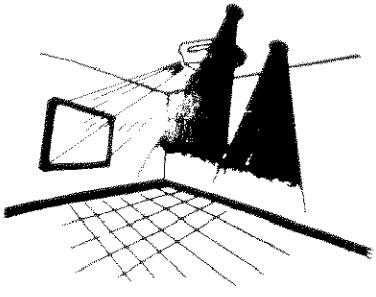
Effects of External Light

If intense light or the sun gets into the screen surface, the beautiful picture cannot be enjoyed. Determine the place of installation by considering the effects of external light on the screen.

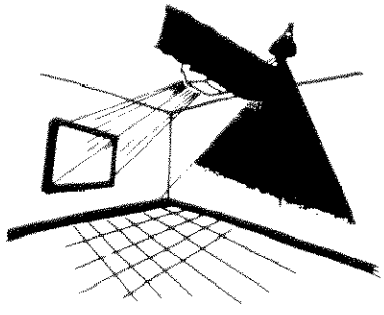


If the external light (ceiling lamp or intense light from windows) from the projecting direction of the video projector hits against the screen, it is reflected on the screen and gets into the eyes of the viewer, and the picture contrast is lowered. If intense light from the window gets into the screen, cover the window.

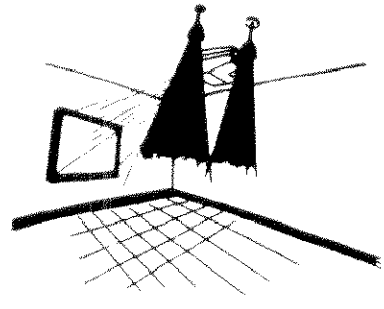
The illuminating light from the projecting direction of the video project is particularly harmful. Turn it off, or prevent the illuminating light from getting directly into the screen using the following measures.



Bury the lamps in the ceiling.



The curtain is effective if there are many lights.



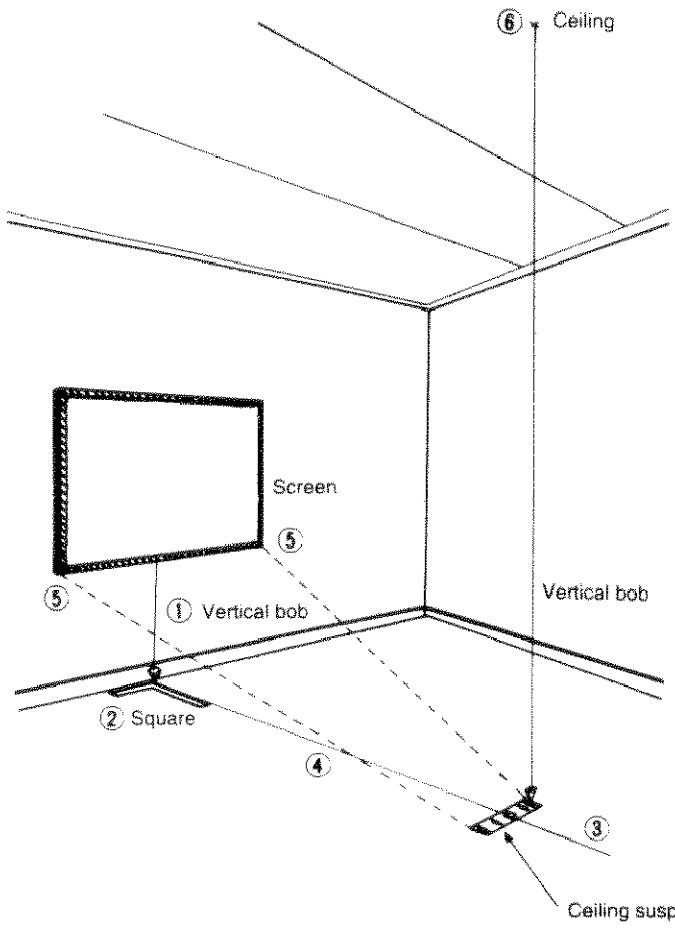
Use pendant type lamp with shade.

Installation of Projector

Ceiling mount

By varying the mounting dimension of the projector, the projection size can be changed. Determine the mounting position depending on the projection size and screen type.

Determine the mounting position of the ceiling bracket on the basis of the standard installation configuration.



Mounting of screen

Mount according to the screen mounting procedure.

Positioning of ceiling bracket

1. Drop a vertical bob from the center line of the screen and mark on the floor.
2. Fit a square to the marking on the floor and the wall to draw a vertical line to the screen.
3. Draw a string from the square and match with the center line of the ceiling bracket.
4. Measure the dimension between the ceiling bracket and screen.
5. Measure both ends of the screen and both ends of the ceiling bracket and make sure they are parallel to each other.
6. Drop a vertical bob from the ceiling and mark on the ceiling by matching with the mounting hole of the ceiling bracket.

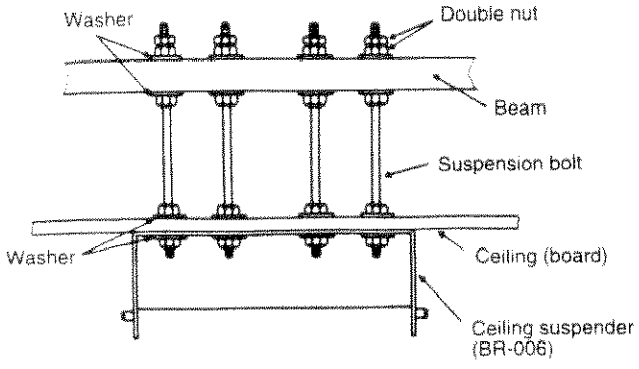
Fitting of ceiling bracket

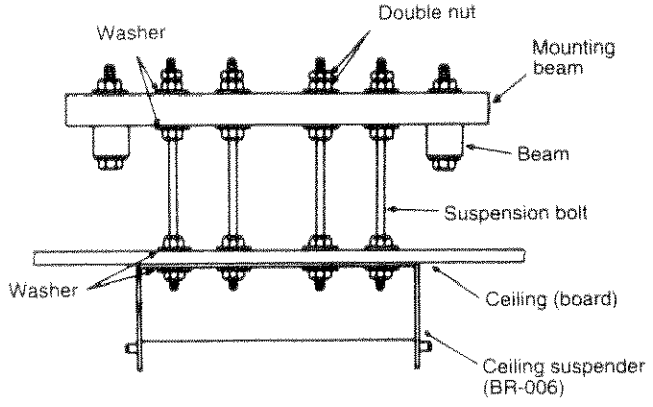
A. When directly mounting on the ceiling, having a space between the beam and ceiling.
B. When suspending from the ceiling, having a space between the beam and ceiling.
C. When directly mounting on the ceiling, with a concrete-made mounting surface, having a space against the ceiling.
D. When suspending from the ceiling, with a concrete-made mounting surface, having a space against the ceiling.
E. When directly mounting on a concrete-made ceiling.

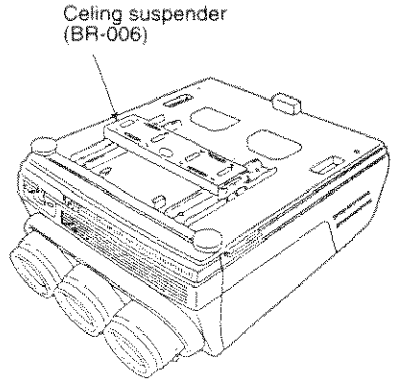
Fitting of ceiling bracket

A. When directly mounting on the ceiling, having a space between the beam and ceiling.

(Using ceiling bracket BR-006 or BR-007)







1. Drill penetration holes for suspension bolts in the ceiling by matching with the mounting position of the ceiling bracket.

2. Drill holes in beam or mounting beam in specified size and fix suspension bolts. (Use 0.4" suspension bolts. In BR-007, suspension bolts of 0.47" and 0.63" can be used).

   At this time, make sure the mounting beam and beam can withstand the load of the projector sufficiently.

   If the strength of mounting beam or beam is insufficient, reinforce to assure safety.

   If reinforcement is not enough or screw is loosened, it may cause projector to fall.

3. Fix the ceiling bracket on the suspension bolts.

4. If a beam is not provided at a position desired to mount the projector, attach a mounting beam between nearby beams. Make sure the mounting beam and beam can withstand the load of the projector sufficiently.

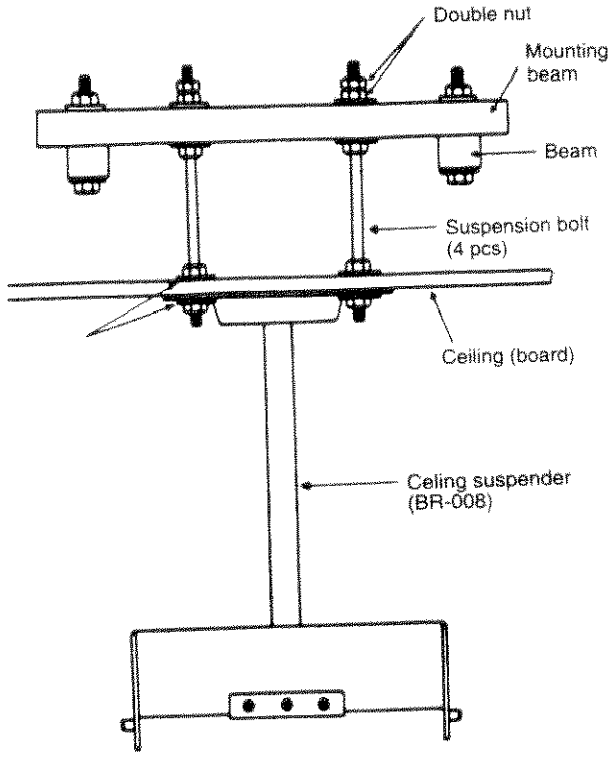
5. As the suspension bolts and nuts for mounting the projector, use double nuts and screw lock together with nuts, if necessary, so as not to get loosened by vibration.

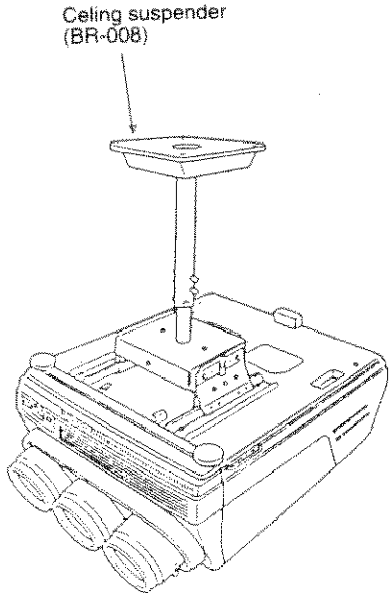
6. The suspension bolts and nuts are not furnished. Select from commercial products in consideration of the strength to withstand the load of the projector.

Fitting of ceiling bracket

B. When suspending from the ceiling, having a space between the beam and ceiling

(Using ceiling bracket BR-008)





1. Drill penetration holes for suspension bolts in the ceiling surface by matching with the mounting position of the ceiling brackets.

2. Attach mounting beam between neighboring beams of the projector mounting position, and drill holes in specified size, and fix suspension bolts.

   (Use suspension bolts of 0.4" or 0.47").

   At this time, make sure the mounting beam and beam can withstand the load of the projector sufficiently.

   If the strength of mounting beam or beam is insufficient, reinforce to assure safety.

   If reinforcement is not enough or screw is loosened, it may cause projector to fall.

3. Fix the ceiling bracket on the suspension bolts.

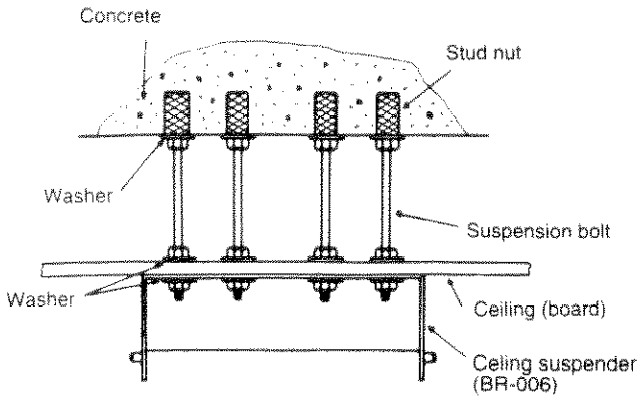
4. Together with the suspension bolts and nuts for mounting the projector, also use double nuts and screw lock, etc. if necessary, so as not to get loosened by vibration.

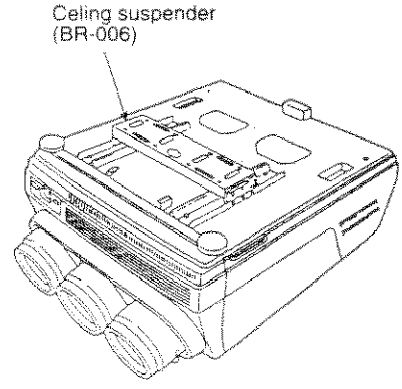
5. The suspension bolts and nuts are not furnished. Select from commercial products in consideration of the strength to withstand the load of the projector.

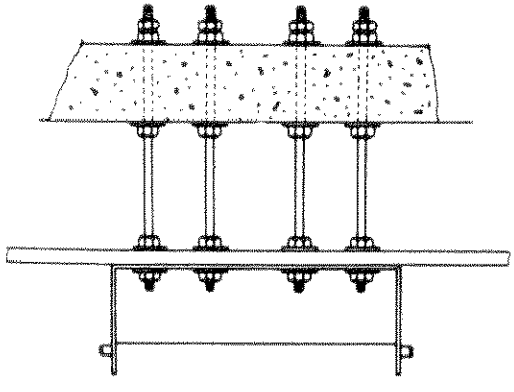
Fitting of ceiling bracket

C. When directly mounting on the ceiling, with a concrete-made mounting surface having a space against the ceiling

(Using ceiling bracket BR-006 or BR-007)







1. Drill penetration holes for suspension bolts in the ceiling surface by matching with the mounting position of the ceiling brackets.

2. Drive stud nuts into the concrete surface right above the holes drilled in the ceiling, and fix suspension bolts.

   (Use 0.4" suspension bolts. In BR-007, suspension bolts of 0.47" and 0.63" can be used).

   Drive the stud nuts according to the job standard specified by the nut maker, and be careful so as not to allow looseness.

   Make sure the ceiling concrete is strong enough to withstand the load of the projector.

   If the ceiling concrete is fragile or deterioration is considered due to years of use, reinforce as shown in the sketch, and fix the suspension bolts.

3. Fix the ceiling bracket on the suspension bolts.

4. Apply screw lock or the like to the stud nuts and bolts so as not to get loosened by vibration.

5. The stud nuts and bolts are not furnished. Select from commercial products in consideration of the strength to withstand the load of the projector.

[Caution]

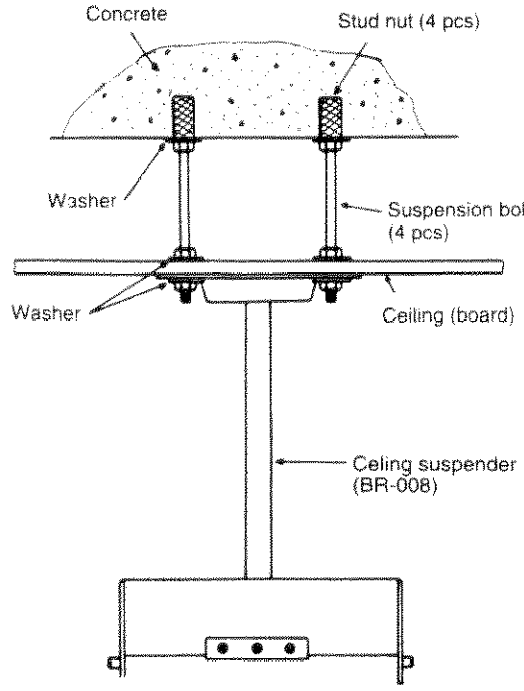
If the mounting area is fragile or loose due to deterioration or concrete is cracked, or rusting of suspension bolts or the like, projector may fall.

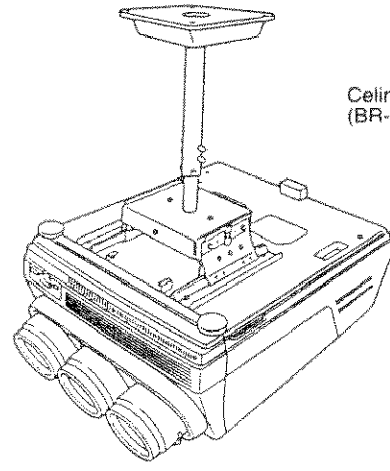
Check the mounting area at least once a year as a safety precaution.

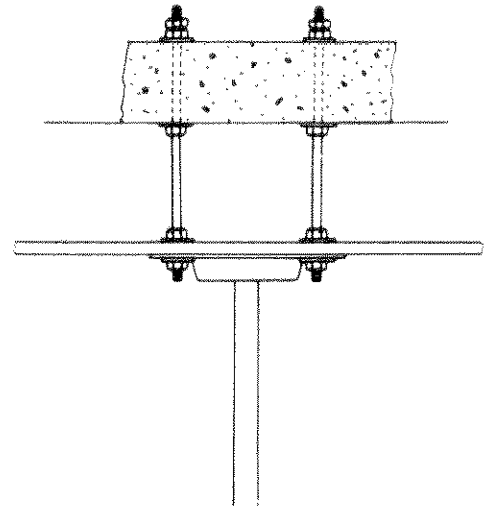
Fitting of ceiling bracket

D. When suspending from the ceiling, with a concrete-made mounting surface having a space against the ceiling

(Using ceiling bracket BR-008)







1. Drill penetration holes for suspension bolts in the ceiling surface by matching with the mounting position of the ceiling brackets.

2. Drive stud nuts into the concrete surface right above the holes drilled in the ceiling, and fix suspension bolts.
   (Use suspension bolts of 0.4" or 0.47").

   Drive the stud nuts according to the job standard specified by the nut maker, and be careful so as not to allow looseness.

   Make sure the ceiling concrete is strong enough to withstand the load of the main body.

   If the ceiling concrete is fragile or deterioration is considered due to years of use, reinforce as shown in the sketch, and fix the suspension bolts.

3. Fix the ceiling bracket on the suspension bolts.

4. Apply screw lock or the like to the stud nuts and bolts so as not to get loosened by vibration.

5. The stud nuts and bolts are not furnished.
   Select from commercial products in consideration of the strength to withstand the load of the projector.

[Caution]

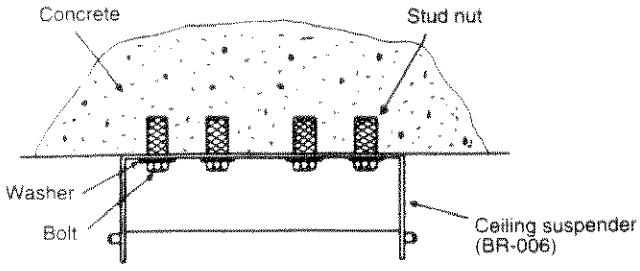
If the mounting area is fragile or loose due to deterioration or concrete is cracked, or rusting of suspension bolts or the like, projector may fall.

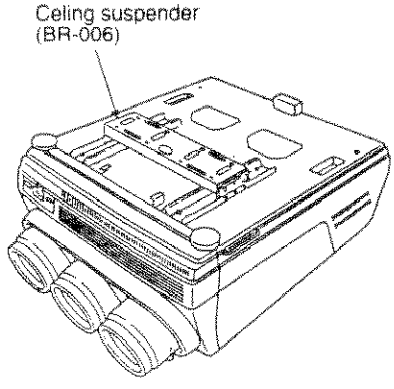
Check the mounting area at least once a year as a safety precaution.

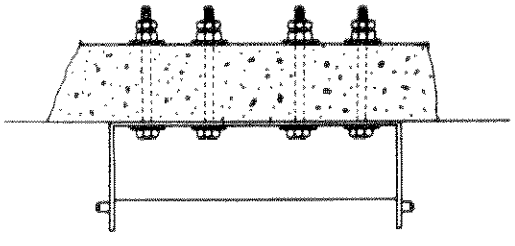
Fitting of ceiling bracket

E. When directly mounting on a concrete-made ceiling

(Using ceiling bracket BR-006 or BR-007)







1. Drill penetration holes for suspension bolts in the ceiling surface by matching with the mounting position of the ceiling brackets.

   Drive the stud nuts according to the job standard specified by the nut maker, and be careful so as not to allow looseness.

   Make sure the ceiling concrete is strong enough to withstand the load of the projector.

   If the ceiling concrete is fragile or deterioration is considered due to years of use, reinforce as shown in the sketch, and fix the suspension bolts.

2. Fix the ceiling bracket on the suspension bolts. (Use 0.4" suspension bolts. In BR-007, suspension bolts of 0.47" and 0.63" can be used).

3. Apply screw lock or the like to the stud nuts and bolts so as not to get loosened by vibration.

4. The stud nuts and bolts are not furnished. Select from commercial products in consideration of the strength to withstand the load of the projector.

[Caution]

If the mounting area is fragile or loose due to deterioration or concrete is cracked, or rusting of suspension bolts or the like, projector may fall.

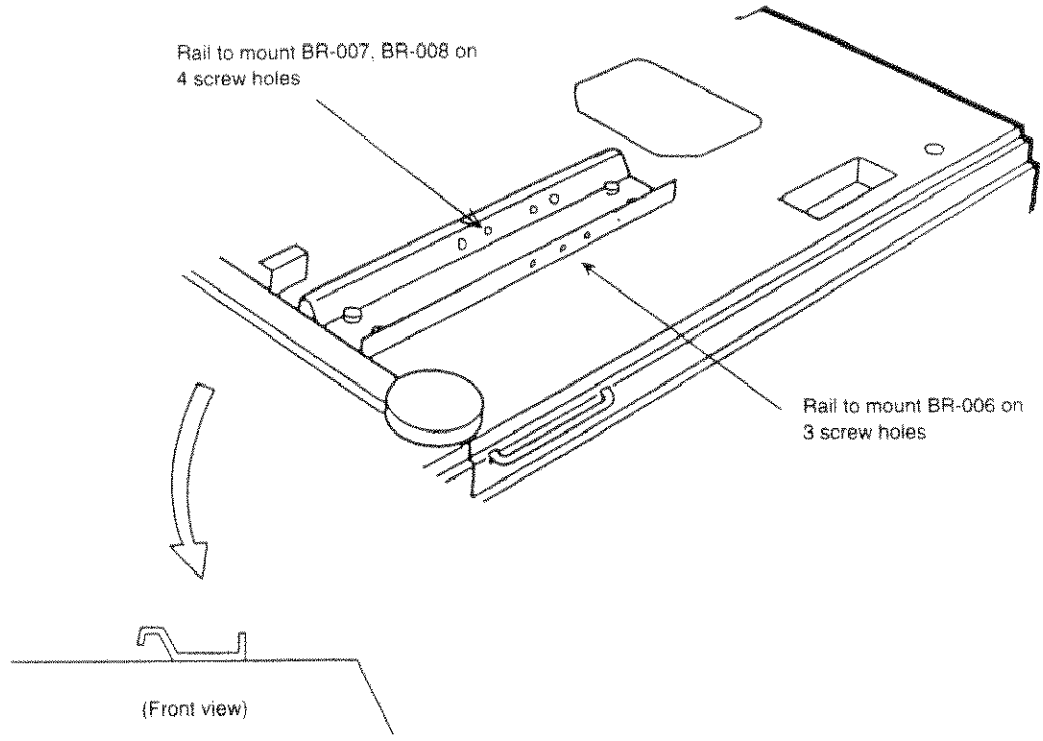
Check the mounting area at least once a year as a safety precaution.

Installation of Projector (Ceiling Mount)

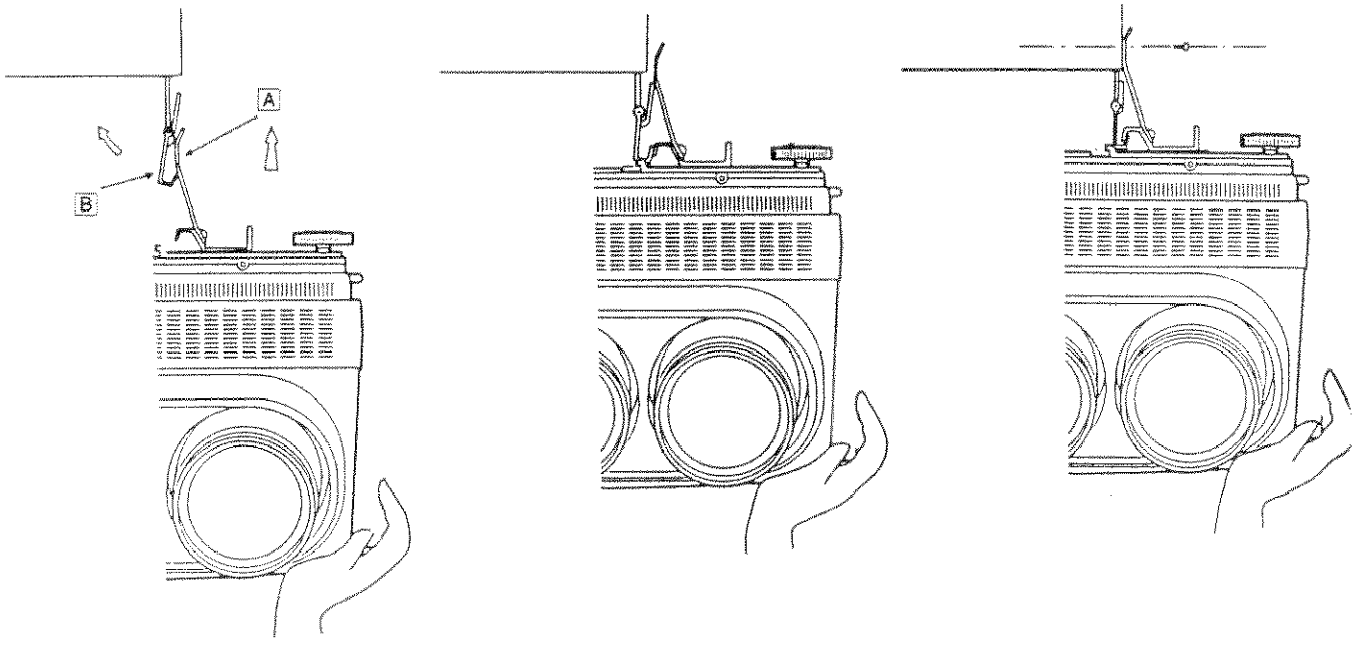
(Using ceiling bracket BR-007 or BR-008)

CAUTION

When mounting the ceiling bracket, it must be noted that the bracket is placed on the projector rail as shown below.



