

# OPERATORS MANUAL

## DP-1200S

DATA PROJECTION SYSTEM

 **DataSmart**<sup>™</sup>  
with Digital Convergence<sup>™</sup>

# INTRODUCTION

Before operating the video projector and System Interface, please read this manual carefully and completely. This manual will provide you with a full understanding of the many features, and the necessary instructions for adjustment and operation of the equipment. Procedures which require the opening of the equipment and contact with electrical components should be performed by service personnel. For continued safe and reliable operation, use only cables supplied by the manufacturer for power and video connections. Adhere to all notes and warnings.

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## WARNING

### When using RGB mode:

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

- Wherever mentioned in this manual, \* denotes Registered trademarks of the International Business Machines corporation.

# INTRODUCTION

## IMPORTANT SAFEGUARDS

The following are important safety instructions designed to ensure the long life of your projector and to prevent fire and shock hazards. Be sure to read these safety instructions carefully and follow all warnings given below.

- **Installation**

Place the projector on a smooth, stable, level surface in an area free from dust and moisture. Do not place the equipment in direct sunlight, near stoves or other heat radiating appliances. Smoke, steam and exposure to direct sunlight could adversely effect the internal components. Avoid rough handling when moving your equipment as a strong shock could damage its internal components. If installing a ceiling mounting (ACMK3303), use only parts recommended or supplied by the manufacturer. Observe all instructions and warnings.

- **Power Supply**

Your equipment is designed to operate on a 120V 60Hz AC power supply. Make sure your local power supply matches these requirements before operation. If not, consult with your dealer to arrange for the required modifications before operation.

Handle the power cord carefully and avoid excessive bending. A damaged cord may cause electric shock or fire.

If the projector is not to be used for an extended period, remove the plug from the wall outlet.

- **Cleaning**

Disconnect AC power from the projector before cleaning.

Clean the cabinet and front panel periodically with a soft cloth. If heavily stained, use a mild detergent solution. Never use strong detergents or solvents such as alcohol or thinner to clean your unit.

- **Fire and Shock Precautions**

Adequate ventilation must be provided to prevent heat build-up inside the equipment. Make sure the ventilation holes are unobstructed.

Keep the inside of the equipment free from foreign objects, such as hairpins, nails, paper, etc., and do not attempt to retrieve such objects yourself or insert metal objects such as wire and screwdrivers inside the unit. If a hazardous object falls inside the equipment, unplug it immediately and call a qualified electrical repairman for removal.

Do not set liquids on top of the equipment.

# SPECIFICATIONS

## I. VIDEO/DATA PROJECTOR

- |                              |   |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
|------------------------------|---|------------|--------------------------------|----------------|----------------|-----------------|----------------|-------------|----------------|-------|----------------|-------|-------|-----|-----|-----|---|-----|-----|-----|-----|
| 1. Projection type           | : Refraction type<br>Projection and screen are separated  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 2. Projection system         | : 3 lens and 3 CRT's in-line  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 3. Lens                      | : 6 element glass lenses. multi-coated<br>F:1.1   |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 4. CRT                       | : 7 inch liquid cooling and optical coupled<br>C7M122P22 R<br>C7M122P22 G<br>C7M122P22 B  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 5. Chromaticity of phosphors | : <table style="margin-left: 20px; border: none;"> <tr> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">Y</td> </tr> <tr> <td>R</td> <td style="text-align: center;">0.638</td> <td style="text-align: center;">0.348</td> </tr> <tr> <td>G</td> <td style="text-align: center;">0.327</td> <td style="text-align: center;">0.572</td> </tr> <tr> <td>B</td> <td style="text-align: center;">0.147</td> <td style="text-align: center;">0.055</td> </tr> </table>  |            | X                              | Y              | R              | 0.638           | 0.348          | G           | 0.327          | 0.572 | B              | 0.147 | 0.055 |     |     |     |   |     |     |     |     |
|                              | X   | Y          |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| R                            | 0.638   | 0.348      |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| G                            | 0.327   | 0.572      |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| B                            | 0.147   | 0.055      |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 6. Light-output              | : 475 lumens (Small area peak high light brightness)  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 7. Contrast ratio            | : Greater than 30 (HDTV method)<br>Greater than 90 (JIS method)   |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 8. VIDEO DRIVE               | : VIDEO 120 Vp-p<br>RGB 60 Vp-p   |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 9. Line rate                 | : 525 to 900  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 10. Resolution               | : <table style="margin-left: 20px; border: none;"> <tr> <td></td> <td colspan="2" style="text-align: center;">CENTER</td> <td colspan="2" style="text-align: center;">CORNER</td> </tr> <tr> <td></td> <td style="text-align: center;">RGB</td> <td style="text-align: center;">VIDEO</td> <td style="text-align: center;">RGB</td> <td style="text-align: center;">VIDEO</td> </tr> <tr> <td>V</td> <td style="text-align: center;">350</td> <td style="text-align: center;">350</td> <td style="text-align: center;">350</td> <td style="text-align: center;">350</td> </tr> <tr> <td>H</td> <td style="text-align: center;">800</td> <td style="text-align: center;">550</td> <td style="text-align: center;">500</td> <td style="text-align: center;">500</td> </tr> </table> |            | CENTER                         |                | CORNER         |                 |                | RGB         | VIDEO          | RGB   | VIDEO          | V     | 350   | 350 | 350 | 350 | H | 800 | 550 | 500 | 500 |
|                              | CENTER  |            | CORNER                         |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
|                              | RGB   | VIDEO      | RGB                            | VIDEO          |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| V                            | 350   | 350        | 350                            | 350            |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| H                            | 800   | 550        | 500                            | 500            |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 11. Display character        | : 2000 Characters   |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 12. Picture size             | : 70" ~ 120"  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 13. Raster distortion        | : <table style="margin-left: 20px; border: none;"> <tr> <td>Keystone</td> <td>: less than 1%</td> </tr> <tr> <td>T&amp;B Pincushion</td> <td>: less than 2%</td> </tr> <tr> <td>Side pincushion</td> <td>: less than 2%</td> </tr> <tr> <td>Linearity H</td> <td>: less than 7%</td> </tr> <tr> <td>          V</td> <td>: less than 7%</td> </tr> </table>   | Keystone   | : less than 1%                 | T&B Pincushion | : less than 2% | Side pincushion | : less than 2% | Linearity H | : less than 7% | V     | : less than 7% |       |       |     |     |     |   |     |     |     |     |
| Keystone                     | : less than 1%  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| T&B Pincushion               | : less than 2%  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| Side pincushion              | : less than 2%  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| Linearity H                  | : less than 7%  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| V                            | : less than 7%  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 14. Convergence              | : Digital convergence (Presetable 8 positions)  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 15. Convergence limits       | : less than 0.2% of V-Height  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 16. Set-up signal            | : 2 cross hatch, 2 Dot  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 17. Remote control           | : Wireless (Operating distance 7m), Wired   |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 18. Remote control Hand Unit | : <table style="margin-left: 20px; border: none;"> <tr> <td>Dimensions</td> <td>: 75 (W) × 190 (D) × 20 (H) mm</td> </tr> </table>  | Dimensions | : 75 (W) × 190 (D) × 20 (H) mm |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| Dimensions                   | : 75 (W) × 190 (D) × 20 (H) mm  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 19. Input                    | : R-G-B Signal 0.7Vp-p 75Ω Positive (BNC)<br>H-V sync. 0.7Vp-p 75Ω Negative (BNC)<br>H 15 ~ 36kHz<br>V 38 ~ 100Hz<br>NTSC VIDEO 1.0Vp-p 75Ω Positive (BNC)  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 20. Power Supply             | : 120V AC, 60Hz   |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 21. Power Consumption        | : 280W  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 22. Cabinet dimensions       | : 630 × 694 × 319 (Front)/232 (Rear) mm<br>(W × D × H)<br>24-13/16 × 27-3/8 × 12-3/8 (Front)/9-3/16 (Rear)<br>inches  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |
| 23. Weight                   | : 51kg, 112.2 lbs.  |            |                                |                |                |                 |                |             |                |       |                |       |       |     |     |     |   |     |     |     |     |

- 24. Safety and regulatory
  - UL : meet UL 478
  - FCC : meet FCC Class A
  - DHHS : meet
- 25. Accessories
  - : User Remote control
    - Wireless RU-1220S
    - Wired AU-1230S
  - Service Remote control
    - Wired SR-1240A
  - AC Line Cable
  - Operators manual
  - Ceiling Mount Bracket

## II. SYSTEM INTERFACE

- 1. Input
  - VIDEO (1) : NTSC, PAL, SECAM, NTSC 4.43 (BNC)  
1.0Vp-p 75Ω Positive with Loop thru
  - VIDEO (2) : NTSC, PAL, SECAM, NTSC 4.43  
1.0Vp-p 75Ω Positive (BNC) or S-VIDEO (switchable)  
Y; 1.0Vp-p 75Ω Positive  
C; 0.28Vp-p 75Ω (burst level)
  - RGB (1) : CGA, EGA, PGA, VGA, 8514A Adaptor refer to Table  
1, 2 Part IV (9 Pin D)
  - RGB (2) RGB (3) : R.G.B signal 0.7-1.5Vp-p 75Ω Positive  
H.V sync. 0.7-2.0Vp-p 75Ω Negative or Positive  
G sync. 0.3-0.6Vp-p 75Ω Negative (BNC)
  - AUDIO : 0.4Vrms 47KΩ (Phono) STEREO  
2 Channels for VIDEO (1), VIDEO (2)  
1 Channel for RGB (selectable)
- 2. OUTPUT
  - : R.G.B signal  
0.7Vp-p 75Ω Positive (BNC)  
H.V sync. 1.0Vp-p 75Ω Negative (BNC)  
AUDIO 0.4Vrms 1KΩ (Phono) STEREO
- 3. Control
  - : DIGITAL Control R.G.B. GAIN  
H-Width, H-Position, V-Height,  
V-HOLD  
INTENSITY (CGA, EGA ONLY)
  - REMOTE Control : Color, Tint, Sharpness
  - SERVICEMAN : Bright, Picture, Color, Tint, Sharpness
  - Control : (Preset, VIDEO only)
- 4. Text color
  - : Red, Green, Blue, Yellow, Cyan, Magenta  
(RGB (1), Digital input only)
- 5. Indicator
  - : Power indicator
  - Signal select indicator  
(VIDEO (1), VIDEO (2), RGB (1), RGB (2), RGB (3))
  - VIDEO system indicator  
(NTSC, PAL, SECAM, NTSC 4.43)

- 6. EXTERNAL Control : POWER ON/OFF  
Signal select  
CRT ON/OFF
- 7. Power consumption : 30 W
- 8. Safety and regulatory :
  - UL : meet UL 478
  - FCC : meet FCC Class A
- 9. Cabinet dimension : 430 × 350 × 91 mm  
(W) × (D) × (H) : 16-15/16 × 13-13/16 × 3-5/8 inch
- 10. Weight : 6 kg/13.3 lbs
- 11. Accessories : Coaxial cable 4 m (13'-2")  
Control cable 16 m (52'-6")  
9 Pin- 9 Pin \*PS-2 Interface Cable 1.8 m (6 ft)  
9 Pin-15 Pin \*PS-2 Interface Cable 1.8 m (6 ft)  
75Ω BNC Terminator  
AC Line Cable  
Rack Mount bracket

Specifications are subject to change without notice.

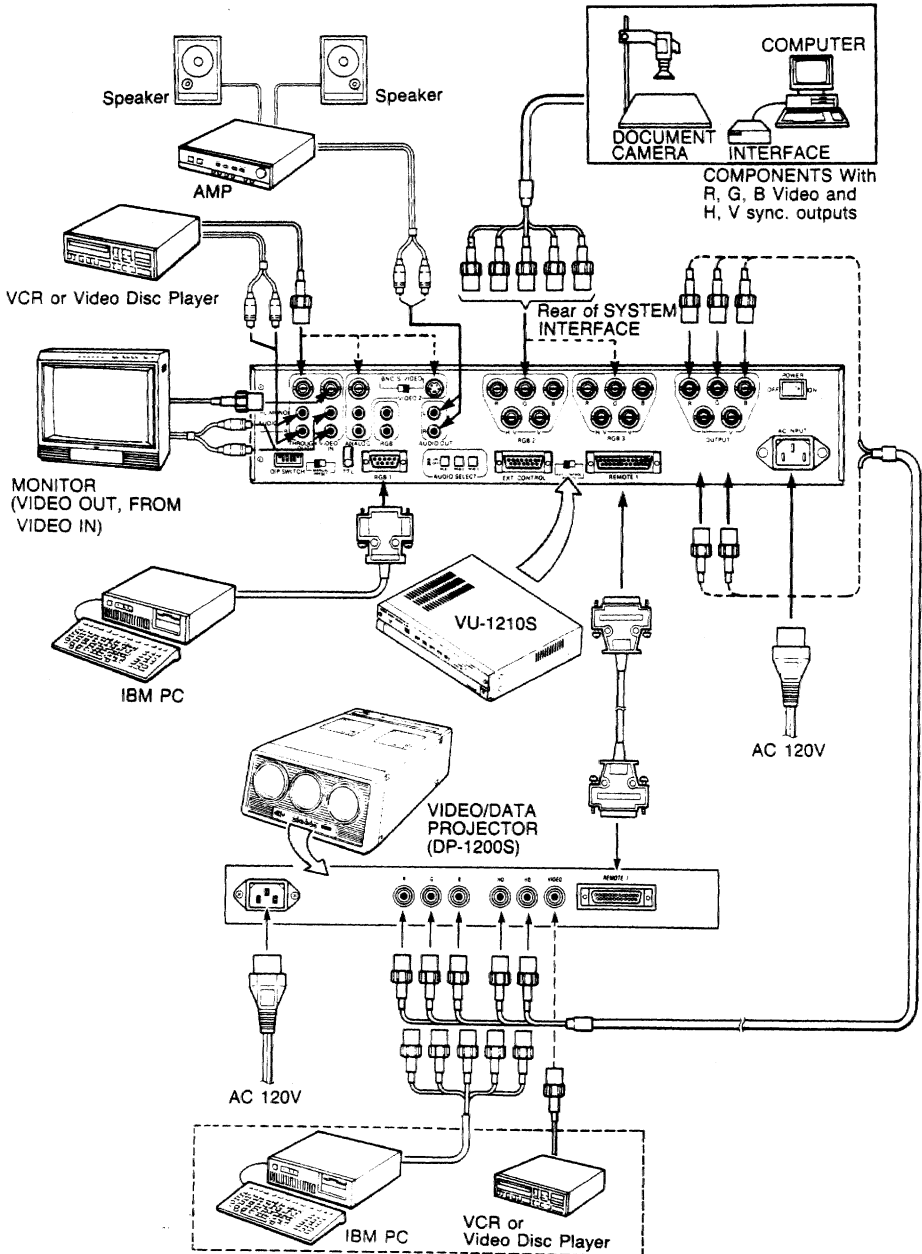
# **PART I**

## **CONNECTIONS AND LAYOUT OF CONTROLS**



# (1) CONNECTION EXAMPLE

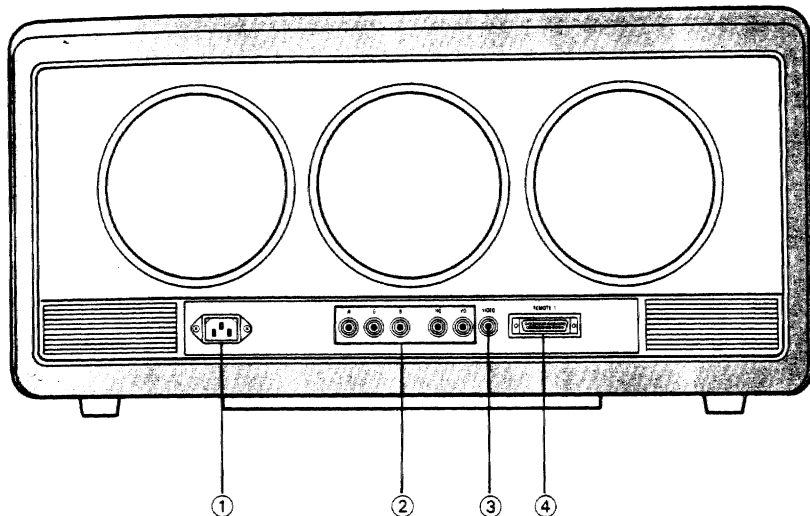
The diagram below shows examples of the various connections possible with the System Interface and video projector.



