TECHNICAL MANUAL (ver.2.0)

Plasma Display:	**PDP-V402/V402E**
Down converter:	**PDA-4003**
Tilted cradle:	**PDK-4001**
Metal fixture for ceiling-hanging type plasma display:	**PDK-4002**
	PDK-4003
	PDK-4004
PDP bracket:	**PDK-4005**
Metal fixture for wall-hanging type plasma display:	**PDK-4006**
Mobile cart:	**PDK-5008**
Multiple mounting fixture for plasma display:	**PDM-4001**
Protective filter:	**PDA-4002**
Speaker system:	**PDP-S03-LR**

This manual gives precautions, general information, and examples for installation and handling of the plasma display and its metal fixtures.

Carefully examine the structure, material, strength, and environmental conditions for the site at which the display is to be installed before selecting an installation method. If the site is unsatisfactory, venders should not sell or install the equipment.

For safety

⚠ In this manual, this symbol indicates important precautions. Read these precautions carefully.

Note:
- We are not responsible for damage caused by defective parts supplied by third parties.
- The performance of the equipment is guaranteed only when assembly and adjustment are performed as described herein.
- The specifications and descriptions given in this technical manual are subject to change without notice.

[Installation]

- We sell this equipment on the assumption that it will be installed by a specialist with adequate training. The equipment must be installed by trained vendors or by your dealer.
- We are not responsible for injuries or damage resulting from choice of unsuitable installation sites, problems in assembly and installation, improper installation, or natural disasters.

Pioneer

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Warning ⚠

- To prevent damage or injury, carefully read and follow this manual and all labels provided on the main display body before undertaking assembly, installation, movement, or adjustment.
- To prevent fire and electric shock resulting from moisture infiltration, never use this system outdoors.
- To prevent injury, take care when handling the system's sharp edges.
- When installing the system at a height, create an off-limits zone to prevent injury or secondary damage in case of falling equipment.
- To prevent fire and electric shock, never place foreign objects within or make modifications to the equipment.
- Always observe the following operating environmental conditions:
  - Temperature   : 0 °C to 40 °C
  - Humidity   : Relative humidity 20% to 80%
- Make sure the site is well-ventilated, and take care to maintain adequate ventilation following installation.

Features

Features and functions of the plasma display (PDP-V402/V402E)

● **Layout Freedom and Slim Design**

Layout freedom is enhanced by providing the highest level of thinness and lightness in the industry (Thinness: 88 mm, Weight: 30.8 kg).

The thin, light form of the plasma display panel provides immediate improvement of operating conditions by increasing the potential installation locations and style coordination for smooth integration into a variety of applications.

● **Materialization of higher luminance and picture quality**

Improved efficiency of the driving current provides even higher luminance.

Adoption of a black stripe and improved filters provides better daylight contrast and color fidelity.

● **Flexible Response to a Wide Band of Input Signals**

VIDEO signals and 640 x 480 dot (VGA) PC signals are displayed with great clarity.

Connection of the exclusive high performance down converter (Scheduled for release soon) enables broad response up to 1024 x 768 dot (XGA) PC signals, and provides the optimum solution for sharp resolution to prevent loss of information such as fine characters and lines.

● **Best display for industrial and public purposes**

Our plasma display (PDP-V402/V402E) is specifically designed for use as an industrial display. It has been designed to provide the following features:

- An aspect ratio of 4:3 optimal for use as a public display
- A versatile mounting structure and metal fixtures permitting wall or vertical installation
- Equipped with integrator mode that enables fine adjustment of white-balance
- Provided with RS-232C as an external control interface
- Color temperature (white-balance) changeover function to allow retakes
- Equipped with a full set of input/output terminals (four input systems and one output system) capable of handling a wide range of applications
- Operating state monitoring function
- Priority input auto switching mode
- Key lock function to prevent tampering
- OSD (On Screen Display) ON/OFF function

Our plasma display has been designed for durability and reliability, features required in industrial displays. Its features and quality allow use in a wide range of applications and locations.

List of specifications

2.1 List of specifications

Light emission panel ...... 40-inch plasma display panel
Aspect ratio 4:3
No. of pixels .... 640 × 480 (adaptable to VGA)
Pixel pitch
.... 1.26 (horizontal, RGB trio) × 1.26 (vertical) mm
No. of gradations .... 256 gradations/
16,770,000-color full color
View angle .... Horizontal : 160° or more
Vertical : 160° or more

Input/output terminals
RGB Input
① BNC Terminal R, G, B (fixed to 75 Ω input)
Analog R, G, B (fixed 75 Ω input, G-on Sync input)
HD (H/V SYNC), VD (switching between 75 Ω /2.2 kΩ input)
Switch VD according to the sync output impedance of the connector. Switch VD to 2.2 kΩ except when the sync output impedance is 75 Ω. (The terminal is factory-set to 75 Ω.)
② Mini Dsub 15P
Analog RGB, 0.7 Vp-p, 75 Ω input, G-on Sync input (Sync 0 - 3 Vp-p)
Synchronization:
HD, VD 2.2 kΩ input, 2.0 - 5.0 Vp-p (Positive/Negative), G-on Sync switch (G-on Sync ON/OFF Change over)
Turn the switch on only if images become greenish (when the G-on Sync signal is applied) at RGB2 input. Under normal circumstances, the switch is left off. (The switch is factory-set to G-on Sync OFF.)

Video input ...... Single-system BNC terminal 75 Ω input
Composite 1 Vp-p
Y/C input .... Double-system BNC terminal 75 Ω input
Control input .... Dsub 9P (RS-232C control)
Video output .... Single-system BNC terminal 75 Ω output (Note: Up to four units, including the unit to which the signal is first input, may be connected when the equipment is connected in series using this output terminal. However, increasing the number of connected units may increase the noise.)

Applicable sources
① Video system: NTSC <PAL/NTSC Dual>
② Computer system
  1. Resolution
    AT-compatible: VGA (640 dots × 480 lines)
    Macintosh: 13-inch mode (640 dots × 480 line)
    PC-9800:   Normal mode (640 dots × 400 line)

  2. Synchronizing frequency:
    AT-compatible: 31.5 kHz (horizontal), 59.9 Hz (vertical)
                   37.9 kHz (horizontal), 72.8 Hz (vertical)
                   37.5 kHz (horizontal), 75 Hz (vertical)
    Macintosh: 35 kHz (horizontal), 66.7 Hz (vertical)
    PC-9800:   24.8 kHz (horizontal), 56.4 Hz (vertical)
                   31.5 kHz (horizontal), 70.1 Hz (vertical)

Does not accommodate the interlaced mode of the computer. Some types of computer have multiple indication modes. However, some modes cannot be displayed even if the computer meets the specifications. Please contact your dealer for further information.

Power source .... 100 to 120 V AC, 50/60 Hz
<220 to 240 V AC , 50/60 Hz>
Inrush .... 70 A or less <30 A or less>
Power factor .... 0.95 or more
Power consumption .... 350 W (in standby: 2 W)
Outer dimensions .... 916 (W) × 714 (H) × 88 (D) mm
Weight .... 30.8 kg <31.6 kg>
Operating environment temperature range
.... 0 to 40 °C
Operating environment humidity range
.... Relative humidity 20% to 80%
Operating environment air pressure range
.... 0.8 - 1.1 atmospheric pressure
Storage conditions (plasma display panel alone)
Storage ambient temperature range
  -20 to 60°C (Temperature gradient (10°C/hr. or less)
Storage ambient humidity range
  .... 20 to 90% (without condensation)
Storage ambient air pressure range
  .... 0.6 - 1.5 atmospheric pressure
Storage conditions (Package state)
Storage environment temperature range
  .... –40 to 60 °C
Storage environment humidity range
  .... Relative humidity 20% to 90%
Storage ambient air pressure range
  .... 0.6 - 1.5 atmospheric pressure
Storage stack limit .... maximum of 10
Accessory
Power cord (PDP-V402 only) 1
Remote control 1
Remote control case 1
AA battery 2
Stand 2
Bolt 2
Washer 2
Cable clamp 3
Operating Instructions 1
Warranty card 1

• Specifications and appearance are subject to change without notice.
• < > shows the PDP-V402E.

2.2 Outline drawing

Plasma display main body weight : 30.8 kg <31.6 kg>

Material : Front - Plastic, Back - plate

Treatment : Front - Leather satin gray paint, Back - Semi-matte black paint (Coating colors should be according to Pioneer's original color specification)

Packing specifications - See "3.3.2 Unpacking"

• <   > shows the PDP-V402E.

⊕ : Location of center of gravity

φ12 (the opening for infrared remote control signals)

<Light-accepting section of the remote controller>

<Operation panel of the main body>

14-M8 (with φ16-hole rivet)

Rear View

7

Part names

2.3 Part names

\<Terminals and power supply section\> (The terminals and power supply section are located at the back of the plasma display main body.)

\<Control Panel\>
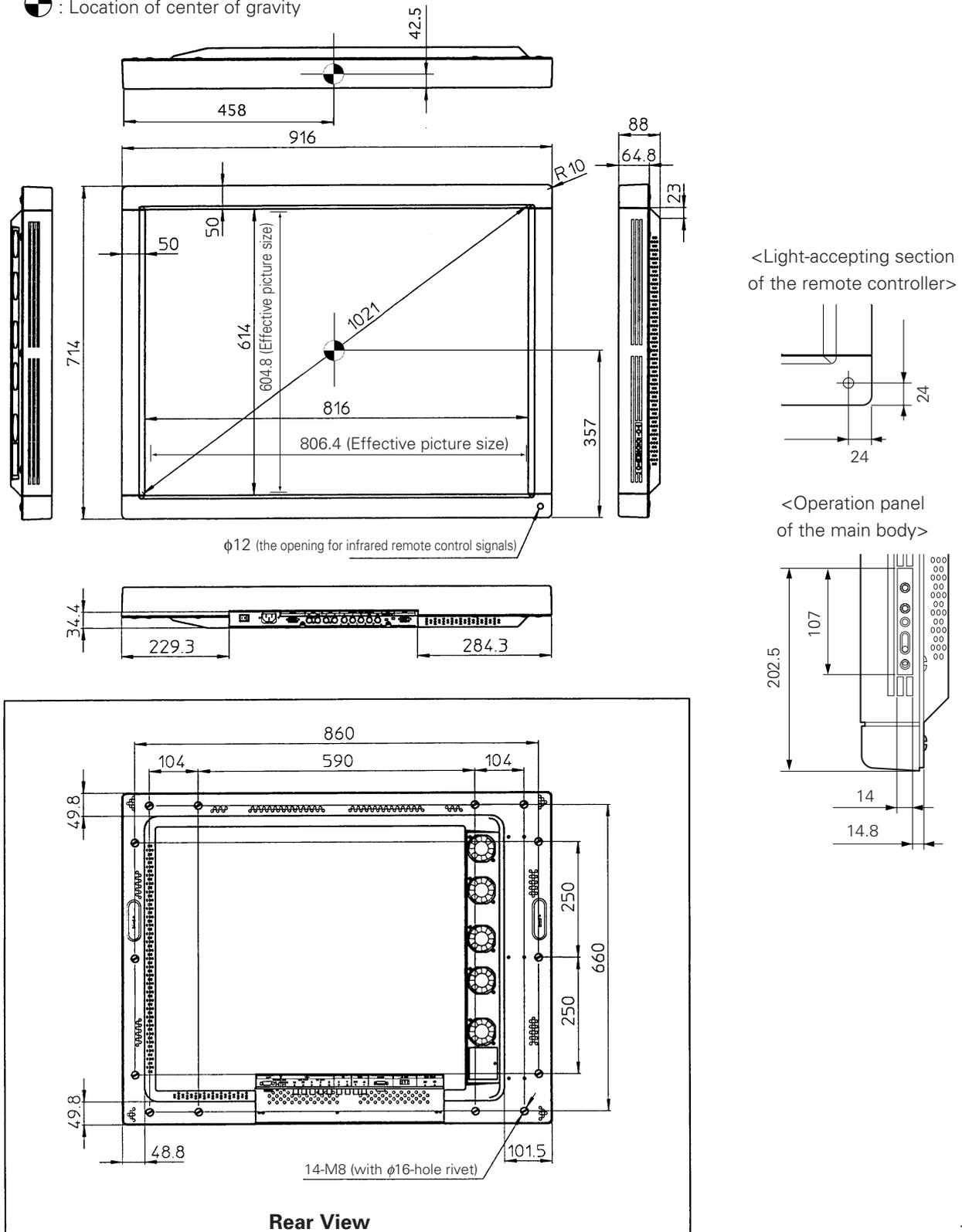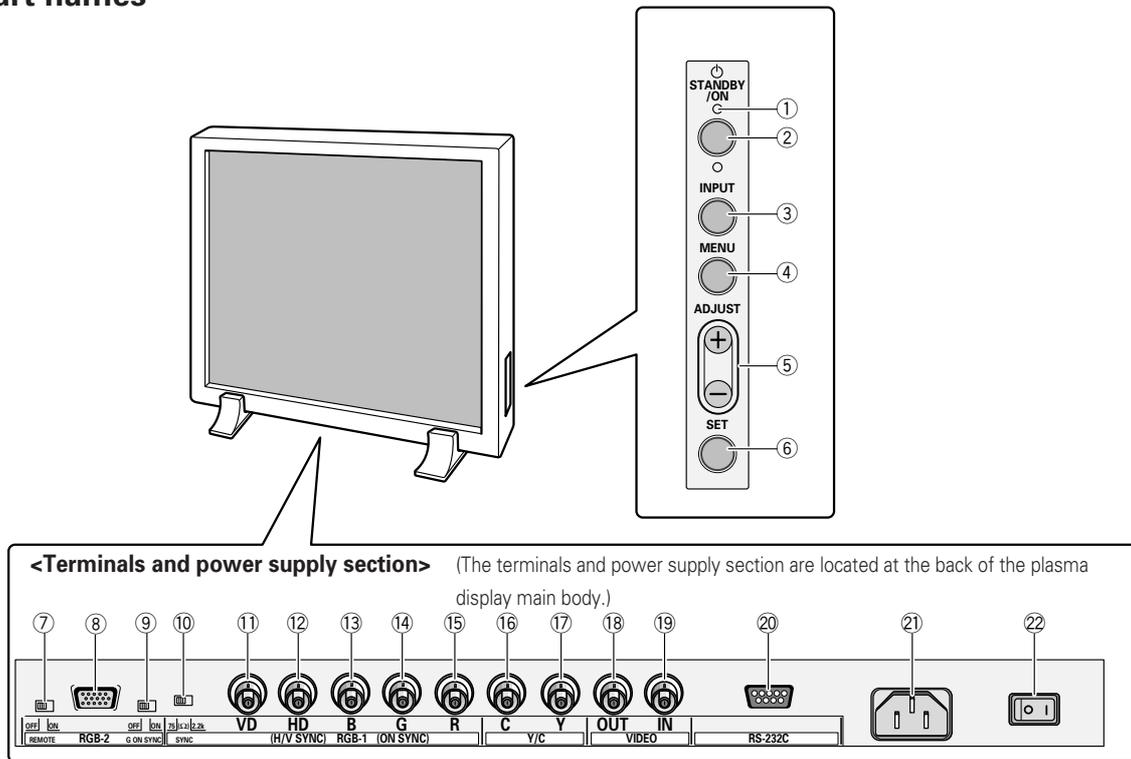
① **STANDBY/ON indicator**

The indicator is red when in standby mode and turns green when the power to the display is turned on.

② **STANDBY/ON button**

Press to turn the power to the display on and off.

③ **INPUT button**

Press to switch the various input functions.

④ **MENU button**

Press to enter the menu screen and exit from it.

⑤ **ADJUST button**

Use the +/– buttons to adjust picture quality.

⑥ **SET button**

Press to finalize menu selections when adjusting picture quality.

\<Rear Panel Terminals/Connections to Power Source\>

RGB-2 input terminals

⑦ **Remote control out switch (ON/OFF)**

This switch will output remote control commands from the RGB-2 (D-SUB 15-pin) terminal to control external peripheral devices planned for future sales release. Normally be sure to use set to OFF.

⑧ MINI D-SUB 15-pin terminal

⑨ **G on Sync mode selection switch (ON/OFF)**

If the images become greenish when an external device is connected to the RGB-2 input terminal, turn ON the G on SYNC mode. Normally set to OFF.

RGB-1 input terminals

⑩ Sync Signal Input Impedance switch (75 Ω/2,2 kΩ)

⑪ Vertical Sync Signal Input terminal: (75 Ω/2,2 kΩ, switchable with the Sync Signal Input Impedance switch)

⑫ Horizontal or Composite Sync Signal Input terminal: (75 Ω/2,2 kΩ, switchable with the Sync Signal Input Impedance switch)

⑬ Blue Signal Input terminal: 75 Ω

⑭ Green or Green with Sync Signal Input terminal (ON SYNC) :75 Ω

⑮ Red Signal Input terminal: 75 Ω

Y/C input terminals

⑯ Color Signal Input terminal: 75 Ω

⑰ Luminance Signal Input terminal: 75 Ω

VIDEO input/output terminals

⑱ Video Output terminal: 75 Ω

⑲ Video Input terminal: 75 Ω

⑳ **Control Signal Input terminal (RS-232C)**

㉑ **AC inlet**

㉒ **MAIN POWER switch**

2.4 Various pin arrangements

RGB-2 input terminal (mini D-sub 15-pin connector: female)
Pin arrangement

RS-232C terminal (D-sub 9-pin connector: male)
Pin arrangement
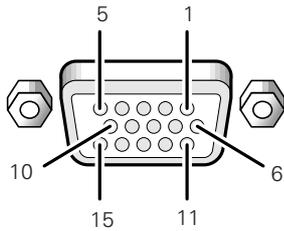
Pin No.	Signal
1	R
2	G
3	B
4	NC (not connected)
5	GND
6	GND
7	GND
8	GND
9	NC (not connected)
10	GND
11	NC (not connected)
12	Remote control signal output (Note)
13	HD or H/V SYNC
14	VD
15	NC (not connected)
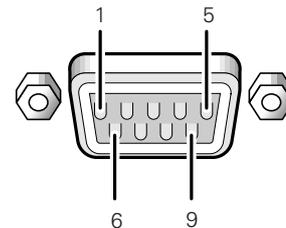
Pin No.	Signal
1	NC (not connected)
2	TxD (Transmit Data)
3	RxD (Receive Data)
4	NC (not connected)
5	GND
6	NC (not connected)
7	NC (not connected)
8	RTS (Request To Send)
9	NC (not connected)

Note: This is a pin for controlling an external add-on peripheral device to be released in the near future.
1 This can be turned ON/OFF with the remote out switch ⑦.
When ''OFF'' is selected, it is NC (not connected).

Remote control

2.5 Remote control

Power button
Turns power on or off.

VIDEO button
Sets Input Function to VIDEO Input.

MENU button
Used to switch the menu screen and normal screen.

ADJUST button
Used to adjust images.

⏻ STANDBY/ON

VIDEO Y/C RGB 1

INPUT SELECT RGB 2

MENU

SET

Pioneer SR

Y/C button
Sets Input Function to Y/C input.

RGB 1 and 2 buttons
These buttons set Input Functions to RGB 1 (BNC terminal) and RGB 2 (Mini D-SUB terminal), respectively.

SET button
This button used to select an adjustment item for picture adjustment.

2.6 Remote control case

Remove the peel-off paper from the double-sided tape on the back of the remote control case, and attach it on the back of this display or on the installation metal fixture to use as a remote control storage case.

Remote

Example of attaching a remote control case

Remote control case

Double-sided tape
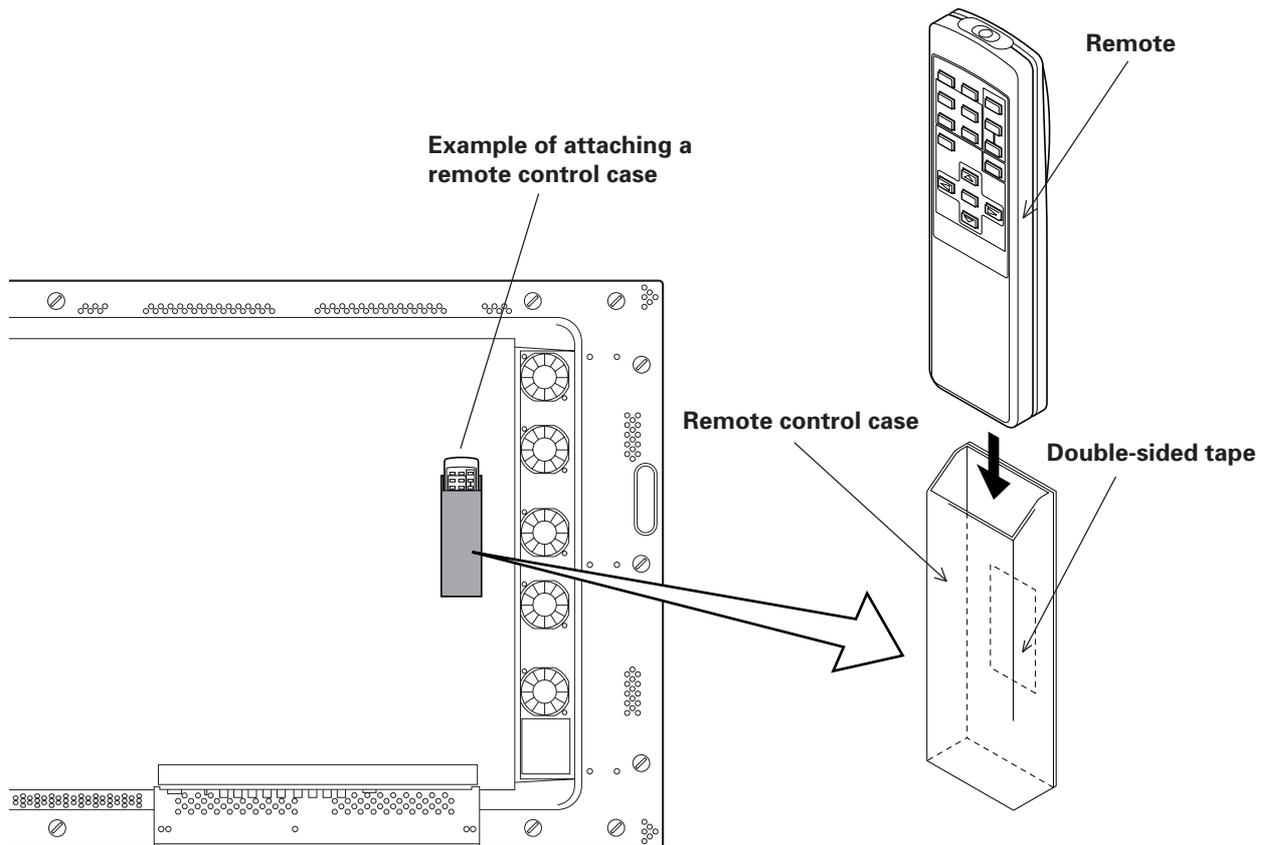
⚠ **(Note) Make sure not to block any air inlet hole with the remote control case.**

Installation environment

3.1 Installation environment

The plasma display and special metal fixture must be installed after careful discussion with the building owner and manager of the building. Never undertake installation without careful consideration of the consequences. In addition, contact the contractor responsible for building construction and interior structure design and confirm the structure and safety of the building.

⚠ : Safety precautions

⚠ **1) Structure of installation site**

Be sure to use an appropriate installation method, after fully understanding the structure of the installation site. There are many types of building structures and materials, and appropriate installation methods will vary accordingly. When using a special metal mounting fixture, consult your dealer or the maker of the fixture.
Before drilling holes, always consider the location of wiring and piping within the building.

⚠ **2) Load resistance of the installation site**

Select an installation site capable of supporting the combined weight of the metal fixture and display.

"Sufficient strength to withstand" means sufficient strength to withstand a weight four times that of the main body including the metal fixture.

⚠ **3) Horizontal plane**

Select a level, sturdy, installation site with sufficient load-bearing capacity.
When using suspension bolts, take care to distribute load evenly on the ceiling on the floor of the installation site.

⚠ **4) Securing installation space**

Select an installation site with adequate space for working. This work requires two or more people.
Remember to leave adequate space for future maintenance.

⚠ **5) Peripheral equipment**

Installation sites close to air conditioner outlets or light bulbs may be unsuitable due to potential damage from dust, temperature, humidity, or condensation.

⚠ **6) Dangerous location sites**

Do not install the display at locations where it may be leaned against or grasped. Similarly, avoid installing at sites subject to excessive vibration or physical shock.

7) Lighting

- For more visible display, avoid installation in very bright locations. Before choosing the location site and method,carefully consider the location of lighting fixtures and direction and strength of sunlight.
- In bright locations, images may appear dark even if the luminance is increased. Adjusting picture brightness to excessively high levels to compensate for extremely bright ambient lighting may reduce the service life of the display panel.

8) Semi-outdoor installation

This machine is designed for indoor use. Installed semi-outdoors, the display will be subject to problems resulting involving the following factors:
- Water, dust, etc.
- Changing temperature and humidity
- Air-borne salt

To ensure that pictures appear normal, avoid installation in locations subject to direct sunlight.

⚠ **9) Temperature and humidity**

The installation site should conform to the following temperature and humidity conditions:

• Operating temperature range: 0 to 40 °C (Depending somewhat on installation conditions, see descriptions of special installations and methods for installation of the standard metal fixture.)

Operating environment humidity range .... Relative humidity 20% to 80%

Operating environment air pressure range .... 0.8 - 1.1 atmospheric pressure

Storage conditions (plasma display panel alone)

Storage ambient temperature range .... -20 to 60°C (Temperature gradient (10°C/hr. or less)

Storage ambient humidity range .... 20 to 90% (without condensation)

Storage ambient air pressure range .... 0.6 - 1.5 atmospheric pressure

Storage conditions (Package state)

Storage environment temperature range .... –40 to 60 °C

Storage environment humidity range .... Relative humidity 20% to 90%

Storage ambient air pressure range .... 0.6 - 1.5 atmospheric pressure

We recommend against installing electronic equipment, including this display, in high-humidity environments. If the display must be installed at a site subject to humid conditions, observe the following:

• Never install the machine in environments having humidity falling outside the specification range.

• Ground the equipment.

• Do not allow condensation to form on any display surface.

• Do not allow water or other liquids to enter the unit.

10) Condensation

One common problem encountered during winter is condensation, drops of water that form on display surfaces when the ambient temperature rises suddenly. Such moisture may adversely affect the performance of the display. If condensation is observed, turn off the machine for one hour before attempting to use it again. Another solution is to raise the ambient temperature gradually, if possible.

⚠ **11) Power requirements**

The voltage range required to ensure specified performance is ±10% of the rated voltage. Keep in mind that high-impedance power distributing wires will produce an effect equivalent to a voltage drop. Watch for the following cases, and recheck power distribution.

• The voltage drop between the switchboard and the plasma display is significant.

• When the power to the machine is turned on and off, voltage fluctuations are large.

Estimate the power consumption of this machine as 400 VA plus a safety margin.

The inrush current when the machine is turned on is approximately 70 A <30 A>.

< > shows the PDP-V402E.

12) Coverage of the remote control

The display communicates with the remote control through weak infrared signals, which typically reflect off display surroundings. The operating range of the remote is affected by the reflective characteristics of surrounding objects. If the range of coverage appears to be unusually short, check the following:

• Do the walls and platform for the display have a mirror or white finish?

• Are there objects near the infrared-accepting section?

• Are the remote control batteries weak or dead?

Other devices using infrared remote control and wireless systems may not work properly if located close to the infrared-emission source of the display. Consult your dealer before using such equipment near the display.

Installation conditions

3.2 Installation conditions

3.2.1 Radiation

This display comes with multiple ventilation holes for efficient radiation of heat. **Avoid blocking any of these holes.**
Ventilation holes are indicated by arrows in the following drawing.
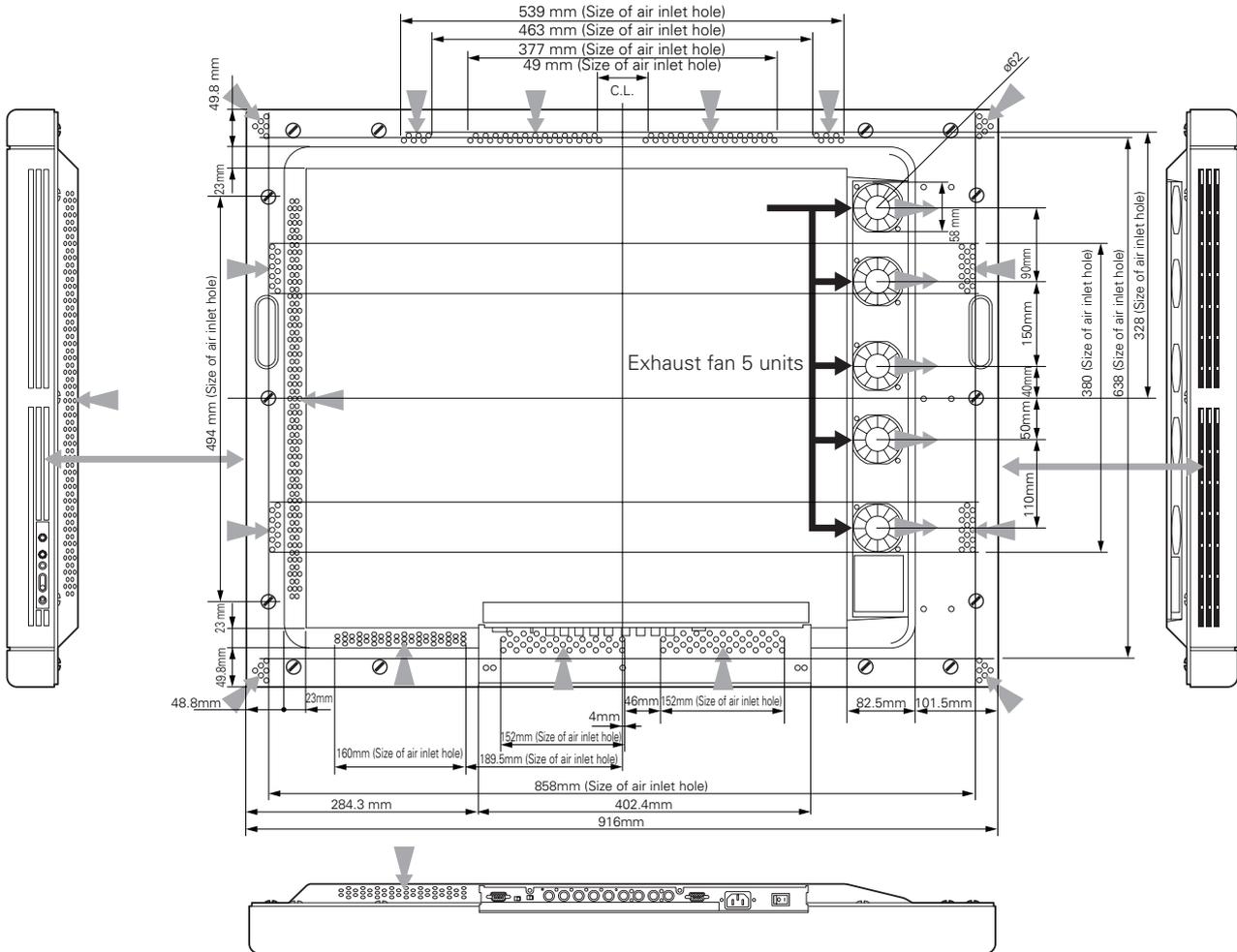
Air flows out through five of the ventilation holes and flows in through the other holes. For special installations, such as wall-hanging or embedding, additional restrictions apply concerning operating temperature. See "3.4 Special installations".

3.2.2 Calculating calorific values

Estimate the maximum power consumption per device as 400 W plus a safety margin. Most of the power consumed is converted to heat, so power consumption is roughly equivalent to generated heat.

1) Conversion to calories

$$[W] \times 0.86 = [kcal/h]$$

Calorific value per display

$$400 \times 0.86 = 344 \ [kcal/h]$$

2) Conversion to British thermal unit (BTU)

$$[W] \times 3.41 = [B.t.u./h]$$

Calorific value per display

$$400 \times 3.41 = 1256 \ [B.t.u./h]$$

3.2.3 Installation position

We recommend using the metal installation fixture made by Pioneer. When using a different fixture, use the M8 bolt hole provided on this display to mount the fixture to the display. Remove the hole rivets on the back of the plasma display, if necessary for the particular fixture. Tighten bolts with a force of 60 kg.cm or less. Overtightening may damage the blind nuts.

• The following figure indicates mounting holes that can be used. (Use a coin or similar object to turn the cap to remove it.)

'a' hole × **14**

Side view   Rear view
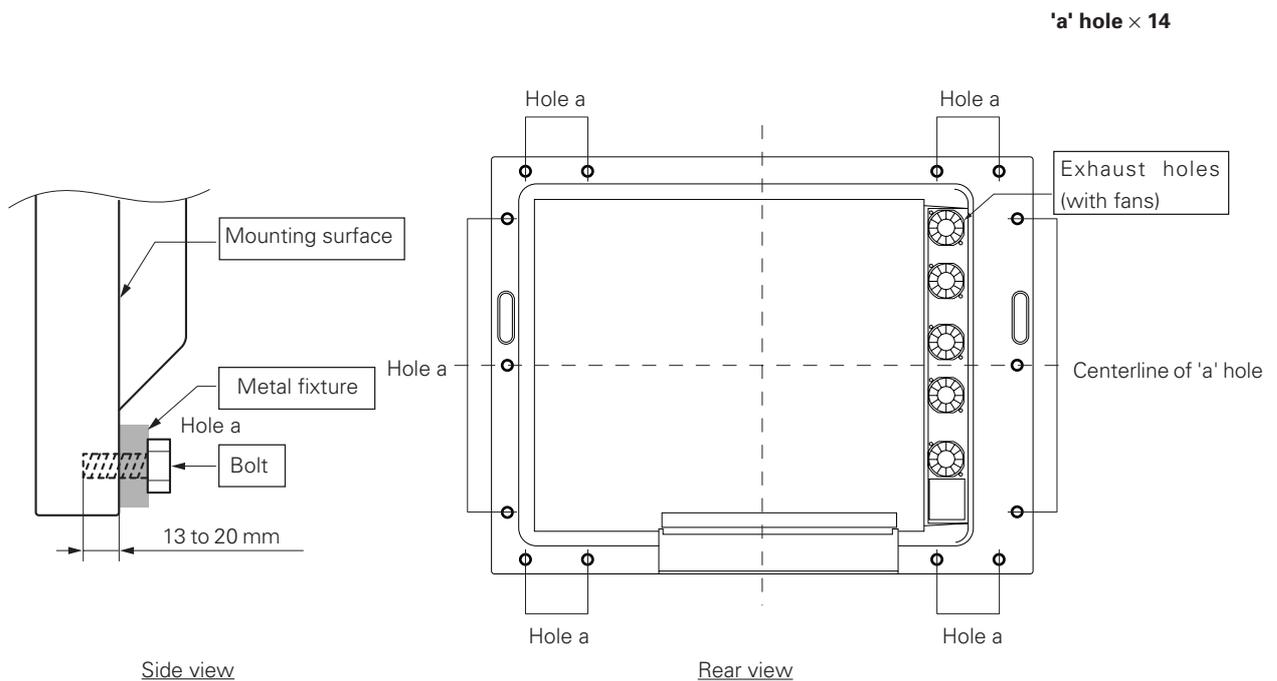
⚠ Make sure to use 4 or more holes that are horizontally or vertically symmetrical to the centerline.

⚠ Use bolts that do not penetrate more than 13 to 20 mm from the mounting surface of the machine (see the above side view). If the bolts used are longer than the above, they may damage the inside of the machine.

⚠ Do not block ventilating holes or blowholes in the rear of the machine.
Hot air is emitted from the ventilating holes.
Care must be taken not to weaken or soil the wall at the back of the machine with the hot air from the holes.

⚠ Glass is used in this machine. It must always be mounted on the straight face.

⚠ Make sure to finger tighten the bolts 2 or 3 times, and after confirming that the bolts are inserted in the right direction, use the tool for final tightening.

⚠ Make sure to use M8 (p=1.25) bolts (Any other bolts should not be used).

> For mounting metal fixtures and so forth, use our genuine parts as much as possible.
> We will not be responsible in any way whatsoever for any accidents and/or damages
> due to the use of parts other than our genuine parts.

Installation conditions

We recommend mounting at a minimum of 4 points, and at 6 or 8 points as shown below if possible. Avoid mounting the display with the particular 4-point scheme shown below.

Mounting method — bad example
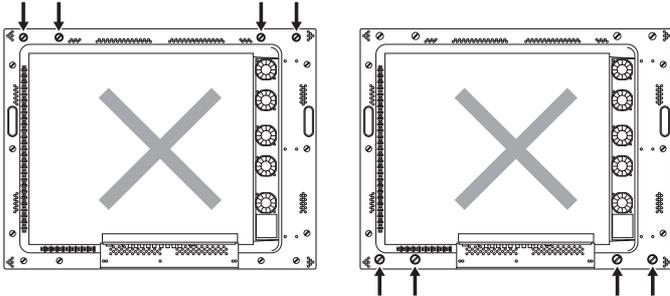
Mounting method — good example
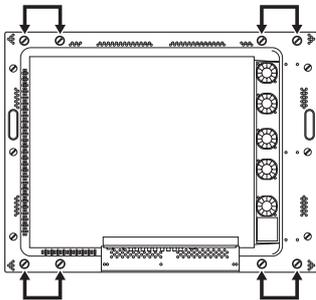
A. 8-point mounting   B. 6-point mounting
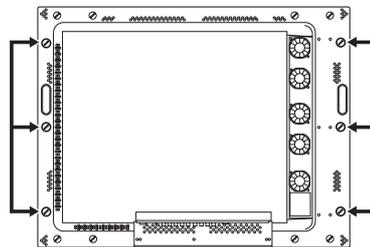
(Do not block ventilation holes.)

C. 4-point mounting (Metal fixture is mounted vertically.)
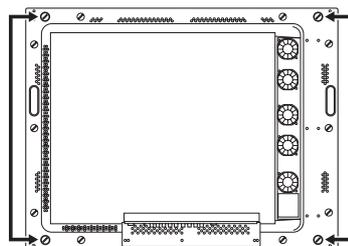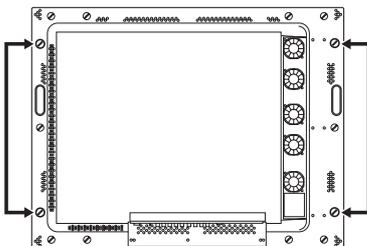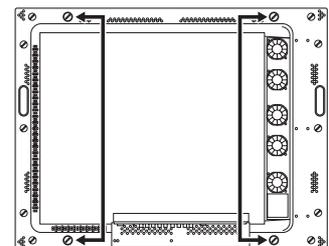
(Do not block ventilation holes.)   **(Do not block the fan.)**

D. 4-point mounting (Metal fixture is mounted horizontally.)
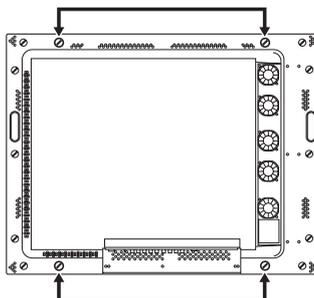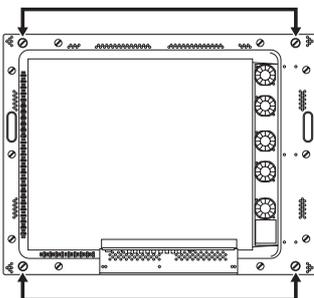
(Take care to avoid pinching power cord, signal cable, etc.)