Mounting method of BR-007, BR-008



1) Push up the set, and B is pushed inside by A.

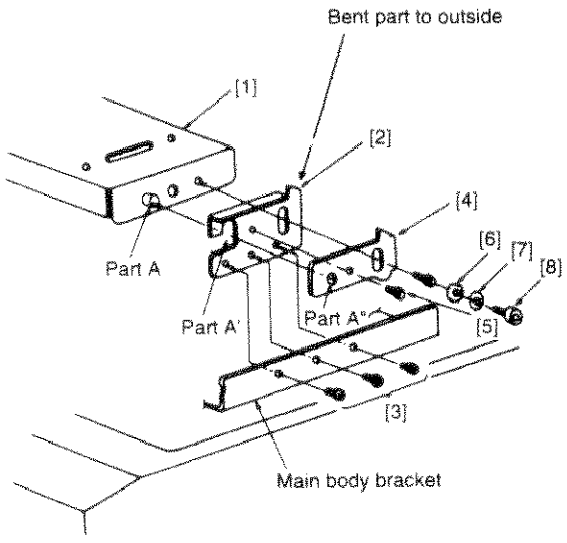
2) Further push up, and hook of A is engaged with hook of B.

3) Release from hand in this state, and fit A into B by screwing.

Installation of Projector

Using ceiling bracket BR-006 (ceiling mount)

◆Use the furnished brackets and screws for attaching the ceiling suspender to the projector.



1. Fit the connector [2] to the projector bracket by using furnished screw [3].

2. When lifting the projector, hold the bent part of the projector corner.
   Gloves and wet hands are slippery and dangerous. Watch your step, too.

3. Match part A' of connector [2] with part A of ceiling bracket [1], and hook the projector.

   [Cautions]

   ◆Make sure it is hooked on part A of ceiling bracket [1], and only then release from hand.

   ◆It is dangerous to leave the projector in hooked state. After hooking, fix to specified position immediately by using furnished bracket and screws.

4. Match the hole of part A' of holder [4] with part A of the ceiling bracket [1], and fit washers [7], [8], sequentially to the furnished screw [6], and attach to the ceiling bracket [1].

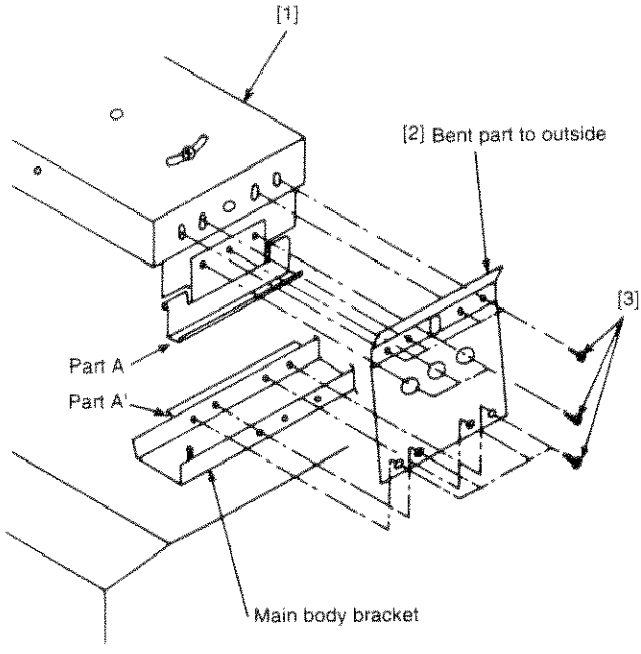
5. Fit the holder [4] to the connector [2] with furnished screw [5].

No.	Constituent part	Q'ty
[1]	Ceiling bracket	1
[2]	Connector (right, left)	2
[3]	Screw for connector	6
[4]	Holder (right, left)	2
[5]	Screw for holder	2
[6]	Adjusting screw	2
[7]	Plain washer	2
[8]	Toothed washer	2

Assembling procedure of ceiling bracket

Using ceiling bracket BR-007 (ceiling mount)

◆Use the furnished brackets and screws for attaching the ceiling bracket to the projector.



1. Fit the connector [2] to the projector bracket by using furnished screw [3].

2. When lifting the projector, hold the bent part of the projector corner.
   Gloves and wet hands are slippery and dangerous. Watch your step, too.

3. Match part A' of projector bracket with part A' of ceiling bracket [1] using the connector [2] as a guide and hook the projector.

   [Cautions]

   ◆Make sure it is hooked on part A of ceiling bracket [1], and on part A' of projector bracket and only then release from hand.

   ◆It is dangerous to leave the projector in hooked state. After hooking, fix to specified position immediately by using furnished bracket and screws.

4. Fix part A' of the ceiling bracket [1] with furnished screw [3] so as not to move.

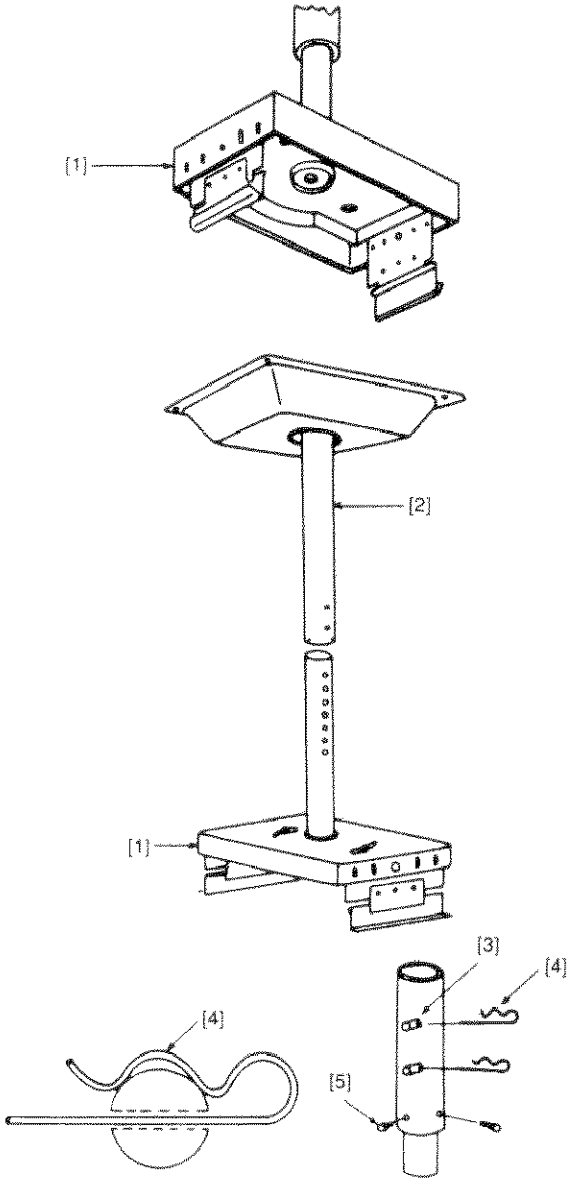
5. Fit connector [2] to ceiling bracket [1] with furnished screw [3].

No.	Constituent part	Q'ty
[1]	Ceiling bracket	1
[2]	Connector	2
[3]	Screw for bracket	22

Assembling procedure of ceiling bracket

Using ceiling bracket BR-008 (ceiling mount)

◆Use the furnished brackets and screws for attaching the ceiling bracket to the projector.

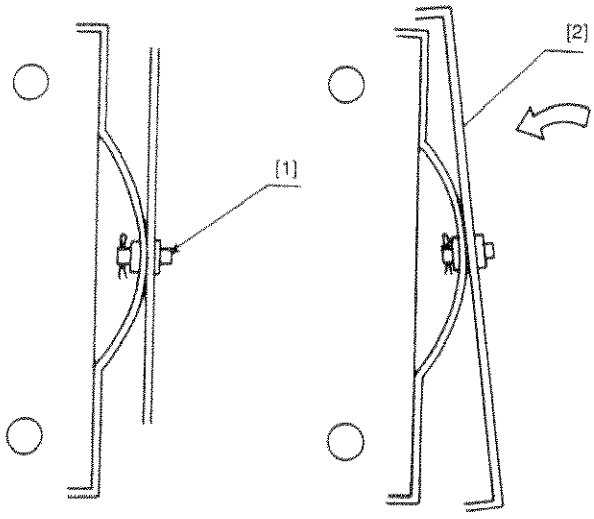


1. Loosen pipe fixing screw [5] to such an extent as not to be detached.
2. Remove clip [4], and pull out fixing pin [3].
3. Separate ceiling suspension pipe into upper and lower halves.
4. Put ceiling suspension pipe [1] on upper ceiling suspension pipe [2], and insert fixing pin [3]. (Calculate the projector height, and determine the position of fixing pin).
5. Insert clip [4] into fixing pin [3].
6. Tighten pipe fixing screw [5]. (By loosening pipe fixing screw [5] when projector is mounted, the lateral angle of the projector can be finely adjusted).
7. Install the projector by referring to the procedure of "using ceiling bracket BR-007" on page 59.
8. Lay the cable along the ceiling suspension pipe.
9. Cut cover to a proper length. Put wiring cable into the cover.

No.	Constituent part	Q'ty
[1]	Ceiling bracket	1
[2]	Ceiling suspension pipe, upper	1
[3]	Fixing pin	2
[4]	Clip	2
[5]	Pipe fixing screw	3

Fine adjusting method of ceiling bracket

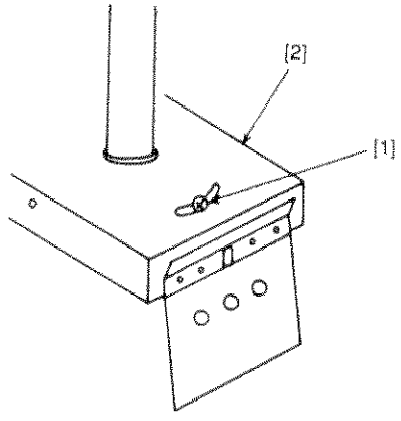
Using ceiling bracket BR-007, BR-008



Horizontal deflection adjustment (BR-007)

1) Horizontal deflection adjustment (BR-007)
   1. Loosen screw [1].
      (Pin is for preventing slipping of bolt).
   2. Rotate bracket [2], then the horizontal deflection can be adjusted.
   3. Tighten screw [1] after deflection adjustment.

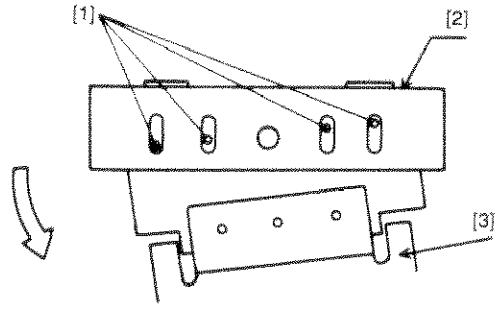
2) Horizontal deflection adjustment (BR-008)
   1. Loosen screw [1].
   2. Rotate bracket [2], then the horizontal deflection can be adjusted.
   3. Tighten screw [1] after deflection adjustment.



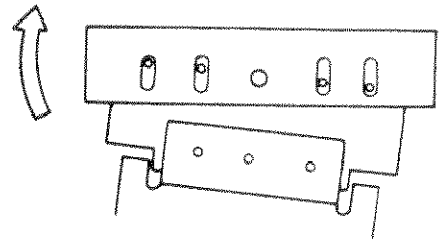
Horizontal deflection adjustment (BR-008)

3) Adjustment of angle of elevation
   1. After hooking the set on BR-007, BR-008, fix brackets [2], [3] temporarily with four screws [1].
   2. Move bracket [3] along slot of bracket [2], and adjust the angle of elevation of the set.
   3. After adjustment, tighten screw.

★The angle of elevation can be adjusted within +/–5 degrees, but should be suppressed around 3 degrees in order to maintain the performance.



(When lowering)

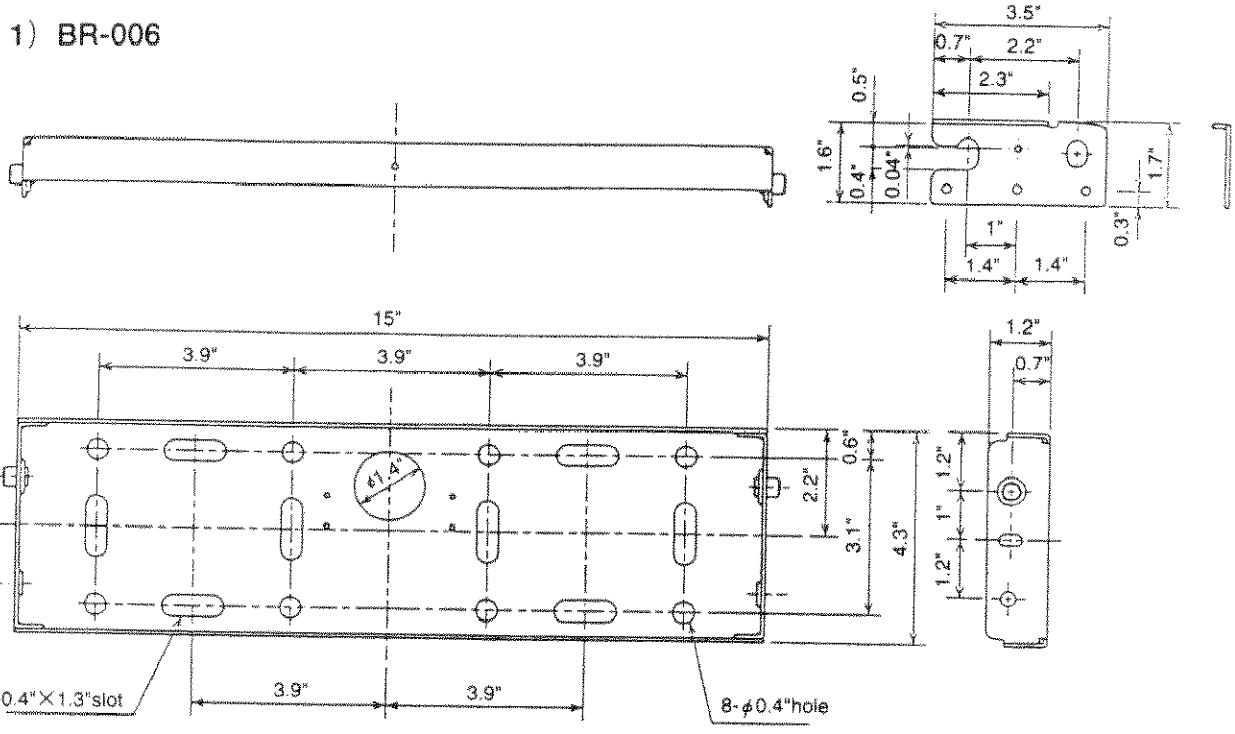


(When raising)

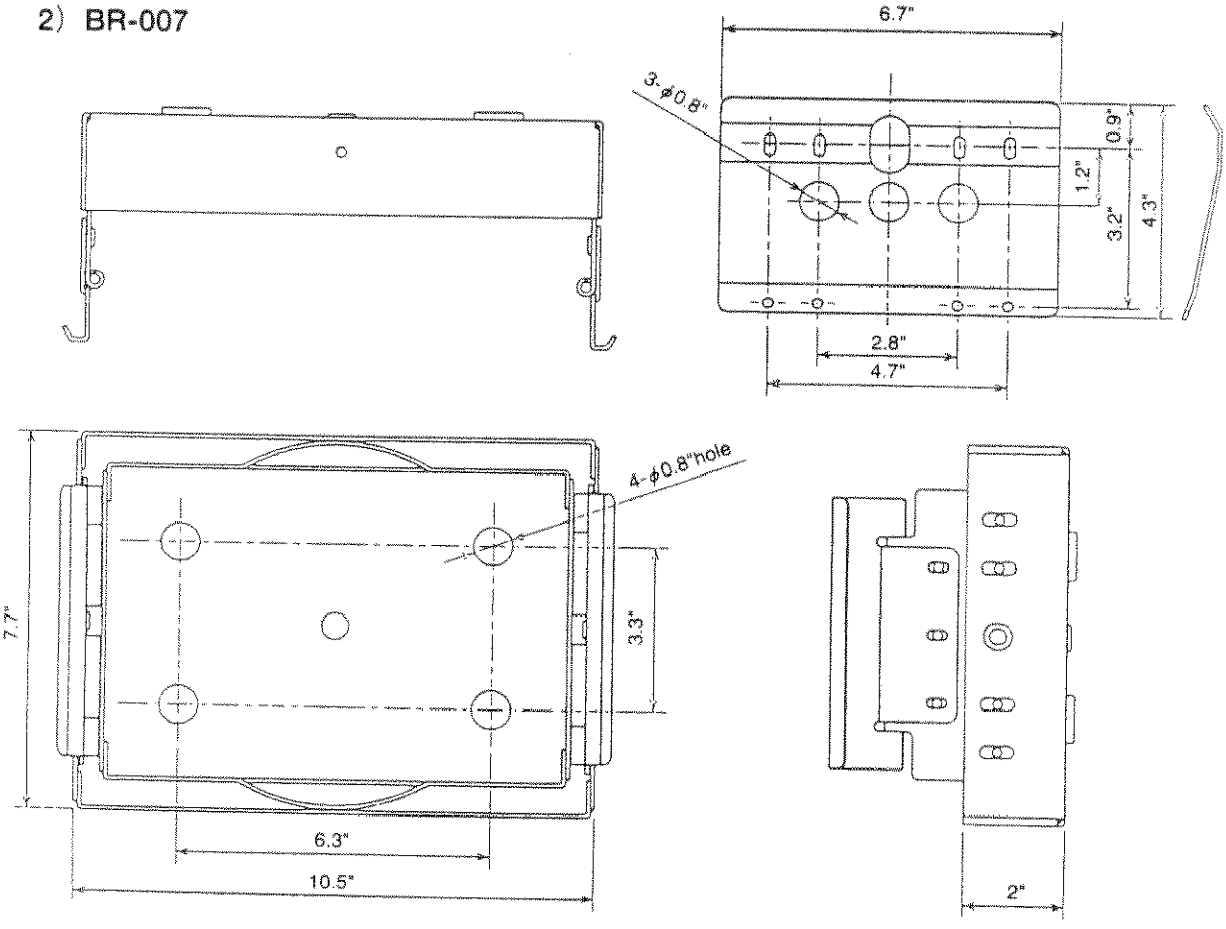
Adjustment of angle of elevation

Dimensional Drawings of Ceiling Brackets

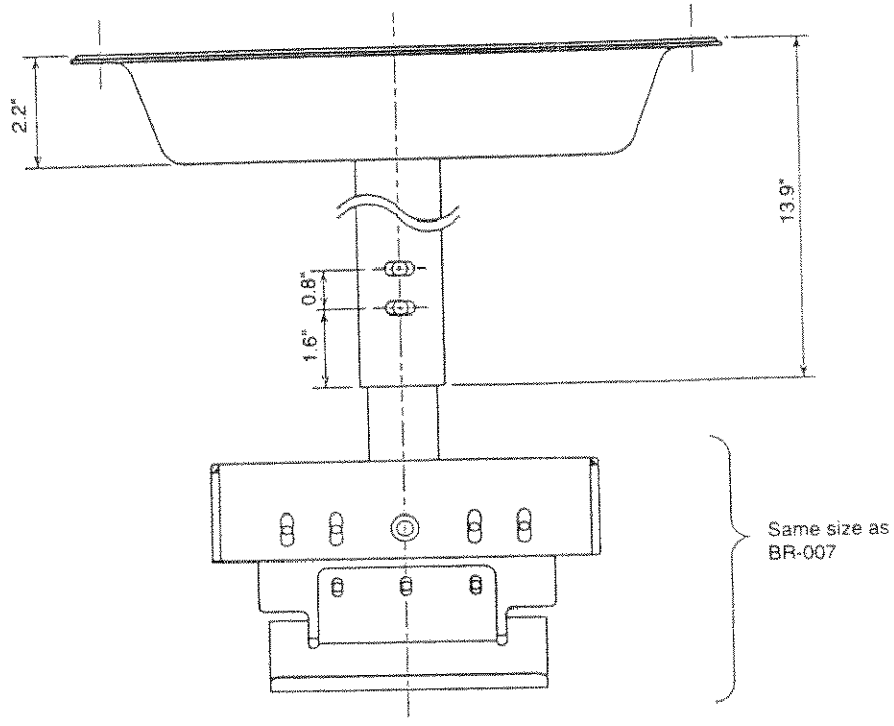
1) BR-006

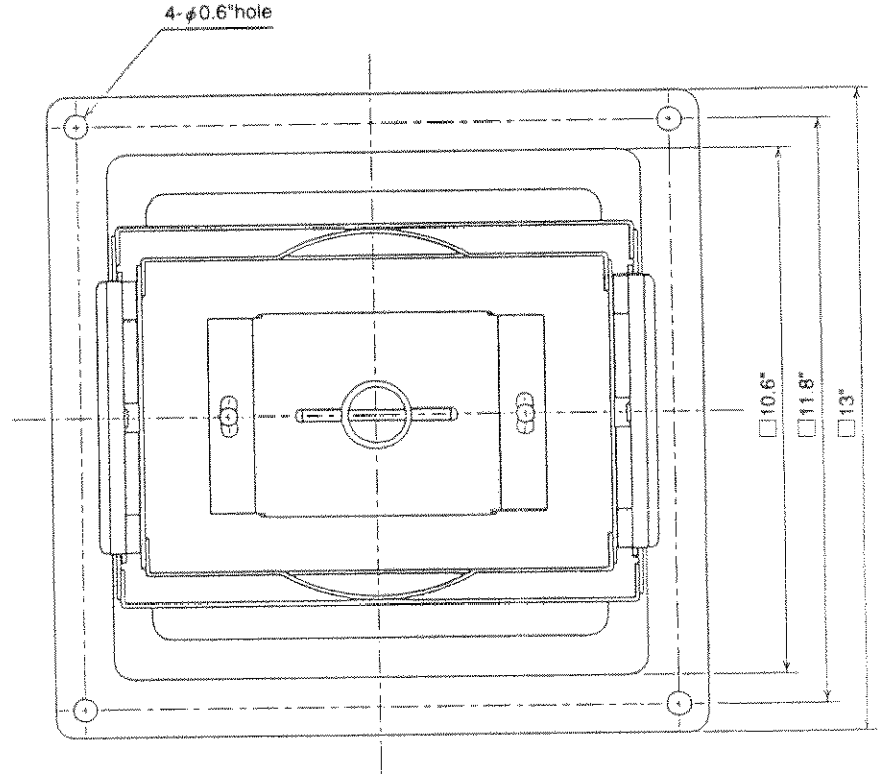


2) BR-007



3) BR-008





CHAPTER II

Convergence & Picture Set-up Instructions

PRIOR TO ADJUSTMENT

Prior to adjustment, read the manual to understand the following.

Memory Data

This machine has a memory function, and stores the adjustment data.

- Up to 30 memories can be stored, and if input signals are different, or same signals, one memory is used as far as the memory content (including user menu) is different. When adjusting, verify the signal (device) to be connected by the user.

- One memory stores:
  - Memory name (it must be recorded in the first place)
  - Wiring method (3-, 4-, 5-wire type)
  - SYNC polarity (4-, 5-wire type only; horizontal, vertical)
  - Frequency (horizontal, vertical)
  - Adjustment data of user menu (picture quality, etc.)
  - Adjustment data of service menu
    - Convergence adjustment data
    - Focus adjustment data
    - Video setting data

  Such stored information is called "memory data."
  The memory data is individually stored in each memory, and hence the adjustment data can be changed in every input signal. As a result, it is possible to adjust independently in each input signal.

- The machine reads out the memory data of the condition coinciding with the input signal when the input signal is changed over in order to judge automatically the frequency, polarity and winding method of input signal.

Note: 3-, 4-, 5- wire type means:
3-wire = Red, Green, Blue with SYNC on Green
4-wire = Red, Green, Blue with separate HV SYNC
5-wire = Red, Green, Blue with separate H & V SYNC

Note: INPUT VIDEO, Y/C terminals do not identify connection method of the connected signals and synchronous polarity. Therefore, when these terminals are selected, signals can be called in NTSC/PAL/SECAM (horizontal frequency 15.6 or 15.7 kHz, vertical frequency 50, 60Hz) memory data, regardless of connection method and polarity.

Memory List

The memory name detected to be same as the signal being displayed, the memory data can be changed over.

- Condition of memory name detected to be same as present input signal
  When horizontal and vertical frequencies are same or similar frequencies :
  - Not locked at the input terminal where present signal is fed.
  - Wiring method Note is same.

  Note:
  In input terminals A and B, input is possible if the wiring method is different. The wiring method is divided into RGBH, RGBHV & RGB (SYNC on G) (3-, 4- and 5-wire system), which differs depending on the machine to be connected. It must be noted that the wiring method is detected automatically in this machine.

Display, Changeover Method of Memory List

1. Press MEM LIST.
   The memory name is displayed.
   The screen display differs depending on whether the memory data detected to be same as the present input signal is singular or plural.
   (The screen display is cleared by pressing ESC button or MEM LIST button).

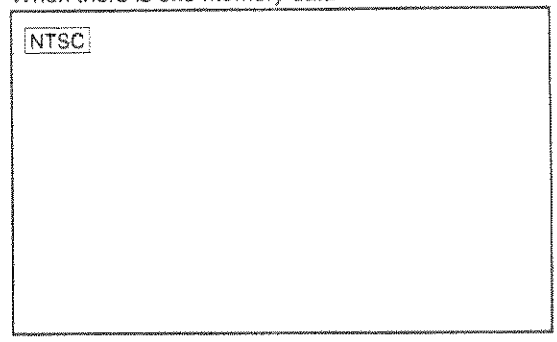
2. Using up or down button, select the memory name desired to be changed.
   Not active if there is only one memory data.

3. Press ENTER button.
   The memory data changes over, and the display disappears.

Memo

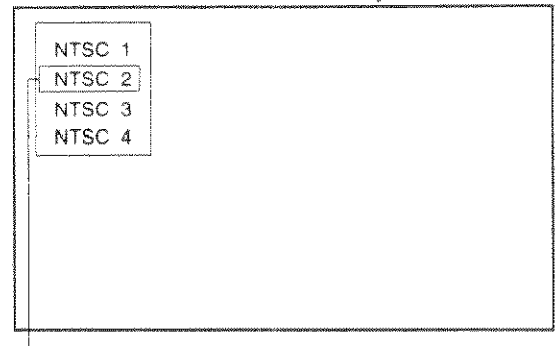
If there are plural memory data detected to be the same signals from other signals, the final detected signal will be displayed.

When there is one memory data



(In NTSC input, when there is only one memory data)

When there are two or more memory data



The memory name in present use is indicated by cursor and displayed.