For direct connection of PC and VCR to projector

## (2) VIDEO PROJECTOR: LOCATION AND FUNCTIONS OF CONTROLS

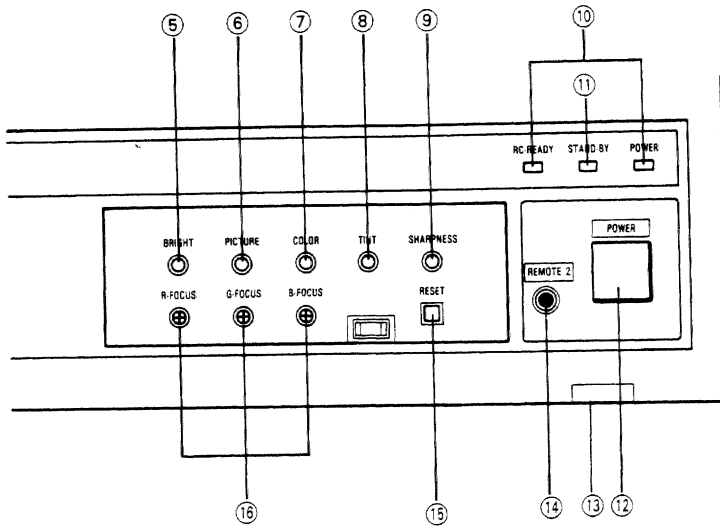
### Front Panel



### Front Panel

- ① Power socket ..... Insert the supplied power cable into this socket.
- ② R, G, B, H, V terminals ..... Connect these input terminals to the output terminals of the System Interface. Confirm that the same lead connected to the R, G, B, H and V output terminal on the System Interface is connected to the corresponding R, G, B, H and V terminal on the projector when the system Interface is not used.
- ③ VIDEO terminal (BNC type) ..... Connect an external video signal source such as a VCR or Video Disc Player to this input terminal for direct signal input to the video projector when the System Interface is not used.
- ④ REMOTE 1 terminal (25 pin) ..... Insert the connector plug of the SUPPLIED REMOTE CABLE into the 25 pin connector, then secure with the two screws. The other end is connected to the System Interface. (Note that as both the connector on the System Interface and the video projector are the same, and both the connector plugs of the lead are the same, either end can be used.)

## Top Control Panel

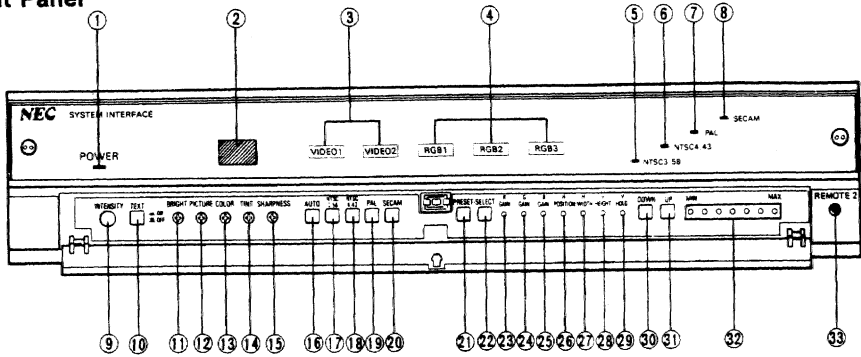


## Top Control Panel

- 5 BRIGHT control ..... Adjusts picture brightness. Turn to the right for a brighter picture, to the left for a darker picture.  
(serviceman control)
- 6 PICTURE control ..... Adjusts picture contrast. Turn to the right for more picture contrast, to the left for less picture contrast.  
(serviceman control)
- 7 COLOR control ..... Adjusts picture color. Turn to the right for more saturation of colors, to the left for less saturation.  
(serviceman control)
- 8 TINT control ..... Adjusts the tint level. Turn to the right for a redder tint, to the left for a greener tint.  
(serviceman control)
- 9 SHARPNESS control ..... Adjusts picture sharpness. Turn to right for a sharper picture, to the left for a softer picture.  
(serviceman control)
- 10 RC-READY, POWER indicators ... Light when the power on the remote control unit is turned ON, when the set is in the STAND-BY condition. The RC-READY indicator will flash when the projector receives a signal from the wireless or wired remote control unit.
- 11 STAND-BY indicator ..... Lights when the POWER button 12 is set to ON.
- 12 POWER button ..... Depress this button to switch on power to the video projector. The STAND-BY indicator will light.
- 13 Infrared Sensor window ..... Receives the infrared signal from the remote control unit.
- 14 REMOTE jack ..... Insert the connector of the wired remote control unit into this jack.
- 15 RESET button ..... Press this button if the remote control functions will not operate to reset (clear) the projector (same function as POWER ON/OFF).  
(serviceman control)
- 16 R, G, B focus controls ..... These are electric static focus controls for serviceman use.  
(serviceman controls)


# (3) SYSTEM INTERFACE: LOCATION AND FUNCTIONS OF CONTROLS



## Front Panel










## Front Panel


- ① POWER indicator ..... Lights when the POWER button on the remote control is set to ON, when the System Interface and video projector are in the ON condition.  



  
- ② Infrared Sensor window ..... Receives the infrared signal transmitted by the wireless remote control unit.
  
- ③ VIDEO 1, VIDEO 2, indicators ..... Illuminate to show the setting of the VIDEO 1, 2 buttons on the remote control unit.  




  
- ④ RGB 1, RGB 2, RGB 3 indicators ..... Illuminate to show the setting of the RGB 1, 2, 3 buttons on the remote control unit.  




  
- ⑤ NTSC 3.58 indicator ..... Illuminates to show selection of NTSC 3.58 mode.  

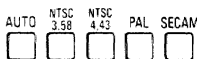
 SECAM  
 PAL  
 NTSC4.43  
 NTSC3.58
  
- ⑥ NTSC 4.43 indicator ..... Illuminates to show selection of NTSC 4.43 mode.
- ⑦ PAL indicator ..... Illuminates to show selection of PAL mode.
- ⑧ SECAM indicator ..... Illuminates to show selection of SECAM mode.
- ⑨ INTENSITY control ..... Turn to adjust the RGB picture intensity.  


  
- ⑩ TEXT button ..... This switch controls the text mode when an\* IBM computer is connected. When it is ON (depressed), the text of the display will appear in one color selected by No. 2, 3 and 4 of the dip switch on the rear of the System Interface, regardless of the colors of the software program being used. When it is OFF, the color of the software program being used will again be displayed (refer to No. 53 "Dip Switch").  


  
- ⑪ BRIGHT control (serviceman control) ..... Adjusts picture brightness. Turn to the right for a brighter picture, to the left for a darker picture.  



- ⑫ PICTURE control ..... Adjusts picture contrast. Turn to the right for more picture contrast, to the left for less picture contrast.  
(serviceman control)
- ⑬ COLOR control ..... Adjusts picture color. Turn to the right for more saturation of colors; to the left for less saturation.  
(serviceman control)
- ⑭ TINT control ..... Adjusts the tint level. Turn to the right for a redder tint, to the left for a greener tint.  
(serviceman control)
- ⑮ SHARPNESS control ..... Adjusts picture sharpness. Turn to right for a sharper picture, to the left for a softer picture.  
(serviceman control)
- ⑯ AUTO button ..... Press this button for automatic selection of NTSC 3.58, NTSC 4.43, PAL or SECAM signals connected to the VIDEO 1 (IN) or VIDEO 2 terminals on the rear panel.



**Note:** When searching or using Fast Forward with a poor quality VCR or Video Disc Player, use the manual buttons for signal input selection.

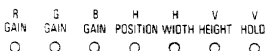
- ⑰ NTSC 3.58 button ..... Press when the AUTO select button will not function properly due to a weak 3.58 NTSC signal.
- ⑱ NTSC 4.43 button ..... Press when the AUTO select button will not function properly due to a weak 4.43 NTSC signal.
- ⑲ PAL button ..... Press when the AUTO select button will not function properly due to a weak PAL signal.
- ⑳ SECAM button ..... Press when the AUTO select button will not function properly due to a weak SECAM signal.
- ㉑ PRESET button ..... Press to memorize the R, G, B Gain, H Position, H Width, V Height and V Hold adjustment values for all mode and function data.



- ㉒ SELECT button ..... Each time SELECT is pressed, selection of R, G, B Gain, H Position, H Width, V Height and V Hold is moved one step. Press to light desired adjustment function.  
When pushing this button in conjunction with the DOWN ⑳ or UP ㉓ buttons, only the present mode and function will be set in the factory preset level.



- ㉓ R. GAIN indicator ..... Lights to show selection of R Gain adjustment function.



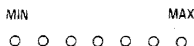
- ㉔ G. GAIN indicator ..... Lights to show selection of G Gain adjustment function.
- ㉕ B. GAIN indicator ..... Lights to show selection of B Gain adjustment function.
- ㉖ H POSITION indicator ..... Lights to show selection of H Position adjustment function.
- ㉗ H WIDTH indicator ..... Lights to show selection of H Width adjustment function.
- ㉘ V HEIGHT indicator ..... Lights to show selection of V Height adjustment function.
- ㉙ V HOLD indicator ..... Lights to show selection of V Hold adjustment function.
- ㉚ DOWN button ..... Press to decrease the selected adjustment function.



- ㉛ UP button ..... Press to increase the selected adjustment function.



- ㉜ MIN/MAX indicator ..... Lights to show level of adjustment.

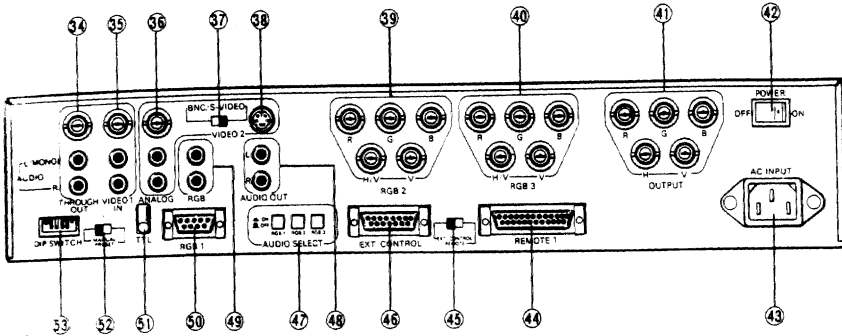


- ㉝ REMOTE CONTROL jack ..... Insert the plug of the wired remote control unit into this jack.

REMOTE 2



# Rear Panel



## Rear Panel

- 34 VIDEO 1 (OUT) (BNC Type) . . . . . Connect an external monitor to this terminal to display the signal input to VIDEO 1 (IN). At all other times, the SUPPLIED 75Ω TERMINATOR must be inserted.
- 35 VIDEO 1 (IN) terminal . . . . . Connect an external video component to this terminal. When an external component is connected, the SUPPLIED 75Ω TERMINATOR must be inserted in the VIDEO 1 OUT terminal.



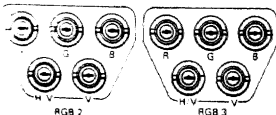
- 36 VIDEO 2 terminal (BNC Type) . . . . . Connect external video components to this terminal.
- 37 BNC/S-VIDEO . . . . . Slide to BNC for input from VIDEO 2 terminal 36, slide to S-VIDEO for input from VIDEO 2 terminal 38.



- 38 VIDEO 2 terminal . . . . . Connect external components with S-CONNECTORS to this terminal.

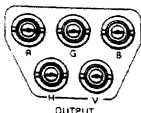


- 39 RGB 2 terminals (BNC Type) . . . . . 75Ω, analog RGB input terminals with separate H/V and V sync. inputs. Connect an external component with separate R, G, B, H and V outputs to these terminals. The appropriate RGB leads must be connected to the corresponding RGB terminals. If using a component with a combined Horizontal and Vertical sync. signal output, connect it to the H/V terminal. If using separate outputs connect the Horizontal sync. to the H/V and the vertical sync. to the V terminal. Connect to the G terminal when inputting the "SYNC ON GREEN" signal.



- 40 RGB 3 terminals (BNC Type) . . . . . 75Ω, analog RGB input terminals with separate H/V and V sync. inputs. Connect in the same manner as explained above for RGB 2 terminals. Connect to the G terminal when inputting the "SYNC ON GREEN" signal.

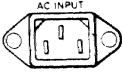
- 41 OUTPUT terminal (BNC Type) . . . . . Connect these output terminals to the R, G, B, H, V input terminals on the video projector with the supplied cable. Confirm that the same lead connected to R, G, B, H and V terminals on the video projector is connected to the corresponding R, G, B, H and V output terminals on the System Interface.



- ④② **POWER switch** ..... A Power switch which supplies main, 120V AC power to the System Interface.



- ④③ **AC input** ..... Connect the supplied power cord to this terminal.



- ④④ **REMOTE terminal** ..... Insert the supplied 25 pin remote lead's connector plug into this terminal and secure with the two screws. The other end is attached to the video projector in the same manner. (Note, that as both the connector on the video unit and video projector are the same, and both the connector plugs of the lead are the same, either end can be used.)



- ④⑤ **EXT CONTROL/REMOTE** ..... Slide to EXT CONTROL when using an external control unit. Slide to REMOTE when the supplied remote control is used. Set the power switch ④② to OFF when moving this switch.



- ④⑥ **EXT CONTROL terminal** ..... Connect an external control unit for power ON/OFF, input switching and CRT OFF functions.



- ④⑦ **AUDIO SELECT** ..... Press RGB 1 for audio output of components connected to RGB 1 terminal.



Press RGB 2 for audio output of components connected to RGB 2 terminal.  
Press RGB 3 for audio output of components connected to RGB 3 terminal.

Note that all RGB audio is output via terminal ④⑧.

- ④⑧ **AUDIO OUT** ..... Connect to an external monitor or amplifier's audio input terminals for audio reproduction.



- ④⑨ **RGB AUDIO IN** ..... Connect to an audio output source when audio is desired with either RGB 1, 2 or 3.



- ⑤① **RGB 1 terminal** ..... A 9 pin, RGB input terminal with MultiSync, which automatically scans all frequencies between 15kHz and 36kHz. It is compatible with the \*IBM PC, PC/XT, PC/AT and look-alikes, plus the \*IBM Professional Graphics adapter, the \*IBM Enhanced Graphics Adapter, the \*IBM Color Graphics Adapter, the \*IBM PS-2 Video Graphics Array and other \*IBM Compatible Graphics adapters (refer to "9 Pin RGB Signal Composition" page 56).

- ⑤① **ANALOG/TTL switch** ..... Used to select an input video signal — either TTL or ANALOG — of the graphics adapter (to RGB 1 only). It is important to determine whether the input signal of the graphics adapter being used is ANALOG or TTL prior to connecting the adapter with your System Interface. Refer to instructions accompanying the graphics adapter for information on the input signal.

52 MANUAL/PRESET switch



This switch selects either the \*IBM mode when PRESET or the manual mode when MANUAL.

When this switch is PRESET, the multi-sync function automatically works in the \*IBM mode and adjusts itself to the scanning frequency, resolution and color requirements of the \*IBM compatible graphics adapter being used.

When this switch is MANUAL, the user must manually select the number of colors (8/16/64) needed by the graphics adapter being used with No. 5 and 6 of the dip switch (refer to Table 1 below).

53 DIP switch



**No. 5, 6**

The three color configurations (8/16/64 colors) necessary when using non-\*IBM compatible graphics adapters can be set using No.5 and 6 of the dip switches as shown on the left. Refer to instructions accompanying the graphics adapter being used for information on how many colors the adapter can display.

**Note:**

These switches should be set correctly in relation to the input signal of the graphics adapter being used. Refer to instructions accompanying the graphics adapter for information on the input signal.