3.2.4 Strain on surface where equipment is installed

① This display uses glass in its display section. When using a third-party metal fixture, check that strain is 1 mm or less by the following method.

② Tightly fit a thread using a force of ϕ 0.1psi or less diagonally through the mounting bolt openings on the mounting surface, as shown in the drawing.

③ Measure distance L of the intersection of the strings in the center section.
The relationship between strain and L is given by Strain = L × 2.

④ If L is 0, interchange the front and rear positions of two strings and check the distance again. If the value of L is not 0, it is the true value of L. If L is 0 after the position is changed, strain is approximately 0.

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* Regarding the distortion of 1 mm or below:

It is possible that the housing of this device causes a maximum distortion of about 3 mm. It is also possible that this device causes stress on the glass when this device suffers a distortion of 4 mm or more. Therefore, make sure to keep the distortion on the mounting surface within 1 mm so that the total distortion should remain less than 4 mm including the distortion of the housing itself under it.

Holes for mounting bolts

Plasma display-mounting surface (mounting metal fixture)

Plasma display-mounting surface (mounting metal fixture)

Thread

Thread

Right angle

Point e is the center of the thread a-b.
Point f is the center of the thread c-d.
Distance between e and f = **L**

(Points e and f are indicated in an enlarged figure for more detailed understanding.)
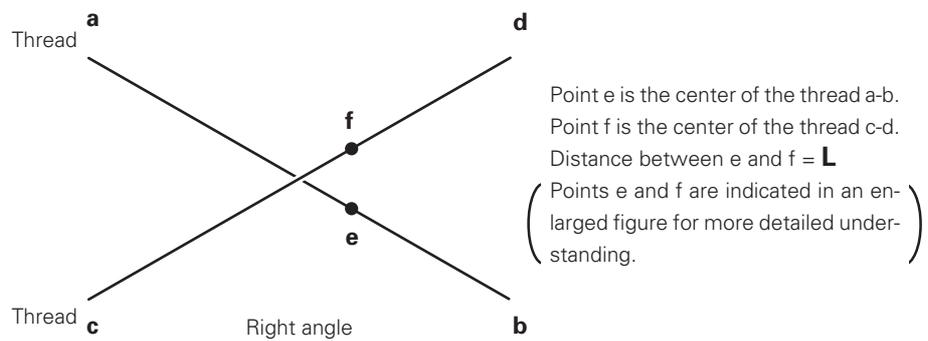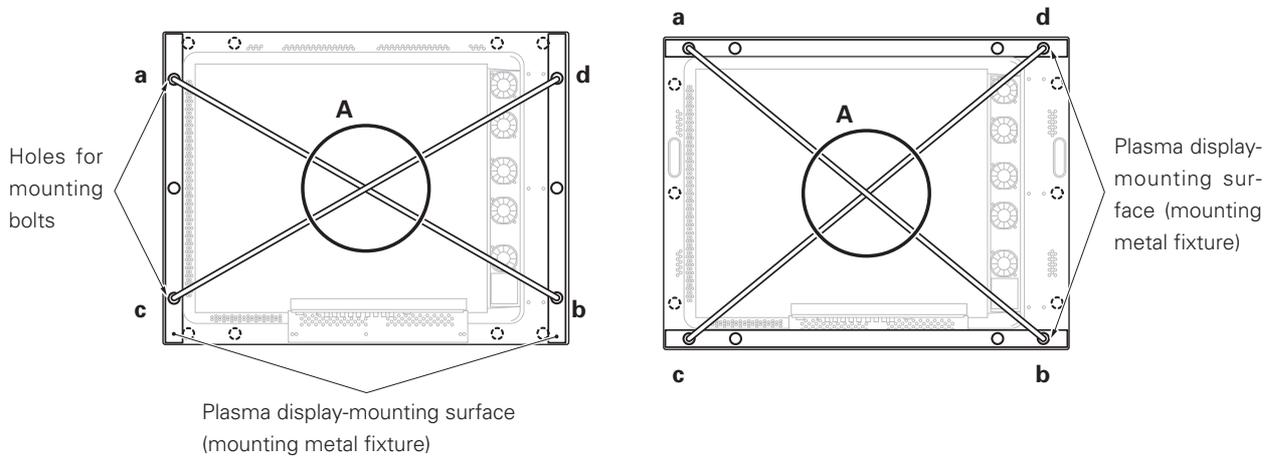
Enlarged drawing of the intersectional part A
(showing the part obliquely)

Installation procedure

3.3 Installation procedure

3.3.1 Precautions for transportation

① Use two workers to move packages. Do not grasp the PP band during transportation. The band may snap and result in injury.

② For transportation and storage, keep the package horizontal. Do not stack packages longitudinally or laterally. If packages are transported or stored while longitudinally stacked or laterally stacked, the company is guarantee will be invalidated.

③ For transportation and storage, never stack more than ten packages, as indicated on the upper carton.

④ For transportation and storage, observe the conditions detailed on the upper carton.

⑤ To protect the glass surface of the display, avoid stepping on the package, placing heavy items on top, or sticking sharp objects into the top.

* If the plasma display and fixture needs to be packed and transported again, follow the packing method and precautions given below:

   • Pack goods by reversing the procedure for unpacking given in "3.3.2 Unpacking". Take care when replacing the mirror mat to place the smooth face facing out, with the soft surface toward the product.

   • Replace the remote control and the stand in the specified positions. If they are placed in the center of the upper pad, the panel may be damaged during transportation.

3.3.2 Unpacking

1) Packing specifications: 1130 (W) × 295 (H) × 852 (D) 39.5 kg <40.4 kg>

   <   > shows the PDP-V402E.
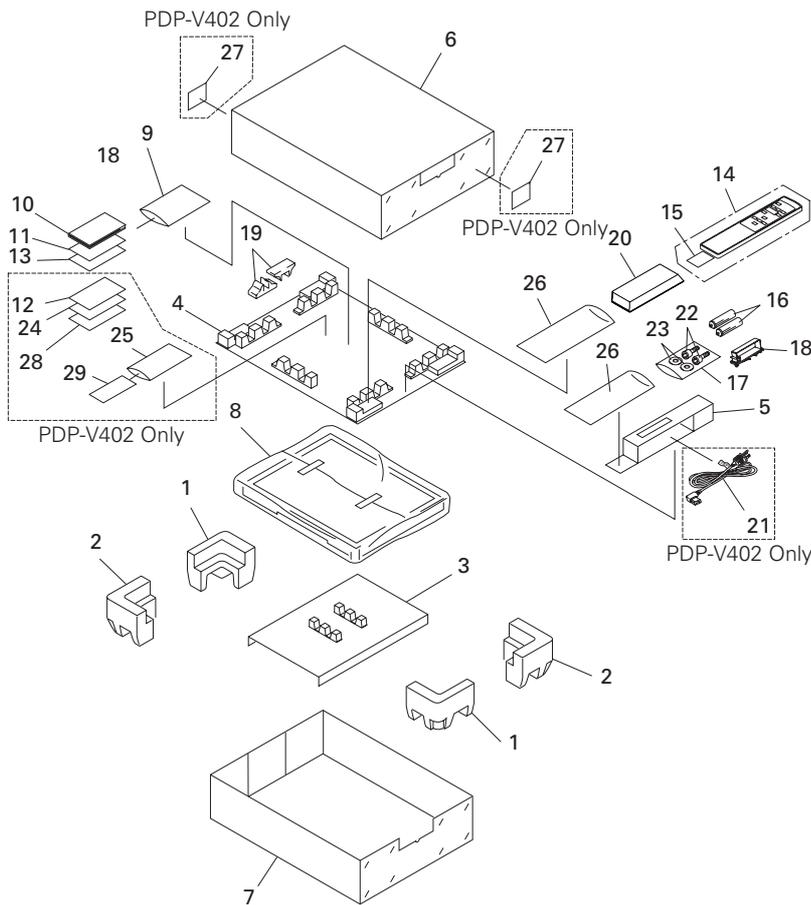
No.	Name
1.	Upper Pad A
2.	Upper Pad B
3.	Upper pad C
4.	Upper Pad
5.	Partition Box
6.	Upper Carton
7.	Under Carton
8.	Mirror Mat
9.	Literature Bag
10.	Operating Instructions
11.	Plasma Caution Sheet
12.	Plasma Caution Sheet
13.	Caution Sheet
14.	Remote Control Unit
15.	Battery Cover
16.	Batteries (R6P, AA)
17.	Vinyl Bag
18.	Cable Clamp
19.	Display Stand V
20.	Controller Case
21.	AC Power Cord
22.	Bolt (Hex)
23.	Washer
24.	Warranty Card
25.	Vinyl Pouch
26.	Vinyl envelope
27.	Label
28.	Caution Sheet
29.	Warranty Card

2) Procedure for unpacking
   ① Remove the PP band.
   ② Slowly lift and remove the upper carton.
   ③ Remove the catalogue bag (9) (instruction manuals), stand (19), and the plastic bag for (26) (accessories) on top of the upper pad.
      Caution: If the upper pad (4) is removed before removing these items, the items may fall and damage the product.
   ④ Remove the upper pad (4).
   ⑤ Open the mirror mat (8).
   ⑥ Remove the product. (Requires two workers to remove the set.)

3) Movement after unpacking
   Moving the product after unpacking requires two workers.
   • Never drag the product on the floor.
   • The display screen (front protective panel) is fragile. Move it slowly, and take care to avoid striking it or scraping objects against it.
   • Remove the protective film applied to the front protective panel only after construction and work are finished and dust has settled.

Installation procedure

3.3.3 Wiring

1) Power source connection
   - Refer to (Power cord connection) on page 24 <36, 82> of the instruction manual.
   - For power source capacity, see the description given in "3.1 Installation environment, 11) Power requirements" in this manual.

2) Signal cable connection
   (1) Connecting to a PC
      - See the description given in (Connecting to a PC) , on pp. 19 to 20 <26 to 29, 72 to 75> of the instruction manual.
   (2) Connecting to a video cassette recorder
      - See the description given in (Connection to a video cassette recorder) , on pp. 21 to 23 <30 to 35, 76 to 81> of the instruction manual.
   (3) Precautions
      - Use coaxial cables. For video signals, use the 3C-2V for lengths of 15 m or less, and the 5C-2V for lengths of 30 m or less. Since data signals are more easily degraded than video signals, use a thick cable (e.g. a 5C-2V cable) for data communications, even for lengths of 15 m or less. Try to minimize the distance between the signal transmission device and the plasma display unit.
      - If a video cable is wired close to a dimmer, neon tube, air conditioner, or other device, or if it is wired in parallel to a cable television cable, display performance may be affected.
   <   > shows the PDP-V402E.

3) Treatment of wires
   - For long-term or permanent installations, rather than short-term installations for specific events, use wires of the proper length, carefully considering the placement of all other wires.
   - Place wires so that no load or force is applied to the connecting terminals. For short-term use, wires may be bundled with string. For long-term installations, form wire bunches using cable clamps.

4) Mounting cable clamp
   Use a cable clamp to form cable bunches in the upward direction, as shown in the drawing.

   Cable clamps are supplied for bundling connection cables.
   Follow these steps when using cable clamps:

<Back>
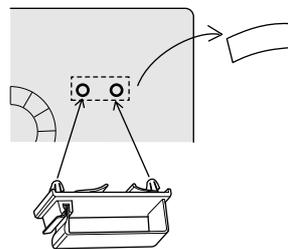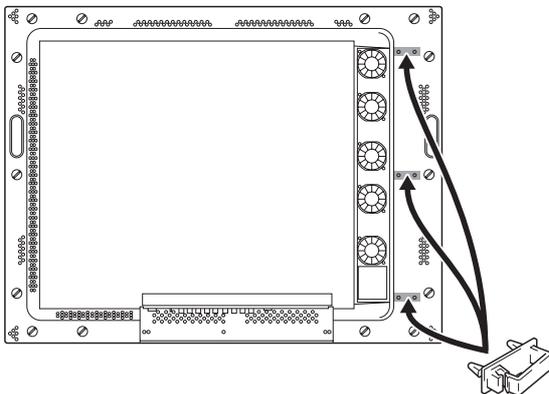
Peel off the paper at the back and insert the supplied cable clamp into the mounting holes until it clicks.

⚠ **Caution** Peel off the label covering the mounting holes before attaching the cable clamps.
When cables are inserted in a cable clamp, keep the clamp at least 10 cm from the wall to allow ventilation.

Installation conditions

Outline of conditions for installing PDP-V402 system
For installation space (distances from surrounding structures and so forth), make sure to carefully read this section.

Installation conditions	Page	Room temperatures	VIDEO	PC-9800 56.4Hz Machintosh 66.7Hz VGA 60Hz	PC-9800 70.1Hz 72.8Hz 75Hz	Remarks
Normal installation Rear open air *2	P24	40°C	O	O	O	Open air *2 without fan and partition
Vertical installation Rear open air *2	P24	40°C	O	O	O	Open air *2 without fan and partition
Wall hanging Normal installation Rear clearance between 0 and 50 mm	P26	30°C	O	O	×	Excluding the rear side Open air *2 without fan and partition
		35°C	O	O	×	
		40°C	×	×	×	
Wall hanging Normal installation Rear clearance of 50 mm or more	P26	35°C	O	O	O	Excluding the rear side Open air *2 without fan and partition
		40°C	O	O	O	
Wall hanging (recessed space) Normal installation Rear clearance between 0 and 50 mm	P28	30°C	O	O	×	Upper and lower clearances 0, left and right clearances 100 mm without fan and fan and partition
		35°C	×	×	×	
		40°C	×	×	×	
Wall hanging (recessed space) Normal installation Rear clearance of 50 mm or more	P28	40°C	O	O	O	Upper and lower clearances 0, left and right clearances 100 mm without fan and fan and partition
Wall embedding (less than150 mm) Normal installation Rear open air*2	P30	40°C	O	O	O	Without fan and partition
Wall embedding (recessed space) Normal installation Front mesh	P32	35°C	O	O	O	Upper, lower, left and right rear clearances 100 mm without fan and partition
		40°C	O	O	×	
Box installation Normal installation Rear mesh	P34	35°C	O	O	O	Upper, lower, left and right rear clearances 50 mm without fan and partition
		40°C	×	×	×	
Box installation Normal installation Side mesh	P36	30°C	O	O	O	Upper, lower, left and right rear clearances 50 mm without fan and partition
		35°C	O	O	×	
		40°C	×	×	×	
Wall hanging Vertical installation Rear clearance between 0 and 50 mm	P38	30°C	O	O	×	Excluding the rear side Open air *2 without fan and partition
		35°C	×	×	×	
		40°C	×	×	×	
Wall hanging Vertical installation Rear clearance between 50 and 100 mm	P38	30°C	O	O	O	Excluding the rear side Open air *2 without fan and partition
		35°C	O	O	×	
		40°C	O	O	×	
Wall hanging Vertical installation Rear clearance of 100 mm or more	P38	35°C	O	O	O	Excluding the rear side Open air *2 without fan and partition
		40°C	O	O	×	
Wall hanging (recessed or raised space) Vertical installation Rear clearance between 50 and 100 mm	P40	30°C	O	O	O	Upper, lower, left and right rear clearances 100 mm without fan and partition
		35°C	O	O	×	
		40°C	×	×	×	
Wall hanging (recessed or raised space) Vertical installation Rear clearance of 100 mm or more	P40	35°C	O	O	O	Upper, lower, left and right rear clearances 100 mm without fan and partition
		40°C	O	O	×	

Installation conditions	Page	Room temperatures	VIDEO	PC-9800 56.4Hz Machintosh 66.7Hz VGA 60Hz	PC-9800 70.1Hz 72.8Hz 75Hz	Remarks
Wall embedding (less than 60 mm) Vertical installation with rear open air *2	P42	40ºC	O	O	O	Without fan and partition
Wall embedding (less than 150 mm) Vertical installation with rear open air *2	P42	35ºC	O	O	O	Without fan and partition
		40ºC	O	O	×	
Wall embedding Vertical installation with front mesh	P44	30ºC	O	O	O	Upper, lower, left and right clearances 100 mm without fan and partition
		35ºC	O	O	×	
		40ºC	×	×	×	
Ceiling suspension (using wires) Vertical installation	P46	40ºC	O	O	O	Without fan and partition
Ceiling installation Downward installation with rear clearance between 50 mm or more	P48	35ºC	O	O	O	Without fan and partition
		40ºC	×	×	×	
Ceiling embedding (using wires) Vertical installation with rear open air *2	P50	35ºC	O	O	O	Without fan and partition
		40ºC	O	O	×	
Floor installation Upward installation with rear clearance between 50 mm or more	P52	35ºC	O	O	O	Without fan and partition
		40ºC	O	O	×	
Floor installation Upward installation with rear clearance of 300 mm or more	P54	30ºC	O	O	×	Without fan
		35ºC	×	×	×	
		40ºC	×	×	×	
Floor installation Upward installation with rear clearance of 300 mm or more	P54	35ºC	O	O	O	With fans
		40ºC	×	×	×	
Floor installation Upward installation when PDM-4001 is used	P58	30ºC	O	O	×	Without fan
		40ºC	×	×	×	
Floor installation Upward installation when PDM-4001 is used	P58	35ºC	O	O	×	With fans
		40ºC	×	×	×	
Wall hanging installation Normal installation with lateral connection	P60	35ºC	O	O	O	Without fan and partition
		40ºC	×	×	×	
Wall hanging installation Normal installation with horizontal connections (up to 3 units)	P61	35ºC	O	O	O	Without fan and partition
		40ºC	×	×	×	

*1 : For special installations, basically, do not use PC-9800 (70.1 Hz), VGA (72.8 Hz, 75Hz)

*2 : ''Open air'' means a condition where there is no interference within a radius of 300 mm.

* When mounting a down converter (PDA-4003), the same working temperate conditions will apply.

Special installations (Fixing on a structure)

3.4 Special installations

This display may be installed in several different positions, including wall-hanging and wall-embedding. Conditions, including temperature, may restrict the use of certain positions or installation methods.
Consider installation methods and conditions, and see the description given in "3.1 to 3.3" in this chapter.
All the measurement conditions in this manual are set in conformity with the following:
• 100% white light is applied.
• After sufficient aging
All measurements should be performed under the same conditions. The aging time needed for measurement depends on the size of the installation space, but the standard time is approximately 2.5 hours.

"Sufficient strength to withstand" means sufficient strength to withstand a weight four times that of the main body including the metal fixture.

3.4.1 Fixing on a structure

To fix the machine on a structure, observe the following conditions:

① When fixing on a structure, make sure to install the display in a complete open-air condition (a condition that has no interference within a radius of 300 mm of this display).

② After fixing on a structure, the distortion of the unit must be within 1 mm.

③ Do not block holes other than those shown blocked in the fixing figure on the next page.

④ Use a structure 20 mm or less in thickness.
(In the case of the fixing examples 1 and 4 on the next page, the thickness of the structure is not limited.)

⑤ If an L-shaped structure is used, the thickness of the structure must be 100 mm or less.

⑥ Use a structure with sufficient strength.

⑦ Care must be taken not to apply stress to the power cable.

* The descriptions in ② - ⑦ indicate the common precautions for fixing the machine on the structure in "wall-hanging" and "wall-embedding."

1mm MAX.

Distortion of the unit is 1mm max.

100 mm or less

L-shaped structure

20 mm or less in thickness

36 mm or less in width

(The thickness of the examples 1 and 4 on the next page is not limited.)

20 mm or less in thickness

36 mm or less in width

(The thickness of the examples 1 and 4 on the next page is not limited.)
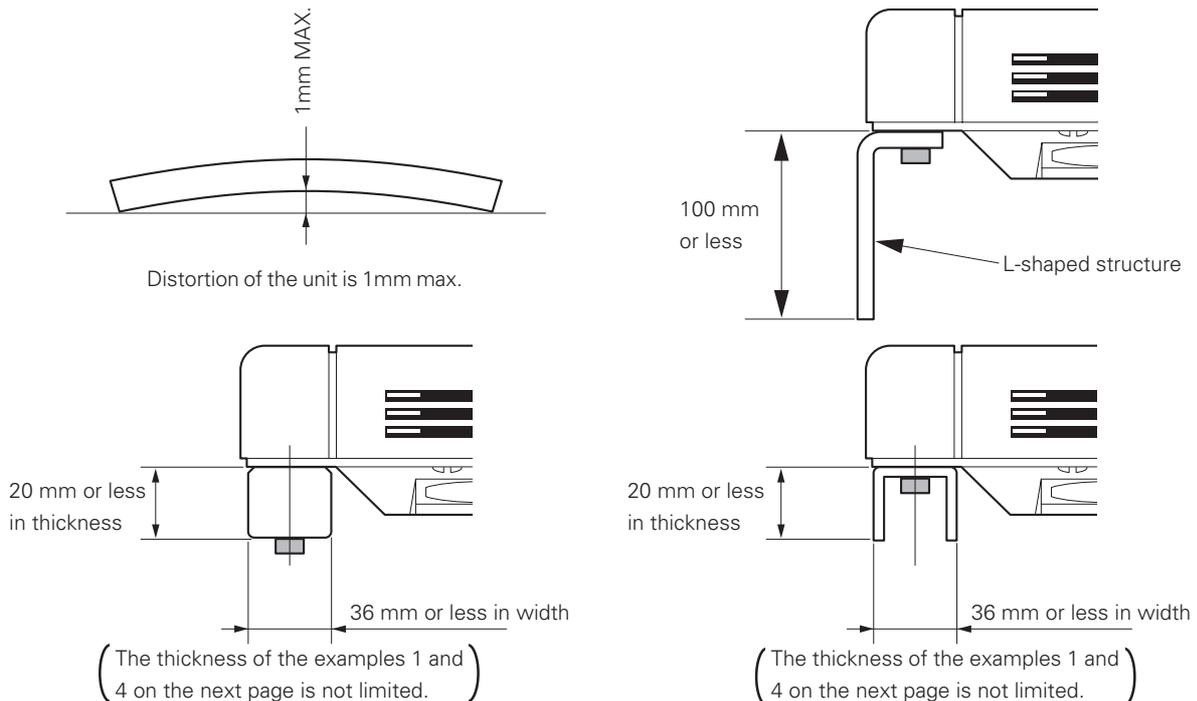
☆ **Operating temperature requirements**
When normally installed
• Ambient temperature requirement: 0 to 40°C (Examples 1 and 2)
When vertically installed
• Ambient temperature requirement: 0 to 40°C (Examples 3 and 4)
When installing speakers
For ambient temperature requirements, the same requirements as indicated above apply.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Example 1:

When normally installed

Beams

Example 2:

Beams
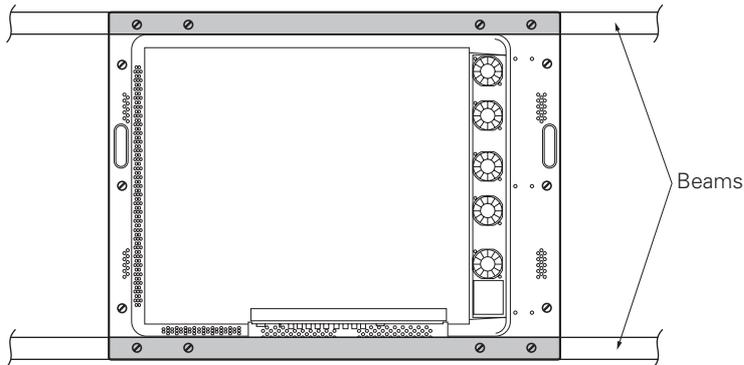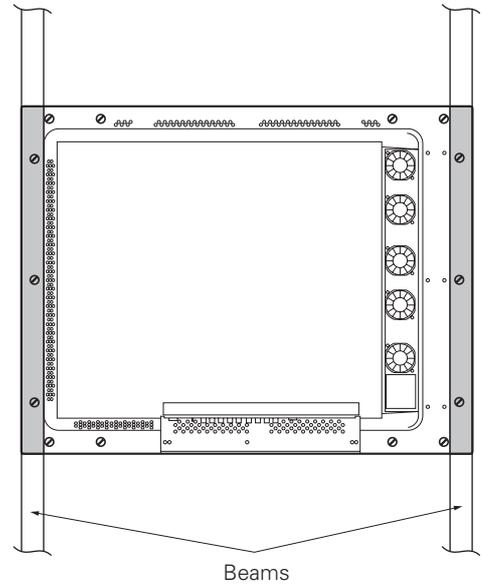
Example 1, 2

VIDEO	PC-9800 (56.4Hz) Machintosh(66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~40°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

*When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Example 3:

When vertically installed

Mount the display with the fans on the upper side.
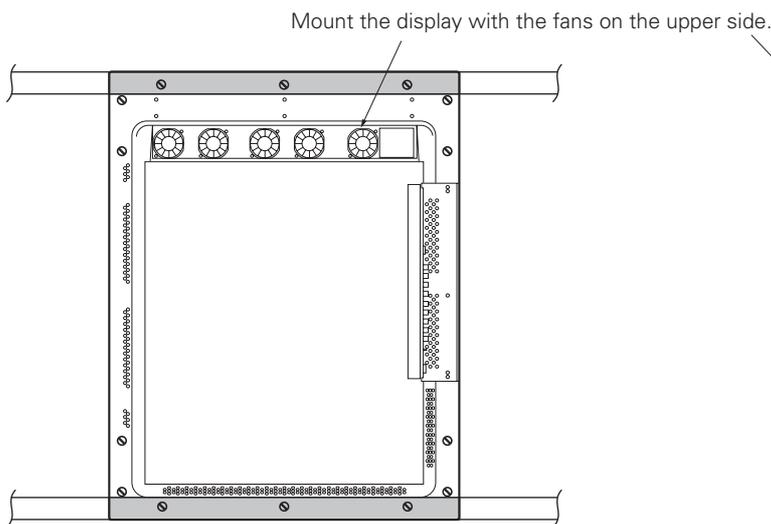
Example 4:

Example 3, 4

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~40°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installations (Wall hanging)

3.4.2 Wall hanging

This display may be wall-mounted. Since this form of mounting affects ventilation patterns inside, observe the following requirements:

① **When mounting plate metal, avoid blocking any ventilation holes.** Use plate metal of the size indicated in the following drawing.

② Provide space for adequate ventilation between the wall and the display.

③ Use plate metal having sufficient strength (with a safety factor of approximately four), and attach at four points (4-point mounting) as shown below. Since wall installations involve certain hazards, always follow double-safety procedures.

④ The following table lists proper operating temperatures. Use the display within the listed range of outside air temperature.

⑤ Keep deformation of the display to 1 mm, including twisting and bending.

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Less than 50 mm	0~35°C	0~35°C	Not usable
50 mm or more	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* In case the clearance A to the wall is 50 mm or more, the same working temperature conditions apply when mounting the down converter.

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [▭] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

<Correct>

Beams

Bad example of blocking exhaust
<Incorrect>

Beams

Special installation (Wall hanging)

50mm

Do not block this area at either the left or right.

10mm

Basically, it is not recommended to operate this display in any confined space.

In the event that you are going to use this display in a closed space, make sure to observe the following requirements in accordance with the above drawing.

B ≥ 100mm

* No limitations of upper and lower clearances for the plasma display

Working temperature requirements

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60HZ)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Less than 50 mm	0~30°C	0~30°C	Not usable
50 mm or more	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* In case the clearance A to the wall is 50 mm or more, the same working temperature conditions apply when mounting the down converter.

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [   ] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

\<Correct\>

Bad example of blocking exhaust
\<Incorrect\>

Beams

Beams

Special installations (Wall embedding)

3.4.3 Wall embedding

This display is designed to accommodate embedding in a wall. Note that the allowable range of outside-air temperature depends on the installation conditions. Please observe the following requirements:

⚠

① Use a metal mounting fixture that does not block the side slits or the back ventilation holes, and attach at a minimum of four points. To avoid breaking the PDP panel, limit any twisting or bending stress applied to the display to 1 mm or less.

② <u>Do not use cable clamps</u> for this installation method. Cable clamps can interfere with proper ventilation and result in device failure.

③ Installation conditions and ambient operating temperatures:

(1) If the back of the display will be unobstructed (If there is no obstruction within 300 mm from the backside):
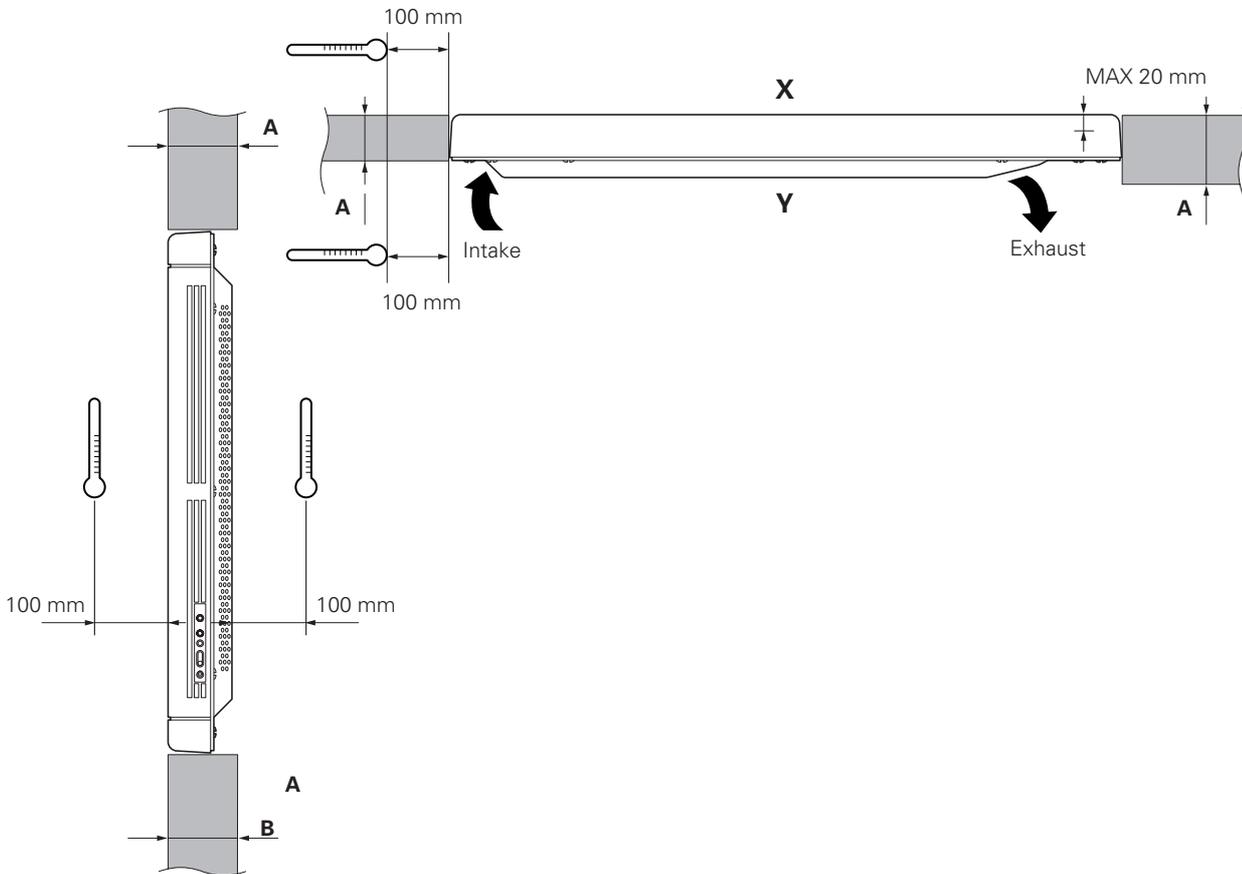
X-Y space temperature requirements

A size	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
150 mm or more	0~40°C	0~40°C	0~40°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).
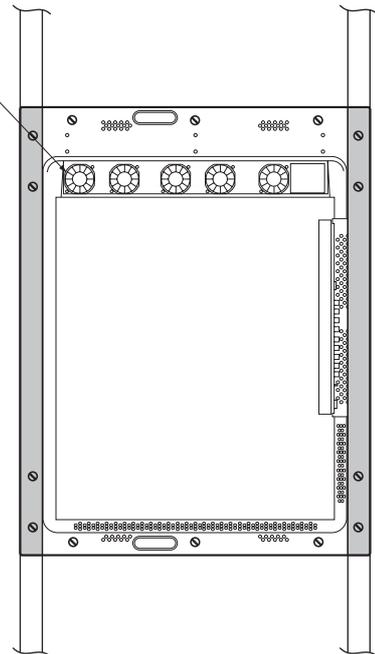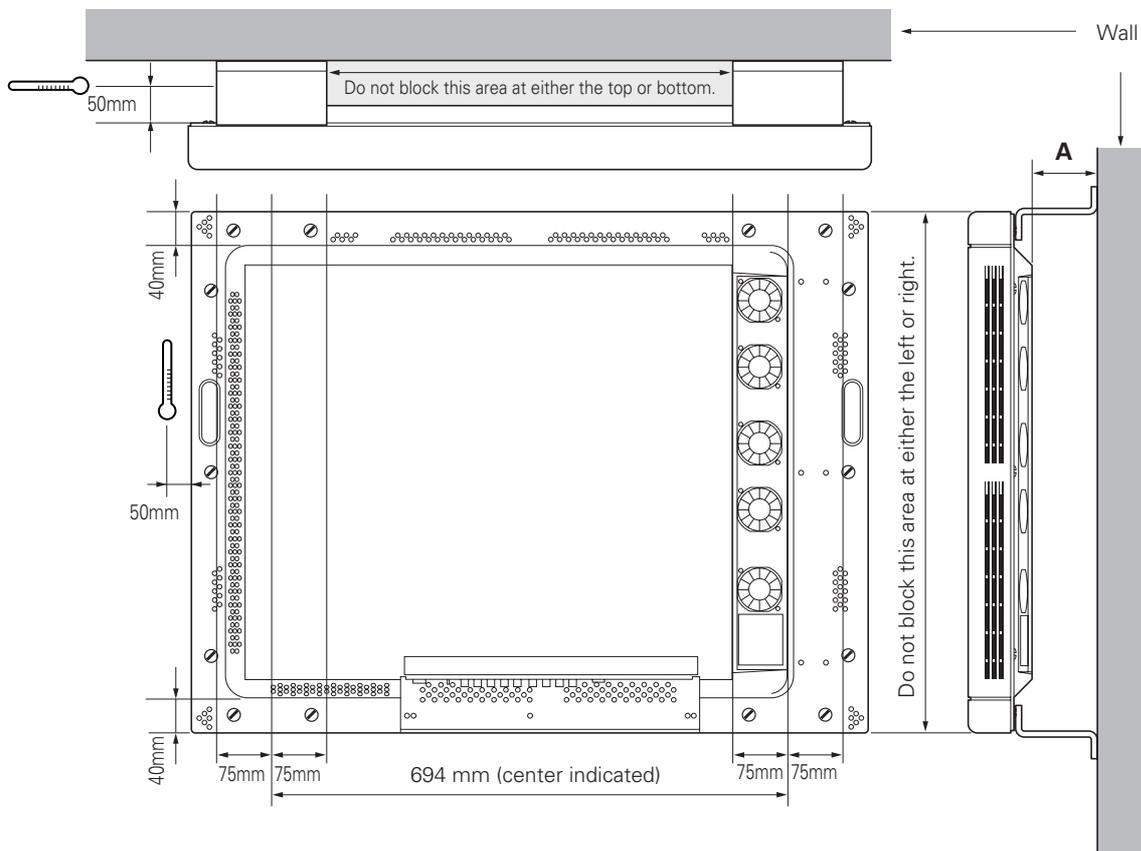* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installations (Wall embedding)

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [shaded] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

<Correct>

Beams

Bad example of blocking exhaust
<Incorrect>

Beams

Special installations (Wall embedding)

Y

X

50mm or more

Punching net

100mm or more

100mm or more

100mm or more

100mm or more

50mm

10mm

Aperture efficiency 50% or more

Working temperature requirements

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~35°C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installations (Wall embedding)

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked ▭ cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

<Correct>

Bad example of blocking exhaust
<Incorrect>

Beams

Beams

3.4.4 When the display is put in a box
Operating this display in confined spaces is not recommended.

• If the display is to be used in confined spaces, observe the following conditions shown in the drawing in a page to the right:

$$A \geq 50$$
$$B \geq 50$$
$$C \geq 10$$
$$D \geq 50$$

Use a mesh with aperture efficiency of 50% or more.

• **Keep the temperature in the closed space "Y" and the open space "X" less than the following temperature range. In particular, the space "Y" should be ventilated sufficiently by the air conditioner or fan so that hot air is not trapped in the space**. Thus, everywhere in "Y" must be kept less than the following temperature range. If hot air remains in the closed space, the temperature may rise, causing a malfunction or fire. As a precaution in case of accidents, the inner wall should have sufficient heat resistance or fire resistance.