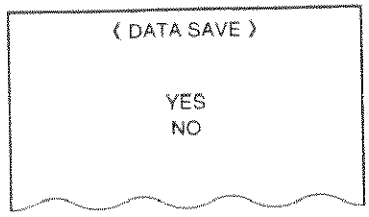
(In NTSC input, there are four memory data judged to be same.)

Data Save

Save data after completion of each adjustment.
(If the input signal is changed over or the power source is cut off without saving, the adjustment data will not be stored).

[Procedure]
(1) After each adjustment, return to service menu.

(2) By pressing ESC button in service menu, the data save menu is displayed.



Data save menu

(3) By selecting YES, the adjustment data is saved. (It takes about 13 seconds to save.)
During saving, do not turn OFF power supply or change input signals, to prevent erase of data and error operation.

(4) When NO is selected, the adjustment data will not be saved.
In this case, by turning off the power and turning it on again, the previous date before adjustment will be restored.

Note: If adjustment data is not changed, the data save menu is not displayed.

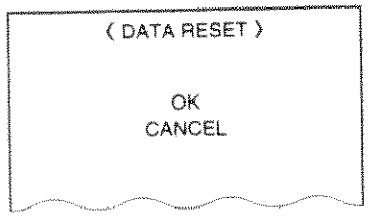
Data Reset

The data reset can be individually set to the initial value in sub and under-sub menu. (Initial setting of data is not always 0.)

[Procedure]

(1) Get into the menu (both sub menu and under-sub menu) of the item desired to reset data.

(2) By pressing NORMAL button, data reset menu is displayed.



Data reset menu

(3) By selecting OK, data is reset.

(4) Data is not reset by selecting CANCEL or pressing ESC button.

Note: If data is reset by mistake, once power is turned off without saving data, and turn on again, then the original data is restored (the last saved data is read out).

[Reset examples]

1. To reset all of adjustment data of BLANKING
   1) Get into BLANKING menu.
   2) Reset data (follow steps (2) and (3) above).
2. To reset only TOP adjustment data in FOCUS
   1) Get into FOCUS menu.
   2) Select TOP.
   3) Reset data.

Note 1: Reset in G/CONVER menu (page 93)

- By resetting in G/CONVER menu
  All convergence adjustment data of R, G, B are reset.
- By resetting in MANUAL ADJ menu
  Geometric adjustment data of G is reset. However, the following items are not reset.
  H-SIZE, KEYS, PIN
  V-SIZE, LIN, S-LIN
- By resetting in SCAN MODE menu
  At the time of 5 x 5 RB DIG ADJ, convergence adjustment data of R and B are reset.
  At the time of 5 x 5 G DIG ADJ, geometrical adjustment data of G is reset. However, the following items are not reset.
  H-SIZE, KEYS, PIN
  V-SIZE, LIN, S-LIN

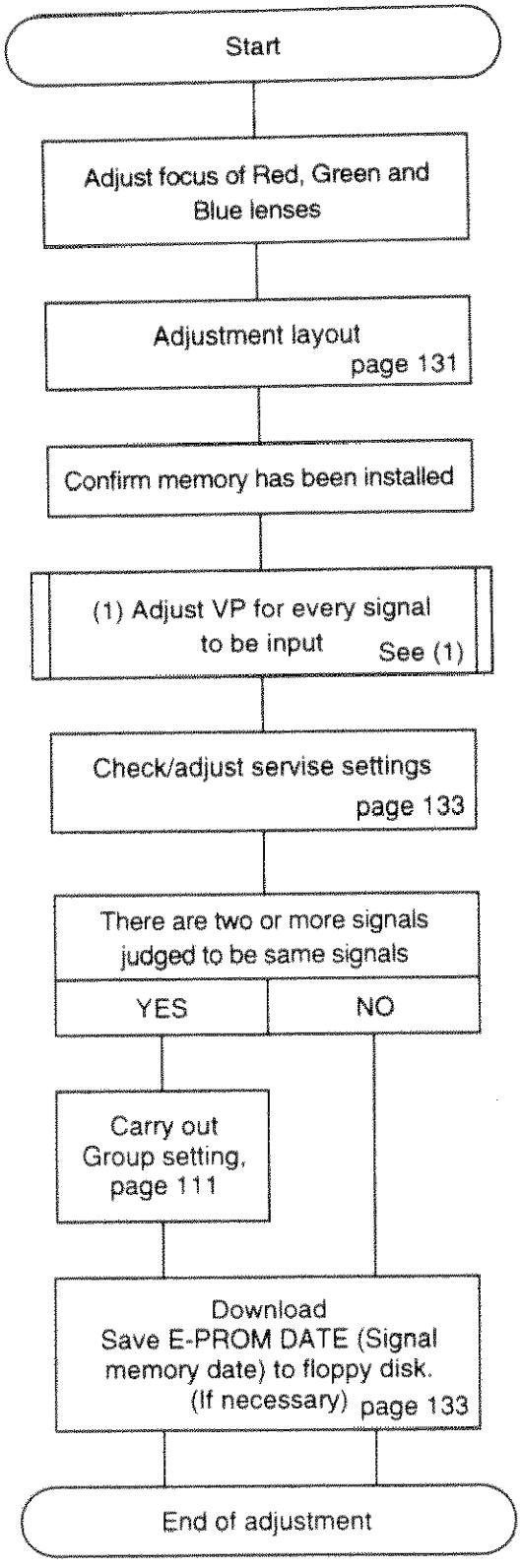
- In under-sub menu, when the data is moved by getting into each menu, the item is reset.
  Example: To reset horizontal BOW (G):
  1) Select SKEW/BOW in (3)-3 MANUAL ADJ menu, press FUNC button, and get into under-sub menu of BOW.
  2) Change adjustment color to G by G button, and move the adjustment data only in the horizontal direction by right or left button.
  3) Reset data (steps (2) and (3)).

Note 2: Reset in (4)-1 FOCUS menu (page 105)
- By resetting in (4)-1 FOCUS menu
  Adjustment data of all items of FOCUS (R, G, B) are reset.
- By resetting in (4)-2 FOCUS CORNER menu display
  Adjustment data of all items of FOCUS CORNER (R, G, B) are reset.

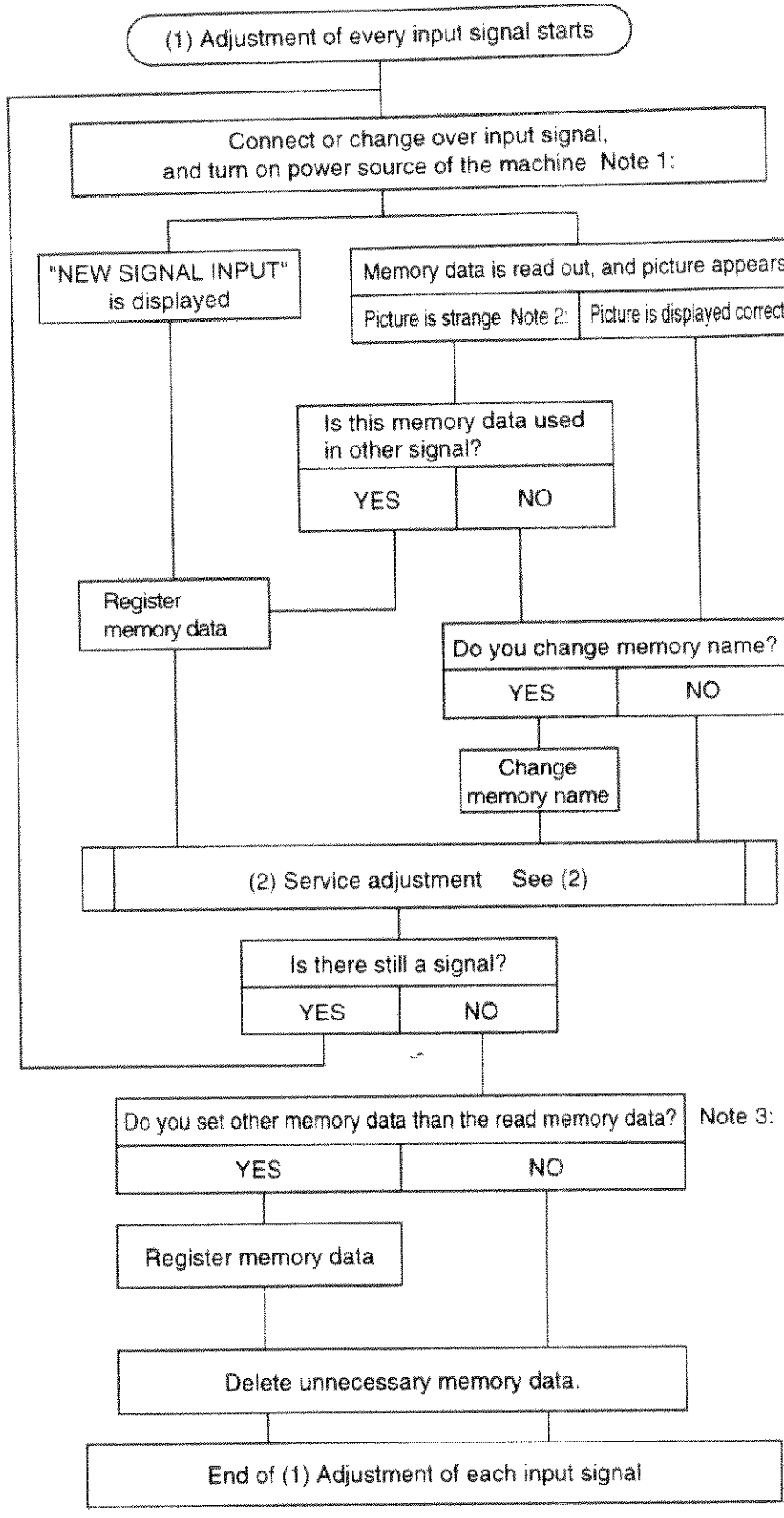
Note 3: By resetting in (5)-1 BLANKING menu (page 109) display, adjustment data of all items of blanking are reset.

Procedure of Adjustments

Adjusting Total Procedure



(1) Procedure of adjust VP for every signal to be input

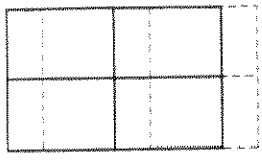


Note 1: In the computer using video board, the input signal may be changed over by software. In this case, individual memory data is necessary.

Example: When using MS-DOS and MS-WINDOWS (when using video board)
MS-DOS: Horizontal frequency 31.5 kHz (sometimes, signal may be partly changed also on DOS)
MS-WINDOWS: Horizontal frequency 64 kHz, 48 kHz, etc.; several types of signals can be selected.
Confirm sufficiently with customer.

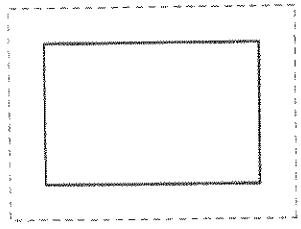
Note 2: In this machine, signals cannot be distinguished if the frequency and wiring method (3, 4, 5 wires) are identical. Therefore, if signals of same frequency and wiring method and different phase and signal system are fed, the same memory data is already read out.
In this case, the picture may not be displayed correctly, but may appear as follows.

1. Wrong phase

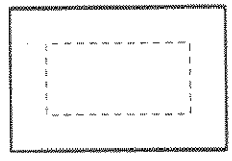


Centers of screen and picture are deviated in the horizontal or vertical direction.

2. Wrong width



Picture is out of screen.



Picture is smaller than screen

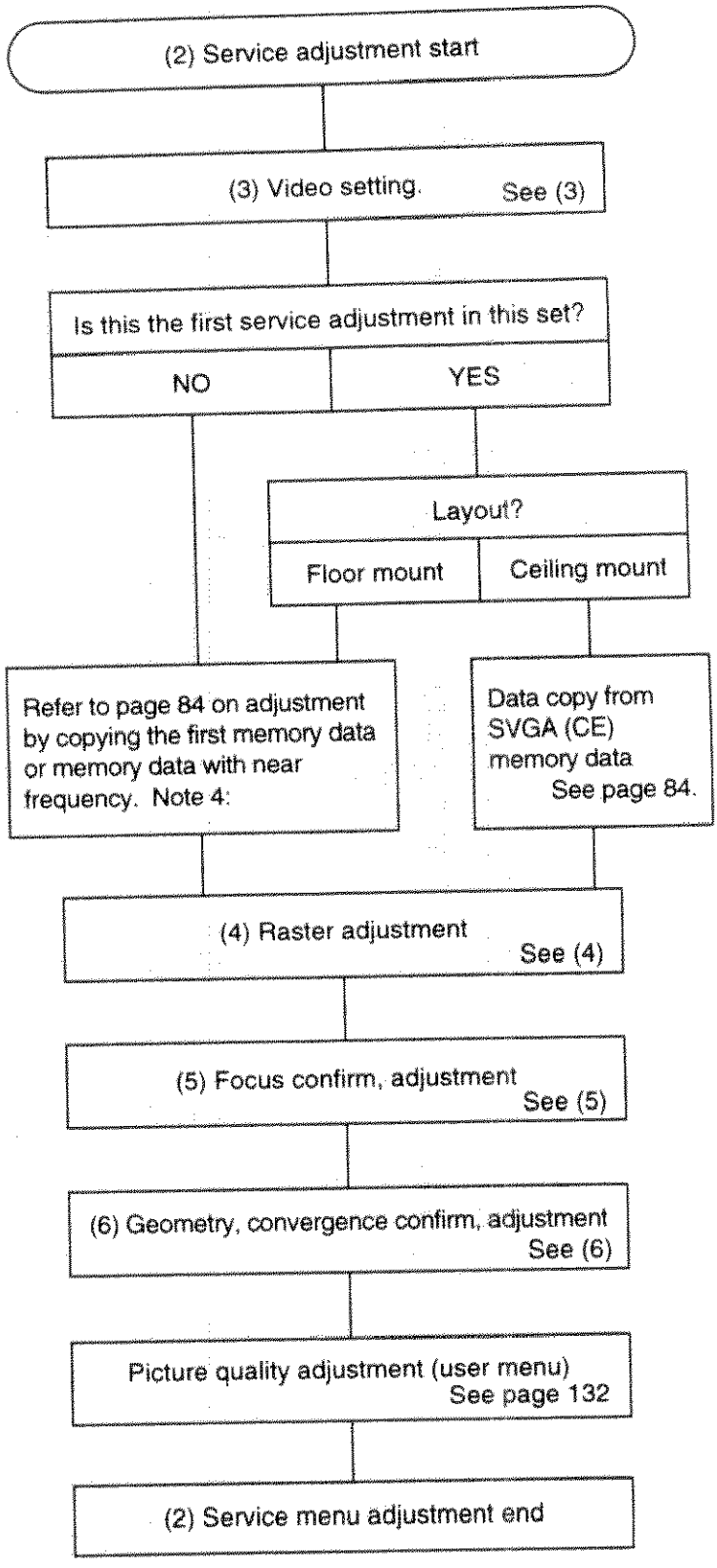
Note 3: In the case of signals of the same frequency, if two or more memory data for changing the picture quality adjustment or the like (user menu) are required, register memory data again.
(In this case, when service adjustment is done in one memory data, second service adjustment is not needed).

Example: When the customer requests to equalize (adjustment data of MENU1) VTR and LD separately.

Caution:
The customer presents request only when reading and understanding pages 32 and 33 of the instruction manual. Therefore, this function should be explained at the time of installation so that the customer can judge appropriately.

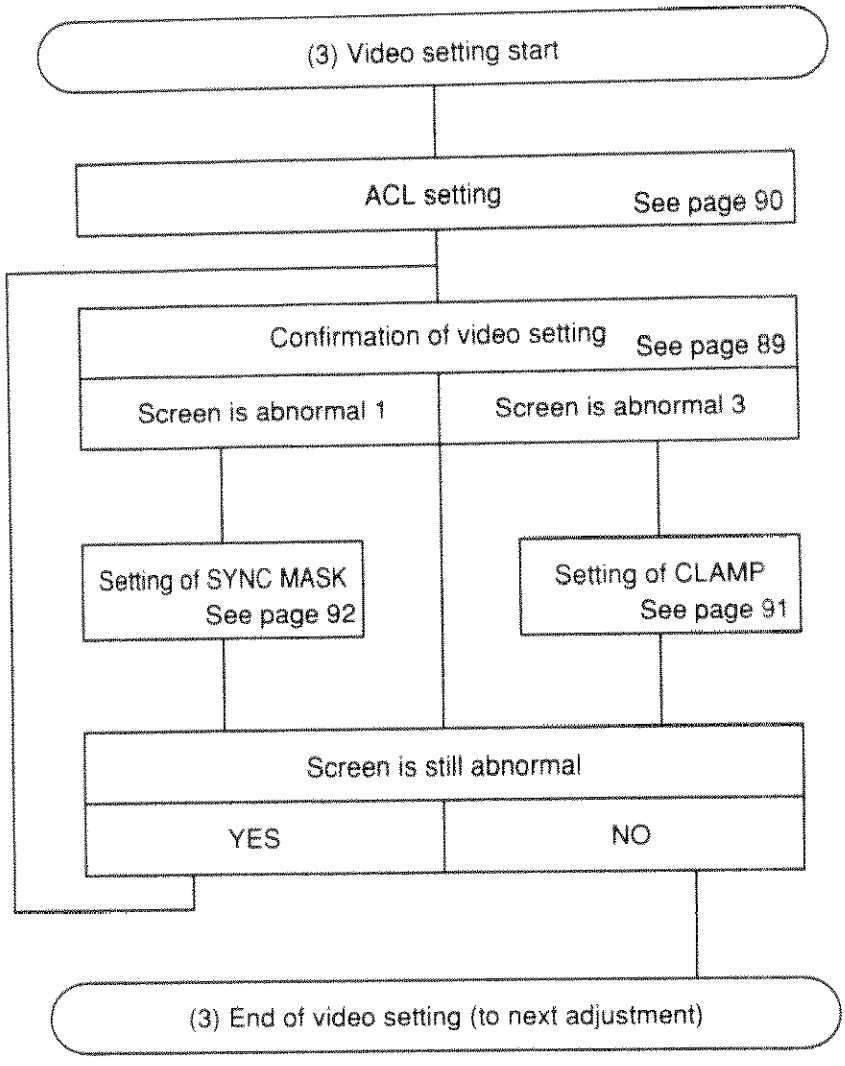
In Note 2, automatic changeover is also possible by group setting.

(2) Procedure of service adjustment

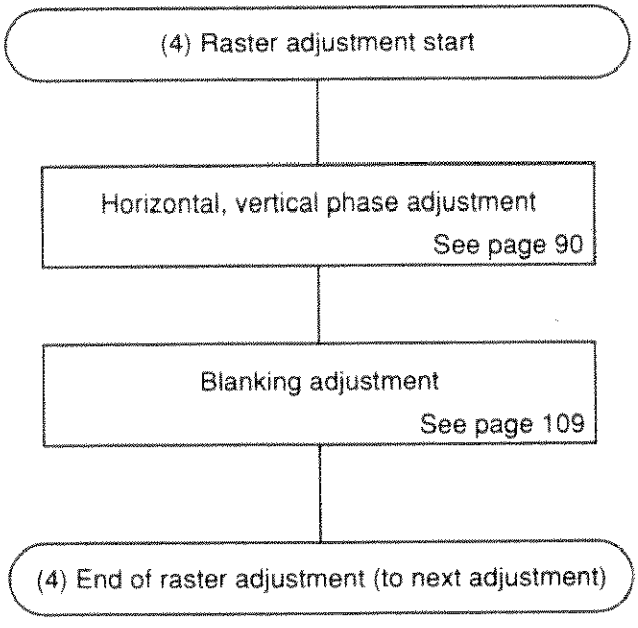


Note 4: In adjustment of convergence and focus, adjustment time is greatly shortened by copying data from the memory data with the first adjustment date or near frequency. Be sure to take this procedure.
(In case of ceiling mount, copy the data not from the adjustment data for floor mount layout at shipment, but from the data already adjusted for ceiling mount layout and with near frequency.)

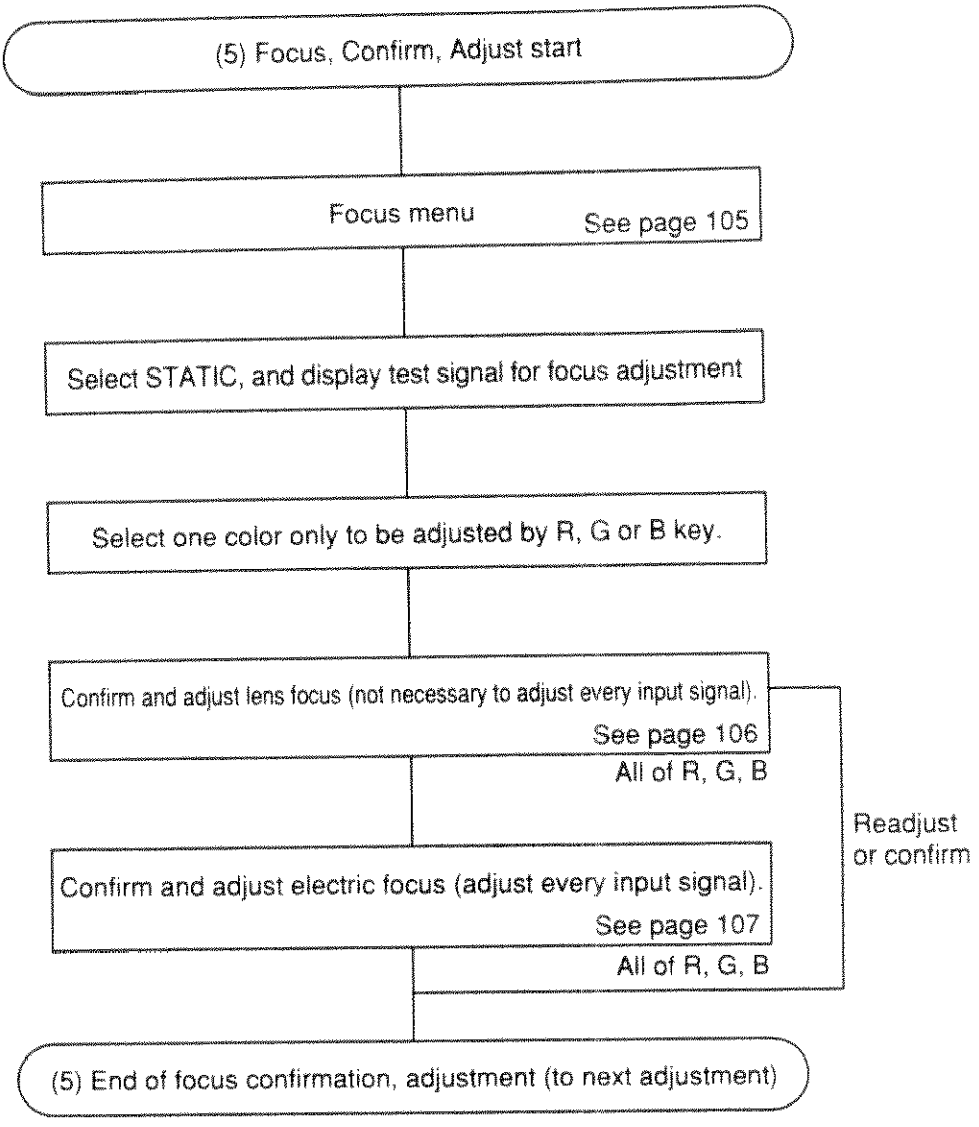
(3) Procedure of video setting



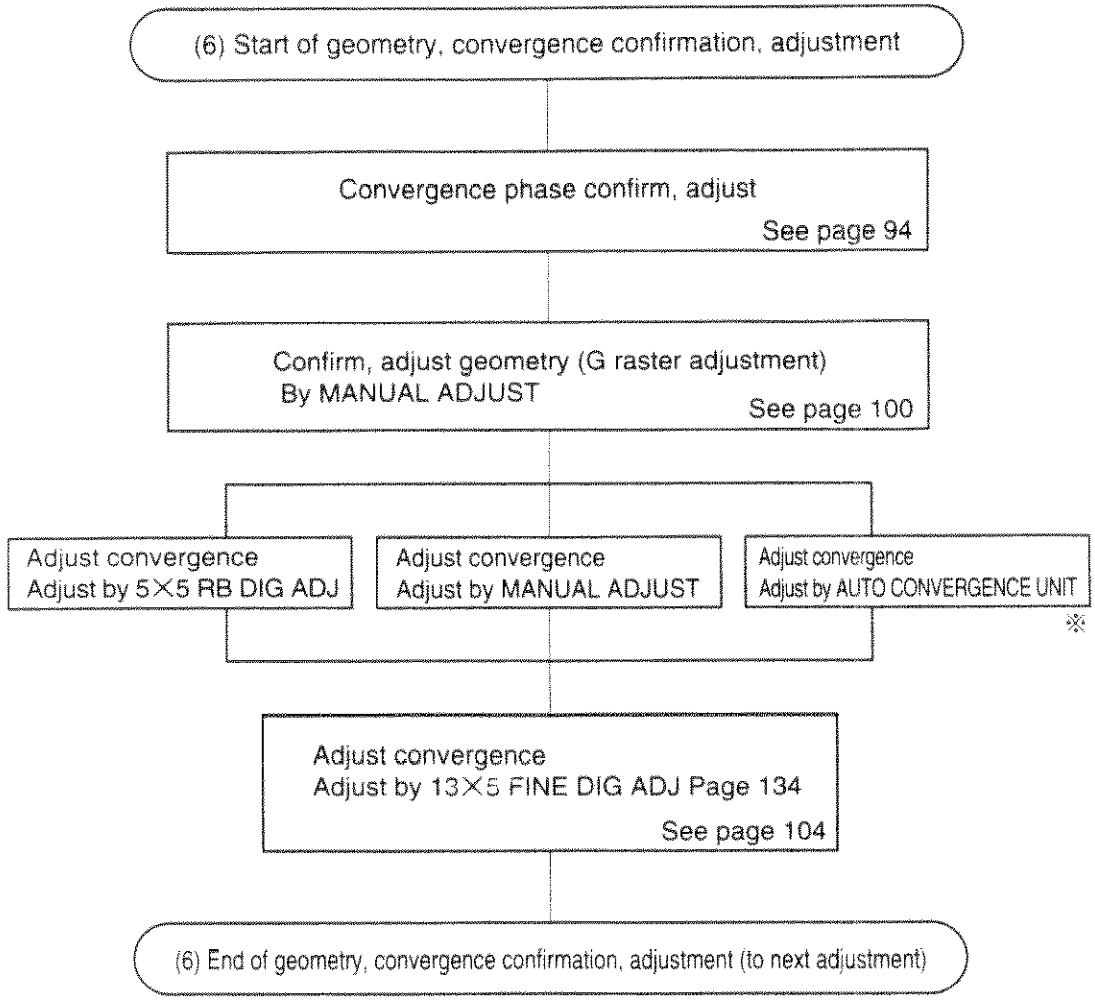
(4) Procedure of raster adjustment



(5) Procedure of focus confirmation, adjustment



(6) Procedure of confirmation, adjustment of geometry, convergence



※ For details regarding the adjustment by AUTO CONVERGENCE UNIT (ACU), please see the operating instruction of ACU.

