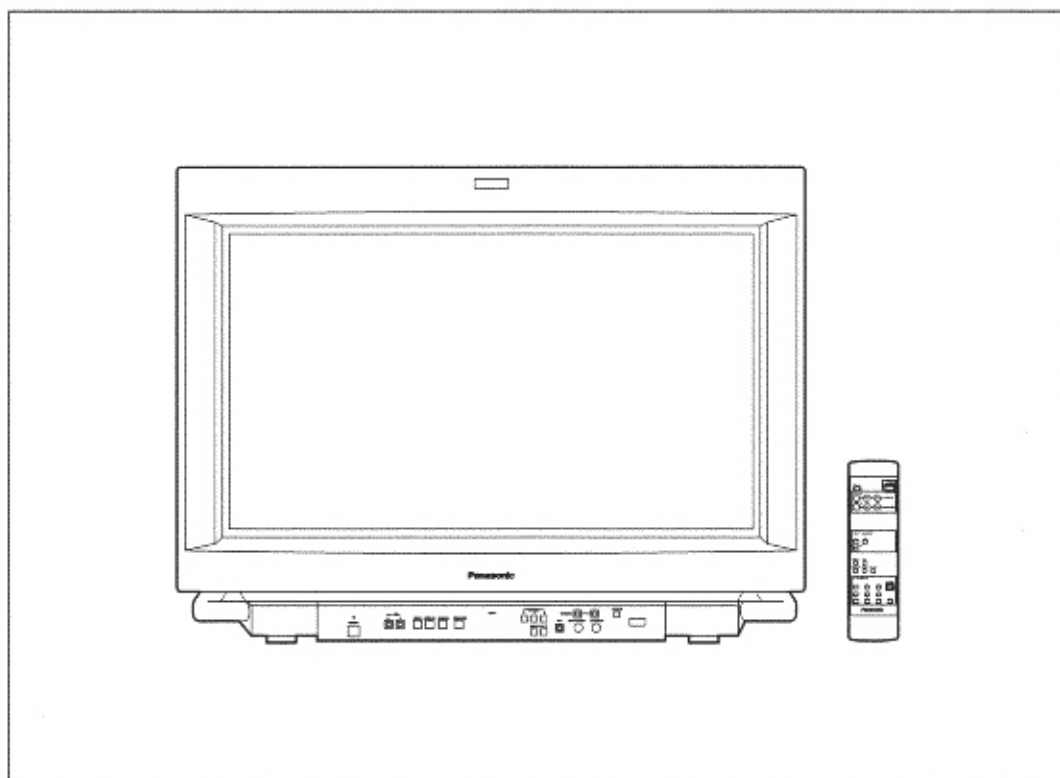# Operating Instructions

High Definition Color Monitor

Model No. **AT-H3015W**

Panasonic®

Read these instructions completely before operating this unit.

TQBJ 0021

Dear Panasonic Customer:

This instruction booklet provides all the necessary operating information that you might require. We hope it will help you to get the most performance out of your new product, and that you will be pleased with your Panasonic Color Monitor.

The serial number of your product may be found on its back. You should note it in the space provided below and retain this booklet in case service is required.

Model number: **AT-H3015W**   Serial number:

Contents

Features

1. Compatible with two HDTV formats

Input signals can be input in any one of two HDTV formats: 1080i or 480p, and the matrix ratios for the YP_BP_R signals are switched automatically in accordance with the input signal. In addition, different convergence settings and other adjustment data for each separate format can be stored in memory, so that optimum reproduction can be obtained for each type of signal at all times.

2. High resolution shows up even the smallest details clearly.

The monitor is equipped with a 30-inch SMPTE standard fluorescent, high-resolution CRT with a deflection of 90° and a 0.36 mm trio pitch. Plus it has a new "double dynamic" focus circuit that provides a resolution of 1000 horizontal TV lines at the center of the screen and 950 horizontal TV lines at the screen edges.

3. Intelligent control greatly improves ease of use

Because setting-up data can be displayed on the screen, settings can be made using numbers, which makes it much easier to reproduce achieve good picture quality reproduction. Furthermore, settings such as contrast, brightness, RGB/YP_BP_R, and SYNC INT/EXT can be pre-set separately for both the LINE A and LINE B input channels, so that it is not necessary to repeat setting-up operations when the channel is switched. In addition, the accessory remote control unit can be used in both wired and wireless modes.

What are the two HDTV formats?

The two HDTV formats which are mentioned in this manual are as follows:

Signal name (abbreviation)	No. of scanning lines	No. of effective scanning lines	Scanning frequencies	Interlacing/Aspect ratio
1080i	1125	1080	f_H=33.75 kHz f_V=60 Hz	Interlaced/16:9
480p	525	480	f_H=31.47 kHz f_V=59.94 Hz	Non-interlaced/16:9

IMPORTANT SAFETY NOTICE

WARNING: To prevent damage which may result in fire or shock hazard, do not expose this appliance to rain or moisture.

Power Supply: This Color Monitor is designed to operate on 120 volt, 50/60 Hz AC, house current only.

CAUTION
RISK OF ELECTRIC SHOCK.
DO NOT OPEN

### AVIS : RISQUE DE CHOC ÉLECTRIQUE.
NE PAS OUVRIR

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

CAUTION: This equipment is equipped with a three-pin grounding-type power plug.
Do not remove the grounding pin on the power plug.
This plug will only fit a grounding-type power outlet. This is a safety feature.
If you are unable to insert the plug into the outlet, contact an electrician.
Do not defeat the purpose of the grounding plug.

Do not remove
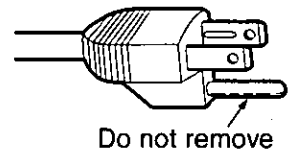
WARNING: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
CAUTION: Any unauthorized changes or modifications to this equipment would void the users authority to operate.

Precautions with regard to safety

WARNING

Setting up the monitor

Do not place anything on top of the monitor.
- If water gets spilled on the monitor or gets inside it, short-circuits can occur which may result in fire.
  If water gets inside the monitor, contact the place of purchase.

Do not place the monitor on top of surfaces which are unstable.
- If the monitor is placed on top of a surface which is sloped or unstable, it may fall down or tip over, and injury or damage could result.
  Take any measures necessary to prevent the monitor from falling over.

Using the monitor

Do not remove the rear cover of the monitor.
- High voltages which could cause fire or electric shocks are present inside this monitor.
  Consult the place of purchase for any inspection, adjustment and servicing needs.

Do not make any modifications to the monitor yourself.
- Unauthorized modifications may cause fire or electric shocks.
  Consult the place of purchase if you wish to have any specification changes made.

Do not do anything to damage the power cord.
- Do not damage or modify the cord, place heavy objects on top of the cord, bring it close to hot objects, or bend, twist or pull the cord strongly. If the cord is not handled properly, fire or electric shocks may result.
  If the power cable becomes damaged, contact the place of purchase for repairs.

Do not insert any foreign objects into the monitor.
- Do not insert any metal objects or flammable objects into the monitor or drop them onto the monitor, as doing so can cause short-circuits which might result in fire or electric shocks.
  If any foreign objects get inside the monitor, consult the place of purchase.

Do not use a power supply which is outside the specified voltage range (120 V AC).
- If a voltage which is higher than the specified voltage is used, it will cause damage to the monitor, and fire may result.
  Use only a 120 V AC, 50/60 Hz power supply.

If a problem occurs during use

Do not continue using the monitor if a problem such as no picture occurs.
- If a problem occurs, turn off the POWER switch immediately and disconnect the power cord from the wall outlet.
  If you continue using the monitor after such a problem has occurred, fire or electric shocks may result.
  If a problem occurs, contact the place of purchase.

Do not continue using the monitor if you notice smoke or a strange smell coming from the monitor.
- If such a problem occurs, turn off the POWER switch immediately and disconnect the power cord from the wall outlet.
  Check that no more smoke is coming out, and then contact the place of purchase for repairs.
  The monitor contains no user-serviceable parts, so never attempt to repair the monitor yourself.

Do not use the monitor if foreign objects or water get inside the monitor, or if the monitor is dropped or the cabinet is broken.
- In such cases, If a problem occurs, turn off the POWER switch immediately and disconnect the power cord from the wall outlet.
  If you continue using the monitor after such a problem has occurred, fire or electric shocks may result.
  Contact the place of purchase for repairs.

Do not use the power cord if it becomes damaged (for instance, if wires become exposed or a wire breaks).
- If you continue using the cord after such a problem has occurred, fire or electric shocks may result.
  Contact the place of purchase for repairs.

CAUTION

Setting up the monitor

Do not set up the monitor in humid or dusty places or in places where the monitor may come into contact with smoke or steam.
- If the monitor is used in places which are hot or humid, fire or electric shocks may result.
  Set the monitor up in a place which has an ambient temperature of 32°–104°F (0°–40°C) and an ambient humidity of 30%–80% (with no condensing).

Do not cover the ventilation holes.
- If the ventilation holes are covered, the inside of the monitor could overheat, and fire or other problems may result.
  Leave a space of 4" (10 cm) or more between the monitor and the wall when setting up the monitor.
  Do not place the monitor facing straight up or straight down, and do not tilt it on its side or place it upside down.

Do not handle the power cord plug with wet hands.
- If you handle the power plug with wet hands, electric shocks may result.
  Wipe your hands thoroughly before handling the power cord.

When disconnecting the power cable, hold the plug, not the cable.
- If the power cable itself is pulled, the cable will become damaged, and fire or electric shocks may result.

Always disconnect all cables before moving the monitor.
- Always check that the power cable plug and cables are disconnected before moving the monitor.
  Moving the monitor with cables still attached can damage the cables, and fire or electric shocks may result.

Do not place the power cord near hot objects.
- The outside of the power cord may melt, and fire or electric shocks may result.

Using the monitor

Do not place any heavy objects on top of the monitor.
- Doing so can cause the monitor to become unbalanced and fall, which could result in damage or injury.

Do not step on top of the monitor.
- Doing so may cause the monitor to tip over or break, and injury may result.

If not using the monitor for long periods, disconnect the power cord plug from the wall outlet for safety.

Use only the specified type of batteries in the accessory remote control unit, and do not mix old and new batteries.
- If batteries are not treated properly, they may leak, and fire or contamination may result.

When inserting the batteries, make sure that the polarities (plus $\oplus$ and minus $\ominus$ directions) are correct, and follow the indications on the remote control unit.
- If the batteries are inserted with the wrong polarities, they may leak, and fire, injury or contamination may result.

Cleaning

Ask the place of purchase to clean inside the monitor at least once a year.
- If dust is left to build up inside the monitor over long periods without being cleaned out, fire or problems with operation may result.
  Please discuss with the place of purchase regarding cleaning costs.

Disconnect the power plug from the wall outlet as a safety precaution before carrying out any cleaning.
- Electric shocks may result if this is not done.

Precautions on handling

1. This monitor weighs 227 lbs. (103 kg).

If the monitor is set up in a location which is not strong enough to bear the monitor's weight, damage may result. If the setting-up location is not strong enough, reinforce the location so that there will be no problems with safety. Moreover, four or more people should be used to carry the monitor.

2. Ambient conditions

Set the monitor up in a place which has an ambient temperature within 50°–95°F (10°–35°C) and an ambient humidity within 30%–80%.
Furthermore, there are ventilation holes in the cabinet and a built-in fan has been provided to prevent excessively high temperatures from building up inside the monitor. Be sure to allow adequate ventilation around the ventilation holes.

3. Do not expose the surface of the CRT to direct sunlight or artificial illumination.

If light falls directly onto the surface of the CRT, it will adversely affect the clearness of the picture.

4. Place the monitor well away from sources of magnetic fields such as magnets and speaker systems.

If the monitor is affected by magnetic fields, it may cause color distortion and picture skew.

5. External degaussing

When using a commercially-available degaussing coil to degauss the monitor, turn off the POWER switch on the monitor first. If degaussing is carried out while the power is still switched on, the geomagnetic correction setting will be canceled and uneven color reproduction may result.

6. If the direction that the monitor faces is changed, be sure to change the landing setting.

If the setting-up direction is changed, the monitor may become affected by geomagnetism.

**7. Do not subject the monitor to strong vibration or shocks.**

These can damage the CRT or cause problems with operation. Take extreme care to prevents vibration and shocks when transporting, setting-up, repairing and adjusting the monitor.

8. Leave the monitor for approximately 30 minutes after turning on the power to obtain the best performance.

Wait for approximately 30 minutes to pass before carrying out daily adjustments and any other necessary adjustments also.

Transporting the monitor

The monitor weighs 227 lbs. (103 kg). When transporting the monitor, have at least 4 people present, and hold the monitor by the side handles.
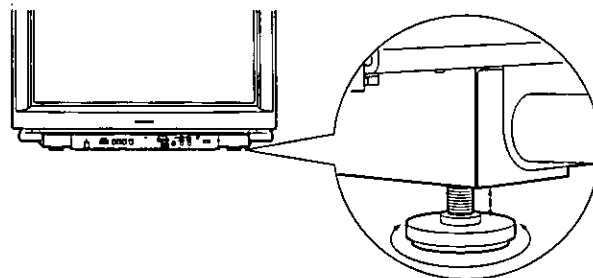

Handle   Handle
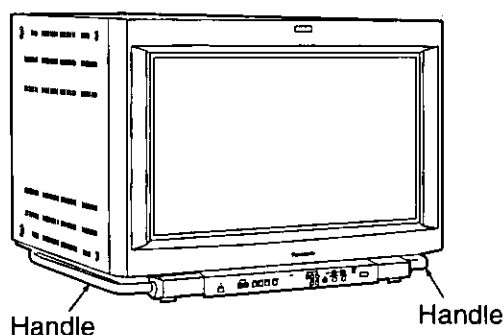
NOTE:
● The monitor's center of gravity is located in the CRT at the front of the monitor, so be aware of this when transporting the monitor.

Adjusting the feet

The four feet which are attached to the base of the monitor can have their heights adjusted. This is useful when setting up the monitor on a surface which is not perfectly level.

3/8″ (10 mm) or less

NOTE:
● If the feet are screwed out too far, they will come out. For safety reasons, do not screw the feet out by any more than 3/8″ (10 mm).

Memory function

The monitor is shipped from the factory with all settings and adjustments at their standard values. These settings and adjustments can be changed as desired to match different types of input signals and signal formats, and the changes can be stored in user memory areas.
The following shows the setting and adjustment functions and the memory storage methods.

Adjustment \ Item	Adjustable item	No. of memory areas	Memory setting method
Landing adjustment	LANDING	1 area	Stored in memory if the LEVEL buttons are used to make adjustment.
Geomagnetic correction	Geomagnetic correction direction selector (LANDING DIRECTION)	2 areas (Separate settings possible for both USER1 and USER2)	
Convergence adjustment	CONVERGENCE (RED, BLUE)	4 areas (Separate underscan and overscan settings possible for 1080i and 480p signal formats)	After adjusting, press the CONVERGENCE WRITE button to store the adjustment.
Color temperature adjustment	White balance (W/B LEVEL)	1 area	After adjusting, press the USER DATA WRITE button to store the adjustment.
Picture adjustments	● BRIGHTNESS ● CONTRAST ● CHROMA	2 areas (Separate settings possible for both LINE A and LINE B)	After adjusting, press the PRESET WRITE button to store the adjustment.
	● APERTURE		Stored in memory if the LEVEL buttons are used to make adjustment.
Image adjustment	Position (FRAME POSITION)	2 areas (Separate settings possible for 1080i and 480p)	Stored in memory if the arrow buttons (POSITION/ CONVERGENCE) are used to make adjustment.
Other adjustments	● Synchronizing sig-nal selection (SYNC) ● YP$_b$P$_R$/RGB signal selection (SIGNAL) ● 2 HDTV format selection	2 areas (Separate settings possible for both LINE A and LINE B)	Stored in memory if changed.

Name and function of each front panel part
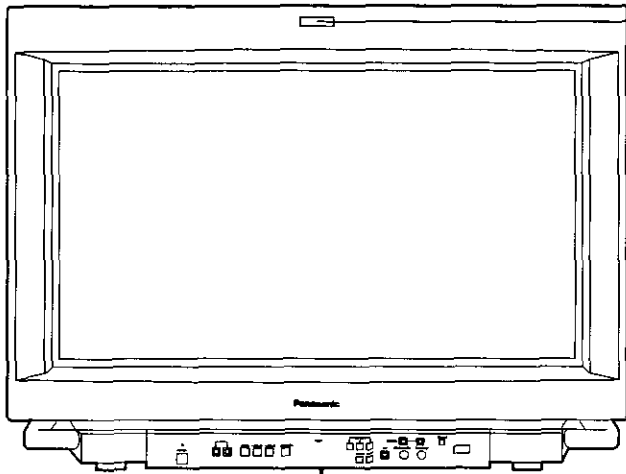
Tally indicator (page 8)
This indicator shows which monitor the signal has been switched to, and which monitor should be monitored.
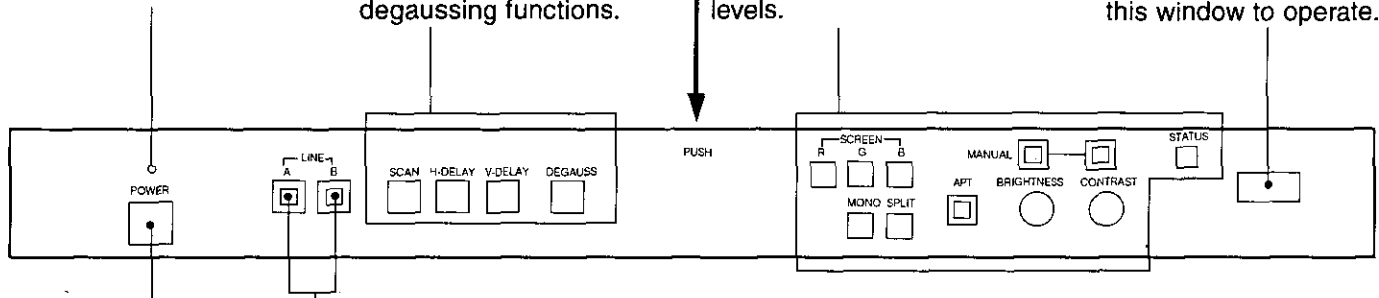
Front panel

Power indicator
(page 8)
This indicator illuminates when the POWER switch on the monitor is turned on.

Image control part
(page 9)
This part is used to carry out scan size selection, blanking display and degaussing functions.

Picture adjustment part
(page 10-14)
This part is used to carry out brightness and contrast adjustments and to check the image and quality levels.

Remote control unit signal receptor
When using the remote control unit in wireless mode, point it toward this window to operate.

```
POWER    ┌LINE┐         SCAN  H-DELAY  V-DELAY  DEGAUSS    PUSH   ┌SCREEN┐           MANUAL            STATUS
          A   B                                                    R  G  B
                                                                                  APT  BRIGHTNESS  CONTRAST
                                                                  MONO SPLIT
```

POWER switch
(page 8)
This switch is used to turn the monitor power on and off.

LINE A/B select switches
(page 8)
These switches are used to select the signal to be input to the monitor.


Opening the control tray
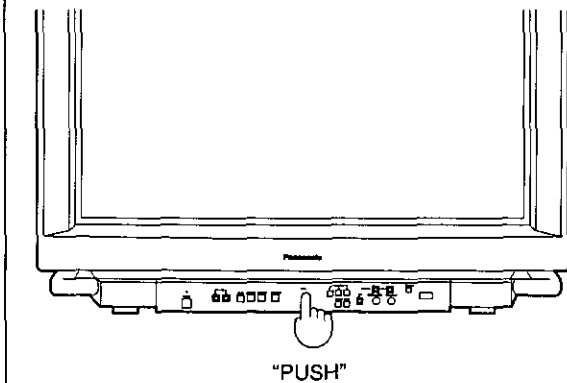
- Gently press the center of the part marked "PUSH". The tray will then pop out slightly, and you can then pull it out further.
- To close the tray, press the part marked "PUSH" again with your finger until the tray clicks shut.

"PUSH"
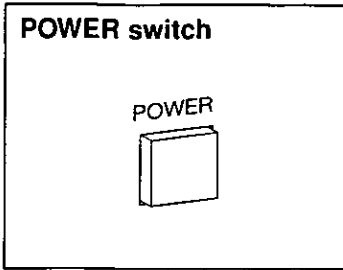
| **POWER switch**
|
| POWER |

This switch is used to turn the monitor power on and off.
● When the switch is pushed in, the power turns on, and both the POWER indicator and the tally indicator illuminate with a green color. The selected input signal also appears on the screen.
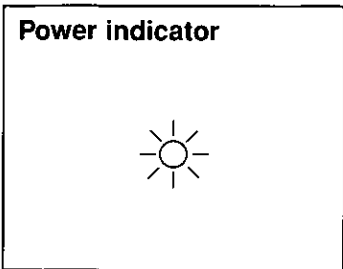
| **Power indicator** |

This indicator illuminates with a green color when the monitor power is turned on.

| **Tally indicator** |
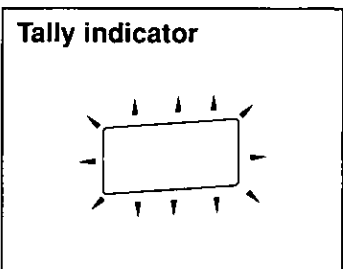
When several monitors are being used together, this indicator can be used to show which monitor the signal has been switched to, and which monitor should be monitored. (At the time of shipment from the factory, this indicator is set to illuminate with a green color when the monitor power is turned on.
● The TALLY button on the remote control unit can be used to change the color of any tally indicators to green or red as desired.

| **LINE A/B select switches**
|
| LINE
| A   B |
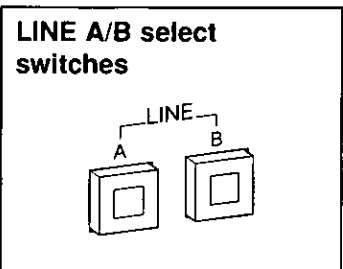
These switches are used to select which signal is to be input to the monitor.
● Switch A ····When this switch is pressed, the signal from the source connected to the LINE A input terminals at the rear of the monitor is displayed.
● Switch B ····When this switch is pressed, the signal from the source connected to the LINE B input terminals at the rear of the monitor is displayed.

NOTE:
The following settings must be made for each respective input signal which is input to the monitor via the LINE A/B input terminals.
● RGB/YP$_B$P$_R$ picture signal selection ············Refer to page 18 for details.
● 1080i/480p/AUTO format selection ···········Refer to page 18 for details.
● Synchronizing signal selection ················Refer to page 19 for details.

(Image control part)
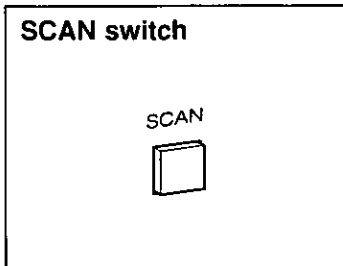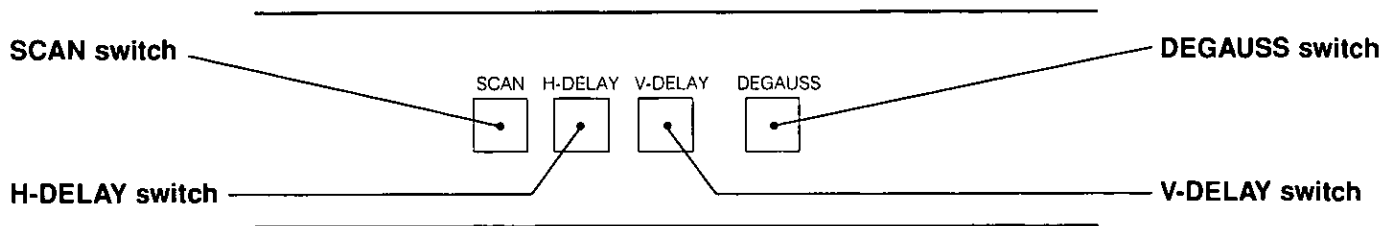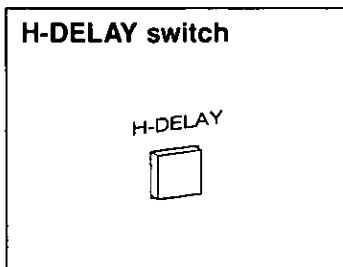
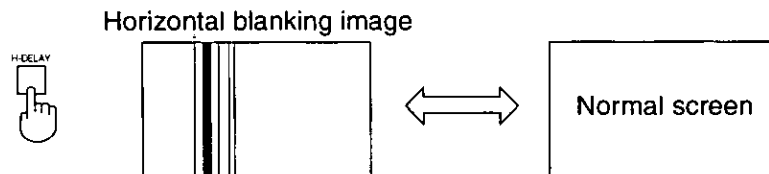|	
SCAN switch SCAN	This switch is used to change the scanning size. ● The screen changes between an underscan (2%) screen and an overscan (3%) screen each time this switch is pressed. **NOTE:** ● If the scanning size is changed after the convergence has been adjusted without pressing the CONVERGENCE WRITE button, the adjustment data will be lost.

H-DELAY switch

H-DELAY

This switch is used to inspect the horizontal blanking interval.
● The screen changes between a horizontal blanking image and a normal screen such as shown below each time this switch is pressed.

Horizontal blanking image

H-DELAY ⟺ Normal screen

NOTE: ● A normal screen is always displayed when the power is turned on.