Usage temperature conditions (BOX air temperature)

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35 °C	0~35 °C	0~35 °C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installation (Putting in a box) Rear side mesh

Mesh

Mesh

10mm

Outside air temperature measuring point

Intake side

Exhaust side

A

A

B

B

B

C

D

10mm
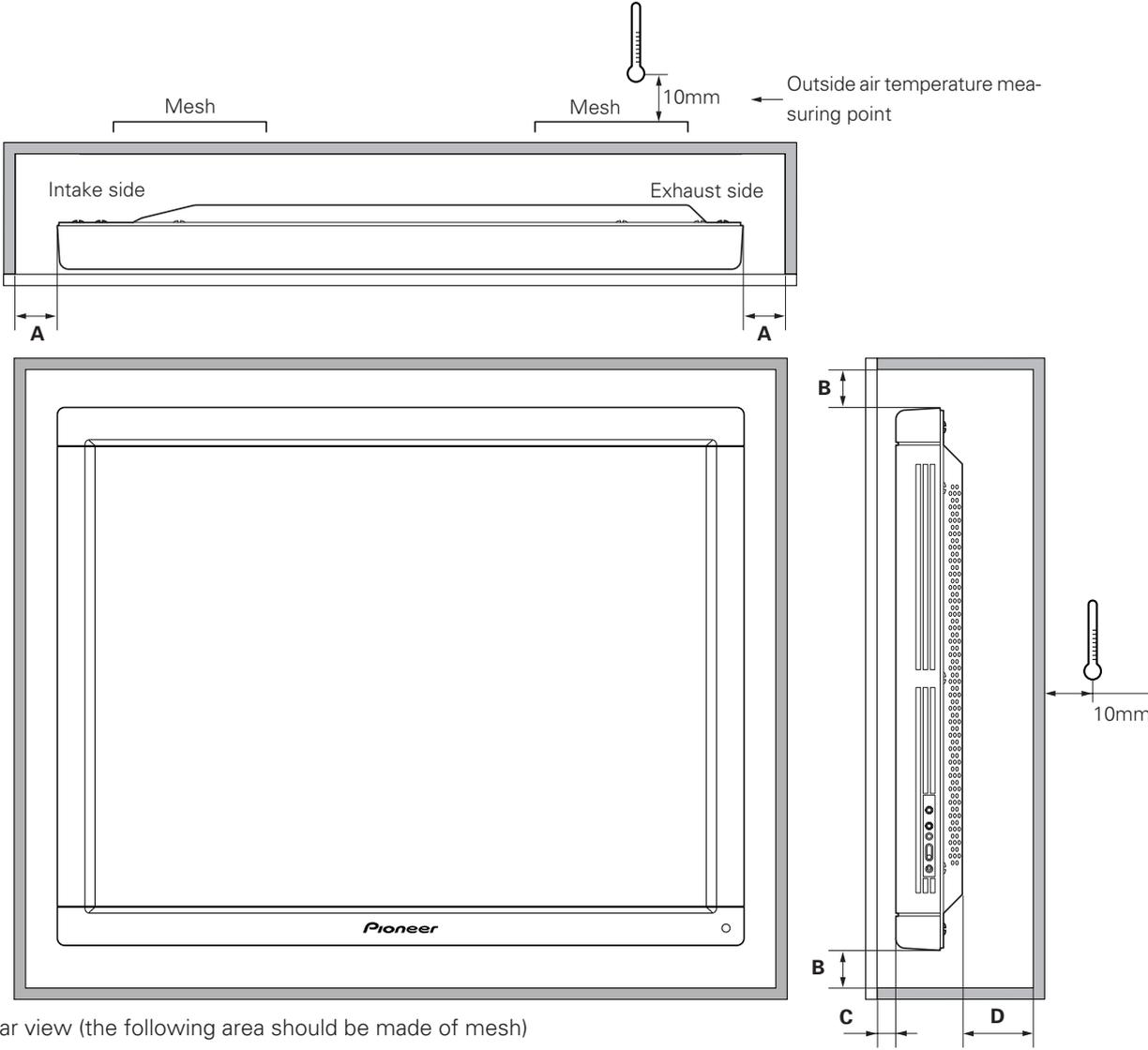
Rear view (the following area should be made of mesh)

B+50mm

B+50mm

B+50mm

B+50mm

614mm

614mm

Mesh with aperture efficiency of 50% or more

Area 900 cm^2 or more

Minimum area
900 cm^2 or more

A ≥ 50
B ≥ 50
C ≥ 10
D ≥ 50

A+50mm   150mm or more

150mm or more   A+50mm

35
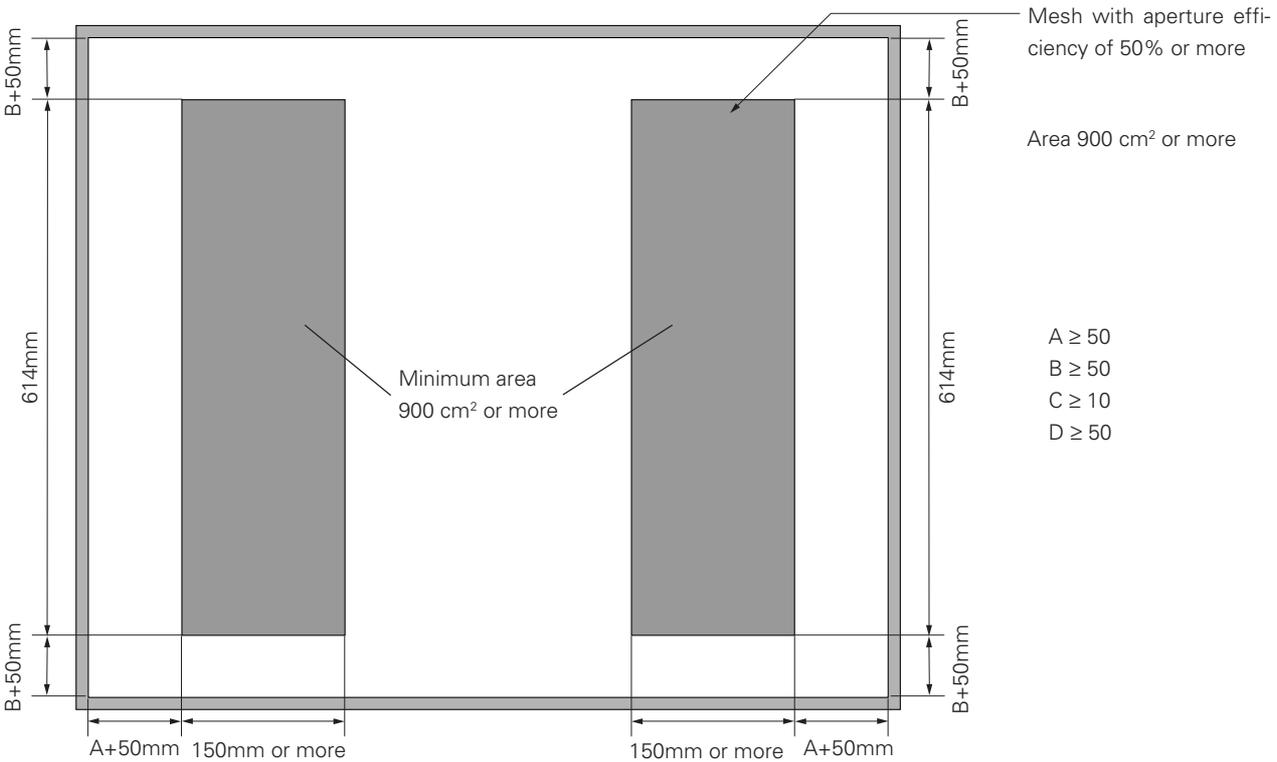
Special installation (Putting in a box) Mesh (side)

Operating this display in confined spaces is not recommended.

• If the display is to be used in confined spaces, observe the following conditions shown in the drawing in a page to the right:

$A \geq 50$

$B \geq 50$

$C \geq 10$

$D \geq 50$

Use a mesh with aperture efficiency of 50% or more.

• **Keep the temperature in the closed space "Y" and the open space "X" less than the following temperature range. In particular, the space "Y" should be ventilated sufficiently by the air conditioner or fan so that hot air is not trapped in the space**. Thus, everywhere in "Y" must be kept less than the following temperature range. If hot air remains in the closed space, the temperature may rise, causing a malfunction or fire. As a precaution in case of accidents, the inner wall should have sufficient heat resistance or fire resistance.

Usage temperature conditions (BOX air temperature)

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35 °C	0~35 °C	0~30 °C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Mesh

Intake side

Exhaust side

Mesh

Outside air temperature measuring point

100 mm

A

A

B

10mm

B

C

D

B+50 mm

564 mm

Minimum area 500 cm^2 or more

Mesh with aperture efficiency of 50% or more

B+100 mm

100 mm or more

C

(Intake side)

B+50 mm

564 mm

B+100 mm

C

100 mm or more

(Exhaust side)

A ≥ 50
B ≥ 50
C ≥ 10
D ≥ 50

3.4.5 Wall hanging (vertically wall-hanging equipment)

This display is designed to accommodate a range of wall installations. For this type of installation, carefully consider all installation specifics before beginning work, since these factors can significantly affect the temperature of the air surrounding the display. Please observe the following requirements:

① Use **plate metal that keeps all single holes clear** and has dimensions no larger than those given in the following table.

② Leave adequate ventilation space between the wall and the display.

③ Mount a metal plate with sufficient strength at each of the four positions indicated in the following figure (four-point stopping).

Mounting the display on the wall involves danger. Be sure to take double safety measures.

④ Recommended ambient operating temperatures are listed in the following table. Operate the display within this temperature range.

⑤ The surface of the wall should closely approximate a perfectly flat plane. Keep deformation pressures on the display, such as twisting and bending, at or below 1 mm.
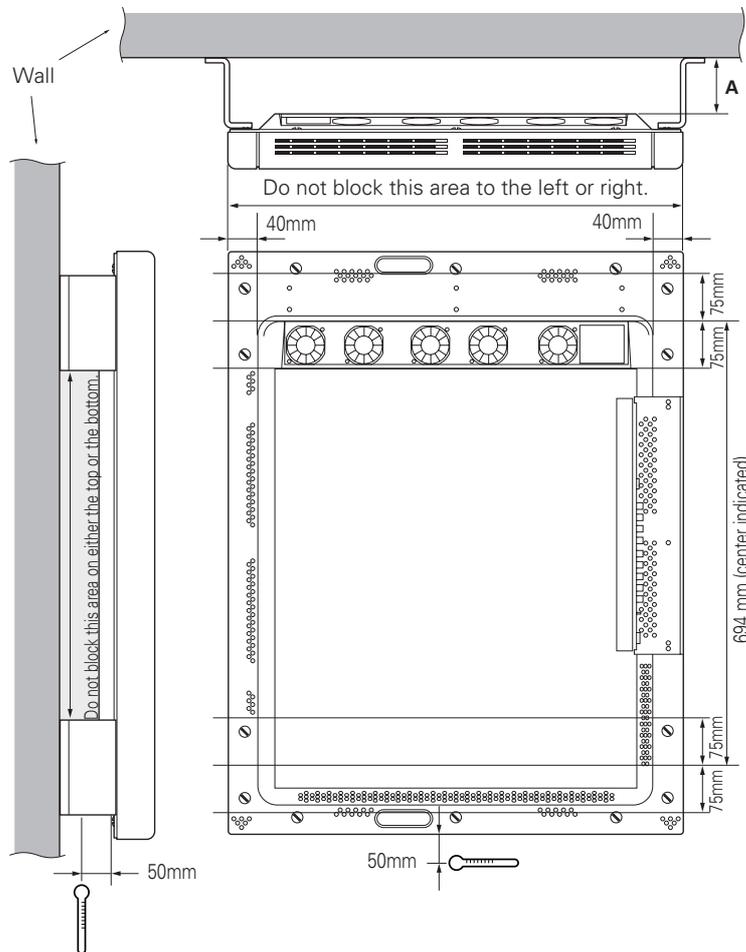
Working temperature requirements

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Less than 50 mm	0~30°C	0~30°C	Not usable
50 mm or more Less than 100 mm	0~40°C	0~40°C	0~30°C
Less than 100 mm	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

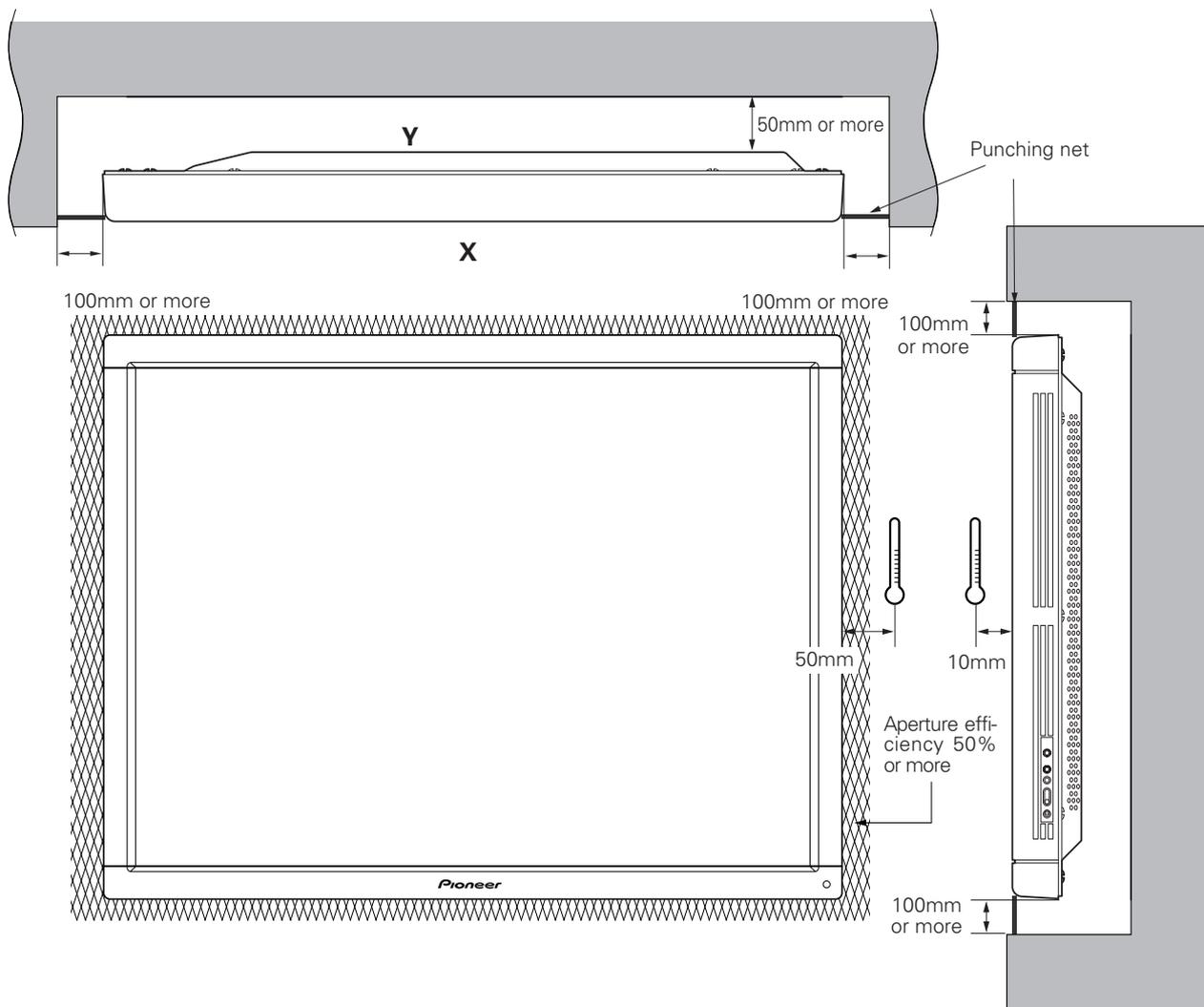* In case the clearance A to the wall is 50 mm or more, the same working temperature conditions apply when   mounting the down converter.

Special installation (Wall hanging (vertically wall-hanging equipment))

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked ▢ cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").
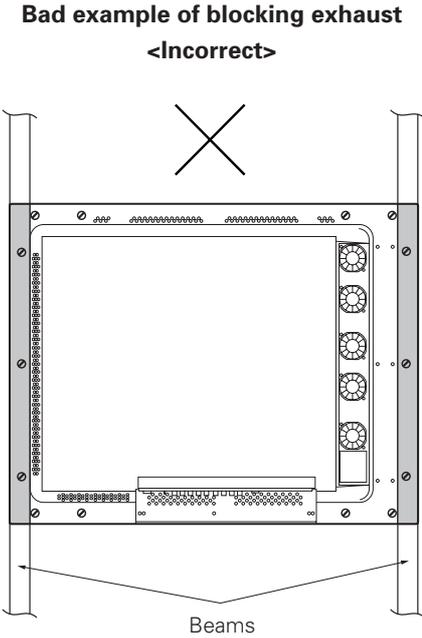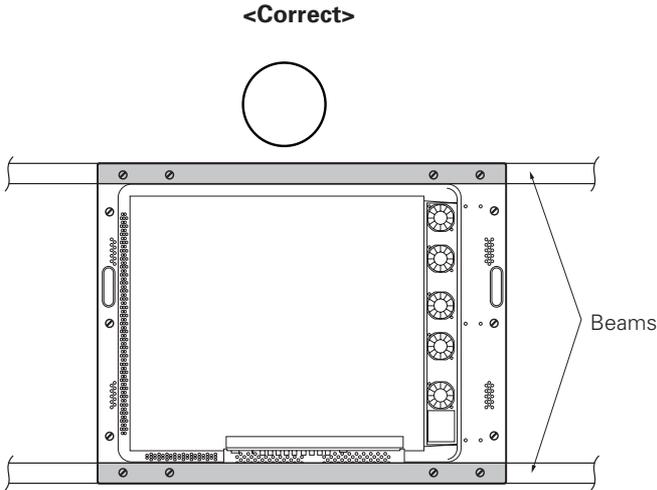
Bad example of blocking exhaust

<Correct>
<Incorrect>

Beams

Beams
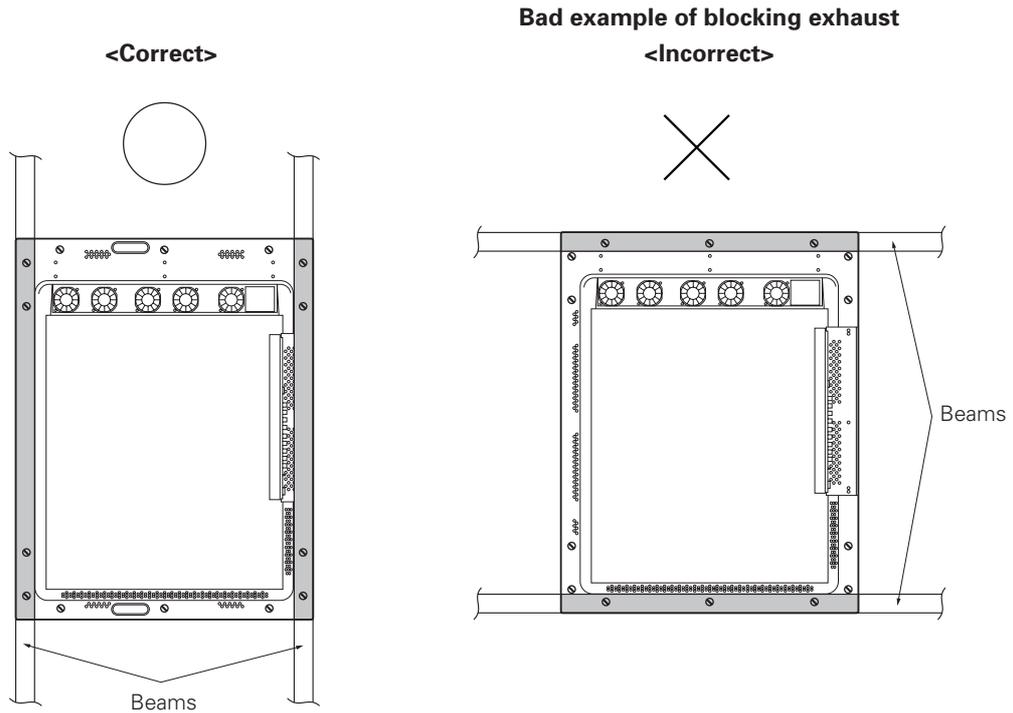
Special installation (Wall hanging (vertically wall-hanging equipment))

Basically, it is not recommended to operate this display in any confined space.

In the event that you are going to use this display in a closed space, make sure to observe the following requirements in accordance with the above drawing.

<div style="text-align:center">

B ≥ 100mm

C ≥ 100mm

</div>

Working temperature requirements

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
50 mm or more and/or 100 mm or less	0~35°C	0~35°C	30°C
100 mm or more	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installation (Wall hanging (vertically wall-hanging equipment))

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [   ] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

Bad example of blocking exhaust

<Correct>

<Incorrect>

Beams

Beams

Special installation (Wall embedding (vertically wall-embedding equipment))

3.4.6 Wall embedding (vertically wall-embedding equipment)

This display is designed to accommodate embedding in a wall. Since the allowable range of outside-air temperature depends on the installation conditions. Please observe the following conditions:

⚠️

① Use a metal mounting fixture that does not block the side slits or the back ventilation holes, and attach at a minimum of four points. To avoid breaking the PDP panel, limit any twisting or bending stress applied to the display to 1 mm or less.

② <u>Do not use cable clamps</u> for this installation method. Cable clamps can interfere with proper ventilation and result in device failure.

③ Installation conditions and ambient operating temperatures:

(1) If the space behind the wall is open (If there is no obstruction within 300 mm from the backside):

Exhaust

Install the display with the fan on top.

100 mm

100 mm

A

100 mm   100 mm

A

Working temperature requirements

A size	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
60 mm or less	0~40°C	0~40°C	0~40°C
60 mm or more and/or 150 mm or less	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installation (Wall hanging (vertically wall-hanging equipment))

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [ ] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

<Correct>

Bad example of blocking exhaust
<Incorrect>

Beams

Beams

Special installations (Wall hanging (Vertically installing this display by embedding in the wall)

(2) When there is a closed space behind the wall.

Punching net

B

Punching net

A

Punching net

B

Aperture ratio 50% or more

50mm

50mm

C

Punching net

C

Punching net

B ≥ 100
C ≥ 100

Basically, it is not recommended to operate this display in a confined space.

In the event that you are going to use this display in a closed space, make sure to observe the following requirements in accordance with the above drawing.

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
100mm or more	0~35°C	0~35°C	0~30°C

* The same conditions will apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installation (Wall hanging (vertically wall-hanging equipment))

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [   ] cannot be used for the unit.
When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

<Correct>

Bad example of blocking exhaust
<Incorrect>

Beams

Beams
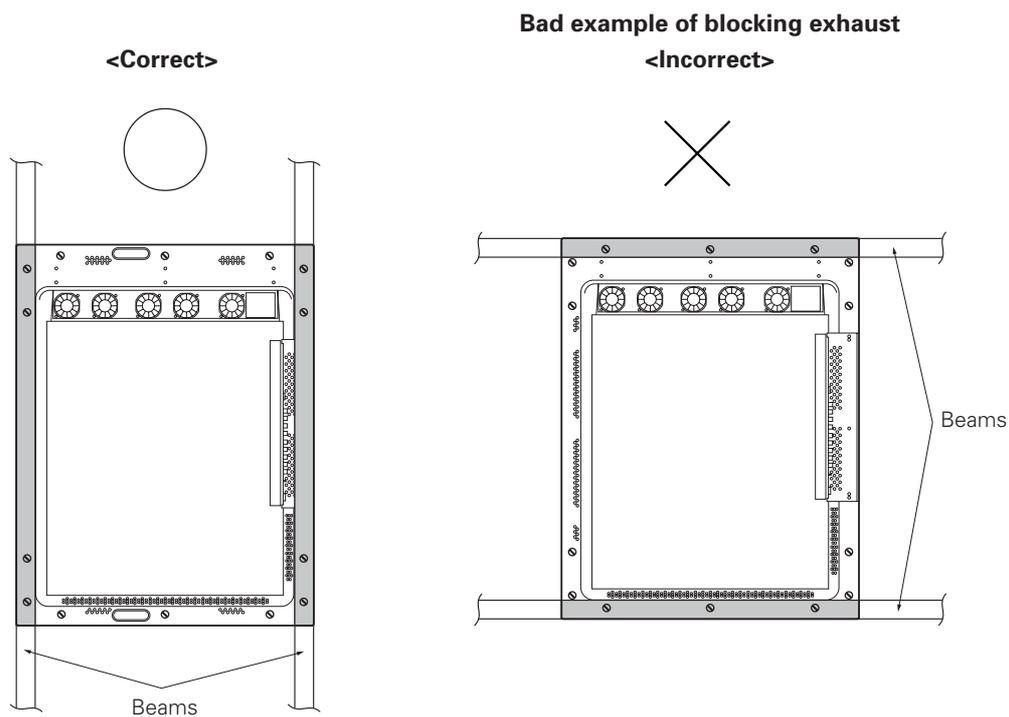
Special installation (Ceiling suspension (using wires))

3.4.7 Ceiling suspension (using wires)

Mount the display with the fans on the upper side.

When suspending the display by wires, use a combination of two mounting rows, as shown in the diagram above (rows A - B or C - D, from rows A - D). This is done to safeguard against subjecting the display to twisting forces. Use a minimum of four mounting points.
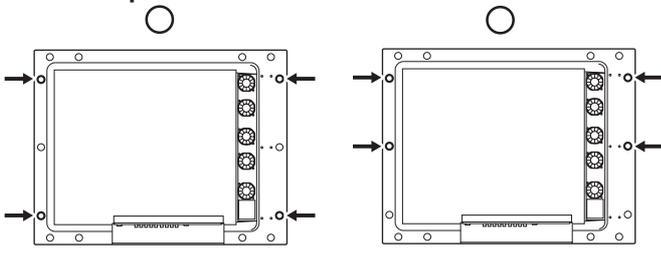
Good example   **Bad example**
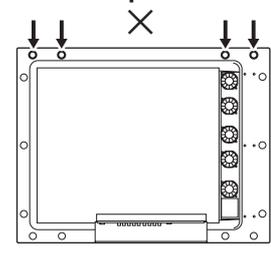
Use the following metal fixture to keep load from centering on the two mounting points at the top. As discussed in 3.4.1 Fixing on a struc, avoid blocking any ventilation holes other than those in the shaded ( ).

When attaching cables to the ceiling, install two cables at two independent points for safety.

Wire

Wire
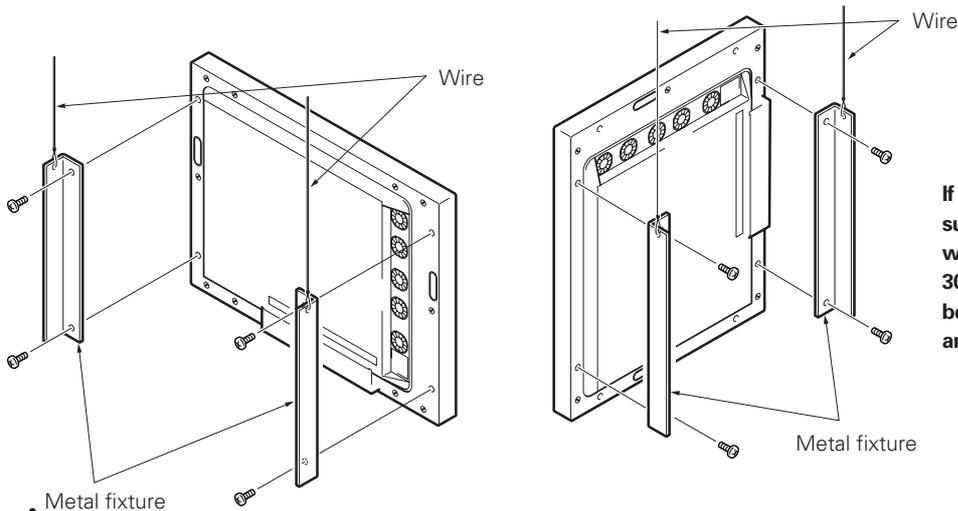
If the display is suspended close to a wall, provide at least 300 mm clearance between that wall and the display.

Metal fixture

Metal fixture

⚠ Use mounting screws with minimum strength equal to that of mild steel cable, or stronger screws with hexagonal socket heads.
The cable must be capable of supporting a load four times as heavy as the total weight of the display (30.8 kg <31.6 kg>) plus the weight of the metal fixture, if one is used. Provide auxiliary back-up cables to safeguard against breakage of main cables due to earthquakes etc..
< > shows the PDP-V401E.

Working temperature requirements

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~40°C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installation (Ceiling suspension (using wires))

Should the distance between the wall face and the unit be 300 mm or less, treat the clearance in the rear cover of the pop or that of the fixture nearer to the wall as the clearance A and apply the wall hanging conditions in 3.4.2. wall hanging.

Metal fixture   Metal fixture

PDP

A   A or more

Wall
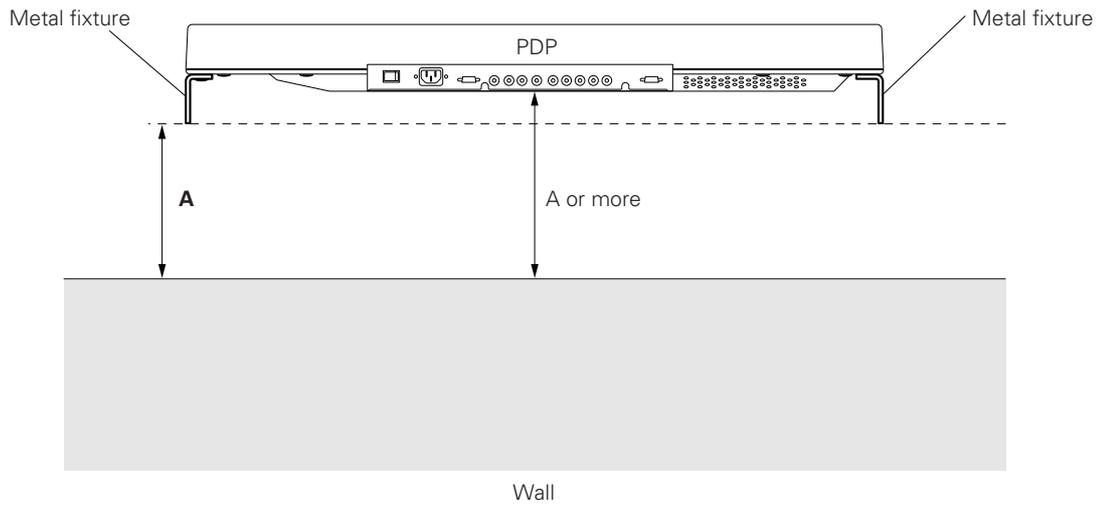
Special installation (Installation with the screen downward)

3.4.8 Installation with the screen downward

This display is designed to be installed with the screen downward, but certain uses can interfere with proper ventilation. Please observe the following conditions:

① Use **plate metal that keeps all single holes clear** and has dimensions no larger than those given in the following table.

② Leave adequate ventilation space between the display and the ceiling.

③ Use plate metal having sufficient strength (incorporating a safety factor of approximately four), and secure at the four points indicated in the following drawing (four-point mounting). Mounting plate metal on a ceiling involves certain hazards. Make sure you provide adequate back-up safety measures.

④ Recommended ambient operating temperatures are given in the following table. Operate the display within this range of temperatures.

⑤ The ceiling should closely approximate a perfectly flat plane. Keep deformation pressures applied to the display, such as twisting and bending, at or below 1 mm.
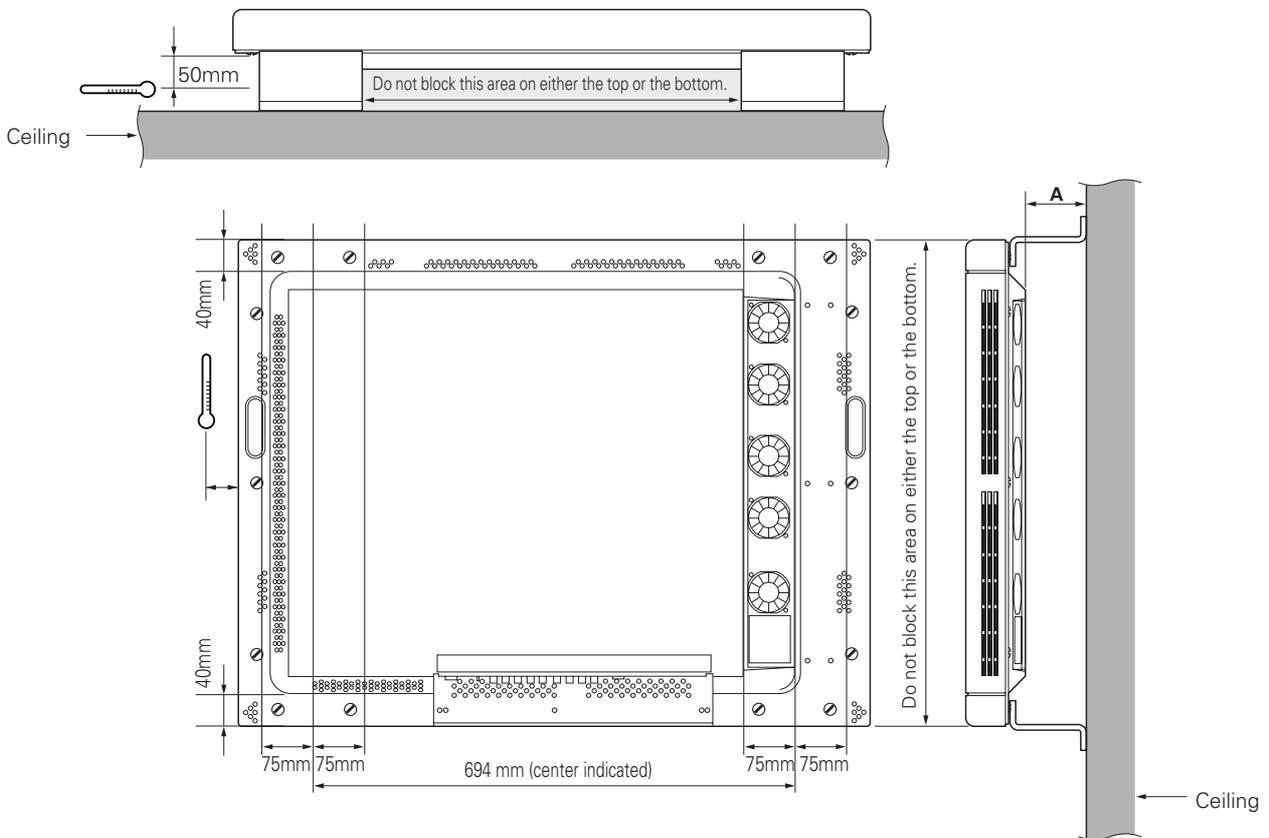
Working temperature requirements

A size	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
50 mm or more	0~35°C	0~35°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.
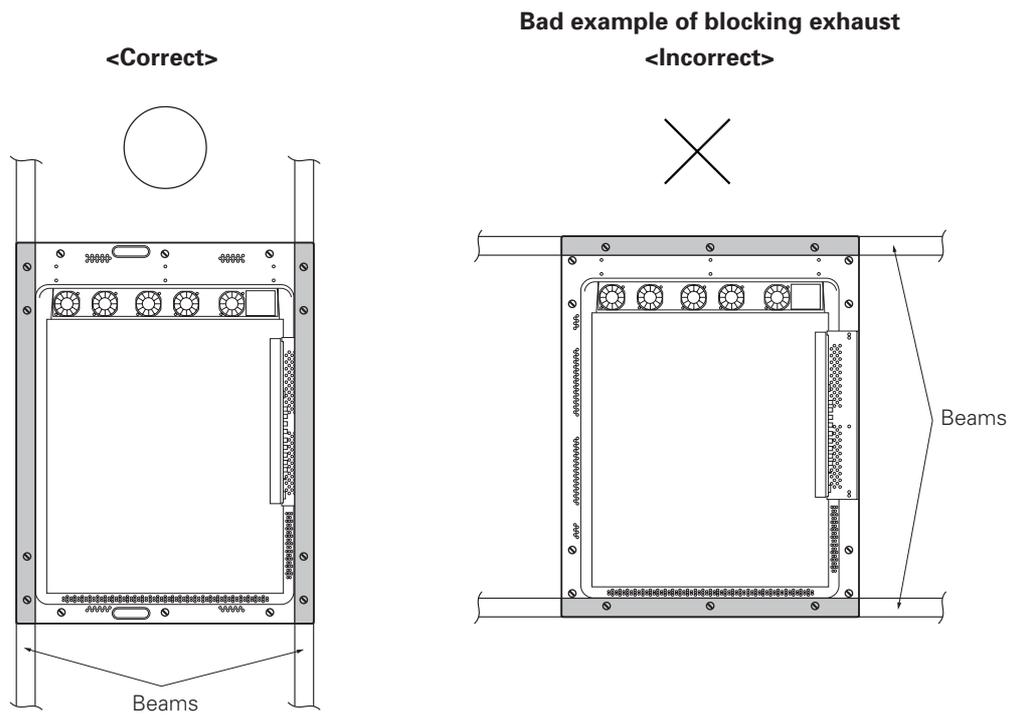
Special installation (Installation with the screen downward)

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [　] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").
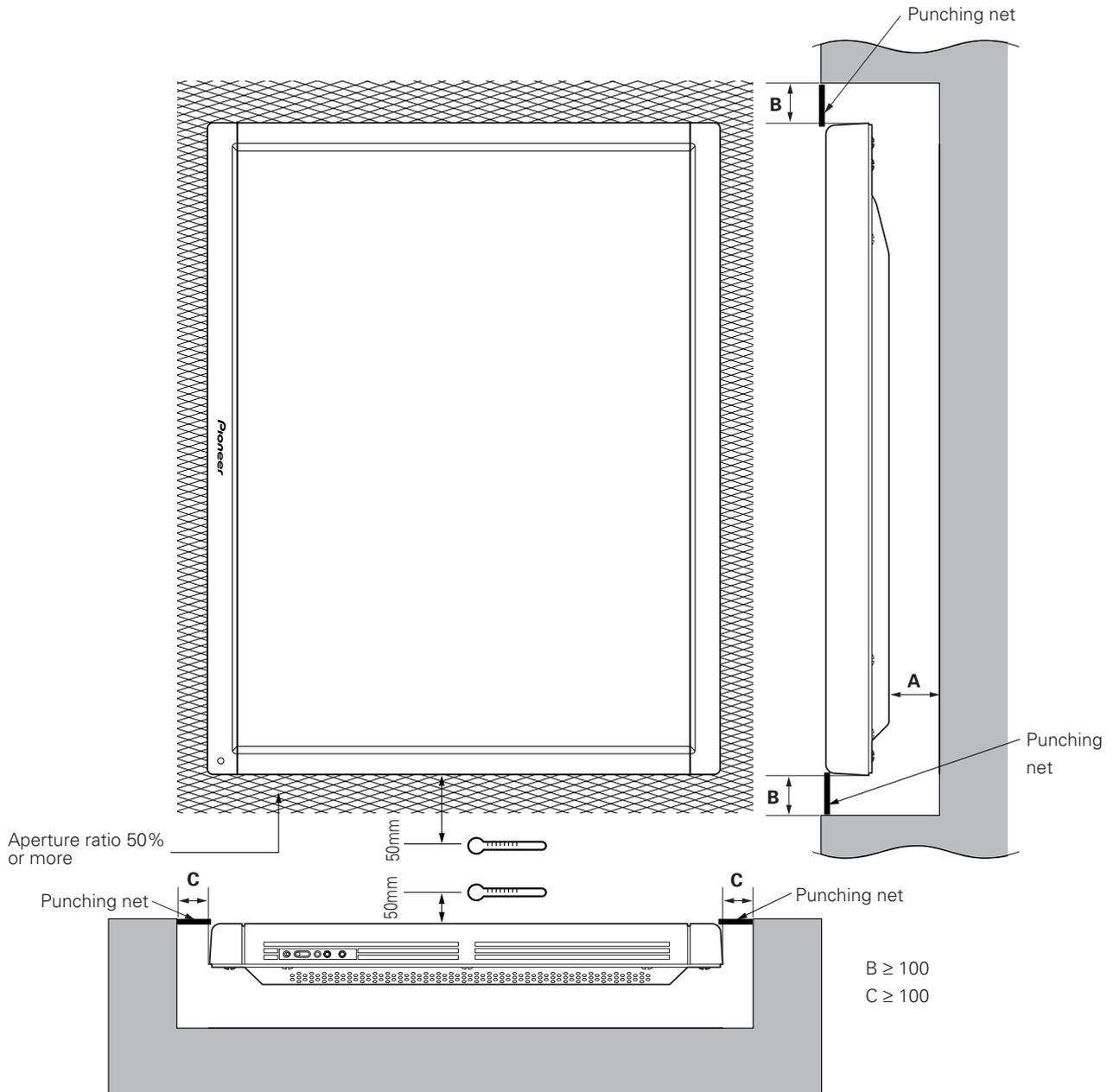
<Correct>

Beams

Bad example of blocking exhaust
<Incorrect>

Beams
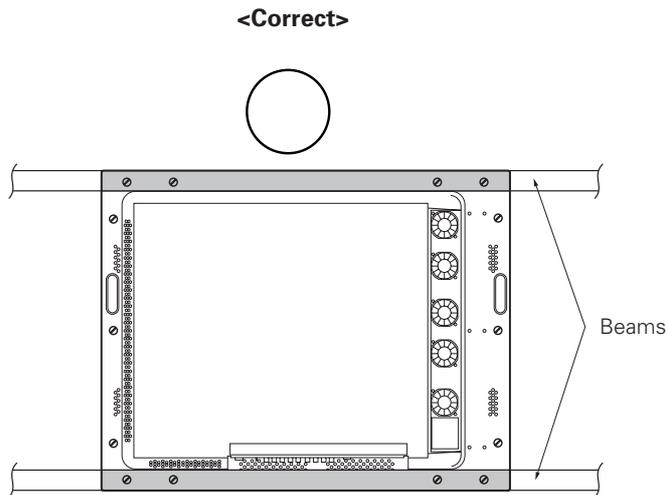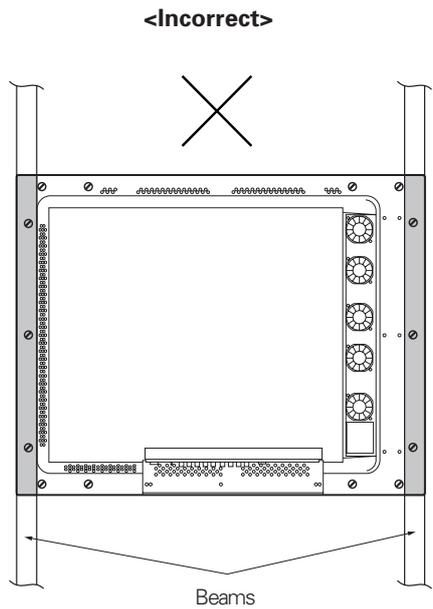
Special installation (Ceiling embedding)

3.4.9 Ceiling embedding

This display is designed to accommodate embedding in a ceiling. Note that the allowable range of outside-air temperature depends on the installation conditions. Please observe the following requirements:

⚠

① Use a mounting fixture with a shape that does not block ventilation holes on the back or disturb ventilation in any way, and secure the display at four or more points. Moreover, when installing this display, ensure that the deformation such as twisting and bending of this display can be kept within 1 mm. Otherwise, it is likely that PDP panel will cause cracks.