Service Menu Screen

Display method of Service Menu

1) Press buttons ENTER + B + ESC on remote control.

2) Once service menu is displayed, it can be displayed again by pressing ESC. (After turning off the power, and turning on, ENTER + B + ESC must be selected again).

3) When buttons ENTER + B + ESC are pressed again, or when the power is turned off, the service menu will not be displayed again.

Caution:

After installation and adjustment, cancel the service menu in step 3).

Description of Service Menu

Service menu

```
( SERVICE MENU )

SIGNAL SET      INPUT ASR
RASTER          VIDEO ADJ
G/CONVER        TEST SIGNAL
FOCUS           SERIAL I/F
BLANKING        LAYOUT

SEL:↑ ↓ ←→ SUB MENU:ENT EXIT:ESC
```

After the above manipulation, the service manual is displayed as shown here.

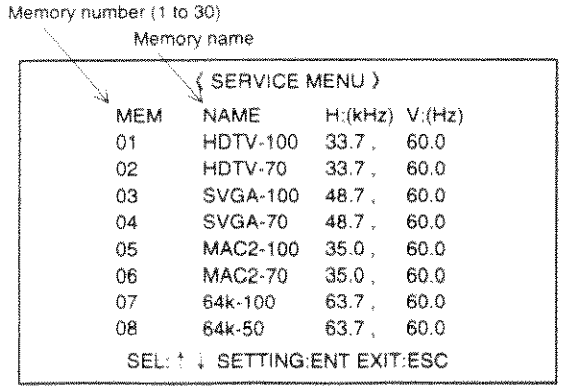
1) The service menu is a hierarchical menu composed of three or four strata.

2) Move the cursor (highlighted) with up, down, right or left button, and press ENTER to get into each sub menu.

3) Move back one menu by ESC button.

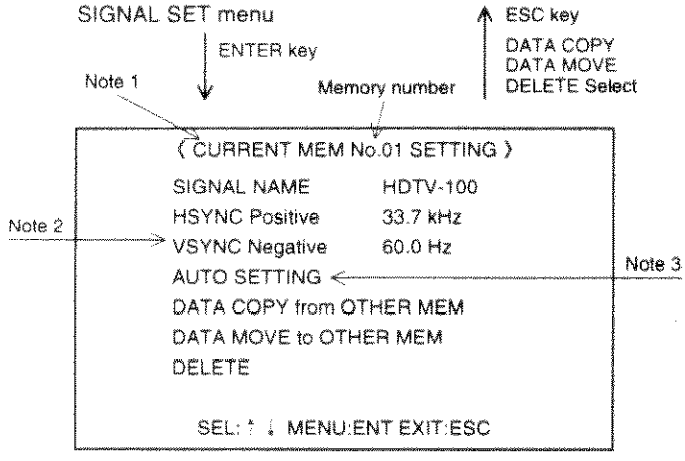
Note: Please allow 2 or 3 hours for warm up time, for the projector to reach it's optimum operating temperature.

(1) SIGNAL SET

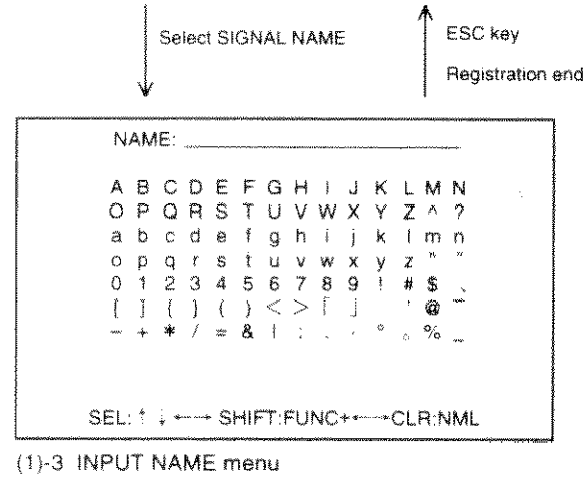


(1)-1 SIGNAL SET menu

Display changes depending on object, such as DATA COPY, DATA MOVE, DELETE.



(1)-2 MEM SETTING menu



(1)-3 INPUT NAME menu

(1)-1

[Display method]

Displayed by selecting SIGNAL SET on service menu.

It is also displayed by selecting as follows in 1-2 MEM SET menu.

DATA COPY
DATA MOVE
DELETE

[Display data]

All the present memory data is displayed.

[Method of use]

Used in:Data copy
Data move
Data delete

(This display is an example. Display changes depending on object. Not all these data are stored in the memory data at shipment from the factory.)

(1)-2

[Display method]

Displayed by selecting memory number in SIGNAL SET menu and pressing ENTER button.

[Display data]

The information of memory data of selected memory number is displayed.

[Method of use]

Used in:Data copy
Data move
Data delete
Memory name enter, change

Note 1: Data is displayed as follows:

Memory data presently read out.....CURRENT
Memory data judged to be same signal...NEXT
Memory data of completely different signal.....DIFFER

When CURRENT is displayed, DELETE cannnot be selected.

Note 2: Represents signal polarity and wiring method.

3-wire method-No polarity indication
4-wire method-Polarity shown for H only
5-wire method-Polarity shown for both H and V

Note 3: Usable only when NEXT MEMORY is displayed or in the case of new registration.

(1)-3

[Display method]

Displayed by selecting SIGNAL NAME in MEM SETTING menu.

[Method of use]

Used in:
Registration of memory name

MEMORY

(A) Registration of Memory Data

This machine has individual memory data for input signals. Therefore, when connecting a new signal not registered in the memory, the memory data must be upgraded.
The method of registration of memory data varies with the input signal and registered memory data.

◦ When memory data of signal detected is the same as input signal it is not registered.
(When new signal is fed)

Newly register memory data.

◦ When memory data of signal detected to be same as input signal is registered.
(When two or more memory data of same frequency are needed)

Register memory data with same signal.

Note: Up to 30 memory data can be registered, but when all 30 are used, memory data cannot be recorded. Delete unnecessary data according to the memory data deletion procedure (page 83), and then record new data.

(B) New Recorded Memory Data

1) Enter a signal to be registered, and select the connected input terminal (INPUT A, VIDEO, etc.) by remote control.

2) "INPUT A NEW SIGNAL" is displayed.

3) Press ESC button.
(If the service menu is not started up, boot it up with ENTER, B, ESC buttons).

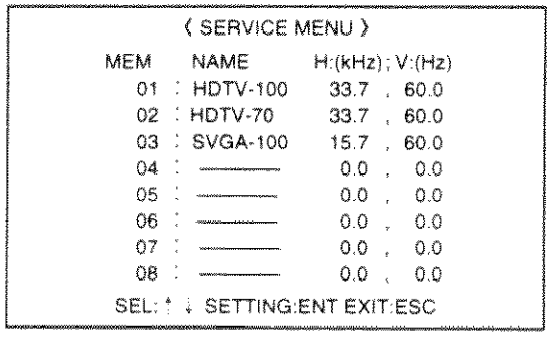
4) The screen displays :
"CURRENT SIGNAL HAS NOT NAME"
PLEASE ENTER NAME!

5) When ESC button is pressed, MEM SETTING menu is displayed. (At this time, adjustment data is called from the memory data of the closest frequency among registered data).

6) Register memory name (page 83).

7) After registering, select AUTO SETTING. (By doing this, the adjustment data gets into the registered memory data).

8) By pressing ESC key, SIGNAL SET menu (page 79) is displayed. (The adjustment memory to be recorded is entered in the memory vacant space; in this case, MEM4).



9) Press ESC key until data save screen appears, and save the memory data. (Unless this operation is done, the adjustment date put in the memory date in Step 7 is not stored).

Note:

Performing service adjustment in changing CRT, etc., 15KHz, 40Hz signals and NTSC, HDTV memory data are indispensable in terms of Specification.
Signal of 15KHz, 40Hz is MEMO1, and the memory name is "TEST".
Use MEMO2 for registering NTSC Signal, and MEMO3 for registering HDTV signal. (When two or more of these signals are registered, the second signal and afterwards can be registered anywhere).

☆AS memory data to be used for adjusting NTSC and HDTV, use the memory No.2 and 3 used in checking initialization, with priority.

(C) Recording of Memory Data with same Signal

This setting is required in the following cases.

1) When two signals of same frequency required to change adjustment data are present

Example 1: NTSC signal and CGA signal

These signals are nearly equal in horizontal and vertical frequency, but differ in video signal period, and hence adjustment values such as H, V-SIZE, H, V-PHASE must be varied. Therefore, two memory data are required.

2) When two memory data are required at one frequency by the request of the customer

Example 1: The customer wishes to equalize (adjustment data of MENU 1) separately in VTR and LD.

The adjustment data of MENU 1 is also entered in the memory data, and two memory data are also required in such a case.

Caution:

The customer presents request only when reading and understanding pages 12 and 13 of the instruction manual. Therefore, this function should be explained at the time of installation so that the customer can judge appropriately.

◦ Procedure of registration

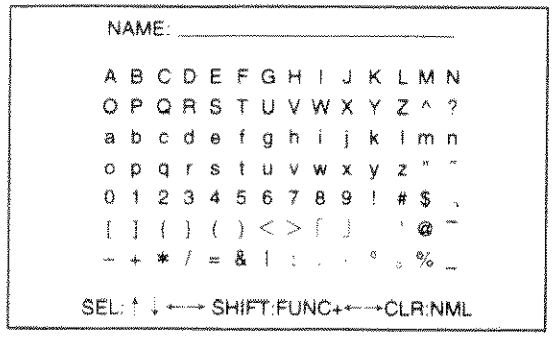
(1) Enter the signal desired to be registered, and select connected input terminal (INPUT A, VIDEO, etc.).
(2) Get into SIGNAL SET menu (page 79).
(3) Move cursor to memory number not registered at the present (with a blank name), and press ENTER key.
(4) MEM SETTING menu (page 79) of selected memory data is displayed.
(5) Register memory name (page 83).
(6) Select AUTO SETTING in MEM SETTING menu (page 79) after registration. (By doing this, the adjustment data gets into the registered memory data)
(7) Press ESC key, then SIGNAL SET menu (page 79) is displayed.
(8) Press ESC key, and save memory data.

Note: To distinguish different signals at same frequency:

1) Vary wiring method (in this case, memory data must be registered again); or
2) Divide input terminal, and use lock/unlock function (group setting) (see page 111).

(D) Recording, Changing Methods of Memory Name

(1) When SIGNAL NAME is selected in MEM SETTING menu (page 79), INPUT NAME menu is displayed.



(1)-3 INPUT NAME menu

(1) Manipulate the keys as follows in MEM SETTING menu (when changing the memory name, change in the same manner).

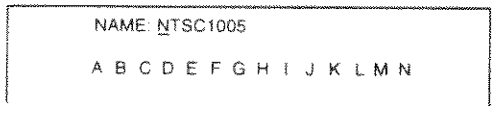
1) Move the cursor with up, down, right, left keys.

2) Determine characters by ENTER key. (Determine each character. After determining one character, go to next one).

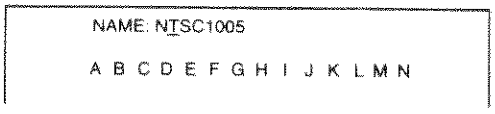
3) To move the position of character input, press FUNC and right or left key together to move one character to right or left.

For example: To change only the second character when changing memory data

In INPUT NAME menu, characters are entered from N.



Press "FUNC" + "→" keys continuously, then the cursor moves to the position of T, and a character can be entered.



4) When NORMAL key is pressed, the memory name is initialized. (The memory name disappears from the screen).

5) By entering eight characters or pressing ESC key, the screen returns to (1)-1 SIGNAL SET menu (page 79), and the registered memory name gets in (end of registration).

Note 1: When same name is registered in adjustment data, the display shows:
"NAME ALREADY IN USE, "
PLEASE ENTER A DIFFERENT NAME
and the screen returns to (1)-3 INPUT NAME menu. Enter name again. (At this time, the name initially intended to register is not cleared, and it is possible to overwrite one character).

(E) Copy of Memory Data

This function is used to copy the convergence and focus adjustment data from one memory to another. This is useful when setting up the VP to work with a new signal. Copied signal data usually requires less adjustment than starting adjustment from the beginning.

◦ Copying procedure:

(1) Get into SIGNAL SET menu (page 79).

(2) Move the cursor to an unused memory number slot (destination) and press the ENTER key.

(3) Pressing ENTER causes MEM SETTING menu (page 79) to be displayed.

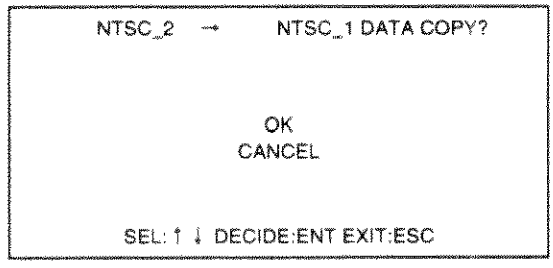
(4) Select DATA COPY from OTHER MEM and press ENTER.

(5) Control is returned to SIGNAL SET menu (page 79).

(6) Move cursor to a memory which is close to the frequency of the new signal and press ENTER.

(7) A screen similar to the screen below appears and when OK is selected and ENTER is pressed, adjustment date will be copied to the new memory location.

Memory data name of copy source Memory data name of copy destination



(8) Press ESC until DATA SAVE screen appears, and save data.

Note: While data is being copied, the picture may disappear for about 2 seconds or so. During copying, do not turn OFF power supply or change input signals, to prevent erase of data and error operation.

(F) Deleting of Memory Data

Use to delete no longer used memories or make space for new signals to be saved to memory.

Note: Please do not delete TEST, NTSC and HDTV (one of some memories named NTSC, HDTV) signal settings, since these are needed to set up the VP if the CRT units were replaced.

- Delete procedure

(1) Enter the SIGNAL SET menu (page 79).

(2) Move the cursor to the memory to be deleted and press ENTER key.

(3) MEM SETTING menu (page 79) is displayed.

(4) Select delete and press ENTER.

(5) A screen similar to below Fig. 2 is displayed. When OK is selected, the memory is deleted. Select cancel to abort the memory delete operation.

Memory data name to be deleted

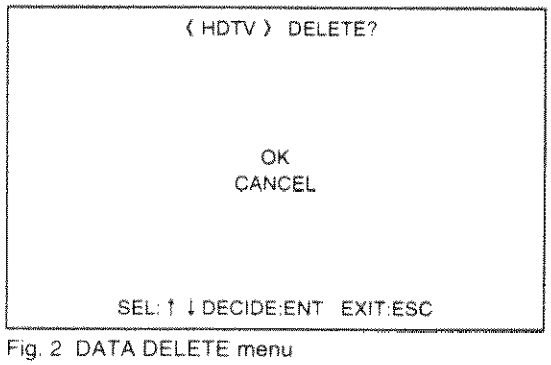


Fig. 2 DATA DELETE menu

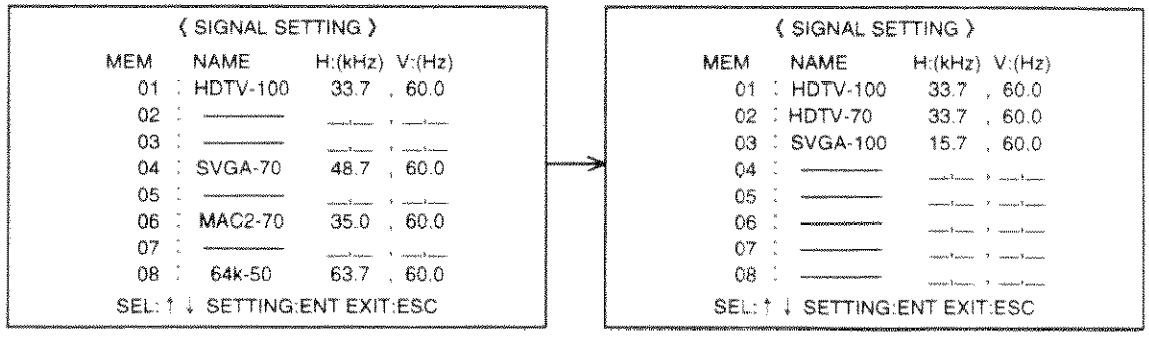
Note: A memory cannot be deleted while it is being used to display a given signal. This soon becomes apparent when entering the MEM SETTING menu (page 79) since the DELETE option is displayed in red and cannot be selected.

(G) Move of Memory Data

When registration and deletion of memory data are repeated, memory data are stored at random in the memory, and it is hard to view the list in SIGNAL SET menu as shown below. By using this function, the memory numbers can be shuffled, and the data in the memory can be neatly put in order.

Hard-to-view SIGNAL SET menu

Easy-to-view SIGNAL SET menu



The left side can be transformed to the right side so as to be easily viewed.

(1) Get into SIGNAL SET menu (page 79).

(2) Move cursor to the memory number desired to be moved, and press ENTER button.

(3) MEM SETTING menu (page 79) of that memory number is displayed.

(4) Select DATA MOVE to OTHER MEM.

(5) SIGNAL SET menu (page 79) is displayed again.

(6) Move cursor to the memory number of move destination, and press ENTER key. (Only memory number with blank name can be selected).

(7) The screen in Fig. 3 is displayed. When OK is selected, the memory data is moved.

Memory name to be moved Memory number at move destination

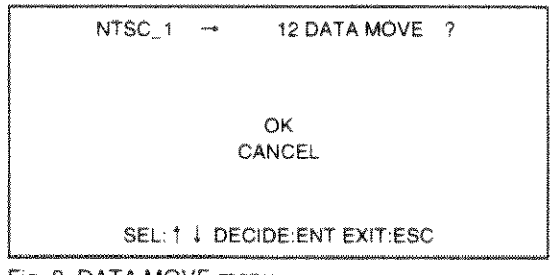


Fig. 3 DATA MOVE menu

Note: When all memory data are used, DATA MOVE is invalid. (In this case, DATA MOVE to OTHER MEM is displayed in red in MEM SETTING menu (page 79)).
Please do not move and delete No.1 TEST date.

(H) Initial Setting of Memory Data

Before shipping from the factory, the data adjusted on the general use conditions (signal, inch size and layout) are stored in the memory data.
The conditions (signal, inch size and layout) on which the data adjusted are shown below.

NAME	F_M(kHz)	F_V(Hz)	70"	100"	150"	Floor mount	Ceiling mount
NTSC	15.7	60.0	×	×	×	×	
PALS	15.7	50.0		×		×	
HDTV	33.75	60.0		×		×	
SVGA 800×600	48.1	72.0	×	×		×	×
TEST	15.0	40.0	×			×	
100K	100.0	80.8	×			×	

How to read a memory name

Signal name Inch size Number of wires in wiring method

In case of SVGA
SVGA (FL) → Floor mount layout
SVGA (CE) → Ceiling mount layout

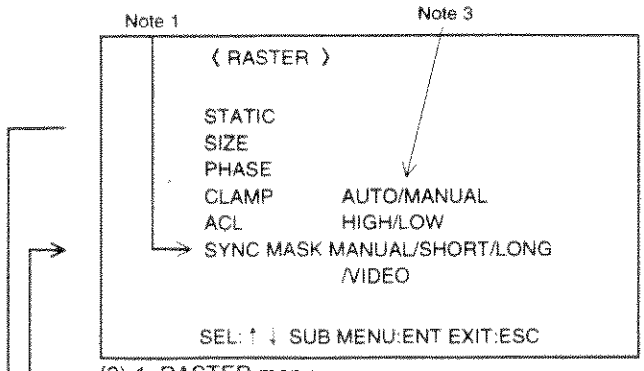
PALS means PAL/SECAM signal.

In the same layout, same signal, and same inch size, by using the date, adjustment can be limited to fine adjustment only.

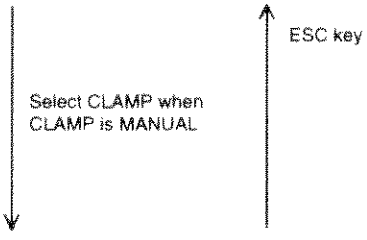
Caution:

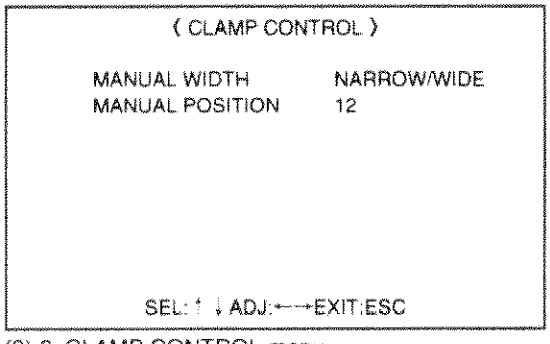
INPUT VIDEO, Y/C terminals do not distinguish the wiring method and synchronous polarity of the connected signal. Therefore, when these terminals are selected, any memory data of NTSC, PAL, SECAM (horizontal frequency 15.6 or 15.7 Hz, vertical frequency 50, 60 Hz) can be called regardless of wiring method or polarity.

(2) RASTER

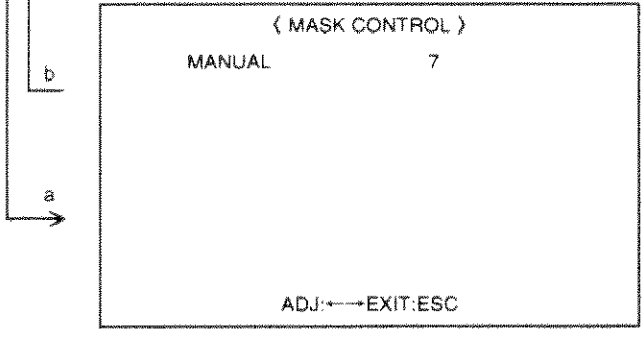


(2)-1 RASTER menu





(2)-2 CLAMP CONTROL menu



(2)-3 MASK CONTROL menu

Note) Initial setting of each item is as follows.

CLAMP	AUTO
ACL	HIGH (Only memory data of HDTV is LOW)
SYNC MASK	SHORT

a: Select SYNC MASK when MANUAL.
b: ESC key

(2)-1

[Display method]

Displayed by selecting RASTER in service menu.

[Method of use]

Used in:

STATIC	Vertical phase adjustment
PHASE	Horizontal, vertical phase adjustment
SIZE	Adjustment of horizontal width, vertical width
CLAMP	Adjustment of CLAMP width, position
ACL	Setting of ACL level
SYNC MASK	Setting of SYNC MASK

Note 1: SYNC MASK is not displayed by signal.
Adjust cursor, and change over with right or left key.

Note 2: CLAMP, ACL, SYNC, MASK refer to any one of those shown on the left.

Note 3: Adjust cursor, and changeover AUTO or MANUAL with right or left key.

(2)-2

[Display method]

Displayed by selecting CLAMP when CLAMP is MANUAL.

[Method of use]

Used in:
Setting of CLAMP

Note: MANUAL WIDTH indicated any one of those shown on the left.

(2)-3

[Display method]

Displayed by selecting SYNC MASK when SYNC MASK is MANUAL.

[Method of use]

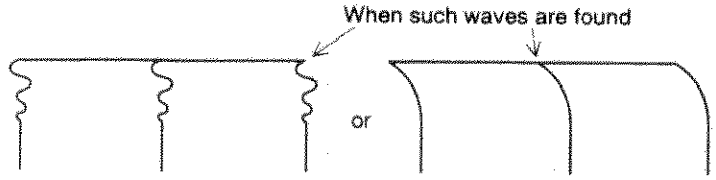
Used in:
Setting of SYNC MASK

ACL 4:3 HIGH 16:9 LOW

Confirmation Items

1. There are large waves in upper part of screen in INPUT A, B (screen is abnormal 1)

Check the upper part of the screen, and if waves are observed as shown below, set SYNC MASK (page 92).

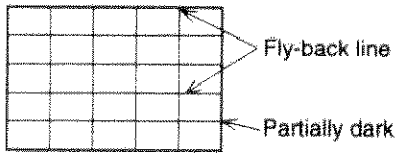


Note: Check with input signal, not with test signal, which may not show difference.

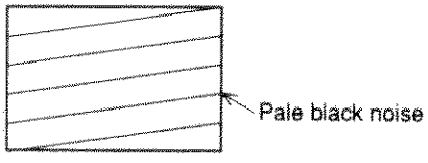
2. Screen brightness is not uniform, and extremely noisy (screen is abnormal 3)

If any phenomenon of 1 to 5 is found, set CLAMP (page 91).

①Fly-back line appears, or partially dark

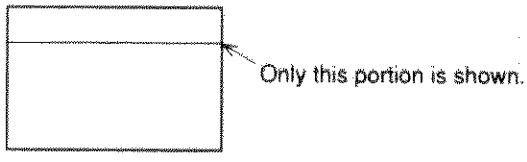


②Pale black noise flows vertically

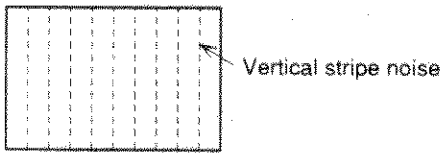


③Brightness of the entire screen floats, and BRIGHT of MENU 1 cannot be adjusted. One of R, G, B is dark.

④Partially shown, entire picture is not shown.



⑤Vertical noise



Horizontal, vertical phase adjustment

1) Get into RASTER menu (page 88), and select STATIC.

2) Adjust with UP or DOWN button only so that the test signal vertical point comes to screen center. (never use RIGHT or LEFT button.)

3) Select PHASE in RASTER menu (page 88).

4) Adjust with UP, DOWN, RIGHT or LEFT button so that the picture center comes to the screen center.

5) The phase in the vertical direction varies significantly between the adjustment value 0 and -1, and adjust as follows if the picture could not be moved to an optimum position in step 2).

   5.1) Select STATIC in RASTER menu (page 88).

   5.2) Press TEST button to return the picture to input signal.

   5.3) Adjust with UP or DOWN button so that the picture center comes to the screen center.

Caution: Since the layout is deviated, never use RIGHT or LEFT button at this time.

6) Select SIZE in RASTER menu (page 88).

7) Adjust with RIGHT or LEFT button so that the horizontal width may be approximately optimum.

8) Adjust with UP or DOWN button so that the vertical width may be approximately optimum.

9) Press ESC button until data save menu appears, and save data.

Note 1: Adjust with input signal. The picture is not moved by test signal.

Note 2: The picture may be completely concealed by BLANKING. In such a case, press NORMAL button in (5)-1 BLANKING menu (page 109), and reset blanking once.