V-DELAY switch
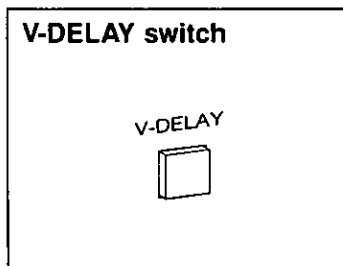
V-DELAY

This switch is used to inspect the vertical blanking interval.
● The screen changes between a vertical blanking image and a normal screen such as shown below each time this switch is pressed.

Vertical blanking image

V-DELAY ⟺ Normal screen
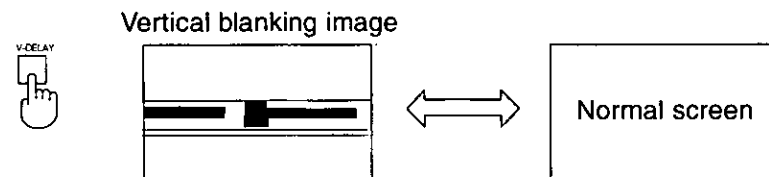
NOTE: ● This switch can be used together with the H-DELAY switch to produce a crossed pulse image such as the one shown at right.
● A normal screen is always displayed when the power is turned on.

Crossed pulse blanking image

DEGAUSS switch
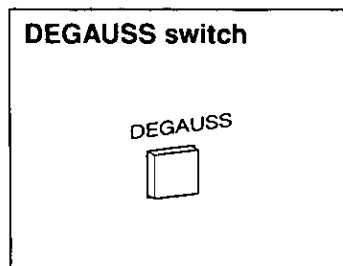
DEGAUSS

This switch is used to degauss the CRT.
● The CRT is automatically degaussed when the monitor power is turned on, but if the monitor is turned while the power is on, the CRT can become magnetized and color distortion can result. If this happens, press this switch while the monitor power is turned on.
NOTE:
● Make sure that the control tray at the bottom of the monitor is closed when using this switch. If it is used while the control tray is open, color distortion may occur as a result of magnetization when the control tray is pushed in.
● After the DEGAUSS switch has been pressed once or the power has been turned on, the DEGAUSS switch operation will be deactivated for five minutes. The DEGAUSS switch can be used again after five minutes have passed.

(Picture adjustment part)

SCREEN switches

MONO switch

SPLIT switch
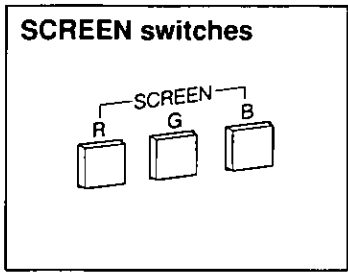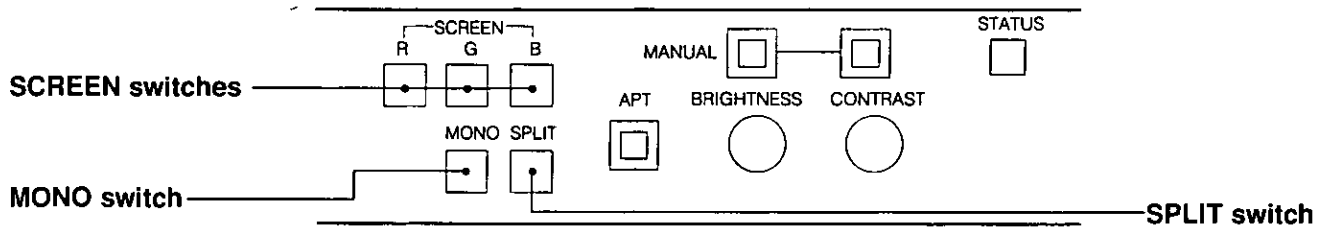
SCREEN switches

These switches are used to turn the screen voltages on and off.
Each time one of the R, G or B switches is pressed, the screen voltage for the red, green or blue color turns on and off. However, all three colors cannot be off simultaneously.
● If one switch is turned on, a two-color composite screen will appear.
● If two switches are turned on, a single-color screen (either red, green or blue) will appear.
● If two switches are already on and the remaining switch is then pressed, the screen will return to the normal screen.

NOTE: ● A normal screen is always displayed when the power is turned on.

MONO switch
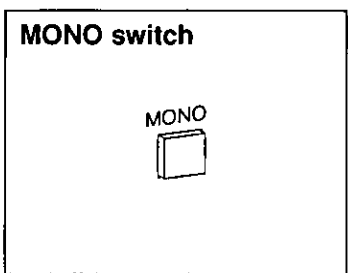
This switch is used to force a black-and-white image to appear.
● The screen switches between black-and-white (MONO: ON) and color (MONO: OFF) each time the switch is pressed.
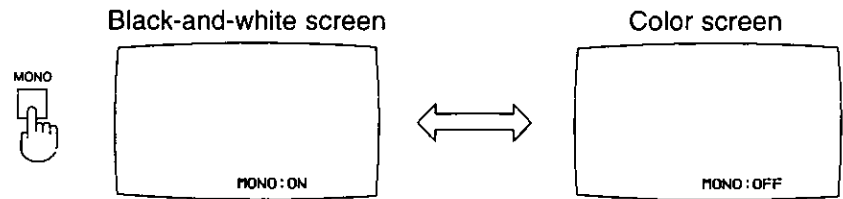
(The on-screen display will disappear approximately 3 seconds after the switch is released.)
NOTE: ● A color screen is displayed when the power is turned on.
● When set to black-and-white (MONO: ON), a black-and-white picture will always appear, even if a color signal is being input.
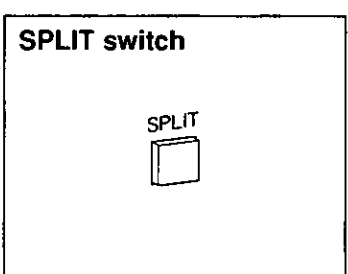
SPLIT switch

This switch is used to create a split screen that enables you to check the white balance easily.
● The screen changes as shown below each time this switch is pressed. When the switch is set to ON (SPLIT: ON), the lower half of the screen appears in black-and-white (monochrome).
In addition, when the switch is set to OFF (SPLIT: OFF), the screen can appear with markers or without markers.
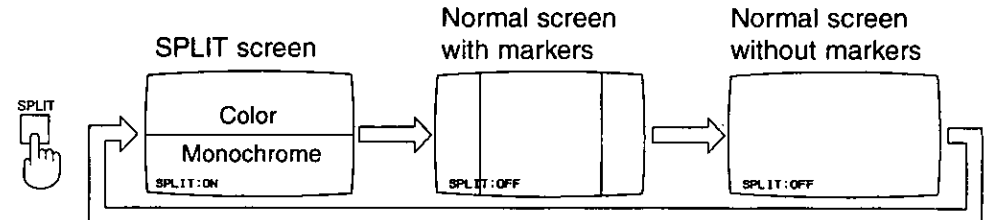
(The on-screen display will disappear approximately 3 seconds after the switch is released.)
NOTE: ● A normal screen is always displayed when the power is turned on.
● When a white object filmed by a camera is displayed on the screen and the upper and lower colors in the split screen are the same, then it indicates that the camera's white balance is set correctly.
● Markers are used to indicate the display area if the signal currently being input is displayed on a monitor with a 4:3 aspect ratio.

(Picture adjustment part)

MANUAL switches

STATUS switch

CONTRAST control knob

APT switch

BRIGHTNESS control knob

APT switch

APT
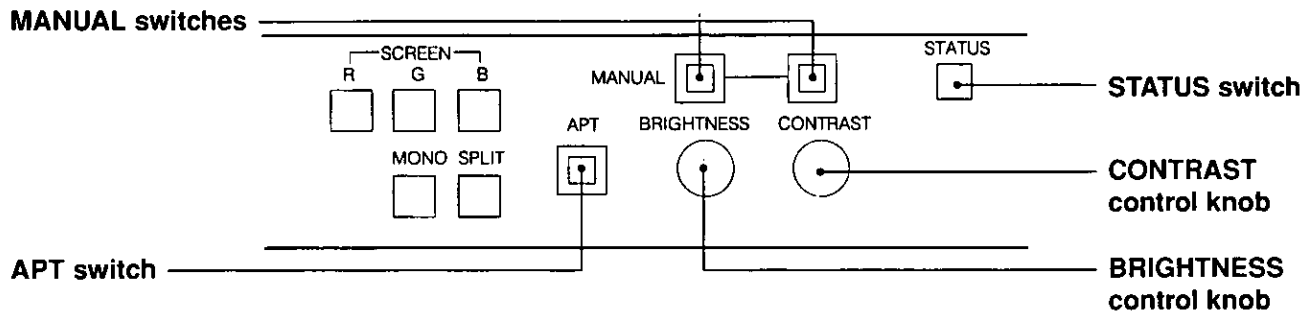
This switch is used to turn the picture aperture correction function on and off.
- The function turns on and off each time the switch is pressed.
- When the switch is on, the indicator which is built into the switch illuminates with a green color.

NOTE:
- The adjustment functions for aperture characteristics (effectiveness level and boost frequency) are available on the drawer. Refer to page 34 for details.

MANUAL switches

MANUAL

These switches are used to switch to manual mode for adjusting the BRIGHTNESS and CONTRAST settings.
- The mode switches between manual mode and the preset mode each time a switch is pressed.

NOTE:
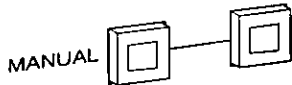- When one of these switches is pressed, the indicator which is built into the switch illuminates with a green color. The BRIGHTNESS control knob and the CONTRAST control knob below each respective switch can then be used to adjust the setting in manual mode.
- The preset mode value can be changed between the standard value which was set at the time of shipment from the factory and the value which has been set in manual mode. Refer to the following page and to "PRESET INITIAL button" on page 20 and "PRESET WRITE button" on page 19 for details.

BRIGHTNESS control knob

BRIGHTNESS

This control knob is used to adjust the BRIGHTNESS setting.
- Adjustment using the BRIGHTNESS control knob is possible when the indicator of the MANUAL switch which is directly above the knob is illuminated.

BRIGHTNESS

DARK   BRIGHT
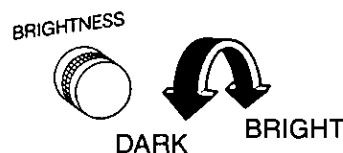
When turned in the direction of "BRIGHT", the picture becomes brighter.
When turned in the direction of "DARK", the picture becomes darker.

NOTE:
- The adjustment range is 0–200. The STATUS switch can be used to display the adjustment level on-screen.
- The adjustment value is stored in memory as a manual adjustment value.

CONTRAST control knob	This control knob is used to adjust the CONTRAST setting.

CONTRAST control knob

CONTRAST

This control knob is used to adjust the CONTRAST setting.
● Adjustment using the CONTRAST control knob is possible when the indicator of the MANUAL switch which is directly above the knob is illuminated.
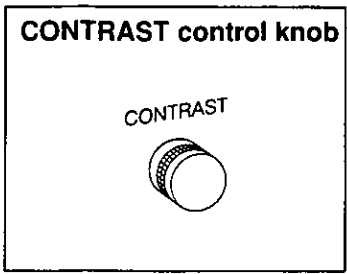
CONTRAST

WEAK STRONG

When turned in the direction of "WEAK", the contrast becomes weaker. When turned in the direction of "STRONG", the contrast becomes stronger.
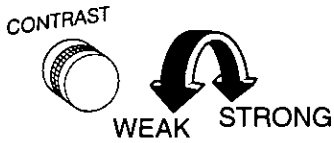
NOTE: ● The adjustment range is 50–200. The STATUS switch can be used to display the adjustment level on-screen.
● The adjustment value is stored in memory as a manual adjustment value.

BRIGHTNESS and CONTRAST adjustment procedure

MANUAL

Press one of the MANUAL switches to turn on adjustment mode (indicator illuminates).

BRIGHTNESS
DARK ◯ BRIGHT
Turn the BRIGHTNESS control knob to adjust the brightness.

CONTRAST
WEAK ◯ STRONG
Turn the CONTRAST control knob to adjust the contrast.

To save the setting as the preset value (inside the control tray)

WRITE
Press the PRESET WRITE button.

NOTE: ● Before pressing the PRESET WRITE button, check the setting for the CHROMA MANUAL button which is inside the control tray. If the indicator of the CHROMA MANUAL button is illuminated, the manual setting value for the chroma adjustment will also be saved as the preset value.

STATUS switch

STATUS
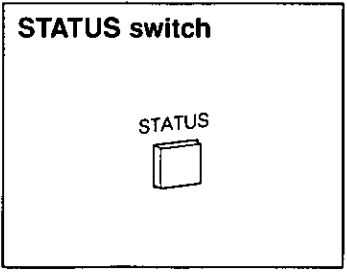
This switch is used to display adjustment data on the screen.
● The on-screen display details change as shown below each time this switch is pressed.

Picture data display

```
LINE  A:RGB      TEMP 6500K
SYNC  :HD/VD
SYSTEM:1080i  SCREENS:RGB
------------DATA---------
          INIT PRESET MANU
CNTRST    100    100    90
BRIGHT    100    100    92
CHROMA    100    100   100

APERTURE OFF MID       10
SPLIT:ON      MONO:ON
```

White balance data display

```
        GAIN           BIAS
R:1722          R:0060
G:1736          G:0060
B:1624          B:0100
```

Geomagnetic correction data display

```
        LANDING ADJ
  L1:-014 L1:+047
  L2:+028 L1:-011
  L3:+032 L1:+061
  L4:+000 L1:-017
--------------------
X:+000  Y:+000 Z:+000
        USER1
```

Normal screen

NOTE:
● All settings and adjustments can be carried out while the on-screen displays are appearing.
● The on-screen display will disappear by itself after approximately 30 seconds.
● Refer to the following page for details on the on-screen display contents.

On-screen display contents using the STATUS switch

Picture data display

Input select condition display ⎯⎯⎯

HDTV format setting condition display ⎯⎯

SPLIT switch setting condition display ⎯⎯

```
LINE  A:RGB        TEMP  6500K
SYNC    :HD/VD
SYSTEM :1080 i  SCREENS:RGB
----------DATA----------
          INIT  PRESET  MANU
CNTRST    100    100      90
BRIGHT    100    100      92
CHROMA    100    100     100

APERTURE  OFF  MID      10
SPLIT:ON        MONO:ON
```

⎯ Color temperature selection condition display
⎯ Synchronizing signal selection condition display
⎯ SCREEN switch selection condition display
⎯ Contrast adjustment level display (50–200)
⎯ Brightness adjustment level display (0–200)
⎯ Chroma adjustment level display (50–300)
⎯ Aperture setting and adjustment level display (1 db–10 dB)
⎯ MONO switch setting condition display

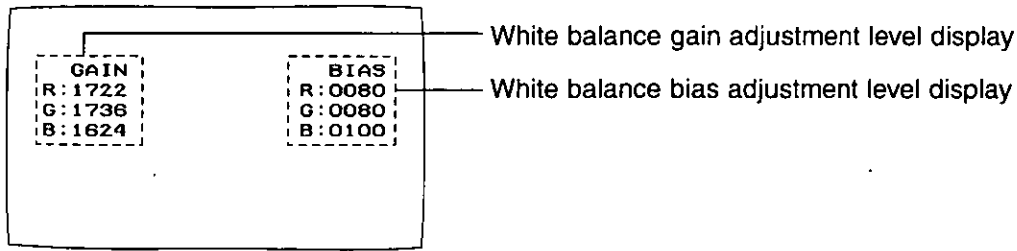The adjustment level values are displayed separately for the following items:
- "INIT" ....Standard data value at the time of shipment from the factory
- "PRESET"...................................Preset adjustment value
- "MANU".....................................Manual adjustment value

NOTE: • The relationships between the signal name displayed and the signal details are as follows.

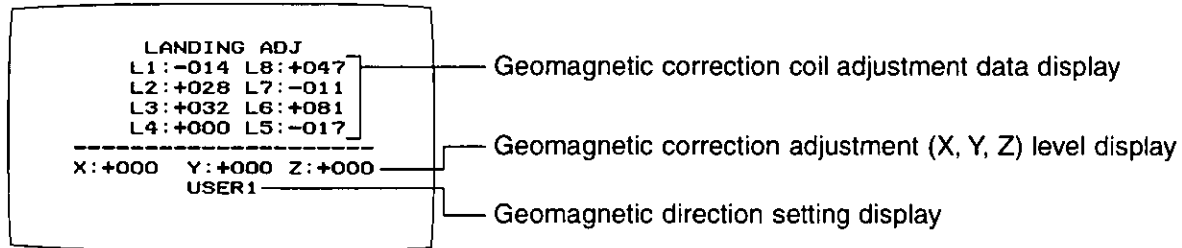|	
"LINE A"..	Signal from the source connected to the LINE A input terminals
"LINE B"..	Signal from the source connected to the LINE B input terminals
"RGB"	RGB signal
"YP$_B$P$_R$"	YP$_B$P$_R$ signal
"PLUGE"...	Internal pluge signal
"WINDOW-H"................................	Internal window signal (100%)
"WINDOW-L"..................................	Internal window signal (35%)
"CROSS HATCH-1".......................	Internal crosshatch signal (coarse)
"CROSS HATCH-2".......................	Internal crosshatch signal (fine)
"GRAY SCALE"	Internal grayscale signal
"FULL WHITE"..............................	Internal full white signal
"SYNC: LINE"	Synchronizing signal separated from video signal
"SYNC: COMPO SYNC"................	External synchronizing signal from source connected to the COMPO SYNC terminal
"SYNC: HD/VD"............................	External synchronizing signal from source connected to the HD and VD terminals
"SYSTEM: 1080i"..........................	1080i format signal
"SYSTEM: 480p"	480p format signal

White balance data display

```
┌─────────────────────────────────┐
│   ┌──────┐         ┌───────┐     │
│   ┌─GAIN─┐         ┌─BIAS──┐     │
│   │R:1722│         │R:0080 │     │
│   │G:1736│         │G:0080 │     │
│   │B:1624│         │B:0100 │     │
│   └──────┘         └───────┘     │
│                                  │
│                                  │
│                                  │
└─────────────────────────────────┘
```
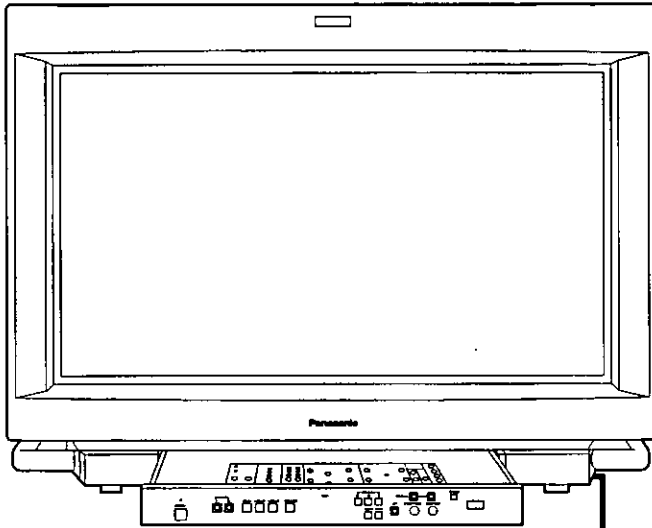———— White balance gain adjustment level display
———— White balance bias adjustment level display

● Values for R, G and B indicate the current adjustment level values for each color.

Geomagnetic correction data display

```
┌──────────────────────────────────┐
│         LANDING ADJ                │
│         L1:-014 L8:+047            │
│         L2:+028 L7:-011            │
│         L3:+032 L6:+081            │
│         L4:+000 L5:-017            │
│        ──────────────────────     │
│        X:+000  Y:+000 Z:+000       │
│               USER1                │
│                                    │
└──────────────────────────────────┘
```
———— Geomagnetic correction coil adjustment data display

———— Geomagnetic correction adjustment (X, Y, Z) level display

———— Geomagnetic direction setting display

● The meaning of each item of display data is as follows:
"L1–L8" .... Adjustment data for each geomagnetic coil
"X" .... Adjustment data for the horizontal geomagnetic correction coil
"Y" .... Adjustment data for the vertical geomagnetic correction coil
"Z" .... Adjustment data for the longitudinal geomagnetic correction coil

● The following settings can appear in the geomagnetic direction setting display.
"USER 1" .... User correction data
"USER 2" .... User correction data
"EAST" .... Geomagnetism in the easterly direction
"SOUTH-EAST" .... Geomagnetism in the south-easterly direction
"SOUTH" .... Geomagnetism in the southerly direction
"SOUTH-WEST" .... Geomagnetism in the south-westerly direction
"WEST" .... Geomagnetism in the westerly direction
"NORTH-WEST" .... Geomagnetism in the north-westerly direction
"NORTH" .... Geomagnetism in the northerly direction
"NORTH-EAST" .... Geomagnetism in the north-easterly direction

Name and function of parts inside the control tray

FRAME POSITION adjustment part
(pages 21 and 22)
This part can be used to return the screen position to the factory default setting and to set the picture position adjustment mode.

LANDING adjustment part
(pages 23-27)
This part can be used to adjust the geomagnetic correction in accordance with the direction that the monitor is facing.
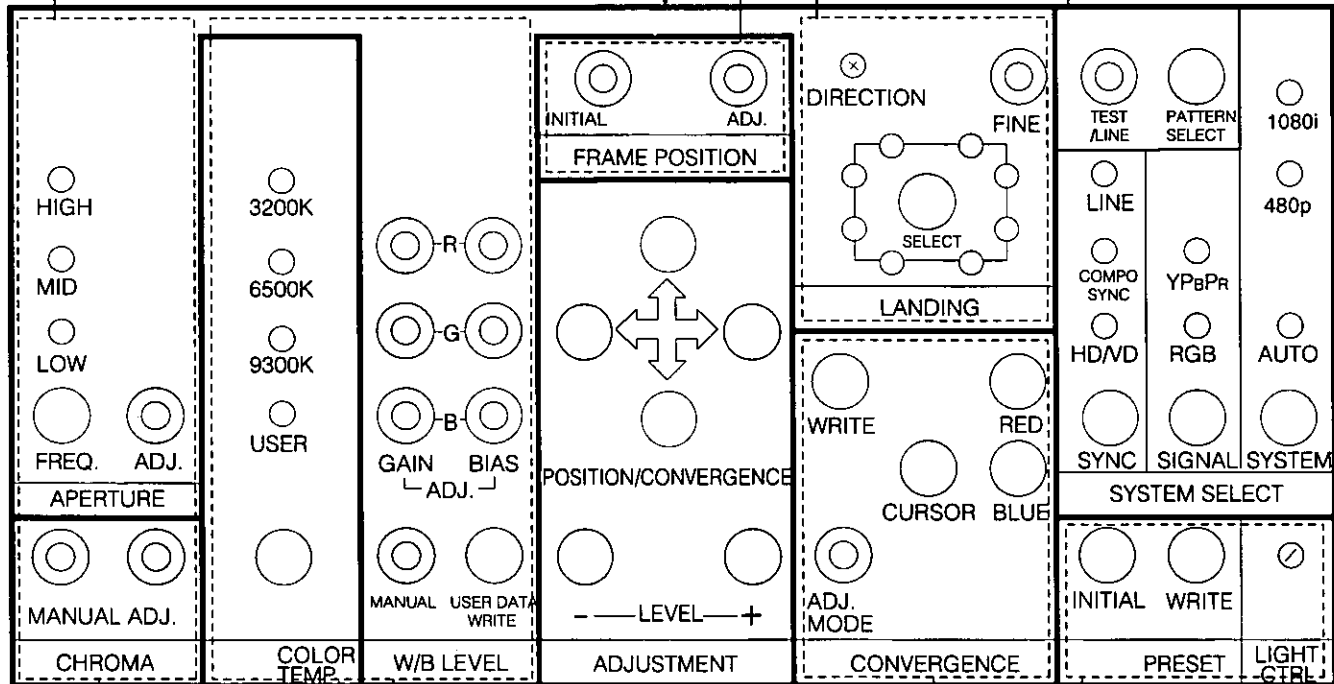
SYSTEM SELECT part
(pages 16-19)
This part can be used to select the input signal format and the synchronizing signal type in accordance with the signal being input.

Inside of control tray

APERTURE adjustment part (page 34)
This part can be used to select the boost frequency for aperture correction and to turn the adjustment mode on and off.

CHROMA adjustment part
(page 33)
This part can be used to change the chroma level and to turn the chroma adjustment mode on and off.

Cursor movement/level adjustment part
(pages 20 and 21)
This part can be used to move the cursor, change adjustment values and move the screen position in the various adjustment modes.