② Do not use cable clamps for this installation method. Cable clamps can interfere with proper ventilation and result in device failure.

③ Installation conditions and ambient operating temperatures:

(1) When the space above the ceiling is not enclosed (If there is no obstruction within 300 mm from the backside):
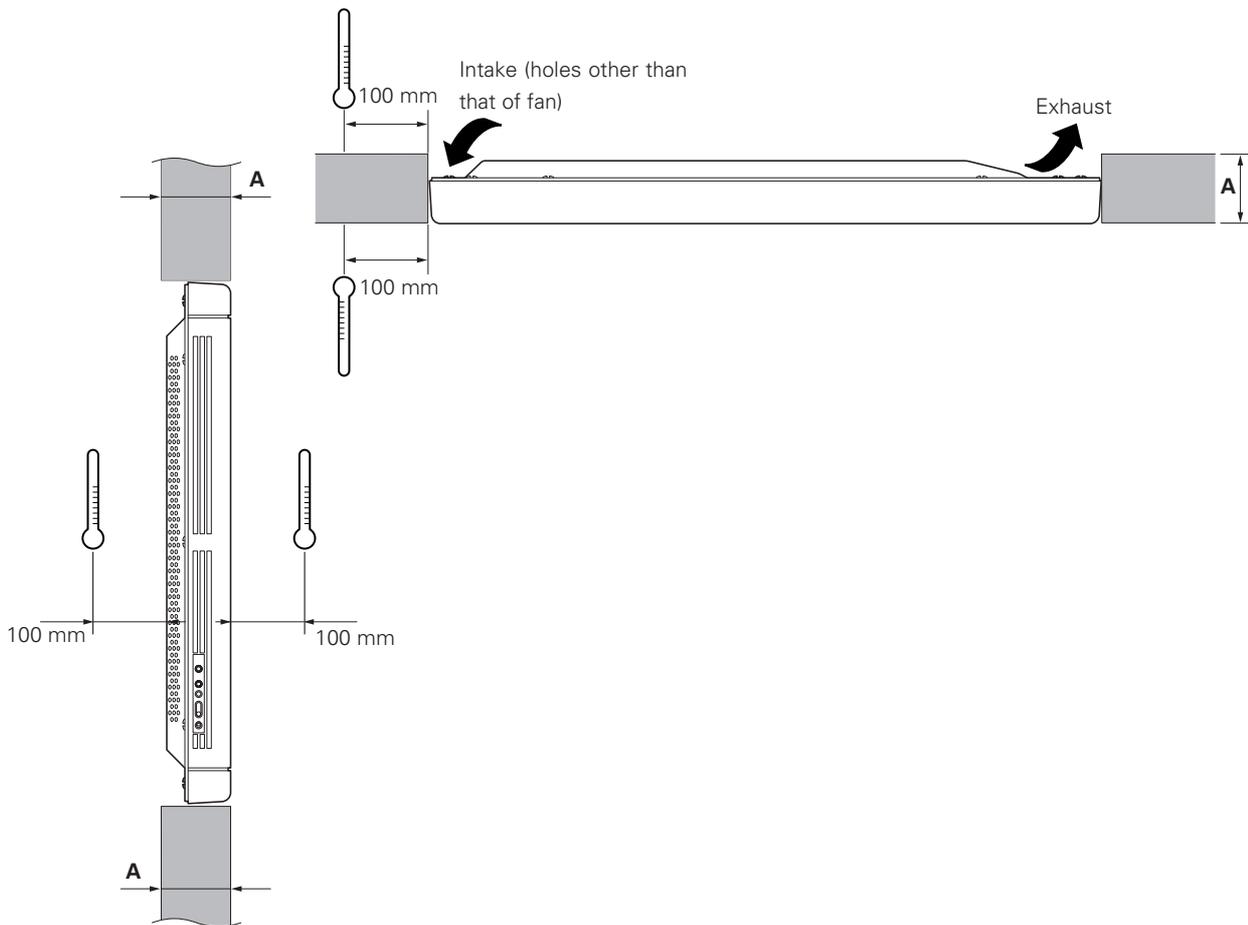
Working temperature requirements

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60HZ)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
150 mm or less	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

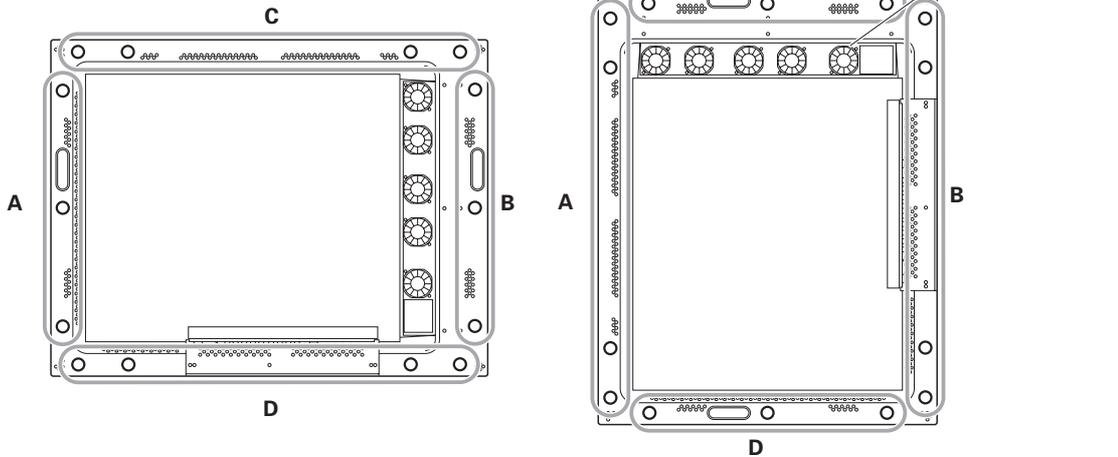* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [ ] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

Bad example of blocking exhaust

<Correct>   **<Incorrect>**

Beams

Beams

Special installation (Installation on the floor)

3.4.10 Installation on the floor

This display is designed to accommodate floor installation, but certain specific installations may interfere with adequate ventilation. Always observe the following conditions:

① Use **plate metal that keeps all single holes clear** and has dimensions no larger than those given in the following table.

② Leave adequate ventilation space between the display and the floor.

③ Use plate metal having sufficient strength, and attach at the four points indicated in the following drawing (four-point mounting).

④ Recommended ambient operating temperatures are listed in the following table. Operate the display within this temperature range.

⑤ The ceiling should closely approximate a perfectly flat plane. Keep deformation pressures upon the display, such as twisting and bending, at or below 1 mm.

Working temperature requirements

A size	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
50 mm or more	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked ▢ cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

\<Correct\>

Bad example of blocking exhaust
\<Incorrect\>

Beams

Beams

Special installation (Installation under the floor)

3.4.11 Installation under the floor

• If protective glass or similar material is used, the following installation conditions must be observed:
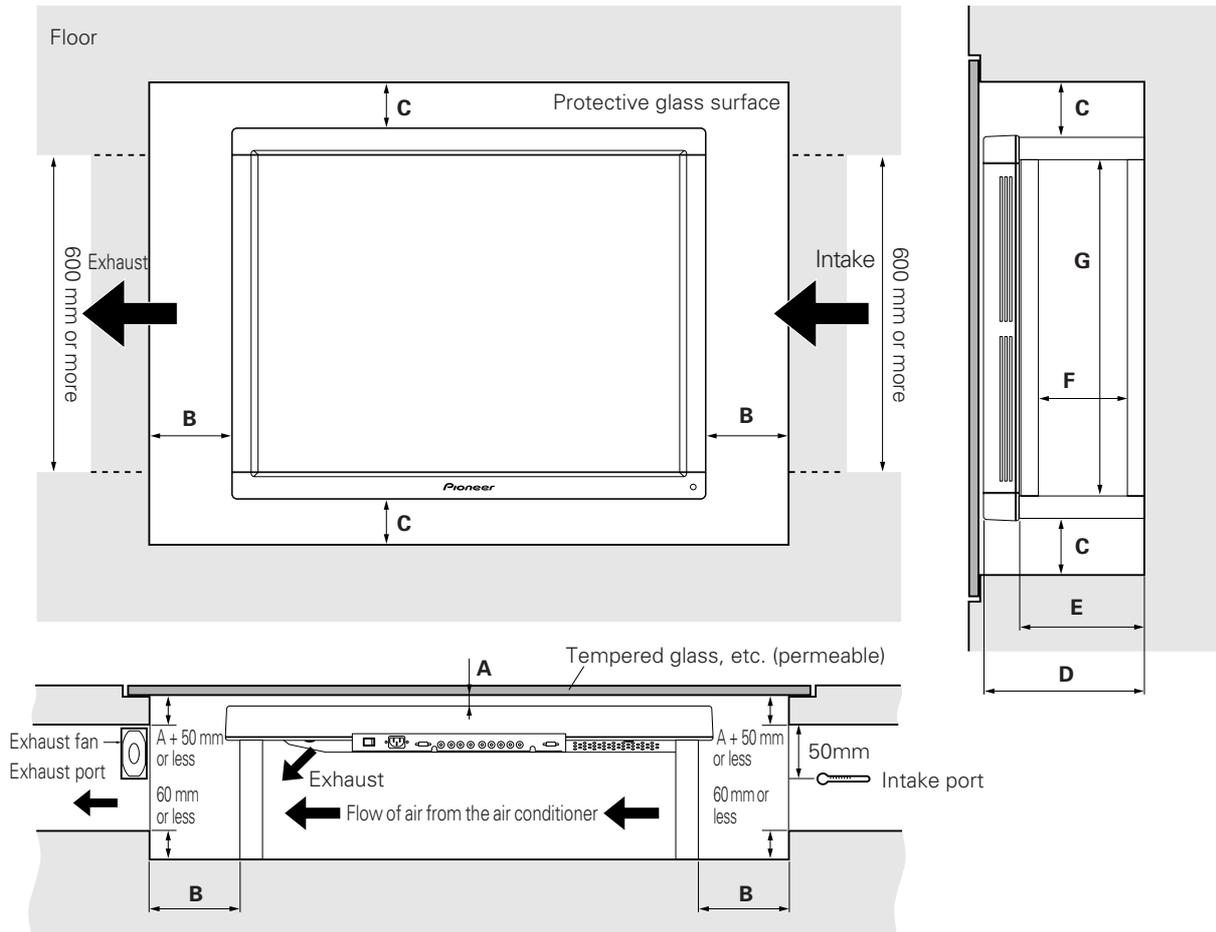
← Looking in the direction of the arrow (see the next page)

If the display is used in the closed space, observe the following conditions in the above environment:

> A ≥ 20 mm (clearance between the protective glass and PDP)
>
> B ≥ 100 mm (clearance between the PDP and side wall)
>
> C ≥ 50 mm (clearance between the PDP and side wall)
>
> D ≥ 290 mm (clearance between the surface of the PDP and the mounting surface under the floor)
>
> E ≥ D – 65 mm
>
> F ≥ 180 mm
>
> G ≥ 600 mm

	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Without exhaust fan	0~30°C	0~30°C	Not usable
With exhaust fan	0~35°C	0~35°C	0~35°C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Conditions for embedding under the floor

← Looking in the direction of the arrow (see the previous page)

C. L.

600 mm or more

a

A + 50 mm or less

a   b

60 mm or less

$a = b$

The size of the intake port is the same as that of the exhaust port.

For the exhaust port only, add a fan at the position indicated in the left figure (in the case of a single fan).

Fan placement....Place a fan in an upper position.

* The maximum air flow rate of the fan is 2.0 m³/min.

C. L.

In the case of two fans:

a   a

a   a

Special installation (Installation under the floor)

Securing method: Basically, the unit is secured as indicated below. Keep open all areas other than the shaded parts. The fixing method marked [   ] cannot be used for the unit.

When the unit is fixed on a structure, select a structure of the proper thickness and height. Care must also be taken regarding the number of fixing bolts to be used (see "3.4.1 Fixing on a structure").

<Correct>

Beams

<Correct>
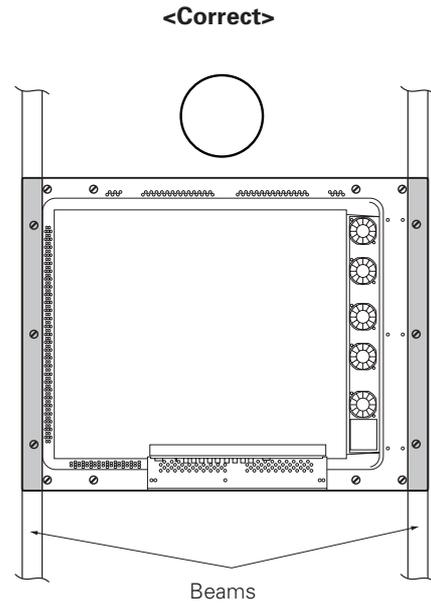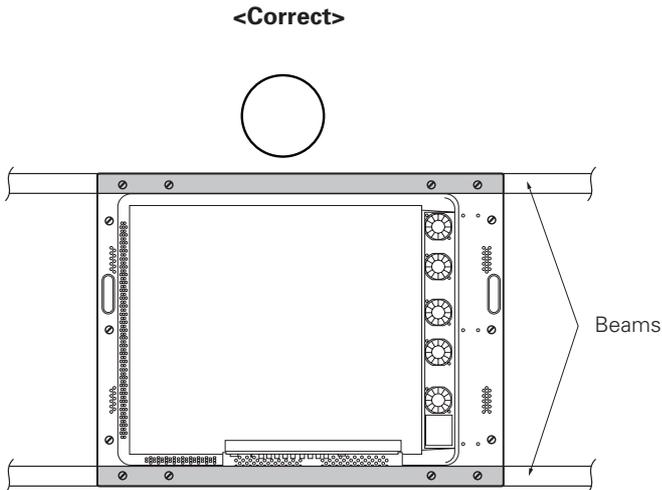
Beams

Bad example of blocking exhaust
<Incorrect>
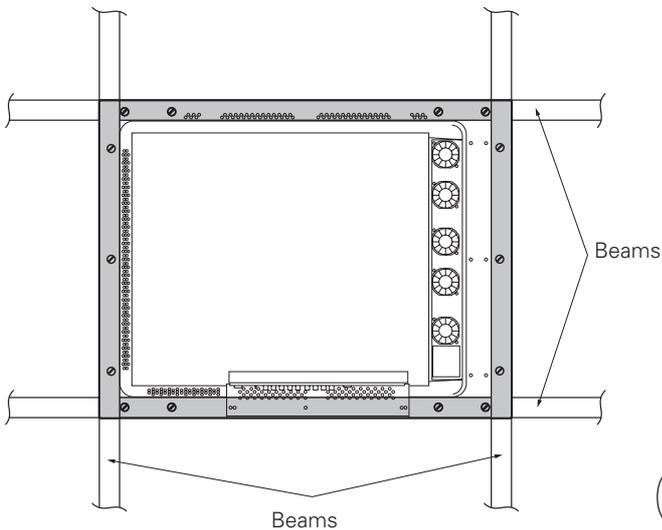
Beams

Beams

(Do not install the horizontal beam at the same time as the vertical beam.)

3.4.12 Installation under the floor (using the PDM-4001)

• If protective glass or similar material is used, the multi-installation fixture (PDM-4001) shown in the following figure is very useful.
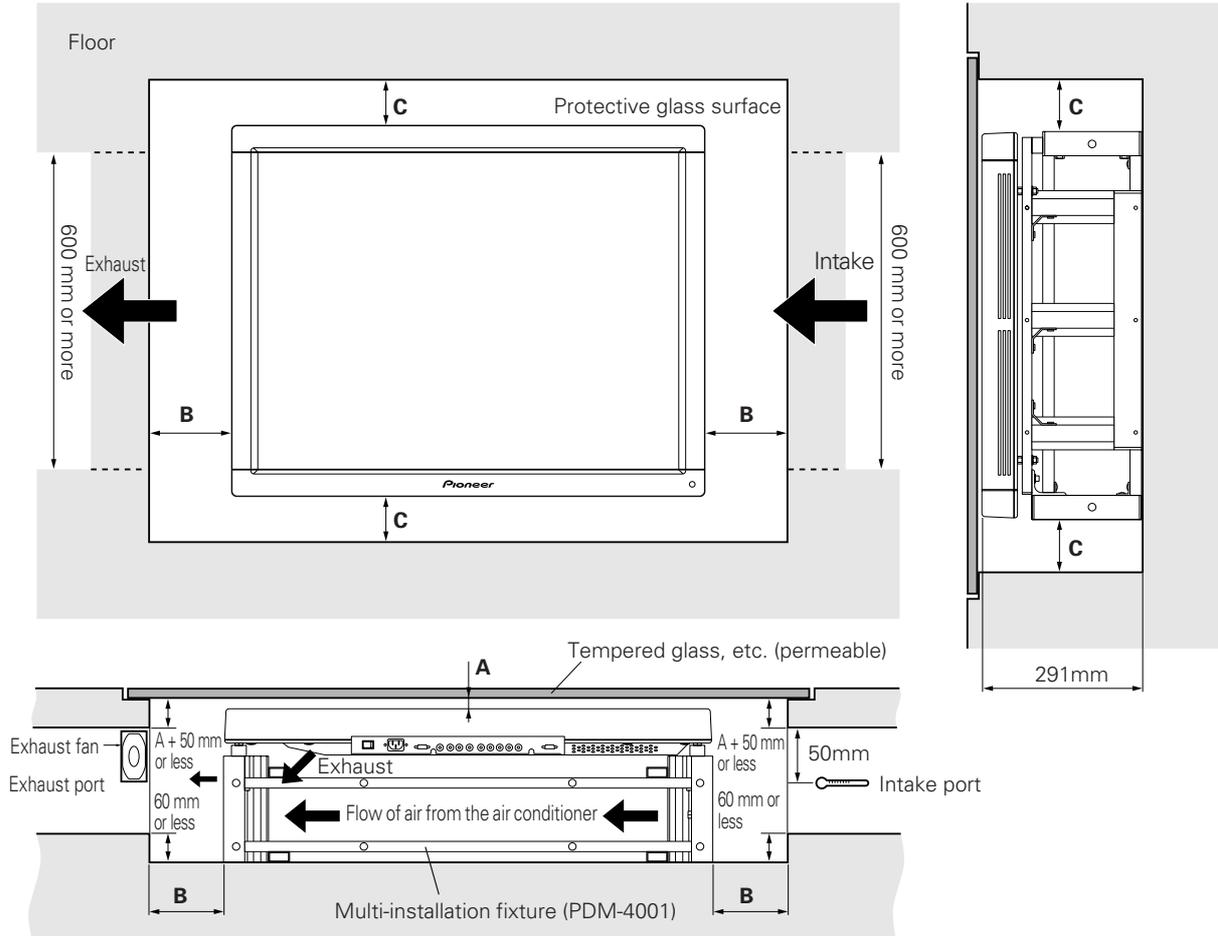
← Looking in the direction of the arrow (see the next page)

If the display is used in the closed space, observe the following conditions in the above environment:

A ≥ 20 mm (clearance between the protective glass and PDP)
B ≥ 100 mm (clearance between the PDP and side wall)
C ≥ 50 mm (clearance between the PDP and side wall)

	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Without exhaust fan	0~30°C	0~30°C	Not usable
With exhaust fan	0~35°C	0~35°C	0~35°C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Special installation (Installation under the floor (using the PDM-4001))

Conditions for embedding under the floor:

⬅ Looking in the direction of the arrow (see the previous page)

C. L.

600 mm or more

a

A + 50 mm or less

a   **b**

60 mm or less

$a = b$

The size of the intake port is the same as that of the exhaust port.

For the exhaust port only, add a fan at the position indicated in the left figure (in the case of a single fan).

Fan placement....Place a fan in an upper position.

* The maximum air flow rate of the fan is 2.0 m^3/min.

C. L.

In the case of two fans:

a   **a**

a   **a**
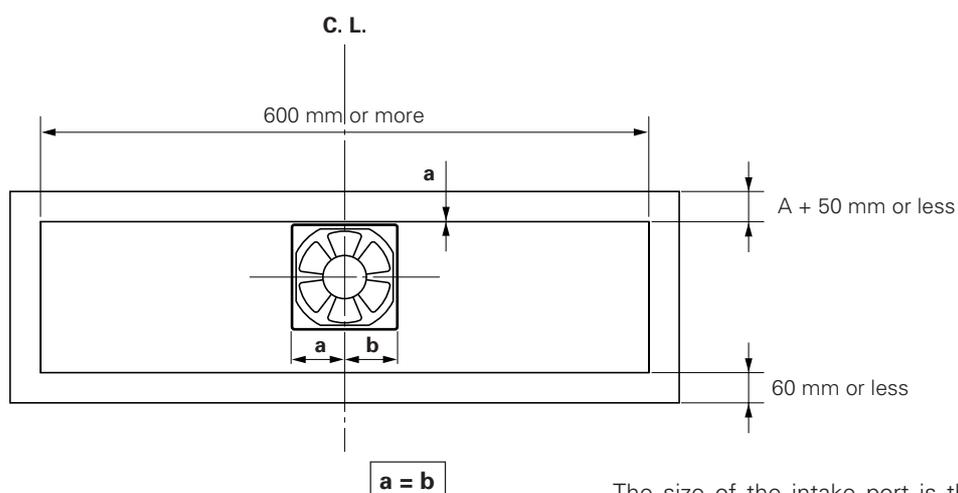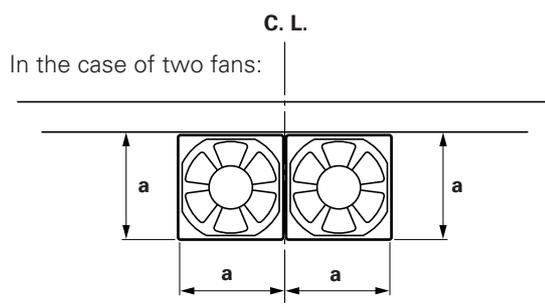
Special installation (Horizontal connections)

3.4.13 Horizontal connections

While the display is designed to accommodate side-by-side installations, keep in mind that specific installation configurations may affect ventilation. Observe the following requirements:

① The following table lists the operating temperature conditions. Use the units under conditions that keep the outside atmosphere in this range.
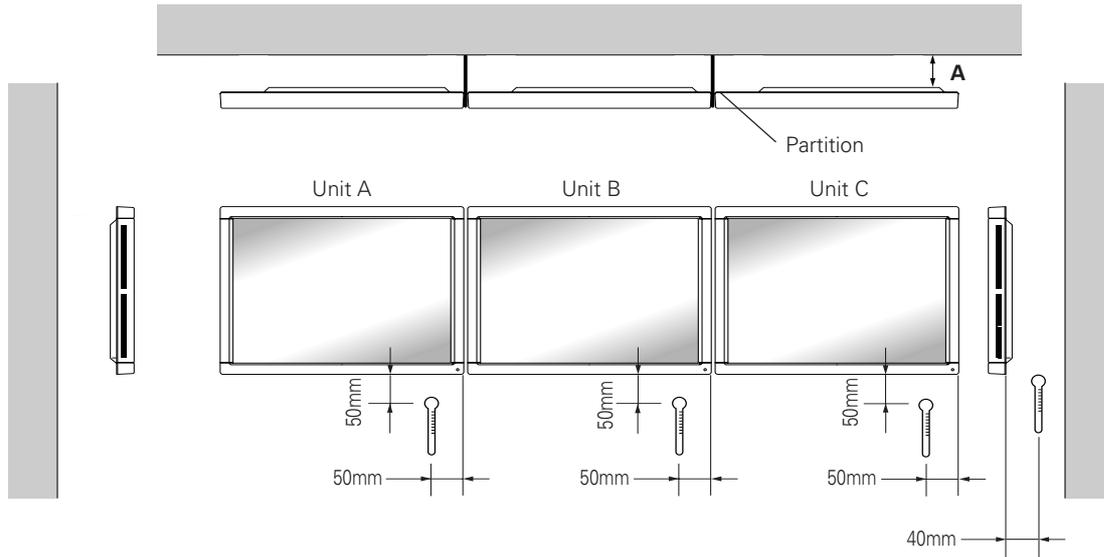
In case of lateral connections, ensure that left and right partitions are provided.

Be careful to install the partitions so that the air on the left and right backside of the set is not mixed up.

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60HZ)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
50 mm or more	0~35°C	0~35°C	0~35°C

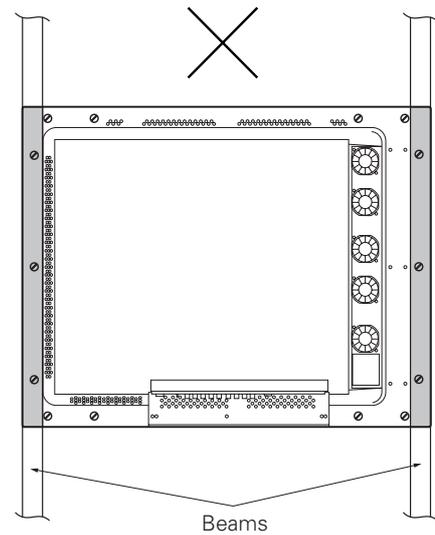* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

* For the securing method, see 3.4 Special installations and 3.4.2 Wall hanging.

3.4.14 Vertical connections

This machine is designed to be used vertical connection, but some operations under vertical connection may adversely affect ventilation in the machine. Therefore, observe the following conditions for safe operation:

① Installation of up to three units (Vertical connection)
   The following table lists the operating temperature conditions. Use the units under conditions that keep the outside atmosphere in this range.

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60HZ)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
50 mm or more	0~35°C	0~35°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).
* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Wall

Partition

A

Make sure to mount them so that they will not block any exhaust holes.

50mm

50mm
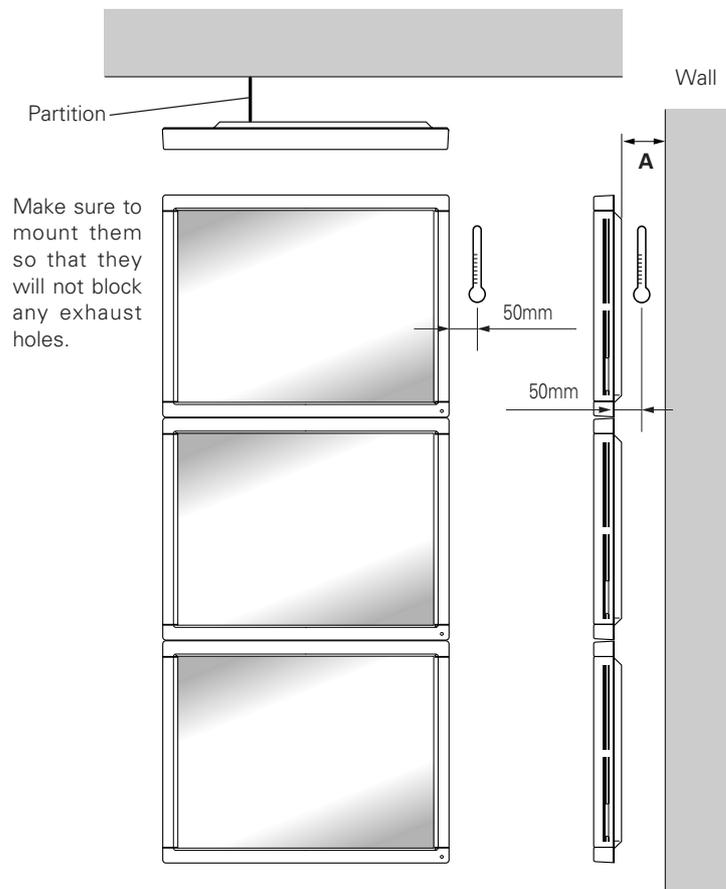
* For the securing method, see 3.4 Special installations and 3.4.2 Wall hanging.

Before making adjustments

5.1 Before Beginning Adjustments

You can make adjustments to the unit in the following ways:

- With the operating panel of the main unit
- With the remote control unit
- With a PC (through RS-232C control)

Make sure you've thoroughly read and understood the following before making any adjustments.

5.1.1 Operating mode

The unit has the following four major operating modes:
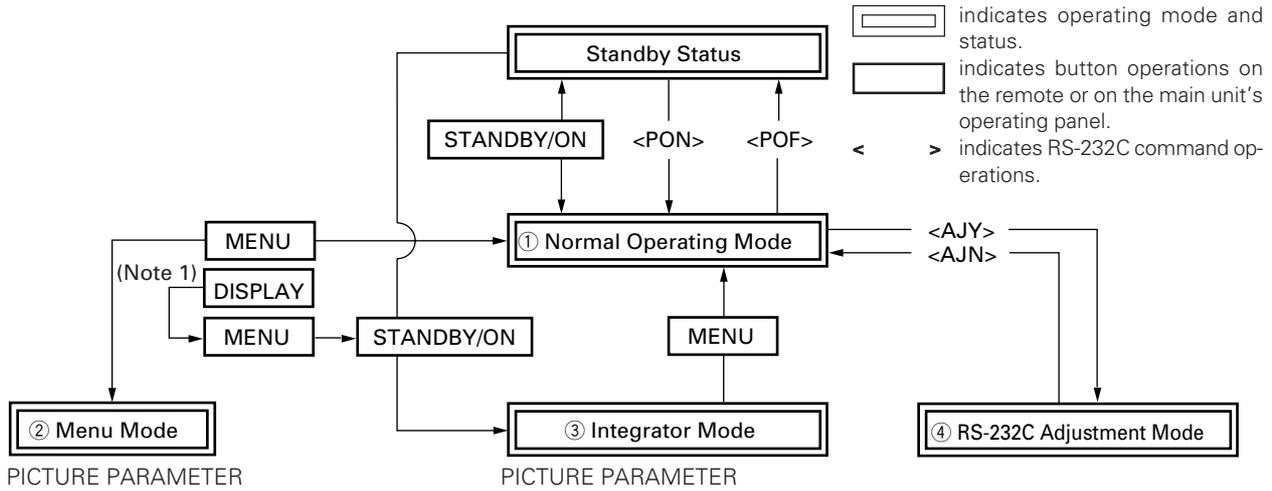
PICTURE PARAMETER

    CONTRAST

    BRIGHT.
    COLOR (Note:1)
    TINT (Note:1,4)
    SHARPNESS (Note:1)
    CLK.FRQ. (Note:2)
    CLK.PHS. (Note:2)
    HOR.POS. (Note:2)
    VER.POS. (Note:2)
    INIT.
    SCART RGB (Note:6)

PICTURE PARAMETER

    CONTRAST

    BRIGHT.
    COLOR (Note:1)
    TINT (Note:1,4)
    SHARPNESS (Note:1)
    CLK.FRQ. (Note:2)
    CLK.PHS. (Note:2)
    HOR.POS.
    VER.POS.
    INIT.

WHITE BALANCE

    R HIGH
    G HIGH
    B HIGH
    R LOW
    G LOW
    B LOW
    INIT.

ADDITIONAL SET UP

    COLOR MODE
    BAUD RATE
    AUTO RGB2
    MP MODE (Note:5)
    NTSC MASK (Note:4)
    FULL MASK
    OSD
    FOUR METER (Note:3)

TOTAL INITIALIZE

See the description provided in "5.3 Outer control by RS-232C".

Note 1: Only when VIDEO and Y/C are input.
Note 2: Only when RGB1 and RGB2 are input.
Note 3: Only indication
Note 4: Only when NTSC signal, no signal, or no applicable signal is input (VGA, Macintosh, PC-9800 inputs).
       Cannot adjust when PAL signals are input <PAL signals can be input only for PDP-V402E>.
Note 5: Only when signals other than the NTSC signal are input.
Note 6: PDP-V402 only

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Functions and features of standard optional items

4.1 Functions and features of standard metal fixtures

Our plasma display (PDP-V402 <PDP-V402E>) features a large screen, high luminance, and high picture quality. In addition, the plasma display is so light and thin that it can be installed in a far wider area than competing displays now on the market.

The PDP-V402 <PDP-V402E> is designed so that it can be installed in different ways, as we have taken the operating environment and installation structure in consideration. To take advantage of this flexibility in installation methods, you can select one of the following standard metal fixtures:

● **Down converter: PDA-4003**
This is a high performance down converter, which allows our plasma display PDP-V402 to display the XGA (images of 1024 x 768 pixels). It enables the plasma display to deliver considerably sharp images, minimizing missing information such as very fine characters or lines.

● **Tilting stand: PDK-4001**
The angle of the PDK-4001 tilting stand can be adjusted in a range from 0° to 20° from vertical. With this stand, you can adjust the tilt of a plasma display installed on a desk or floor to suit your eyes.

● **One-sided, ceiling-suspension the metal fixture for the plasma display: PDK-4002**
With this simple support fixture, you can adjust the installation angle between ± 45° from right to left and up to 25° down from horizontal. The depth of the display with this metal fixture at the time of installation is less than or equal to 170 mm when the display is installed vertically. This fixture can cover a large area depending on the application.

● **Double-sided, ceiling-suspension the metal fixture for the plasma display: PDK-4003**
The metal fixture for double-sided installation makes good use of the display's thin, light structure. This fixture enables double-sided installations of less than or equal to 470 mm when the display is installed vertically, something which is not possible with other displays on the market.

● **Ceiling-suspension metal fixture for the plasma display (hand screw type): PDK-4004**
This low-cost metal fixture uses a bolt, and allows you to adjust the angle up to 25° down from horizontal. It is suitable for installing the display in rooms having a standard ceiling height (2.40 – 2.70 m).

● **PDP bracket: PDK-4005**
The PDK-4005 bracket can be used when handling the display during transport or installation. You can also use this bracket as a frame for wire-hanging or wall-installation. It is best suited to rental applications that require speedy installation and simple and safe mounting.

● **Wall-mounting metal fixture for plasma display: PDK-4006**
This mounting fixture permits adjustable installation angles between 0 and 25 degrees. When installation is complete, the installed depth should be 125 mm or less (for vertical installations without optional speaker system). Adjust the tilt to for best visibility, depending on the particular use.

● **Mobile cart: PDK-5008**
This is a carryable stand, which is stable enough for one person to freely transfer the plasma display.
It is possible to adjust the height and angle of the screen to meet the sightline of the viewers, depending on the purpose.

● **Multi-display bracket for plasma display: PDM-4001**
The multi-display bracket allows you to take full advantage of the thinness of the plasma display. With plasma displays of 300 mm depth or less, which was virtually impossible with conventional display, installation of a maximum 4 x 4 multiple displays (3676 x 2868 mm) is possible. Furthermore, once the multiple displays are installed, maintenance of the displays is possible using front access.

● **Protective filter: PDA-4002**
This filter is used to improve the durability of the plasma display for industrial use.
This filter prevents the plasma display from being damaged or stained due to malicious acts, and improves the strength of the front of the panel. When the filter is mounted, the anti-reflection coating prevents the quality of images from deteriorating.

● **Speaker system: PDP-S03-LR**
The sound system employs a vertical twin-system, composed of a 2.5-cm dome corn-type tweeter at the center and newly-developed elliptical drivers 4.5 cm in width, arranged vertically. The resulting configuration system produces rich, stable sound fields.
Only 7.4-cm wide, the cabinet reproduces a rich and dynamic sound range. (When the speaker is mounted to the main body of the plasma display, the operation panel on the main body may not be used.)

> ⚠️ **The work of assembling and installing the metal fixture and mounting the plasma display must always be performed by two people.**
> **Caution**

Handling standard optional items

4.2 Handling standard metal fixtures

4.2.1 Precautions on handling metal fixtures

This chapter describes how to install and handle metal fixtures specially designed for plasma displays sold by us, PIONEER. We sell this unit on the premise that it will be installed by specialist vendors with sufficient technical skill. The plasma display must be installed by a specialist in this work or by the dealer from which you made your purchase.

4.2.2 Precautions for vendors performing the installation

1) Before installation

Strictly observe the instructions in "3.1 Installation environment".

2) Installation

Thoroughly read the contents of this chapter and observe the instructions.

For safety, make sure the work is performed by more than one person.

"Sufficient strength to withstand" means sufficient strength to withstand a weight four times that of the main body including the metal fixture.

3) After installation

After installing the metal fixture, check it for strength and make sure there are no loose screws. When the plasma display is mounted, check the installation again.

4) Delivery to the customer

(1) Precautions on operation

● **Precautions**

After finishing the above checks, the installing vendor must describe the following precautions to the customer. Even if the construction is perfect, handling the metal fixture improperly can undermine the integrity of the installation. You should explain precautions on handling to the customer so that the customer can understand how to handle the display.

● **Convenient use of the plasma display**

• If the display is not mounted properly, please ask the installing vendor to check and repair it.

• To prevent the display from falling or similar accidents, do not try to adjust the angle or height of the plasma display yourself. Please ask the installing vendor to adjust it (Except the PDK-4001).

● **Do not do the following.**

The following actions are inherently dangerous. Exercise caution in handling the metal fixtures.

• **Applying loads by pushing or pulling.**
• **Spilling water on the fixture.**
• **Placing something on the fixture.**
• **Touching screws that are part of the fixture.**

(2) Notes for vendor performing the installation (Japanese only)

Once the installation is completed and checked and the above precautions have been explained to the customer, the installing vendor must enter certain data in the Vendor's installation notes and give these notes to the customer.

(3) Periodic inspection

Parts that are not visible from the exterior, which are either inside the display or part of the floor or ceiling on which the plasma display is mounted, may age without obvious signs until the display falls from the mounting fixtures. Advise the customer to ask the installing vendor or a specialist to periodically inspect the fixture and plasma display.

4.3 Stand (an accessory to PDP-V402 <PDP-V402E>)

4.3.1 Installing the stand

1. Attach the stand to the display using M8 commercial screws whose length equals the thickness of the table to which the fixture is attached plus 25 mm.

Front

590

100

100

Rear

2. Remove hole rivets Ⓐ and Ⓐ' with a coin or the like.

Ⓐ   Ⓐ'

3. Insert the main body of the plasma display into the stand.
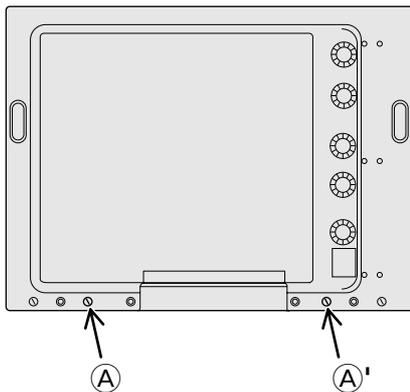
4. Fix the main body to the stand with the washers and bolts provided.
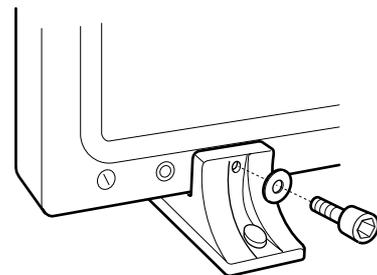
For this work, use a hexagonal wrench.