ACL setting

This setting is required when using different aspect ratios (4:3, 16:9) on a same screen. Set as follows. (When the aspect ratio is not different, set at HIGH.)

- Using 4:3 screen (showing 16:9 on 4:3 screen)
  In the case of 4:3, set at HIGH
  In the case of 16:9, set at LOW

- Using 16:9 screen (showing 4:3 on 16:9 screen)
  In the case of 4:3, set at LOW
  In the case of 16:9, set at HIGH

- Setting method
  Move cursor to ACL in (2)-1 RASTER menu (page 88), and set by using right or left button. After setting, press ESC button until getting into DATA SAVE menu and save data.

Setting of Clamp

[Setting procedure]

1) Get into RASTER menu (page 88).

2) Move cursor to CLAMP, and set to MANUAL with RIGHT or LEFT button. (Initial setting is AUTO).

3) Press ENTER button, then CLAMP CONTROL menu is displayed.

4) Move cursor to MANUAL WIDTH, and set to NARROW with RIGHT or LEFT button.

5) When recovered normal, go to 7).

6) If the screen is still abnormal, move cursor to MANUAL POSITION, and adjust to the most stable screen with RIGHT or LEFT button.

7) Press ESC button until data save menu appears, and save data.

Setting of SYNC MASK

This setting can be done only in INPUT A, B.
(In the case of Y/C, VIDEO input, setting is not necessary, and hence it is not displayed).

[Setting procedure]

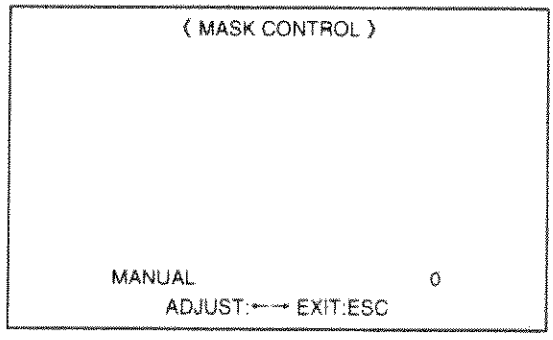
1) Get into RASTER menu (page 88).

2) Move cursor to SYNC MASK, and set to wave-free portion in the upper portion in the upper part with RIGHT or LEFT button. (Use SHORT, NORMAL, VIDEO, and the initial setting is SHORT).

3) When recovering normal, go to 6).

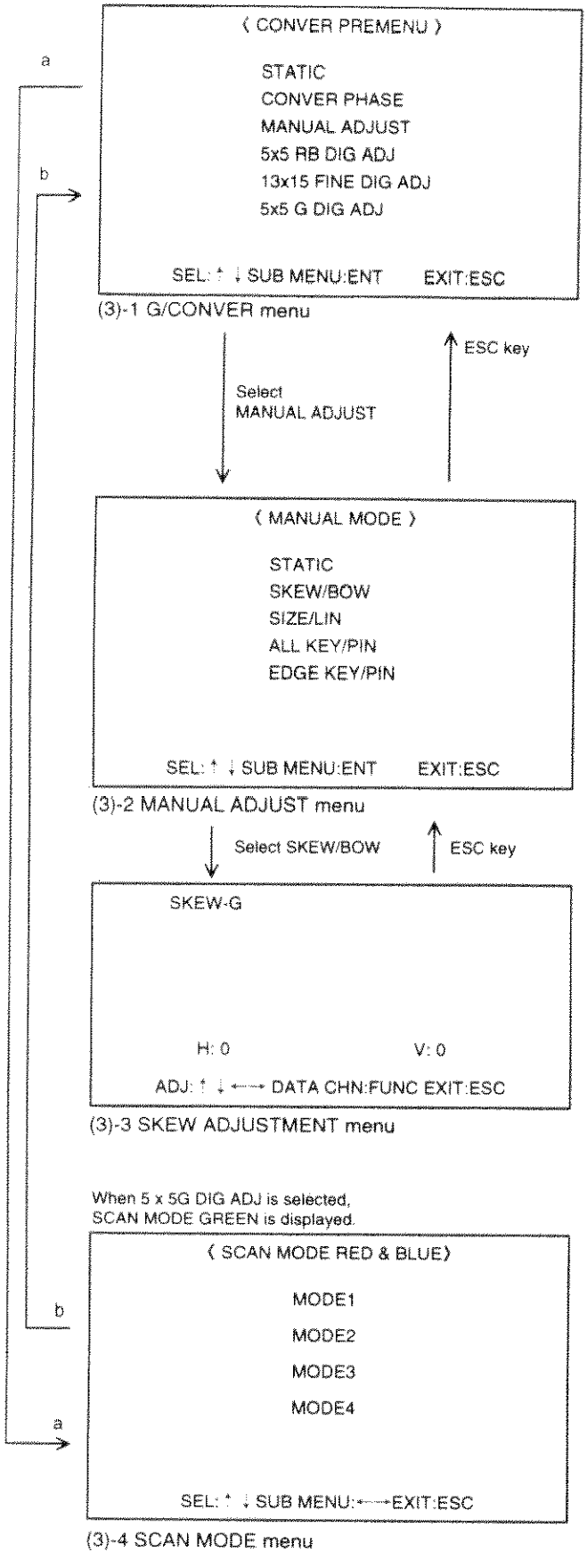
4) When waves are not corrected, set MANUAL in SYNC MASK setting, and press ENTER button.

5) The following is displayed. Adjust to eliminate waves with RIGHT or LEFT button.



6) Press ESC button until data save menu appears, and save data.

(3) G/CONVER



a: Select 5×5 RB DIG ADJ, 5×5 G DIG ADJ.
b: ESC key

(3)-1

[Display method]

Displayed by selecting G/CONVER in service menu.

[Method of use]

Used in:

STATIC	Static convergence adjustment
CONVER PHASE	Convergence phase adjustment
MANUAL ADJUST	Geometric adjustment
5×5 RB DIG ADJ	5×5 DIG ADJ adjustment
13×5 FINE DIG ADJ	13×5 DIG ADJ adjustment
5×5 DIG ADJ	5×5 DIG ADJ adjustment (Usually not used)

(3)-2

[Display method]

Displayed by selecting MANUAL ADJSUT in G/CONVER menu.

[Method of use]

Used in:

Geometric convergence adjustment

(3)-3

[Display method]

Displayed by selecting SKEW/BOW in (3)-2 MANUAL ADJ menu.

[Method of use]

Skew is adjusted.

Remarks:

1) By pressing FUNC key, the bow adjustment menu starts.
2) By selecting each adjustment item in (3)-2 MANUAL ADJ menu, each adjustment is enabled same as in (3)-3.

(3)-4

[Display method]

Displayed by selecting 5×5 RB DIG ADJ, 5×5 G DIG ADJ in G/CONVER menu.

[Method of use]

Used in:

5×5 DIG ADJ adjustment.

Convergence Phase Confirmation, Adjustment

Usually confirmation only, and no adjustment is needed.

(1) Get into G/CONVER menu (page 93).

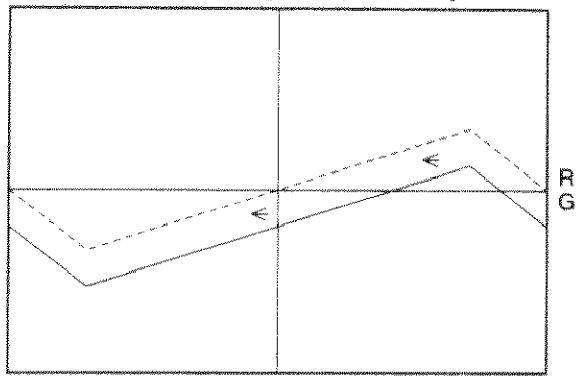
(2) Select STATIC.

(3) In STATIC menu, match R center with G center by using RIGHT, LEFT, TOP and BOTTOM buttons. (This adjustment is essential. Without this adjustment, the convergence phase cannot be adjusted correctly).

(4) Select CONVER PHASE. (At this time, the following test signal is displayed).

(5) Match oblique line of R with G center by using RIGHT or LEFT button.

Test signal for convergence phase adjustment



Remote Control Manipulation Method in Geometry Adjustment

(1) Select the color to be adjusted with R, G or B key. (During adjustment, the color can be also selected).
In G adjustment, all of R, G, B move simultaneously. In R and B, they move independently. Therefore, always start with G.

(2) When TEST key is pressed during adjustment, internal test signal and external input signal can be changed over.

(3) The color is changed over when the key of the color in the process of adjustment is pressed (pressing R key during R adjustment, B key during B adjustment, G key during G adjustment).

1. During G adjustment: White (R, G, B display) >> Green (G display)
2. During R adjustment: White (R, G, B display) >> Yellow (R, G display)
3. During B adjustment: White (R, G, B display) >> Cyan (G, B display)

Pressing again the key of the color being adjusted returns to white.

(4) Select the item to be adjusted with UP or DOWN key, get into adjustment menu, then the cross hatch is displayed.

(5) Adjust each item with UP, DOWN, RIGHT, LEFT keys.

(6) All menus but STATIC are accompanied by sub menus.

(7) After getting into each adjustment menu, press FUNC key, then sub menu can be changed.

1) SKEW/BOW
SKEW >> BOW >>

2) SIZE/LIN
SIZE >> LIN-ALL >> LIN-TOP&RIGHT >> LIN-BOTTOM&LEFT >>

3) ALL KEY/PIN
KEYSTONE >> KEY-BALANCE >> PIN >> PIN-BALANCE >>

4) EDGE KEY/PIN
KEY-TOP&RIGHT >> KEY-BOTTOM&LEFT >> PIN-TOP&RIGHT >> PIN-BOTTOM&LEFT

In adjustment menu, adjust the vertical direction with UP and DOWN keys, and in the horizontal direction with RIGHT and LEFT keys.

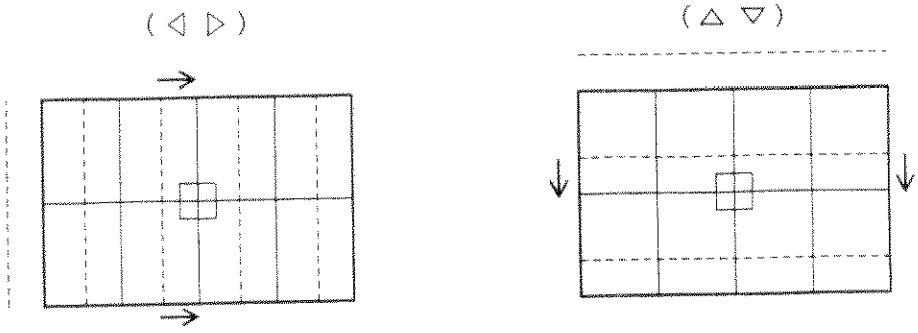
Operation of Geometry Correction Waveform

(Adjust by taking note of the square area).

Start with Green

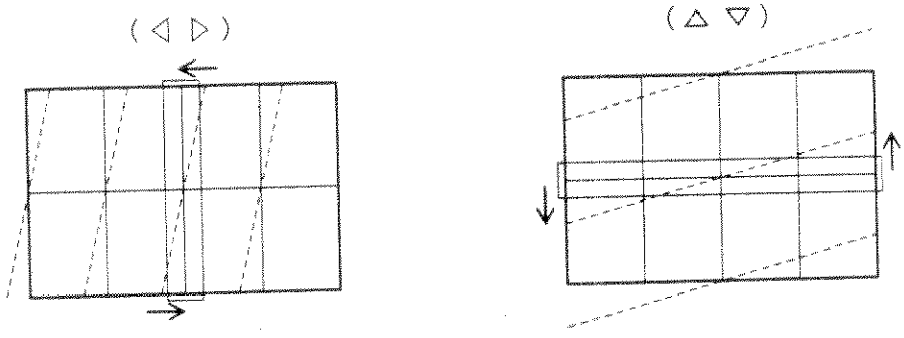
(Adjust in the sequence of 1) to 5)).

1) STATIC

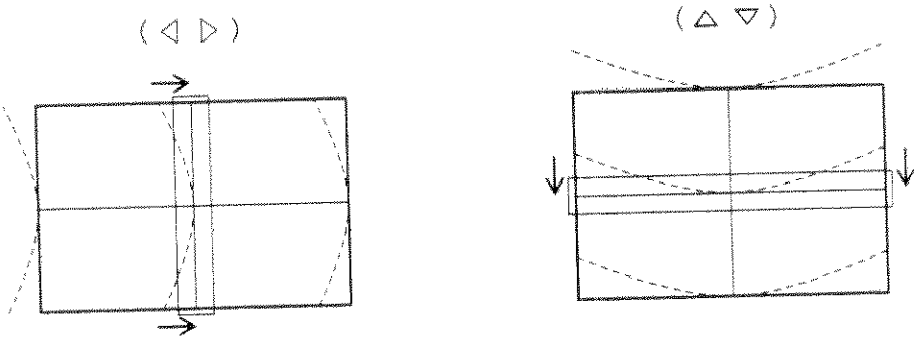


☆The entire screen moves. Adjust by taking note of the center of the screen only.

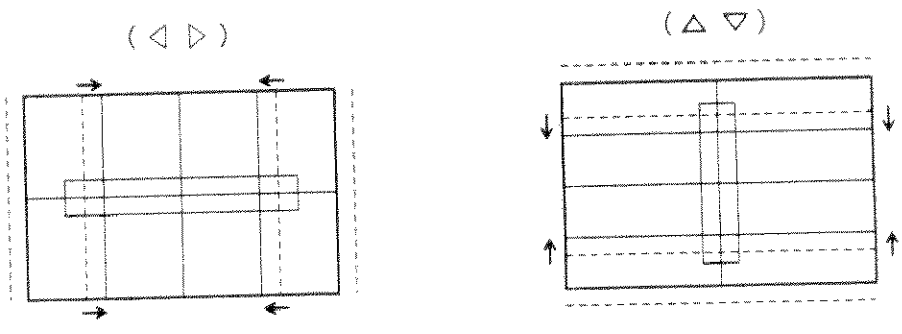
2)-1 SKEW



2)-2 BOW



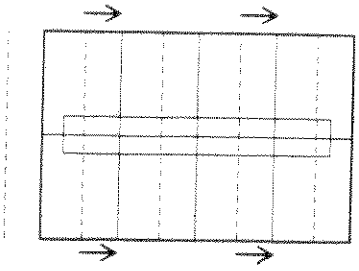
3)-1 SIZE



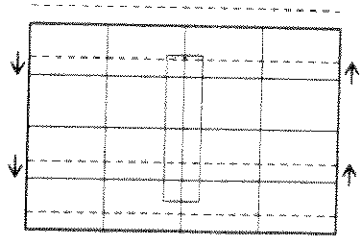
☆Adjust by taking note of the inside of the screen.

3)-2 LIN ALL

(◁ ▷)

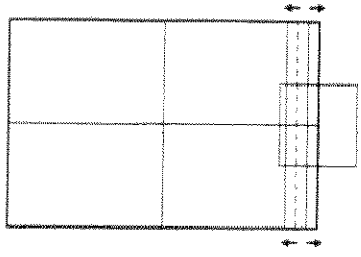


(△ ▽)

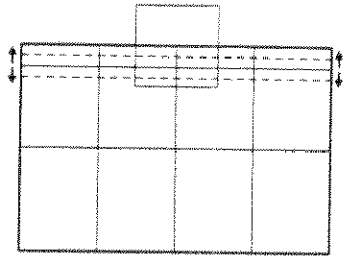


3)-3 R/T LIN

(◁ ▷)

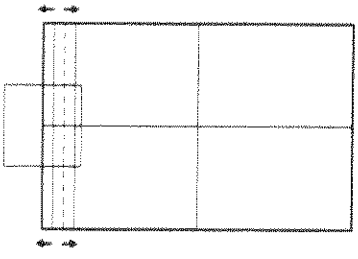


(△ ▽)

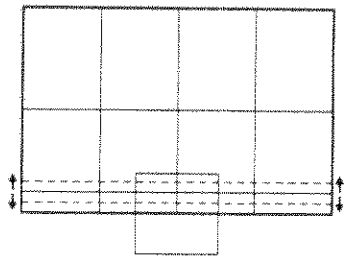


3)-4 L/B LIN

(◁ ▷)



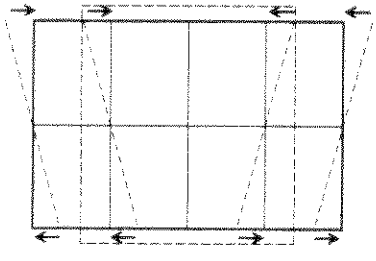
(△ ▽)



☆Mainly the periphery of the screen moves, and adjust by taking note of the periphery.

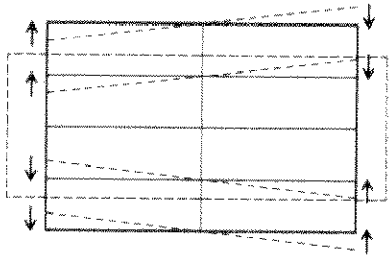
4)-1 KEYSTONE ALL

(◁ ▷)



☆The entire screen moves, but adjust by taking note of the inside rather than the periphery. Adjust the periphery with L, R, KEYSTONE.

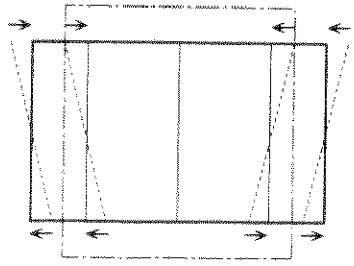
(△ ▽)



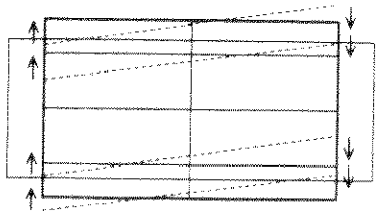
☆The entire screen moves, but adjust by taking note of the inside rather than the periphery. Adjust the periphery with T, B, KEYSTONE.

4)-2 KEY-BALANCE

(◁ ▷)



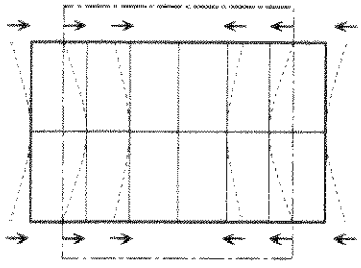
(△ ▽)



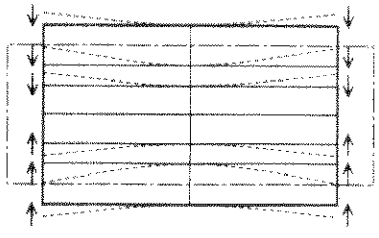
☆The entire screen moves, but adjust by taking note of the inside rather than the periphery.

4)-3 PIN-ALL

(◁ ▷)



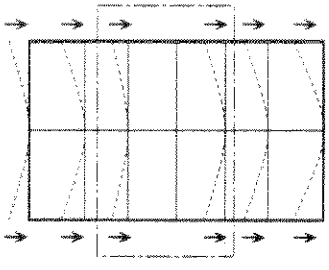
(△ ▽)



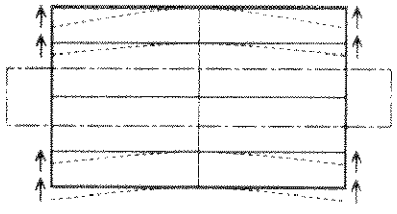
☆The entire screen moves, but adjust by taking note of the inside rather than the periphery.

4)-4 PIN BALANCE

(◁ ▷)



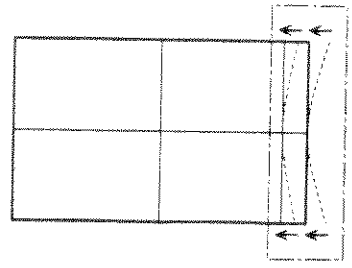
(△ ▽)



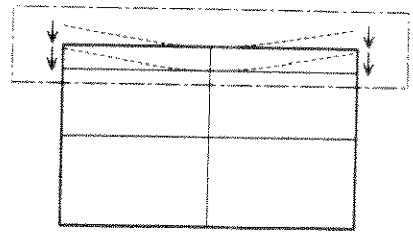
☆The entire screen moves, but adjust by taking note of the inside rather than the periphery.

5)-1 R/T PIN

(◁ ▷)

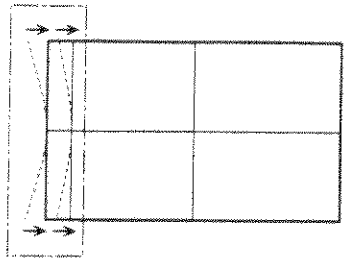


(△ ▽)

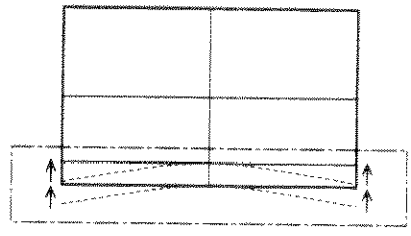


5)-2 L/B PIN

(◁ ▷)



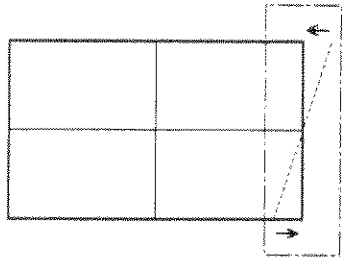
(△ ▽)



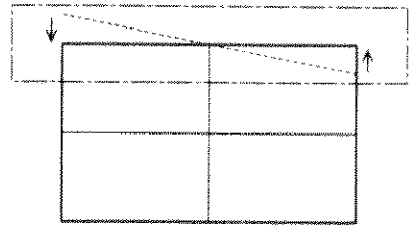
☆Mainly the periphery of the screen moves, and adjust by taking note of the periphery.

5)-3 R/T KEY

(◁ ▷)

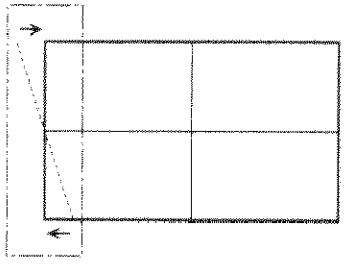


(△ ▽)

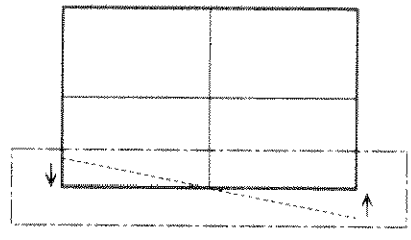


5)-4 L/B KEY

(◁ ▷)



(△ ▽)



☆Mainly the periphery of the screen moves, and adjust by taking note of the periphery.

Geometry (MANUAL ADJ) Adjustment

Adjusting procedure of geometry.

(1) Select (3)-1 G/CONVER (page 93).

(2) Select MANUAL ADJ.

(3) Select SKEW. At this time, the test signal becomes cross-hairs signal.

(4) Press G for adjusting color G.

(5) Taking note of vertical lines and lateral lines of central part, adjust with up, down, right and left keys.

(6) Taking note of vertical lines and lateral lines of central part, adjust with BOW.

(7) Adjust with horizontal function of SIZE, LIN so that peripheral vertical lines may be extended fully in the screen margin or to an optimum width. At this time, the test signal is changed to 13 x 15 cross hatch.

(8) Adjust with vertical function of SIZE, LIN so that peripheral lateral lines may be extended fully in the screen margin or to an optimum width.

(9) Taking note of the vertical line central part, adjust to uniform intervals with L-LIN, R-LIN. If the horizontal width is deviated, adjust again with horizontal function of SIZE.

(10) Taking note of the lateral line central part, adjust to uniform intervals with T-LIN, B-LIN. If the vertical width is deviated, adjust again with vertical function of SIZE.

(11) In order for the vertical and lateral lines of G raster to be parallel to the inclination of the screen margin, adjust with KEYSTONE, KEY-BALANCE, PIN, PIN-BALANCE, EDGE-KEY/PIN.

(12) If deviated after adjustment, repeat adjustment.
(For each adjustment, see the operation of geometry correction).

(13) Adjust convergence of R and B with 5 x 5 RB DIG ADJ.
(For each adjustment, see the operation of geometry correction).

(14) As required, adjust with 13 x 15 FINE DIG ADJ.

(15) Get into SAVE menu, and save data (saving takes 13 seconds).

Note 1: Between test signal and input signal, the width and position of picture are different. Accordingly, from steps (7) to (11), adjusts by alternately changing over test signal and input signal as required.

Note 2: Do not use STATIC-G of convergence menu in this adjustment.

Note 3: When getting into MANUAL ADJUST first after turning on the power, the adjustment color is G, but after adjustment, the final adjustment color is recorded, and therefore check the adjustment color before MANUAL ADJUST. (Checking method, example: SKEW-"adjustment color" If the color is different from the one to be adjusted, select proper color by pressing R, G or B button).

Note 4: For convergence adjustment of R, B, when adjusting with MANUAL ADJ, as for R, B (press key R to adjust color R, B to adjust color B), adjust STATIC so as to overlap with raster of G, and adjust in the same manner as in steps (3) to (11).

Note 5: The test signal for convergence may be deviated in picture position depending on the frequency. In such a case, continue adjustment directly without adjusting the position in STATIC.

Remote Control Manipulation of 5×5 DIG ADJ

(1) In R, B adjustment, select the color to be adjusted with R, B key. (In the first adjustment, the color is R, but after the adjustment, final adjustment color appears, and therefore check and adjust the color).

(2) Move white square cursor with UP, DOWN, RIGHT, LEFT keys, and press ENTER at the adjusting point (center of square cursor). The square cursor is changed in color, and it is ready to adjust the point. Adjust the point with UP, DOWN, RIGHT and LEFT keys (adjust to G in the case of R, B adjustment).

The color of square cursor is:
White when the cursor is moving; red or blue during adjustment according to the adjustment color. (Whether moving the cursor or moving, the adjustment color can be changed by pressing R or B key).

(3) The display color of cross hatch is changed over when the key of the color in the process of adjustment is pressed (pressing R key during R adjustment, B key during B adjustment, G key during G adjustment).

1. During R adjustment: White (R, G, B display) >> Yellow (R, G display)
2. During B adjustment: White (R, G, B display) >> Cyan (G, B display)

When the adjustment color key is pressed again, the cross hatch returns to white.

(4) By pressing ENTER key during adjustment, the adjustment color returns to white, and the cursor is allowed to move.

(5) When moving the cursor, the adjustment color can be changed (R, Bkey).

(6) By pressing ESC key in the cursor movable screen (when the square cursor is white), it causes to return to G/CONVER menu.

Note: When 5×5 G DIG ADJ is selected, G can be adjusted, but it is very difficult to use in geometry adjustment. Usually it should not be used.