**TABLE 1**

COLOR MODE	DIP SWITCH	
	No. 5	No. 6
8 colors	ON	OFF
16 colors	ON	ON
64 colors	OFF	ON
UNUSED	OFF	OFF

**TABLE 2**

**TEXT SWITCH COLOR SELECTION**

TEXT COLOR	DIP SWITCH		
	No. 2 R	No. 3 G	No. 4 B
RED	OFF	ON	ON
GREEN	ON	OFF	ON
BLUE	ON	ON	OFF
YELLOW	OFF	OFF	ON
CYAN	ON	OFF	OFF
MAGENTA	OFF	ON	OFF
WHITE	OFF	OFF	OFF

**No. 2, 3, 4**

By the setting of 2, 3, 4 of the dip switch, one of seven colors can be selected and displayed when the TEXT button (4) is ON, regardless of the colors of the software being used. Refer to Table 2 on the left for settings of the 2, 3 and 4 switches.

**Note:** These work only in the TTL mode, RGB 1.

**TABLE 3**  
**PC/PS-2 SELECTION**

IBM SELECT	No.1
IBM PC/AT	ON
PS-2	OFF

**No. 1**

This switch is used to select for RGB 1 either \*PC/AT or \*PS-2. Refer to Table 3.

**Note:** Place switch 1 in the ON position if connecting an \*IBM PC/AT or compatible to RGB 1.

Place switch 1 in the OFF position if connecting an \*IBM PS-2 or compatible to RGB 1.



**PART II**  
**INSTALLATION**

# SETTING PROCEDURE

The video projector has been preadjusted at the factory for a table-top, front type projection system on a 120" flat screen.

However, it has also been designed to accommodate various projection systems such as a ceiling mounting or table top setting, front or rear projection and can be used with any flat screen from 70" to 120".

Accordingly, to correspond with the projection system and screen size, various adjustments are necessary.

Please follow the instructions below to ensure correct operation.

## (1) INSTALLATION DIAGRAMS FOR 72", 100" and 120" SCREENS

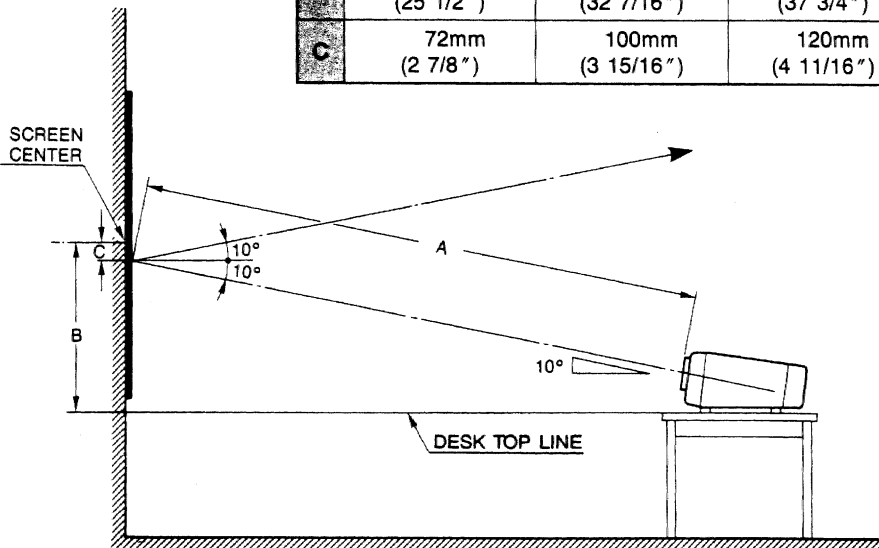
The following diagrams indicate the relative position of the projector and screen in ceiling and table top installations. If the projection distance is altered more than  $\pm 1\%$  of the indicated value, lens focus and registration readjustment may be required.

### (A) Table Top System

Decide the length, height and depth according to the screen size to be used.

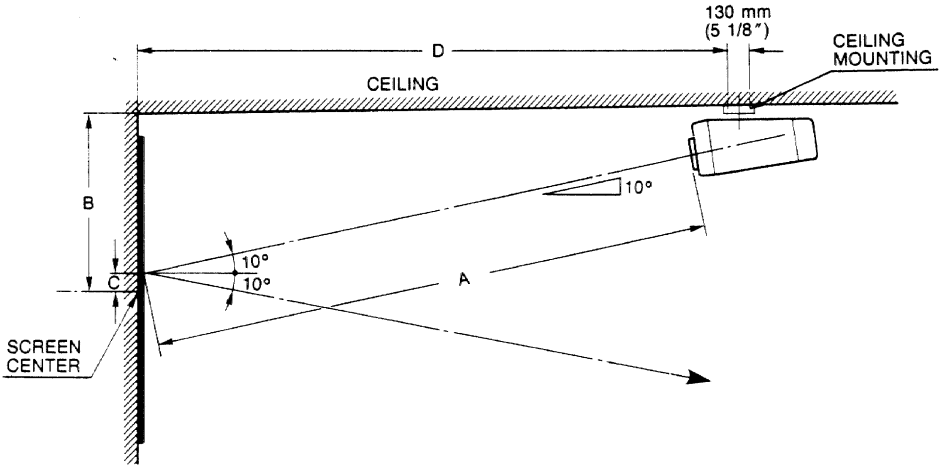
<b>A</b>	DISTANCE BETWEEN LENS AND SCREEN		
<b>B</b>	DISTANCE BETWEEN DESK TOP FACE AND SCREEN CENTER		
<b>C</b>	DISTANCE BETWEEN AXIAL POINT AND SCREEN CENTER		

	72" SCREEN	100" SCREEN	120" SCREEN
<b>A</b>	2,194mm (86 3/8")	3,043mm (119 3/4")	3,635mm (143 1/8")
<b>B</b>	648mm (25 1/2")	824mm (32 7/16")	947mm (37 3/4")
<b>C</b>	72mm (2 7/8")	100mm (3 15/16")	120mm (4 11/16")



## (B) Ceiling Mounting System (Accessory No. ACMK3303)

Decide the length, height and depth according to the screen size to be used.



	72" SCREEN	100" SCREEN	120" SCREEN
A	2,194mm (86 3/8")	3,043mm (119 3/4")	3,635mm (143 1/8")
B	712mm (28 1/32")	889mm (35 ")	1,012mm (39 13/16")
C	72mm (2 7/8")	100mm (3 15/16")	120mm (4 11/16")
D	2,344mm (92 1/4")	3,180mm (125 3/16")	3,763mm (148 1/8")

A	DISTANCE BETWEEN LENS AND SCREEN
B	DISTANCE BETWEEN CEILING AND SCREEN
C	DISTANCE BETWEEN AXIAL POINT AND SCREEN CENTER
D	DISTANCE BETWEEN WALL AND BOLTS

## (C) Setting Distance Calculations For 70" ~ 120" Screens

Follow the equations below to calculate the relative A, B, C and D distances for 70" ~ 120" screens.

### Floor Type

$$A = 2194 \times \frac{\text{Screen Diagonal Size (Inch)}}{72} \quad (\text{mm})$$

$$B = 453 \times \frac{\text{Screen Diagonal Size (Inch)}}{72} + 195 \quad (\text{mm})$$

$$C = 5 \times \frac{\text{Screen Diagonal Size (Inch)}}{5} \quad (\text{mm})$$

### Ceiling Type

$$A = 2194 \times \frac{\text{Screen Diagonal Size (Inch)}}{72} \quad (\text{mm})$$

$$B = 453 \times \frac{\text{Screen Diagonal Size (Inch)}}{72} + 260 \quad (\text{mm})$$

$$C = 5 \times \frac{\text{Screen Diagonal Size (Inch)}}{5} \quad (\text{mm})$$

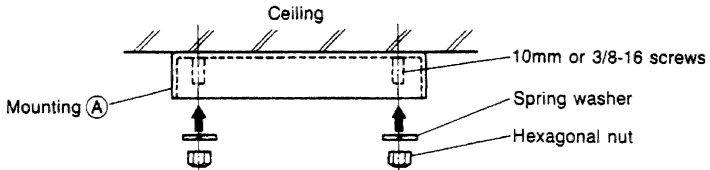
$$D = 2160 \times \frac{\text{Screen Diagonal Size (Inch)}}{72} + 184 \quad (\text{mm})$$

## (2) CEILING INSTALLATION (ACMK3303)

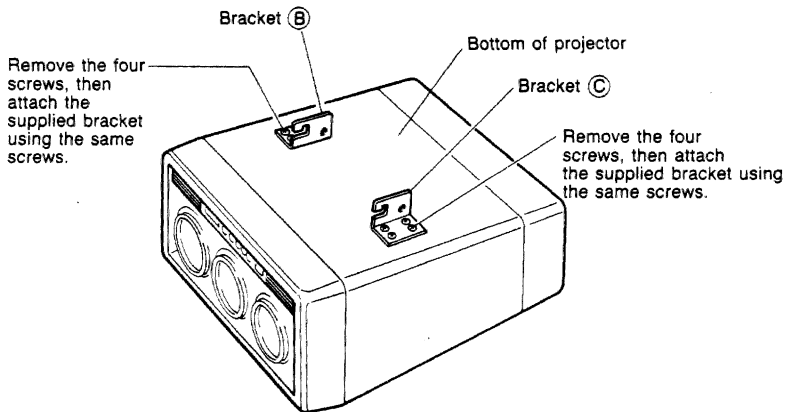
For safety, use only the optional ceiling mounting kit when installing the ceiling bracket.

**Note: The ceiling must be strong enough to support the projector weight of 51kg (112.2 lbs).**

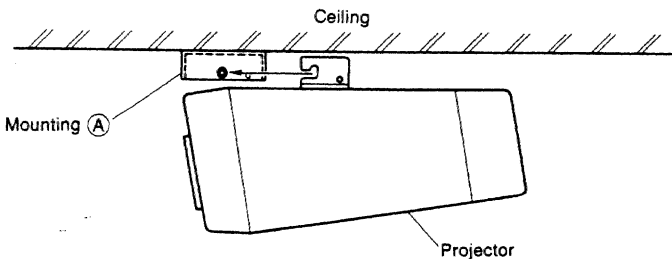
- ① Decide the relation between the projector and the screen according to screen size (see screen size setting examples, page 20).
- ② Attach the mounting (A) to the ceiling. Use 10mm metric coarse screws or 3/8-16" unified coarse screws (4 pcs).



- ③ Attach the bracket (B) and (C) to the projector's bottom face.

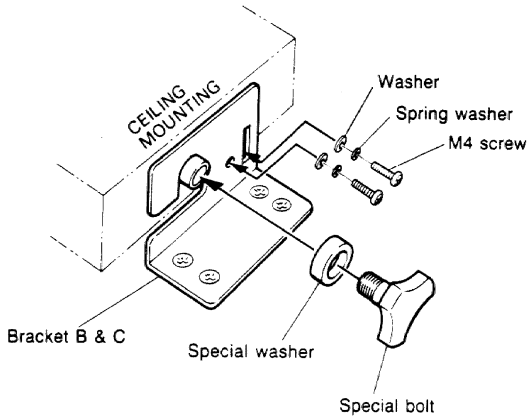


- ④ Fit the projector's brackets onto the protrusions of the mounting (A), until securely fixed.

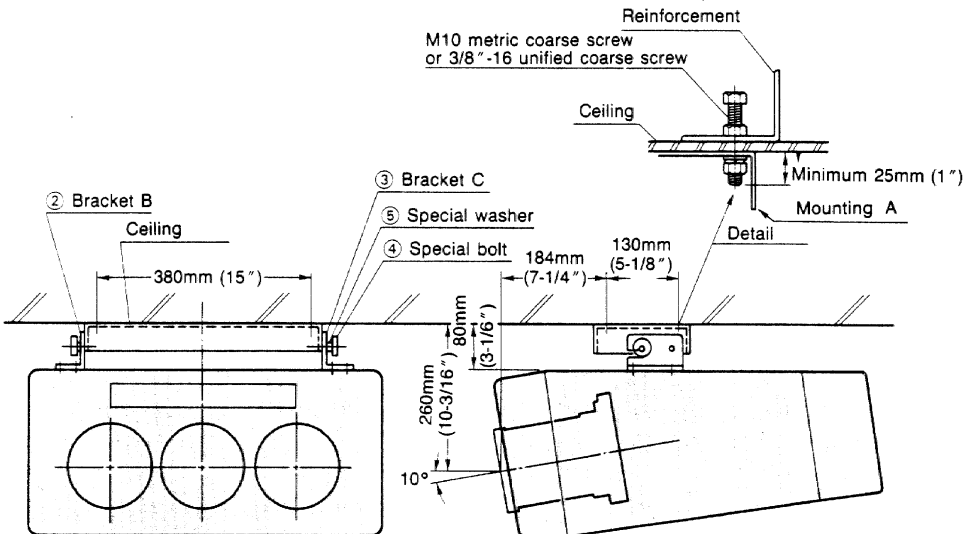


⑤ Fix the special bolt and the special washer.

If mounting for a 10° projection angle, that is, the bottom face of the projector is set parallel to the ceiling, attach two M4 screws to each B & C Bracket as shown in the diagram below. If setting for other than a 10° projection angle, attach only one M4 screw to the outer slot of each B & C bracket.



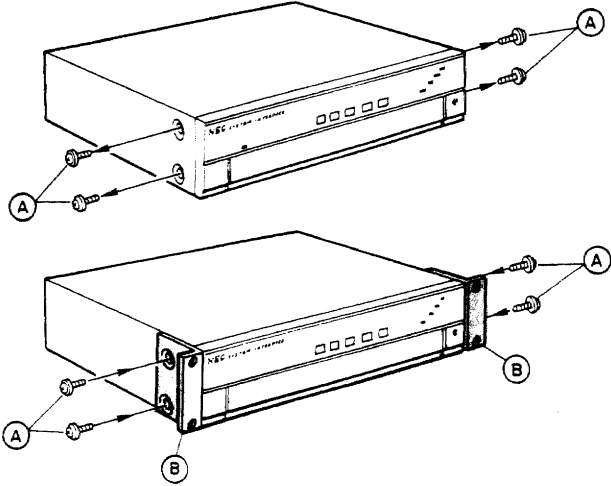
⑥ Projector fixed in ceiling mounting position.



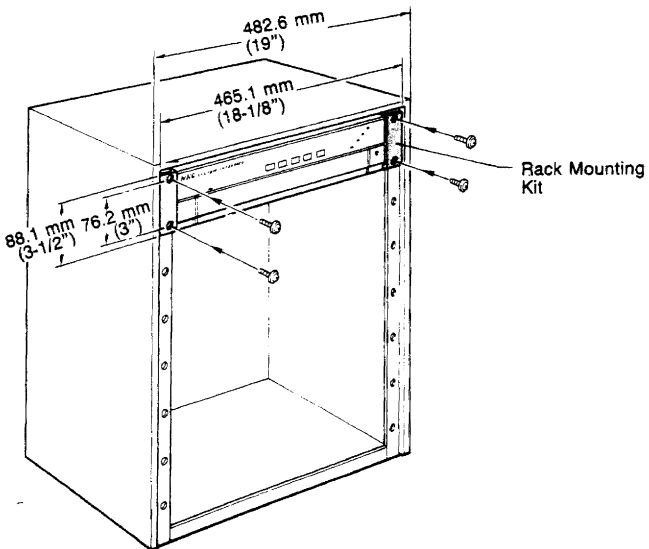
### (3) RACK INSTALLATION

For safety, use only the optional rack mounting kit when installing the ceiling bracket.

- ① Remove the 4 screws (A) from the System Interface.
- ② Secure the rack mounting to the System Interface with the screws (A) removed in step 1 above.



- ③ Attach the EIA standard rack to the System Interface and secure with the screws.



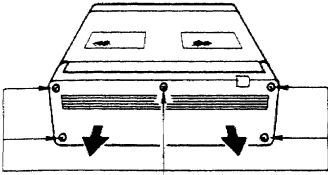
# **PART III**

**SET UP  
REMOTE CONTROL OPERATION  
CONVERGENCE**

# (1) DIP SWITCH SETTING

DIP switch (SW8503) on the SYSTEM PWB must also be set in accordance with the projection system used. Refer to the DIP switch setting Table below, and set each switch to the appropriate position.

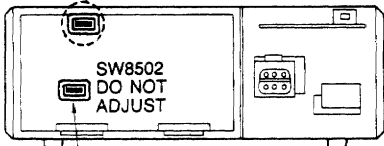
**Note:** The projector is preadjusted for the table top, front projection system with the remote control unit operation at the projector. If using this system, DIP switch setting is not necessary.