PRESET/LIGHT control part
(pages 19-20)
This part can be used to store picture adjustment data as preset values, to return settings to the factory default values and to change the brightness of the front indicators.
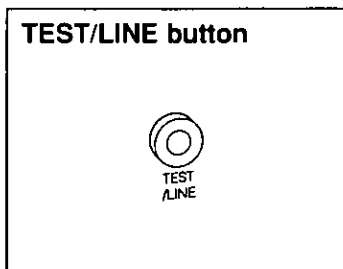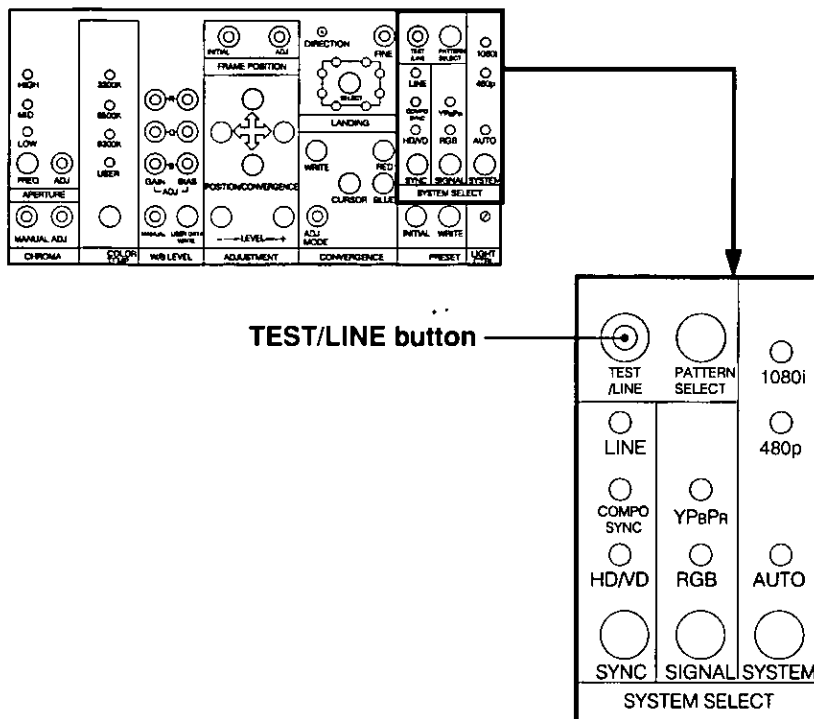
White balance adjustment part
(pages 35-38)
This part can be used to change the color temperature and to adjust the user mode color temperature.

CONVERGENCE adjustment part
(pages 28-32)
This part can be used to adjust the convergence.

(SYSTEM SELECT adjustment part)
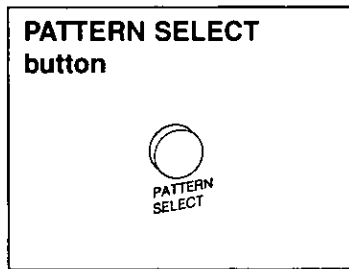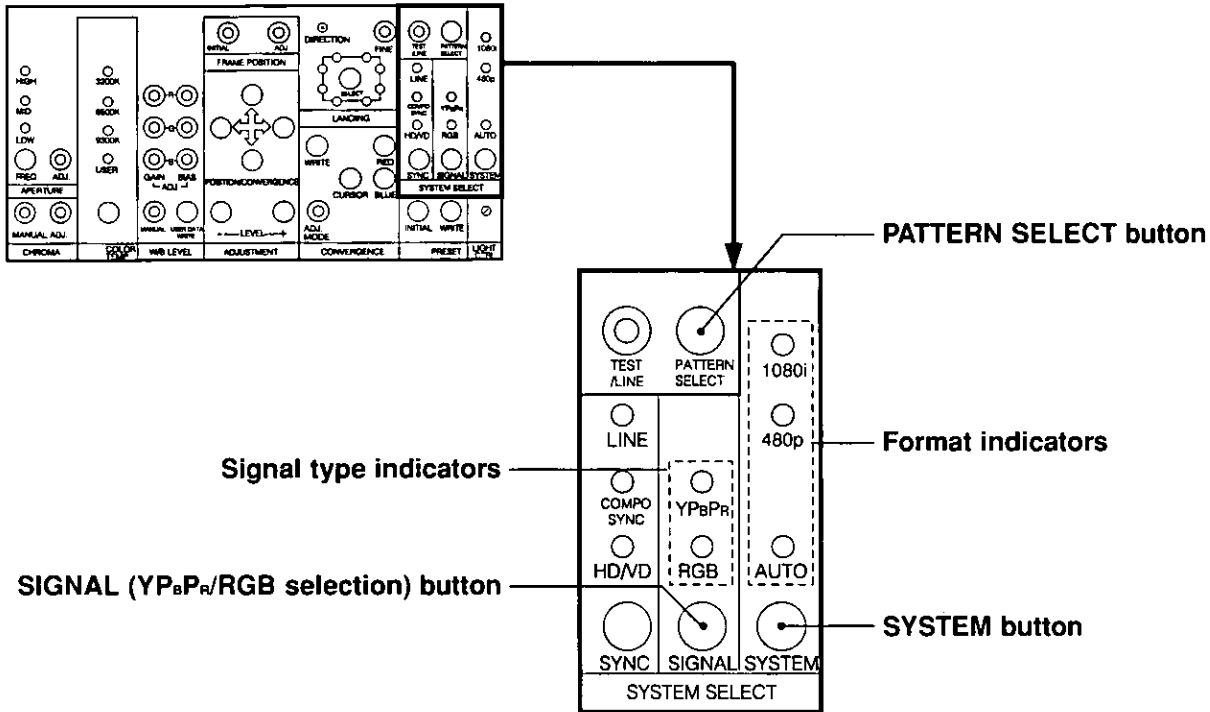

TEST/LINE button

TEST/LINE button

- This button is used to switch between LINE input signals (A/B) and the internal test pattern signals.
- The signal changes between the LINE input signal and the test pattern signal each time the button is pressed. The indicator which is built into the button illuminates when the test pattern signal is selected.

Internal test pattern signal   LINE input signal
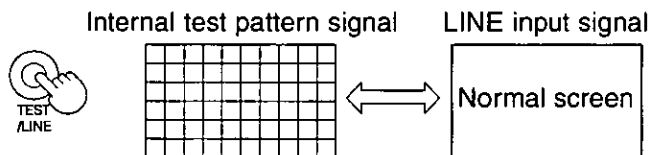
NOTE:
- The internal test pattern which corresponds to the format selected by means of the SYSTEM button is displayed.
- When "AUTO" has been selected by means of the SYSTEM button, the internal test pattern displayed is also set in accordance with the input format automatically selected by the system.
- If the format is changed by pressing the SYSTEM button while an internal test pattern is being displayed, the test pattern will also change to match the new format selected.
- If the internal test pattern is cleared and the LINE input signal is displayed instead, the format will return to the one being used before the internal test pattern was displayed, regardless of the format which was selected by the SYSTEM button while the internal test pattern was being displayed.
- If the format is changed by means of external control while an internal test pattern is being displayed, the internal test pattern will not change to match the new format.
- LINE input is always selected when the power is turned on.
- The following functions cannot be used while an internal test pattern is being displayed.
    LINE A/B selection (LINE A/B)
    YP₈P₈/RGB selection (SIGNAL)
    Synchronizing signal selection (SYNC)
    AUTO selection using the SYSTEM button
- While an internal test pattern is being displayed, the actual pattern displayed can be selected from among 7 different patterns using the PATTERN SELECT button. Refer to the following page for details.
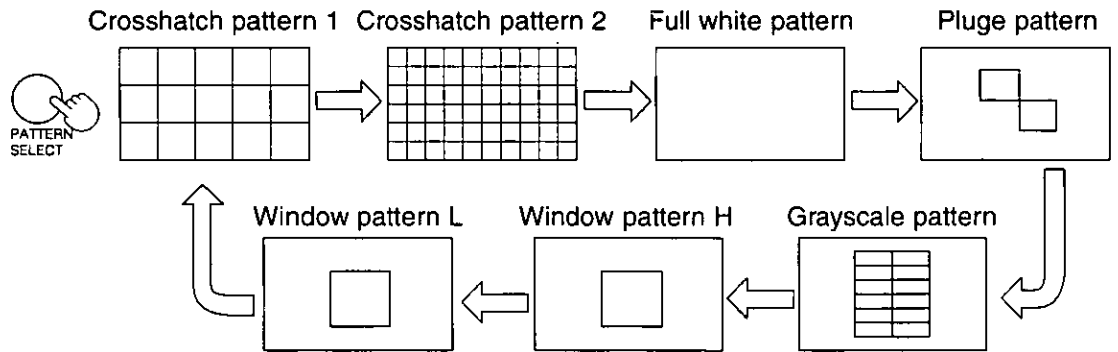
— 16 —

(SYSTEM SELECT adjustment part)

PATTERN SELECT button

Signal type indicators

SIGNAL (YP₈Pₐ/RGB selection) button

Format indicators

SYSTEM button

SYSTEM SELECT
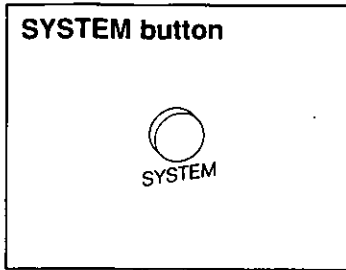

PATTERN SELECT button	This button is used to select the internal test pattern. It only works when the TEST/LINE button has been pressed so that an internal test pattern signal is selected.

● The internal test pattern screen changes as shown below each time this button is pressed.

Crosshatch pattern 1   Crosshatch pattern 2   Full white pattern   Pluge pattern

Window pattern L   Window pattern H   Grayscale pattern

● The details and purpose of each internal test pattern are as follows.

Crosshatch pattern 1 ....Geometric adjustment and convergence adjustment
Crosshatch pattern 2 ....Geometric adjustment and convergence adjustment
Full white pattern (100% white)..................Landing adjustment
Pluge pattern (±4%) ....Brightness adjustment
Grayscale pattern (0, 25, 50, 75, 100%) ....Contrast adjustment and white balance adjustment
Window pattern H (100%) ....White balance adjustment
Window pattern L (35%)..............................White balance adjustment

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SYSTEM button

This button is used to select the signal format in accordance with the HDTV format signal from the source connected to the LINE input terminals.

● The signal format selected changes as follows each time the button is pressed. An indicator will illuminate to show the currently-selected format.
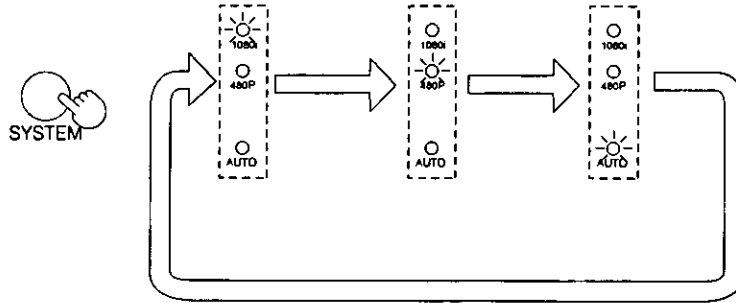
● The following signals can be input for each signal format.
"1080i"........................1080/60 interlaced signals   16:9
"480p"........................480/59.94 non-interlaced signals 16:9
"AUTO" ....Automatically selected from the above two formats (1080i or 480p)

NOTE: ● "AUTO" cannot be selected while an internal test pattern is being displayed.
● If the format is changed while an internal test pattern is being displayed, this change will not take effect if a LINE input signal is then received.
● If the SYSTEM button is pressed to change the selected format after the convergence has been adjusted but without pressing the CONVERGENCE WRITE button, the adjustment data will be lost.
● If an incorrect setting is made using this button, it might not be possible to obtain a normal picture on the monitor.

SIGNAL (YP$_B$P$_R$/RGB selection) button
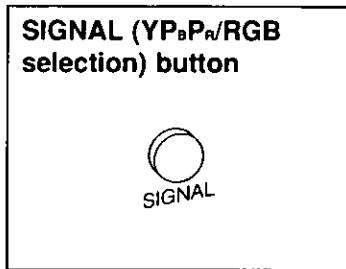
This button is used to select the picture signal type in accordance with the signal being input from the source connected to the LINE input terminals.

● The picture signal type changes as shown below each time the button is pressed. An indicator will illuminate to show the currently-selected signal type.
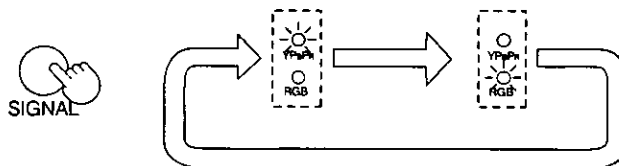
● The signals which can be received for each signal type are given below.
"YP$_B$P$_R$" ....Luminance/color difference signal type: 0.7 Vp-p
                                Matrix ratio   1080i: SMPTE/BTA
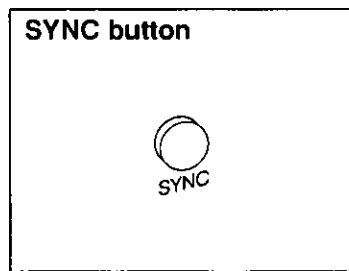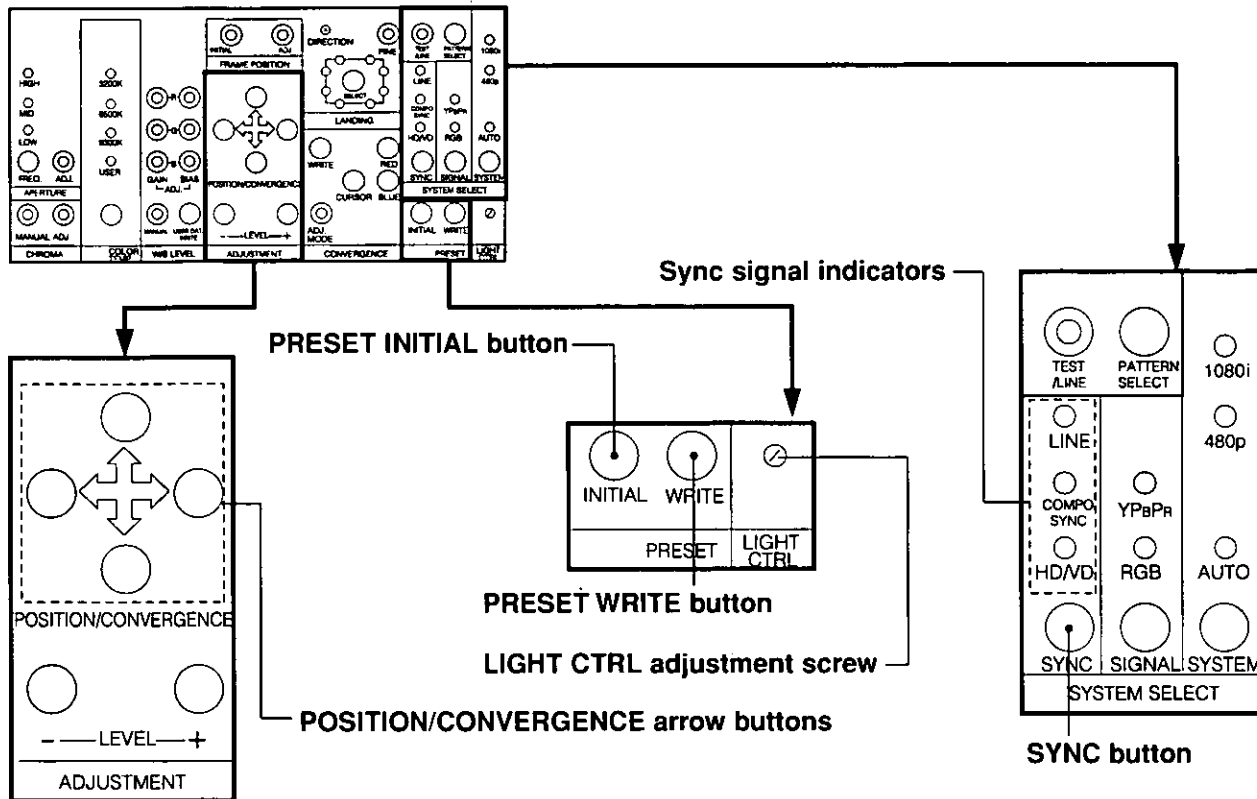   480p: CCIR
"RGB" ....Primary color signal type: 0.7 Vp-p

NOTE: ● This selection is not possible while an internal test pattern is being displayed.
● If an incorrect setting is made using this button, it might not be possible to obtain a normal picture on the monitor.

(SYSTEM SELECT adjustment part, PRESET/LIGHT adjustment part, Cursor movement/level adjustment part)

Sync signal indicators

PRESET INITIAL button

PRESET WRITE button

LIGHT CTRL adjustment screw

POSITION/CONVERGENCE arrow buttons

POSITION/CONVERGENCE

— LEVEL —+

ADJUSTMENT

SYNC button

SYNC button

This button is used to select the synchronizing signal input circuit to match the type of synchronizing signal being input.

● The synchronizing signal input circuit changes as shown below each time the button is pressed. An indicator will illuminate to show the currently-selected synchronizing signal type.
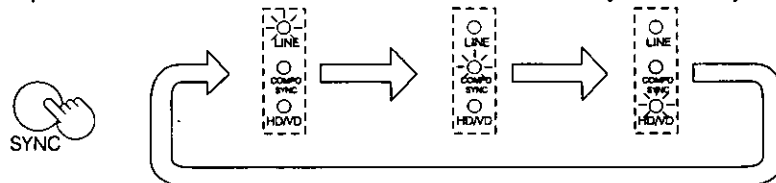
● The following types of synchronizing signal input can be selected.

"LINE" .... Composite sync signal of brightness (Y) signal or green (G) signal input via the LINE A/B input terminals

"COMPO SYNC" ..... Composite sync signal input via the COMPO SYNC input terminal for external synchronization (EXT SYNC)

"HD/VD" .... Separate sync signal input via the HD/VD input terminals for external synchronization (EXT SYNC)

NOTE: ● When an internal test pattern is being displayed, the internally-generated synchronizing signal takes priority, and the SYNC button does not operate.
● If an incorrect selection is made using this button, the synchronization of the picture displayed will be distorted.

PRESET WRITE button
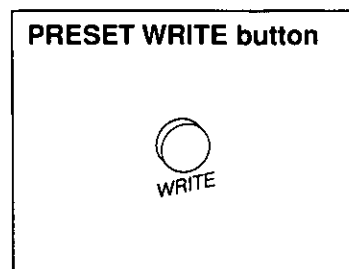
This button is used to store the adjustment values for BRIGHTNESS, CONTRAST and CHROMA adjustment settings into memory as preset values.

● The current screen condition is saved into memory as preset values each time this button is pressed.
If the STATUS switch has been pressed so that an on-screen display is currently being displayed on the monitor screen, the values shown in green in the "MANU" column will be written to the corresponding places in the "PRESET" column to the left, and all items in the "PRESET" column will be displayed in green.
● This button only works when one of the MANUAL switch indicators on the front panel or CHROMA MANUAL switch indicator in the control tray is illuminated.
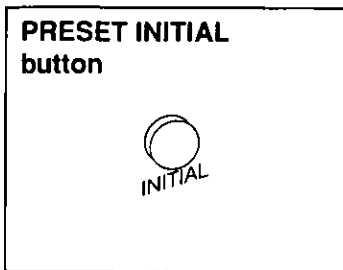
| PRESET INITIAL button | This button is used to restore the preset data for the picture adjustment which has been stored in memory to the standard setting values which were made at the time of shipment from the factory. |

PRESET INITIAL button

○
INITIAL

This button is used to restore the preset data for the picture adjustment which has been stored in memory to the standard setting values which were made at the time of shipment from the factory.

● When this button is pressed, the picture is displayed on the screen in the condition with the factory default setting values active. If the PRESET WRITE button is then pressed, all of the preset data is replaced with the factory default setting values.

NOTE: ● If the MANUAL switches or the CHROMA MANUAL switch is pressed at this time without pressing the PRESET WRITE button, the mode for resetting values to the factory default setting values will be canceled.

LIGHT CTRL adjustment screw
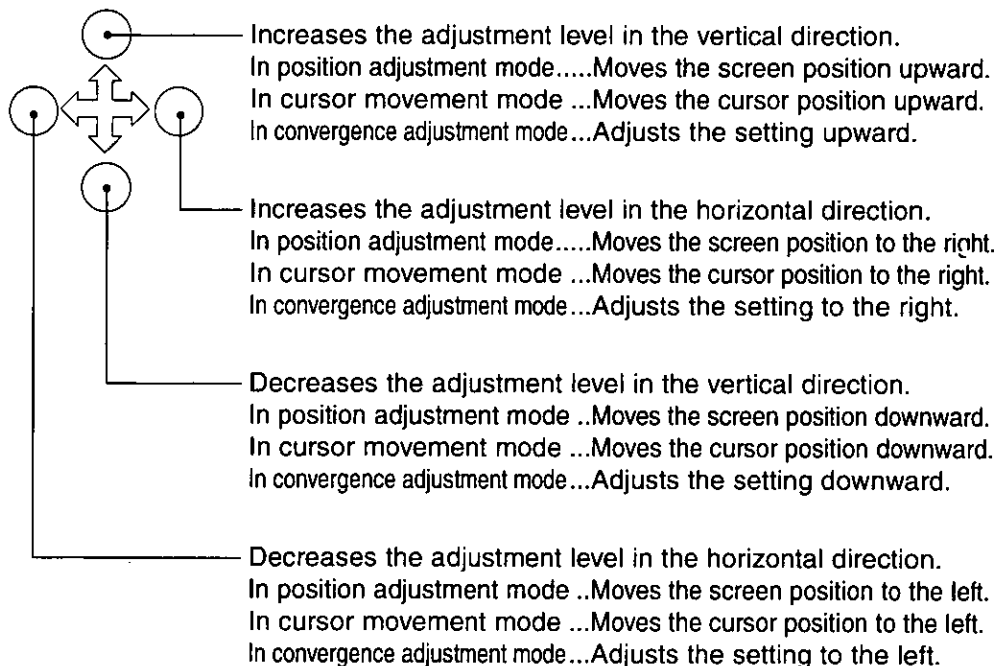
⊘
LIGHT
CTRL
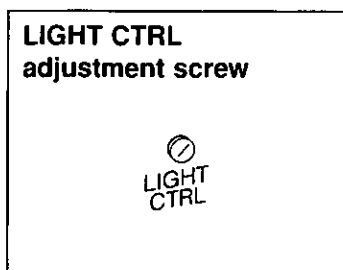
This screw is used to adjust the brightness of the indicators on the front panel of the monitor.
Turn the screw to adjust the brightness to the desired level.

DARK ▯ BRIGHT

● Use a flat-tipped screwdriver to adjust the setting of the screw. If the screw is turned in the BRIGHT direction, the illumination will become brighter, and if it is turned in the DARK direction, the illumination will become darker.

POSITION/CONVER-GENCE arrow buttons

POSITION/CONVERGENCE
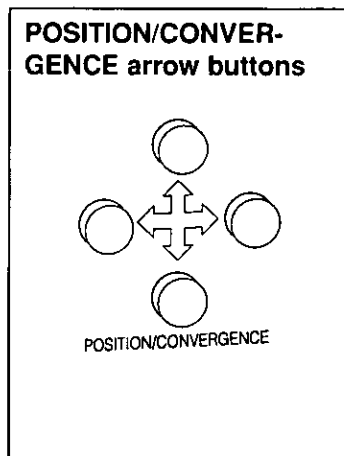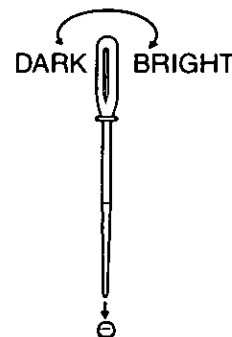
These buttons are used to move the screen position while in position adjustment mode and convergence adjustment mode, and are also used to make actual adjustments to the convergence.

● After the respective adjustment mode has been activated, use these buttons to carry out adjustments as given below.

Increases the adjustment level in the vertical direction.
In position adjustment mode.....Moves the screen position upward.
In cursor movement mode ...Moves the cursor position upward.
In convergence adjustment mode...Adjusts the setting upward.

Increases the adjustment level in the horizontal direction.
In position adjustment mode.....Moves the screen position to the right.
In cursor movement mode ...Moves the cursor position to the right.
In convergence adjustment mode...Adjusts the setting to the right.

Decreases the adjustment level in the vertical direction.
In position adjustment mode ..Moves the screen position downward.
In cursor movement mode ...Moves the cursor position downward.
In convergence adjustment mode...Adjusts the setting downward.

Decreases the adjustment level in the horizontal direction.
In position adjustment mode ..Moves the screen position to the left.
In cursor movement mode ...Moves the cursor position to the left.
In convergence adjustment mode...Adjusts the setting to the left.

NOTE: ● If any two of the four buttons are pressed simultaneously, the button which was pressed second will take effect.
● If a button is pressed continuously, the setting changes continuously.