Convergence Adjustment 5×5

Adjustment of 5×5 DIG ADJ

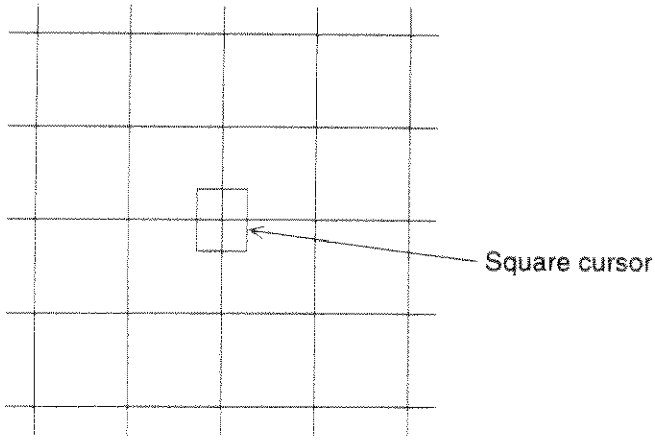
- Adjusting procedure of 5×5 DIG ADJ (as for manipulation of remote control during adjustment, see page 100), GEOMETRY (MANUAL ADJ) ADJUSTMENT
  (1) Get into G/CONVER menu (page 93), select STATIC, and by taking note of central vertical lines and lateral lines, adjust the static convergence of R, B to overlap with G raster.

  (2) Return to G/CONVER menu (page 93).

  (3) Select 5×5 RB DIG ADJ.

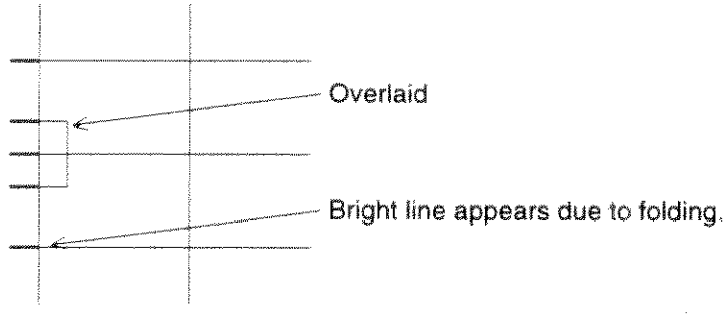
  (4) Get into SCAN MODE menu, then 5×5 cross hatch is displayed.

  (5) By selecting MODE 1, the following screen appears, and the square cursor is shown in the center of the screen.

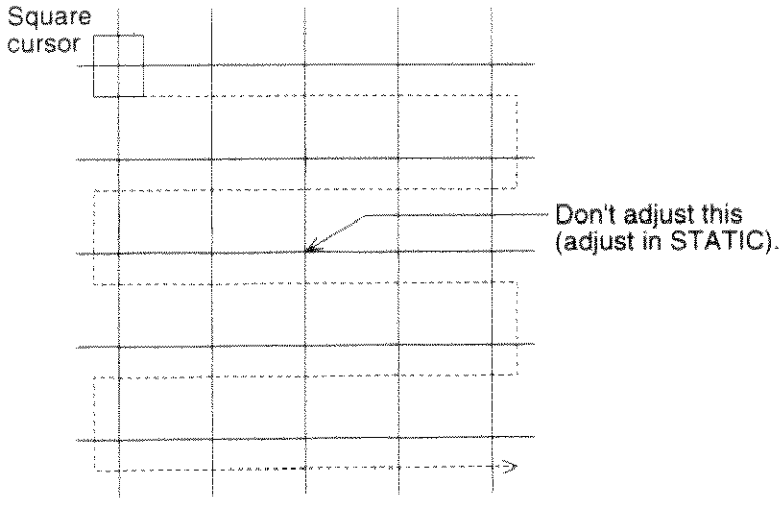


  (6) Select the color to be adjusted with R, B key. (In the first adjustment, the color is R, but after adjustment, final adjustment color appears, and therefore check and adjust the color).

Note: When the square cursor is moved to right or left end of the MODE 1 screen, it may sometimes look folded and overlaid as shown below (a signal short in video signal period). In such a case, adjust in "MANUAL ADJUST".



(7) Move the square cursor to the upper left point as shown below, and press ENTER key to get into adjustment mode, and adjust so that line of R or B may overlap with G.



(8) Adjust 24 points of R, B from upper left to lower right corner as shown above, except for the middle.

(9) Change square cursor to white by pressing ENTER and pressing ESC key, the DATA SAVE screen is made. Perform DATA SAVE with the DATA SAVE screen.

(10) If still deviated, repeat steps (7) to (9).

Note 1: Do not adjust central vertical and lateral lines in 5×5 DIG ADJ. Adjust in STATIC.

Note 2: When 5×5 G DIG ADJ is selected, G can be adjusted, but it is very difficult to use in geometry adjustment. Usually it should not be used.

13 × 15 DIG ADJ

This adjustment should be done as required if adjustment is not complete with 5 × 5 DIG ADJ method.

- Adjusting procedure of 13 × 15 DIG ADJ
  (1) Get into G/CONVER menu (page 93), and select 13 x 15 DIG ADJ.

  (2) Cross hatch of 13 × 15 is displayed, and the white square cursor is shown in the center.

  (3) Select the adjusting color with R, B key.

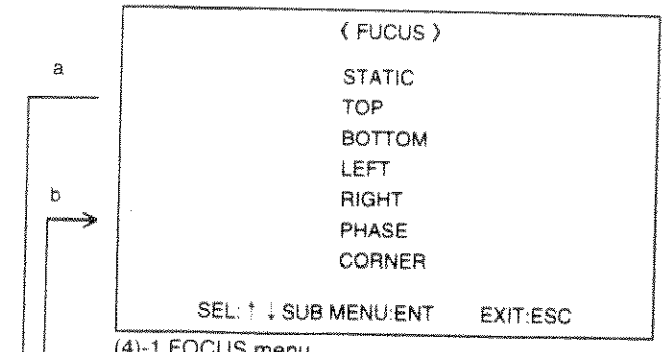
  (If selected by G key, G can be adjusted, but it is very difficult to use in geometry adjustment. Usually it should not be used.)

  (4) Adjust so as to overlay R, B on G raster.
  (See adjusting procedure steps (7) to (9) of 5 × 5 DIG ADJ.)

  (5) After adjustment, get into SAVE menu, and save adjustment data.

Note 1: By pressing TEST key during adjusting, the internal test signal and external input signal are switched. Use to adjust convergence shift at the screen periphery.

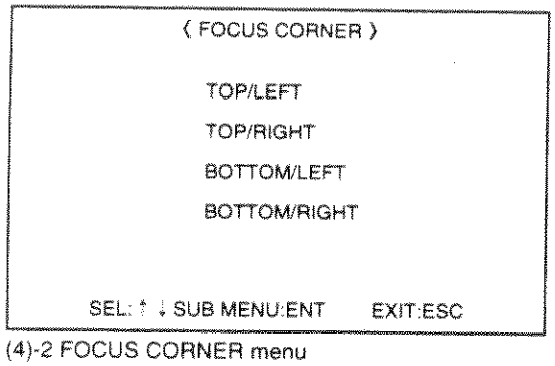
(4) FOCUS



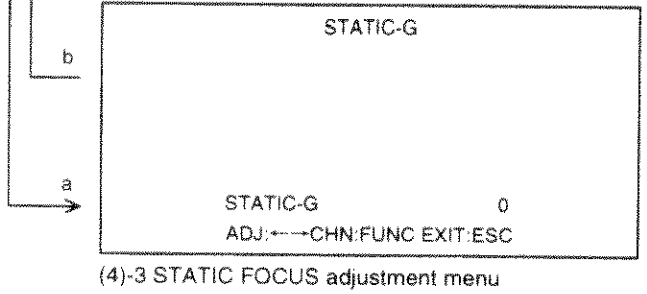
(4)-1 FOCUS menu

CORNER Select

ESC key



(4)-2 FOCUS CORNER menu



(4)-3 STATIC FOCUS adjustment menu

a: Select STATIC
b: ESC key

(4)-1

[Display method]

Displayed by selecting FOCUS in service menu.

[Method of use]

Used in:
Focus adjustment

(4)-2

[Display method]

Displayed by selecting CORNER in FOCUS menu.

[Method of use]

Used in:
Focus adjustment

(4)-3

[Display method]

Displayed by selecting STATIC FOCUS menu.

[Method of use]

Static focus is adjusted.

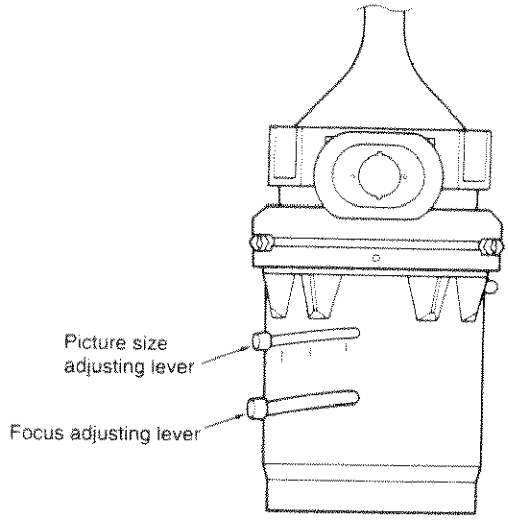
Remarks:

1) Pressing of FUNC key causes to get into adjustment menu of TOP, BOTTOM, RIGHT, LEFT, PHASE.
2) By selecting each adjustment item in menu of (4)-1, (4)-2, each adjustment can be done same as in (4)-3

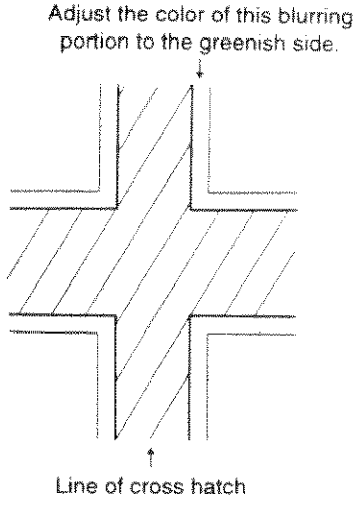
Confirmation and Adjustment of Lens Focus

(1) Taking note of screen center, turn the focus adjusting knob of the lens to the optimum position.

Note: As for the blue color, adjust the blur of the color slightly to the greenish side. (Slightly off the focus. At the violet side, the focus is improved, but blur is increased. Avoid this side). See below.



Names of lens knobs



Criterion of focal point

Confirmation and Adjustment of Electric Focus

(1) Get into FOCUS menu (page 105), and select STATIC. (After selection, test signal of page 108 appears).

(2) Press G key, and adjust to +50.

(3) Select LEFT, RIGHT, and adjust to +50.

(4) Select PHASE, and adjust until the focal balance of the central lateral line is optimized.

(5) Adjust the following items in this sequence.

1. STATIC
2. TOP → BOTTOM
3. LEFT → RIGHT
4. TOP/LEFT → TOP/RIGHT
5. BOTTOM/LEFT → BOTTOM/RIGHT

If adjusting items 2 and 3 again after adjusting items 4 and 5, adjust 4 and 5 again after adjusting 2 and 3.

(6) Adjust the following items after selecting the color with R, G, B keys, and adjust all colors.

1) STATIC
Adjust to the point where the thickness of the bright lines in the central part of the test signal is most clearly seen.

2) TOP
Adjust to the point where the thickness of the bright lines is uniform in vertical and lateral line, taking note of the central upper part.

3) BOTTOM
Adjust to the point where the thickness of the bright lines is uniform in vertical and lateral line, taking note of the central lower part.

4) LEFT
Adjust to the point where the thickness of the bright lines is uniform in vertical and lateral line, taking note of the central left part.

5) RIGHT
Adjust to the point where the thickness of the bright lines is uniform in vertical and lateral line, taking note of the central right part.

6) CORNER
There are four corners: T/L (top left), T/R (top right), B/L (bottom left), and B/R (bottom right). Adjust as required. In each menu, take note of each part, and adjust to the point where the thickness of the bright lines is uniform in vertical and lateral line.

(7) After adjustment, save data.

Cautions:

1. PHASE (PHF) can be selected whenever during R, G, B adjustment, but the adjustment value is common for R, G and B. Therefore, do not adjust after adjusting in the method 1) to 4) above.
2. As for RIGHT, T/R, B/R, after adjustment, move the adjustment value by ±10 (example: if the value after adjustment is +20, move from +10 to +30), and check if the cross hatch line of the test signal does not suddenly become thick. (Check both right and left sides). if suddenly becoming thick, move each adjustment value (RIGHT, T/R, B/R) so that such phenomenon may not occur.

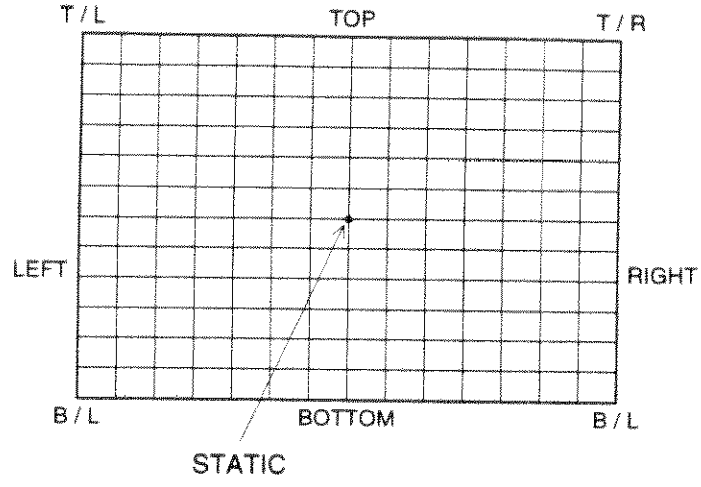
Note 1: When getting into the focus menu, it is automatically changed over to built-in test signal. By TEST key, test signal and external signal can be changed over alternately.

Note 2: When R key is pressed in focus menu, the screen is dominated by R color only, and when pressed again, it is changed to white. It is same with other colors.

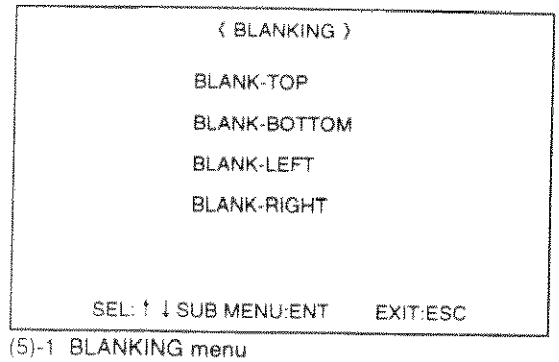
Note 3: STATIC changes the focus of the entire screen, and hence it must be adjusted in the first place.

Note 4: Maximum difference of right and left data is ±40 (between LEFT and RIGHT, T/L and T/R, B/L and B/R).

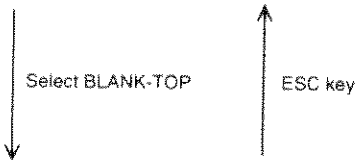
Test signal for focus adjustment (adjust by taking note of each position)

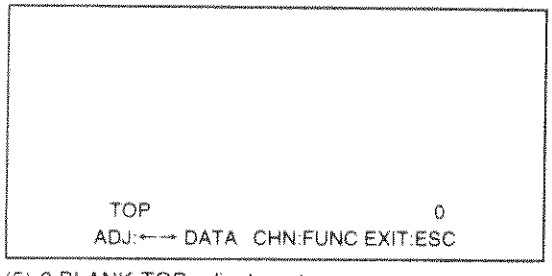


(5) BLANKING



(5)-1 BLANKING menu





(5)-2 BLANK-TOP adjustment menu

(5)-1

[Display method]

Displayed by selecting BLANKING in service menu.

[Method of use]

Used in:

Blanking adjustment

(5)-2

[Display method]

Displayed by selecting TOP in BLANKING menu.

[Method of use]

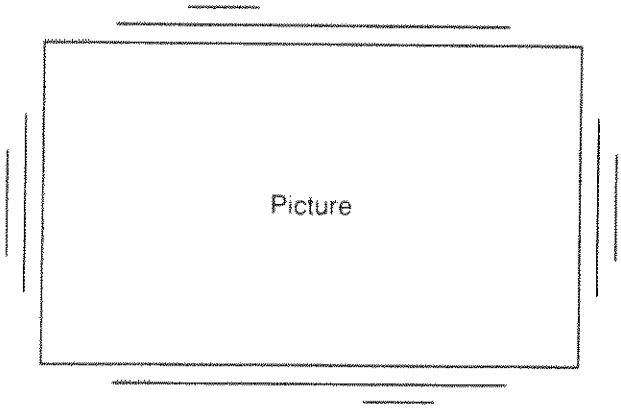
Top blanking is adjusted.

Remarks:

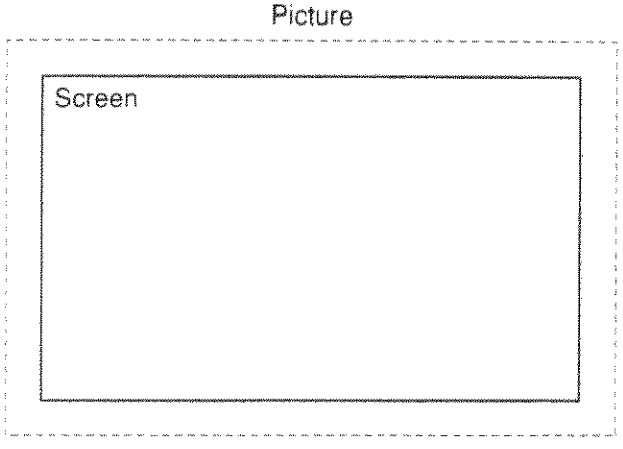
1) Pressing of FUNC key causes to get into adjustment menu of TOP, BOTTOM, RIGHT, LEFT.
2) When each adjustment item is selected in (5)-1 menu, adjustment can be done same as in (5)-2.

Blanking Adjustment

Adjust blanking only when necessary.
- Adjustment is necessary in the following cases.



Example 1: Character broadcast signal of NTSC (occurring in upper part of screen)



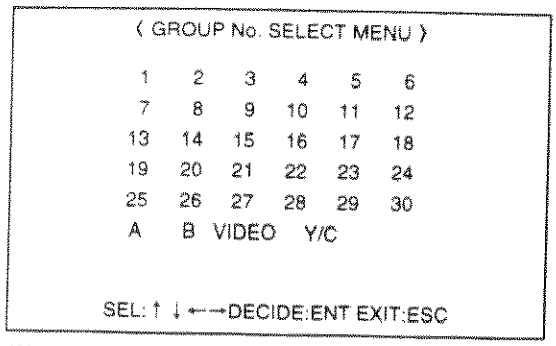
When picture is shown outside the screen

Overscan signal (NTSC)

(1) Get into BLANKING menu (page 109).

(2) Adjust in the sequence of BLANK-TOP, BOTTOM, LEFT, RIGHT ultimately unless the picture disappears, or close to the margin of screen frame.

(6) INPUT ASR



(6)-1 INPUT ASR menu

ENTER key

ESC key

Indicates group No. or input terminal.

〈 SERVICE MENU 〉

MEM	NAME	H:(kHz)	V:(Hz)
01	HDTV-100	33.7	60.0
02	HDTV-70	33.7	60.0
03	SVGA-100	48.7	60.0
04	SVGA-70	48.7	60.0
05	MAC2-100	35.0	60.0
06	MAC2-70	35.0	60.0
07	64k-100	63.7	60.0
08	64k-50	63.7	60.0

SEL:↑ ↓ ENABLE/DISABLE:FUNC EXIT:ESC

(6)-2 SIGNAL SET menu

(6)-1

[Display method]

Displayed by selecting INPUT ASR in service menu.

[Method of use]

Used in:

Setting of group setting

(6)-2

[Display method]

Displayed by selecting input terminal in INPUT ASR menu.

[Method of use]

Used in:

Setting of group setting

Group Setting

This is to lock the memory data registered in each input terminal of INPUT A, B, VIDEO, Y/C. (This setting should be done only when there are two or more memory data judged to be identical signals). By setting this lock, the locked memory data cannot be read out at the set input terminal. Consequently, even in the memory data judged to be identical signals, by dividing the input terminals, the correctly adjusted memory data can be read out and changed over.

Locking the memory date

Important: Make either of the following operations (1 or 2).

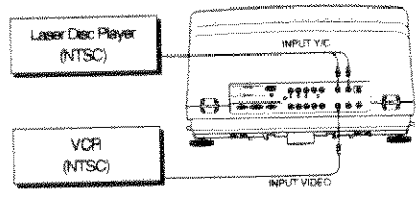
1. Unlock the memory date in MENU 2 mode.
2. Connect the signal to the other terminal that the memory date isn't locked.

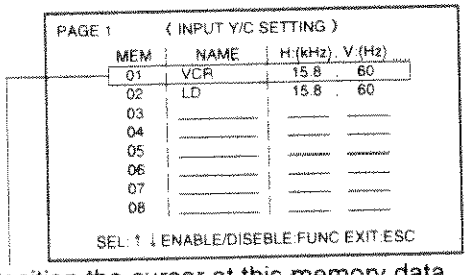
You can use this lock feature in the following case:

< Example >

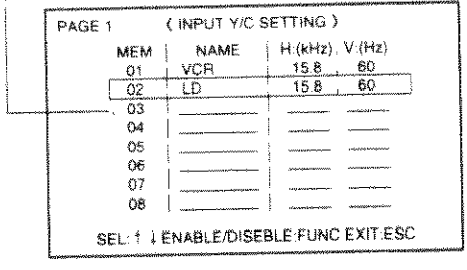
When you connect both the Laser Disc of NTSC program and VCR of NTSC program as shown below, by using the lock feature you can change the setting of picture adjustment for each input source.

- For Laser Disc, set CONTRAST to 50 level.
- For VCR, set CONTRAST to 0 level.





Position the cursor at this memory data using the △▽ buttons, and press the FUNC button.



1. Connect the Laser Disc to the INPUT Y/C terminals.
2. Connect the VCR to INPUT VIDEO terminal.
3. Select Y/C input source using the INPUT Y/C button on the remote control.
4. Lock the memory data of the VCR of NTSC program using the FUNC button.
5. Select VIDEO input source using the INPUT VIDEO button on the remote control.
6. Lock the memory data of the Laser Disc of NTSC program using the FUNC button.

Following this way, you can watch the Laser Disc or VCR in each setting of picture adjustment.

Note:

- At INPUT VIDEO or Y/C terminal, memory data of other signals than PAL, NTSC, SECAM, are locked automatically. The lock cannnot be canceled.
- The memory data being called at the present (shown in the screen) cannot be locked.
- When a signal for calling memory data locked at a certain input terminal is connected to the same input terminal, MENU 1 and MENU 2 can be manipulated, but the data cannot be stored. The input terminal name to which the signal is connected, and message meaning "the signal is not present in the memory data at that input terminal" are displayed. (For example, when the signal for calling the memory data locked at INPUT VIDEO terminal is connected to INPUT VIDEO terminal, "INPUT VIDEO NEW SIGNAL" is displayed).
  (1) Unlock in MENU 2.
  (2) Connect this signal to other input terminal at which memory data is not locked.

(1) Setting procedures

(1) Enter into INPUT ASR menu (page 111).

(2) Select the input terminal desired to be locked by UP, DOWN, RIGHT and LEFT buttons.

(3) Get into (6)-2 SIGNAL INPUT menu.

GROUP No.

〈 INPUT A SETTING 〉

MEM	NAME	H:(kHz), V:(Hz)
01	HDTV-100	33.7 , 60.0
02	HDTV-70	33.7 , 60.0
03	SVGA-100	48.7 , 60.0
04	SVGA-70	48.7 , 60.0
05	MAC2-100	35.0 , 60.0
06	MAC2-70	35.0 , 60.0
07	64k-100	63.7 , 60.0
08	64k-50	63.7 , 60.0

SEL: ↑ ↓ ENABLE/DISABLE:FUNC EXIT:ESC

(6)-2 SIGNAL SET menu

On the screen, manipulate as follows:

1) Move the cursor to the memory number desired to be locked, and pressing FUNC button, then the cursor color is changed from green to red.

2) Every time FUNC button is pressed, the color is changed from red to green and versa, alternately.

3) When DOWN button is pressed at the end of the displayed memory number, the display is changed to next page, and when UP button is pressed at the beginning of memory number, it is changed to preceding page.

Green number and name are not locked.
Red number and name are locked.

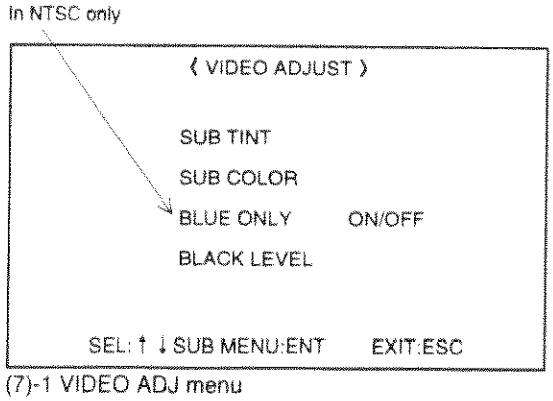
(4) Press ESC button to return to (6)-1 INPUT ASR menu (page 111). (Saved automatically at this point).

(5) When setting at other input terminal, select other input terminal, and follow step (3) and (4).

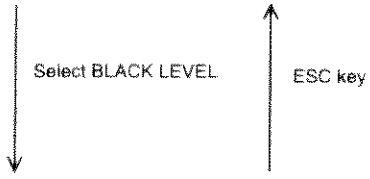
Note 1: The memory data being read out at the present can not be locked.

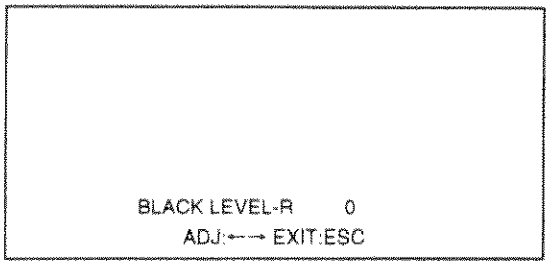
Note 2: VIDEO,Y/C terminals are exclusive for NTSC/PAL/SECAM, and therefore memory data of other signals (for example, SVGA, VGA) are locked automatically. The lock can not be canceled.

(7) VIDEO ADJ



(7)-1 VIDEO ADJ menu





(7)-2 BLACK LEVEL adjustment menu

(7)-1

[Display method]

Displayed by selecting VIDEO ADJ in service menu.

[Method of use]

Used in:

Sub color adjustment

Sub tint adjustment

Black level adjustment

Note: Usually these adjustments are not conducted.

(7)-2

[Display method]

Displayed by selecting BLACK LEVEL in (7)-1 VIDEO ADJ menu.