### (A) Rear Cover Removal

- Remove the 5 screws (B) from the rear cover.
- Remove the rear cover to reveal the SYSTEM PWB shield.
- The DIP switch can be accessed through the opening in the shield.

SW8503 ADJUST SYSTEM PWB

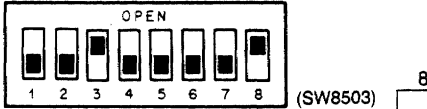
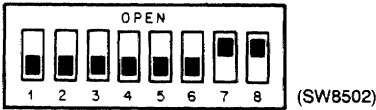


### (B) Dip Switch

The setting of the DIP switch in the "shipped" condition is shown in the illustration on the left.

**Caution:** Actual orientation of DIP switch may be reversed—please check and confirm before setting.

Refer to "Adjustments" on page 47 for the normal setting for this switch.



DIP switch setting Table

OPEN	SHORT	Comments
SI USED	SI NOT USED	System Interface, used/not used switching.
SI SIDE	PJ SIDE	Remote control receiving section selection
REAR	FRONT	Rear/Front projection system switching
CEILING	FLOOR	Ceiling/Floor setting switching

0 = SHORT  
1 = OPEN

With MAIN POWER ON. Initial condition of input signal switches								
4	0	1	0	1	0	1	0	1
3	0	0	1	1	0	0	1	1
2	0	0	0	0	1	1	1	1

8 pin OPEN	VIDEO 1	VIDEO 2	RGB 1	RGB 2	RGB 3	NOT USED
8 pin SHORT	VIDEO	RGB	NOT USED			

EXT CONTROL MODE	
OPEN	EXT CONTROL by VU-1210S
SHORT	Normal mode

**Note:** Please refer to Caution on page 27.



### (C) Pin Description

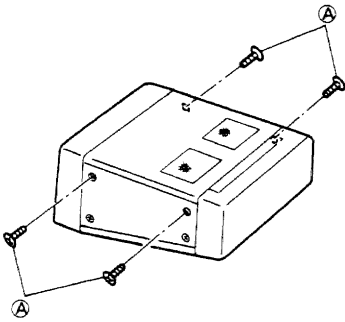
- Pin 8 . . . . . Switch to OPEN if a System Interface is connected. Switch to SHORT if a System Interface is not used.
- Pin 7 . . . . . When pin 8 is in the OPEN condition, remote control operation can be received at the System Interface side or projector side by the setting of this pin.
- Pin 6 . . . . . Switching for front or rear projection systems. The left/right movement of the convergence is reversed. At the same time polarity at the horizontal deflection yoke's connector, must be reversed (refer to "SCAN REVERSAL").
- Pin 5 . . . . . Switching for ceiling mounting or floor (table top) setting systems.  
The up/down movement of the convergence is reversed. At the same time the polarity of the vertical deflection yoke's connector must be reversed (refer to "SCAN REVERSAL").
- Pins 4, 3, 2 . . . . . Setting of the Input Signal Switches, when main power is turned ON.  
With remote control ON or OFF, the input signal at the moment of "OFF" is stored.  
When the main power is turned ON or OFF the settings return to the initial condition.
- Pin 1 . . . . . Set to OPEN when using the EXT CONTROL mode of the System Interface to control the projector.

- Caution 1:** If the DIP switch settings are changed, you must reset the system by using the main power ON/OFF (No. 12, page 12) or by pressing the RESET button (No. 15, page 12) on the projector. Power ON/OFF by remote control will not reset DIP switch settings.
- 2:** When using the EXT CONTROL mode of the System Interface, first set pin 1 of the projector Dip Switch to EXT CONTROL (OPEN).

## (2) SCAN REVERSAL

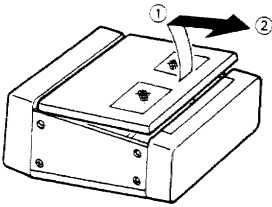
When the projector is installed on the ceiling or is used as a rear projector, the Horizontal and Vertical polarity plugs must be corrected.

**Note:** The projector is preadjusted for the table top, front projection system. If using this system scan adjustment is not necessary.



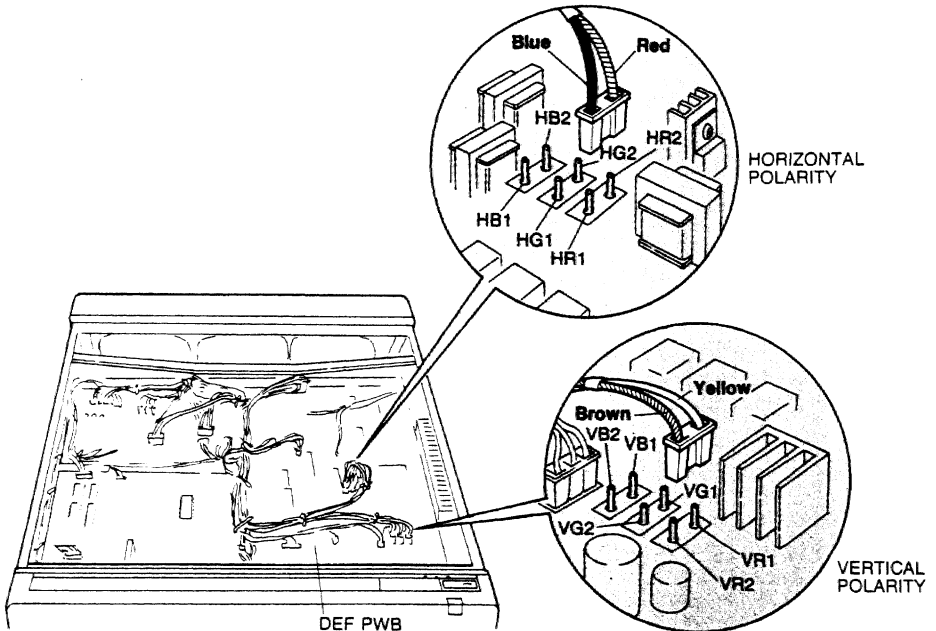
### (A) Top Cover Removal

- Confirm that the main power is off and remove the power plug from the outlet.
- Remove the 4 screws **A**.
- Lift the rear of the projector top up in the direction of the arrow **1**. Pull back the projector top in the direction of the arrow **2**.



### (B) Scan Reversal

The illustration below shows the position of the Horizontal and Vertical polarity connectors.



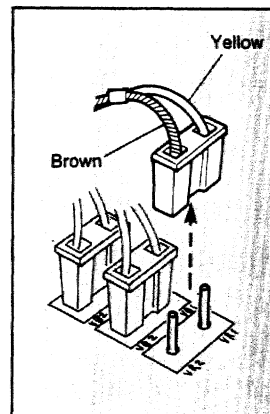
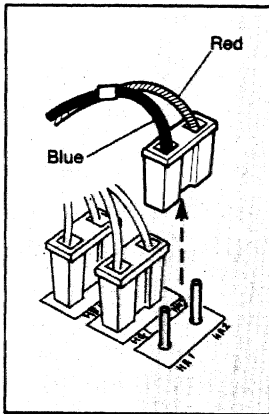
## SCAN REVERSAL TABLE

Setting	CONNECTOR	VR, VG, VB		HR, HG, HB	
	PIN	①	②	①	②
FRONT Ex-Factory	FLOOR	Lead	Lead	Lead	Lead
		Yellow	Brown	Blue	Red
FRONT	CEILING	Brown	Yellow	Red	Blue
REAR	FLOOR	Yellow	Brown	Red	Blue
REAR	CEILING	Brown	Yellow	Blue	Red

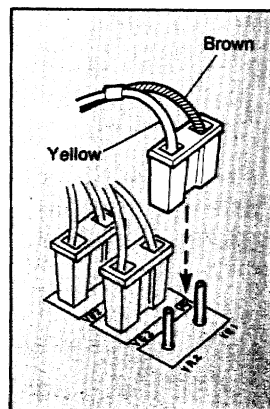
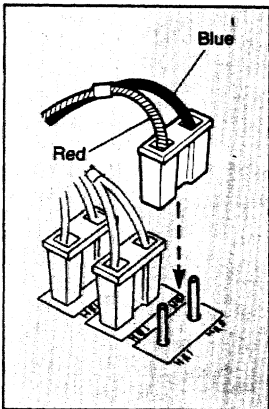
**Example:** To change the projector's scan from a front projection floor system to a front projection ceiling mounting, proceed as follows:

- ① Remove the Top Cover (refer to "Top Cover Removal" page 28).
- ② Reverse the 3 Vertical and 3 Horizontal connectors as shown below, making sure that each connector is inserted into the same pins i.e. the correct R, G or B.

Front Projection  
Floor type



Front Projection  
Ceiling type



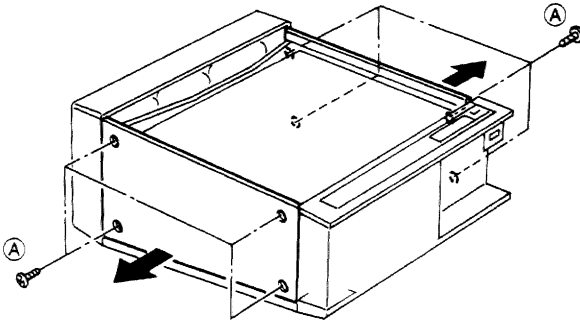
### 3) FOCUS ADJUSTMENTS

The focus on the Projector has been adjusted for a 120" screen. When altering the projection distance for a 70" to 120" screen, carry out focus adjustments as explained below.

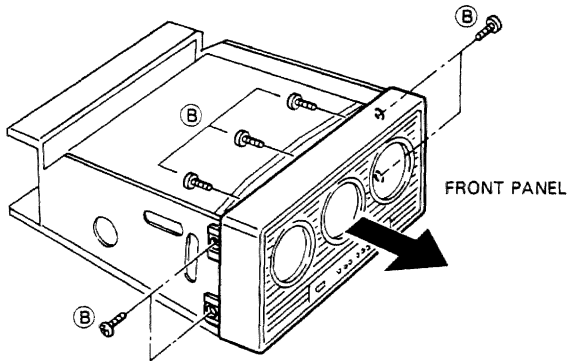
#### (A) Preliminary Adjustments for 70" to 90" Screen Setting

If setting for a 91" to 120" screen the following adjustment will not be necessary, i.e. the adjustment washers must be inserted between the chassis and CRT lug. If setting for a 70" to 90" screen follow the steps below.

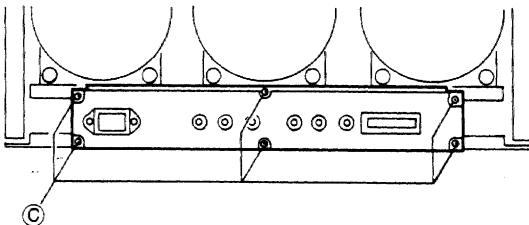
- 1 Remove the 4 screws (A) on each side of the projector and remove the side covers.



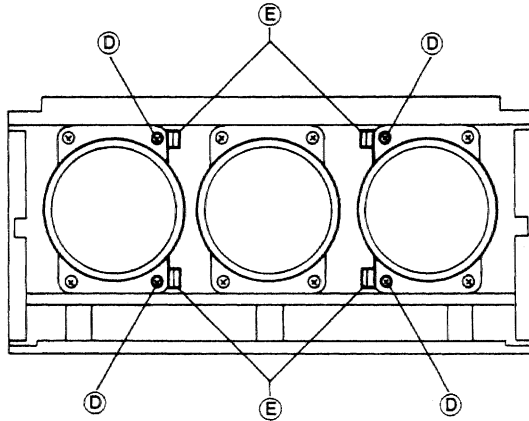
- 2 Remove the 2 screws (B) on each side of the chassis and the 3 screws (B) from the top of the front cover.



- 3 Remove the 6 screws (C) connecting the terminal panel to the front panel of the projector.



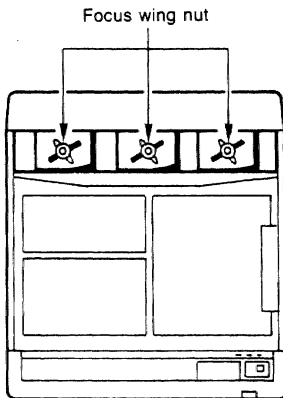
- ④ Remove the 2 inside screws **D** of each Red and Blue CRT and remove the 4 metal adjustment washers **E**.



- ⑤ Replace the 4 screws **D** and secure firmly.  
 ⑥ Carry out "Wing Nut" and "Centering Magnet" adjustments to complete the Focus Adjustment.

**Note:** When setting for a 91" to 120" screen, these adjustment washers must be replaced. Follow the above steps in reverse.

### (B) Optical Focus Adjustment

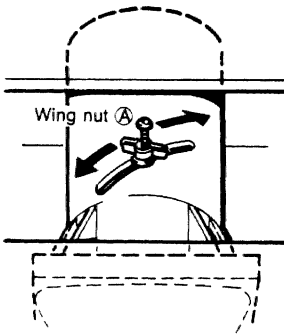
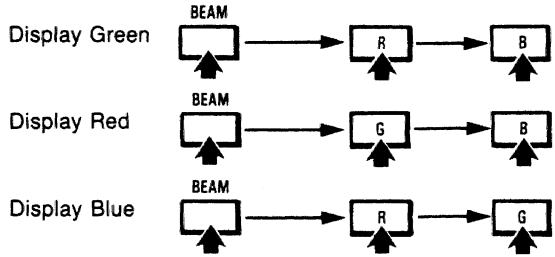
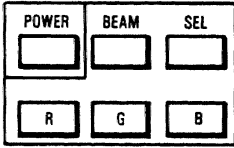


- ① Decide the correct setting distance for the appropriate screen size (see "Setting Procedure" page 20).  
 ② Confirm main power is off, and remove the top cover (see "Top Cover Removal" page 28).

**Note:** It is most important to set the projector in strict accordance with the setting measurements on pages 20, 28.

- ③ Feed in a signal (any signal will suffice), then turn on power and display the cross hatch pattern by pressing the TEST button, then the CROSS HATCH button on the remote control unit.
- ④ Display only one CRT by pressing the BEAM button then the R, B or R, G or B, G buttons to produce the remaining color.

EXAMPLE

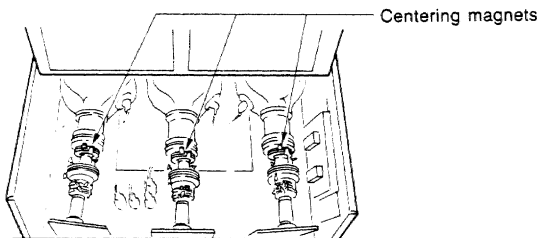
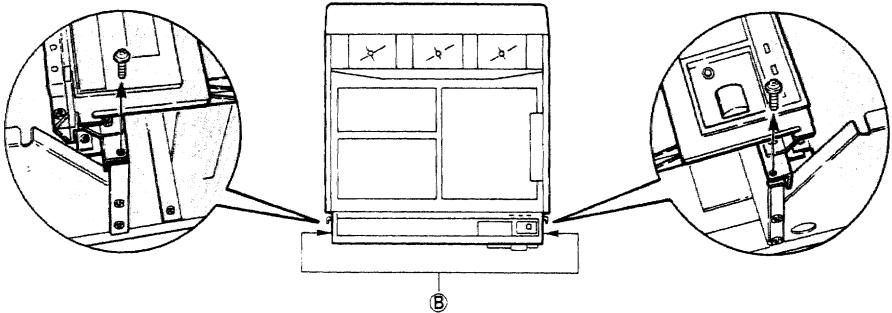


- ⑤ Display image from each CRT sequentially, with the other two beams cut off. Adjust for optimum focus by loosening the wing nut **A** and slightly rotating the lens. Tighten the wing nut after adjustment.