(LEVEL adjustment part, FRAME POSITION adjustment part)

FRAME POSITION ADJ. button

FRAME POSITION INITIAL button

LEVEL adjustment buttons

**LEVEL adjustment buttons**
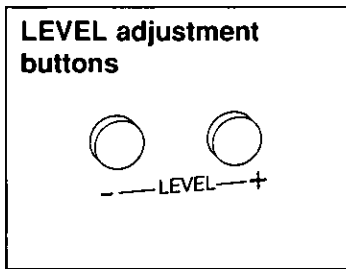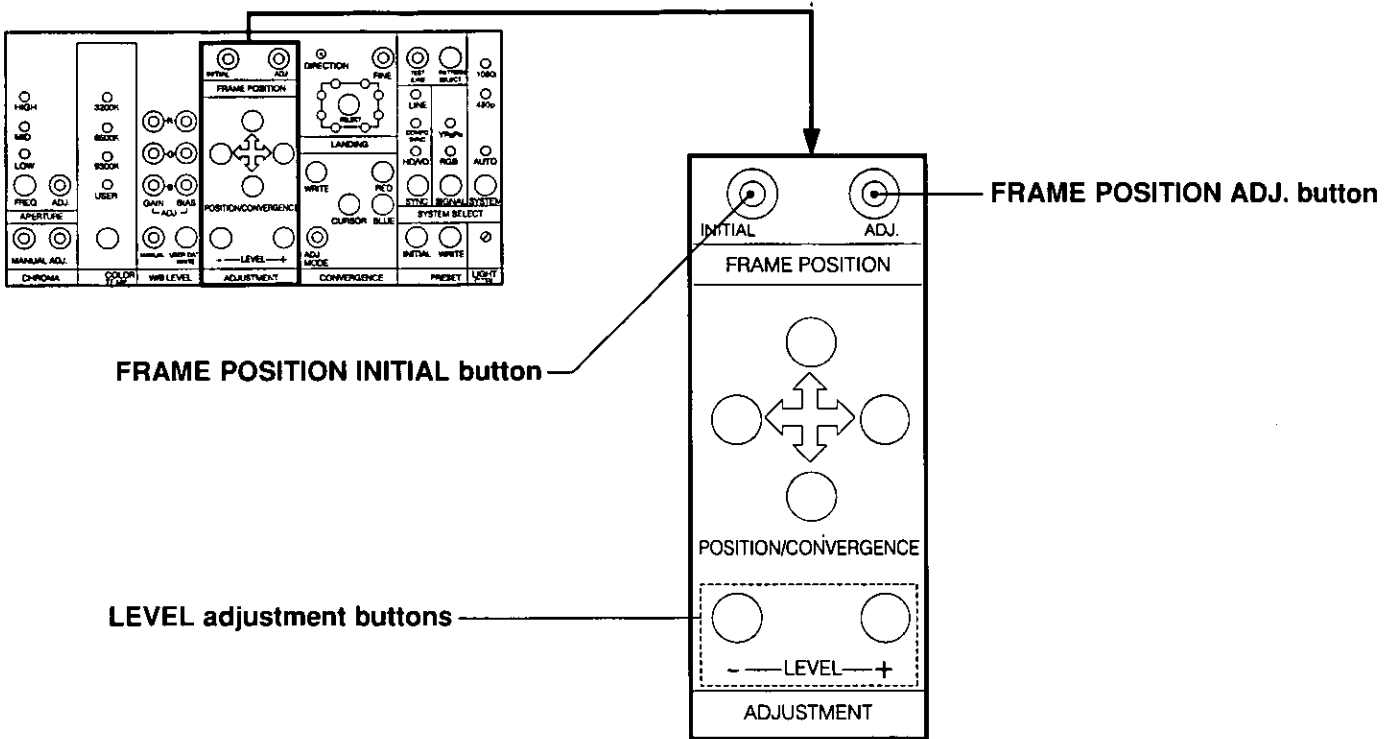
These buttons are used to adjust the setting levels in aperture adjustment, chroma adjustment, color temperature adjustment and landing adjustment modes.

Adjustment can be carried out using these buttons whenever one of the above adjustment modes is active.

- + ... Increases the adjustment level.
- - ... Decreases the adjustment level.

NOTE: • If a button is pressed continuously, the setting changes continuously.

FRAME POSITION ADJ. button
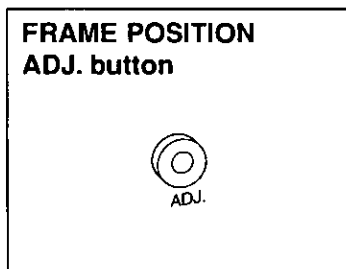
This button is used to set the monitor to frame position adjustment mode for moving the screen position horizontally and vertically.
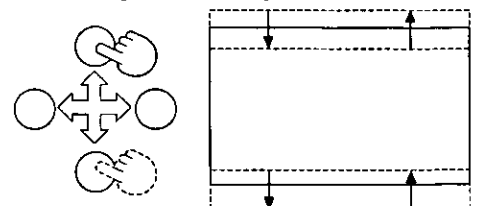- Frame position adjustment mode turns on and off each time the button is pressed. When frame position mode is on, the built-in indicator illuminates.
- When frame position mode is on, the POSITION/CONVERGENCE arrow buttons can be used to move the screen position horizontally and vertically as shown in the illustrations below.

Direction of position change

Horizontal position adjustment
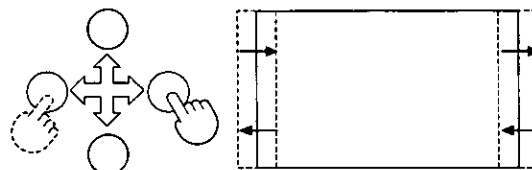
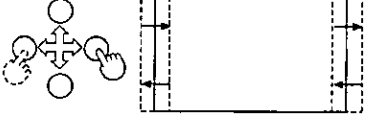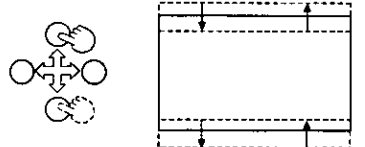**Vertical position adjustment**

Position adjustment procedure

Press to turn on frame position adjustment mode (indicator illuminates).

Adjust using the POSITION/CONVERGENCE arrow buttons.

● Horizontal position adjustment

● Vertical position adjustment

NOTE: ● Adjustment is possible for all two HDTV formats (1080i and 480p); the adjustment details are stored in memory separately for each format.
● Frame position adjustment mode defaults to off when the power switch is turned on.
● When the FRAME POSITION INITIAL button is pressed, the frame position returns to the factory default setting.
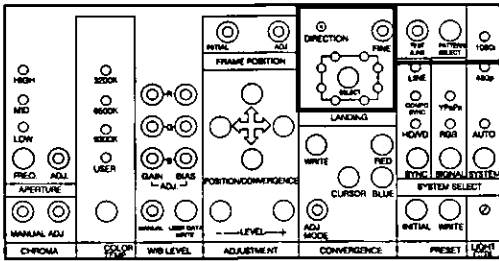
FRAME POSITION INITIAL button

This button is used to return the frame position setting to the factory default setting.
If the frame position has been changed from the factory default setting, the indicator of this button will be illuminated.
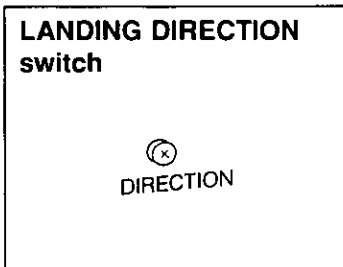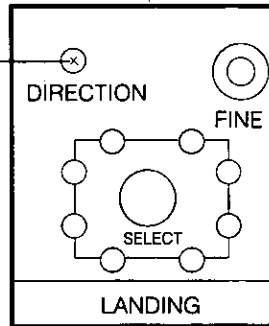● If this button is pressed while the built-in indicator is illuminated, the frame position will then be returned to the factory default setting.

NOTE: ● This button works independently for all of the two HDTV formats (1080i and 480p).

(LANDING adjustment part)

LANDING DIRECTION switch

DIRECTION

FINE

SELECT

LANDING

LANDING DIRECTION switch

⊗
DIRECTION

This switch is used to change the correction angle which is set in accordance with the direction the monitor faces in order to correct color distortion (white balance) in the picture as a result of geomagnetism.

● If this screw is turned while the LANDING FINE button is off (the indicator is switched off), the landing direction will change. Turn the screw to the appropriate setting in accordance with the direction of the monitor's CRT.
● Use a small Phillips-head screwdriver to turn the adjustment screw.

NOTE: ● The internal mechanism of this monitor includes geomagnetic correction coils which operate in three different directions: horizontally (X axis), vertically (Y axis) and longitudinally (Z axis). At the time of shipment from the factory, the monitor is provided with data for 8 standard directions and two modes for setting user correction data.
● If the STATUS switch is pressed 3 times, the landing direction data will be displayed on the screen, and this can be used to check the direction settings.
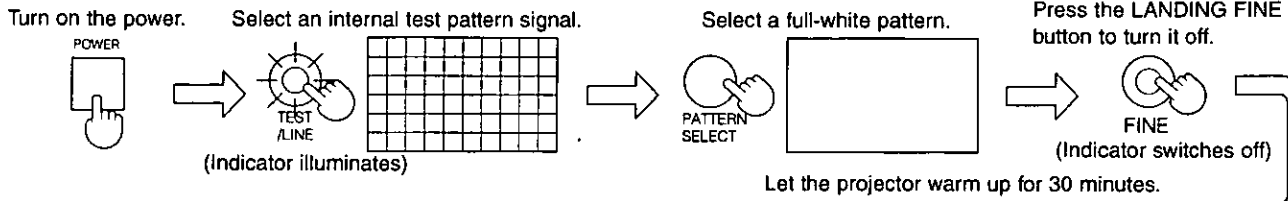
● USER 1
● USER 2   ⎤ User correction data

● EAST
● SOUTH-EAST
● SOUTH
● SOUTH-WEST
● WEST   ⎤ Factory setting data
● NORTH-WEST
● NORTH
● NORTH-EAST

Changing the landing adjustment direction

Turn on the power.
POWER

Select an internal test pattern signal.
TEST /LINE
(Indicator illuminates)

Select a full-white pattern.
PATTERN SELECT

Press the LANDING FINE button to turn it off.
FINE
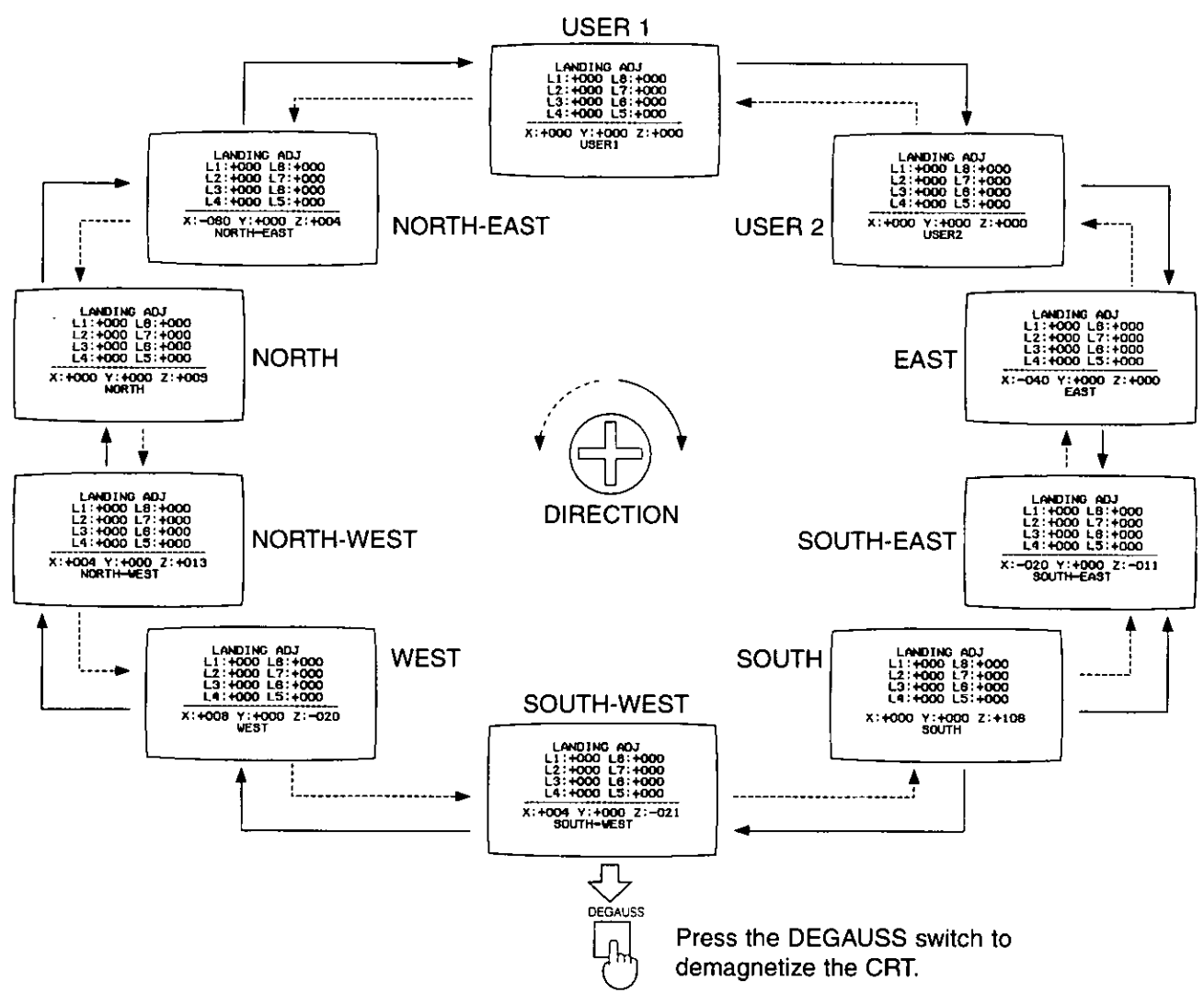(Indicator switches off)

Let the projector warm up for 30 minutes.

STATUS Press the STATUS switch 3 times to display the landing adjustment data on the monitor screen.
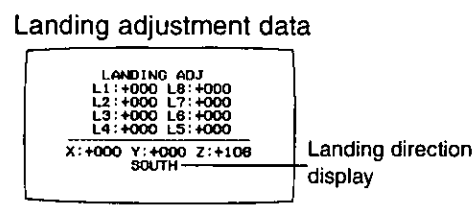
Turn the LANDING DIRECTION switch to set the landing direction.

Landing adjustment data

```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+000 Y:+000 Z:+108
         SOUTH
```
Landing direction display

USER 1
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+000 Y:+000 Z:+000
         USER1
```

NORTH-EAST
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:-080 Y:+000 Z:+004
      NORTH-EAST
```

USER 2
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+000 Y:+000 Z:+000
         USER2
```

NORTH
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+000 Y:+000 Z:+009
         NORTH
```

EAST
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:-040 Y:+000 Z:+000
         EAST
```

DIRECTION

NORTH-WEST
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+004 Y:+000 Z:+013
      NORTH-WEST
```

SOUTH-EAST
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:-020 Y:+000 Z:-011
      SOUTH-EAST
```

WEST
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+008 Y:+000 Z:-020
         WEST
```

SOUTH-WEST
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+004 Y:+000 Z:-021
      SOUTH-WEST
```

SOUTH
```
     LANDING ADJ
  L1:+000 L8:+000
  L2:+000 L7:+000
  L3:+000 L6:+000
  L4:+000 L5:+000
  X:+000 Y:+000 Z:+108
         SOUTH
```

DEGAUSS

Press the DEGAUSS switch to demagnetize the CRT.

NOTE:
- If the color distortion still remains after this setting has been changed, it will be necessary to carry out the adjustments given on pages 25–26.
- If the user setting data (USER 1 or USER 2) is selected, you can then select the horizontal (X axis), vertical (Y axis) or longitudinal (Z axis) landing adjustment coils by pressing the LANDING SELECT button, and you can then adjust the correction amount for the selected coil using the LEVEL buttons. Refer to page 27 for details of this procedure.

(LANDING adjustment part)

LANDING FINE button

LANDING SELECT indicators
(8 indicators)

LANDING SELECT button

DIRECTION

LANDING
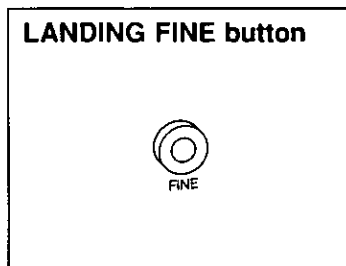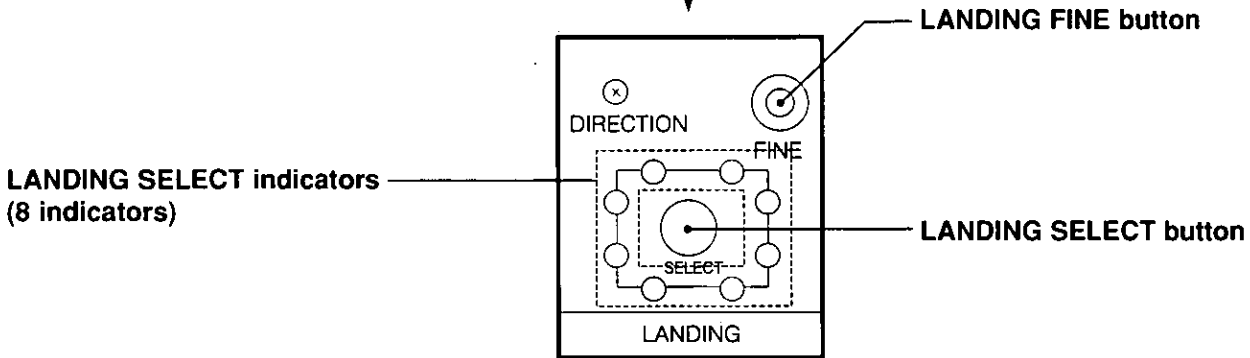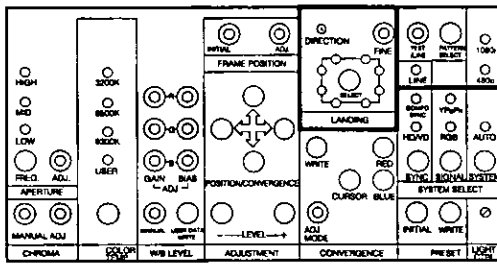
LANDING FINE button	This button is used to turn landing adjustment mode on and off. When landing adjustment mode is on, you can then select and adjust one of the 8 landing adjustment coils and the eight landing adjustment coils around the CRT become activated.

FINE

• Landing adjustment mode turns on and off each time the button is pressed.
• When landing adjustment mode is on, the built-in indicator illuminates.
• When landing adjustment mode is off, the built-in indicator switches off, you can then change the landing direction and adjust the landing correction amount in user correction mode.

LANDING SELECT button
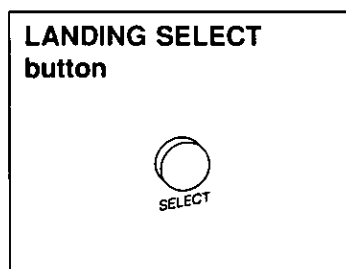
SELECT

This button is used to select landing adjustment coils. When the indicator of the LANDING FINE button is illuminated, you can then select the landing adjustment coil to be adjusted. When the indicator is switched off, you can select landing adjustment coils in user correction mode.
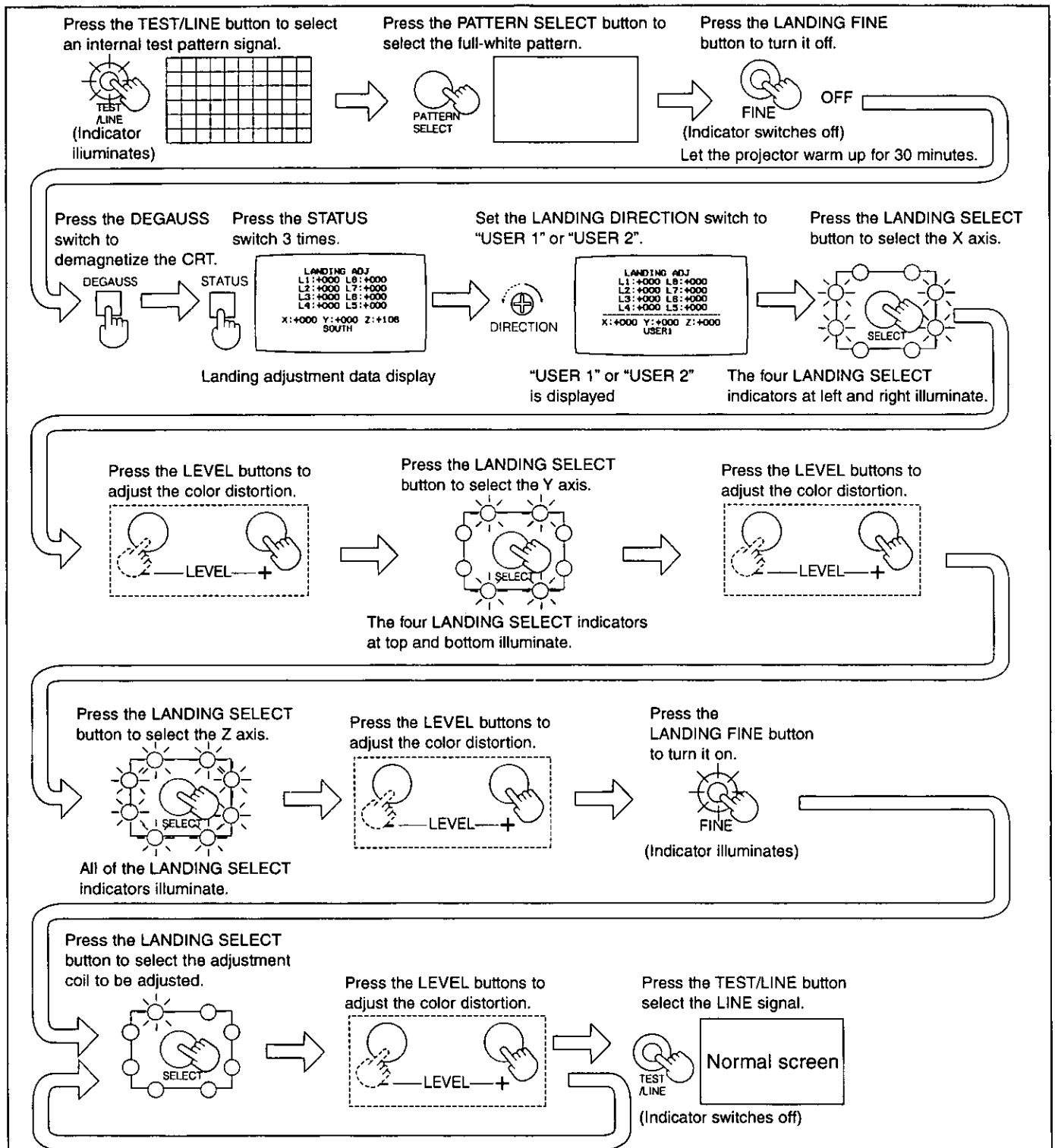
• The positions of the illuminated LANDING SELECT indicators change each time this button is pressed, and the landing adjustment coil to be adjusted can then be selected.
• When adjusting the landing, look at the LANDING SELECT indicators and the adjustment position of the screen when selecting the landing adjustment coils.

NOTE: • Landing adjustment can be carried out using the LEVEL buttons.
• The uniformity of the white color can be seen more easily if the full-white pattern is displayed.
• Landing adjustment coil selection defaults to off when the power switch is turned on.

Adjustment method if color distortion persists even after using the LANDING DIRECTION switch to set the direction

Press the TEST/LINE button to select an internal test pattern signal.

(Indicator illuminates)

Press the PATTERN SELECT button to select the full-white pattern.

Press the LANDING FINE button to turn it on.

Let the projector warm up for 30 minutes.

(Indicator illuminates)

Press the DEGAUSS switch to demagnetize the CRT.

DEGAUSS

Press the LANDING SELECT button to select the adjustment coil to be adjusted.

SELECT

Press the LEVEL buttons to adjust the color distortion.

— LEVEL — +

After adjustment is complete

Press the TEST/LINE button select the LINE signal.

Normal screen

(Indicator switches off)

NOTE:
● When the LEVEL buttons are used to adjust the color distortion, the screen may become tilted. Do not adjust the color distortion so much that the screen starts to tilt.
● Once the landing adjustment coils have been adjusted, make sure that you always press the LANDING FINE button to turn it on.
● If you switch to any other adjustment mode while this adjustment is being carried out, the landing adjustment coil selection will be canceled and adjustment will no longer be possible.
● Adjustment is still possible if the STATUS switch is pressed 3 times so that the adjustment data for the landing adjustment coils is displayed on the screen. The adjustment range is -128 to +127.

Adjustment procedure when the LANDING DIRECTION switch is set to USER

Press the TEST/LINE button to select an internal test pattern signal.

TEST /LINE
(Indicator illuminates)

Press the PATTERN SELECT button to select the full-white pattern.

PATTERN SELECT

Press the LANDING FINE button to turn it off.

FINE OFF
(Indicator switches off)
Let the projector warm up for 30 minutes.

Press the DEGAUSS switch to demagnetize the CRT.

DEGAUSS

Press the STATUS switch 3 times.

STATUS

```
LANDING ADJ
L1:+000 L8:+000
L2:+000 L7:+000
L3:+000 L8:+000
L4:+000 L5:+000

X:+000 Y:+000 Z:+106
        SOUTH
```

Landing adjustment data display

Set the LANDING DIRECTION switch to "USER 1" or "USER 2".

DIRECTION