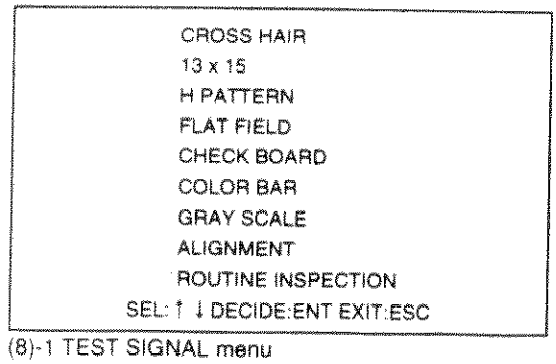
[Method of use]

Black level can be adjusted in every color.

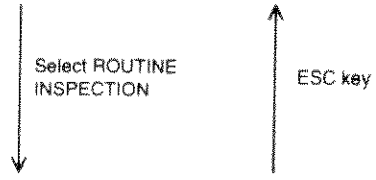
Remarks:

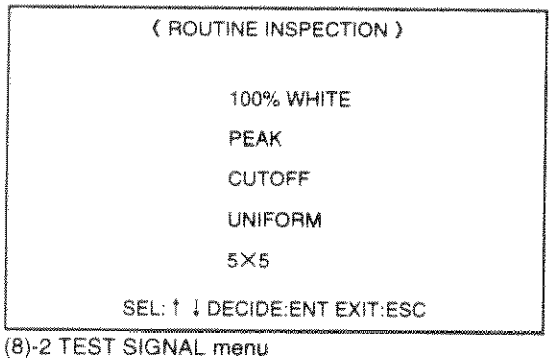
By selecting each adjustment item in (7)-1 menu, adjustment can be done same as in (7)-2.

(8) TEST SIGNAL



(8)-1 TEST SIGNAL menu





(8)-2 TEST SIGNAL menu

(8)-1

[Display method]

Displayed by selecting TEST SIGNAL in service menu.

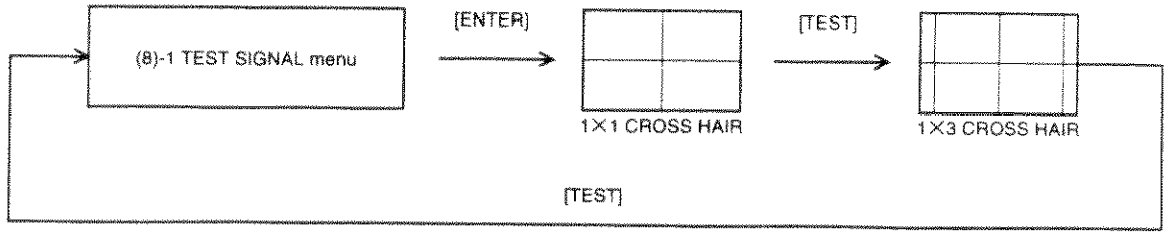
[Method of use]

Used in:

Changeover of test pattern

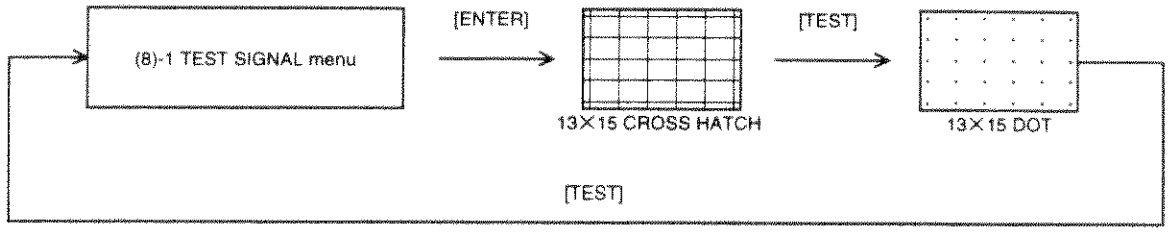
(1) CROSS HAIR

Test signal is changed over to:
1×1 cross hair
3 (lateral)×1 (vertical) cross hair



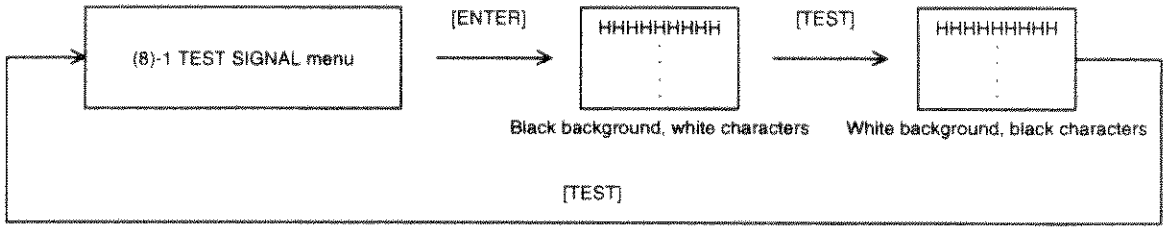
(2) 13×15

Test signal is changed over to:
15 (lateral)×13 (vertical) cross hatch
15 (lateral)×13 (vertical) dot



(3) H PATTERN

Test signal is changed over to:
H PATTERN (black background, white characters)
H PATTERN (white background, black characters)



Test Signals for Periodic Checking

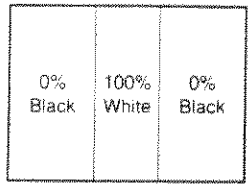
- Not planned to be used at the present.

When "ROUTINE INSPECTION" is selected, the selection menu of the test signal to be used in periodic checking ((8)-2 TEST SIGNAL menu (2), page 115) is displayed.
Regardless of the present input signal, a signal of horizontal frequency of 31.5 kHz and vertical frequency of 60 Hz is displayed.

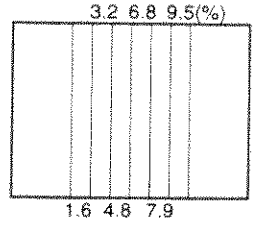
The test patterns are as follows.

①100% WHITE: All white

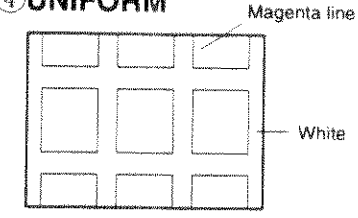
②PEAK



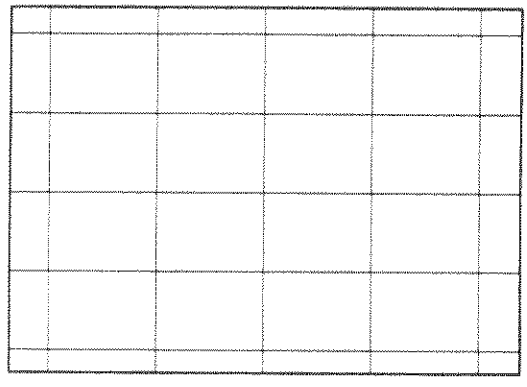
③CUT OFF



④UNIFORM

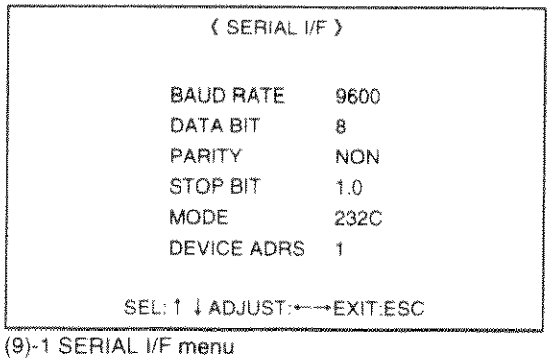


⑤CROSS HATCH 5×5



Note: These test signals are fixed in frequency. Therefore, if it is attempted to change over to the test signal in the midst of a certain adjustment, the data save screen appears.

(9) SERIAL I/F



(9)-1 SERIAL I/F menu

[Display method]

Displayed by selecting SERIAL I/F in service menu.

[Method of use]

Used in:

RS232C/RS422A/RS485 control command

Note: Usually the left side is standard.

1) RS232C/RS422A/RS485 Control Command

This machine can be controlled by personal computer by using RS-232C, 422A, etc.

◇ **Principal functions**

- Power on/off of the machine
- Changeover of input terminals
- Rewrite of memory data of user menu
- Memory data writing suction of service menu
- Read-out of memory data

(**Example of use**)

For example, the following use is possible.

8:40 A.M.	Power ON (at INPUT A)
↓	
10:00 A.M.	Change contrast to 150
↓	
0:00 P.M.	Power OFF
↓	
1:00 P.M.	Power ON
↓	
3:00 P.M.	Change input terminal to INPUT B
↓	
5:20 P.M.	Power OFF

It is possible to control from an external device by using REMOTE 1 (RS232C), REMOTE 2 (RS422A/RS485) terminals of the machine. REMOTE 1 and REMOTE 2 cannot be used at the same time.

1. Interface

Protocol	RS232C/RS422A/RS485
Baud-rate	9600/4800/2400/1200/300 [bps]
Data length	8/7 [bits]
Parity	Even/odd/none
Stop bit	1/2 [bits]

2) Control Command Composition

The command consists of four codes address code, function code, data code and end code, and the signal length of command varies in each function.
Data code is not used in certain commands.

	Address code	Function code	Data code	End code
HEX	30h 30h	Function	Data	0Dh
ASCII	'0' '0'	Function	Data	

[Address code]

In RS232C, RS422A, 30h 30h (two ASCII characters '0' '0').
In RS485, 30h 30h are used as batch action address, and when issuing command for individual projectors, it is specified by two-digit ASCII code corresponding to the device address (1 to 16) set by SERVICE MENU -> SERIAL I/F of the projector.

[Function code]

Intrinsic code of each control action.

[Data code]

Intrinsic data (numerical value, etc.) of each control action, and it is not always specified.

[End code]

0Dh

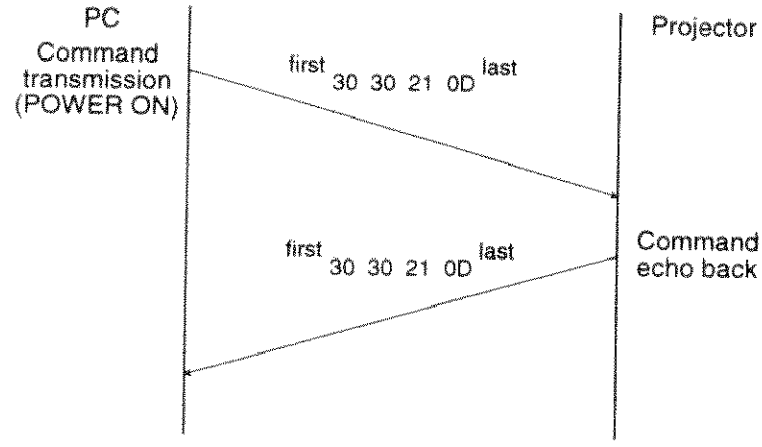
3) Control Command Sequence

(1) The command from the host computer to the projector is transmitted within 400 ms.

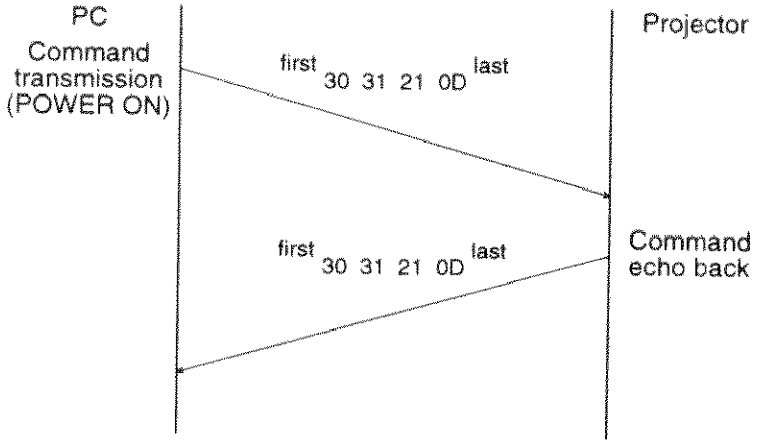
(2) The projector sends return command in 400 ms after receiving last code. Return command is not sent unless received normally.

(3) The host computer checks the return command, and verifies if the transmitted command has been executed or not.

ex.3-1 RS232C, RS422A



ex.3-2 RS-485 (When device address of projector is 1)



In RS485, when the host computer specifies address code as 30h 30h, all projectors are put in action regardless of the device address of projector, but the projector does not send back return command. When controlling projectors individually, the host computer must transmit the address code matched with the device address of projector. In this case, only the projector coinciding in address operates, and that projector sends back the return command.

4) Setting Method of Numerical Value

When setting address, numerical value, etc., ASCII character strings are used. Correspondence of ASCII codes and hexagonal codes is shown below.

ASCII	'+'	'−'	'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'	'8'	'9'
HEX	2Bh	2Dh	30h	31h	32h	33h	34h	35h	36h	37h	38h	39h

ex.4-1 To set adjustment value as -24

⇨ Set data code in 2Dh 32h 34h.

ex. 4-2 To control only the set of which device address of projector is 7 when using RS485

⇨ Set address code in 30h 37h.

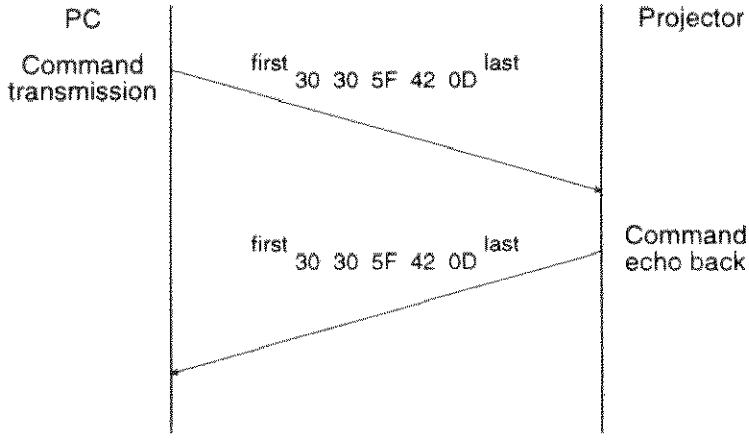
5) Operation Command

The operation command sets the basic action of projector. However, it may not operate in the case of signal change or memory save.

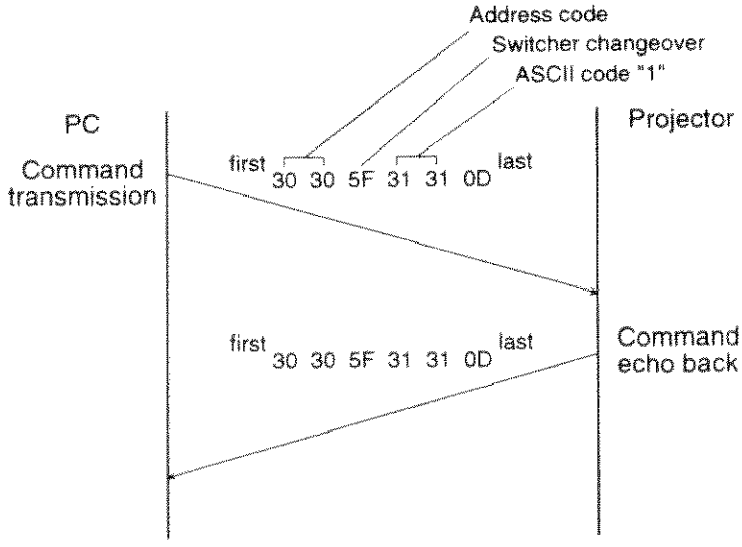
	Function	Data
POWER ON	21h	
POWER OFF	22h	
INPUT A	5Fh 41h	
INPUT B	5Fh 42h	
INPUT VIDEO	5Fh 43h	
INPUT Y/C	5Fh 44h	
INPUT SW	5Fh	'01~30'
MUTE ON	4Eh 31h	
MUTE OFF	4Eh 30h	

The numerical value specified as data code at the time of switcher changeover (INPUT SW) corresponds to the channel number of switcher. The switcher changeover (INPUT SW command) is possible only when operating in system with the switcher corresponding to VS-1281. Do not use in other conditions. Up to 30 channels can be controlled.

ex.5-1 Set signal input in INPUT B.

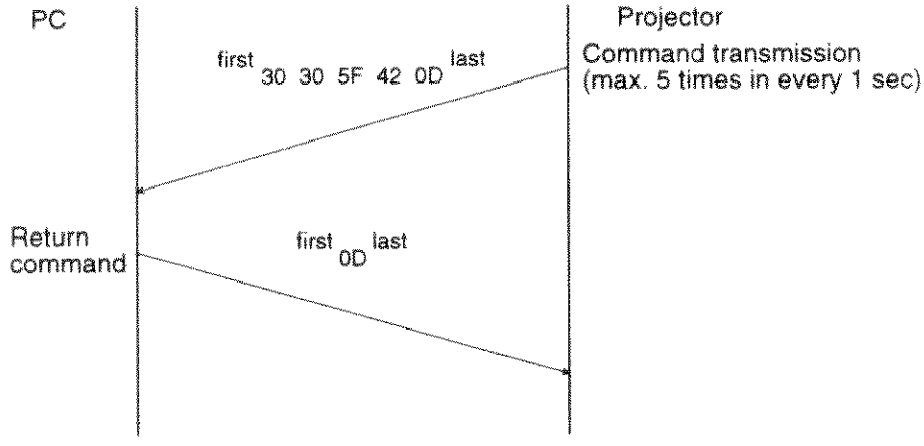


ex.5-2 Set signal input in channel 11 of switcher.



In RS232C, RS422A setting, by performing power on/off, input change, or mute on/off by other means than RS such as infrared ray remote control, the projector sends the command by repeating up to five times in every 1 sec until end code 0Dh is returned from the host computer. The host computer, by receiving the command, can confirm the running state of the projector.

ex.5-3 When setting in INPUT B by using infrared ray remote control (when setting in RS232C, RS422A)



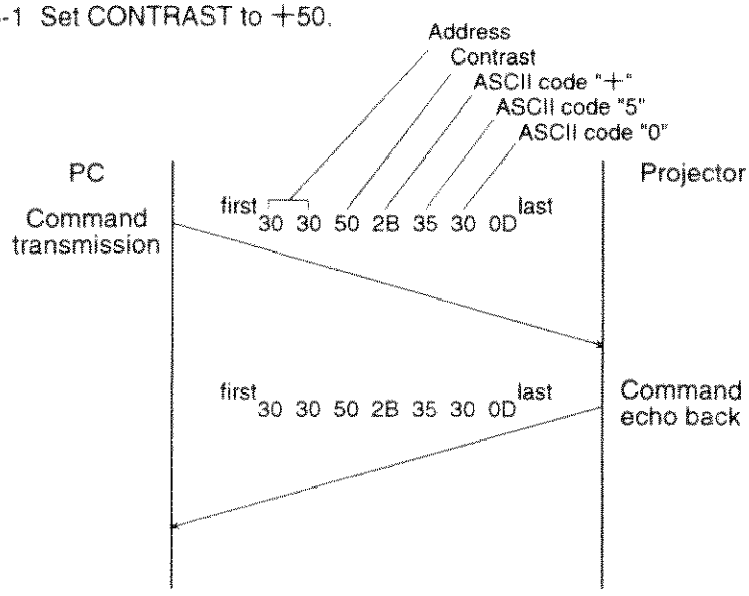
6) User Command

In user command, data setting and reading of MENU 1, MENU 2 (excluding INPUT SETTING) can be done.
However, it may fail to function in signal change or memory save or mute. Besides, it is not allowed to set while service menu is being displayed or when no signal is supplied.
Details of the user command are shown in the table below. Data setting and reading can be done.
There are commands and data that cannot be set or that vary in data setting range depending on the input terminal or input signal. The commands and data that can be set are same as the commands that can be adjusted by the remote control.

	Function	Data
CONTRAST	50h	'−50~+50'
BRIGHTNESS	51h	'−50~+50'
SHARPNESS	52h	'−50~+50'
TINT	53h	'−50~+50'
COLOR	54h	'−50~+50'
SET UP LEVEL 0%	55h	30h
SET UP LEVEL NORMAL	55h	31h
SET UP LEVEL 7.5%	55h	32h
COLOR TEMP 3200	41h	4Ch
COLOR TEMP 6500	41h	4Dh
COLOR TEMP 9300	41h	48h
COLOR TEMP CUSTOM	41h	43h
DRIVE-R	77h 52h	'−128~+127'
DRIVE-B	77h 42h	'−128~+127'
PHASE H	70h 50h 48h	'−50~+50'
PHASE V	70h 50h 56h	'−20~+20'
CONVERGENCE-R H	58h 52h 48h	'−50~+50'
CONVERGENCE-R V	58h 52h 56h	'−50~+50'
CONVERGENCE-B H	58h 42h 48h	'−50~+50'
CONVERGENCE-B V	58h 42h 56h	'−50~+50'
FOCUS-R	66h 52h	'−50~+50'
FOCUS-G	66h 47h	'−50~+50'
FOCUS-B	66h 42h	'−50~+50'
ACL SYNCHRONIZATION ON	41h 43h 4ch 53ch	31h
ACL SYNCHRONIZATION OFF	41h 43h 4ch 53ch	30h

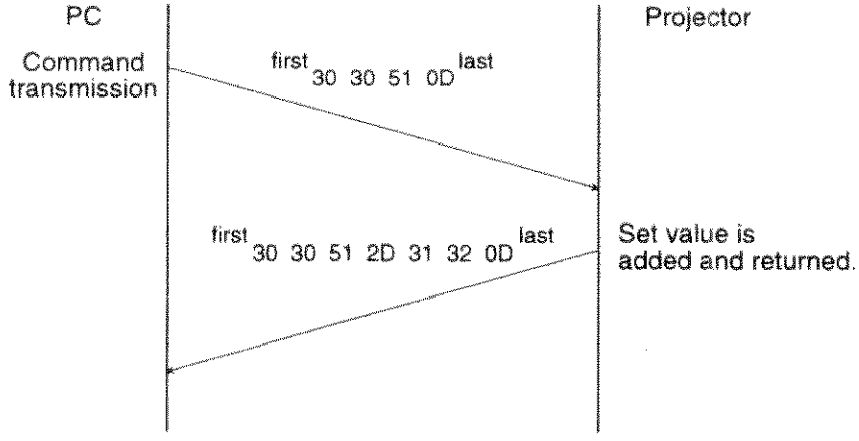
Note: The user command saves the data automatically by sending command (not saved in the case of new signal).

ex. 6-1 Set CONTRAST to +50.



When transmitted without adding data code, or when data code outside the setting range is transmitted, the projector adds the present set value as the data code and sends it back. By using this, the present set value set in the projector can be read out.

ex.6-2 To read the present set value of BRIGHTNESS (in the case of the present set value of -12)



7) Memory Command

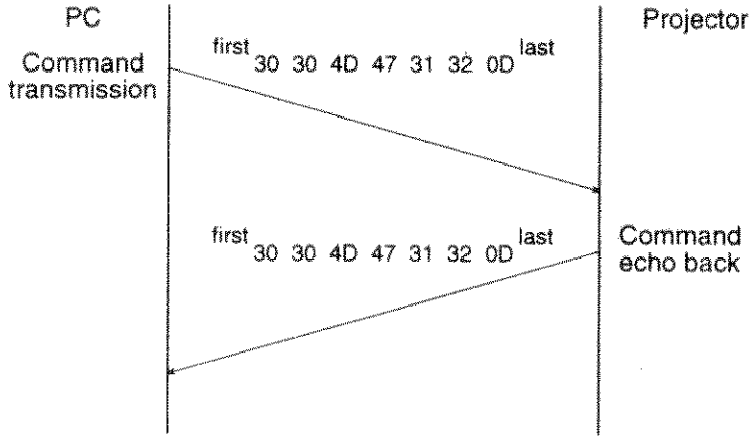
The memory and group in which adjustment data is held are directly specified. Confirm the content of the memory and group in (1)-1 SIGNAL SET menu or (6)-2 SIGNAL SET (GROUP SET).
When specifying memory, only the memory matched in the signal frequency, polarity of synchronous signal, and type can be specified.
By specifying group, only the signals memory having the content most similar to the correct input signal among those permitted within the group are read out.
These commands may not work in signal changeover or memory save.

	Function	Data
MEMORY SELECT	4Dh	'01~30'
GROUP SELECT	4Dh 47h	'01~30'

Note 1: If memory differing in frequency and wiring system from input signal is specified, the command is ignored.

Note 2: The memory being read out is also read out also when the signal of same frequency is read out next time.

ex.7-1



8) Read-Out Command

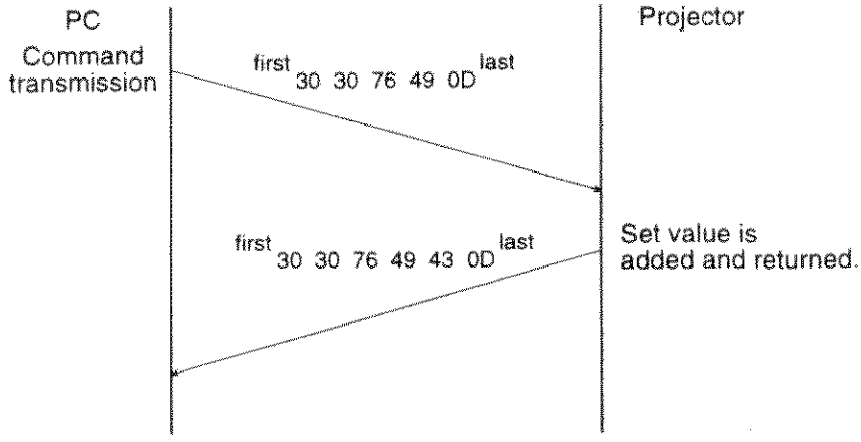
The operating state of the projector is monitored. The items to be monitored are power on/off, setting of input terminal, mute on/off, and operating group/memory.