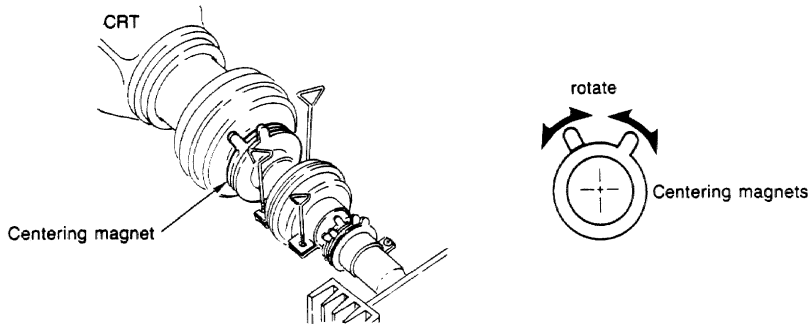
**Note:** The **STATIC CANCEL** function must be performed in first for each R, G and B display before continuing to step C of **STATIC CANCEL** on page 46.

**(C) Adjustment of Centering Magnet**

- ① Loosen and remove the two screws **B**, and lift up the top chassis to display the 3 CRTs and the centering magnets.



- ② Turn on power and display a cross-hatch test pattern. Cut-off either the Red or Blue CRT. Adjust the centering magnets of the displayed R or B CRT to align the corresponding color pattern with the Green. In the same manner, display the previously covered R or B CRT and cover the other, then adjust the final CRT's centering magnets to align the pattern with the Green and previously adjusted color.



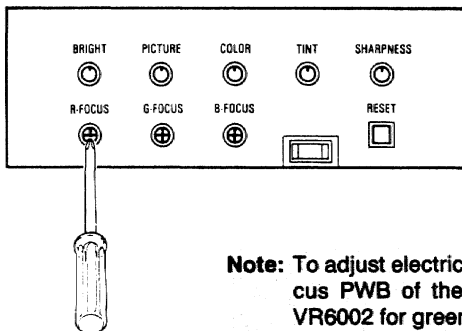
Carry out this adjustment on the Red and Blue CRT individually.

- ③ Turn off power. Replace the 2 screws (B) and secure the top chassis. Replace the 5 screws to fasten the rear cover. Then replace the 4 screws (A) to secure the top cover.

### Electric Focus Adjustments

Adjust each R FOCUS, G FOCUS and B FOCUS in the Control Compartment of the projector for fine adjustment of the focus.

**Note:** These controls are set into the panel and need to be adjusted with a phillips head screwdriver.



**Note:** To adjust electric corner focus—locate the PS-Div. Focus PWB of the projector. Adjust VR6001 for blue, VR6002 for green and VR6003 for red optimum focus.

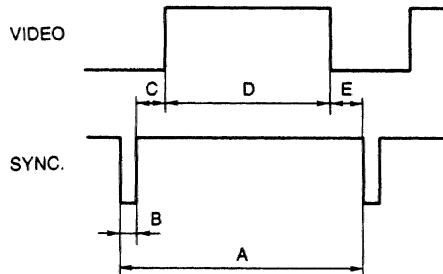
#### (4) RGB 2, 3 SIGNAL INPUT COMPOSITION

##### RGB 2, 3 Preset Signal

The RGB 2, 3 inputs have been adjusted at the factory to receive the following signals. If different signals are used, follow the steps outlined in "RGB 2, 3 Adjustments".

		A	B	C	D	E
RGB 2 SIGNAL	H $\mu$ s	35.7	4.9	3.03	27.7	0.1
	Vms	16.7	0.07	3.33	10.95	2.35
RGB 3 SIGNAL	H $\mu$ s	31.3	4.3	2.66	24.3	0
	Vms	16.7	0.07	3.33	10.95	2.35

#### TIMING CHART



#### (5) CHANGING THE RGB INPUT SIGNAL

When the Projector is shipped from the factory, RGB 1 is adjusted to accept \*IBM PC AT and RGB 2, 3 will accept RGB 2, 3 Signal Input as in the table above. If inputting a different signal, it is necessary to adjust in the following order.

##### (1) To Change RGB 1 Input from IBM PC AT to PS-2

- ① Set Dip SW No. 1 on the Rear Panel of the System Interface to OFF to select \*PS-2 mode.
- ② Connect the input signal as shown on page 10. There are 4 modes for \*IBM PS-2, therefore, carry out the following adjustments for each mode.
- ③ R GAIN, G GAIN, B GAIN.
  - (a) Press SELECT ⑳ to adjust desired color gain and light R, G or B GAIN ㉓/㉔/㉕.
  - (b) Connect an oscilloscope to selected color TEST point R-GAIN (TP607), G-GAIN (TP608), and B-GAIN (TP609).
  - (c) Adjust DOWN ㉖ and UP ㉗ to obtain a value of 0.7 Vp-p on the oscilloscope.

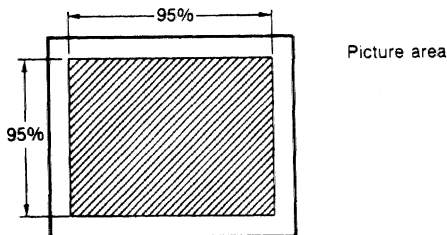


④ H Position Phase Adjustment.

- (a) Press SELECT to light H POSITION ②⑥.
- (b) Press the DOWN and UP buttons to position the picture in the center of the screen.

⑤ H WIDTH, V HEIGHT (Amplitude Adjustment)

- (a) Press SELECT to light H WIDTH ②⑦.
- (b) Press DOWN and UP buttons to obtain a scan of 95% in relation to the screen.
- (c) In the same manner, adjust the V HEIGHT.

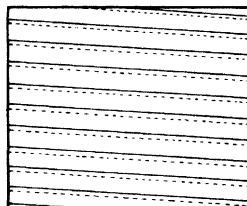


⑥ V HOLD (Vertical Sync Fine Adjustment)

- (a) Press select to light V HOLD ②⑨.
- (b) Press DOWN and UP buttons to obtain a picture without pairing.



Normal Condition



Pairing Occurs

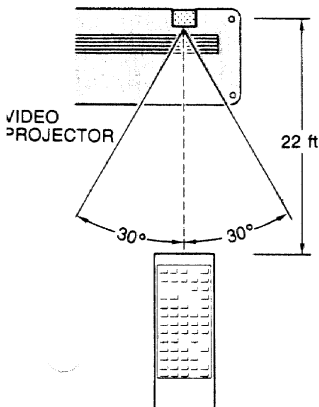
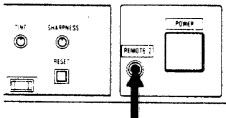
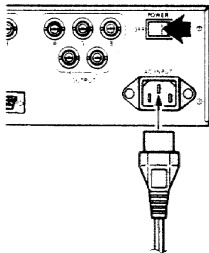
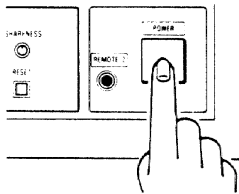
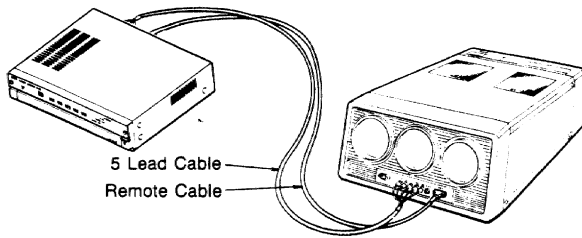
⑦ Convergence Adjustment

- (a) Memorize the vertical and horizontal frequencies of the new input signal. Refer to "Adjustment When Changing the Input Signal" on page 47.
- (b) Carry out convergence as shown in "CONVERGENCE PROCEDURE" page 48.

**(2) To Change RGB 2, 3 Input Signal**

- (a) Connect the input signal.
- (b) Adjust using the same procedures as in (1), steps 3-7 above.

## (6) OPERATION PROCEDURE



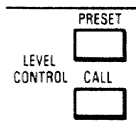
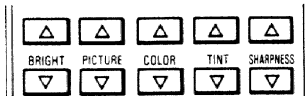
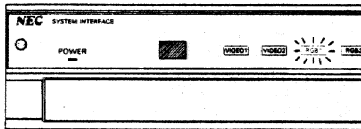
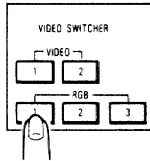
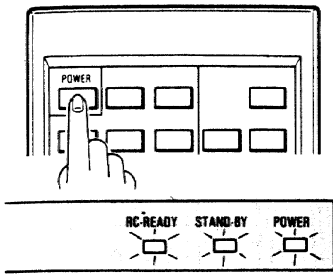
1. Connect the System Interface and the video projector with the supplied 25 pin remote cable.
2. Connect the supplied 5 lead cable to the OUTPUT (R, G, B, H, V) terminal on the back of the System Interface and the R, G, B, HD, VD terminals on the projector. Confirm that the lead colors match with the corresponding input/output connections.
3. Make the appropriate connections of external components (Refer to examples of connections, page 10).
4. Insert the power plug into an active 120V AC 60Hz outlet.
5. Set the POWER switch on the rear of the System Interface to ON.  
Set the POWER switch on the projector to standby.

6. (a) If using the wired remote control unit, plug it into the REMOTE 2 jack on the Projector. If receiving at the System Interface, plug it into the remote jack on the front of the System Interface.
- (b) If using the wireless remote control unit, confirm you are within the effective operating area (see fig. at left).

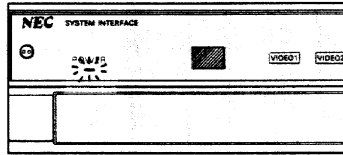
The remote control unit will not function properly if strong light strikes the sensor window or if there are obstacles between the remote control unit and the System Interface.

**Note 1:** According to the setting of the DIP SW on the projector (page 26), the wireless and wired remote control unit will operate from either the projector or the System Interface but not both.

**Note 2:** The wireless remote control will not operate if the wired remote control is plugged in.



7. Press the POWER button on the remote control unit. The RC-READY and POWER indicators on the Projector will light and the POWER indicator on the System Interface will light. In this condition the set is ready for operation.



8. Turn on power to the external device. Select the desired signal input by pressing the appropriate VIDEO 1, 2 or RGB 1, 2, 3 button on the remote control unit. The corresponding indicator on the System Interface will light.

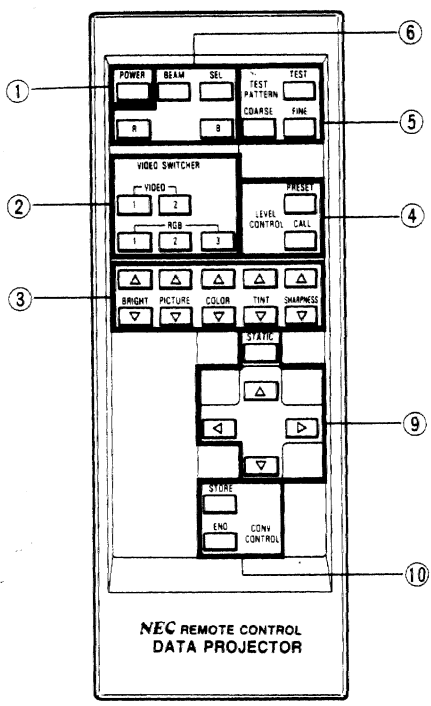
9. Adjust for optimum picture using the picture controls on the remote control unit. Note that in RGB mode, Color Tint and Sharpness controls are not operational.

**Note:** It is presumed that convergence has been completed. If it has not been carried out, or there is a need for adjustment, refer to "CONVERGENCE ADJUSTMENTS", page 48.

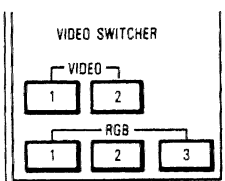
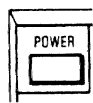
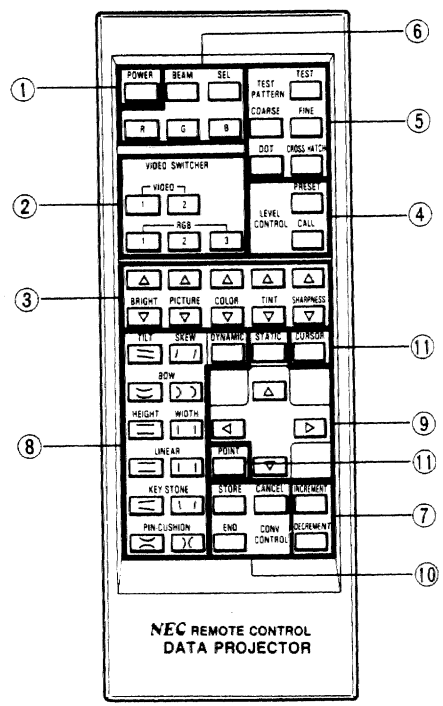
10. Press the PRESET button on the remote control unit to memorize the picture adjustment levels. To return to memorized levels, after performing further picture adjustments, press the CALL button. When switching to another signal input where adjustment levels have been preset, the projector automatically returns to those preset levels when the CALL button is pressed.

# (7) REMOTE CONTROL FUNCTIONS

## USER REMOTE CONTROL



## SERVICE REMOTE CONTROL



### 1. POWER BUTTON

Press POWER BUTTON ① on REMOTE CONTROL UNIT in "ON" position. (MAIN POWER SWITCH, on projector, must be "ON", as indicated by STANDBY LIGHT being illuminated.) When power is applied, RC-READY and POWER INDICATOR LIGHTS, on projector, will be illuminated. POWER INDICATOR LIGHT on the SYSTEM INTERFACE will also be illuminated.

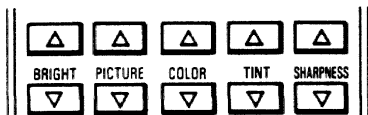
### 2. VIDEO SWITCHER BUTTONS

- (2.1) VIDEO 1, VIDEO 2
- (2.2) RGB, 1, 2, 3

Press the appropriate VIDEO SWITCHER BUTTON which corresponds to the applied signal input. Associated indicator light on SYSTEM INTERFACE, will be illuminated.

### 3. PICTURE CONTROL BUTTONS BRIGHT, PICTURE, COLOR, TINT, SHARPNESS, CONTROL (▲▼) BUTTONS

Use these buttons to obtain the desired picture level.



▲ Press for a brighter picture.

BRIGHT

▼ Press for a darker picture.

▲ Press for more picture contrast.

PICTURE

▼ Press for less picture contrast.

▲ Press for greater color saturation.

COLOR

▼ Press for less color saturation.

▲ Press for a redder tint.

TINT

▼ Press for a greener tint.

▲ Press for a sharper picture.

SHARPNESS

▼ Press for a softer picture.

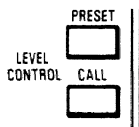
### 4. LEVEL CONTROL BUTTONS

#### (a) PRESET BUTTON:

Press this button to memorize each of the five PICTURE CONTROL BUTTON adjustments, for the selected signal input (COLOR, TINT and SHARPNESS controls are not operational if applied signal is RGB).

#### (b) CALL BUTTON:

Memorized PICTURE CONTROL BUTTON adjustments, for a selected input signal, may be recalled by pressing the CALL BUTTON.



When the main power is switched on, the "PRESET" level of the applied signal input is selected. PICTURE CONTROL BUTTON adjustments are memorized by pressing the PRESET BUTTON. Adjustments are retained in memory if power is turned on or off. To return the adjustments to the factory preset levels, proceed as follows.

(a) While pressing the POINT button, press CALL.

(b) Press the PRESET button.

**Note: An input must be connected to the unit in order to activate the TEST function.**

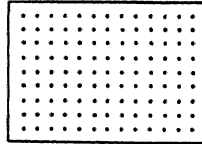
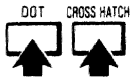
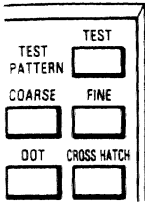
## 5. TEST PATTERN

### TEST BUTTON

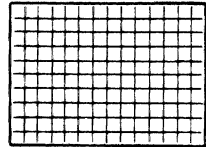
Press the TEST button to switch to the adjustment pattern mode.

### DOT, CROSS HATCH buttons

Press the corresponding DOT or CROSS HATCH button to display the desired pattern.



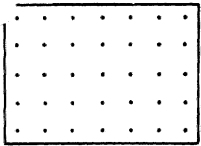
DOT



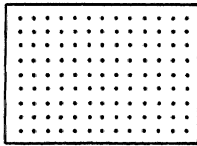
CROSS HATCH

### COARSE, FINE, BUTTONS

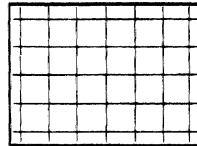
- Press the COARSE button to display a normal DOT or CROSS HATCH pattern.
- Press the FINE button for an enlarged display of either the DOT or CROSS HATCH pattern. There will also be a slight change in the amount of convergence movement.