```
LANDING ADJ
L1:+000 L8:+000
L2:+000 L7:+000
L3:+000 L8:+000
L4:+000 L5:+000

X:+000 Y:+000 Z:+000
        USER1
```

"USER 1" or "USER 2" is displayed

Press the LANDING SELECT button to select the X axis.

SELECT

The four LANDING SELECT indicators at left and right illuminate.

Press the LEVEL buttons to adjust the color distortion.

— LEVEL — +

Press the LANDING SELECT button to select the Y axis.

SELECT

The four LANDING SELECT indicators at top and bottom illuminate.

Press the LEVEL buttons to adjust the color distortion.

— LEVEL — +

Press the LANDING SELECT button to select the Z axis.

SELECT

All of the LANDING SELECT indicators illuminate.

Press the LEVEL buttons to adjust the color distortion.

— LEVEL — +

Press the LANDING FINE button to turn it on.

FINE
(Indicator illuminates)

Press the LANDING SELECT button to select the adjustment coil to be adjusted.

SELECT

Press the LEVEL buttons to adjust the color distortion.

— LEVEL — +

Press the TEST/LINE button select the LINE signal.

TEST /LINE

Normal screen

(Indicator switches off)

NOTE: • Once the landing adjustment coils have been adjusted, make sure that you always press the LANDING FINE button to turn it on.
• When the LEVEL buttons are used to adjust the color distortion, the screen may become tilted. Do not adjust the color distortion so much that the screen starts to tilt.
• If it is difficult to check the color distortion when the landing adjustment data is displayed, press the STATUS switch to clear the on-screen display.
• If you switch to any other adjustment mode while this adjustment is being carried out, the landing adjustment coil selection will be canceled and adjustment will no longer be possible.

(CONVERGENCE adjustment part)

WRITE   RED

CURSOR BLUE

CONVERGENCE ADJ. MODE button

ADJ.
MODE
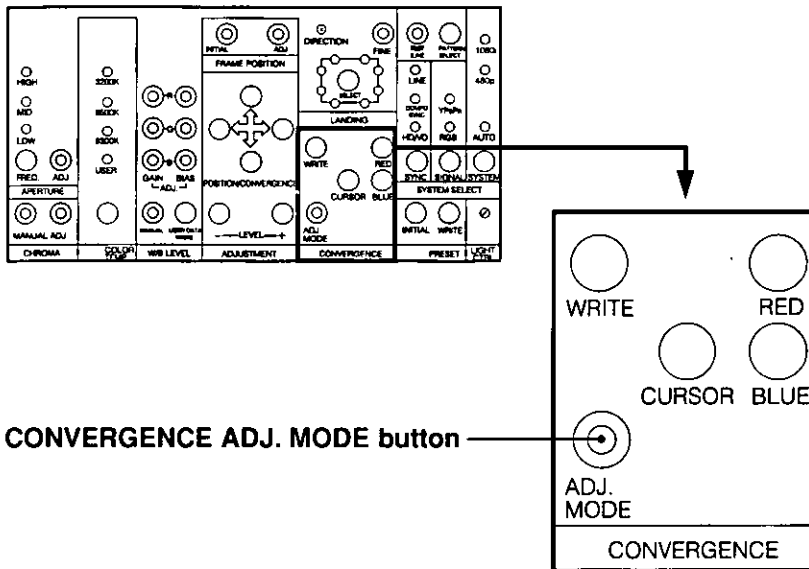
CONVERGENCE

CONVERGENCE ADJ. MODE button	The convergence may become misaligned if the monitor is set up under certain monitor setting-up conditions. If this happens, use this button to switch the monitor to convergence adjustment mode, and then adjust the convergence.

ADJ. MODE

- Convergence adjustment mode turns on and off each time the button is pressed. When convergence adjustment mode is on, the built-in indicator illuminates and the screen shows a crosshatch pattern and a cursor as shown in the illustration below.
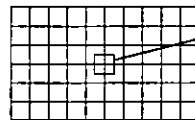
Cursor

The cursor is displayed so that it overlaps the crosshatch pattern.

ADJ. MODE

NOTE:
- The convergence adjustment buttons only operate when convergence adjustment mode is turned on.
- If convergence adjustment mode is turned on when "AUTO" has been selected by means of the SYSTEM button, the convergence adjustment mode for the signal format currently being input will be selected automatically.
- If the SYSTEM button is pressed to change the selected format while in convergence adjustment mode, convergence adjustment can then be carried out for the new signal format selected. However, "AUTO" cannot be selected using the SYSTEM button at this time.
- If the SYSTEM button has been pressed to change the selected format while in convergence adjustment mode, the input signal which was selected before convergence adjustment mode was turned on will be displayed again when convergence adjustment mode is canceled.
- The following functions cannot be used while convergence adjustment mode is on.

Front panel	Inside the control tray
• Line input (LINE A/B) selection	• APERTURE adjustment
• Horizontal delay (H-DELAY) selection	• CHROMA adjustment
• Vertical delay (V-DELAY) selection	• COLOR TEMP selection/adjustment
• Screen green (SCREEN-G) selection	• FRAME POSITION adjustment
• Split screen (SPLIT) selection	• LANDING FINE
• Aperture (APT) selection	• Synchronizing signal (SYNC) selection/YP_BP_R/RGB (SIGNAL) selection
	• "AUTO" selection using the SYSTEM button

- Convergence adjustment mode defaults to off when the power switch is turned on.
- If the SCAN switch on the front panel or the SYSTEM button inside the control tray is pressed after the convergence has been adjusted but without pressing the CONVERGENCE WRITE button, the convergence adjustment data will be lost.

(CONVERGENCE adjustment part)
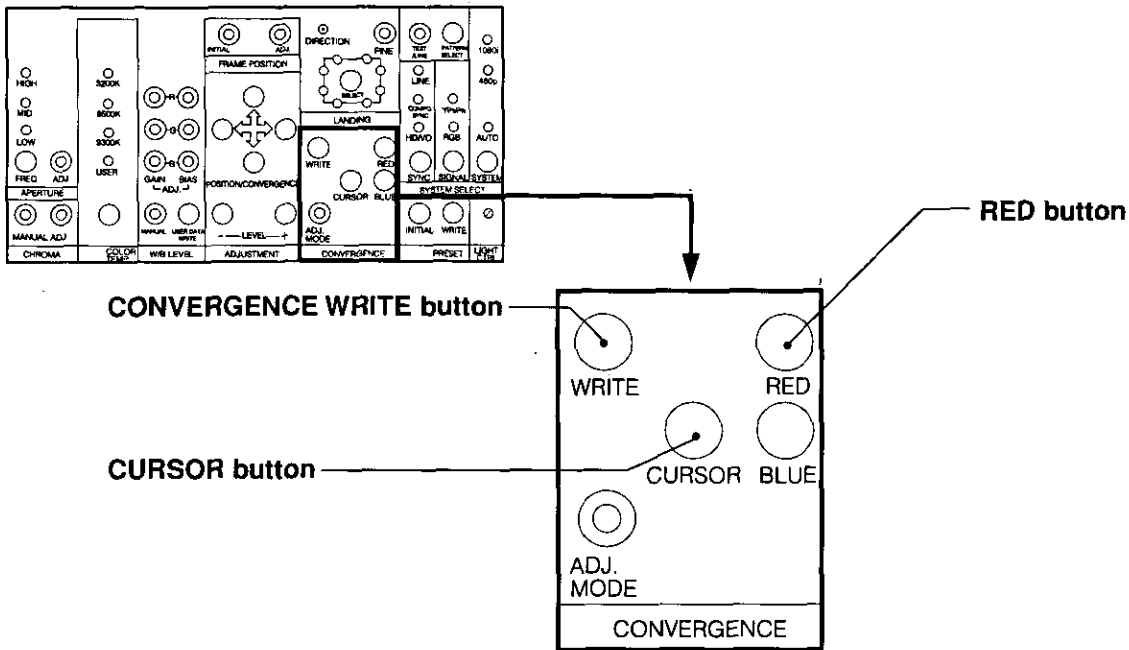
CONVERGENCE WRITE button

CURSOR button

RED button

WRITE   RED

CURSOR   BLUE

ADJ. MODE

CONVERGENCE

CONVERGENCE WRITE button	This button is used to store the convergence adjustments into memory. It only operates when convergence adjustment mode is active.

This button is used to store the convergence adjustments into memory. It only operates when convergence adjustment mode is active.
- If this button is pressed after changes to the convergence adjustments have been made, the adjustments will then be stored in memory.

NOTE:
- Be sure to press the CONVERGENCE WRITE button after the convergence has been adjusted.
- If the SCAN switch, the SYSTEM button, the LINE A/B select switches or the POWER switch is pressed before the CONVERGENCE WRITE button is pressed, any changes made to the convergence adjustment data will be canceled.

NOTE:
- The adjustment conditions in both underscan and overscan modes can be stored in memory separately for each signal format (1080i and 480p).

CURSOR button

This button is used to set the cursor movement mode for specifying an adjustment location when adjusting the point convergence. It only operates when convergence adjustment mode is active.
- After this button has been pressed, the cursor can then be moved by pressing the POSITION/CONVERGENCE arrow buttons.

NOTE:
- If the RED button or the BLUE button is pressed after the CURSOR button has been pressed, the cursor movement mode will be canceled and the red or blue point convergence adjustment mode will be activated.


RED button

RED
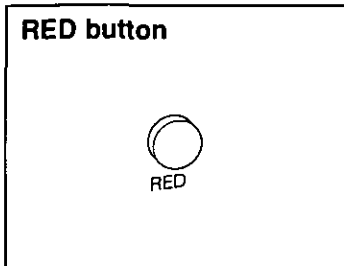
This button is used to set red point convergence mode for correcting localized color distortion. The button only operates when convergence mode is active.
- After this button has been pressed, the red convergence at the place where the cursor is displayed can then be adjusted by pressing the POSITION/CONVERGENCE arrow buttons.

Changes in direction when using the POSITION/CONVERGENCE arrow buttons in red point convergence mode

If the left or right button is pressed, the red vertical line at the cursor position moves to the left or right respectively.

Cursor

If the up or down button is pressed, the red horizontal line at the cursor position moves up or down respectively.
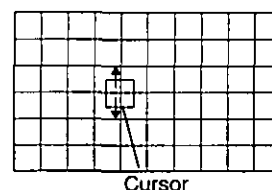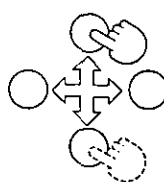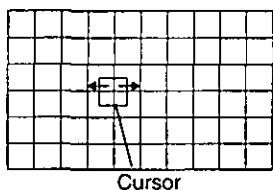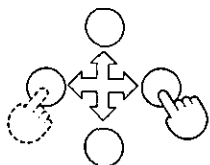
Cursor

Red point convergence adjustment procedure

Press the CONVERGENCE ADJ. MODE button to turn it on.

ADJ. MODE

(Indicator illuminates)

Convergence adjustment mode (cursor movement mode)

Press the CURSOR button.

CURSOR

Cursor movement mode
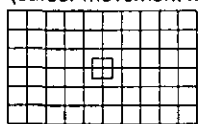
Press the POSITION/CONVERGENCE arrow buttons to move the cursor to the place where red convergence is distorted.
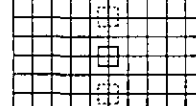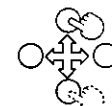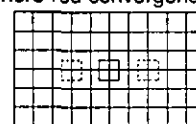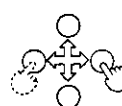
Press the RED button.

RED

Red point convergence adjustment mode

Press the POSITION/CONVERGENCE arrow buttons to adjust the red point convergence.
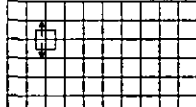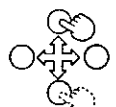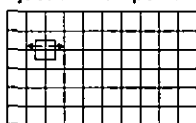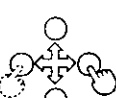
Press the CONVERGENCE WRITE button.

WRITE

STORE COMPLETED

Setting condition is stored in memory.

NOTE:
- After adjusting the convergence, be sure to press the CONVERGENCE WRITE button to store the setting condition into memory. If the settings is not stored in memory, the adjustment changes will not take effect.
- Separate adjustment is possible for the 1080i and 480p signal formats and for underscan and overscan modes.
- If the STATUS switch is pressed while in convergence adjustment mode, the adjustment mode and values will be displayed on the screen.

(CONVERGENCE adjustment part)

WRITE   RED

BLUE button

CURSOR BLUE

ADJ.
MODE
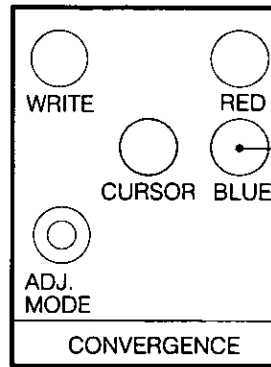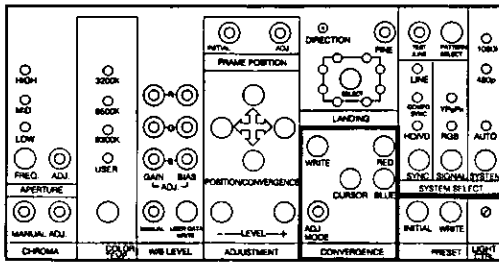
CONVERGENCE

BLUE button

BLUE

This button is used to set blue point convergence mode for correcting localized color distortion. The button only operates when convergence mode is active.

- After this button has been pressed, the blue convergence at the place where the cursor is displayed can then be adjusted by pressing the POSITION/CONVERGENCE arrow buttons.

Changes in direction when using the POSITION/CONVERGENCE arrow buttons in blue point convergence mode

If the left or right button is pressed, the blue vertical line at the cursor position moves to the left or right respectively.

If the up or down button is pressed, the blue horizontal line at the cursor position moves up or down respectively.
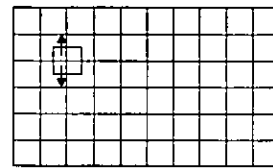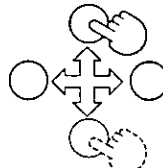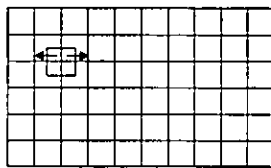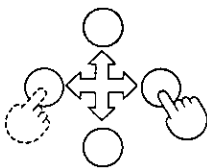
Blue point convergence adjustment procedure

Press the CONVERGENCE ADJ. MODE button to turn it on.

ADJ. MODE

(Indicator illuminates)

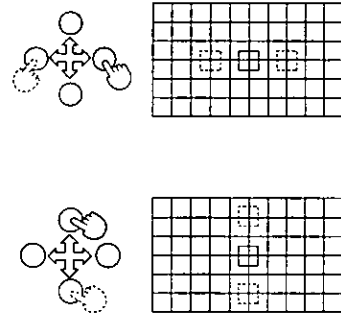Convergence adjustment mode (cursor movement mode)
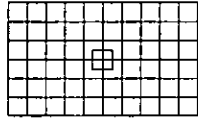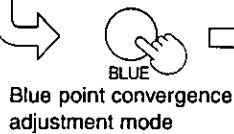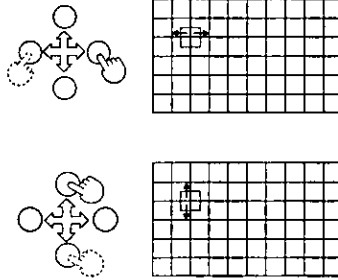
Press the CURSOR button.

CURSOR

Cursor movement mode

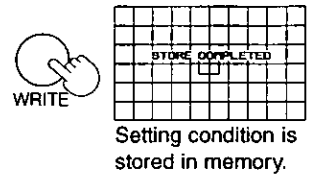Press the POSITION/CONVERGENCE arrow buttons to move the cursor to the place where blue convergence is distorted.