⚠️ **Caution**

This unit weighs 30.8 kg <31.6 kg>. In addition, it is unstable due to its small depth, and should be unpacked and carried by at least two persons.

< > shows the PDP-V402E.

How to mount standard optional items
(Stand: an accessory to PDP-V402 <PDP-V402E>)

4.3.2 Outer-dimensions diagram (Unit: mm)
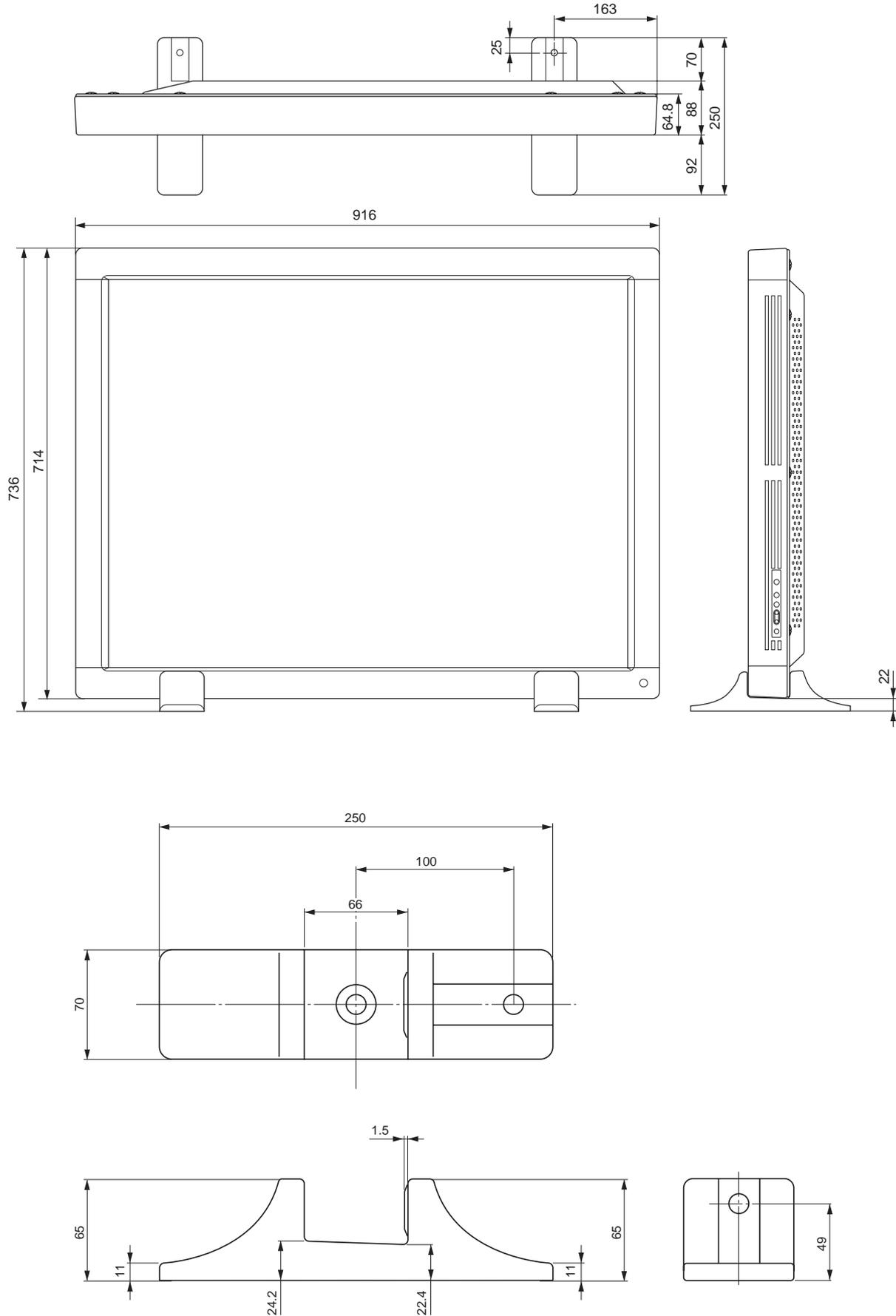
4.4 Down converter PDA-4003

4.4.1 Specifications

Input/output terminals

Input .... D-sub 15pin

Output D-sub15pin

Remote control satellite input (Sold separately)

 .... MINI DIN4pin

DC supply connector .... Mini-jack

Output signal

Resolution, refresh rate .... 640 X 480(VGA),60Hz

Miscellaneous

Power supply .... DC 9.3V

Current (DC 9.3V) 0.8A

External dimension ....

 .... 338(Width) X 28(Height) X 150(Depth) mm

Weight 1kg

Accessories

Remote control 1

Screw rivets .... 8 (spare 4)

Rubber cushion 4

AA manganese battery 2

D-sub 15 pin cable 1

AC adaptor 1

(AC 100 V - 240 V 50/60 Hz DC 9.3 V Rating 3 A)

Belcro 2

Power Cord 1

Binder 10

Cable strap 1

Operating Instructions 1

Warranty Card 1

The specifications and external appearance of the product may change without prior notice due to constant improvements.

Input Signals

The input signals for the down converter are as shown below.

	Display Mode	Resolution (dots x lines)	Vertical Frequency (Hz)	Horizontal Frequency (kHz)
VGA	VESA Standard	640 x 480	72.809	37.861
		640 x 480	75.000	37.500
		640 x 480	85.008	43.269
SVGA	VASA Guidelines	800 x 600	56.250	35.156
		800 x 600	60.317	37.879
	VESA Standerd	800 x 600	75.000	46.875
		800 x 600	85.061	53.674
XGA	VASA Guidelines	1024 x 768	60.004	48.363
	VESA Standerd	1024 x 768	70.069	56.476
		1024 x 768	75.029	60.023
		1024 x 768	84.997	68.677
Macintosh	13-inch monitor	640 x 480	66.670	35.000
	16-inch monitor	832 x 624	74.502	49.693
	19-inch monitor	1024 x 768	74.700	60.000

How to mount standard optional items (PDA-4003)

Note 1) In case the signals for the full lines which are more than 845 lines are input, ''OUT OF RANGE'' will be indicated.

Note 2) Though it is not shown in the above table, in case the signals for the full lines which are equal to or less than 845 lines are input, the images will be shown, but there are some possibilities that the following problems might happen:

      ① The out-of-roundness may not be correct (Example: PC-9800/640 X 400 @ 56.4Hz)

      ② Noise may be caused/images may be distorted.

      ③ Images may not be completely adjusted.

Please understand that these problems are out of the scope of our product warranty.

Moreover, in case that it is inevitable for you to input some interlaced signals, input by way of separate synchronization.

In case you use G on Sync or composite synchronization to input, there is a chance that the resolution and frequency of your signals may not be correctly identified.

Note 3) There are some older Macintosh PC models that can output both C on Synch and composite synchronization at the same time. In such a case, there is a chance that the resolution and frequency of the signals may not be correctly identified or the white balance may be disturbed. Therefore, basically, do not use such models.

Note 4) Macintosh is the registered trademark of Apple Computer Inc.

PC-9800 is the registered trademark of NEC Corporation.

4.4.2 Outline drawing (Unit: mm)

4.4.3 The outline from setting up to adjusting of down converter

The following explains the outline from setting up to adjusting of down converter, when using PDP-V402, PDP-V402E plasma display manufactured by our company.

Start	
Open the section titled "Before using the down converter."	See the section titled ''Before using this down converter'' in Page 71.
Mount the cable strap	See the section titled ''How to use a cable strap'' in Page 74. Note) If it has already been mounted, there is no need for this work.
Mount the down converter on the rear panel of the plasma display.	See the section titled ''Mounting on the plasma display'' in Page 72.
Connect the cables and the AC adapter.	See ''Connection'' in Page 76 and ''Connecting the power supply cord'' in Page 76 as well as ''How to mount the AC adapter'' in Page 73.
Carry out the styling of the cables.	See the section titled ''On styling of the cables'' for your reference in Page 75.
Turn ON the power for the input signal source (including PC), the plasma display and the down converter.	Note) Turn the input function of the plasma display to ''RGB2.''
Input the FULL WHITE signal, and carry out the aging (for about 10 minutes).	Note) During this time, pay careful attention to prevent any image burn-in. (Be careful not to keep transmitting the OSD signal or enter any signals other than the FULL WHITE signal, etc. because such actions may cause an image burnt-in)
Adjust [CLK.FRQ.], [CLK. PHS.], [HOR. POS.] and [VER.POS.] of the plasma display, while displaying the DOWN CONVERTER test pattern.	See Steps ① to ⑤ of the section titled ''Operating a down converter'' in Page 78, 79. Knacks for adjustment: • Adjust in order of [CLK.FRQ.] to [HOR.PDS.] or [VER.POS.] to [CLK.PHS.]. • When adjusting [CLK.PHS.], try to minimize a transverse flicker and a color shift on the screen (there may be a chance that they cannot be completely adjusted).
← A	
Input a signal, which is identical to that of the down converter test pattern, at the same resolution and frequency for an actual image to be used.	Note) The down converter can store 10 different adjusted values in memory. When the eleventh signal is input, it will overwrite on the first signal. Whenever any resolution and frequency of the input signal for the down converter are changed, it is necessary to adjust the resolution and frequency, respectively.

How to mount standard optional items (PDA-4003)

Execute [AUTO SETUP] of the down converter.

See Step ⑥ and ⑦ of ''Operations'' in Page 79.

Note) If you execute [AUTO SETUP] many times, there is chance that the adjusted value may change every time (Basically, it is [CLK.PHS.] value only).

Moreover, if [AUTO SETUP] is executed with an unclear signal to adjust the image area, it may not be correctly adjusted.

Adjust [CLK. FRQ.], [CLK. PHS.], [HOR. POS.] and [VER. POS.], whenever deemed necessary.

See Step ⑦ to ⑪ of the section titled the ''Operations'' in Page 79 to 80.

Knacks for adjustment:

• Adjust in order of [CLK.FRQ.] to [HOR.POS.] or [VER.POS.] to [CLK.PHS.].

• There may be almost no need to readjust the signals other than [CLK.PHS.].

• When adjusting [CLK.PHS.], try to minimize a transverse flicker and a color shift on the screen (there may be a chance that they cannot be completely adjusted). Even if there is still a slight flicker, it is likely that there may be no difficulty when the actual signals are used for display.

• If [CLK.PHS.] is adjusted when [CLK.FRQ.] has not been adjusted, it wil not be converged.

• When [CLK.POS.] is adjusted, there is a chance that one dot of information or so may drop out.

Note) To ensure to store the adjusted data in memory, make sure to clear the menu by clicking on the [DOWN CONVERTER - MENU] button.

Confirm that there is no problem for adjustment when you input the actual signal for display.

Note) When there is a problem, perform readjustment.

Note) When there are two types of signals or more to input into the down converter, repeat the flow from Step A.

End

4.4.4 Before using the down converter

Before using the down converter, please carefully read and prepare the following items, and then start your mounting, connection and adjustment.

- Are all the accessories ready now? See the section tilted ''Specifications'' in Page 67.
    - A remote control
    - AA cells X 2 pieces (for the above remote control)
    - D-Sub 15P cable
    - AC adapter
    - Power supply cable (for the above AC adapter)
    - Velcro x 2 pieces (No need in case it has been attached to the plasma display and AC adapter).
    - Cable strap (No need if it has been attached to the down converter).
    - Screw rivet x 4 pieces (This is necessary only when the down converter is mounted on the plasma display)
    - Rubber cushion X 4 pieces (This is needed when it is mounted on the plasma display (other than PDP-V402, PDP-V402E).)
    - Binders x some pieces

- Is it the plasma display PDP-V402, PDP-V402E that you are going to combine?
    - ➡   If NO,
                we will prepare the remote control satellite (JA-V15IR).
    Explanation: In case of PDP-V402, PDP-V402E the signal is transmitted from the remote control to the plasma display photo-sensor (➡the plasma display micrEo computer) to the plasma display RGB 2 terminal (No. 12 pin) to the down converter to the RGB IN terminal (No. 12 pin) to the down converter microcomputer. Therefore, it is possible to adjust the down converter without using the remote control satellite (The remote control satellite is operated aiming at the plasma display's photo-sensor). In this case, the plasma display's remote switch is turned ON.
    Note) In the following cases, it is difficult to receive the remote control signal:
        -When the remote control satellite is connected even though it is PDP-V402, PDP-V402E.
        -When a display with PLUG & PLAY function is connected.

- Adjust the white balance of the plasma display correctly.
    See the section titled ''How to adjust the image quality and white balance'' in Page 155

- To match the actual resolution, we will have prepared a vertical stripe-alternating pattern in black and white for you, which is similar to the test pattern for the down converter.
    In this case, it is easier to execute the AUTO.SETUP, if the outer boundary of the image area is edged with white color.

How to mount standard optional items (PDA-4003)

4.4.5 Mounting on the plasma display

This device can be used by mounting it on the rear of the plasma display (PDP-V402). (But, this cannot be mounted on PDP-V401 and PDP-V401E).

Two mounting locations ("a" and "b") are provided.

This should be usually mounted on the lower side ("a" portion) of the main body.
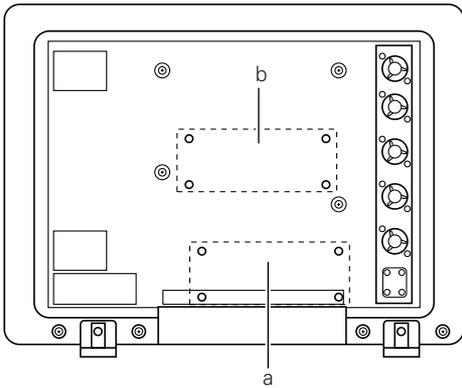
The dimension in the mounted condition is as follows:
When it is mounted on ''a'' portion
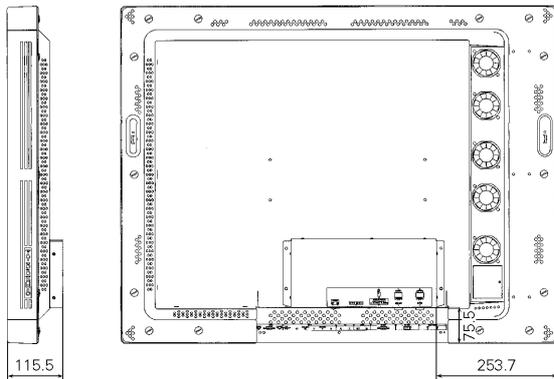
When it is mounted on ''b'' portion
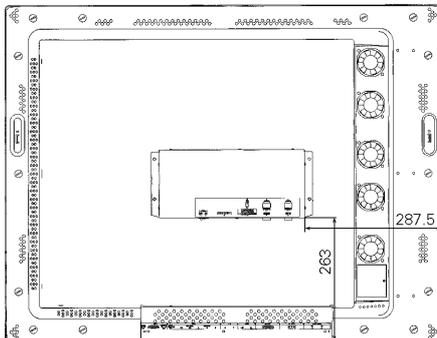
Caution:

- When using a ceiling-hanging type plasma display metal fixture (double-sided type) (PDK-4003), which is our standard fixture, it is recommended that the metal fixture should be mounted on the "b" portion, as there is an angle restriction if it is mounted on the "a" portion.
  Moreover, when using a wall-hanging type plasma display metal fixture (PDK-4006), mount this device on the "b" portion as this device cannot be mounted on the "a" portion.
- **When mounting it on the plasma display, do not use the attached rubber cushions.**
- **The temperature conditions are the same as those conditions for special installation (See 3.4) when mounting the down converter.**
- Please refrain from transporting the down converter as mounted on the rear panel of the plasma display (PDP-V402,PDP-V402E).

Before mounting, ensure to complete the following procedure:

- Disconnect any connecting cords that connect the plasma display to any peripheral devices.
- Switch off the power supply to the plasma display, and pull out the power source plug from the outlet.

How to mount

Align each rivet hole of the plasma display with a matching mounting hole of this device while pressing the device with your left hand. Mount the device using the attached screw rivets in order of 1, 2, 3 and 4 as shown in the figure below.
Just inserting the screw rivets into the holes and pushing them down into the holes by hand can securely mount the device.
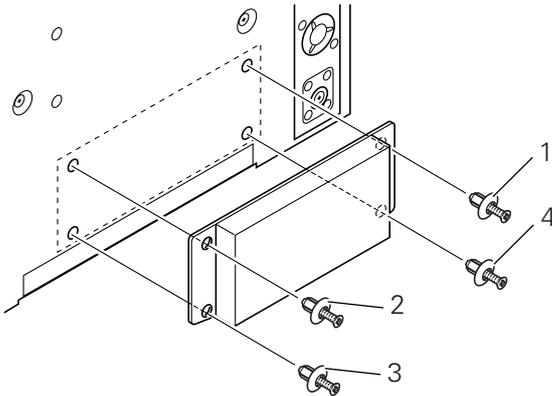
How to attach screw rivets

Inserting the screw rivets and pushing down the screw portion from above can secure the screw rivets.
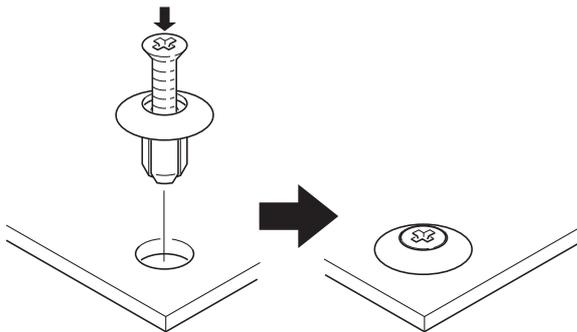
How to remove the screw rivets

As the screw rivet head is cross-sloted, use a Phillips screwdriver to remove the screw rivet. The remaining part of a screw rivet will come off, when this device is pulled up with the screw portion removed.

How to mount AC adapter

When mounting AC adapter, use the attached hook and loop fasteners.

Attach one portion of the hook and loop fastener to the AC adapter (on the side on which the caution label is not attached) and the other portion on the backside of the plasma display in order to mount the AC adapter.

Vertical direction
Attach the hook and loop fastener so that the bottom of the AC adapter will be located at the center of lowermost fan in height.

Horizontal direction
Attach it between this device and the fan.

Route the cord though the cable clamp, avoiding the fan hole.
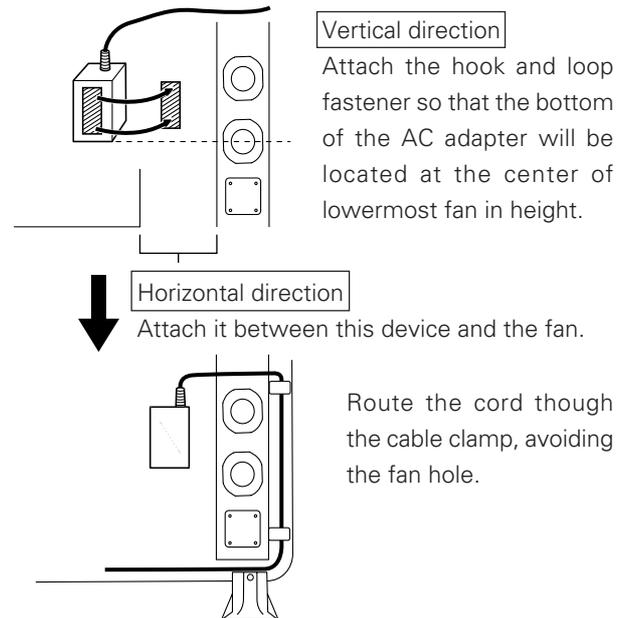
NOTICE:

- *When attaching the hook and loop fastener to the AC adapter as well as this device, make sure to remove dirt and dust before attaching it.*

How to mount standard optional items (PDA-4003)

How to use a cable strap

D-|sub-15 pin cable can be secured so that the cable will not hang down from the plasma display main body.

How to mount

Insert the tip of the cable strap into the cable-strap-mounting hole of this device.
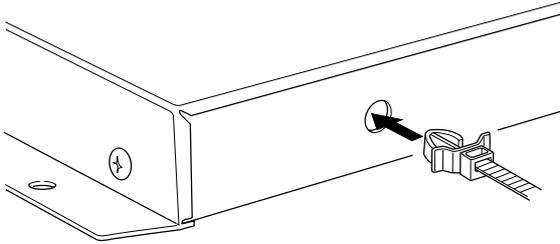
The belt can be loosened or removed when the lever is pushed as shown in the figure below.
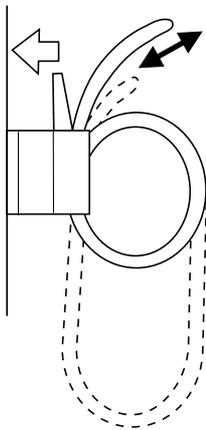
How to use the binder

This binder is used to bundle cables. Once this binder is fastened, it cannot be loosened.

To remove the binder, the binder has to be cut out. In such a case, pay attention so that the cable will not be damaged.
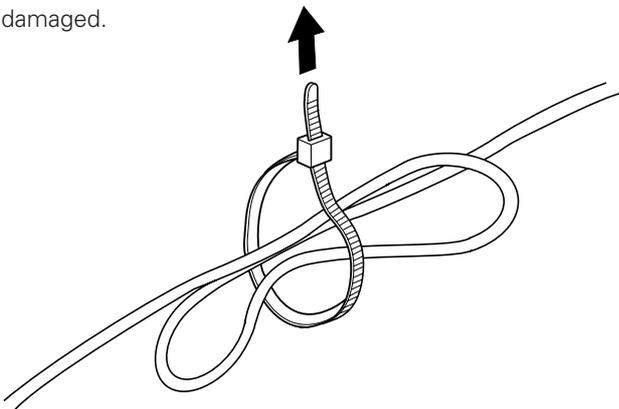
On styling of the cables

Carry out the styling of the cables as follows:

Use the attached binders to bundle the cables.

Use the attached cable straps to secure the D-Sub 5-pin cables.
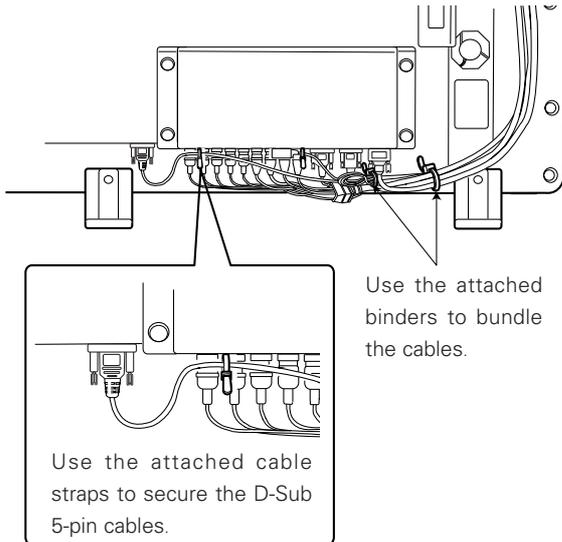
4.4.6 When mounting using only this device

When placing it on a rack, etc., apply the attached rubber cushions to the points 1, 2, 3 and 4 in order to prevent the surface of the rack from scratching or making it slippery.

To use this device safely, do not tighten it with the screws when it is placed on a rack and so forth.

Remove a peel-out paper from the double-sided tape, and attach the cushion as shown in the figure.

Aligning the end face.
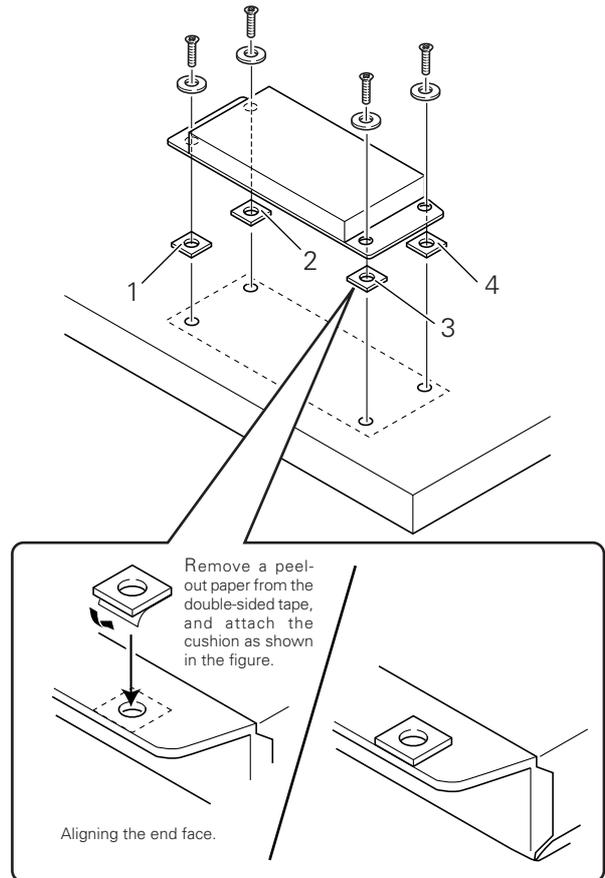
How to mount standard optional items (PDA-4003)

Connection

Accessory power cord

Accessory AC adaptor

To wall power outlet

0.8A
DC IN 9.3V

OFF — ON

SATELLITE REMOTE
DC8V
18mA MAX

RGB OUT

RGB IN

Accessory D-sub 15 cable

To the remote control satellite

PC
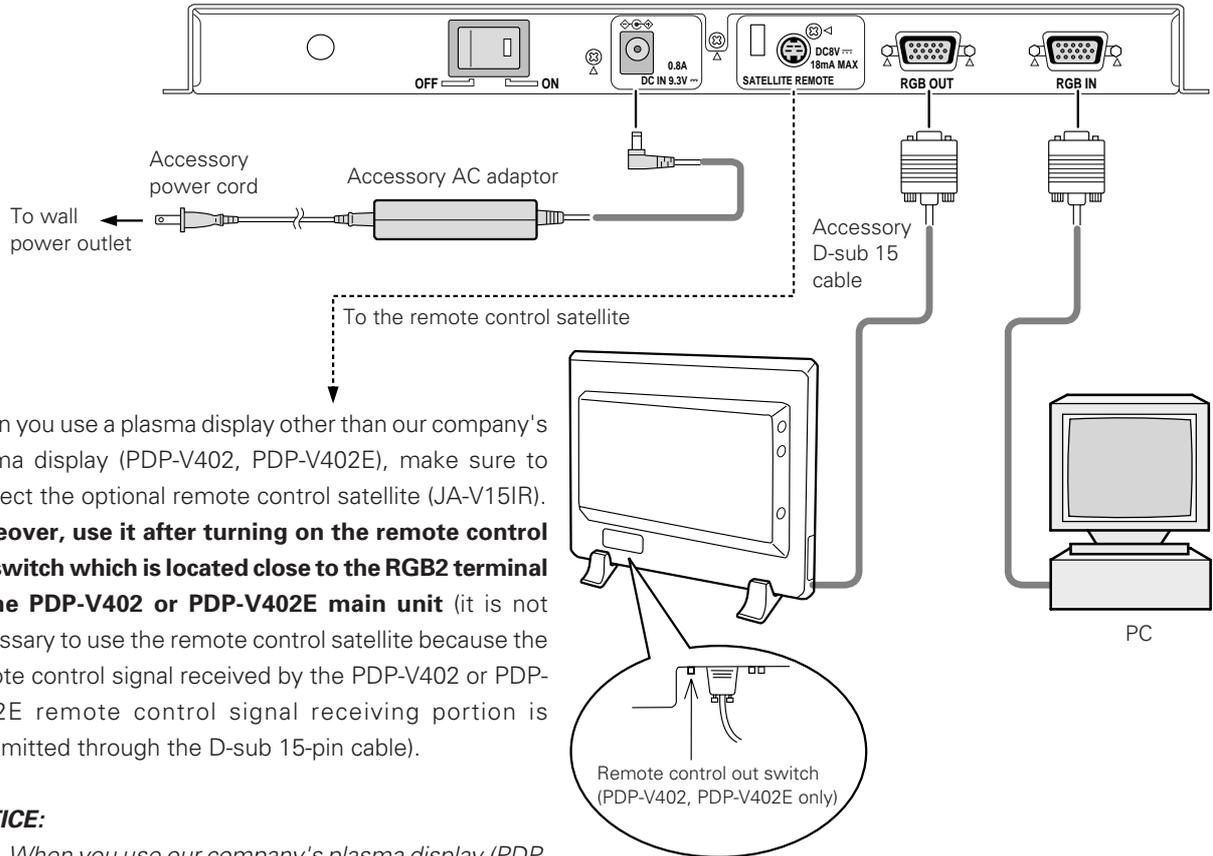
When you use a plasma display other than our company's plasma display (PDP-V402, PDP-V402E), make sure to connect the optional remote control satellite (JA-V15IR). **Moreover, use it after turning on the remote control out switch which is located close to the RGB2 terminal of the PDP-V402 or PDP-V402E main unit** (it is not necessary to use the remote control satellite because the remote control signal received by the PDP-V402 or PDP-V402E remote control signal receiving portion is transmitted through the D-sub 15-pin cable).

Remote control out switch
(PDP-V402, PDP-V402E only)

NOTICE:

When you use our company's plasma display (PDP-V402, PDP-V402E), switching on the remote control out switch and also connecting with the remote control satellite may make it difficult to receive the remote control signal.

Power Cord Connection

Connect all the peripheral devices first before connecting the unit's power cord.

①

② To wall power outlet
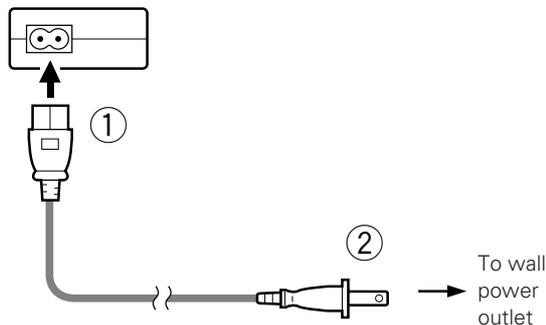
① **Connect the power cord to the accessory AC adaptor.**

② **Insert the power plug into the power outlet on the wall, etc.**

⚠ CAUTION

Do not use a power supply other than the indicated voltage (AC 100 - 240 V). It may cause a fire or electric shock.

⚠ CAUTION

Always use the supplied power cord and AC adaptor.

4.4.7 Repackaging procedure

When repackaging, follow the procedure as shown in the illustrations below.

Remote control device
(Secure it with an adhesive tape)

Place the D-sub15-pin cable over the cutoff sections after packing all other items.

Rolling

Cutoff section

Put it into the box with the underside first

Put the accessories (such as power supply cord) here.

Put the manual and the AC adapter here.

Manual

Put into a bag.

AC adapter
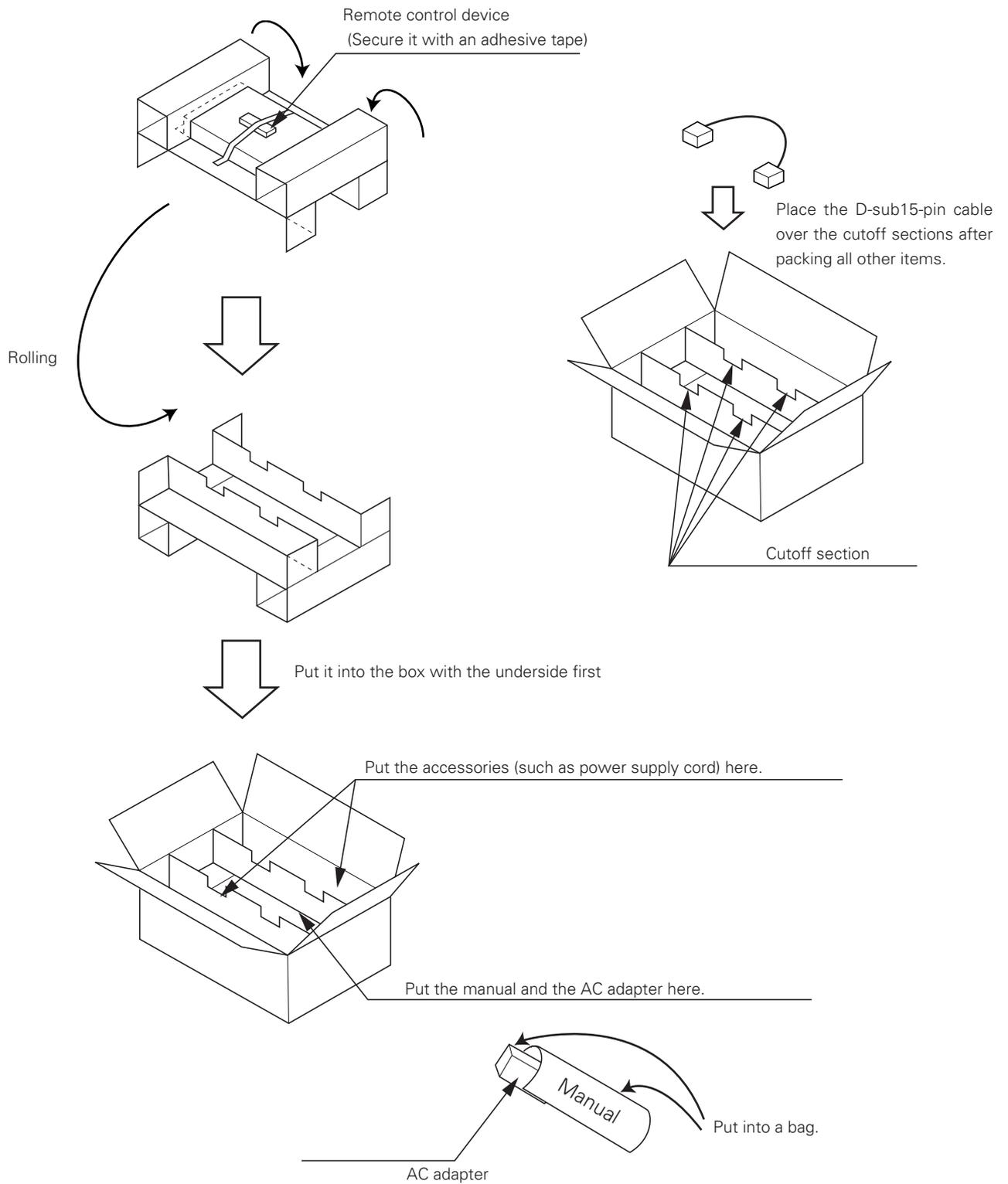
How to mount standard optional items (PDA-4003)

4.4.8 Operating a down converter

When PDP-V402, PDP-V402E is used

When the plasma display MENU is open, ensure to close it once before opening this MENU.

> **When using a plasma display other than PDP-V402, PDP-V402E**
> Connect an optional remote control satellite to this device, and operate the remote control directing it to the light-receiving portion. The operating method is the same as when using PDP-V402, PDP-V402E.

2,6,8

10

1, 5, 11

10

3,7,9

---
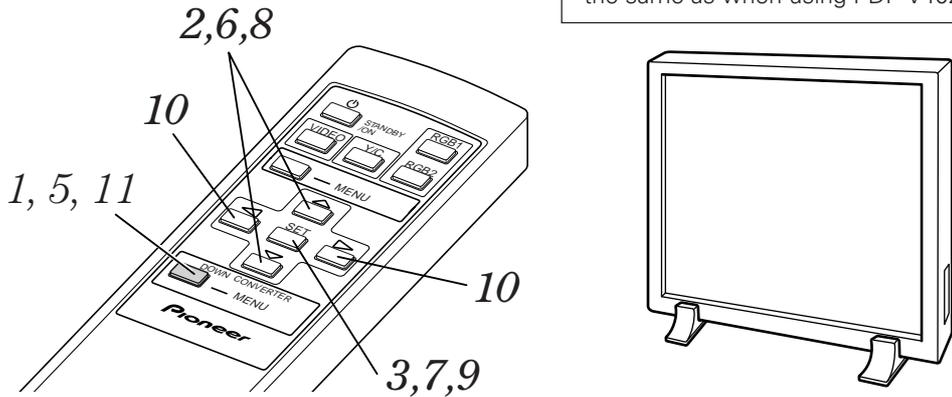
1 **Push the MENU button**

DOWN CONVERTER

⬜ MENU   ➡

```
AUTO SETUP
CLK. FRQ.              124
CLK. PHS.               -1
HOR. POS.               32
VER. POS.               16
STATUS
TEST PATTERN

  SET : SEL        MENU : EXIT
```

Main MENU screen
Currently selected items are indicated in magenta.

---

2 **Selecting the TEST PATTERN**

△
▽   ➡

```
AUTO SETUP
CLK. FRQ.              124
CLK. PHS.               -1
HOR. POS.               32
VER. POS.               16
STATUS
TEST PATTERN

  SET : SEL        MENU : EXIT
```

---

3 **Pressing the SET button.**

SET   ➡
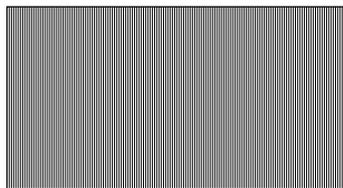
A test pattern is indicated.

---

4 **Adjust each of the CLK. FRQ., CLK. PHS., HOR. POS., VER. POS for the <u>plasma display (PDP-V402,PDP-V402E)</u> while indicating the test pattern. (For adjustment, see the instruction manual for the plasma display (PDP-V402,PDP-V402E). Moreover, once the adjustment has been completed, close the menu of the plasma display (PDP-V402,PDP-V402E)).**

78

5 Return to the MENU screen after the adjustment.

DOWN CONVERTER
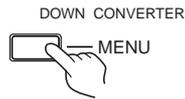
MENU

6 Selecting the AUTO SETUP.

△ ▽ ➡
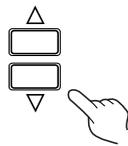
```
AUTO SETUP
CLK. FRQ.          124
CLK. PHS.           -1
HOR. POS.           32
VER. POS.           16
STATUS
TEST PATTERN

  SET : SEL      MENU : EXIT
```

7 Pressing the SET button.

SET ➡

The AUTO SETUP screen is indicated.
Select YES or NO using ◁ ▷ buttons, and then push the SET button.

```
AUTO  SETUP?
   YES◄►NO

        SET : SETUP
```

➡ When the AUTO SETUP is completed, the screen will automatically return to the main MENU screen.

The display in this area is "SET:SETUP" when "YES" is selected, or "SET:EXIT" when "NO" is selected.

(1) When YES is selected:
It is adjusted automatically according to the input signal.
(2) When NO is selected:
No adjustment will be made.

When a fine-tuning is needed, follow the operations after the Step (8).

8 Select an item you would like to adjust.

△ ▽ ➡
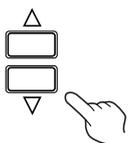
```
AUTO SETUP
CLK. FRQ.          124
CLK. PHS.           -1
HOR. POS.           32
VER. POS.           16
STATUS
TEST PATTERN

  SET : SEL      MENU : EXIT
```

How to mount standard optional items (PDA-4003)

9 Deciding on a selected item

SET

A fine-tuning will be done according to the following procedure:

CLK. FRQ. .... When the letters in the picture are missing, or a rainbow-shaped noise is annoying, use
(-128 to 128)   this function for adjustment. This function is to adjust the frequency of the internal clock signal for the video signal input.

CLK. PHS. .... When some letters in the picture flicker and the colors blurs use this function for
(-16 to 15)   adjustment. Make adjustments to minimize the flickers and color blurs. This function is to adjust the phase of the internal clock signal, which is adjusted with the CLK. FRQ. function.