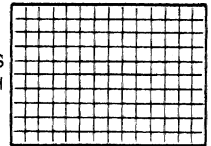
COARSE



FINE



COARSE



FINE

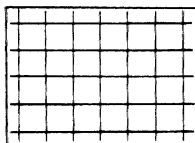
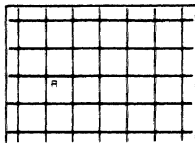
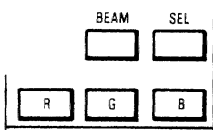
## 6. CRT SELECTION

### SEL, R,G,B BUTTONS

Press SEL to enter the "SELECT MODE", then one of the R, G or B buttons to select the desired CRT for adjustment. The letter R, G or B will be displayed just to the left of the center of the screen.

### BEAM BUTTON

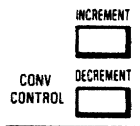
When a test pattern is displayed, press BEAM to enter the "BEAM MODE", then the desired R, G or B button, in succession, to cut-off the R, G or B beam, the remaining two colors will be displayed. To display only one color, press BEAM and two of the R, G, B buttons, the color associated with the button that was not pressed will be displayed.



GREEN ONLY

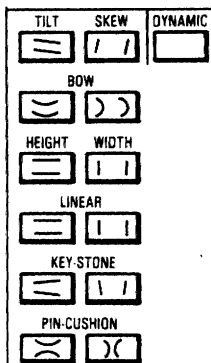
**Note 1:** The CRT beam cut-off operates independently of the convergence CRT selection.

**Note 2:** If the TEST button is switched when in the Beam OFF condition, the picture will be displayed with all three CRTs ON. Pressing the TEST button once again will cause the adjustment pattern to revert to the same condition which existed before the TEST button was pressed.



## 7. INCREMENT/DECREMENT BUTTONS

Use these buttons in conjunction with the twelve convergence adjustment buttons to increase or decrease the pattern adjustment.



## 8. DYNAMIC CONVERGENCE

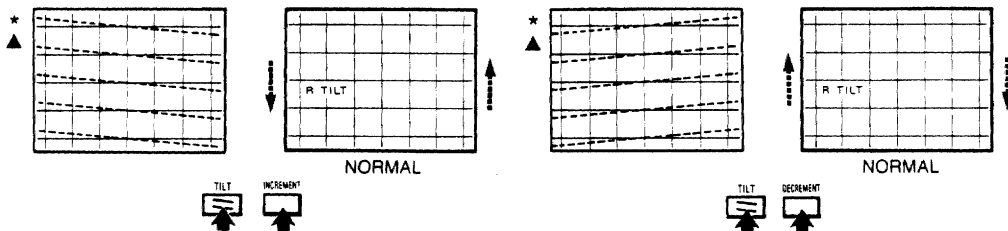
### DYNAMIC BUTTON

Press this button then one of the 12 buttons shown on the left to enter the desired adjustment mode.

**Note:** The following button functions refer to a Front, Floor type setting.

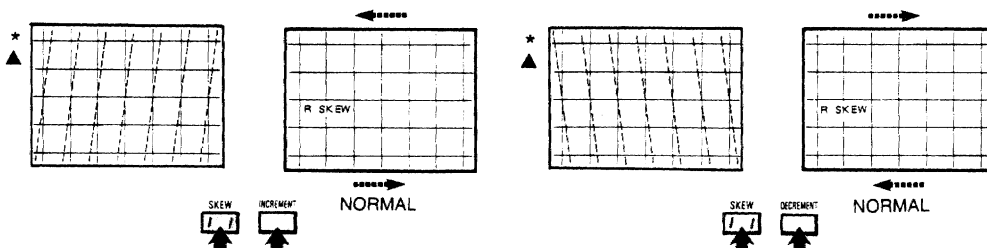
“\*” Indicates that in a rear type setting, the functions of the INCREMENT and DECREMENT buttons will be reversed.

“▲” Indicates that in a ceiling type setting, the functions of the INCREMENT and DECREMENT buttons will be reversed.



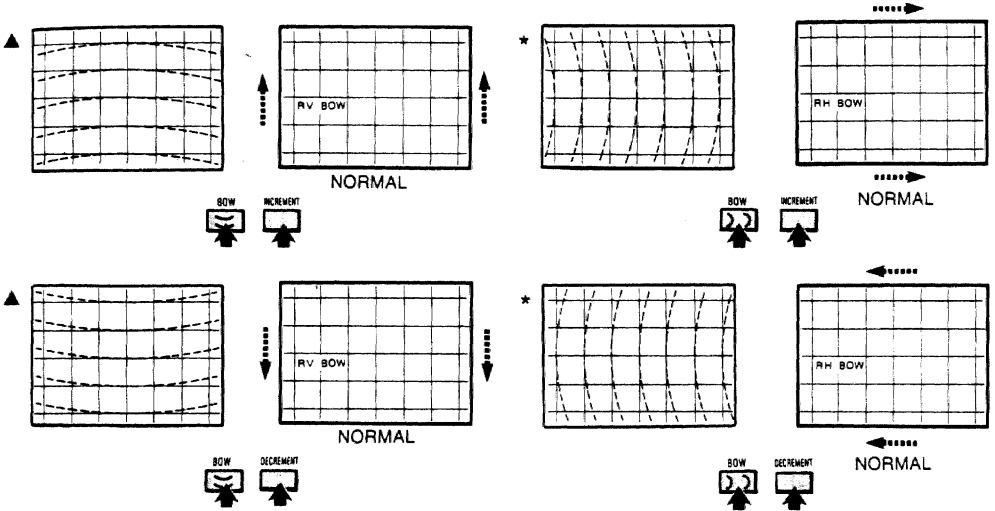
### SKEW BUTTON

Press this button in conjunction with the INCREMENT or DECREMENT buttons. “SKEW” will be displayed in the center of the screen.



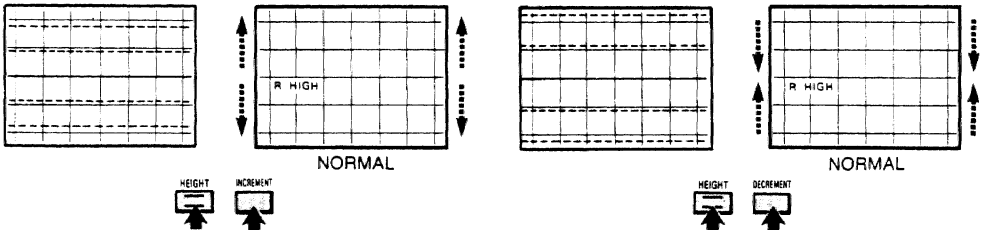
## BOW BUTTONS

Press these buttons in conjunction with the INCREMENT or DECREMENT buttons. "BOW" will be displayed in the center of the screen.



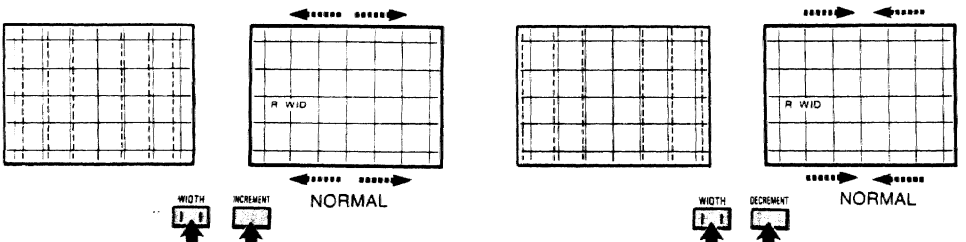
## HEIGHT BUTTON

Press this button in conjunction with the INCREMENT or DECREMENT buttons to adjust the pattern height. "HIGH" will be displayed in the center of the screen.



## WIDTH BUTTON

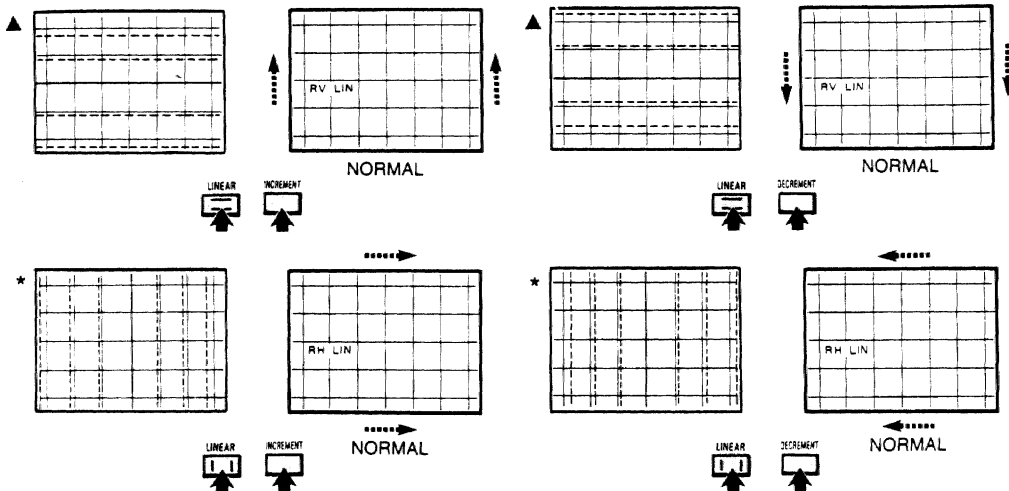
Press this button in conjunction with the INCREMENT or DECREMENT buttons to adjust the pattern width. "WID" will be displayed in the center of the screen.





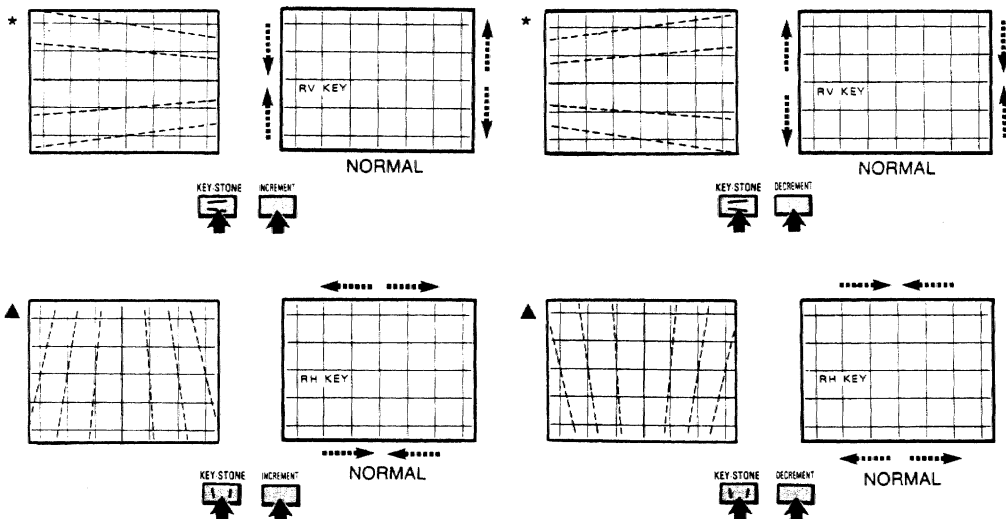
## LINEAR BUTTONS

Press these buttons in conjunction with the INCREMENT or DECREMENT buttons to adjust the pattern lines "LIN" will be displayed in the center of the screen.



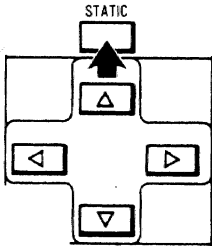
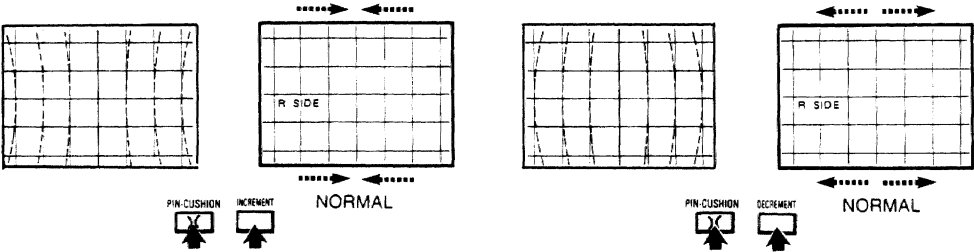
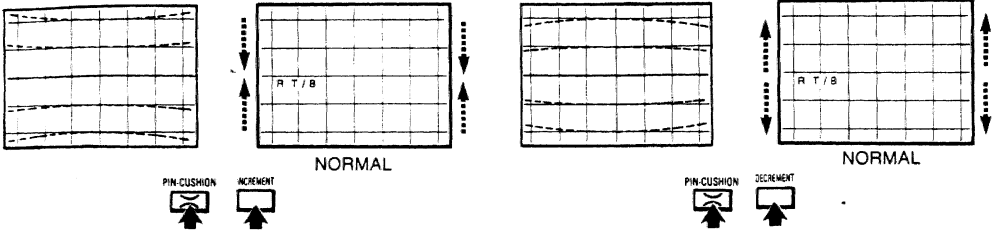
## KEY-STONE BUTTONS

Press these buttons in conjunction with the INCREMENT or DECREMENT buttons to correct the pattern's key stone distortion "KEY" will be displayed in the center of the screen.



## PIN CUSHION BUTTONS

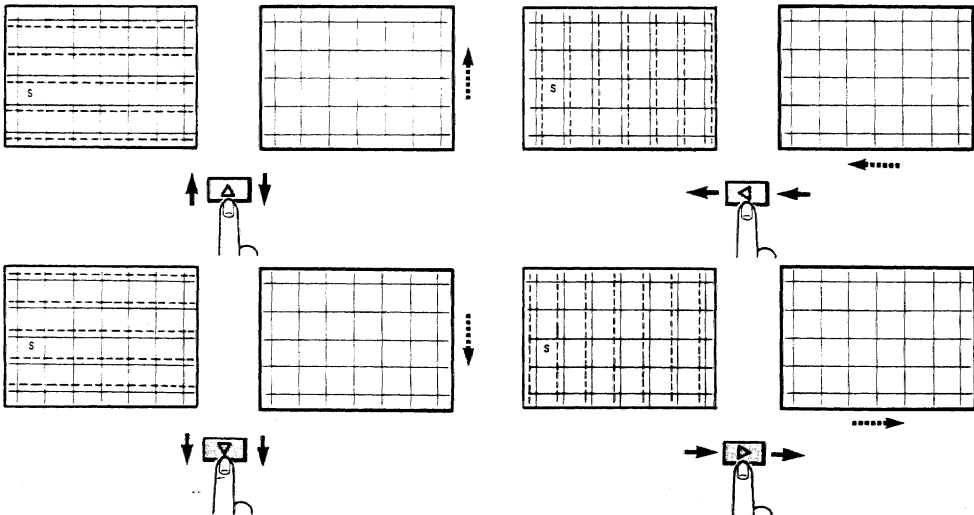
Press these buttons in conjunction with the INCREMENT or DECREMENT buttons to correct the pattern pin cushion distortion.



## 9. STATIC MODE SELECTION

Press the STATIC button "S" will be displayed just to the left of the center of the screen.

Press the "▲" "▼" "◀" "▶" to correct the pattern.

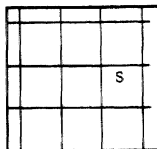
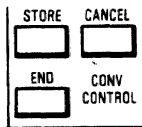


## 10. ADJUSTMENT MEMORY

### STORE BUTTON

Press this button once and "S" will be displayed on the right side of the screen.

Press once more to store the setting in the memory. The "S" display will disappear from view. The "S" display may take a few seconds to disappear.



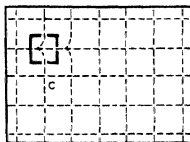
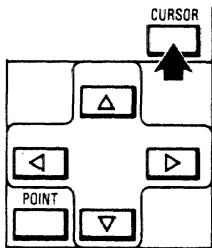
**Note:** Pressing STORE BUTTON will only memorize the picture geometry and convergence adjustment data that has most recently been performed. For each PRESET level, picture and convergence adjustments must be carried out. If the "STORE" button is not pressed twice and the remote control power is turned OFF/ON, the adjustment data will be cancelled.