	Function	(Reception) Data
POWER ON	76h 50h	31h
POWER OFF	76h 50h	30h
INPUT A	76h 49h	41h
INPUT B	76h 49h	42h
INPUT VIDEO	76h 49h	43h
INPUT Y/C	76h 49h	44h
MUTE ON	76h 4Dh 54h	31h
MUTE OFF	76h 4Dh 54h	30h
GROUP.MEMORY	76h 53h	47h [group code] 4Dh [memory code]

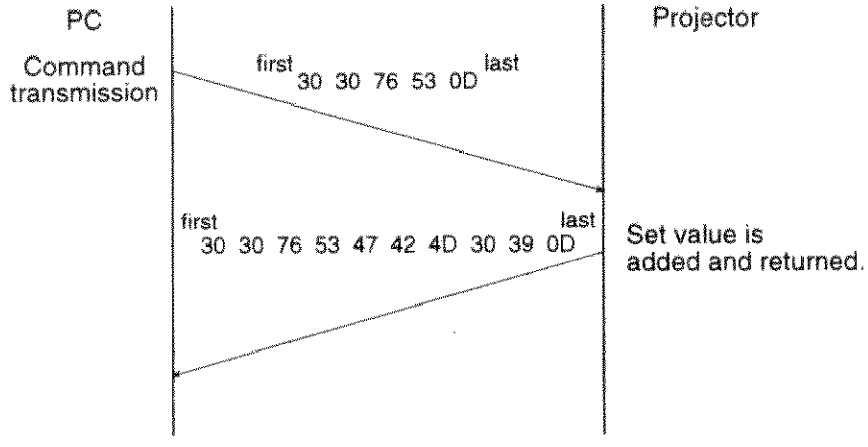
The host computer transmits without adding data code. On the other hand, the projector receiving the command adds the present running state as data code and sends it back.

In group/memory reading, [group code] is 41h, 42h, 43h, 44h, respectively when the group is INPUT A, INPUT B,INPUT VIDEO, INPUT Y/C, and ASCII code of 01 to 30 otherwise. Besides, [memory code] is ASCII code of 01 to 30.

ex.8-1 Reading of input terminal (during operation in INPUT VIDEO)



ex.8-2 Reading of memory number and group in operation (during operation by group B memory 9)



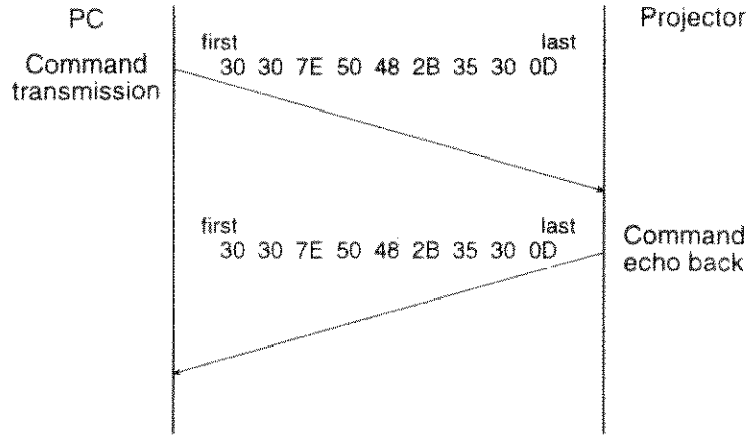
9) Service Command

The service command can set and read data in SERVICE MENU. The data that can be set or read are the following.
It may fail to function in the case of signal changeover, mute or memory save. It cannot be set when the user menu (MENU 1, MENU 2) is displayed or when no input signal is supplied.
There are certain commands that cannot be set or that vary in data setting range depending on the input terminal and input signal. The commands and data that can be set are same as the commands that can be adjusted by remote control.

	Function	Data
STATIC-R H	7Eh 53h 54h 52h 48h	'−341～+341'
STATIC-R V	7Eh 53h 54h 52h 56h	'−78～+77'
STATIC-G H	7Eh 53h 54h 47h 48h	'−341～+341'
STATIC-G V	7Eh 53h 54h 47h 56h	'−78～+77'
STATIC-B H	7Eh 53h 54h 42h 48h	'−341～+341'
STATIC-B V	7Eh 53h 54h 42h 56h	'−78～+77'
SIZE H	7Eh 53h 5Ah 48h	'−80～+60'
SIZE V	7Eh 53h 5Ah 56h	'−276～+313'
PHASE H	7Eh 50h 48h	'−200～+200'
PHASE V	7Eh 50h 56h	'−108～+107'
CLAMP AUTO	7Eh 43h 4Ch	41h 44h
CLAMP MANUAL WIDE	7Eh 43h 4Ch	57h '0～63'
CLAMP MANUAL NARROW	7Eh 43h 4Ch	4Eh '0～63'
ACL LOW	7Eh 41h 43h 4Ch	48h
ACL HIGH	7Eh 41h 43h 48h	4Ch
SYNC MASK SHORT	7Eh 4Dh 53h 4Bh	32h
SYNC MASK LONG	7Eh 4Dh 53h 4Bh	31h
SYNC MASK VIDEO	7Eh 4Dh 53h 4Bh	33h
SYNC MASK MANUAL	7Eh 4Dh 53h 4Bh	30h '0～31'
BLANKING-TOP	7Eh 42h 54h	'0～100'
BLANKING-BOTTOM	7Eh 42h 42h	'0～100'
BLANKING-LEFT	7Eh 42h 4Ch	'22～192'
BLANKING-RIGHT	7Eh 46h 52h	'0～192'
FOCUS STATIC-R	7Eh 46h 54h 52h	'−78～77'
FOCUS TOP-R	7Eh 46h 42h 52h	'0～127'
FOCUS BOTTOM-R	7Eh 46h 4Ch 52h	'0～127'
FOCUS LEFT-R	7Eh 46h 52h 52h	'0～127'
FOCUS RIGHT-R	7Eh 46h 52h 52h	'Value of left±40'
FOCUS TOP/LEFT-R	7Eh 46h 54h 52h 52h	'−78～77'
FOCUS TOP/RIGHT-R	7Eh 46h 54h 4Ch 52h	'Value of top/left±40'
FOCUS BOTTOM/LEFT-R	7Eh 46h 42h 52h 52h	'−78～77'
FOCUS BOTTOM/RIGHT-R	7Eh 46h 42h 4Ch 52h	'Value of bottom/left±40'
FOCUS STATIC-G	7Eh 46h 53h 47h	'−78～77'
FOCUS TOP-G	7Eh 46h 54h 47h	'0～127'
FOCUS BOTTOM-G	7Eh 46h 42h 47h	'0～127'
FOCUS LEFT-G	7Eh 46h 4Ch 47h	'0～127'
FOCUS RIGHT-G	7Eh 46h 52h 47h	'Value of left±40'
FOCUS TOP/LEFT-G	7Eh 46h 54h 52h 47h	'−78～77'
FOCUS TOP/RIGHT-G	7Eh 46h 54h 4Ch 47h	'Value of top/left±40'
FOCUS BOTTOM/LEFT-G	7Eh 46h 42h 52h 47h	'−78～77'
FOCUS BOTTOM/RIGHT-G	7Eh 46h 42h 4Ch 47h	'Value of bottom/left±40'
FOCUS STATIC-B	7Eh 46h 53h 42h	'−78～77'
FOCUS TOP-B	7Eh 46h 54h 42h	'0～127'
FOCUS BOTTOM-B	7Eh 46h 42h 42h	'0～127'
FOCUS LEFT-B	7Eh 46h 4Ch 42h	'0～127'
FOCUS RIGHT-B	7Eh 46h 52h 42h	'Value of left±40'
FOCUS TOP/LEFT-B	7Eh 46h 54h 52h 42h	'−78～77'
FOCUS TOP/RIGHT-B	7Eh 46h 54h 4Ch 42h	'Value of top/left±40'
FOCUS BOTTOM/LEFT-B	7Eh 46h 42h 52h 42h	'−78～77'
FOCUS BOTTOM/RIGHT-B	7Eh 46h 42h 4Ch 42h	'Value of bottom/left±40'
FOCUS PHASE	7Eh 46h 50h	'0～63'
SUB TINT	7Eh 53h 54h 54h	'−78～+77'
SUB COLOR	7Eh 53h 43h 4Fh	'−78～+77'
BLACK LEVEL/R	7Eh 4Ch 56h 53h 52h	'−50～+50'
BLACK LEVEL/G	7Eh 4Ch 56h 53h 47h	'−50～+50'
BLACK LEVEL/B	7Eh 4Ch 56h 53h 42h	'−50～+50'
DATA SAVE	7Eh 44h 53h 56h	

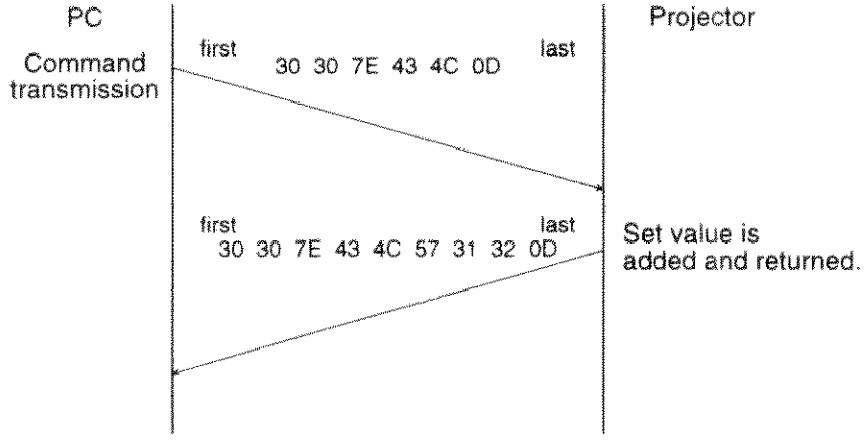
Note: Data varied by command cannot be automatically saved in Service command unless data save command is transmitted. To save data, send data save command after setting data. If the input signal on the screen is not registered, data is not saved.

ex.9-1 Set PHASE-H to +50.

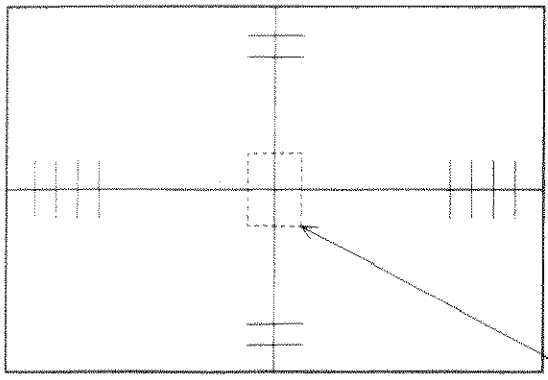


Unless data code is transmitted, the projector transmits the present set value. When setting disabled data is transferred, the present set value is transmitted.
By using this function, the present set value in the projector can be read out.

ex.9-2 Read out the present set value of CLAMP (when the present set value is MANUAL WIDE 12).



(10) LAYOUT



(10)-1 **LAYOUT signal**
Only G is issued.

[Display method]

Displayed by selecting LAYOUT in service menu.

[Method of use]

The reference signal of installation layout.
(Set the center of the layout setting to match the center of the screen).

Note: This signal differs from other test signals. It is generated within the projector.

During layout signal output, the convergence adjustment values of SKEW, LIN, etc. are zero. Therefore install by observing only the center of the screen.

User Adjustment

The user can use the following adjustment items. For details, see instruction manual. Especially, picture quality adjustment items in MENU 1 should be adjusted as required.

(MENU 1) Picture quality adjustment, setting

	Initial setting	
CONTRAST	0	
BRIGHTNESS	0	
SHARPNESS	0	Displayed only in NTSC, PAL, SECAM
COLOR	0	Displayed only in NTSC, PAL, SECAM
TINT	0	Displayed only in NTSC
COLOR TEMP	6500/9300	9300 in NTSC/PAL/SECAM, 6500 in others
BLUE ONLY	OFF	Displayed only in NTSC
SET UP	NORMAL	Displayed only in NTSC

After adjustment, confirm the set value.

(MENU 2) Convergence, focus, memory name change, etc.

INPUT SETTING....Change of memory name, lock setting
PHASE.....Phase adjustment
FOCUS.....Static focus adjustment
CONVERGENCE...Static convergence adjustment of R, B

This menu is completely done in the service adjustment, and is hence unnecessary.

Note: Of MENU 2 items, PHASE, FOCUS, and CONVERGENCE are reset automatically at the time of individual service adjustment.

APPENDIX

&

ADDENDUMS

Addendum 1
Downloading the VS-1281's adjustment data to Floppy Disk.

The VS-1281 holds all convergence, focus adjustment data, etc. in an E-Prom found on the JUNGLE PWB. At present, if this PWB is changed, then all the data it contained would be lost, and adjustment of the VS-1281 would have to be carried out from the very beginning.

Because of this, it is recommended that whenever the VS-1281 is set up to display a new signal, all E-Prom data be downloaded to a computer and saved to a floppy disk.

For further details regarding this software, please contact your MELA dealer.

Repuired equipment:

1. IBM compatible PC.
2. RS-232 cross cable
   (Connect to com port on PC and remote 1 on VS-1281).
3. Control Software
   (Obtainable from MELA: DPMP1281.EXE, DSET1281.EXE.)
4. NTSC signal source
   (VCR, LD, signal generator and so on)

Preparing for Data Transfar

1. Connect the RS-232 cross cable to a free com port on the PC and Remote 1 terminal on the VS-1281.
2. Connect an NTSC signal to any of the input terminals. And turn the VS-1281 on.
3. Confirm that on-screen menu is not displayed.

Data Transfer

1. Insert the Data Transfer software disk into the PC and turn it on.
2. At the "A:" prompt, type "DPMP1281" and press return.
3. Follow the instructions displayed on the PC screen.
4. Start Data Transfer
   Important: While data is transferring, do not touch the keyboard or mouse
   (Should an error occur while transferring data, or data transfer should stop, press the ESC key and follow the instructions).
5. When the "A:" prompt reappears, the data transfer is complete (usually takes about 10 minutes to transfer data).

Note:

- The data for each signal memory of the VP is saved to the same directory that DP MP1281.EXE resides in. To check that all data has, in fact, been saved to a file, type "dir" at the command prompt and the directory's contents will be displayed.
- When transferring data stored in 2 projectors, use one disk for each projector. (If a same disk is used for the 2 projectors, data having the same memory name are overwritten).
- The group setting (Lock/Unlock information in Memory Data) data is not saved in a disk. Take notes for the data (on List of Registration of Memory Data) and set the data again.
- After data transfer is completed, picture may not be projected on the left side. In this case, adjust BLANKING-LEFT in the service Menu again.
- When data are transferred with a signal other than an NTSC signal input, data of H-SIZE and H-PHASE may be changed.

Data setting

Caution:

If data setting is executed, all memory data(including factory adjustment data) are overwritten.

1. Insert the Data Setting software disk with transfer data into the PC and turn it on.
2. At the "A:" prompt, type "DSET 1281" and press return.
3. Follow the instructions displayed on the PC screen.
4. Start Data Setting

   IMPORTANT: While this program is executed, do not touch the keyboard or mouse.

   (Should an error occur while setting data, or data transfer should stop, press the ESC key and follow the instructions).
5. When the "A:" prompt reappears, the data setting is complete (usually takes about 15 minutes).
6. Confirm picture left, color temperature setting and group setting of each input signal.

Addendum 2
Trouble Diagnosis

The defective point can be checked by referring to the seven-segment LED display in the rear panel of the main body.

LED display	Operation	Principal defective board
1.	H-STOP Stopping of horizontal scanning	DEFL-H
2.	V-STOP Stopping of vertical scanning	DEFL-V
3.	P-CONV Power source abnormality in CONV-FOCUS system, DEFL system	POWER-2
4.	P-VIDEO Power source abnormality in VIDEO system	POWER-1
5.	BEAM Abnormal rise of beam current	PWB-HV
6.	P-HV Power source abnormality of high voltage line	HV-POWER
7.	X-RAY Abnormal rise of high voltage	PWB-HV
0.	FANSTOP Stopping of one of cooling fans	———

Addendum 3
List of Messages

"INPUT NO SIGNAL" "Signal is not fed"	◎Is the input terminal selected correctly? ◎Is the power turned on in the connected device? ◎Is the connected cable broken?
"INPUT_NEW SIGNAL" "This is a new signal"	◎Is the memory data locked at the input terminal? If not locked, newly register memory data is necessary.
"THIS SIGNAL CAN' T ENABLED!" NTSC, PAL or SECAM INPUT ONLY "This signal cannot be unlocked. This is an input of NTSC, PAL, SECAM only."	◎The display appears when memory data other than NTSC/PAL/SECAM is unlocked in VIDEO, Y/C input terminals.
"NAME ALREADY IN USE, PLEASE ENTER A DIFFERENT NAME" "This memory name is used elsewhere. Register in different name."	◎The display appears when attempted to register in the same name as other memory name when registering or changing memory name. Change the memory name.
"MEMORIES FULLED UP! PLEASE DELETE OTHER ENTRY" "Memory is full."	◎The display appears when memory is newly registered when all of 30 memories are being used. When necessary to register new memory, delete unnecessary memory, and then register newly.

Addendum 4

Remote ID

The VS-1281 (hereinafter "VP") comes equipped with a remote ID function. With it, you can specify an ID number for each VP in your system. When using more than one VP, you can operate specific VPs by remote control, by simply specifying the ID numbers. Up to a maximum of 16 VPs can be allotted IDs.

NOTE: This function lets you set the VP to receive or disregard remote control signals. It does not let you assign ID numbers to remote controllers. Therefore, no matter which remote controller you use, only the specified VPs can be operated by remote control.

For your reference: When using the remote ID function, only specified VPs can be operated by remote control.
All other unspecified VPs will ignore commands sent from remote. If a certain projector does not respond to the remote signals, try pressing the "FUNC" button followed by "0" "0" on the remote controller.

(1) Setting remote ID number
1) Get the into ⑨-1 SERIAL-I/F menu.
2) Move the cursor to "DEVICE ADRS" and select an ID No. with the RIGHT and LEFT buttons.
3) Quit the menu and save your settings.

(2) Locking IDs (Enabling operation by remote control)
1) Face the remote controller towards all VPs for which you want to lock the ID. It is not important whether the power to the VP is ON or the VP is on standby.
2) Press the "FUNC" button followed by the ID No. (01～16).

Example: For ID No. 7 ... "FUNC" "0" "7"

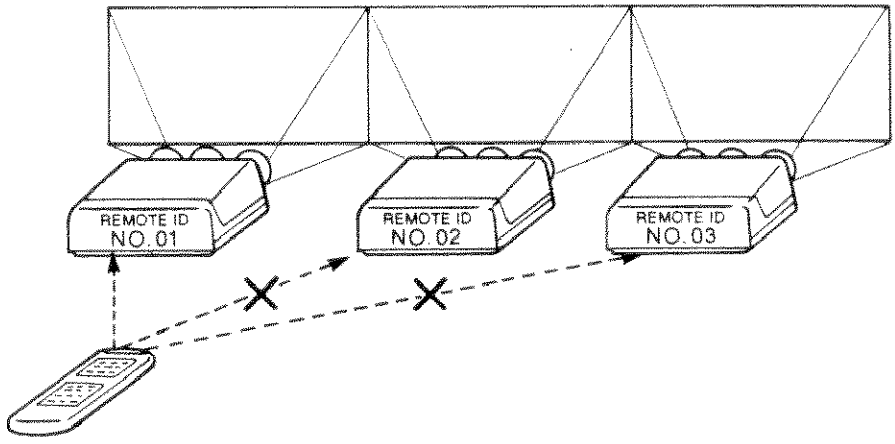
3) If the VP is ON, "REMOTE ID No.___ CONTROL ONLY!" will be displayed on the screen. If the projector is on standby, the 7-segment indicator on the projector's rear will read "P" and will soon start flashing.
4) When one of the indications in step 3) is given, the remote ID function is turned ON. Only the specified VP will respond to remote commands while all other VPs will ignore them. If the indication is not given immediately after performing step 2), repeat step 2).

(3) Unlocking IDs
1) Face the remote controller towards all VPs for which you want to unlock the ID.
2) Press the "FUNC" button followed by "0" "0".
3) If the VP is ON, "REMOTE ID CONTROL CLEAR!" will be displayed on the screen. If the projector is on standby, the green LED and 7-segment indicator on the projector's rear will both read "0" and will soon start flashing.
4) When one of the indications in step 3) is given, the remote ID function is turned OFF. If the indication is not given immediately after performing step 2), repeat step 2).

(4) Checking remote IDs
1) Face the remote controller towards the VP whose ID you want to check and press the "FUNC" button followed by the "DISPLAY" button.
2) "REMOTE ID No.___" will be displayed on the screen.
When displayed, if the message is green, the ID function is ON (the projector will receive remote commands). If red, it indicates that other remote controllers except for designated one are locked and unavailable.

NOTE: This function lets you check both ID No. and remote ID status.

Example



- 3 VPs are used simultaneously, but only the input signal terminal for VP No. 01 has been changed.
  ① Press the "FUNC" button followed by "0" "1". (Only VP No. 01 will be set to respond to remote control.)
  ② Change the input terminal with the INPUT button. (Input is changed for VP. No. 01 only.)

NOTE: Pressing the "FUNC" button followed by "0" "0" will set all VPs to respond to remote control commands.

Appendix 1. List of Registration of Memory Data

Use this list for management of adjusted memory data.

Memory No.	Connected device name	Registered memory name	Wiring system	Horizontal frequency		Vertical frequency		Color temp.
					Polarity		Polarity	
1			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
2			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
3			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
4			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
5			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
6			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
7			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
8			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
9			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
10			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
11			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
12			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
13			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
14			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
15			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM

Memory No.	Connected device name	Registered memory name	Wiring system	Horizontal frequency		Vertical frequency		Color temp.
					Polarity		Polarity	
16			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
17			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
18			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
19			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
20			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
21			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
22			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
23			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
24			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
25			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
26			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
27			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
28			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
29			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM
30			3, 4, 5, Y/C, VIDEO	kHz	Nega/Posi	Hz	Nega/Posi	3200/ 6500/ 9300/ CUSTOM

Appendix 2. List of Group Setting

Enter [D] only in the memory data locked in the table below.

Memory No.	Group setting No.																			
	INPUT A	INPUT B	VIDEO	Y/C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
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30																				

When using with the interface switcher (EXTRON: System 8/10 Plus)

Using the projector with the interface switcher (EXTRON: System 8/10 Plus) allows the various kinds of system operation shown below. Up to 30 inputs are available when performing system operation with the switcher.

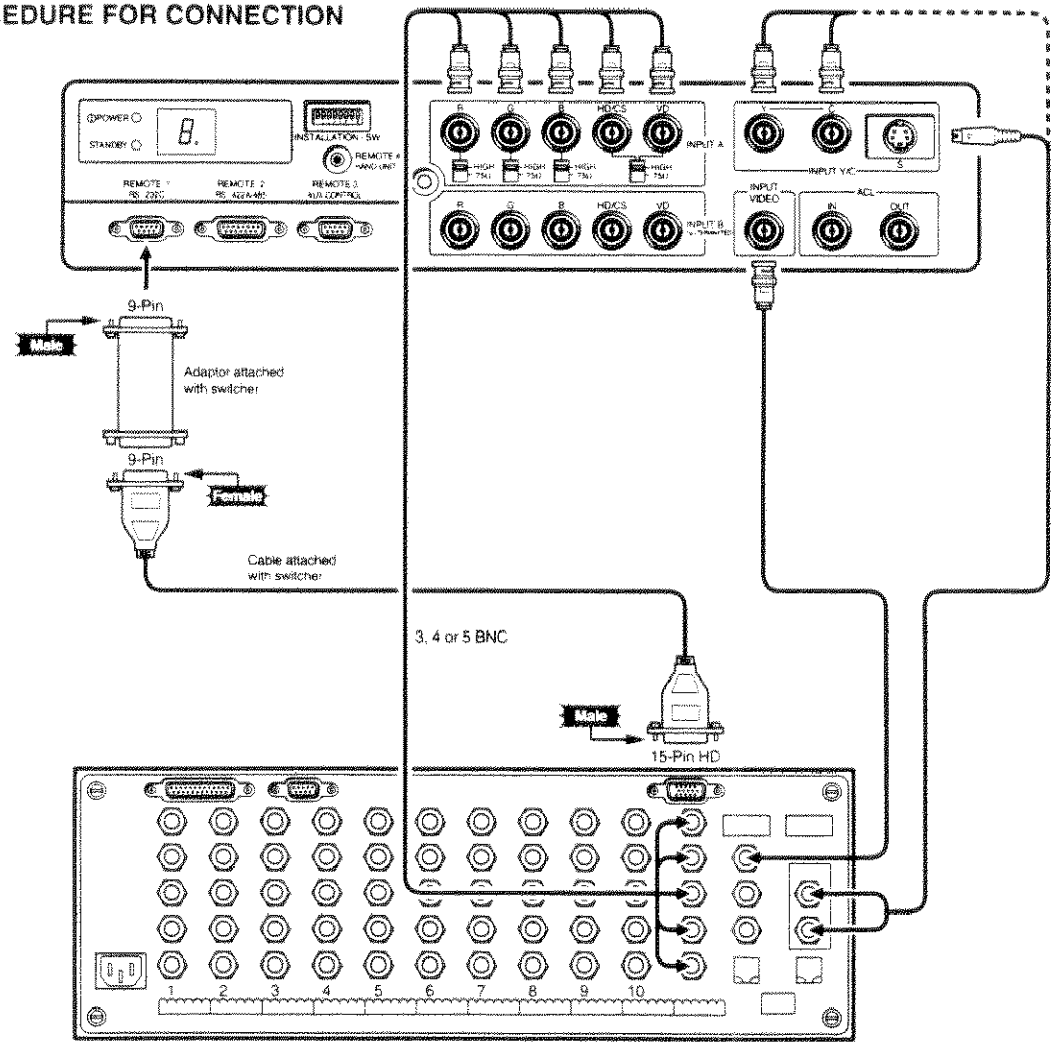
*Automatically switching the input selector of the projector according to the signal (RGB, VIDEO, S-VIDEO) selected by the switcher.

*Turning the power and the mute of the projector on/off from the switcher.

*Selecting the input signal to the switcher with the remote control attached with the projector.

*INPUT ASR setting respectively for each input terminal of the switcher.

PROCEDURE FOR CONNECTION



1) Connect the VP.CONT terminal of the switcher to the REMOTE 1 terminal of the projector.

2) Connect the R, G, B, H and V output terminals of the switcher respectively to the corresponding terminals of INPUT A of the projector.

3) Connect the Y, C and VIDEO output terminals of the switcher respectively to Y, C and VIDEO input terminals of the projector.

HOW TO PERFORM SYSTEM OPERATION

1. Selecting the input signal to the switcher
   *Sequentially input the two-digit numbers by pressing the remote control buttons of the projector.
   EX. *When selecting NO.3 input of the switcher;

   Press 0 and 3 buttons in sequence.

   *When selecting NO.15 input of the switcher;

   Press 1 and 5 buttons in sequence.

INPUT ASR SETTING

1) Select INPUT ASR MENU. (Refer to page 111.)
2) Press the ↑, ↓, ←, → buttons to select the number corresponding to the input terminal of the switcher for which you intended to make setting for INPUT ASR.
3) Make necessary settings for INPUT ASR.
   *Refer to pages 111 - 113 on setting and using INPUT ASR.

CAUTION: This function is valid for no other switcher than EXTRON System 8/10 Plus.

Refer to the user's manual for EXTRON System 8/10 Plus on using it.

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