    Note) When CLK. FRQ. has been adjusted, it may become necessary to readjust HOR. POS.

HOR. POS. .... This adjusts the horizontal position of the picture.
(-50 to 50)

VER. POS. .... This adjusts the vertical position of the picture.
(-43 to 42)

STATUS .... This indicates the resolution of the signal now being input, and synchronous frequency.

10 Adjusting

◁ ▷

➤

CLK. FRQ.   **120**
◄ ► : ADJ.   **SET: EXIT**
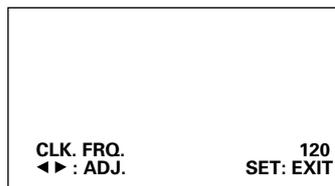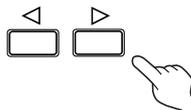
Pushing the SET button will return to the screen for the Step (8).
To adjust other items, repeat the Steps 8 to 10.

11 After completing the setting, return to the original screen.

DOWN CONVERTER

MENU

➤

AUTO SETUP
CLK. FRQ.   **120**
CLK. PHS.   -1
HOR. POS.   32
VER. POS.   16
STATUS
TEST PATTERN

SET : SEL   MENU : EXIT

➤

Returning to the original screen.

Note:

• When using this device in combination with one of the plasma displays manufactured by our company other than PDP-V402, PDP-V402E operate the plasma display with this device directing it to the display's light receiving portion.

• When adjusting the plasma display MENU using a function other than RGB-2, never push the MENU button of this device, because there is a possibility that the adjustment value of this device may change.

- "NO SYNC!" in red characters is displayed when no signal is input. The display automatically disappers in about 3 minutes even when it is left as it is.

<div style="border:1px solid black">
NO SYNC!
</div>

- "OUT OF RANGE!" in red characters is displayed when a signal incompatible with this unit is input. The display automatically disappears in about 3 minutes even when it is left as it is.

<div style="border:1px solid black">
OUT OF RANGE!
</div>

- After completing the plasma display adjustment with the test pattern ON, if the test pattern is switched OFF without closing the plasma dosplay menu, both the plasma display menu and the menu of this unit would be displayed overlapped. To prevent this, be sure to switch the plasma display menu OFF before switching the test pattern OFF.
- Remote control operation may sometimes not be accepted immediately after pressing the power switch ON, switching the input signal, inputting a signal, executing AUTO SETUP or switching the test pattern OFF. In such a case, wait for a few seconds before retrying the operation.
- The HOR.POS. adjustment value may vary when the CLK.FRQ. value is varied.
- The HOR.POS. and VER.POS. adjustment values may sometimes vary by more than 2 steps with certain input signal types or with a single press of the ◄ or ► cursor buttan.
- With certain input signal types, it may happen that the CLK.FRQ. value chanfes but the actual video does not change.

How to mount standard optional items (PDK-4001)

4.5 Tilting stand: PDK-4001

4.5.1 Specifications

Outer dimensions .... 916 (W) × 346.9 (D) × 761 (H) mm(When the plasma display is mounted vertically)

Weight .... 5.5 kg (metal fixture alone)

36.3 kg <37.1 kg> (metal fixture with plasma display PDP-V402 <PDP-V402E>)

Adjustable angle range .... Up to 20° from vertical

Material .... Steel pipe for general structures (STK-MR)

Treatment .... Semi-matt black paint (Pioneer's original color)

Package dimensions ...... 880 (W) × 420 (D) × 185 (H) mm

Package weight .... 8.5 kg

Accessories:

Hexagon socket button head screw (M8 × 45) ..... 6 pcs

Hexagon socket button head (M8 × 60) .... 4 pcs

Washer .... 10 pcs

Round joint .... 4 pcs

Hexagonal wrench .... 1 pc

Operating Instructions (Japanese only) .... 1 pc

The fixture is attached to the installation stand using screws. The choice of screws depends on the strength and material of the surface on which the display is installed. Prepare suitable screws.

4.5.2 Outer-dimension diagram (Unit: mm)

Stand weight: 5.5 kg

Stand weight + display weight: 36.3 kg <37.1 kg> (when PDP-V402 <PDP-V402E> is installed)

Angle of screen: 0°

Angle of screen: 20°

Working temperature requirements

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~40°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

4.5.3 Assembling and installing the metal fixture and mounting the plasma display

■ **Procedure for assembling the fixture**

1. Insert the round joint into each end of the joint pipe.
2. Temporarily attach one joint pipe to the stand frame L or R using an M8 × 60 hexagon socket button head screw and washer.
3. Temporarily attach the other stand frame to the other joint pipe.
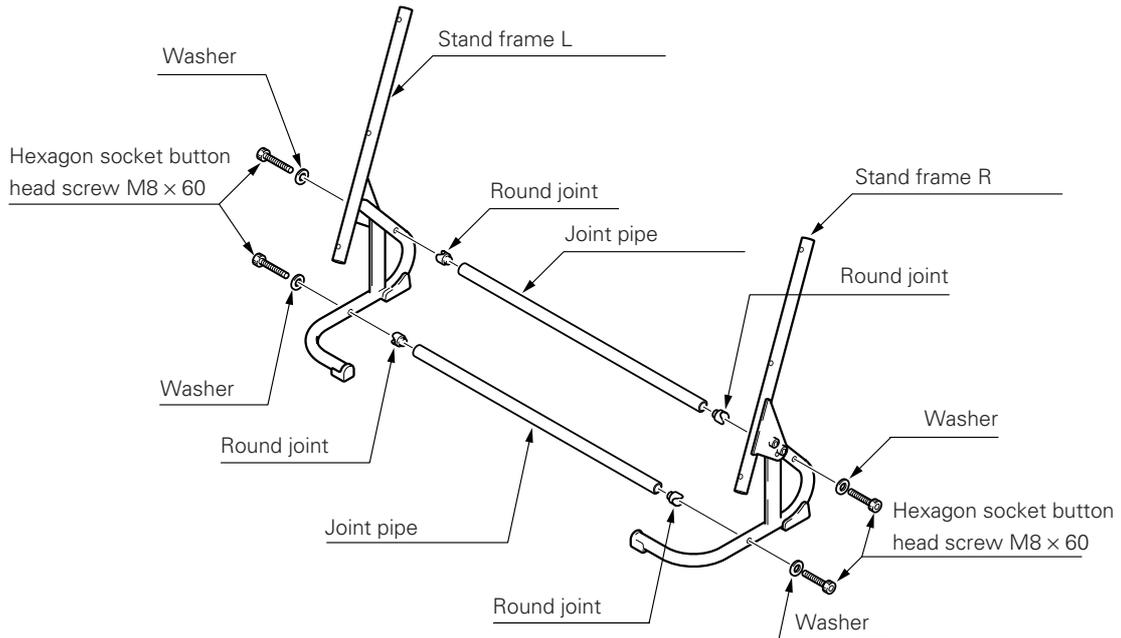
4. With the screen of the plasma display facing downwards, place the display on the edge of a horizontal and stable table as indicated in the following figure. <u>Be sure not to drop or damage the unit.</u>
5. Fix the stand frames to the plasma display by tightening 6 M8 × 45 hexagon socket button head screws and washers.
6. Place the stand frames on a flat surface, and tighten the set screws to the joint pipes.
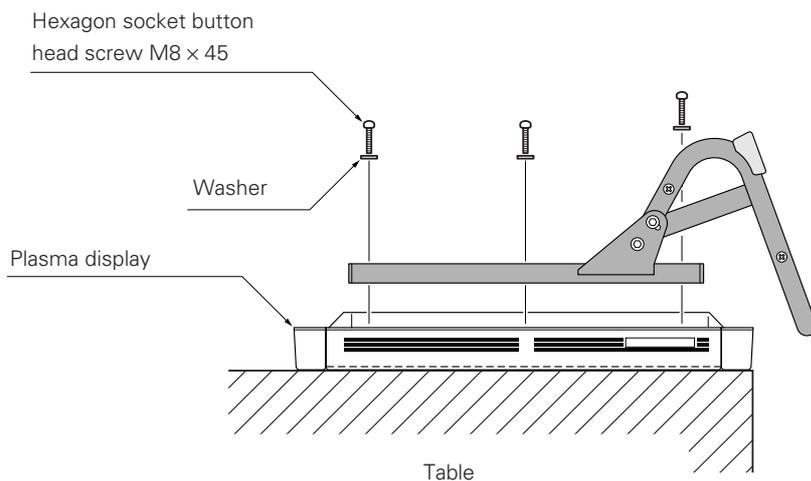
How to mount standard optional items (PDK-4001)

⚠ Precautions for assembly

- **First read the instruction manual. Observe the following points when attaching the stand frame to the plasma display.**

  1. Use 45-mm bolts (shorter bolts).

  2. Before securing the display with the bolts, verify that the positions of the display nuts match the bolt hole positions in the stand frame.

  3. When mounted to the stand frame, the display must have zero clearance and/or backlash to the stand frame, or the plasma display nut will be damaged (Fig.1). Loosen the four bolts securing the joint pipe, as indicated by the arrow, and adjust to remove any clearance or backlash. Then mount the display (Fig.2).

  <Incorrect>   **<Correct>**

  Clearance, backlash

  Fig. 1   **Fig. 2**
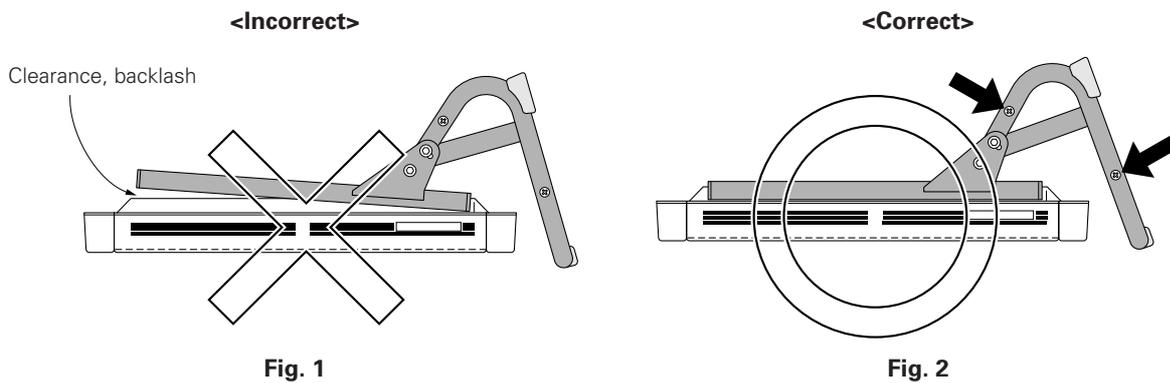
7. To prevent the display from falling, tighten the screws at two points evenly. (The appropriate choice of fixing screws depends on the material, structure, and strength of the table. Use high-quality screws.)
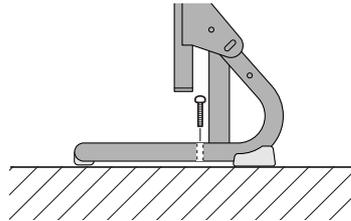
⚠ **Be sure to anchor it with two bolts so that it will not fall.**

■ Angle adjustments
(Variable up to 20° from vertical)

Do not loosen this screw.

Loosen these screws on the left and right sides and decide on the angle you want. Then, tighten the screws.
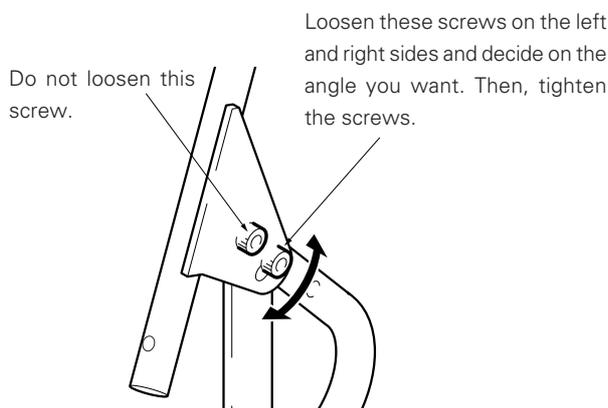
■ Backlash adjustment
If the stand frames placed on the table have backlash, adjust the fixture.
1. Loosen the 4 screws used to attach the joint pipes.
2. Adjust the stand frames to eliminate backlash beween the table and the stand frames, and then tighten the loose screws.
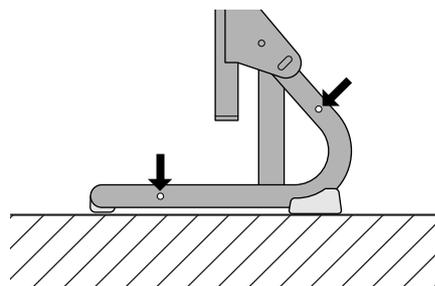
How to mount standard optional items (PDK-4002)

4.6 One-sided, ceiling-suspension metal fixture for the plasma display: PDK-4002

4.6.1 Specifications

Outer dimensions .... 916 (W) × 300 (D) × 1162 (H) mm
(When the plasma display is mounted horizontally)
Weight .... 12.6 kg (metal fixture alone)
43.4 kg <44.2 kg> (metal fixture with plasma display PDP-V402 <PDP-V402E>)
Adjustable angle range ..... 25° down from horizontal, 45° to the left or right
Material .... Steel pipe for general structures (STK-MR)
Treatment .... Semi-matt black paint (Pioneer's original color)
Package dimensions .... 970 (W) × 725 (D) × 230 (H) mm
Package weight .... 19.8 kg

Accessories: Quantities in parentheses indicate those for the PDK-4003
Monitor fixing bolt ....6 pcs (× 12 pcs)
Flange nut ....6 pcs (× 12 pcs)
Hexagonal socket head bolt (M5 × 16) ....1 pc
Hexagonal socket head bolt (M6 × 10) ....3 pcs
Hexagonal socket head bolt (M6 × 30) ....1 pc
Hexagonal socket head bolt (M8 × 75) ....2 pcs
Hexagonal socket head bolt (M10 × 85) ....2 pcs
Flat washer ϕ 8 ....2 pcs
Flat washer ϕ 10 ....2 pcs
Spring washer ϕ 8 ....2 pcs
Spring washer ϕ 10 ....2 pcs
Hole cover ....1 pc
Spacer ....1 pc
Pattern paper ....1 pc
Operating Instructions (Japanese only) ....1 pc
Vendor's installation notes (Japanese only) ....1 pc

The screws used to mount the metal fixture on the ceiling depend on the strength or material of the surface on which the fixture is installed. Provide high-quality screws.

Working temperature requirements

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~40°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

4.6.2 Outer-dimension diagram (Unit: mm)

4- ϕ 13.5 × 22

200

300

200

300

ϕ 60.5

ϕ 240.5

ϕ 70

170

325

1162

805

14

916

25°

118 51

256 102

45° 45°

R522

R469

Outline path of the plasma display when it is tilted 25°

Angle of rotation: 45° to the left or right

Outline path of the plasma display when it is tilted 25°
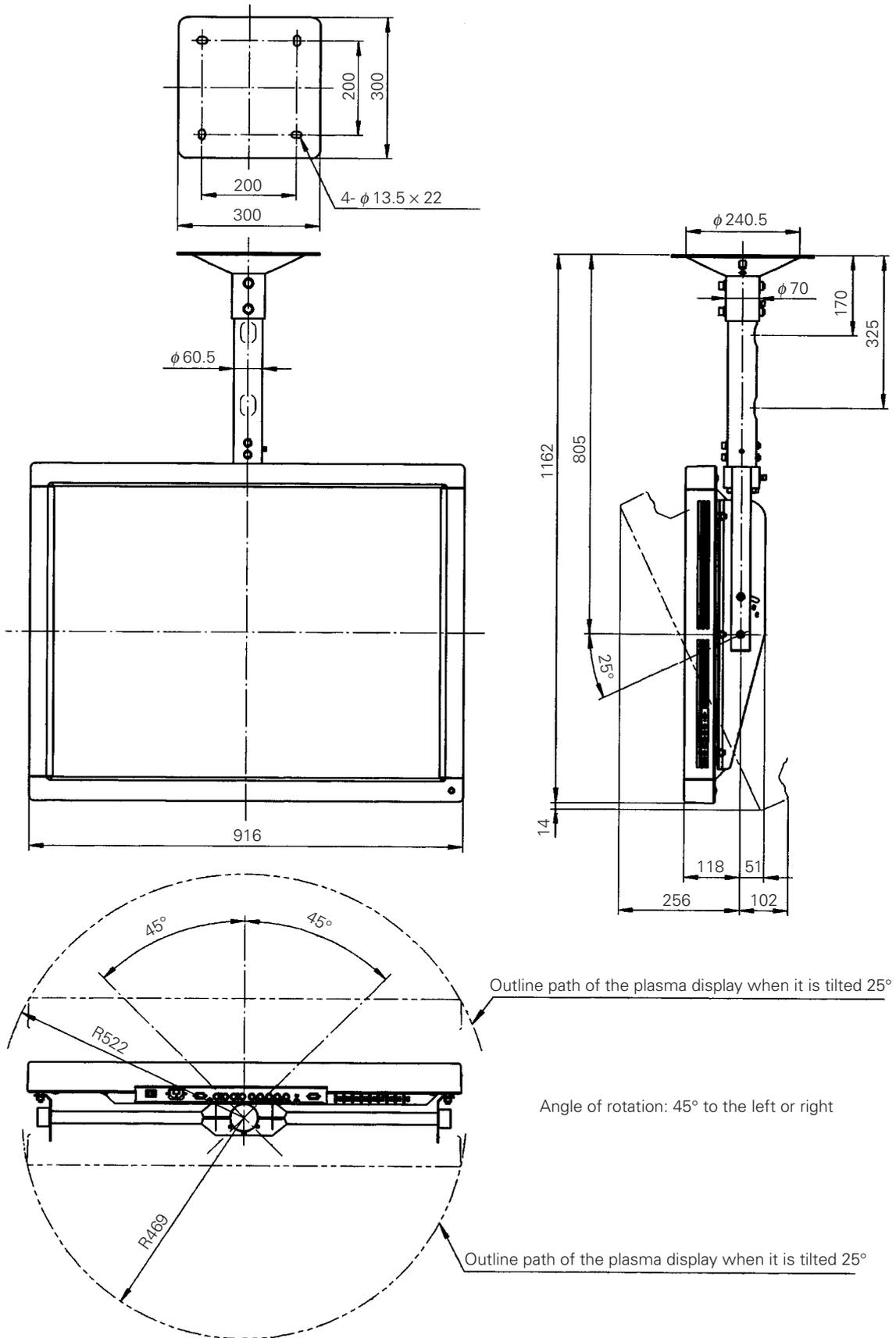
How to mount standard optional items (PDK-4002)

4.6.3 Assembling and installing the metal fixture and mounting the plasma display (same procedure as for the PDK-4003)

1) Preparation

Assembling the PDK-4002 fixture requires the following tools. Prepare them before starting work. (The PDK-4003 is assembled using the same tools.)
- Wrench or spanner (side size: 12 mm)
- Hexagonal wrench (side size: 4 mm: for M5)
- Hexagonal wrench (side size: 5 mm for M6)
- Hexagonal wrench (side size: 6 mm for M8)
- Hexagonal wrench (side size: 8 mm for M10)

In addition, the installation work requires a drill to machine the ceiling. Be sure to have one on hand.

2) Assembling and installing the metal fixture (The same assembly and installation procedures are used for the PDK-4003.)

1. Check that the left and right monitor brackets are firmly mounted on the monitor frame.
   Next, pass the center rod through the monitor frame and spacer. Insert the rod into the support COMP, pass it all the way through, and tighten it using two M8 × 75 hexagonal socket head bolts.
2. Tighten the M5 × 16 hexagonal socket head bolt to eliminate backlash.
3. Decide where to install the fixture, and apply the supplied pattern paper to the ceiling. Make a hole in the ceiling according to the pattern and mount the ceiling flange COMP.
   The fixing screws and nuts must be chosen according to the material, structure, and strength of the part of the ceiling on which the fixture is installed. Provide high-quality screws and nuts.
4. Pass two M10 × 85 hexagonal socket head bolts through the ceiling flange and tighten the support COMP.
5. Tighten the M6 × 10 hexagonal socket head bolt to eliminate backlash.
   - Firmly tighten the bolt.
   - After installing the fixture, check the strength of the fixture and ceiling installation before mounting the plasma display.
   - Double-check the safety of the installation by using the hole made in the ceiling flange COMP, as illustrated. (Use parts with sufficient strength to withstand the weight of this product.)

Anchor
Foundation ceiling
Ceiling flange COMP
Bolt
Safety wire
Safety wire
Shackle

Reference example:
The shackle and safety wire are used to fix the fixture onto the foundation ceiling.

How to mount standard optional items (PDK-4002)

Pattern paper

Ceiling flange COMP

Hexagonal socket head bolt (to eliminate backlash) (M6 × 10) [SME60H100FZK]

Flat washer [WC100FZK]

Spring washer [WS100FZK]

Hexagonal socket head bolt (M10 × 85) [SME100H850FZK]

Flat washer [WC80FZK]

Hexagonal socket head bolt (for tilt adjustment) (M6 × 10) [SME60H100FZK]

Cable holes

Hexagonal socket head bolt (M8 × 75) [SME80H750FZK]

Support COMP

Spacer

Spring washer [WS80FZK]

Hexagonal socket head bolt (to eliminate black lash) (M5 × 16) [SME50H160FZK]

Monitor frame

Center rod

Monitor bracket

Hole cover

Use this hole cover to hide the machined hole in the suspended ceiling.

The figure illustrates the one-sided PDK-4002 fixture.
The PDK-4003, which is double-sided, is assembled and installed in the same manner.

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How to mount standard optional items (PDK-4002)

3) Mounting the plasma display (For the PDK-4003, the same procedure is used to mount two displays.)

1. Remove the 6 hole rivets (arranged lengthwise) from the back of the plasma display with a coin or the like.
2. Mount the monitor mounting bolt assemblies (three each for the left and right) delivered with the display in the mounting holes on the back of the plasma display.
3. Loosen only the top mounting screws in the left and right monitor brackets, and tilt the monitor brackets all the way (do not loosen the bottom screws).
4. Lift up the plasma display, and insert the monitor mounting bolt assemblies into the monitor brackets.
5. <u>With only the top screws used to mount the monitor brackets loosened, tighten three nuts each for the left and right monitor mounting bolt assemblies. When doing this, be sure not to twist the main body of the plasma display.</u>
6. Adjust the angles of the top and bottom of the plasma display (variable from horizontal to 25° downward).
   Decide on the angle you want while supporting the plasma display. Tighten the top screws in the left and right monitor brackets. At this point, the monitor bracket hole will be the measure for angle adjustment. in the monitor bracket (in 5° increments).
7. Adjust the left-to-right angle of the plasma display (it can rotate 45° left or right). Manually rotating the monitor frame, decide on the angle you want.
   Fix the monitor frame tightly using the M6 × 30 hexagonal socket bolt, which is supplied to prevent the display from rotating.
8. Pass the connecting cable through the cable hole of the support COMP of the metal fixture, and connect it to the connectors. If some of the connecting cables cannot pass through the cable hole because the cables are too thick, use thinner cables or connect the cables without passing them through the cable hole.
   For information on how to use the cable clamp that is provided with the fixture, refer to "3.3 Installation procedures, 3.3.3 Wiring".

Connecting cable

Hexagonal socket head bolt (to prevent rotation) (M6 × 30) [SME60H300FZK]

Support COMP

7.

4.

To the connector on the PDP's main body

Standard for angle adjustment

6.

3.

1. Hole rivet

2. Monitor mounting bolt assembly
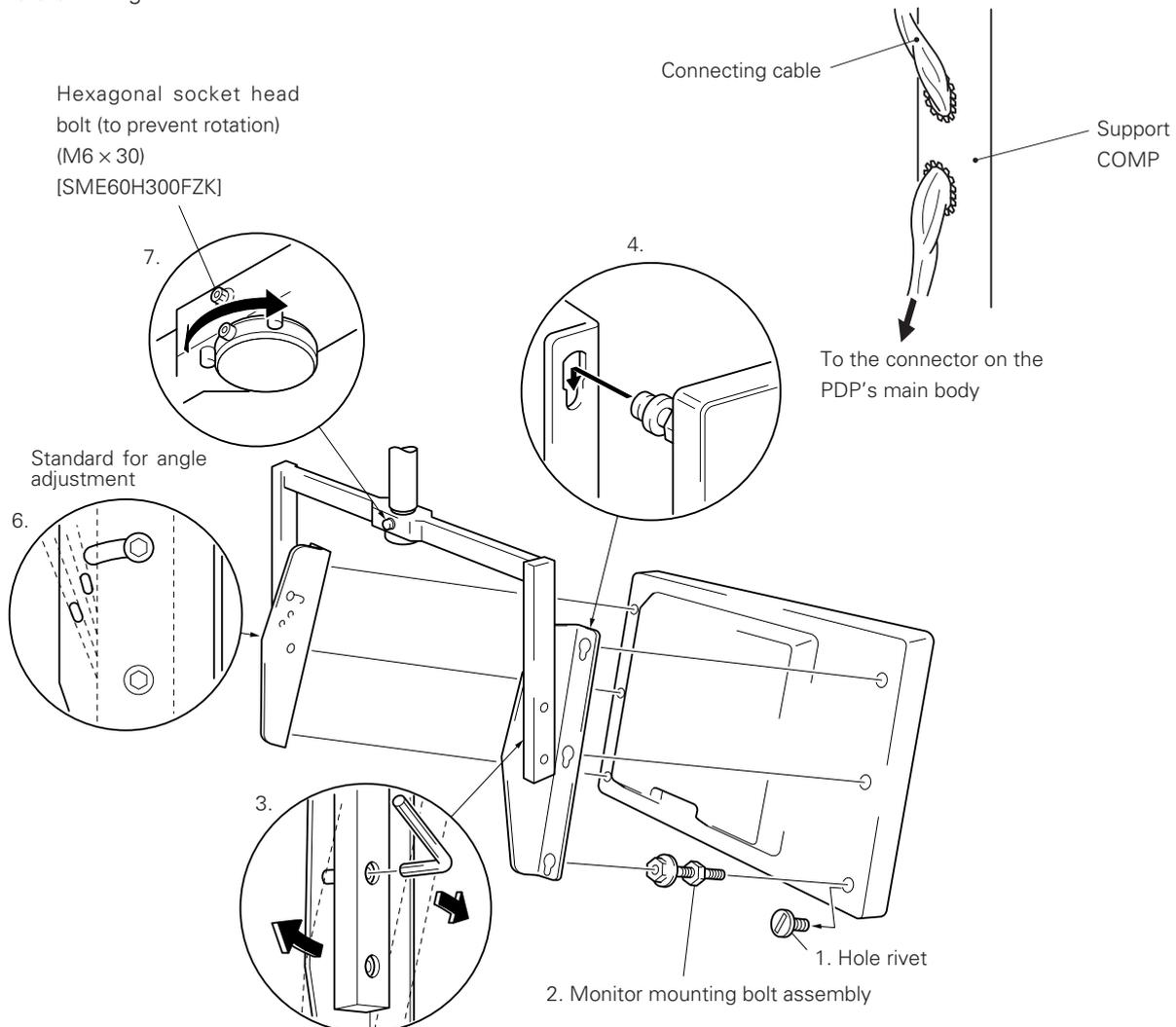
How to mount standard optional items (PDK-4003)

4.7 Double-sided, ceiling-suspension metal fixture for the plasma display: PDK-4003

4.7.1 Specifications

Outer dimensions .... 916 (W) × 466 (D) × 1162 (H) mm
(When the plasma display is mounted horizontally)
Weight .... 16.5 kg (metal fixture alone)
78.1 kg <79.7 kg> (metal fixture with two plasma displays PDP-V402 <PDP-V402E>)
Adjustable angle range ..... 25° down from horizontal, 45° to the left or right
Material .... Steel pipe for general structures (STK-MR)
Treatment .... Semi-matt black paint (Pioneer's original color)
Package dimensions .... 970 (W) × 725 (D) × 415 (H) mm
Package weight .... 25.9 kg
Accessories .... See the accessories to the PDK-4002

Working temperature requirements

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Installation angle 0 degree	0~35°C	0~35°C	0~35°C
Installation angle 25 degrees	0~35°C	0~35°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

4.7.2 Outer-dimension diagram (Unit: mm)

200
300
200
300
4- φ 13.5 × 22
φ 60.5
916

φ 240.5
φ 70
170
325
1162
805
25°
25°
14
233
233
(466)
371
371
742

Outline path of the plasma display when it is tilted 25°

45°
45°
R586
(R586)
45°
45°

Angle of rotation: 45° to the left or right

Outline path of the plasma display when it is tilted 25°
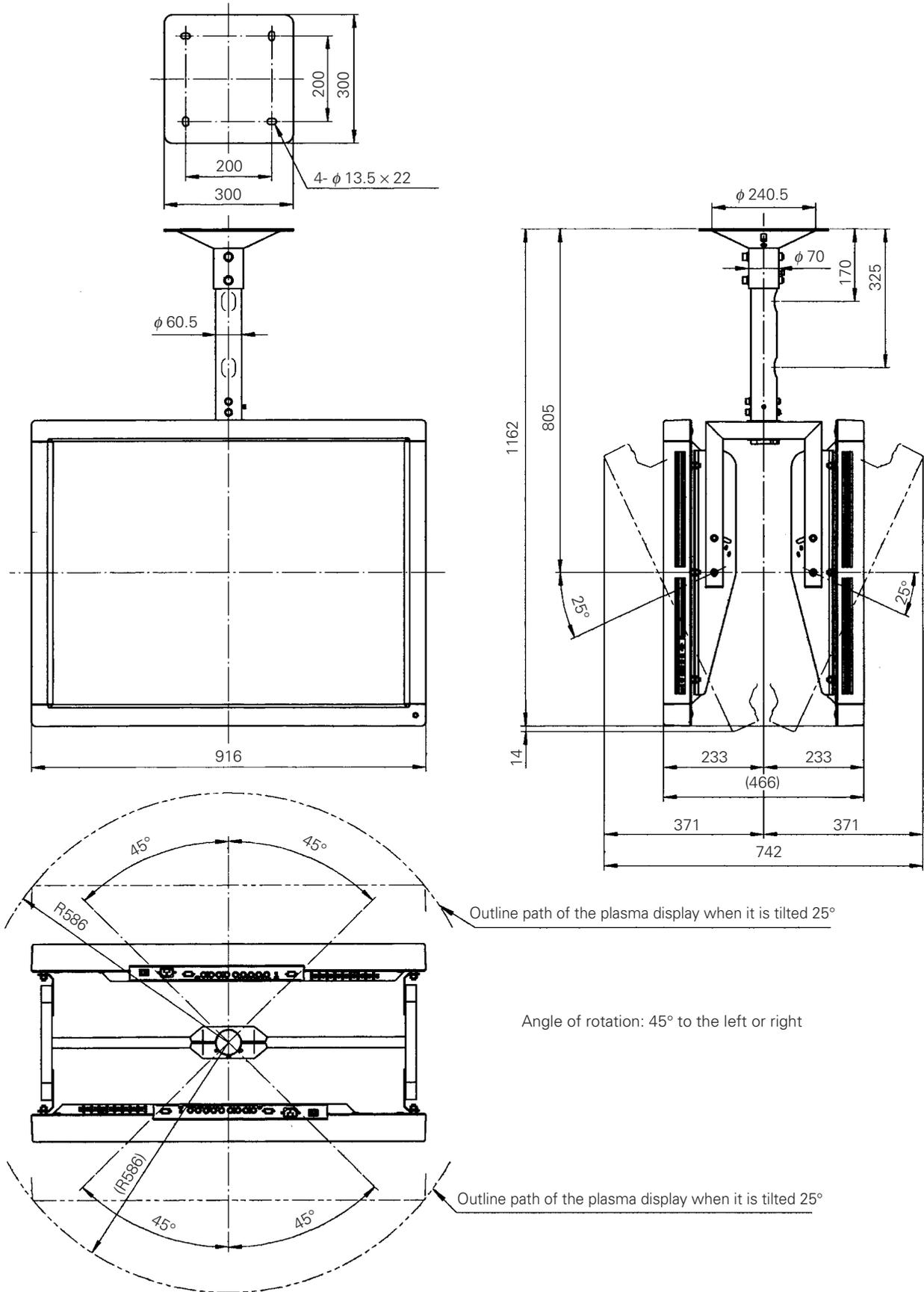
4.7.3 Assembling and installing the metal fixture and mounting the plasma display

Refer to the instructions for the PDK-4002.

How to mount standard optional items (PDK-4004)

4.8 Ceiling-suspension metal fixture for the plasma display (head screw type): PDK-4004

4.8.1 Specifications

Outer dimensions .... 916 (W) × 240 (D) × 792 (H) mm

(When the plasma display is mounted horizontally)

Weight .... 5.5 kg (metal fixture alone)

36.3 kg <37.1 kg> (metal fixture with plasma displays PDP-V402 <PDP-V402E>)

Adjustable angle range ..... 25° down from horizontal

Material .... Steel pipe for general structures (STK-MR)

Treatment .... Semi-matt black paint (Pioneer's original color)

Package dimensions .... 950 (W) × 800 (D) × 330 (H) mm

Package weight .... 9.6 kg

Accessories

Monitor mounting bolt .... 6 pcs

Flange nut .... 6 pcs

Pattern paper .... 1 pc

Operating Instructions (Japanese only) .... 1 pc

Vendor's installation notes (Japanese only) .... 1 pc

The choice of screws used to mount the metal fixture on the ceiling depends on the strength and material of the part of the ceiling on which the fixture is installed. Prepare the most suitable screws.

4.8.2 Outer-dimension diagram (Unit: mm)

Working temperature requirements

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~40°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.
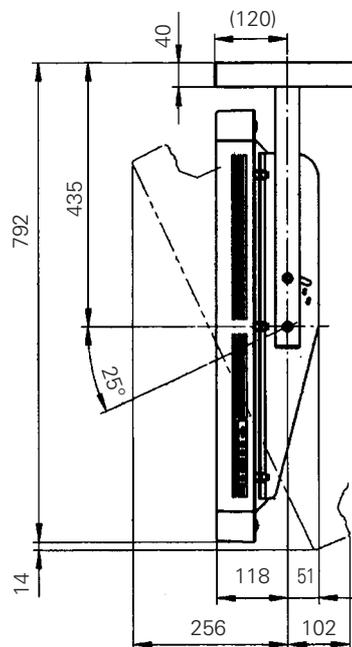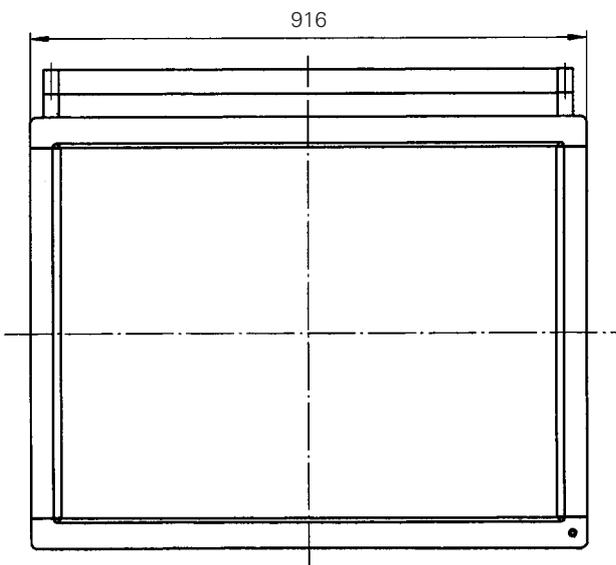
4.8.3 Assembling and installing the metal fixture and mounting the plasma display

1) Preparation

Assembling the metal fixture requires the following tools. Prepare all tools before starting work.

- Wrench or spanner (side size: 12 mm)
- Hexagonal wrench (side size: 6 mm for M8)

In addition, the installation work requires a drill to machine the ceiling. Prepare a suitable drill.

2) Installing the metal fixture

- This fixture is suspended from the ceiling with bolts, as shown in the figure.
- Fixing screws and nuts must be chosen according to the material, structure, and strength of the part of the ceiling on which the metal fixture is installed. Prepare the proper screws and nuts. Secure the fixing screws and nuts at four points to ensure a uniform load. Make sure that the screws are firmly tightened.
- Use the pattern paper delivered with the fixture to make holes in the ceiling.
  After installing the metal fixture, check the strength of the metal fixture and the installation part of the ceiling before mounting the plasma display.
- Take anti-vibration measures using a wire or the like.

Installing paper pattern

Head screw bolt

Double nut
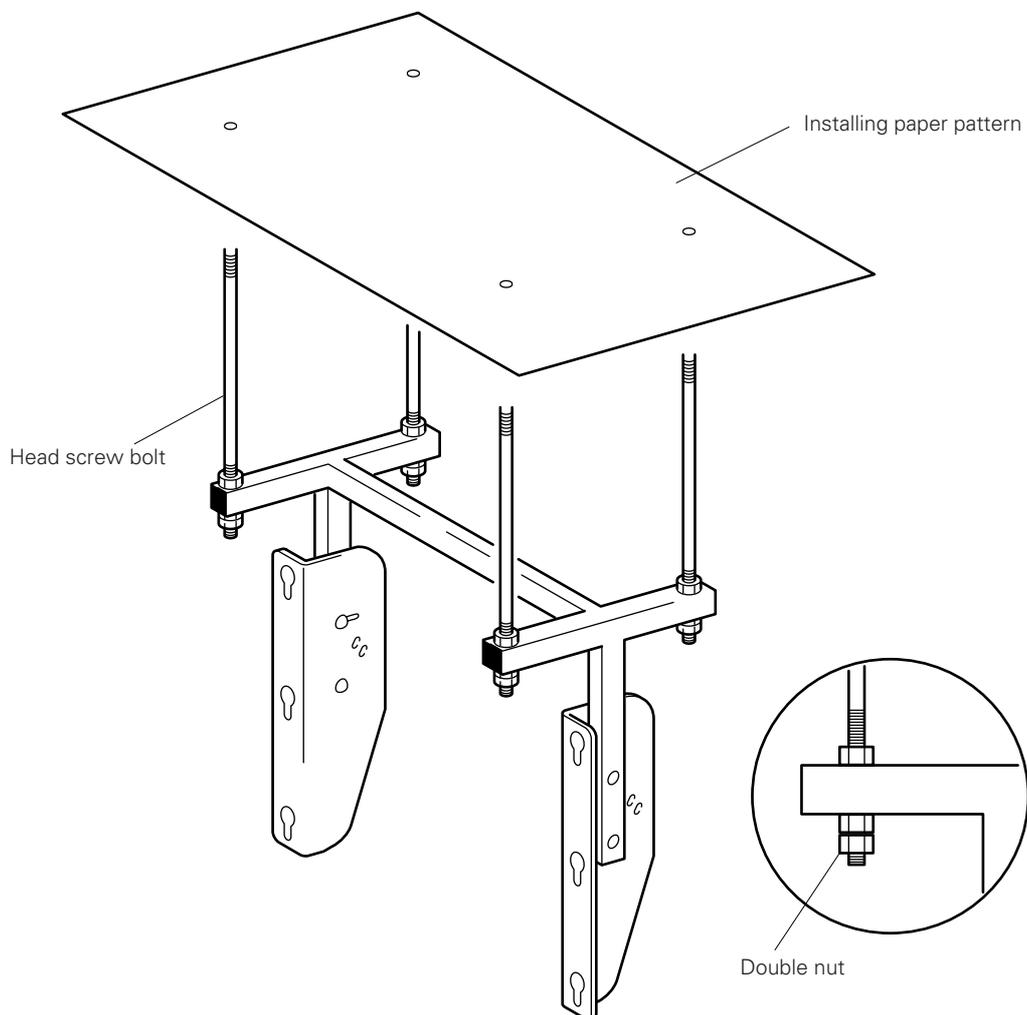
How to mount standard optional items (PDK-4004)

3) Mounting the plasma display

1. Remove the 6 hole rivets (arranged lengthwise) from the back of the plasma display.
2. Install the monitor mounting bolt assemblies (three each on the left and right) provided with the display in the mounting holes on the back of the plasma display.
3. Loosen only the top mounting screws for the left and right monitor brackets, and tilt the monitor brackets all the way (do not loosen the bottom screws).
4. Lift up the plasma display, and insert the monitor mounting bolt assemblies into the monitor brackets.
5. With only the top screws used to mount the monitor brackets loosened, tighten three nuts each on the left and right monitor mounting bolt assemblies. When doing this, be sure not to twist the main body of the plasma display.
6. Adjust the angles of the top and bottom of the plasma display (variable from horizontal to 25° downward). Decide on the angle you want while supporting the plasma display. Tighten the top screws for the left and right monitor brackets. At this point, the monitor bracket hole will be used for angle adjustment. in the monitor bracket (in 5° increments).
7. When using the cable clamp provided with the plasma display to connect the connecting cable to the connectors, refer to "3.3 Installation procedures, 3.3.3 Wiring".