### END BUTTON

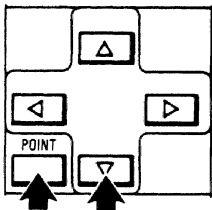
Press this button to erase the on-screen display.

## 11. POINT AND CURSOR DISPLAY THE CURSOR

(a) Press the CURSOR button. The cursor will appear in the center of the screen and the letter "C" will be displayed.

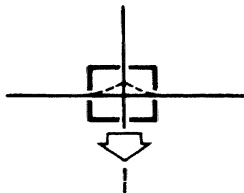


(b) Move the CURSOR to the position to be adjusted by pressing the "▲" "▼" "◀" "▶" buttons.



### POINT ADJUSTMENT

While pressing the POINT button, press the "▲" "▼" "◀" "▶" buttons for convergence adjustment at the point of the cursor. The on-screen display will change to "P". When the key is released "P" will disappear from view.

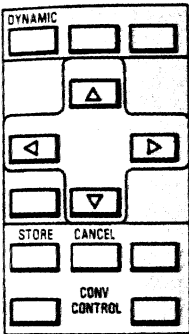


## CONVERGENCE CANCEL FUNCTIONS

Use these functions to cancel the convergence data when moving the projector to a different location, setting for a different screen size, changing the signal source or when a large adjustment in the convergence is necessary.

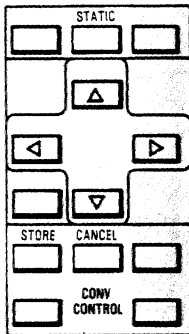
Note that the cancel function must be performed on each individual R, G and B display and also for each input.

Alternatively any individual R, G or B convergence can be cancelled.



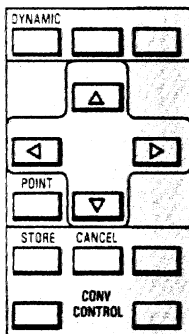
### 1. DYNAMIC CANCEL

- While pressing the CANCEL button, press the DYNAMIC button. "DC" will be displayed on the screen, and the dynamic convergence data will enter the floating condition.
- Press the STORE button and "DC S" will be displayed on the screen.
- Press the STORE button once again, "S" will disappear from view, only "DC" will be displayed and the cancelled condition (clear) will be memorized.
- To default to the condition before the CANCEL button was pressed, turn off POWER before pressing the STORE button.



### 2. STATIC CANCEL

- While pressing the CANCEL button, press the STATIC button. "SC" will be displayed on the screen, and the static convergence data will enter the floating condition.
- Press the STORE button and "SC S" will be displayed on the screen.
- Press the STORE button once again, "S" will disappear from view, only "SC" will be displayed and the cancelled condition (clear) will be memorized.
- To default to the condition before the CANCEL button was pressed, turn off POWER before pressing the STORE button.



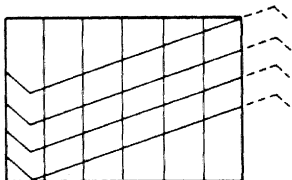
### 3. POINT CANCEL

- While pressing the POINT button, press the CANCEL button and the DYNAMIC button so that all three buttons are depressed (the buttons must be pressed in the order POINT, CANCEL, DYNAMIC). "PC" will appear on the screen. The point convergence data will enter the floating condition.
- Press the STORE button and "PC S" will be displayed on the screen.
- Press the STORE button once again, "S" will disappear from view, only "PC" will be displayed and the cancelled condition (clear) will be memorized.
- To default to the condition before the CANCEL button was pressed, turn off POWER before pressing the STORE button.

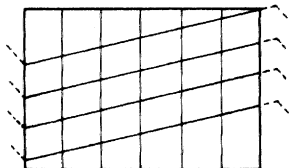
## ADJUSTMENT WHEN CHANGING THE INPUT SIGNAL

When changing the input signal, it is necessary to memorize the vertical and horizontal frequencies of the new signal. After connecting a new signal, follow the procedure below.

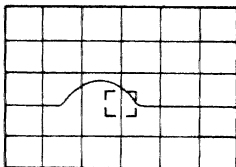
- (1) Select a TEST signal. Either a normal or abnormal cross hatch pattern will appear.
- (2) While pressing the POINT button press the END button. "RN" will appear on the right side of the screen.
- (3) The synchronization at the cross hatch pattern will distort for 2 or 3 seconds, then a normal cross hatch pattern will appear. After this, convergence adjustment can be carried out.
- (4) Even if the TILT and cursor phase are not normal after this adjustment, carry out the following adjustments for "TILT Phase Adjustment" and "Cursor Phase Adjustment".



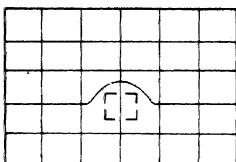
Before Adjustment



After Adjustment



Before Adjustment



After Adjustment

### ■ TILT phase adjustment

- a. Turn off power.
- b. Set S8502 pin 4 on the SYSTEM PWB to OPEN.
- c. Turn on power and select Signal.
- d. Select a TEST signal with the remote control unit.
- e. Cut-off the R & B CRTs and display only the G CRT.
- f. Adjust the pattern so the sudden turn in the diagonal lines are not visible on the screen with the ◀ or ▶ key.

Adjust so the sudden turn in the diagonal lines at the left are aligned with the left edge. If these points are adjusted too far to the left, it will be impossible to complete the cursor and convergence phase adjustments.

- g. Press the STORE button.
- h. Confirm that an "S" is displayed on the right of the screen.
- i. Press the STORE button once again.
- j. The "S" display will disappear.
- k. Turn off power.
- l. Set S8502 switch 4 to SHORT.

### ■ Cursor phase adjustment

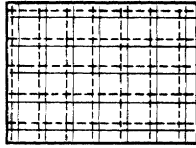
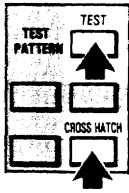
- a. Set S8502 pin 3 and 4 on the SYSTEM PWB to OPEN.
- b. Turn on power and select RGB signal.
- c. Select a TEST signal with the remote control unit.
- d. With the ◀ ▶ keys on the remote control unit, adjust so the cursor position and the convergence phase position are aligned.
- e. Press the STORE button.
- f. Confirm that an "S" is displayed on the right of the screen.
- g. Press the STORE button once again.
- h. The "S" display will disappear.
- i. Turn off power.
- j. Set S8502 switches 3 and 4 to SHORT.

## (8) CONVERGENCE PROCEDURES

1 input source must first be connected.

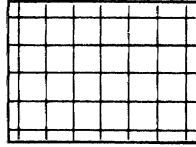
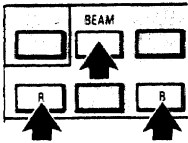
As GREEN is used as a reference color, it is necessary to correct the green pattern before carrying out STATIC convergence.

**Note:** The unit is factory preset for 120" diagonal.



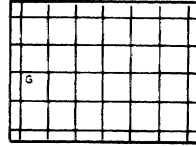
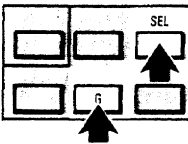
### (A) GREEN ADJUSTMENT

① Press the TEST button then the CROSS HATCH button. The CROSS HATCH pattern test pattern of the three CRTs will be displayed.

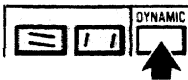


GREEN ONLY

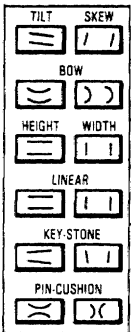
② Press the BEAM button then the R and B buttons. The red and blue CRTs will enter the "cut off" condition and only the green pattern will be displayed.



③ Press the SEL and "G" button to enter the green adjustment mode. "G" will be displayed.



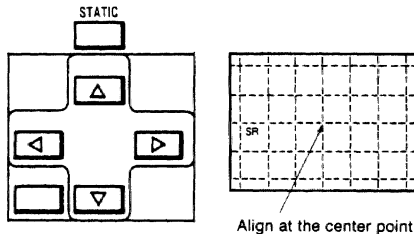
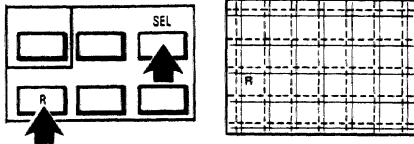
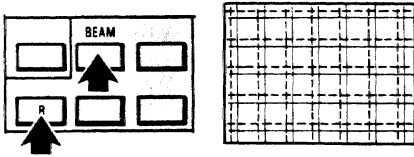
④ Press the DYNAMIC button to enter the dynamic adjustment mode.



⑤ Press one of the 12 adjustment buttons in conjunction with the INCREMENT or DECREMENT button to correct the green cross hatch pattern. Refer to "DYNAMIC CONVERGENCE" page 49 for an explanation of these button functions.

**Note:** This adjustment should be carried out with the projector and screen horizontal to the floor (or ceiling). The VIDEO 1 input must be properly terminated to perform convergence procedures correctly.

## 1. STATIC CONVERGENCE



### Red Convergence

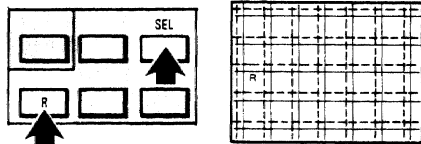
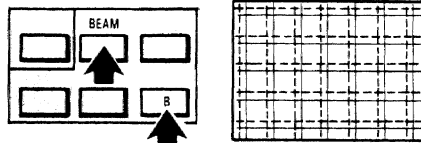
- ① After carrying out the green pattern adjustment, press the BEAM button then the R button. The red CRT which was in the cut off condition will be displayed along with the green.
- ② Press the SEL button and the R button to enter the red adjustment mode, "R" will be displayed.
- ③ Press the STATIC button, "S" will be displayed on the left of R. With reference to the green pattern, adjust the red pattern for best static convergence using the "▲" "▼" "◀" "▶" buttons.

### Blue Convergence

In the same manner as explained in RED CONVERGENCE, adjust the pattern to align the blue CRT i.e. Press "BEAM", "B" then "SEL", "B" buttons. Press STATIC and adjust the blue pattern with the "▲" "▼" "◀" "▶" buttons.

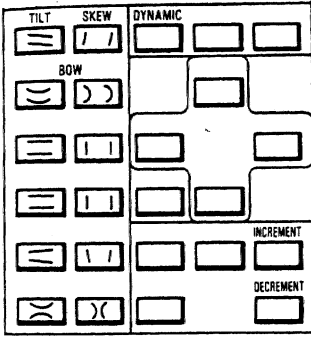
## 2. DYNAMIC CONVERGENCE

This should only be carried out after static convergence has been completed and assumes that the green (reference) pattern has been corrected.



### Red Convergence

- ① With the test pattern displayed, press the BEAM button and the B button. The B CRT will enter the cut-off state.
- ② Press the SEL and R buttons to select the red adjustment. "R" will be displayed.



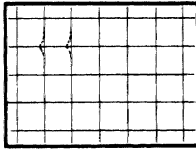
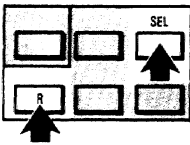
- ③ Press the DYNAMIC button, then one of the 12 adjustment buttons in conjunction with the INCREMENT or DECREMENT button to align the red pattern with the green.  
Refer to pages 41 ~ 44 for an explanation of the adjustment buttons.

### Blue Convergence

In the same manner as explained in RED CONVERGENCE, adjust the pattern to align the blue CRT i.e. Press "BEAM", "B" then the "SEL", "B" buttons. Press the DYNAMIC button then one of the 12 adjustment buttons in conjunction with the INCREMENT or DECREMENT button.

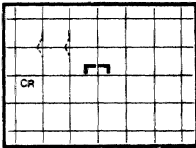
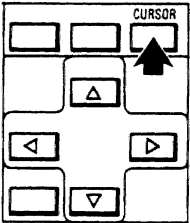
### 3. POINT CONVERGENCE

If the cross hatch pattern is satisfactorily converged after Dynamic Convergence, Point Convergence will not be necessary. If this is the case carry out "ADJUSTMENT MEMORY" to store the setting (see page 45).



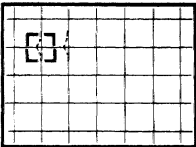
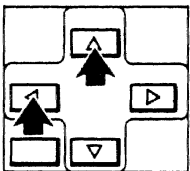
### Red Convergence

- ① Press the "SEL" button then the "R" button to select the red adjustment.



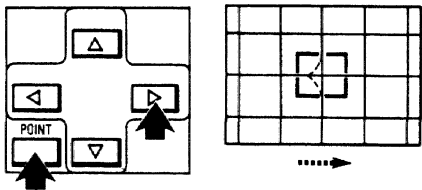
- ② Press the CURSOR button.  
The CURSOR will be displayed in the center of the screen and "C" will appear on the left of "R".

**Note:** The cursor will not be displayed in the area of the on-screen display, therefore only half a cursor will be displayed at the center horizontal line area.



- ③ Press the "▲" "▼" "◀" "▶" buttons to move the cursor to the desired adjustment position.





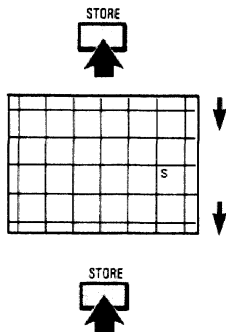
- ④ While pressing the POINT button press the “▲” “▼” “◀” “▶” buttons to adjust the red element.

#### Blue Convergence

In the same manner as explained in RED CONVERGENCE, adjust the pattern to align the blue CRT. Press “SEL”, “B”, buttons, then the “CURSOR” button. Move the cursor to the adjustment point with the “▲” “▼” “◀” “▶” buttons.

#### 4. CONVERGENCE MEMORY

After convergence has been completed it is necessary to store the setting in the memory.



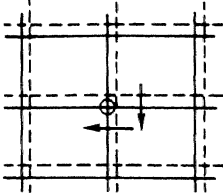
- ① Press the STORE button once. “S” will be displayed on the right side of the screen.
- ② Press the STORE button once again to store the setting in the memory, the on-screen display “S” will disappear. The “S” display may take a few seconds to disappear.
- ③ Press the END button.

## (9) CONVERGENCE EXAMPLE

The following sequence is recommended when carrying out complete convergence. If only partial convergence is necessary, adjustment of selected buttons may suffice. In the following explanation Red and Blue (dot-line) are converged in relation to Green. For optimum results carry out adjustments in the order shown below. In each convergence step adjust misconvergence so as to obtain symmetry about the horizontal and/or vertical axis using the "O" marks as reference.