Press the BLUE button.

BLUE

Blue point convergence adjustment mode

Press the POSITION/CONVERGENCE arrow buttons to adjust the blue point convergence.

Press the CONVERGENCE WRITE button.

WRITE

STORE COMPLETED

Setting condition is stored in memory.
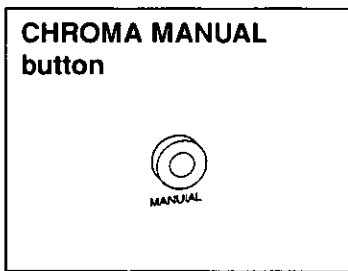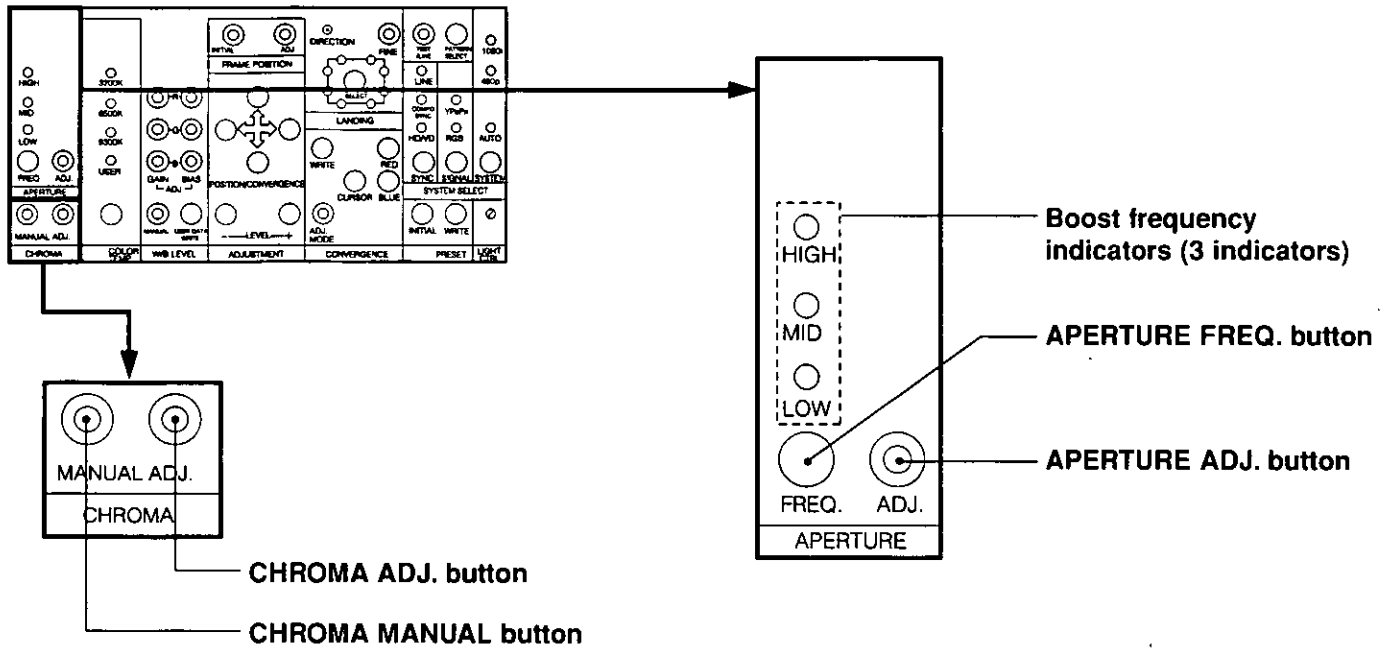
NOTE: ● After adjusting the convergence, be sure to press the CONVERGENCE WRITE button to store the setting condition into memory. If the settings is not stored in memory, the adjustment changes will not take effect.
● Separate adjustment is possible for the 1080i and 480p signal formats and for underscan and overscan modes.
● If the STATUS switch is pressed while in convergence adjustment mode, the adjustment mode and values will be displayed on the screen.

(CHROMA adjustment part, White balance adjustment part)

Boost frequency
indicators (3 indicators)

APERTURE FREQ. button

APERTURE ADJ. button

CHROMA ADJ. button

CHROMA MANUAL button

CHROMA MANUAL button	This button is used to set the manual mode for chroma adjustment.
	• The mode switches between manual mode and preset mode each time this button is pressed. • When manual mode is active, the built-in indicator illuminates, and the CHROMA ADJ. button can then be turned on.
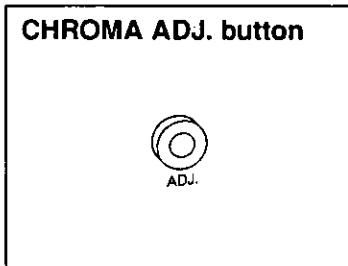
| CHROMA ADJ. button	This button is used to set the chroma adjustment mode. The button only operates when the CHROMA MANUAL button is set to manual mode.
	• Chroma adjustment mode turns on and off each time the button is pressed. • When chroma adjustment mode is active, the built-in indicator illuminates. The chroma can then be adjusted by pressing the LEVEL buttons.

Chroma adjustment procedure

Press the CHROMA
MANUAL button.

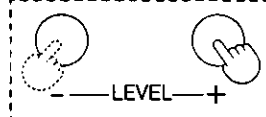
(Indicator illuminates)
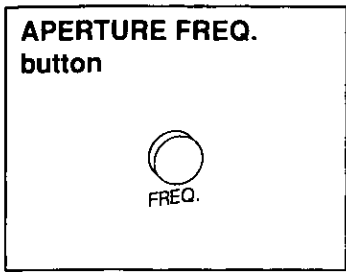
Press the CHROMA ADJ.
button to turn it on.
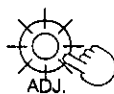
(Indicator illuminates)

Press the LEVEL buttons to
adjust the chroma.

NOTE: • The adjustment range is between 50 and 300, in steps of 1.
• The adjustment settings can be stored in memory for each LINE A/B input selection.
• Chroma adjustment mode defaults to off when the power switch is turned on.
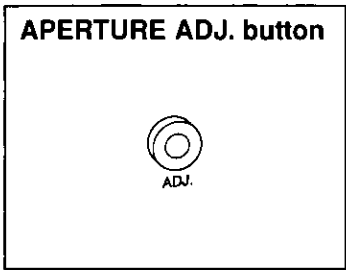
| APERTURE FREQ. button | This button is used to change the boost frequency for aperture correction. |

APERTURE FREQ. button

This button is used to change the boost frequency for aperture correction.

- The boost frequency changes between "HIGH", "MID" and "LOW" each time the button is pressed, and the corresponding boost frequency indicator illuminates.
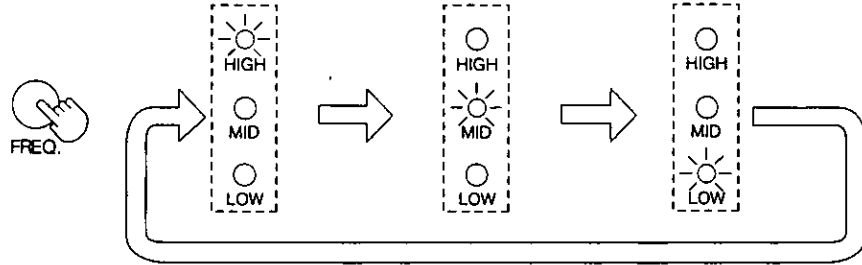
NOTE: ● The frequencies emphasized are those around 25 MHz for "HIGH", 16 MHz for "MID" and 7 MHz for "LOW".
- This setting can be stored in memory for each LINE A/B input selection.
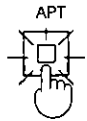
APERTURE ADJ. button

This button is used to set aperture adjustment mode for correcting the screen aperture. The button only operates when the APT switch on the monitor front panel is turned on.

- Aperture adjustment mode turns on and off each time the button is pressed.
- When aperture adjustment mode is on, the built-in indicator illuminates. The aperture correction amount can then be adjusted by pressing the LEVEL buttons.

Aperture adjustment procedure

Press the APT switch on the front panel to turn it on.
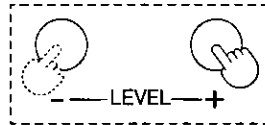

(Indicator illuminates)

Press the APERTURE ADJ. button to turn it on.
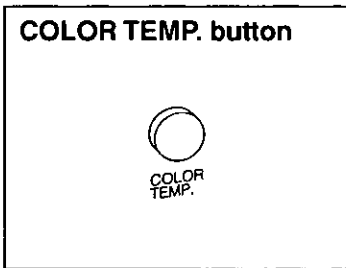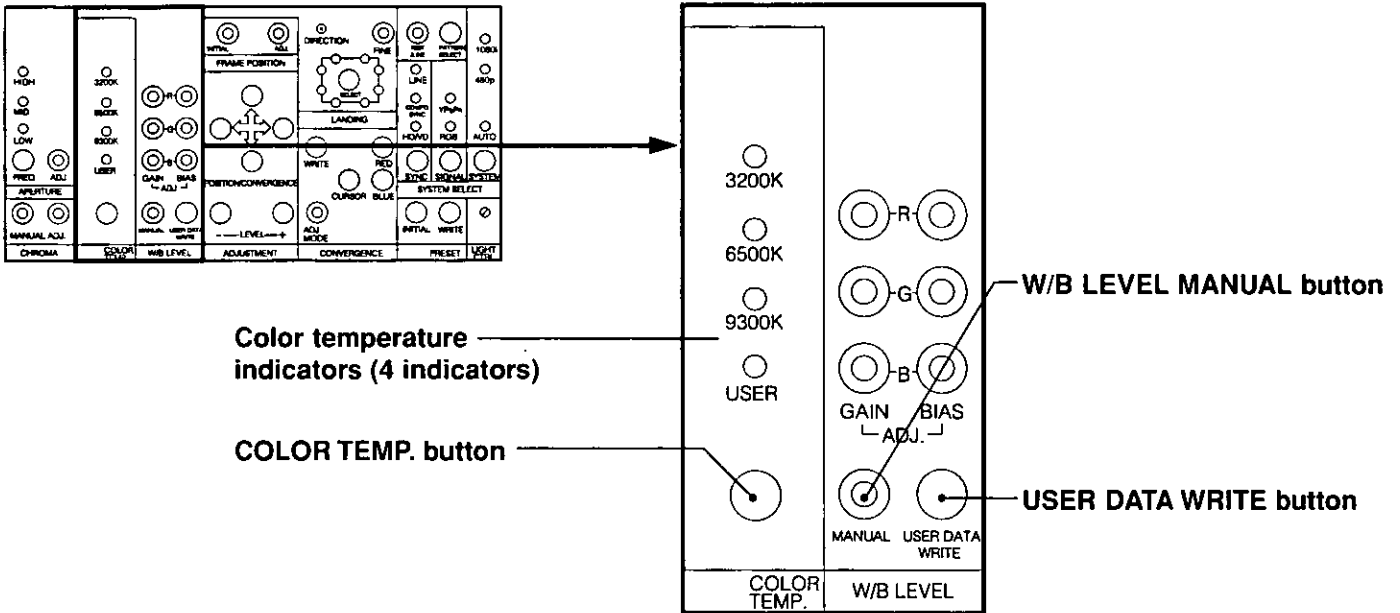

(Indicator illuminates)

Press the LEVEL buttons to adjust the aperture.

NOTE: ● The adjustment range is from 1 dB to 10 dB, in steps of 1 dB.
- The adjustment settings can be stored in memory for each LINE A/B input selection.
- Aperture adjustment mode defaults to off when the power switch is turned on.

(White balance adjustment part)

Color temperature indicators (4 indicators)

COLOR TEMP. button

W/B LEVEL MANUAL button

USER DATA WRITE button

COLOR TEMP. button
COLOR TEMP.

This button is used to select the standard color temperature for the screen.

- The standard color temperature setting changes in the order "3200K" → "6500K" → "9300K" → "USER" each time the COLOR TEMP. button is pressed, and the corresponding color temperature indicator illuminates.
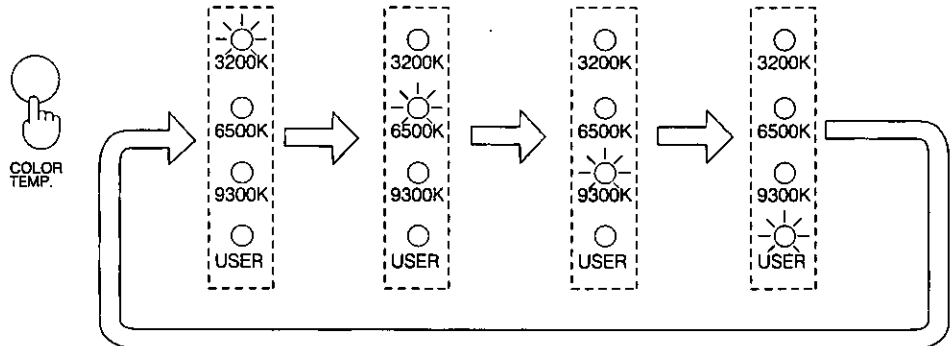
NOTE: ● At the time of shipment from the factory, the "USER" color temperature setting is 6500K This setting can be changed by the user to the desired color temperature setting.

W/B LEVEL MANUAL button
(MANUAL)

This button is used to set the USER color temperature adjustment mode so that users can set their own color temperature.

● USER color temperature adjustment mode turns on and off each time the button is pressed.
● When USER color temperature adjustment mode is on, the built-in indicator illuminates. The W/B LEVEL ADJ. GAIN buttons and the W/B LEVEL ADJ. BIAS buttons can then be used to adjust the setting value for the USER color temperature.

NOTE: ● After changing the USER color temperature setting, be sure to press the USER DATA WRITE button to store the adjusted setting into memory before turning off USER color temperature adjustment mode. If the adjustment mode is turned off before the adjusted setting is stored in memory, the adjustment will not take effect.

USER DATA WRITE button
(USER DATA WRITE)

This button is used to store adjusted settings for the USER color temperature into memory. The button only operates when the indicator of the W/B LEVEL MANUAL button is illuminated.

● If this button is pressed after the USER color temperature has been adjusted, the adjusted setting will be stored in memory as the user mode color temperature, and the USER color temperature indicator will illuminate. The indicator of the W/B LEVEL MANUAL button will then switch off automatically.

(White balance adjustment part)

W/B LEVEL ADJ. BIAS buttons

W/B LEVEL ADJ. GAIN buttons
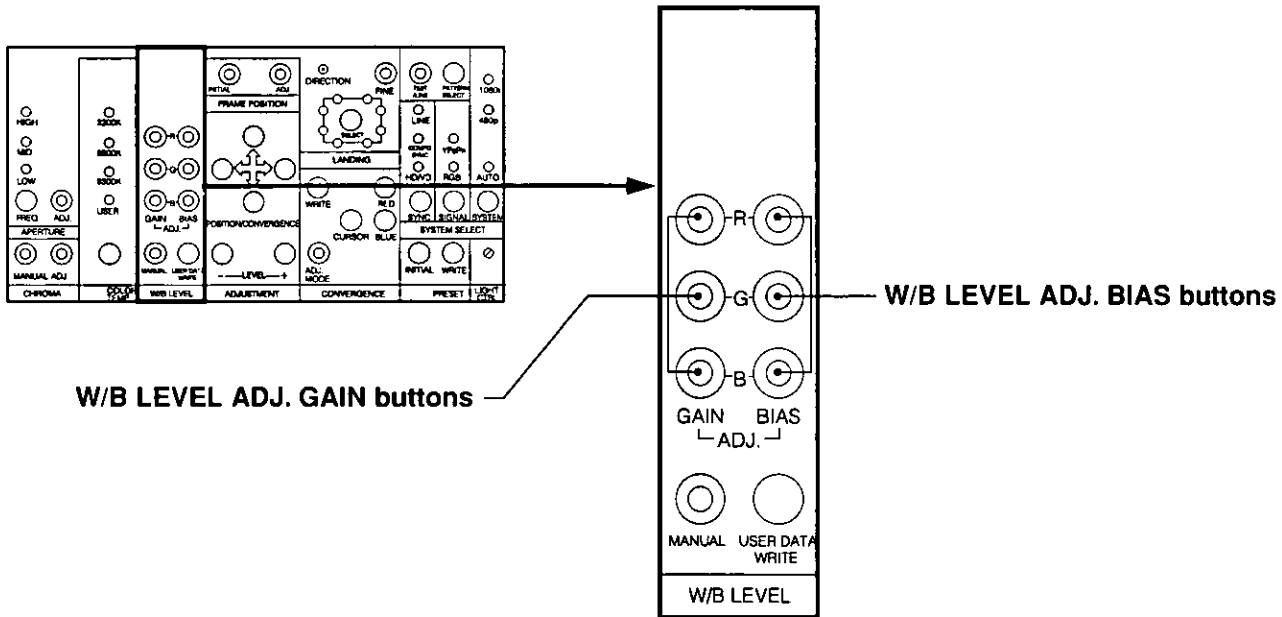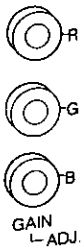
W/B LEVEL ADJ. GAIN buttons	These buttons are used to set the gain adjustment color in color temperature adjustment mode. The buttons only operate when the indicator of the W/B LEVEL MANUAL button is illuminated.

● When the R, G or B button is pressed, the built-in indicator for that button illuminates and the adjustment mode for that color is set. The high-luminance portion can then be adjusted by pressing the LEVEL buttons.

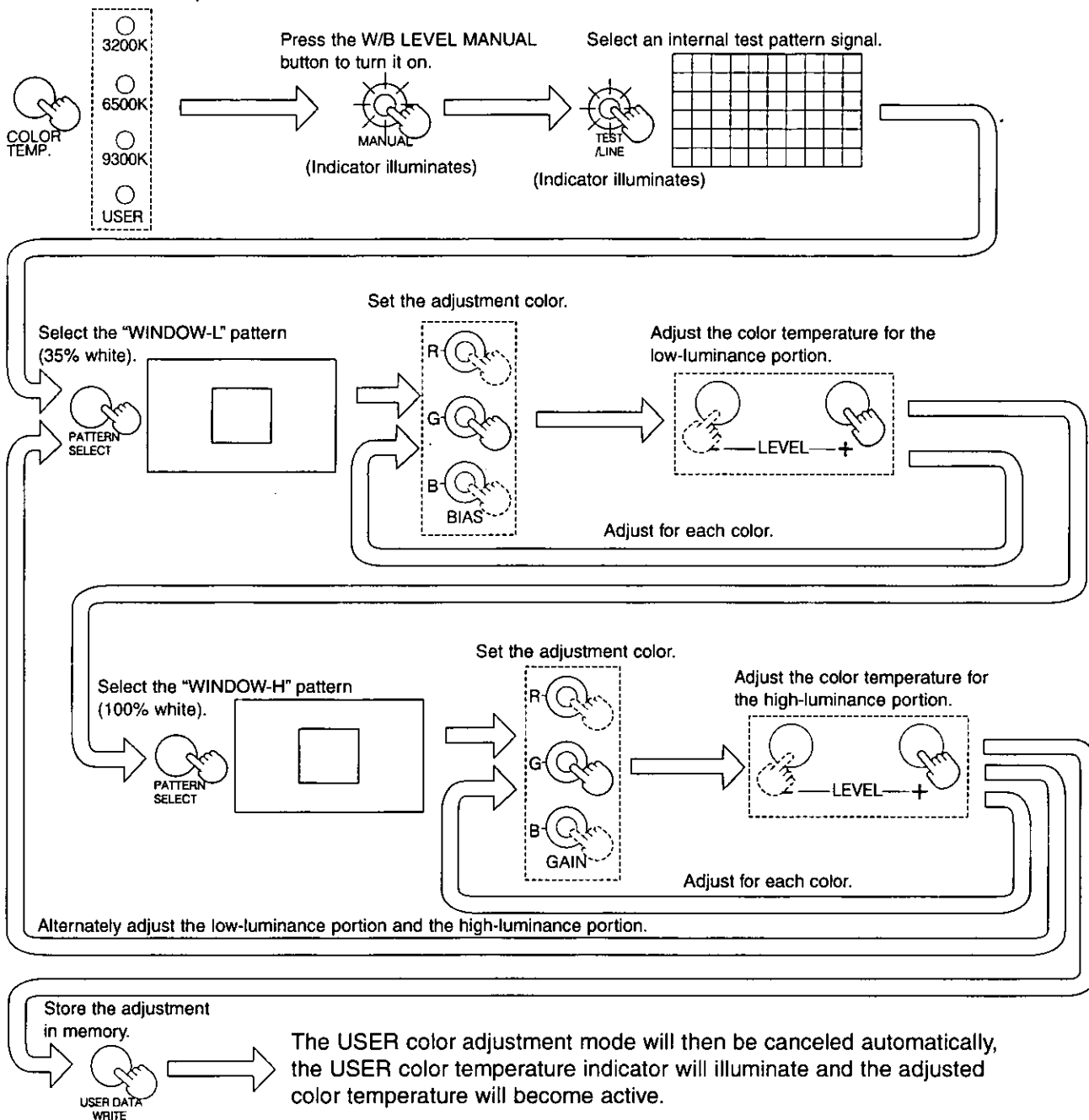| **W/B LEVEL ADJ. BIAS buttons**	These buttons are used to set the bias adjustment color in color temperature adjustment mode. The buttons only operate when the indicator of the W/B LEVEL MANUAL button is illuminated.

● When the R, G or B button is pressed, the built-in indicator for that button illuminates and the adjustment mode for that color is set. The low-luminance portion can then be adjusted by pressing the LEVEL buttons.
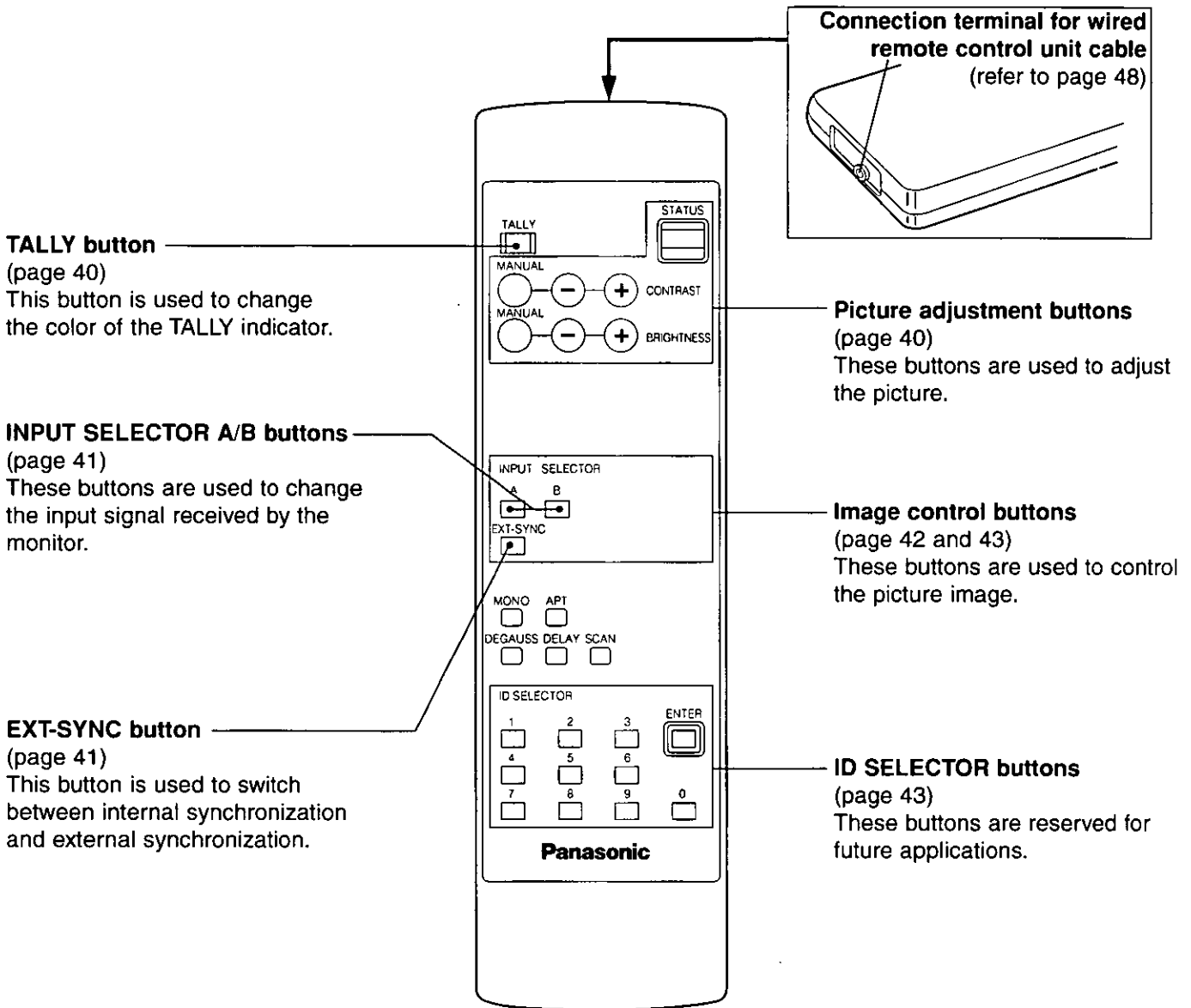
USER color temperature adjustment procedure

Select the setting which is closest
to the desired color temperature.

Press the W/B LEVEL MANUAL button to turn it on.

(Indicator illuminates)

Select an internal test pattern signal.

(Indicator illuminates)

Select the "WINDOW-L" pattern (35% white).

Set the adjustment color.

Adjust the color temperature for the low-luminance portion.

Adjust for each color.

Select the "WINDOW-H" pattern (100% white).

Set the adjustment color.

Adjust the color temperature for the high-luminance portion.

Adjust for each color.

Alternately adjust the low-luminance portion and the high-luminance portion.

Store the adjustment in memory.

The USER color adjustment mode will then be canceled automatically, the USER color temperature indicator will illuminate and the adjusted color temperature will become active.

NOTE:
- Color temperature adjustment for the low-luminance portion and color temperature adjustment for the high-luminance portion have a mutual effect on each other, so be sure to repeat each adjustment alternately.
- After adjusting, be sure to press the USER DATA WRITE button to store the adjusted settings in memory. If the adjustments are not stored in memory, they will not take effect.
  Adjust with the BRIGHTNESS set to 100 and the CONTRAST set to 100.
- The USER color temperature is adjusted based on the standard setting selected using the COLOR TEMP. button.
- These adjustments can also be carried out if the STATUS switch has been pressed to display the white balance data on the screen. The adjustment range for the color temperature for the low-luminance portion is 0 to 255, and that for the high-luminance portion is 0 to 2047.

Name and function of each remote control unit part

TALLY button
(page 40)
This button is used to change
the color of the TALLY indicator.

INPUT SELECTOR A/B buttons
(page 41)
These buttons are used to change
the input signal received by the
monitor.

EXT-SYNC button
(page 41)
This button is used to switch
between internal synchronization
and external synchronization.

TALLY
STATUS
MANUAL
(−) (+) CONTRAST
MANUAL
(−) (+) BRIGHTNESS

INPUT SELECTOR
A B
EXT-SYNC

MONO APT
DEGAUSS DELAY SCAN

ID SELECTOR
1 2 3 ENTER
4 5 6
7 8 9 0

Panasonic

Picture adjustment buttons
(page 40)
These buttons are used to adjust
the picture.

Image control buttons
(page 42 and 43)
These buttons are used to control
the picture image.

ID SELECTOR buttons
(page 43)
These buttons are reserved for
future applications.

Inserting the batteries

Insert the two accessory AA-size batteries as
shown in the illustration, making sure that the
polarities are correct.