4.

6. Standard for angle adjustment

3.

1. Hole rivet

2. Monitor mounting bolt assembly

How to mount standard optional items (PDK-4005)

4.9 PDP bracket: PDK-4005

4.9.1 Specifications

Outer dimensions .... 916 (W) × 138 (D) × 714 (H) mm
Weight .... 3.3 kg (metal fixture alone)
　　　　　　　　　　　　　　34.1 kg <34.9 kg> (metal fixture with two plasma displays PDP-V402 <PDP-V402E>)
Material .... Steel pipe for general structures (STK-MR)
Treatment .... Semi-matt black paint (Pioneer's original color)
Package dimensions .... 720 (W) × 130 (D) × 115 (H) mm
Package weight .... 4.2 kg
Accessories
　Vertical frame ....2 pcs
　Horizontal frame ....2 pcs
　Hexagon socket button head bolt (M8 × 18) ....4 pcs
　Plus/minus screw (M5 × 50) with washer ....8 pcs
　Special eye bolt ....4 pcs
　M8 hexagon nut with spring washer ....4 pc
　M8 hexagon nut ....8 pc
　M8 flat washer ....4 pc
　M8 wave washer ....4 pc
　Operating instructions (Japanese only) ....1 pc
　Vendor's installation notes (Japanese only) ....1 pc

- The screws used to mount the metal fixture to the ceiling depend on the strength and material of the part of the ceiling in which the fixture is installed. Prepare the most suitable screws.
- For the temperature requirements for PDK-4005, see the section titled ''3. Special Installations.

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Less than 50 mm	0~35°C	0~35°C	Not usable
50 mm or more	0~40°C	0~40°C	0~35°C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* In case the clearance A to the wall is 50 mm or more, the same working temperature conditions apply when mounting the down converter.

4.9.2 Assembling and installing the metal fixture and mounting the plasma display

1) Outer-dimension diagram (Unit: mm)

- PDP bracket weight: 3.3 kg
- PDP bracket weight + display weight: 34.1 kg <34.9 kg> (when PDP-V402 <PDP-V402E> is installed)
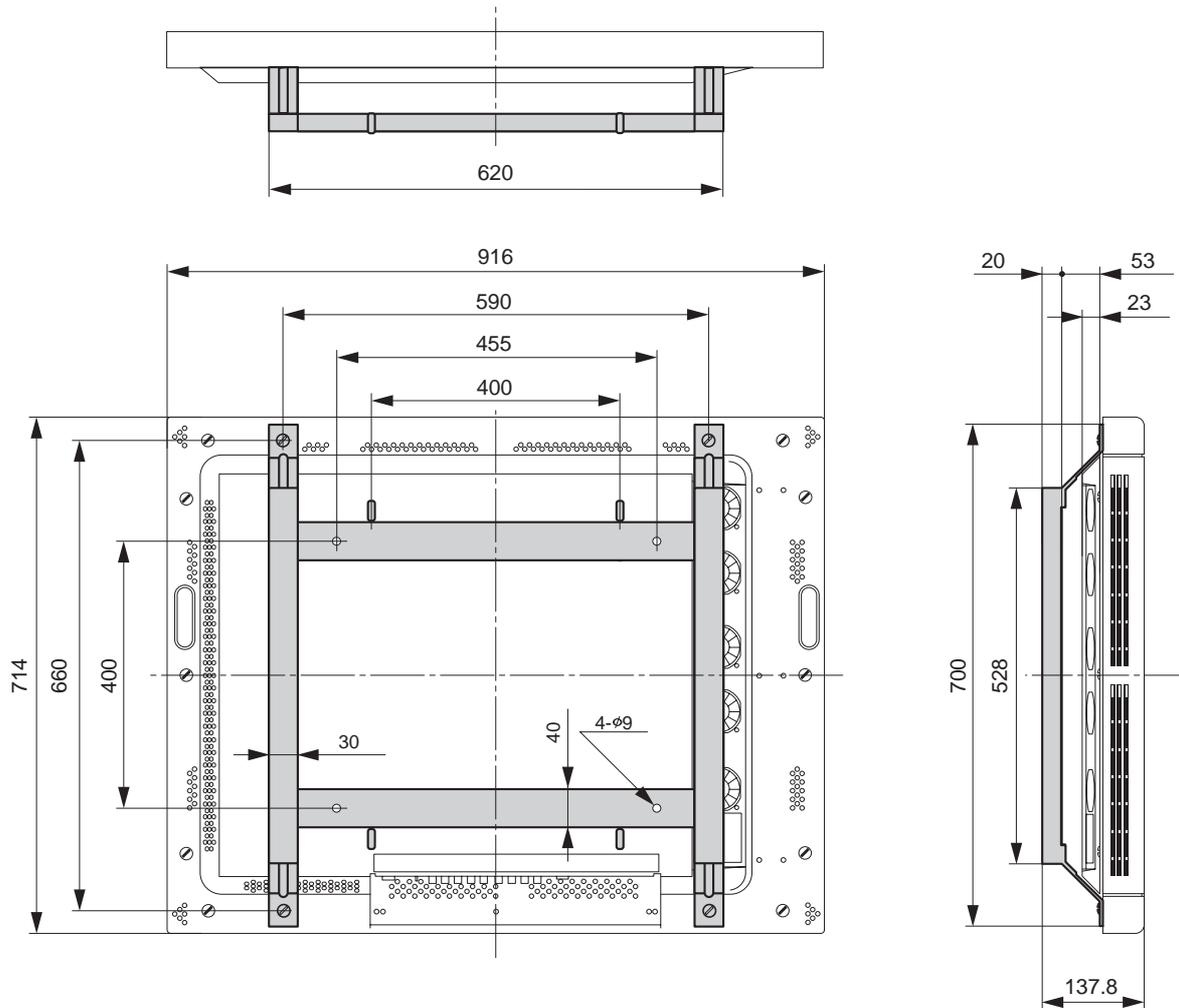
How to mount standard optional items (PDK-4005)

2) Assembly procedure

1. Temporarily tighten the vertical frame (①) and the horizontal frame (②) by using the M5 plus/minus screw with washer (⑤) .
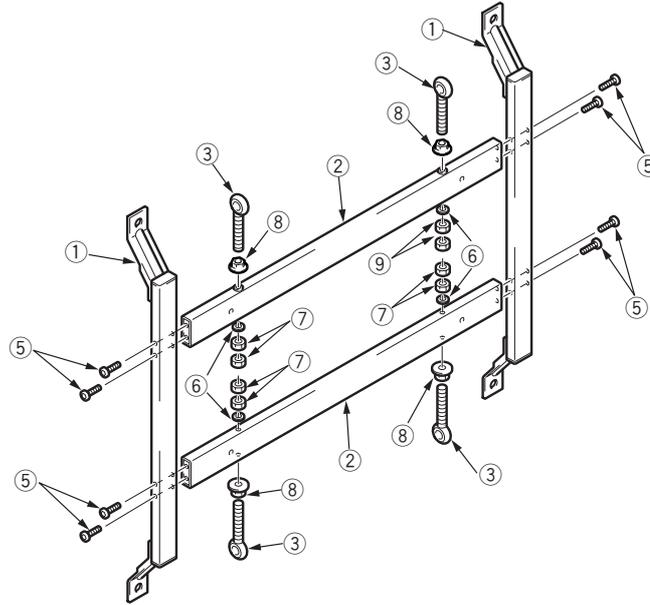
When assembling the PDP bracket, install an M8 nut, as shown, to keep the Special eye bolt from loosening. (This step is not described in the instruction manual.)

Hexagon nut with spring washer (4 pcs.)

Attach the nut up to the base of the bolt as far as possible.

Viewed from below.
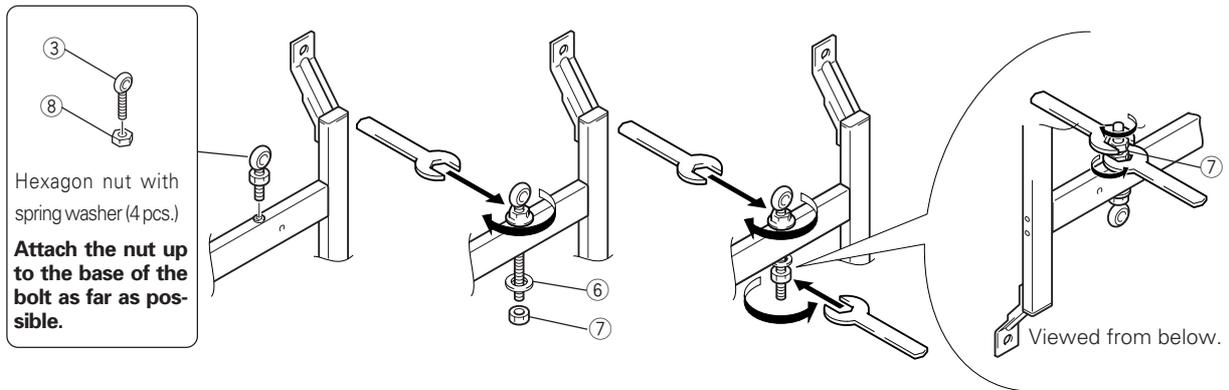
Caution

Before screwing together the horizontal frame and vertical frame, place the frames on a flat surface, as shown, and confirm that the holes match up correctly.

<Incorrect>

Table or similar flat surface
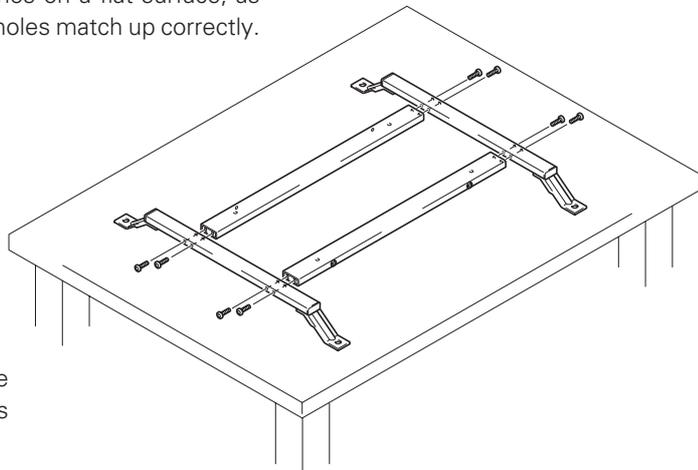
When the frames are placed on a flat surface as above, inserting bolts into the holes is difficult.

2. Place the fixture on a horizontal table, tighten all bolts, and tighten the four bolts (③).

3. With the screen of the plasma display facing downward, place the display on the edge of a flat and stable table, as shown in the figure. <u>Be sure not to drop or damage the display.</u>

PDP bracket

Table
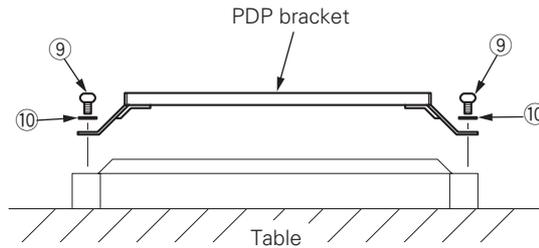
4. Tighten the assembled PDP bracket at four points using M8 hexagonal socket button head bolts (⑨) and M8 wave washers (⑩).

3) Application example

With the PDP bracket mounted, you can install the plasma display (except the PDK-4003, PDK-4006) to a PIONEER standard metal fixture.

As indicated in the figure, you can use the fixture as a handle during transport or installation.
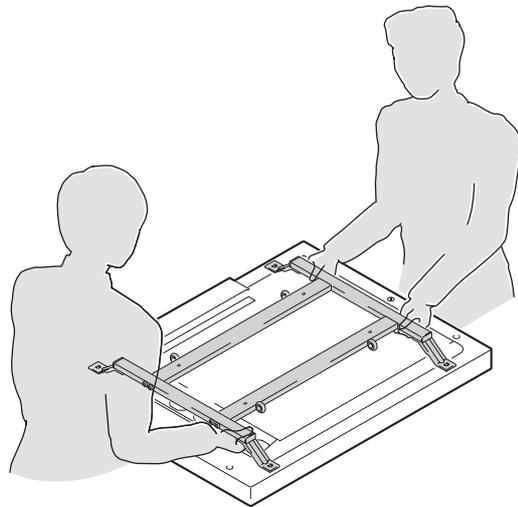
How to mount standard optional items (PDK-4005)

4) Installation example

During installation, strictly observe the related operating conditions in "3.4 Special installation".

(Note) When hanging by wires using eyebolts, the display will tilt forward by approximately 20 degrees due to its weight distribution. Therefore, take this into consideration in advance when hanging it by wires.
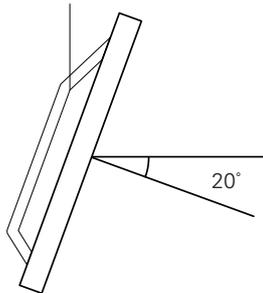
■ **Wire hanging**
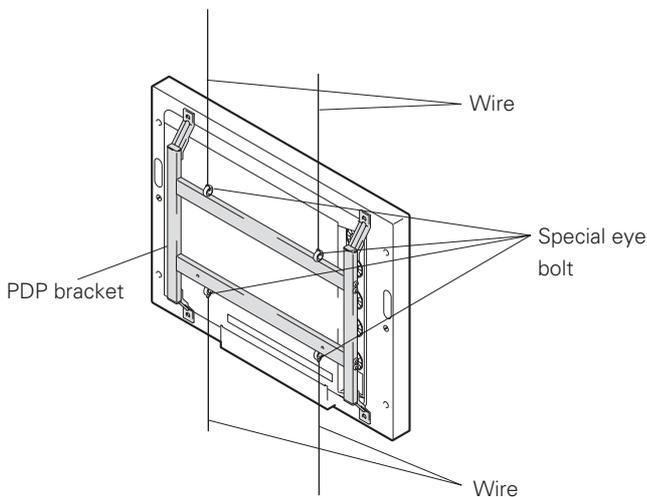
Attach wires to the bolts, as indicated in the figure.
To attach the wires to the ceiling, secure two wires at two independent points for safety.

• To keep the plasma display main body from vibrating, fix the main body by attaching wire to the bottom bolt.
• Use wires strong enough to withstand the total weight (30.8 kg <31.6 kg> for the plasma display itself plus 3.3 kg for the PDP bracket).

< > shows the PDP-V402E.

Caution

Use the Special eye bolt only at the specified locations.
Improper use of Special eye bolts within the plasma display main body may damage the display's blind nut.

Caution

Do not attempt to correct tilt by applying downward load with the wires. Doing so may apply excessive load upon and damage the wire connections and metal mounting fixture.

■ Suspending connected plasma displays using wires

More than one display can be connected, as shown in the figure. (Maximum: 3 displays)
When wires are fixed to the ceiling, use two wires fixed at two independent points.

Hole (9-mm dia.)   Hole (9-mm dia.)

Hole (9-mm dia.)   Hole (9-mm dia.)
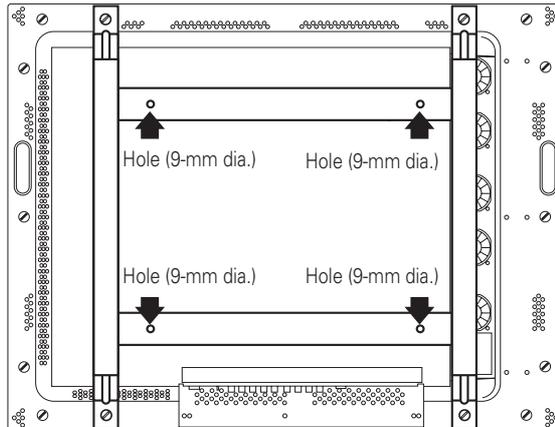
• To prevent plasma displays from tilting, fix them with wires that pass through the bottom bolts.
• When more than two displays are to be hung, use as many wires as needed to withstand the total weight (30.8 kg <31.6 kg> for a plasma display and 3.3 kg for a PDP bracket).
• For the temperature or other conditions, see the description in "Special installation, Ceiling suspension (using wires)."

< > shows the PDP-V402E.

Wire

Hole (9-mm dia.)
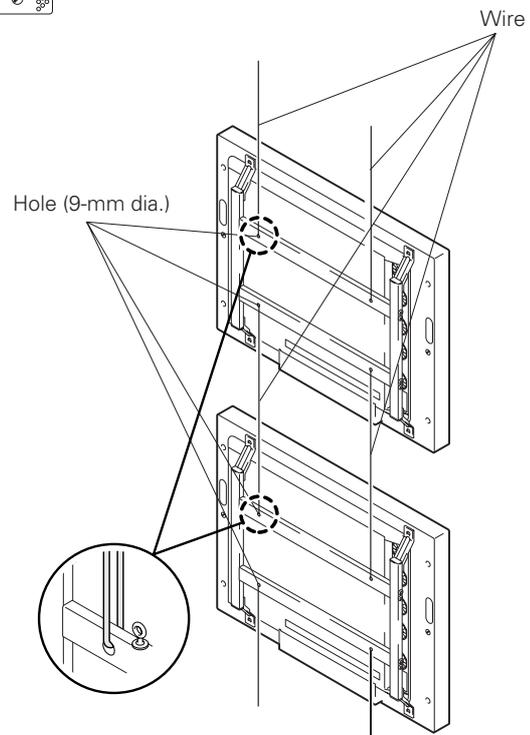
Caution

Strength when special eye bolts are used
It is possible to connect three units in total using special eye bolts. Do not connect four or more units, because there is a likely danger of wire attachments and fixtures being broken due to excessive load.

How to mount standard optional items (PDK-4006)

4.10 Wall hanging metal fixture for the plasma display : PDK-4006

4.10.1 Specifications

Outer dimensions .... 916 (W) × 125 (D) × 714 (H) mm
Weight .... 6.7 kg (metal fixture alone)
          37.5 kg <38.3 kg> (metal fixture with two plasma displays PDP-V402 <PDP-V402E>)
Material .... Steel pipe for general structures (STK-MR)
Treatment .... Semi-matt black paint (Pioneer's original color)
Package dimensions .... 885 (W) × 270 (D) × 80 (H) mm
Package weight .... 7.6 kg
Accessories
  Vertical frame ....2 pcs (for the left side and the right side)
  Lateral frame ....2 pcs
  Hexagonal socket frange bolt ....8 pcs
  Monitor fixing bolt ....4 pcs
  Hexagonal wrench ....1 pc

The operating environmental temperature must be kept within the range of 0 to 35 °C when this fixture is used to install the display. When the angle is 5 degrees or more, you may use the display at 0 to 40 °C. For details, see "4.9.2 7), Recommended ambient operating temperature."

• Recommended ambient operating temperature (in the open state)

5° or more (117mm or more from Wall)

← Wall

← Wall

Angle: less than 5°	**Angle: 5° or more**
Operate at 0 to 35 °C.	**May be used between 0 to 40 °C.**
When PC75Hz is input, however, operate at 0 to 30°C.	**When PC75Hz is input, however, operate at 0 to 35°C.**
(Do not cover the metal fixture or the sides of the display main body.)	**(Do not cover the metal fixture or the sides of the display main body.)**

Working temperature requirements

	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60HZ)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Angle: Less than 5°	0~35 °C	0~35 °C	0~30 °C
Angle: Equal to or greater than 5°	0~40 °C	0~40 °C	0~35 °C

* The same conditions apply to the working temperature requirements for a speaker system (PDP-S03-LR).

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

4.10.2 Assembling and installing the metal fixture and mounting the plasma display

1) Outer-dimension diagram (Unit: mm)

Weight .... 6.7 kg (metal fixture alone)

Weight .... 37.5 kg <38.3 kg> (metal fixture with plasma display PDP-V402 <PDP-V402E>)
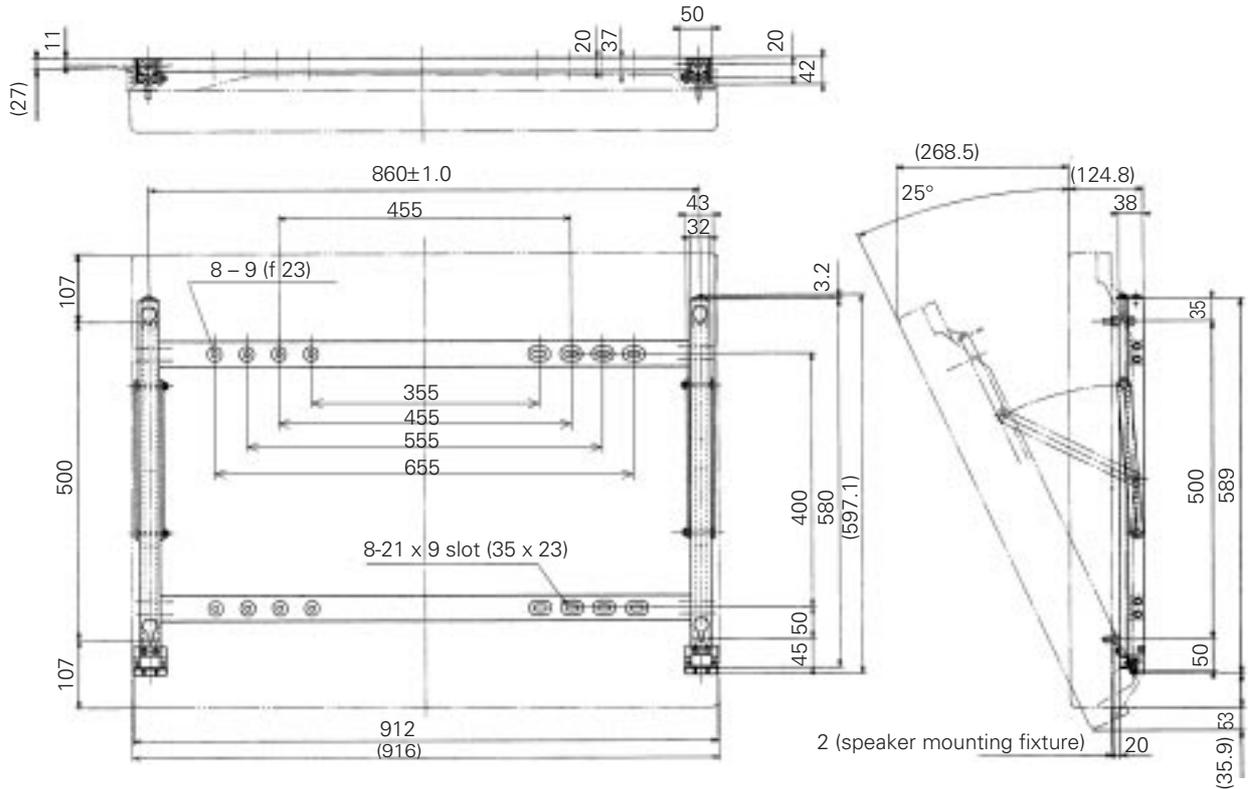
How to mount standard optional items (PDK-4006)

2) Precautions before assembly

- The vertical frame is for the left side and the right side.
  Mount the frame so that the hexagonal socket faces outward for both the left and right sides.
- Set a lateral frame with the shorter socket diameter closer to the wall side.
  A total of 14 holes are involved in mounting the frame to the wall.

3) Assembly procedure

1. Loosen the screw in ⓐ and remove one end of the hook fixture.
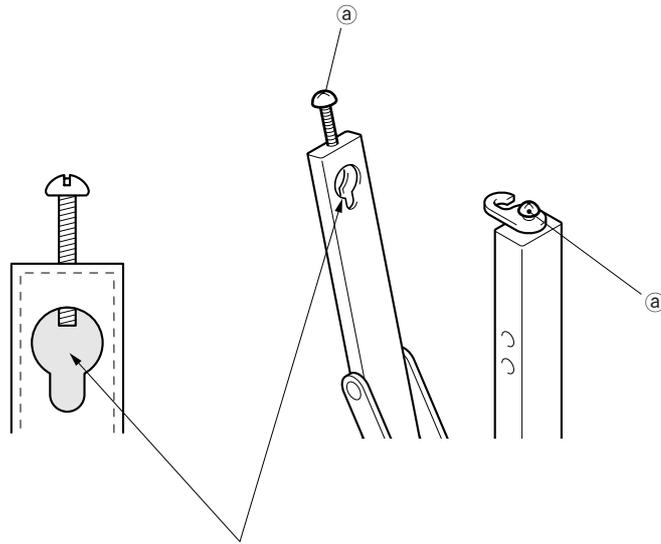
Loosen the screw until the screw completely disappears from this hole.

2. Hold the top of the vertical frame and spread it by approximately 10 cm.

3. Mount the lateral frame to the vertical frame.

This face should face toward the wall.

Assemble the frames so that the hexagonal socket face outside.

This face should face toward the wall. (The socket with the shorter diameter should be closer to the wall.)

Hexagonal wrench

Tighten the bolt with a hexagonal wrench, holding the bolt head with one finger.
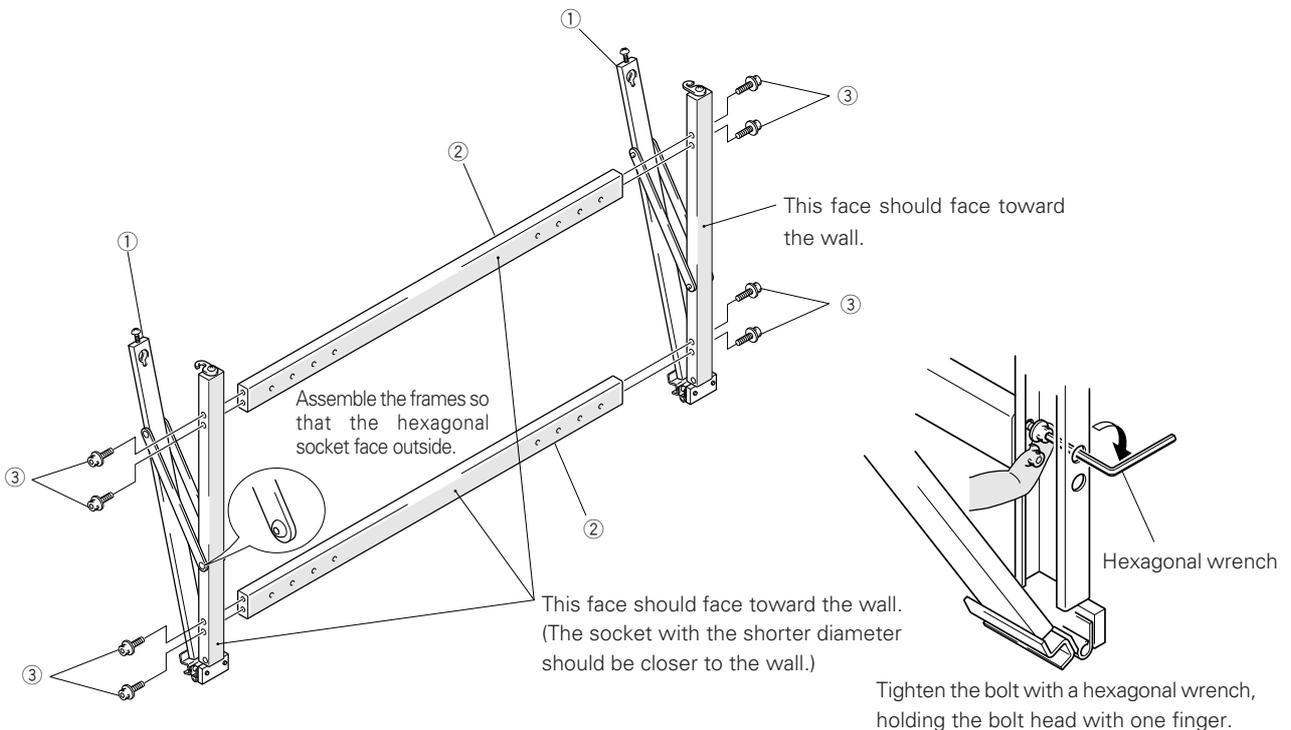
4) Mounting the monitor fixing bolt to the plasma display

1. Mount the monitor fixing bolt at four points on the rear of the plasma display.

14-M8 (with φ16 hole rivet)
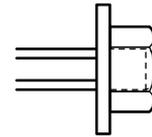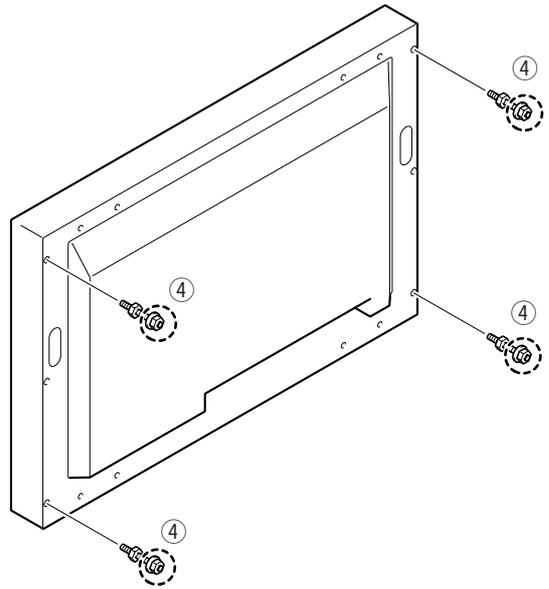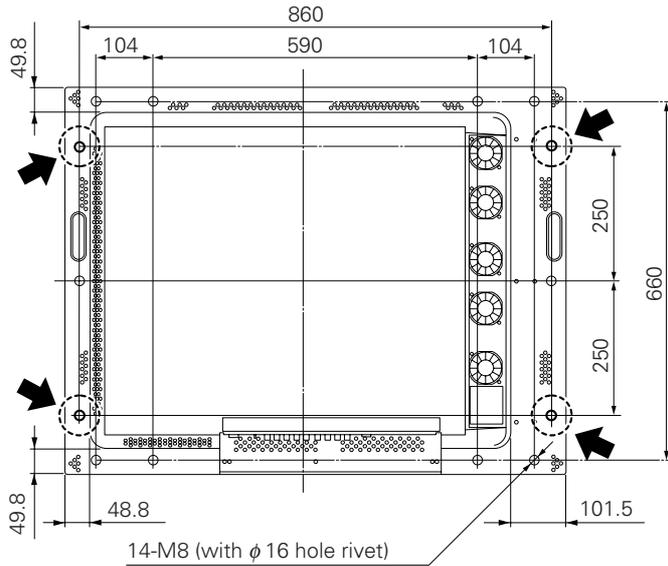
Make the end of the nut ④ flush with the screw.

2. Mount the assembled metal fixture to the wall.

   Mount the assembled metal fixture to the wall, using screws or bolts, attaching at a minimum of four points (shown below as ⓑ). The choice of screws or bolts here should be made based on the specific composition and strength of the wall.

> **Caution**
>
> **Mount the fixture after checking the strength of the wall and beams.**
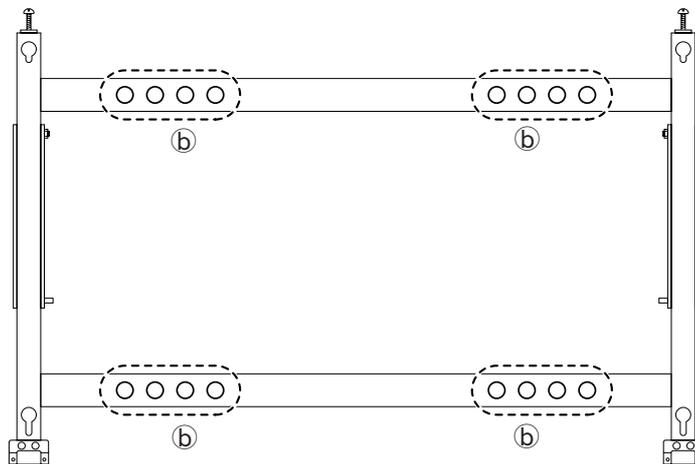
Caution: Mount one of the four groups ⓑs to the wall at four points

How to mount standard optional items (PDK-4006)

3. After securing the fixture with screws, open it as shown in the figure and tighten the screws Ⓒ on the left and right sides of the vertical frame.

Wall side

Ⓒ
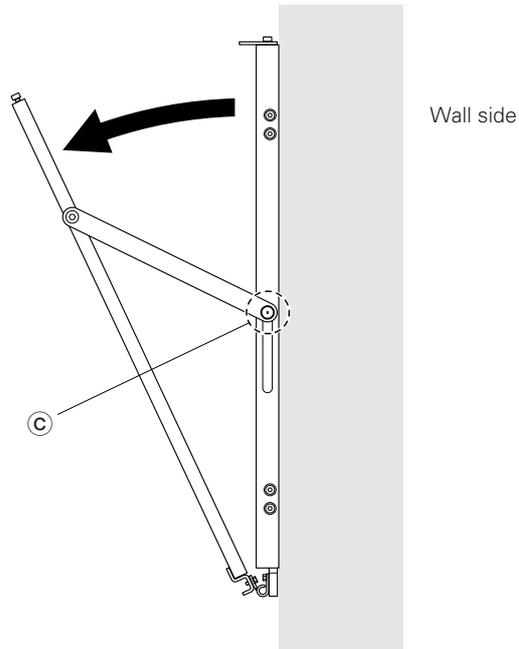
5) Mounting the plasma display

1. As shown below, two workers should hold the left and right ends of the plasma display and insert four monitor fixing bolts into the mounting fixture holes. First insert the bolts in the bottom holes, then in the top holes.

Insert a monitor fixing bolt into the hole of the mounting fixture and set it down.

Tighten the screw from above to prevent the bolt from falling out.

Display

Tighten the nut.
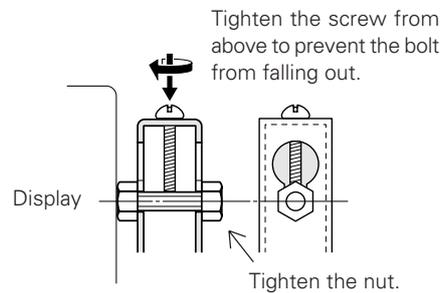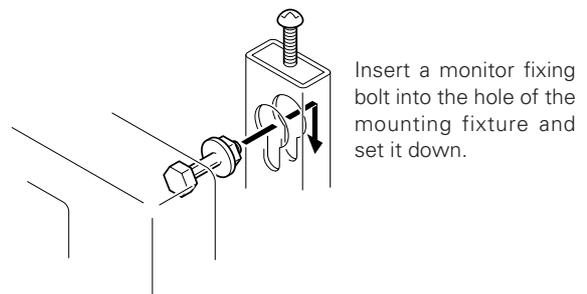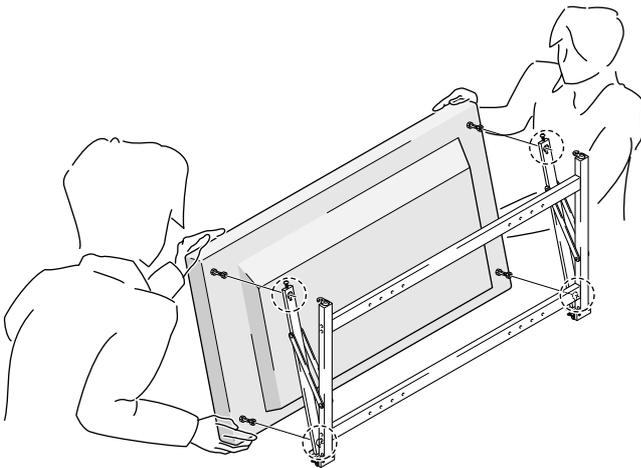
2. The display mounting is complete. Now set the optimal angle.

6) Setting the optimal angle

This metal fixture is infinitely variable in a 25° range. This work requires two workers.

1. Loosen the left and right screws ⓒ of the vertical frame.
2. Lowering the arm, press against the display to get the best angle.
3. When the desired angle is achieved, tighten the screws ⓒ on both sides.

ⓐ

ⓒ
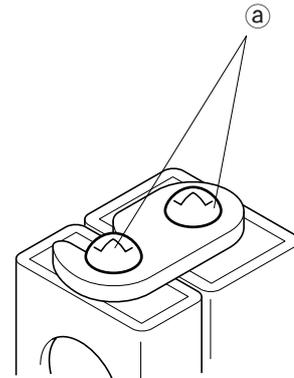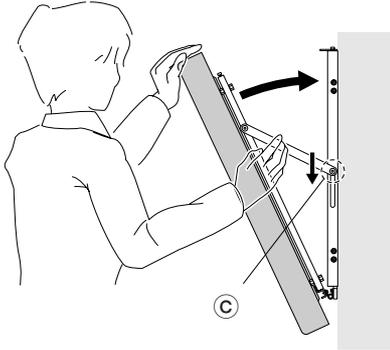
When the monitor is flat against the wall, use screws to connect the variable side and fixed side of the hook fixture shown above. (Use screws in ⓐ.) Tighten the left-and right-side screws ⓒ.

Wire, flat bar

X
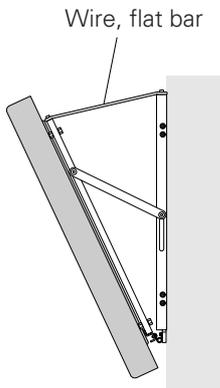
After setting the angle, use screws ⓐ and a wire or flat bar to prevent the frame from opening.
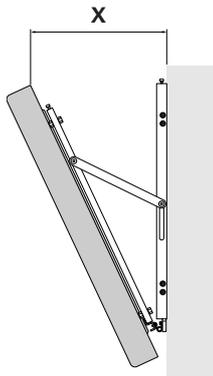
Measure the degree of opening relative to the wall, X, to obtain the standard for the set angle.

X	Angle
117 mm	5°
173 mm	10°
229 mm	15°
282 mm	20°

When the tilted angle is 5 degrees or less, make sure to secure it using wires or flat bars.