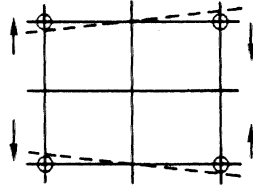
### 1. Static Convergence

Adjustment Point  
H. V. Center



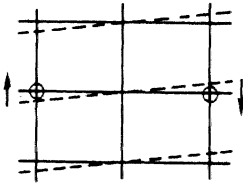
### 4. Dynamic V KEYSTONE

Adjust the 4 corners



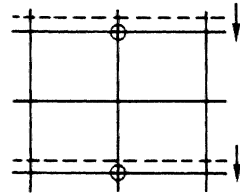
### 2. Dynamic TILT

Adjust Vertical to Center  
Adjust Horizontal Right/Left Side



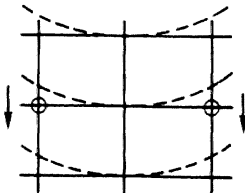
### 5. Dynamic V LINEAR

V Upper/Lower Side  
H Center



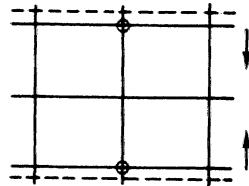
### 3. Dynamic V BOW

Adjust Vertical to Center  
Adjust Horizontal Right/Left Side



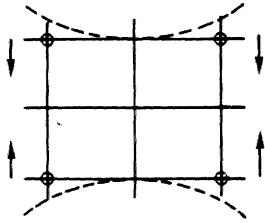
### 6. Dynamic HEIGHT

Adjust Vertical Upper/Lower Side  
Adjust Horizontal to Center



**7. Dynamic V PINCUSHION**

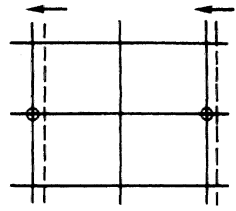
Adjust the 4 corners



**11. Dynamic H LINEAR**

V Center

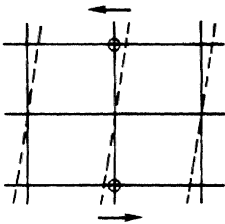
H Right, Left Side



**8. Dynamic SKEW**

Adjust Vertical Upper/Lower Side

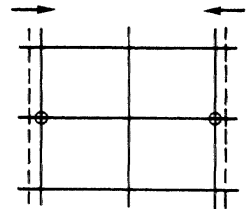
Adjust Horizontal to Center



**12. Dynamic WIDTH**

V Center

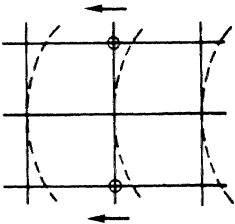
H Right, Left Side



**9. Dynamic H BOW**

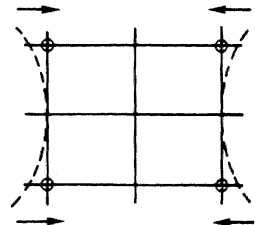
V Upper/Lower Side

H Center



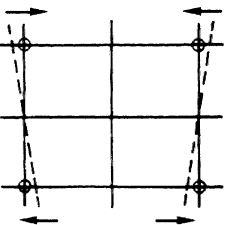
**13. Dynamic H PINCUSHION**

Adjust the 4 corners



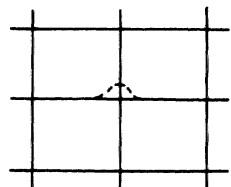
**10. Dynamic H KEYSTONE**

Adjust the 4 corners



**14. Point Convergence**

Adjust any Control Point

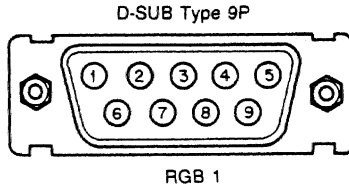


# **PART IV**

**CHARTS  
REFERENCE TABLES  
TROUBLESHOOTING**

# 9 PIN RGB SIGNAL COMPOSITION

## (A) Pin Assignments and Signal Levels for 9 Pin RGB



**TABLE 1 PIN ASSIGNMENT OF IBM GRAPHICS ADAPTER**

IBM ADAPTERS PIN-ASSIGNMENT	COLOR GRAPHICS TTL 16 COLORS	ENHANCED GRAPHICS TTL 64/16 COLORS	PROFESSIONAL GRAPHICS ANALOG	VIDEO GRAPHICS ANALOG
1	GROUND	GROUND	*RED	ΔRED
2	GROUND	SECONDARY RED	*GREEN	ΔGREEN
3	RED	PRIMARY RED	*BLUE	ΔBLUE
4	GREEN	PRIMARY GREEN	COMPOSITE SYNC.	HORIZONTAL SYNC
5	BLUE	PRIMARY BLUE	MODE CONTROL	VERTICAL SYNC
6	INTENSITY	SECONDARY GREEN/ INTENSITY	RED GROUND	RED GROUND
7	NON-CONNECTION	SECONDARY BLUE	GREEN GROUND	GREEN GROUND
8	HORIZONTAL SYNC.	HORIZONTAL SYNC.	BLUE GROUND	BLUE GROUND
9	VERTICAL SYNC.	VERTICAL SYNC.	GROUND	GROUND

**TABLE 2 PIN ASSIGNMENT OF OTHER COMPUTERS**

SIGNAL PIN-ASSIGNMENT	TTL			ANALOG		
	8 COLORS	16 COLORS	64 COLORS	SEPARATE SYNC.	COMPOSITE SYNC.	SYNC. ON GREEN
1	GROUND			ΔRED		
2	—		SECONDARY RED	ΔGREEN		GREEN OH/V SYNC.
3	RED		PRIMARY RED	ΔBLUE		
4	GREEN		PRIMARY GREEN	H. SYNC.	H/V SYNC.	—
5	BLUE		PRIMARY BLUE	V. SYNC.	—	
6	—	INTENSITY	SECONDARY GREEN	GROUND		
7	—		SECONDARY BLUE			
8	H. SYNC./H/V SYNC.					
9	V. SYNC.					

“—” means GROUND or NON-CONNECTION

### SIGNAL LEVEL

All signal levels, except for those listed below, are TTL.

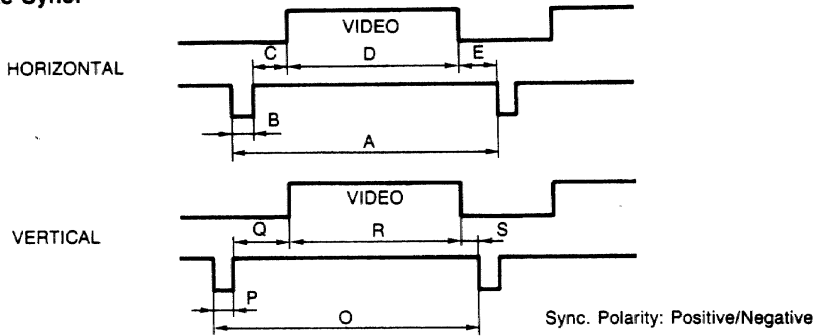
“\*” means 0.6 Vp-p (VIDEO)

“○” means 0.6 Vp-p (VIDEO), 0.3 Vp-p (SYNC.)

“Δ” means 0.7 Vp-p (VIDEO)

## (B) Timing Charts

### (a) Separate Sync.



	f <sub>H</sub>	EXAMPLE TIMING			REMARKS
		15.75kHz	24.83kHz	30.1kHz	
Horizontal	A <sub>μs</sub>	63.5	40.28	33.2	66.7 to 27.8 <sub>μs</sub> (15 to 36kHz)
	B <sub>μs</sub>	5.08	3.04	3.43	2 to 10 <sub>μs</sub>
	C <sub>μs</sub>	7.62	2.80	2.86	2 to 8 <sub>μs</sub>
	D <sub>μs</sub>	46.3	32.4	25.76	25 to 58 <sub>μs</sub> *
	E <sub>μs</sub>	4.4	2.04	1.14	1 to 6 <sub>μs</sub>
Vertical	Oms	16.6	17.72	17.66	10 to 26.3ms (38 to 100Hz)
	Pms	0.26	0.32	0.26	0.05 to 0.7ms
	Qms	1.6	1.01	0.73	0.08 to 2.2ms
	Rms	13.84	16.11	16.6	9.4 to 25.7ms and (O - R) = 0.6 to 4.0
	Sms	0.9	0.28	0.066	0 to 1.6ms and Q = [(O - R) - 0.6] / 2 ± 0.2

Range 1: A = 66.7 to 57.1<sub>μs</sub>  
 Range 2: A = 57.1 to 49.0<sub>μs</sub>  
 Range 3: A = 49.0 to 37.5<sub>μs</sub>  
 Range 4: A = 37.5 to 29.4<sub>μs</sub>

\*Both SEPARATE SYNC. & COMPOSITE SYNC.

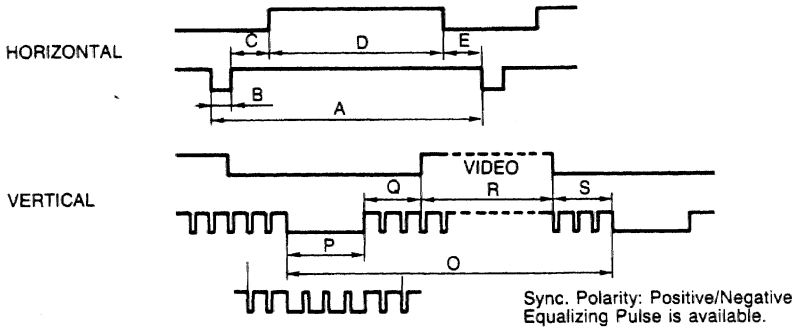
### IBM PC, AT TIMING CHARTS (PRESET TIMING)

	f <sub>H</sub>	15.8kHz	22kHz	30.5kHz		f <sub>H</sub>	15.8kHz	22kHz	30.5kHz
		Horizontal	A <sub>μs</sub>	63			45.5	33	Vertical
B <sub>μs</sub>	4.2		4.9	4.5	Pms	0.075	0.6	0.07	
C <sub>μs</sub>	7.2		1.6	2.8	Qms	1.525	0.08	2.12	
D <sub>μs</sub>	45		39	25.6	Rms	12.6	16	13.05	
E <sub>μs</sub>	6.6		0	0.1	Sms	2.2	0	1.36	

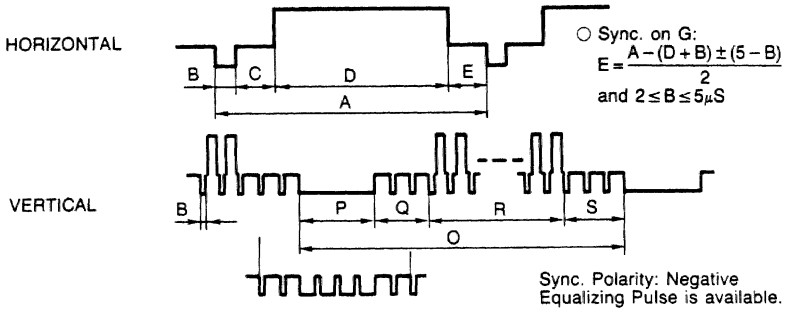
### IBM PS-2 TIMING CHARTS

	f <sub>H</sub>	350 Line MODE 31.47kHz	400 Line MODE 31.47kHz	480 Line MODE 31.47kHz	560 Line MODE 35.52kHz
Horizontal	A <sub>μs</sub>	31.8	31.8	31.8	28.2
	B <sub>μs</sub>	3.8	3.8	3.8	3.9
	C <sub>μs</sub>	1.6	1.6	1.6	1.3
	D <sub>μs</sub>	26.1	26.1	26.1	22.8
	E <sub>μs</sub>	0.3	0.3	0.3	0.2
	Sync polarity	+	-	-	+
Vertical	Oms	14.3	14.3	16.7	11.5
	Pms	0.06	0.06	0.06	0.11
	Qms	1.72	0.89	1.79	0.56/0.58*
	Rms	11.53	13.19	15.79	10.81
	Sms	0.99	0.16	0.06	0.0210*
		Sync polarity	-	+	-

(b) Composite Sync.



Composite Sync. & Video (Sync. on Green)

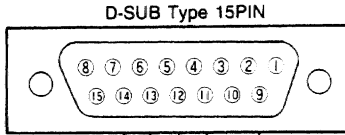


	f <sub>h</sub>	EXAMPLE TIMING			REMARKS
		15.98kHz	25.5kHz	31.5kHz	
Horizontal	A <sub>μs</sub>	62.6	39.2	31.75	66.7 to 29.4 <sub>μs</sub> (15 to 36kHz)
	B <sub>μs</sub>	5.41	2.51	2.06	2 to 10 <sub>μs</sub>
	C <sub>μs</sub>	8.0	3.30	3.62	3.3 to 8 <sub>μs</sub>
	D <sub>μs</sub>	44.7	32.14	24.52	20 to 48 <sub>μs</sub> *
	E <sub>μs</sub>	4.47	1.25	1.56	1 to 6 <sub>μs</sub>
Vertical	Oms	16.35	16.67	16.67	10 to 26.3ms (38 to 100Hz)
	Pms	0.19	0.12	0.19	0.05 to 0.19ms
	Qms	1.82	0.80	1.02	0.08 to 2.2ms
	Rms	13.47	15.63	15.24	9.4 to 25.7ms and (O - R) = 0.6 to 4.0
	Sms	0.87	0.12	0.22	0 to 1.6ms and Q =  (O - R) - 0.6 /2 ± 0.2

## (2) 15 PIN EXTERNAL CONTROL

Use this terminal when controlling the system from an external source.

- ① Set EXT CONTROL/REMOTE SW to EXT.
- ② Connect the external control unit to the 15 pin EXT CONTROL terminal on the SYSTEM INTER-FACE Rear Panel.
- ③ Pin Assignment for 15 pin EXT CONTROL as shown below.



EXT.CONTROL

Table 3

Pin No.		①—⑧
FUNCTION		
Power ON		1
Power OFF		0

Pin No.		③—⑪	④—⑫	⑤—⑬
FUNCTION				
VIDEO 1		0	0	0
VIDEO 2		1	0	0
RGB 1		0	0	1
RGB 2		0	1	0
RGB 3		1	1	0

Pin No.		⑥—⑭
FUNCTION		
BEAM ON		0
BEAM OFF		1

0: OPEN  
1: SHORT

Maximum Cable length : 50m

Cable gauge : More than 10.5mm

**Note:** When the EXT CONTROL/REMOTE SW is set to EXT, POWER-ON/OFF and switching VIDEO 1, VIDEO 2, RGB 1, RGB 2, RGB 3, will not operate with the Remote Control Unit.



## TROUBLESHOOTING

Problem	Check / Solution
<p><b>No Picture</b></p>	<ul style="list-style-type: none"> <li>•Is the projector plugged into an active AC outlet and the power switch ON?</li> <li>•Is the System Interface plugged into an active AC outlet and the power switch ON?</li> <li>•Is the remote control unit plugged in (wired) and the power button ON?</li> <li>•Is the remote control unit (wireless) within the effective operating distance when the power button is pressed? (page 36)</li> <li>•Is the remote cord between the System Interface and projector connected and properly secured? (page 10)</li> <li>•Are the R, G, B, H and V leads correctly connected between the System Interface output terminals and the projector input terminals? (page 10)</li> <li>•Is the correct video or RGB input selected?</li> <li>•Is the external component properly connected? (page 10)</li> <li>•Is the external component plugged into an active AC outlet and power ON?</li> <li>•If using an *IBM personal computer, is the TTL, ANALOG switch in the correct position? (page 16)</li> <li>•Is The test mode selected without any beam turned ON?</li> <li>•Is BEAM "OFF" selected on the external control?</li> </ul>
<p><b>Picture is not clear</b></p>	<ul style="list-style-type: none"> <li>•Is the focus correctly adjusted? If slightly out of focus, correct with RGB focus controls in control compartment of projector (page 33). If still not in focus, carry out focus adjustments as per pages 30~31.</li> <li>•Is the picture adjusted correctly? Adjust picture controls on remote control or in control compartment of projector or System Interface for best picture.</li> </ul>
<p><b>No Color</b></p>	<ul style="list-style-type: none"> <li>•Is the correct system button on the System Interface depressed?</li> <li>•If using an *IBM computer, confirm the correct setting of the TEXT button and the DIP switch on the System Interface (pages 13, 17)</li> </ul>
<p><b>Picture is inverted or left right direction reversed</b></p>	<ul style="list-style-type: none"> <li>•Check the setting of the Horizontal and Vertical polarity plugs. Refer to the Table on page 29.</li> <li>•Is the DIP switch SW8503 (#-5,6) on the SYSTEM PWB in the correct position? Refer to Table on page 26.</li> </ul>

Problem	Check / Solution
<p><b>Color and Picture distortion</b></p>	<ul style="list-style-type: none"> <li>•Are the R, G, B, H and V leads correctly connected between the System Interface output terminals and the projector input terminals? (page 10)</li> <li>•Are the controls in the control compartment of the System Interface correctly set for the R, G, B input signal? (page 32)</li> <li>•If not using an IBM computer confirm that the signal is compatible. Refer to signal composition page 34.</li> </ul>
<p><b>No operation from remote control</b></p>	<ul style="list-style-type: none"> <li>•Check SW8503 pins 8 and 7 for the proper setting of remote control receiving location. Refer to the table on page 26.</li> <li>•Is the wired remote control plugged into the System Interface or the projector?</li> <li>•If using the wireless remote control unit confirm you are within the effective operating range see page 36.</li> <li>•Is the remote lead between the System Interface and the video projector connected correctly? (page 11)</li> <li>•Is the EXT CONTROL/Remote switch (45) on the rear panel of the System Interface in the correct position? (See page 16).</li> </ul>