※ Do not use rechargeable (Ni-Cd) batteries.
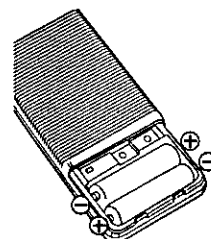
Notes on using the batteries

Always observe the following in order to prevent
battery damage and leakage.
● Never mix old and new batteries or batteries of
  different types.
● The batteries cannot be recharged.
● Do not short the ⊕ and ⊖ terminals.
● Do not disassemble the batteries.
● When discarding the batteries, do not burn them
  or mix them with combustible garbage.
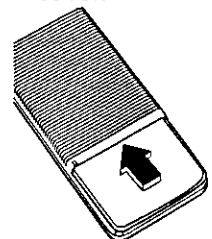
1. Open the battery
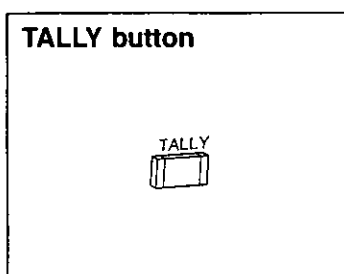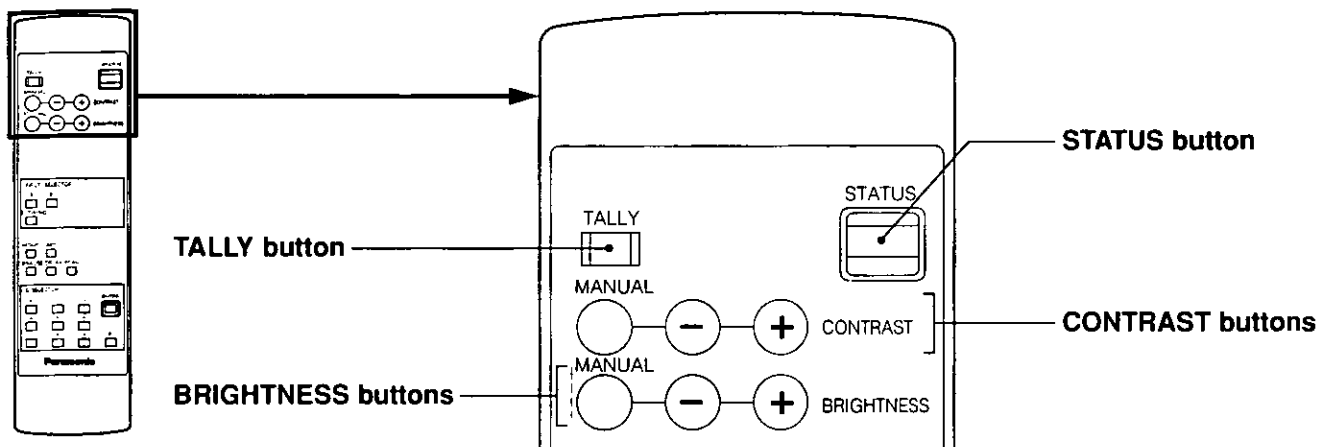   compartment
   cover.
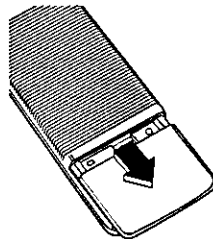
2. Insert the
   batteries.

3. Close the battery
   compartment
   cover.

Notes on using the remote control unit

● Do not pour liquids on the remote control unit.
● Do not drop the remote control unit.
● Use the remote control unit within the following
  range:
  · Within 30° of the center of the monitor
  · Within 23′ (7 m) from the monitor in a straight line

| **TALLY button**

TALLY

This button is used to change the color of the TALLY indicator at the top of the front panel.

- The color of the TALLY indicator switches between red and green each time the button is pressed.


| **STATUS button**
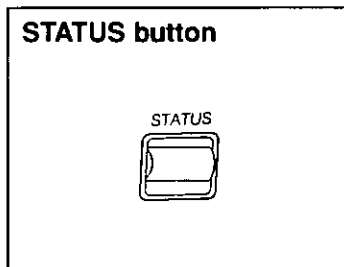
STATUS

This button is used to display adjustment data on the monitor screen.

- This button functions in the same way as the STATUS switch on the monitor's front panel.
(Refer to the explanation of the STATUS switch on page 12 for further details.)

| **CONTRAST buttons**
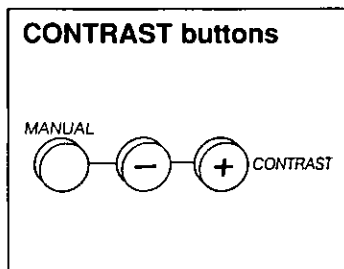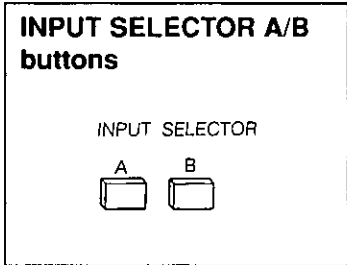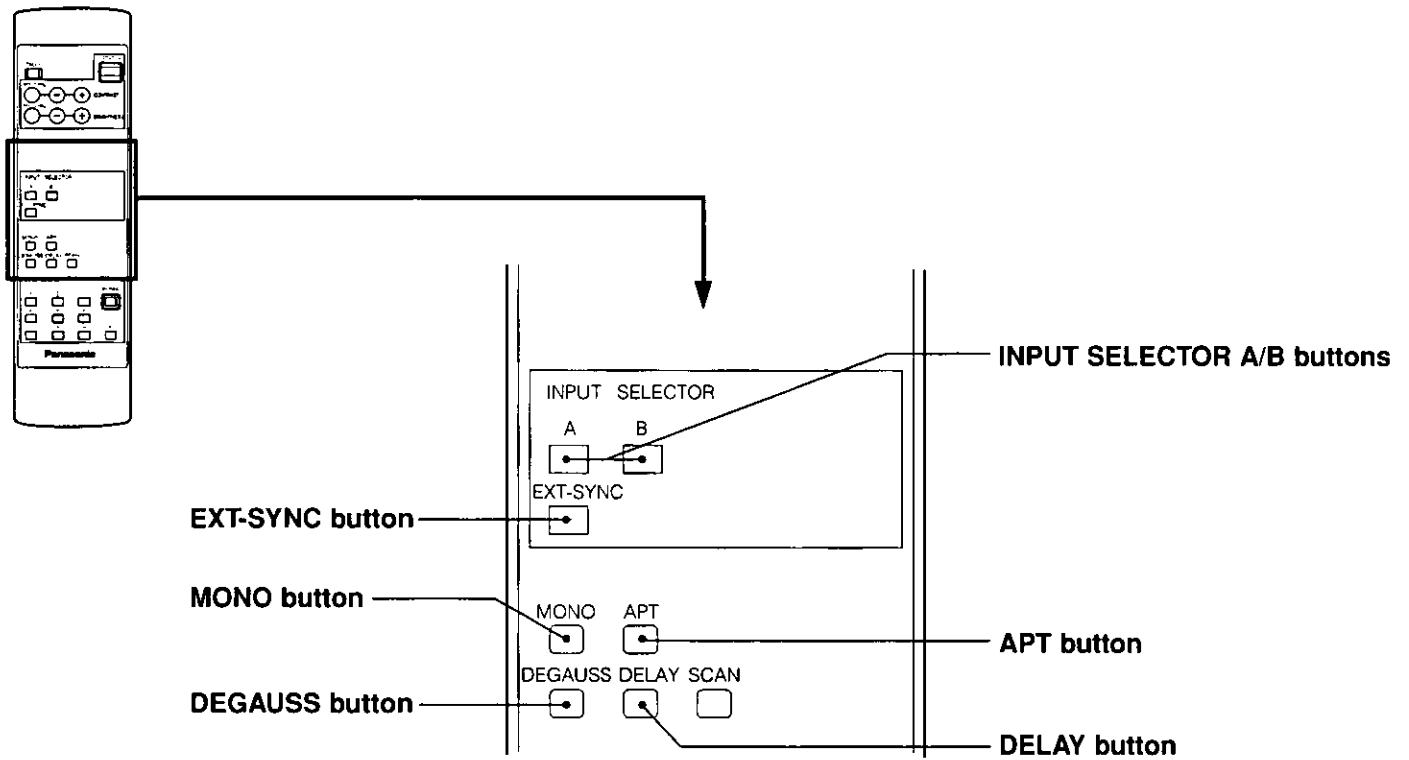
MANUAL
CONTRAST

These buttons are used to adjust the picture contrast.

- Adjustment can be carried out by pressing the MANUAL button and then pressing the "+" and "-" buttons.
- The indicator in the MANUAL button above the CONTRAST adjustment knob on the monitor front panel illuminates and switches off each time the MANUAL button is pressed. Adjustment can be carried out when the indicator is illuminated.
- The contrast becomes stronger each time the "+" button is pressed.
- The contrast becomes weaker each time the "-" button is pressed.

| **BRIGHTNESS buttons**
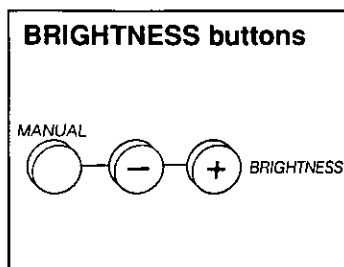
MANUAL
BRIGHTNESS

These buttons are used to adjust the picture brightness.

- Adjustment can be carried out by pressing the MANUAL button and then pressing the "+" and "-" buttons.
- The indicator in the MANUAL button above the BRIGHTNESS adjustment knob on the monitor front panel illuminates and switches off each time the MANUAL button is pressed. Adjustment can be carried out when the indicator is illuminated.
- The brightness increases each time the "+" button is pressed.
- The brightness decreases each time the "-" button is pressed.

INPUT SELECTOR A/B buttons

EXT-SYNC button

MONO button

APT button

DEGAUSS button

DELAY button

INPUT SELECTOR

A B

EXT-SYNC

MONO APT

DEGAUSS DELAY SCAN

INPUT SELECTOR A/B buttons

INPUT SELECTOR

A B

These buttons are used to change the input signal received by the monitor.

● When button A is pressed ····The signal from the source connected to the LINE A input terminals is received by the monitor.
● When button B is pressed ····The signal from the source connected to the LINE B input terminals is received by the monitor.
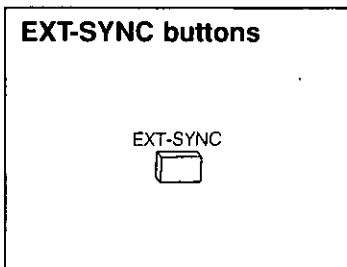
EXT-SYNC buttons

EXT-SYNC

This button is used to switch between internal synchronization and external synchronization.

● The monitor switches between internal synchronization and external synchronization each time this button is pressed.
● Set to external synchronization when the synchronizing signal connected to the EXT SYNC input terminal is to be used.

NOTE: ● If the incorrect setting is selected, or if no synchronizing signal is input, "NO SYNC" will be displayed on the screen as shown below, and the resulting picture will not be correctly synchronized.

NO-SYNC

MONO button

MONO
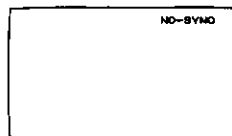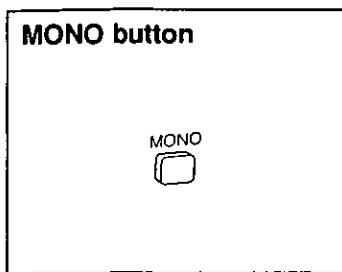
This button is used to force a black-and-white image to appear.

● The picture switches between black-and-white and color each time the button is pressed.
● When set to black-and-white, a black-and-white picture will always appear, even if a color signal is being input.
(Refer to the explanation of the MONO switch on page 10 for further details.)

APT button

APT

This button is used to turn the aperture adjustment function on and off.

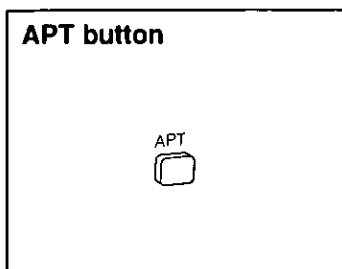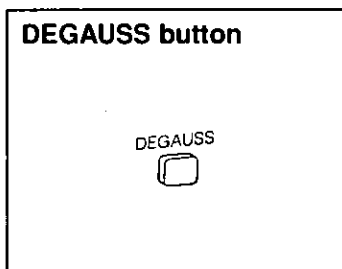● The aperture adjustment function turns on and off each time the button is pressed.
● The buttons used with the aperture adjustment function are located inside the control tray.
(Refer to the explanations of the APERTURE FREQ. button and the APERTURE ADJ. button on page 34 for further details.)

DEGAUSS button

DEGAUSS

This button is used to demagnetize the CRT.

● This button functions in the same way as the DEGAUSS switch on the monitor's front panel.
(Refer to the explanation of the DEGAUSS switch on page 9 for further details.)

DELAY button

DELAY
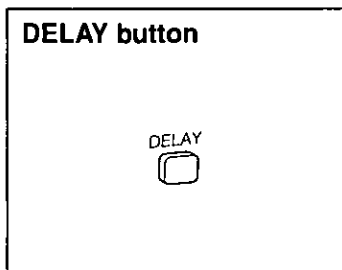
This button is used to inspect the horizontal and vertical blanking intervals.

● The blanking screen is displayed and changes as shown below each time the button is pressed.
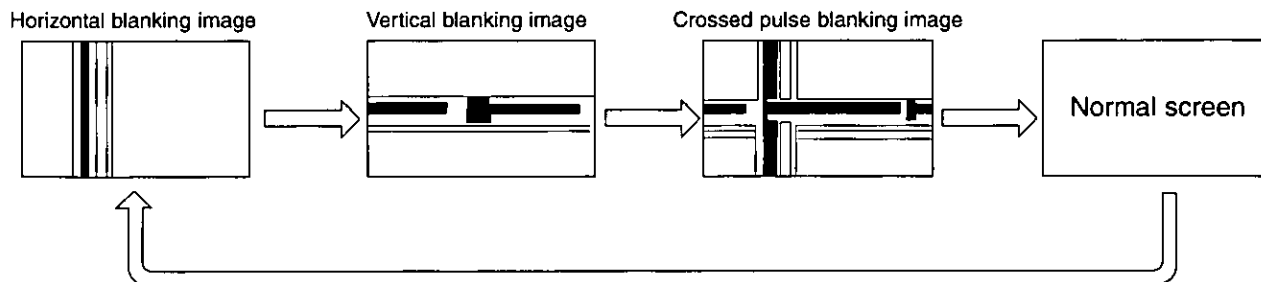
Horizontal blanking image   Vertical blanking image   Crossed pulse blanking image

Normal screen

NOTE: ● A normal screen is always displayed when the power is turned on.

MONO APT

DEGAUSS DELAY SCAN ———————————— **SCAN button**

ID SELECTOR

1   2   3   ENTER ———————————— **ID SELECTOR buttons (spare)**

4   5   6

7   8   9   0

Panasonic

SCAN button	This switch is used to change the scanning size.
SCAN	• The screen changes between an underscan (2%) screen and an overscan (3%) screen each time this switch is pressed.
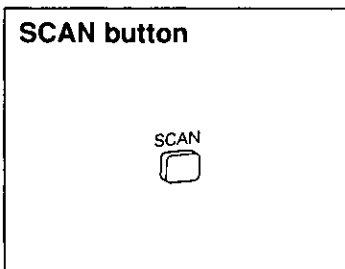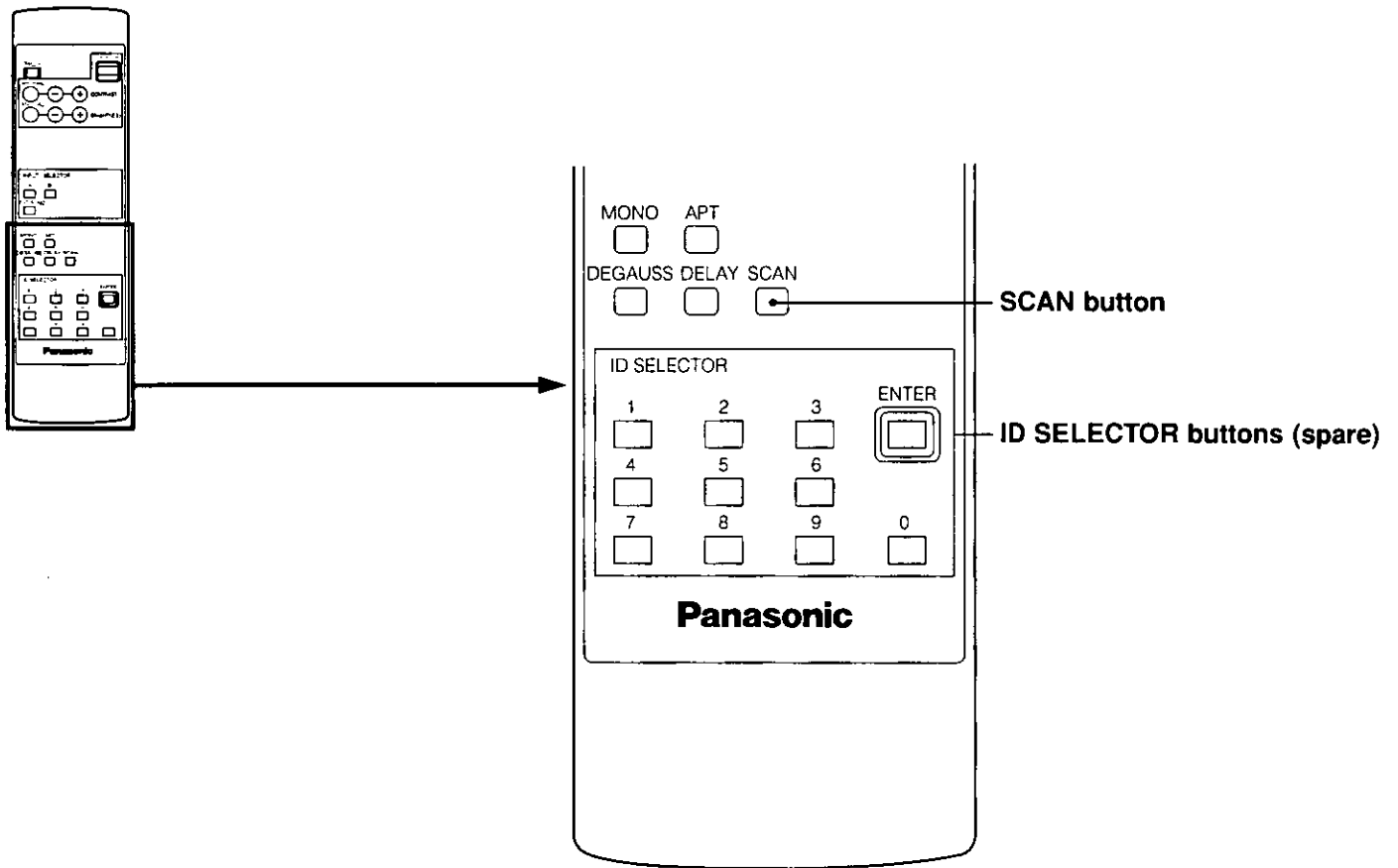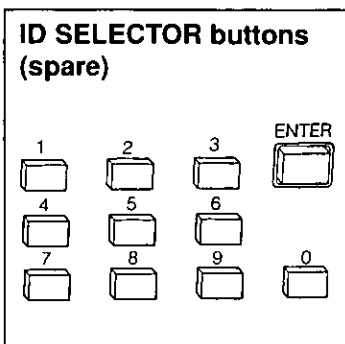
ID SELECTOR buttons (spare)	These buttons cannot be used because the monitor is not equipped with an ID setting function.
1 2 3 ENTER 4 5 6 7 8 9 0	It will be possible to use them when an ID function is added in the future.

Name and function of each rear panel part

Warning label

Fuse bracket (page 45)

Power cord connection socket (page 45)
This socket is used to connect the accessory power cord.

Manufacturing serial number display
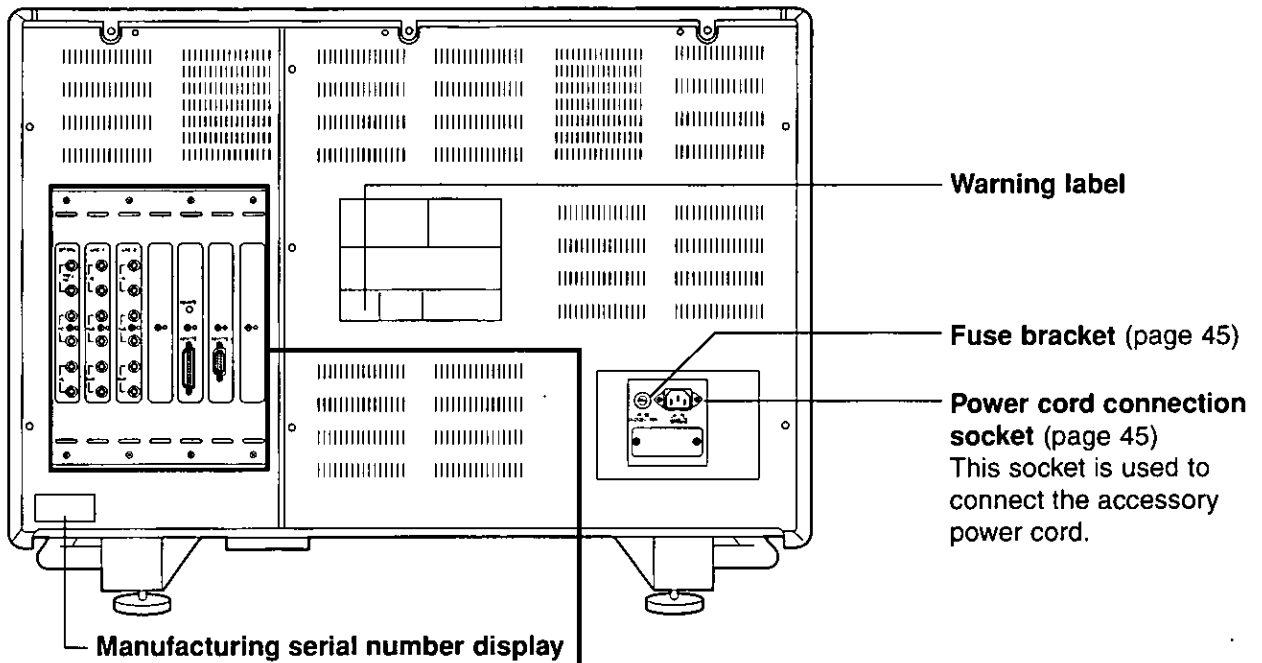
LINE B input/output terminal panel (page 47)
This panel contains the LINE B input/output terminals. They can be connected to sources for YPвPн signals and RGB signals.

LINE A input/output terminal panel (page 46)
This panel contains the LINE A input/output terminals. They can be connected to sources for YPвPн signals and RGB signals.

External sync input/output terminal panel (page 48)
These terminals are used for the input and output of external synchronizing signals.
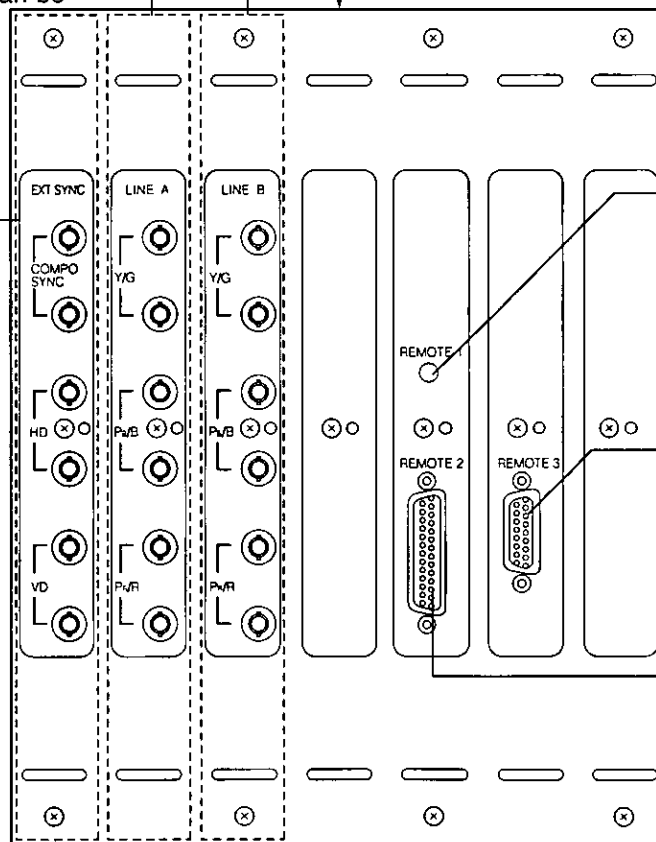
REMOTE 1 terminal (page 48)
This terminal is used to connect the wired remote control unit cable.

REMOTE 3 connector (page 49)
This connector is used in order to carry out external control.

REMOTE 2 connector (page 48)
This connector is used to carry out internal adjustments.

Fuse bracket ─────────── ┤ FUSE
AC125V 10A

AC IN
120V ~
50/60Hz ├─── **Power cord connection socket**
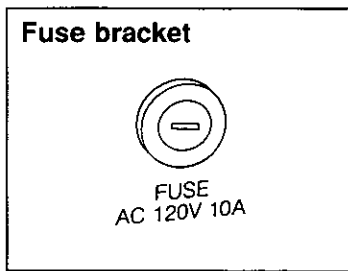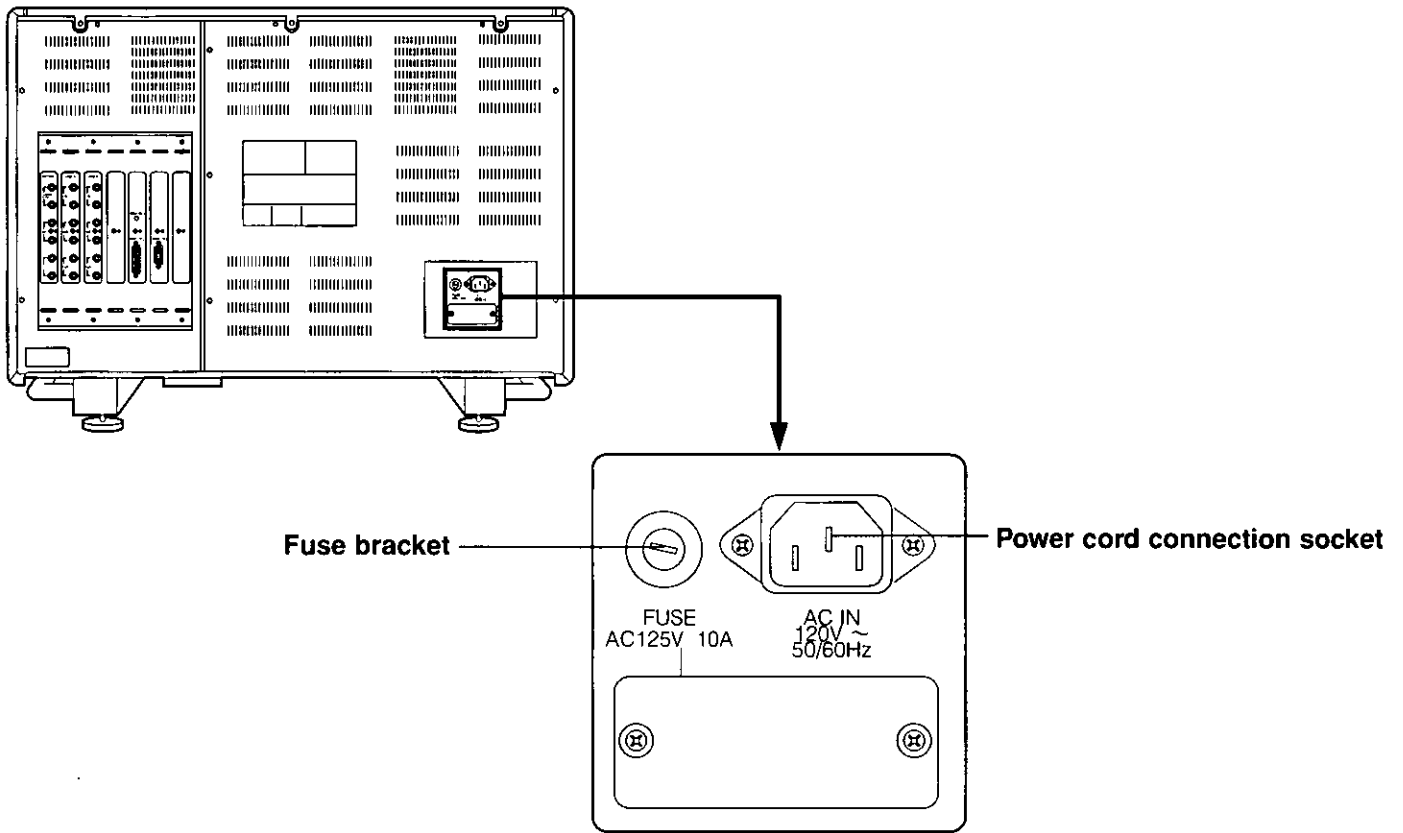
Fuse bracket	This bracket is equipped with a 125 V 10 A time-lag fuse.
FUSE AC 120V 10A	**NOTE:** ● If replacing the fuse, be sure to use a new fuse of the same type.
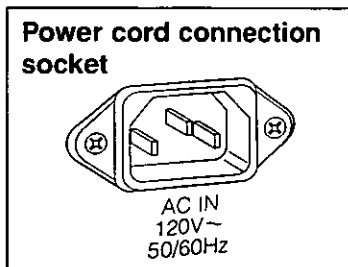
Power cord connection socket	This socket is used to connect the accessory power cord. Connect the monitor to a 120 V AC 50/60 Hz power supply.
AC IN 120V~ 50/60Hz	● The power cord for this monitor is equipped with a three-pronged plug. Be sure to insert it into a three-pronged wall outlet with a ground plug.
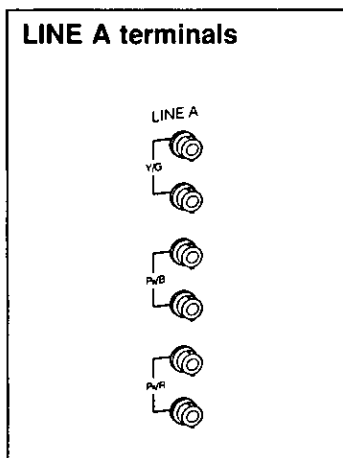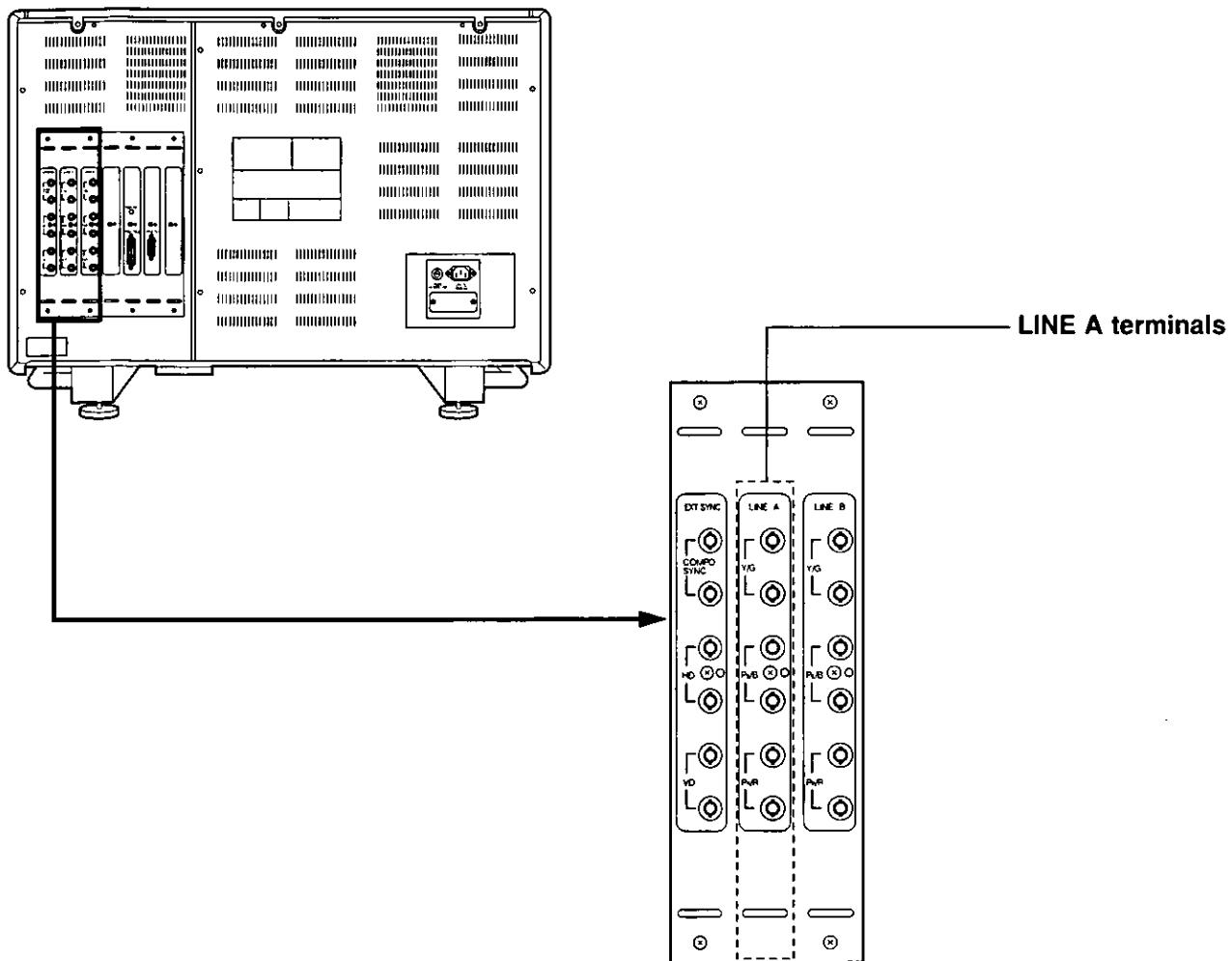
LINE A terminals

LINE A terminals

LINE A

Y/G

P₈/B

P₈/R

These terminals are used to input and output YP$_B$P$_R$ signals and analog RGB signals, and can be connected to 1080i and 480p signal sources.

- You must set the SIGNAL button inside the control tray to the appropriate setting in accordance with the format of the signal being input. Refer to page 18 for details.
- When signals from the sources connected to these terminals are being received, set the LINE A/B select switches on the front panel to LINE A.

NOTE:
- These terminals have a high impedance. If signal output is not necessary, always connect a 75 Ω termination (BNC) to one terminal side.
- Two terminals each are provided for the Y/G, P$_B$/P and P$_R$/P terminals. In order to provide an internal loop-through (bridge) connection, the input signal which is connected to one terminal is then output from the other terminal.

LINE B terminals

REMOTE 1 terminal

EXT SYNC terminals

REMOTE 2 connector

LINE B terminals

LINE B

These terminals are used to input and output YP_BP_R signals and analog RGB signals, and can be connected to 1080i and 480p signal sources.

● You must set the SIGNAL button inside the control tray to the appropriate setting in accordance with the format of the signal being input. Refer to page 18 for details.

● When signals from the sources connected to these terminals are being received, set the LINE A/B select switches on the front panel to LINE B.

NOTE: ● These terminals have a high impedance. If signal output is not necessary, always connect a 75 Ω termination (BNC) to one terminal side.

● Two terminals each are provided for the Y/G, P_B/P and P_R/P terminals. In order to provide an internal loop-through (bridge) connection, the input signal which is connected to one terminal is then output from the other terminal.

EXT SYNC terminals

EXT SYNC

COMPO
SYNC

HD

VD
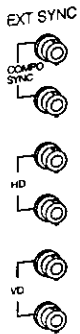
These terminals are used to input and output the external synchronizing signals for RGB signals and YP$_B$P$_R$ signals.

- You must set the SYNC button inside the control tray to the appropriate setting in accordance with the format of the synchronizing signal being input. Refer to page 19 for details.
- Signals with the following levels can be input to these terminals.
  COMPO SYNC terminals ····Normal SYNC 0.3 Vp-p negative polarity
  Tri-level SYNC ±0.3 Vp-p
  HD terminals ······················4.0 Vp-p negative polarity
  VD terminals ·······················4.0 Vp-p negative polarity

NOTE:
- These terminals have a high impedance. If signal output is not necessary, always connect a 75 Ω termination (BNC) to one terminal side.
- Two terminals each are provided for the COMPO SYNC, HD and VD terminals. In order to provide an internal loop-through (bridge) connection, the input signal which is connected to one terminal is then output from the other terminal.

REMOTE 1 terminal

REMOTE 1

This terminal is used to connect the wired remote control unit cable (accessory) which is used to connect the accessory wired remote control unit.

REMOTE 1

Mini plug

Remote control unit
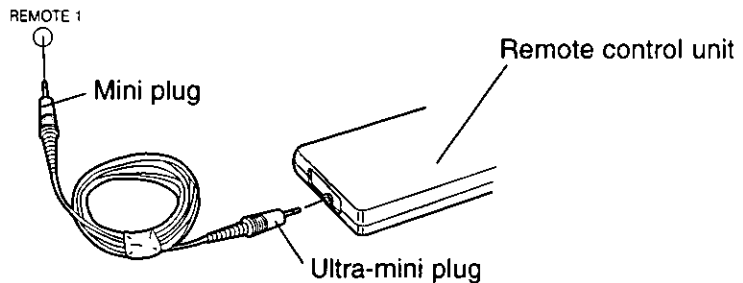
Ultra-mini plug

- Connect the mini plug (thicker end) of the wired remote control unit cable (accessory) to the REMOTE 1 terminal at the rear of the monitor, and connect the ultra-mini plug (thinner end) to the jack of the remote control unit.

REMOTE 2 connector

REMOTE 2
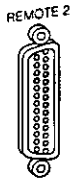
This connector is used to connect a personal computer for the purpose of carrying out internal adjustments.

NOTE:
- This connector should not be used except by a qualified technician.

REMOTE 3 connector

REMOTE 3 connector
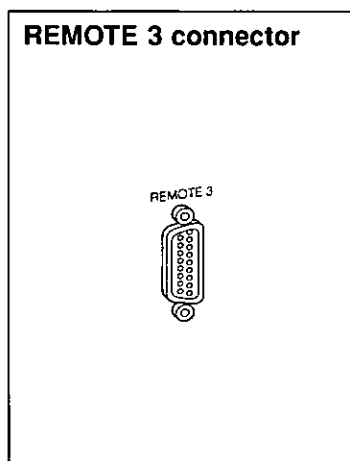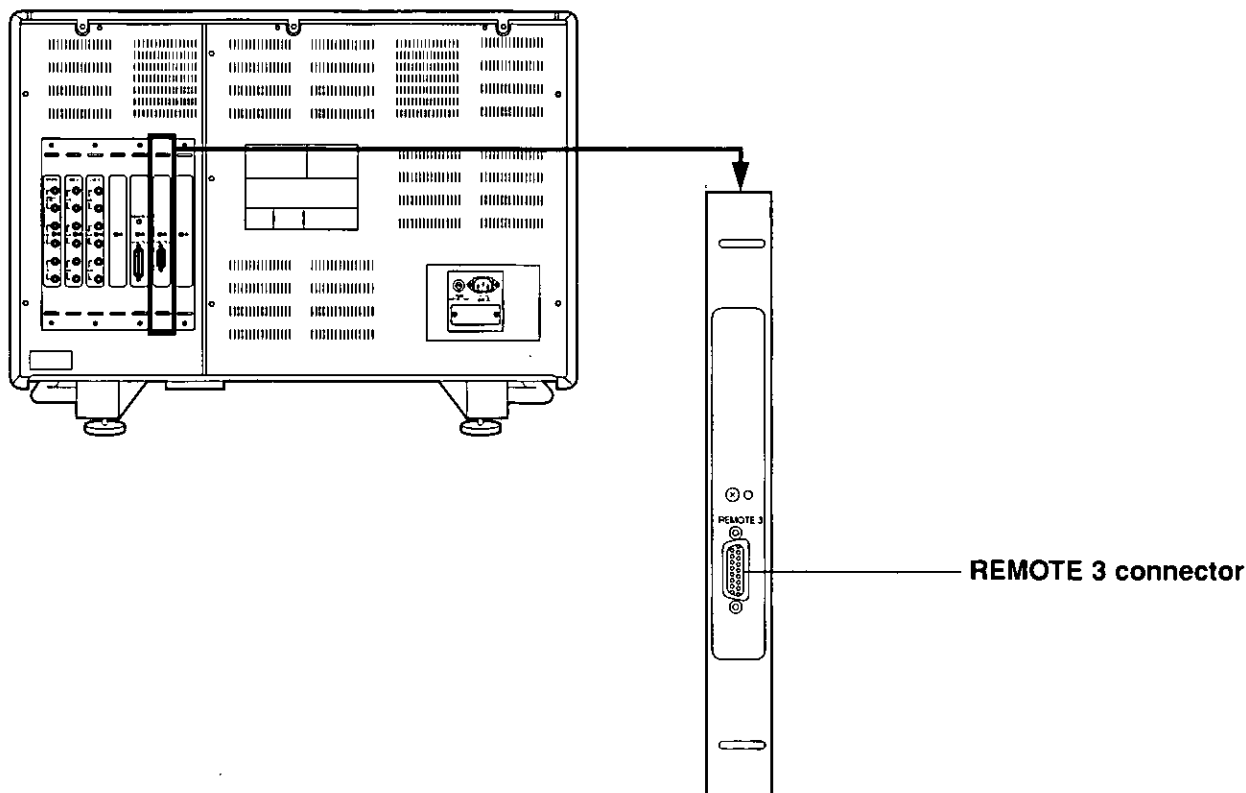
REMOTE 3

This connector is used to carry out external monitor control.
(When using this connector, make sure that you have a connector cable switch on hand ready.)
● The REMOTE 3 connector can be used to create a system in which the user can independently control the monitor remotely using an external switch.
● Following is a description of the control details and control methods for the connector pins.

Pin No.	Control details	Control method
①	Scanning size selection	Shorted to pin ⑤: Underscan Open: Overscan
③	Horizontal delay selection	Shorted to pin ⑤: Horizontal delay Open: Normal screen
④	Vertical delay selection	Shorted to pin ⑤: Vertical delay Open: Normal screen
⑧	Split screen selection	Shorted to pin ⑤: Split screen Open: Normal screen
⑨	Synchronizing signal selection	Shorted to pin ⑤: External synchronizing signal Open: Internal synchronizing signal
⑩	Input selection	Shorted to pin ⑤: LINE B Open: LINE A
⑪	External synchronization method selection	Shorted to pin ⑤: HD/VD Open: COMPO SYNC
⑫	Color/black-and-white selection	Shorted to pin ⑤: Black-and-white Open: Color
⑬	Signal format selection	Shorted to pin ⑤: YPbPr signal Open: RGB signal
⑭	TALLY indicator selection	Shorted to pin ⑤: Red Open: Green

NOTE: ● The external synchronization format selection setting for pin ⑪ is only valid when an external synchronizing signal has been selected at pin ⑨.

Connection diagram for external control (The pin layout is as seen from the rear.)

Color/black-and-white selection

Signal format selection

TALLY indicator selection

Split screen selection

(15) (8)

(14) (7)

(13) (6)

(12) (5)

(11) (4) — Vertical delay selection

(10) (3) — Horizontal delay selection

(9) (2)

(1) — Scanning size selection

Synchronizing signal selection

Input selection

External synchronization method selection

Connector: D-SUB 15-pin
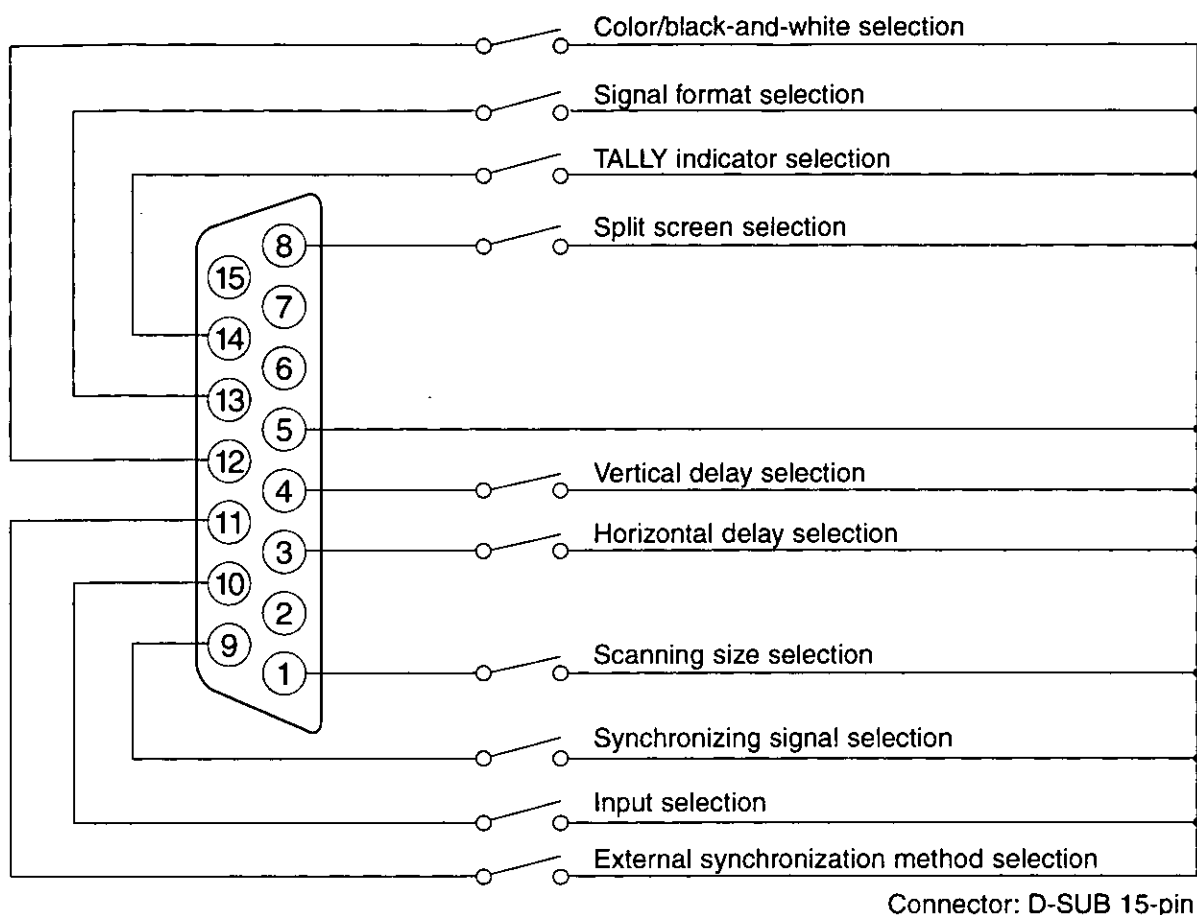
- Pin ⑤ is the GND terminal pin.
- Pins ②, ⑥, ⑦ and ⑮ are spare (reserved).
- Each pin is diode clamped to GND/+5 V, so that they may become damaged if an external voltage is applied. Furthermore, each pin is pulled up internally to 10 kΩ and + 5 V.
- The control operations carried out via the REMOTE 3 connector and the corresponding control operations using the front panel and control tray cannot be used together.

(Example)

If underscan is selected using the monitor front panel, the scanning size control setting from the REMOTE 3 connector will be disabled. Similarly, if underscan is selected via the REMOTE 3 connector, it will not be possible to use the front panel operation panel to change the scanning size.

Specifications

Input/output terminals	LINE A: YP$_B$P$_R$/RGB signals BNC (bridge connection)
	During RGB signal input
	R 0.7 Vp-p Positive polarity
	G 0.7 Vp-p Positive polarity
	B 0.7 Vp-p Positive polarity
	Impedance High impedance 75 Ω termination
	During YP$_B$P$_R$ signal input (same terminals as for RGB signals)
	Y 1.0 Vp-p (video 0.7 Vp-p, sync 0.3 Vp-p [Tri-level sync possible only for 1080i signal])
	P$_B$, P$_R$ ±0.35 Vp-p Positive polarity
	Impedance High impedance 75 Ω termination
	LINE B: YP$_B$P$_R$/RGB signals BNC (bridge connection)
	During RGB signal input
	R 0.7 Vp-p Positive polarity
	G 0.7 Vp-p Positive polarity
	B 0.7 Vp-p Positive polarity
	Impedance High impedance 75 Ω termination
	During YP$_B$P$_R$ signal input (same terminals as for RGB signals)
	Y 1.0 Vp-p (video 0.7 Vp-p, sync 0.3 Vp-p [Tri-level sync possible only for 1080i signal])
	P$_B$, P$_R$ ±0.35 Vp-p Positive polarity
	Impedance High impedance 75 Ω termination
	EXT SYNC: External synchronizing signal BNC (bridge connection)
	COMPO SYNC 0.3 Vp-p Negative polarity
	±0.3 Vp-p Tri-level sync (only for 1080i signal)
	HD 4.0 Vp-p Negative polarity
	VD 4.0 Vp-p Negative polarity
	Impedance High impedance 75 Ω termination
REMOTE 1 terminal	Round 1-pin connector (mini-jack) for wired remote control
REMOTE 2 connector	D-sub 25-in connector for RS-232C
REMOTE 3 connector	D-sub 15-pin connector for external control
Input signal format	1080i/480p
CRT	30″ 90° deflection 37.5 mm dia. in-line electron gun Dot-type shadow mask (Dot pitch 0.36 mm)

Fluorescent tubes	SMPTE standard			
		x	y	
	R	0.630	0.340	
	G	0.310	0.595	
	B	0.155	0.070	

Effective screen size	Width 26 $5/32''$ (664 mm) Height 14 $23/32''$ (374 mm) Diagonal 30" (762 mm)			
Power supply	AC120 V±10% 50/60 Hz			
Power consumption	Standard 370 W Peak 450 W			
Operating conditions	Storage temperature Operating temperature Guaranteed temperature for electrical performance Humidity	-4°–140°F (-20°C–60°C) 32°–104°F (0°C–40°C) 59°–95°F (15°C–35°C) 30%–80% (non-condensing)		
Dimensions	Width 31 $9/16''$ (802mm) Height 24 $7/32''$ (615mm) Depth 27 $7/32''$ (691mm)			
Weight	227lbs. (103kg)			
Cabinet	Metal cabinet			
Power cord length	7.9′ (2.4m)			

Accessories

- Power cord ···1
- Remote control unit ·································1
- Wired remote control unit cable ·············1 (16.4′ [5m])

- AA-size batteries ···································2
- 75-Ω terminations ·································9

Electrical characteristics
(warming-up time 30 minutes or more)

Picture signal system	Input return loss	46 dB or more (6 MHz)
		26 dB or more (30 MHz)
	Frequency characteristics	60 Hz–20 MHz (within ±1.5 dB)
		20–30 MHz (within +1 dB/-4 dB)
		30 MHz or higher (dropping characteristics)
	Wave distortion	Sag 2% or less (60 Hz square wave)
		Overshoot 10% or less (square wave with 10 ns rise)
		Streaking ±3% or less
	Differential gain (DG)	3% or less
	DC playback error	1% or less (change in pedestal level when APL [average picture level per field] switched between 10% and 90%)
	S/N ratio	-50 dB (RMS) or less
	Contrast control range	-6–+6 dB
	Aperture correction range	0–+10 dB (switchable to 7 MHz/16 MHz/25 MHz)
	Color saturation adjustment range	-6–+10 dB
Synchronization system	Input return loss	46 dB or more (6 MHz)
		26 dB or more (30 MHz)
	Synchronizing stability	Internal ±6 dB
		External ±6 dB
	Horizontal synchronization	Leading-in range f_H ±800 Hz
		Holding range f_H ±1.0 kHz
	Vertical synchronization	Synchronizing range f_V ±5 Hz
Deflection high voltage system	Deflection distortion	Linearity Horizontal ±3% or less
		Vertical ±1.5% or less
		Geometric distortion ±1.5% or less
	Flyback time	Horizontal 3.7 μs or less
		Vertical 650 μs or less
	Interlacing	Within 55:45
	Hum fluctuation	0.2 mm or less
	High-voltage potential	31.5 kV ±300 V
	High-voltage fluctuation	±1% or less (beam current 0–1 mA: static)
	Convergence slippage	Center 0.5 mm or less
		Edges 0.7 mm or less
	Standard luminance	70 cd/m² (for full-white pattern)
	Maximum luminance	200 cd/m² (during white peak)
Image system	Resolution	Horizontal Center 1000 TV lines or more
		Edges 950 TV lines or more
		Vertical 750 TV lines or more
	Image amplitude	During overscan 3% overscan
		During underscan 2% underscan
	Color temperature	Selectable (3200 K/6500 K/9300 K/user setting)

Dimensions

34 ¹³/₁₆ (884)

7 ¹⁹/₃₂ (193)

16 ²⁷/₃₂ (428)

Units: inches (mm)

31 ⁹/₁₆ (802)

2 ⁹/₃₂ (58)

27 (686)

2 ⁹/₃₂ (58)

2 ⁷/₈ (73.3)

4 ¹¹/₃₂ (110.6)

22 ³/₈ (568.2)

24 ³/₁₆ (614.5)

15 ¹⁹/₃₂ (396.4)

15 ¹⁹/₃₂ (396.4)

15 ¹⁹/₃₂ (396.4)

4 ²⁹/₃₂ (124.9)

7 ¹⁹/₃₂ (193)

φ1 ³¹/₃₂ (50)

⁷/₁₆ (10.8)

4 ³¹/₃₂ (126.5)

21 ⁵/₈ (549)

4 ³¹/₃₂ (126.5)

4 ³/₈ (111.5)

20 ¹⁵/₁₆ (532)

1 ⁷/₈ (47.5)

27 ⁷/₃₂ (691)
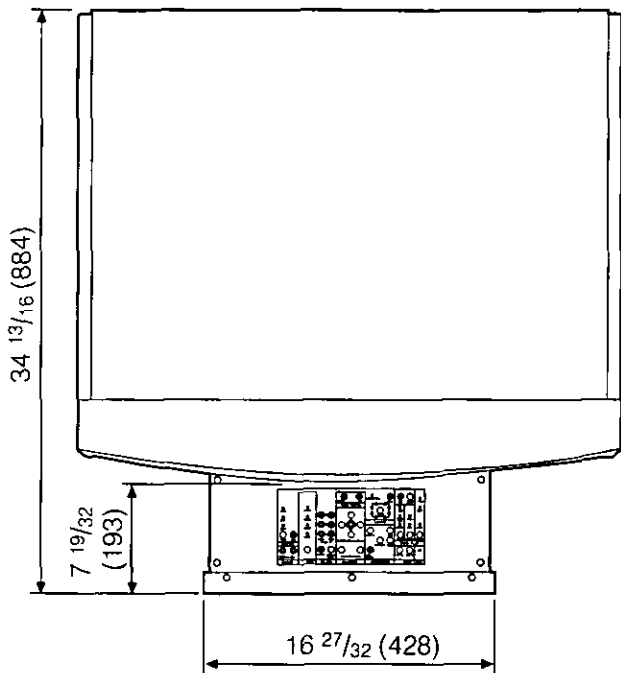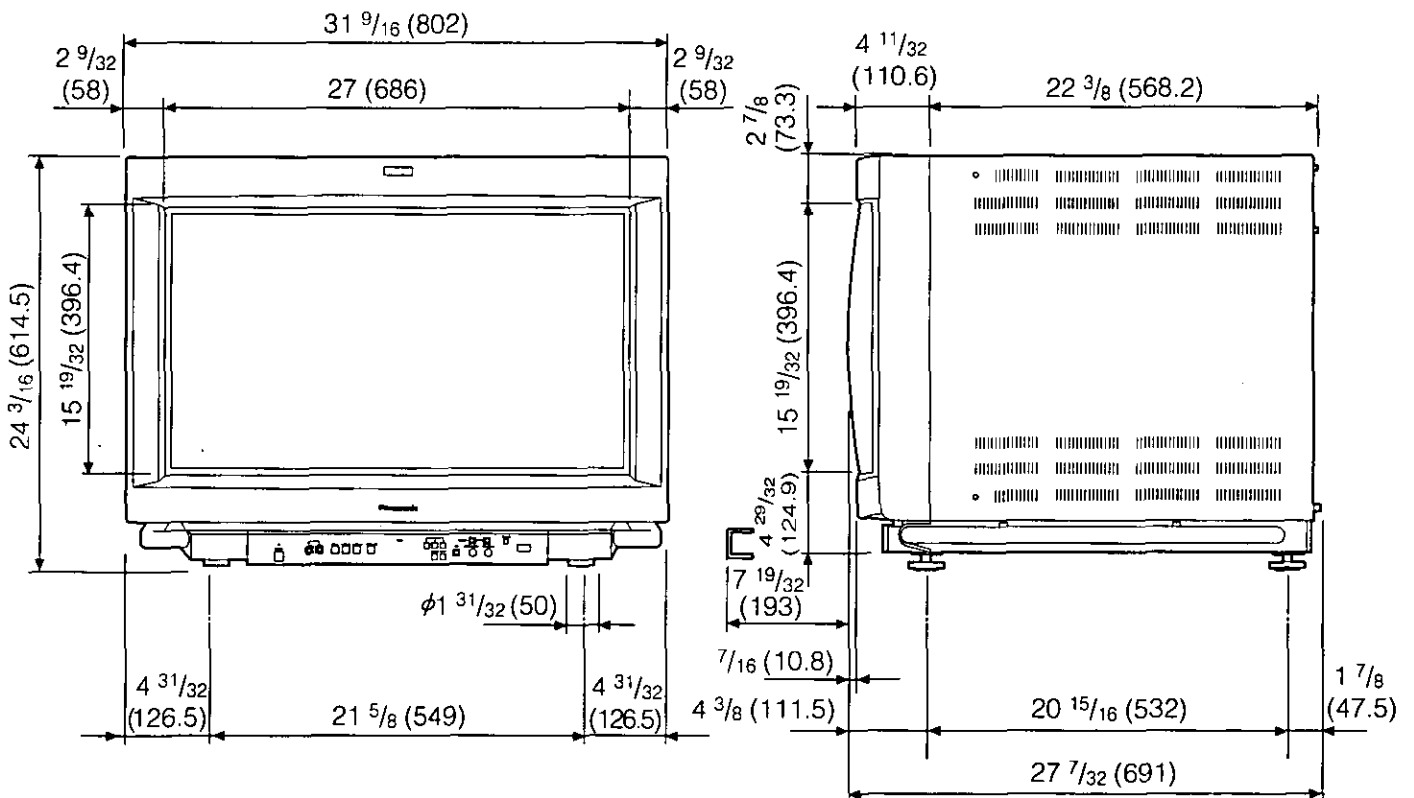
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