How to mount standard optional items (PDK-5008)

4.11 Mobile cart:PDK-5008

4.11.1 Specification

Outer dimension .... 916 (W) X 720 (D) X 1710 (H) (Maximum) (Minimum : 1460)

Weight .... 36.5 kg (Stand only)

67.3 kg (Stand + plasma display)

Material .... STKM (steel pipe) SPCC and SS41

Treatment .... Melamine coating, baking finished (silver metallic)

Packaging dimension .... 1704 (W) X 900 (D) X 105 (H) (Support main body portion)

987 (W) X 770 (D) X 255 (H) (Bracket portion)

705 (W) X 460 (D) X 75 (H) (Shelf portion)

Packaging Weight .... 31.5 kg (Support main body portion)

12kg (Bracket portion)

4.5kg (Shelf portion)

Accessories

Panel support	1 pcs
Bracket	1 pcs
Leg base	2 pcs
Stand Shelf	1 pcs
Shelf bracket	2 pcs
Hexagonal wrench	1 pcs
Hexagonal socket head bolt (M8 X 60)	4 pcs
Hexagonal socket head bolt (M8 X 20)	8 pcs
Ornament screw (M6 X 12)	4 pcs
Washer	4 pcs
Spring washer	4 pcs
Leg base collar	4 pcs
Cord clip	6 pcs

- Operating temperature conditions:
  Ambient temperature conditions: 0 - 40˚
- Operating temperature conditions when speakers (PDP-S03-LR) are installed:
  Ambient temperature conditions: 0 - 40˚

4.11.2 Assembling and mounting the metal fixtures, and mounting the plasma display

1) External dimensional drawing Unit: mm

    Weight .... 36.5 kg (Stand only)

    Weight .... 67.3 kg <68.1kg> (Stand + plasma display PDP-V402<PDP-V402E>)
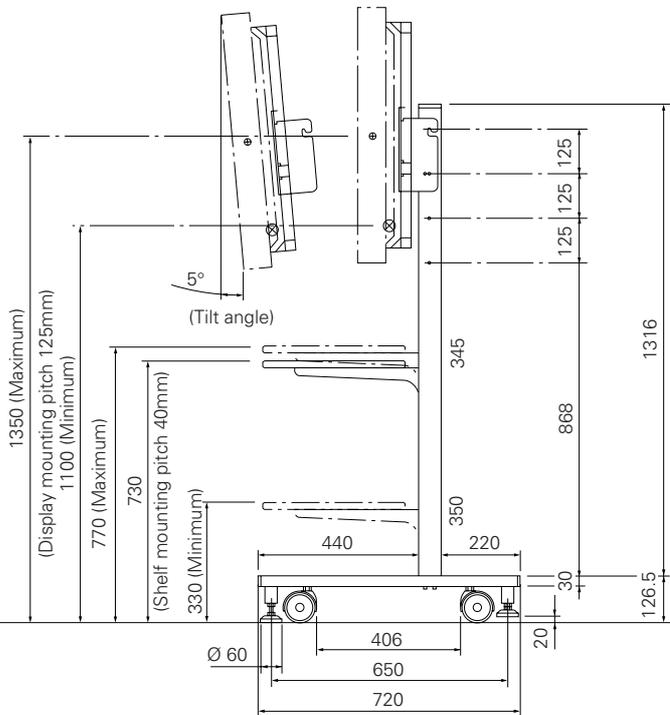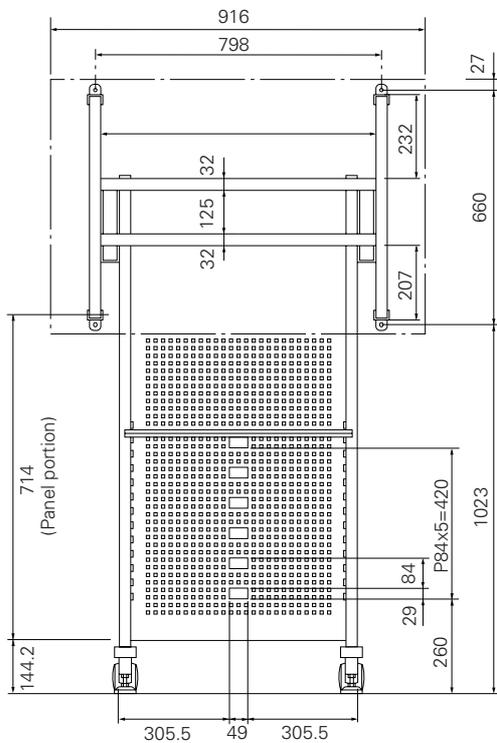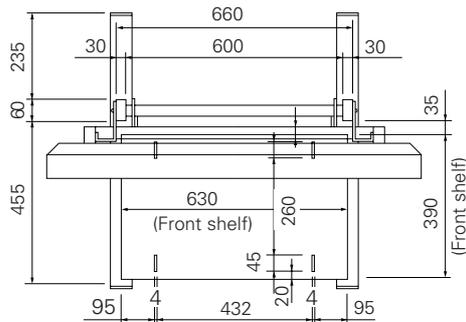
How to mount standard optional items (PDK-5008)

4.11.3 Mounting procedure

For safety reasons, two or more people should carry out this work.

① Securing the leg bases to the panel support

Secure the leg bases to the panel support with the hexagonal socket head bolts (M8X60) and the leg base collars as shown in the figure below so that the label on the backside faces to the rear casters.
*Use the binding clip to bundle the power supply cord, computer-connecting cables, BNC terminal cables, etc.

(Note) For safety, make sure to firmly tighten each bolt twice or more alternately.
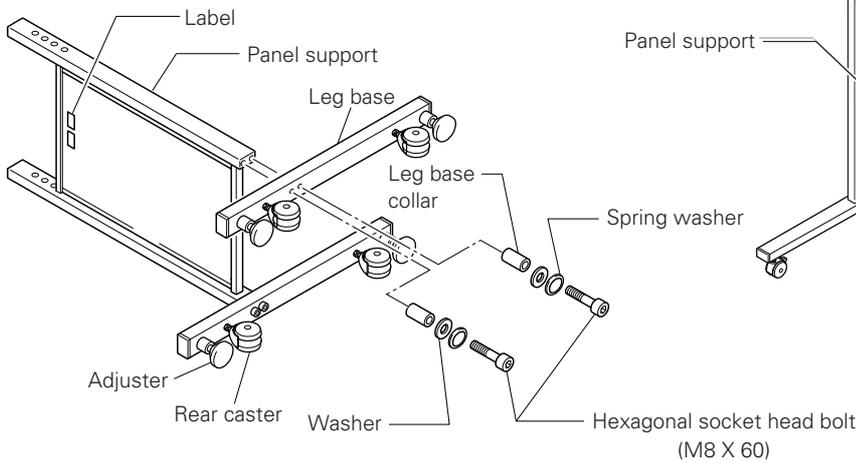
② AInsert the cord clip into the support main body.

*Use the cord clip when bundling the power supply cord, computer connecting cable and BNC terminal cable and so forth.
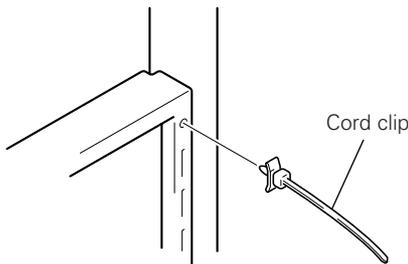
③ Mounting the bolts for securing the bracket to the panel support

Mount each hexagonal socket head bolt (M8X20) to the panel support with a gap of 5 to 6 mm left as shown in the figure below. (It is possible to mount the plasma display at three different level, namely 1,350 mm, 1,125 mm and 1,100 mm from the floor surface to the center of the display screen.)

(Note) Do not mount any bolts at the fourth level from the top. This will be used for Step 4.
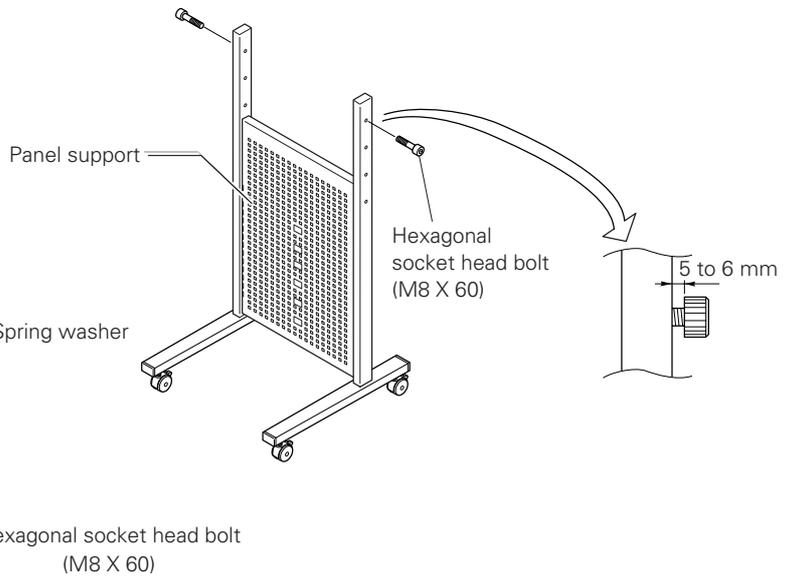
④ Mounting the bracket on the plasma display

Secure the bracket on the plasma display backside inserting the attached hexagonal head socket bolts (M8X20) into the bolt holes as shown in the figure below.

(Note) It is recommended to cover the front surface of the plasma display with a blanket or similar material so that it is not be damaged.
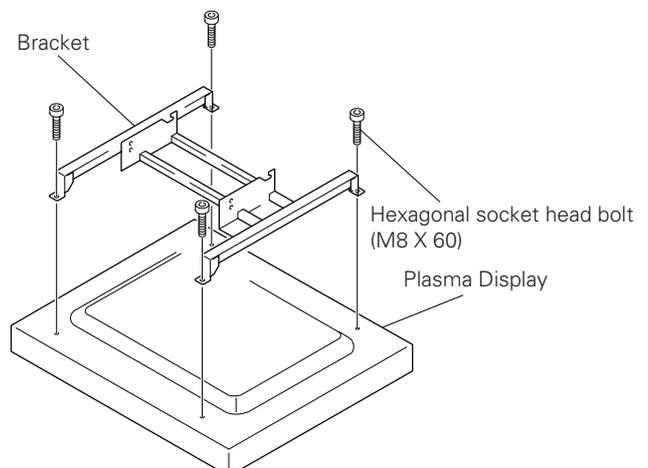
⑤ Mounting the plasma display mounted with the bracket on the panel support
   1. Hang the hooks of the bracket on the bolts on the left and right sides of the panel support.
   2. Secure the bolt holes under the hook portions and the bolt holes of the panel support with the hexagonal socket head bolts (M8X20) as shown in the figure below.
   3. Tighten the bolts at the hook portions.
(Note 1) Ensure that two or more people should carry out this work.
(Note 2) To ensure safety when tightening the bolts, make sure to tighten each bolt twice or more alternately in order to firmly tighten the bolts.
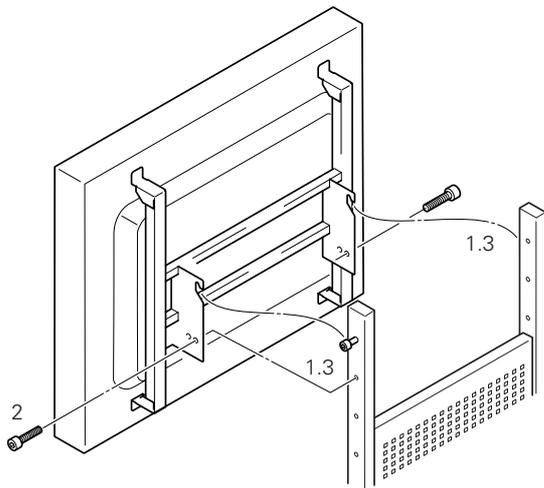
''How to adjust the tilting angle of the plasma display screen''
If you want to make it easier for the viewer to see the screen, you can tilt the plasma display forward by changing the bracket mounting position.

0˚   5˚
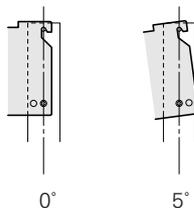
When mounting the bracket to the panel support, ensure that two persons hang the bracket while they are holding the poles for safety reasons.
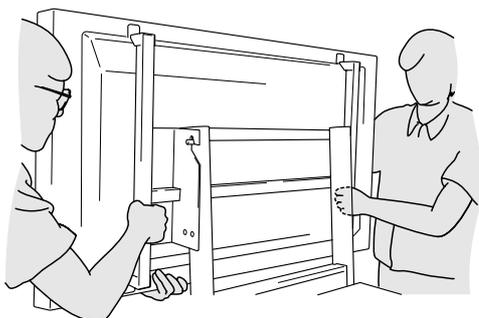
⑥ Securing stand shelf and shelf bracket
   Secure stand shelf and shelf bracket fixture on one side with the attached ornament screw (M6X12). Secure the shelf bracket on the other side in the same manner.

Shelf bracket
Ornament screw (M6 X 12)
Stand shelf
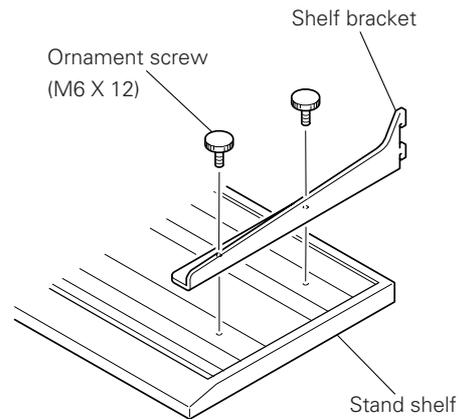
Rear view of stand shelf

⑦ Mounting the stand shelf on the panel support
   Tilt the stand shelf and insert the tips of the hook portions into the slits on the panel support, and then return the stand shelf to the horizontal position.

Hook
Panel support
Slit
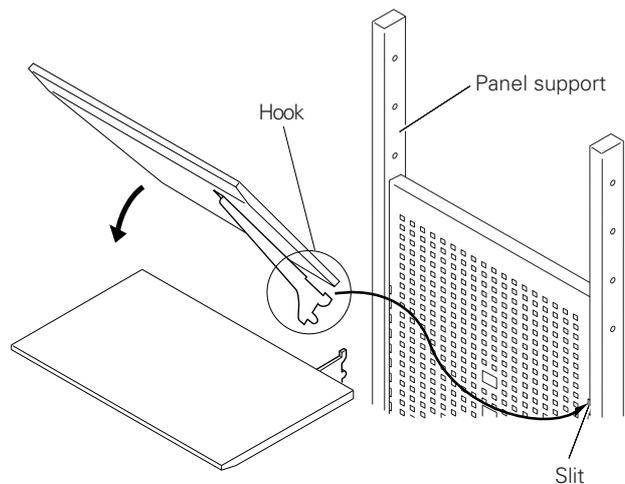
⑧ Adjusting the adjuster
When the location for installing the carryable stand is decided, make sure to adjust the adjuster.
1) Turn the adjuster base in the arrow-pointed direction till it touches the floor surface.
2) Secure the adjuster by turning the adjuster securing nut located at the upper portion in the arrow-pointed direction.

Adjuster securing nut
Adjuster base

113
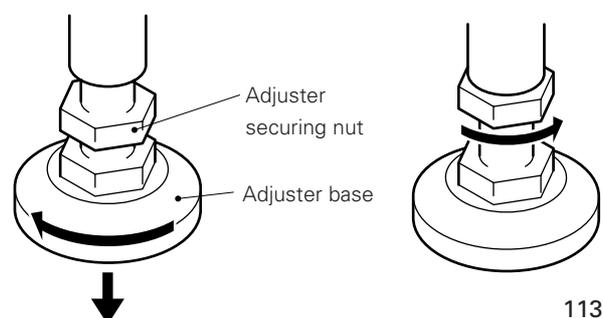
How to mount standard optional items (PDK-5008)

4.11.4 In case of mounting an optional protective filter (PDA-4002)

When using a separately-sold PDA-4002 protective filter, the 4 bolts indicated by arrows in the diagram below must also be screwed into the bracket.

Note that the bolts used must consist of the hexagonal bored bolts (M8 X 20) provided with the product.
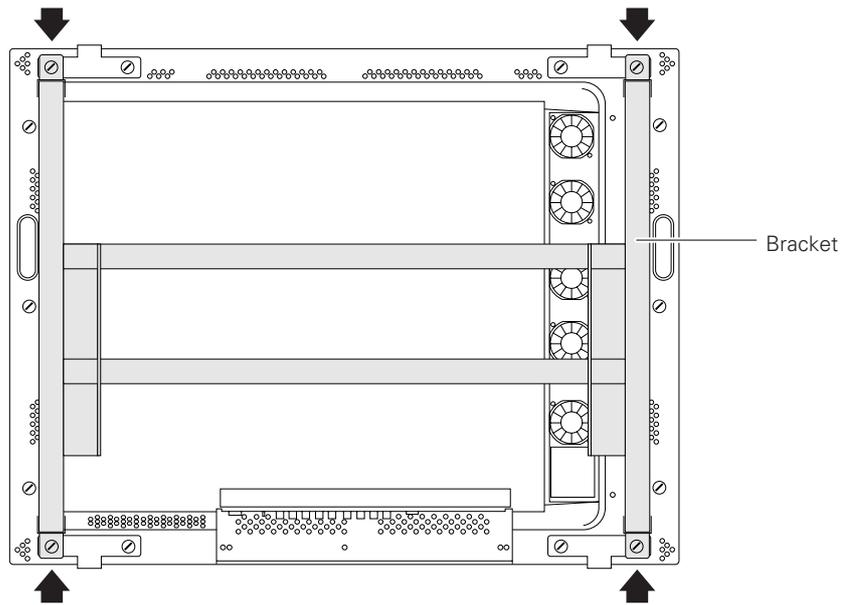
Bracket

4.12 Partition Multiple installation fixture

4.12.1 Specification

Outer dimension .... 919 (W) X 290.8 (D) X 717 (H) mm
(Without sliding)

Weight .... 20.6 kg (Metal fixture only)
51.4 kg (metal fixture + plasma display PDP-V402)

Material .... Steel pipe for general structures (STK-MR)

Treatment .... Semi-matte black coating (Pioneer's original color)

Packaging dimension .... 990 (W) X 800 (D) X 310 (H) mm

Packaging Weight .... 27.0 kg

Accessories

Cover

Monitor securing bolts .... x 1

Hexagon bolts (M10 X 100) .... x 4

Nuts (M10) .... x 6

Washers .... x 6

Spring washers .... x 6

Tapping threads .... x 3

Chain .... x 1

Tag .... x 3 (Red, blue and yellow)

Operating instructions .... x 1

Information on installation contractors .... x 1

For safety reasons, ensure that two workers carry out mounting and installation work together.

> ⚠ **For safety reasons, ensure that two workers carry out mounting and installation work together.**
>
> **Caution**

Clearance A to the wall	VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
Two units	0~40°C	0~40°C	0~35°C
Three units	0~35°C	0~35°C	0~30°C
Four units	0~35°C	0~35°C	0~30°C

Make sure to provide with partitions for left and right sides when making lateral connections.

When installing in a series side by side, there is no need for a left and right partition.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

4.12.2 Outer dimensional drawing [Unit: mm]

Weight .... 20.6 kg (metal fixture only)

51.4 kg (metal fixture + plasma display PDP-V402)
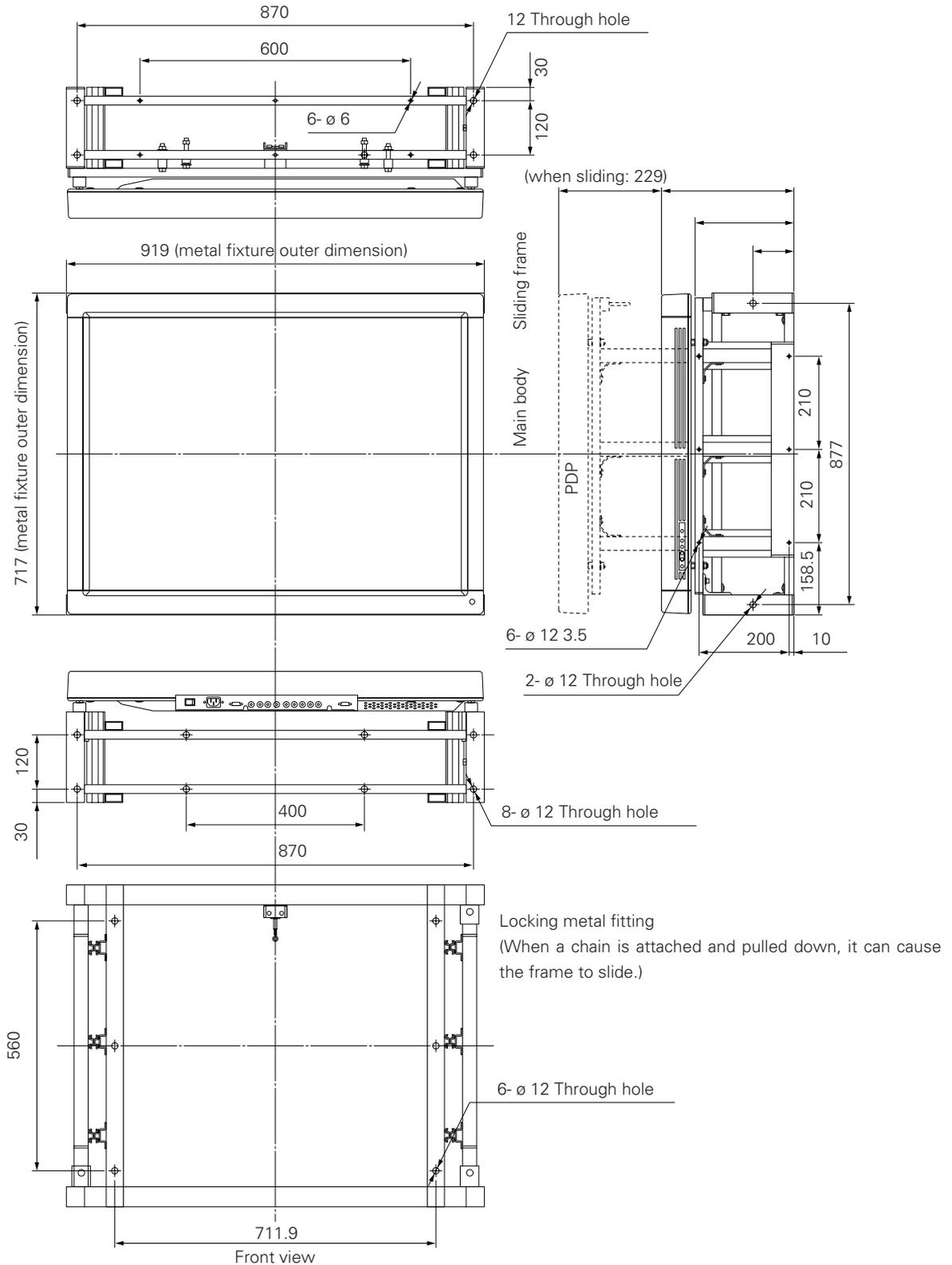
How to mount standard optional items (PDM-4001)

4.12.3 Installation conditions

1) Load carrying capacity of the floor
The floor should be level and with an even surface, and it should have a sufficient load carrying capacity of its own. Especially, when the floor consists of boarding, the floor may cause deformation or deflection, if the weight of this system is put near the middle of reinforcing crosspieces under the floor, depending on where such crosspieces are located. In this case, make sure to spread out the weight on the floor, using solid boarding sufficient enough to resist the deformation or deflection caused over time. A concrete floor sometimes may be not good enough for horizontal installation, because of an uneven surface. In such a case, make sure to take similar corrective measures so that the floor can be leveled and even.

2) Height of the ceiling
Ensure that the distance from the top of this system to the ceiling is at least 30 cm. If there are an air outlet of an air-conditioner or a lighting display in the upper area, it is necessary to pay sufficient attention because they may cause problems due to dust, temperature, humidity and water droplets. Moreover, when the system is going to be fully covered with furnishings, make sure to provide a process to eliminate the heat accumulated on the top panel. Otherwise, it may cause problems.

3) Front space
It is possible to pull out the PDP main body forward using the sliding frame. For maintenance, make sure to provide a sufficient working space on the front side.

4) Space on both sides and backside, and fan unit
They all depend on the installation conditions.
Make sure to follow the installation conditions as shown in the operating environment requirements.
For a fan unit, see the attached standard specification and drawing.

5) Stacking units
It is possible to vertically install up to four units.
For installation of up to three units, make sure to use a base plate and cradles, and take measures to prevent shifting. Moreover, when you are going to vertically install four units of displays, make sure to use anchor bolts for secure installation.

> ⚠ **It is not possible to vertically install five or more units.**
> **Caution**

6) Installations works to prevent shifting.
- For installation, make sure to use base plates and cradles.
  (See the attached cradle and base plate drawing based on our recommendation.)
- Ensure that all necessary measures are taken to prevent shifting, because it is likely that the system may move or turn due to earthquakes and accidents (It is recommended to use anchor bolts for secure installation). If it is not possible to use anchor bolts, then use wires to secure the display.
  Note) For wire mounting, make sure to use the holes shown in Figure in Page 113.
- For securing on the floor or the wall, everything depends on the materials of installation (securing) location. For installation and mounting, make sure to consult with a specialized installation contractor.

7) Calculating calorific values

Assume that the power consumption per unit is 400 W, to be on the safe side. As most of the consumed power is converted into heat, power consumption is roughly equal to generated heat.

① Conversion to calories

$$[W] \times 0.86 = [kcal/h]$$

Calorific value per plasma display:

$$400 \times 0.86 = 344 \ [kcal/h]$$

② Conversion to British thermal unit (B.t.u./h)

$$[W] \times 3.41 = B.t.u./h$$

Calorific value per plasma display

$$400 \times 3.41 \times = 1364 \ [B.t.u./h]$$

No. of surfaces	Calorific value [kcal/h]	British thermal unit [B.t.u./h]
1 surface	344	1364
4 surfaces	1376	5456
9 surfaces	3096	12276
12 surfaces	4128	16368
16 surfaces	5504	21824

8) Temperature and humidity requirements

• Strictly observe the following requirements for the temperature and humidity at the site:

[1] Allowable operating temperature : 0 to 35ºC (no condensation)

[2] Allowable operating humidity : 20 to 80%

[3] Storage temperature : - 10 to 45ºC (as packed)

• Moisture is strictly prohibited. The shape of this product is vulnerable to the external effects. When installing this display closer to an air outlet of an air conditioner or a water fountain, where it is highly humid, make sure to take perfect waterproofing measures.

In a building that has newly been built, it may be highly humid due to the moisture coming out from the concrete. Pay full attention to this factor.

• It is never advisable to install such delicate electronic equipment as this system in a highly humid environment. If a higher temperature is even slightly anticipated, however, please take the following precautions:

* Never install this system in such an environment that exceeds the scope of the recommended installation conditions.

* Provide for a suitable grounding.

* Make sure that there will be no condensation.

* Install it where the general public will not be able to touch it.

* Ensure that no water droplets come in contact with any part of the display.

How to mount standard optional items (PDM-4001)

9) Power supply requirements

When it consists of some multiple systems, never provide the power from the existing power outlet because it is extremely dangerous to do so. Make sure to provide the power from the distribution panel.

① Power voltage

　Guaranteed operating voltage for a plasma display is +/-10% of the rated voltage. It is necessary to have a power voltage of more than 100V (102 V to 105 V) without any load.

　Ensure that the voltage will not drop below 96 V, when all the power has been turned ON.

　If it drops below 96 V, it may be necessary to replace the power cable from the distribution panel to the plasma display with a thicker one.

② Calculate the power consumption of a plasma display at 400 VA per unit, to be on the safe side. When it is going to be connected with any other equipment, take the power consumption of such other equipment into consideration. When the total current capacity is obtained, make sure to derive the power from the power distribution panel though a circuit breaker, allowing for about 25% or more extra power.

　In Japan, it is customary to use 15 A to 20 A per circuit. If the total power consumption is higher than this, it is necessary to increase the number of circuits, say, by two or three additional circuits.

No. of surfaces of a plasma display unit	Power capacity	Current capacity
1 surface	400VA	4A
4 surfaces	1600VA	16A
9 surfaces	3600VA	36A
12 surfaces	4800VA	48A
16 surfaces	6400VA	64A

Moreover, when the power for a plasma display is ON, the inrush current is about 70A. If it is composed of some multiple systems, make sure not to turn ON all the systems at one time, but to turn ON one system after another.
If all the systems are turned ON at one time, the circuit breaker may be tripped.

③ Power supply breaker

　To reduce the noise, the plasma display has a built-in power line filter. For this reason, a leakage current of 0.5 mA is passing throughout the circuit. In case that a leakage breaker is provided, confirm that the leakage current sensivity is greater than the leakage current value of the plasma display to be used.

10) Cautions for using base plates and cradles

Make sure to install so that the system remains horizontal. We will not be responsible in any way whatsoever for any damages due to defective installation and/or mounting of this system, or any natural disasters.

4.12.4 Before installation and assembly

1) Check the following items:

[1] Dimension of the installation site, space of the backside, and distance from the ceiling.

[2] Horizontal angle and strength of the floor, and whether the floor is uneven or not.

[3] Location of the power supply

[4] Installation site

Whether any reinforcement is needed for the floor or the wall (reinforcing covers, sheet or floor plate); whether the width of the route or passage to bring in and bring out the display is sufficient; whether there is an elevator available or not (if available, the size and load limitations); and whether there is any air flow passage of an air conditioner and so forth.

[5] Site, specification, configuration, and kind of image of the transmitter.

[6] Model No. of the display to be used and the quantity, etc. of machinery parts (Check according to the list)

Check if the quantity of the machinery parts to be brought in is all ready product by product.

* The same person should do all of this checking.

2) Necessary tools for assembly

- No. 2 Phillips (+) driver (magnetized)
- Stepladders or trestles x 2 (the height depends on the No. of units and height of the installation site)
- Ring spanners (12, 13) x 2 pieces each
- Spanners (12, 13, 17) x 2 pieces each
- Hexagon socket wrench (diagonal: 6 cm for M8) x 1

3) System flow chart for assembly
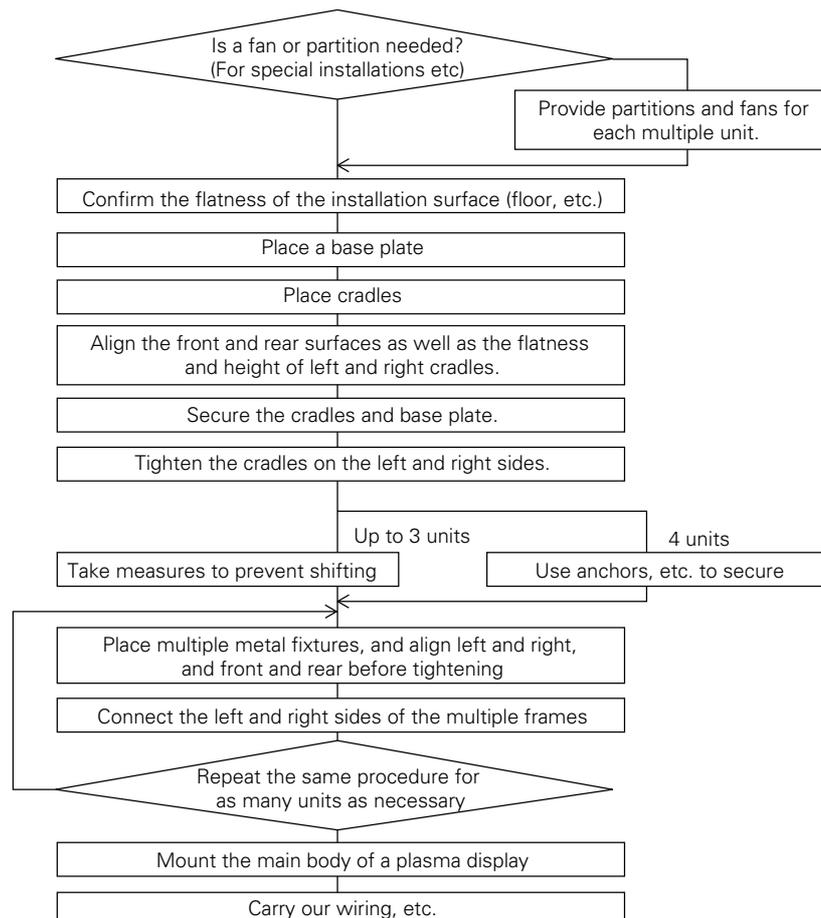
How to mount standard optional items (PDM-4001)

4.12.5 Installation and assembly

1) When installing multiple installation fixtures on the floor
When installing the multiple installation fixtures on the floor, make available the cradles and base plates as shown in figure 4.11.5-1.

Prepare as many cradles and base plates as necessary, depending on the combination.

Here is reference information on how to make cradles and base plates.

The size of the base plate shows a case where the base plate is not fixed to the floor.

When it is fixed to the floor, decide the A size and B size as shown in Figure 4.11.5-7, after taking the strength, etc. into consideration.

Note) Where the floor condition is unstable, it is necessary to take measures against falling regardless of the number of stacking units.

For two units   For three units
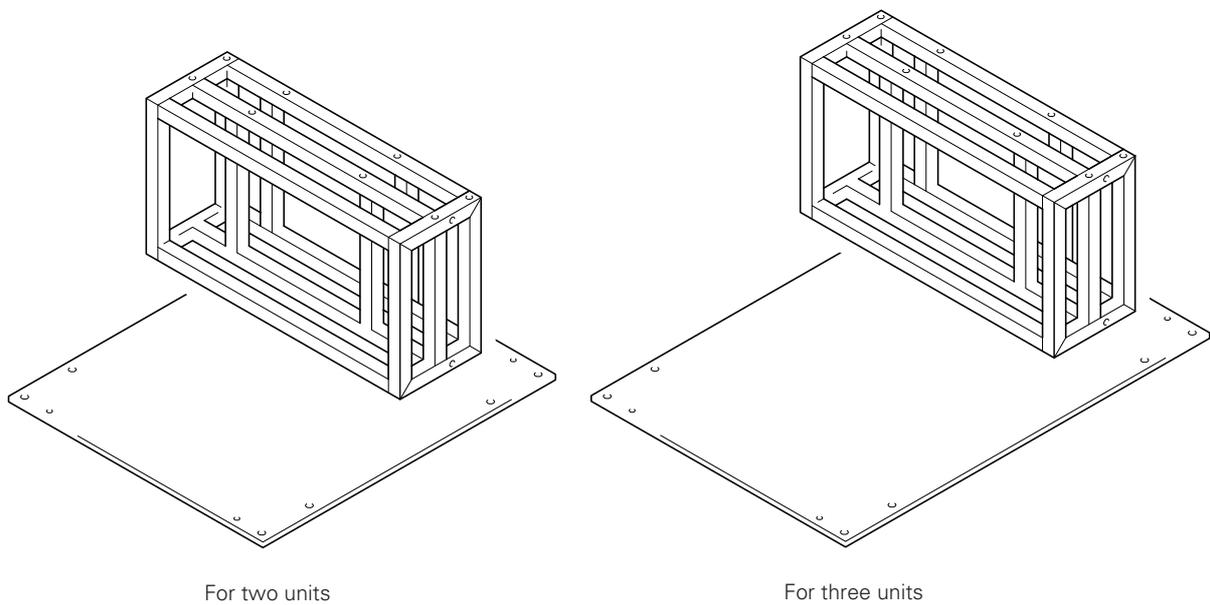
Figure 4.11.5-1)

Here are some reference drawings and additional information.
  • Reference drawing of a cradle (Figure 4.11.5-2))
  • Reference drawing of a base plate (Figure 4.11.5-3))
  • Dimension of base plates for two or more columns of three units (when not fixed to the floor).
  • Dimension of base plates for one column of two units and one column of three units (when not fixed to the floor).
  • Reference drawing of 2 x 2 = 4-surface multiple installation (Figure 4.11.5-7)
  • Reference drawing of 3 X 3 = 9-surface multiple installation (Figure 4.11.5-8)
  • Reference drawing of 4 x 4 = 16-surface multiple installation(Figure 4.11.5-9)

Reference drawing of cradles

<Top view drawing>
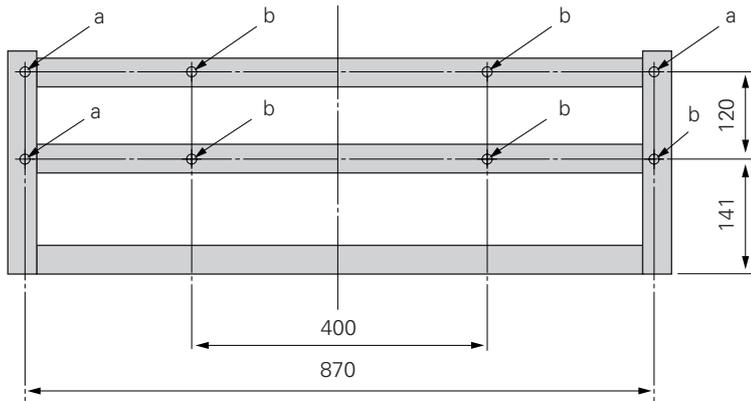
a: M10...10 mm threaded holes (two holes)

b: ø12 mm holes (Upper side- six holes, and lower side- eight holes)

<Front view drawing>

<Bottom view drawing>
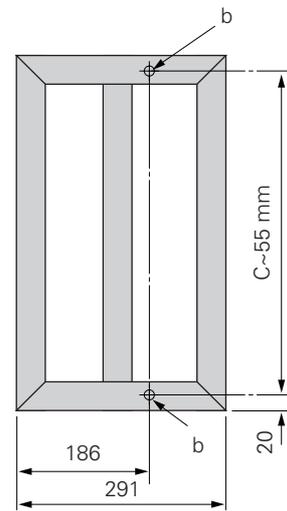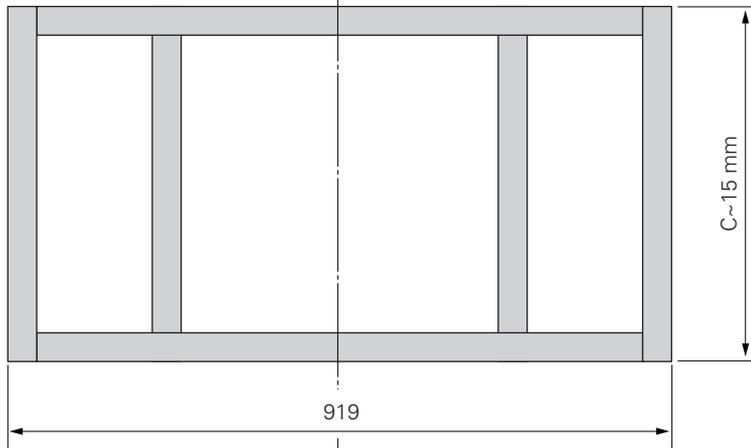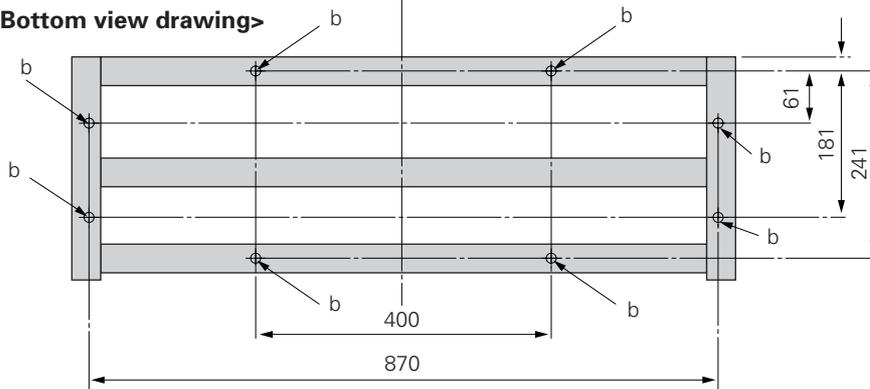
Supports are designed based on 40-mm square pipe.

Figure 4.11.5-2)

How to mount standard optional items (PDM-4001)

Reference drawing of base plate

a: 12 mm hole (four holes)
(For securing a base plate)

b: M8 x 8 mm threaded holes (eight holes)
(Bracket mounting holes for transport)

c: M10 x 10 mm threaded holes (eight holes)
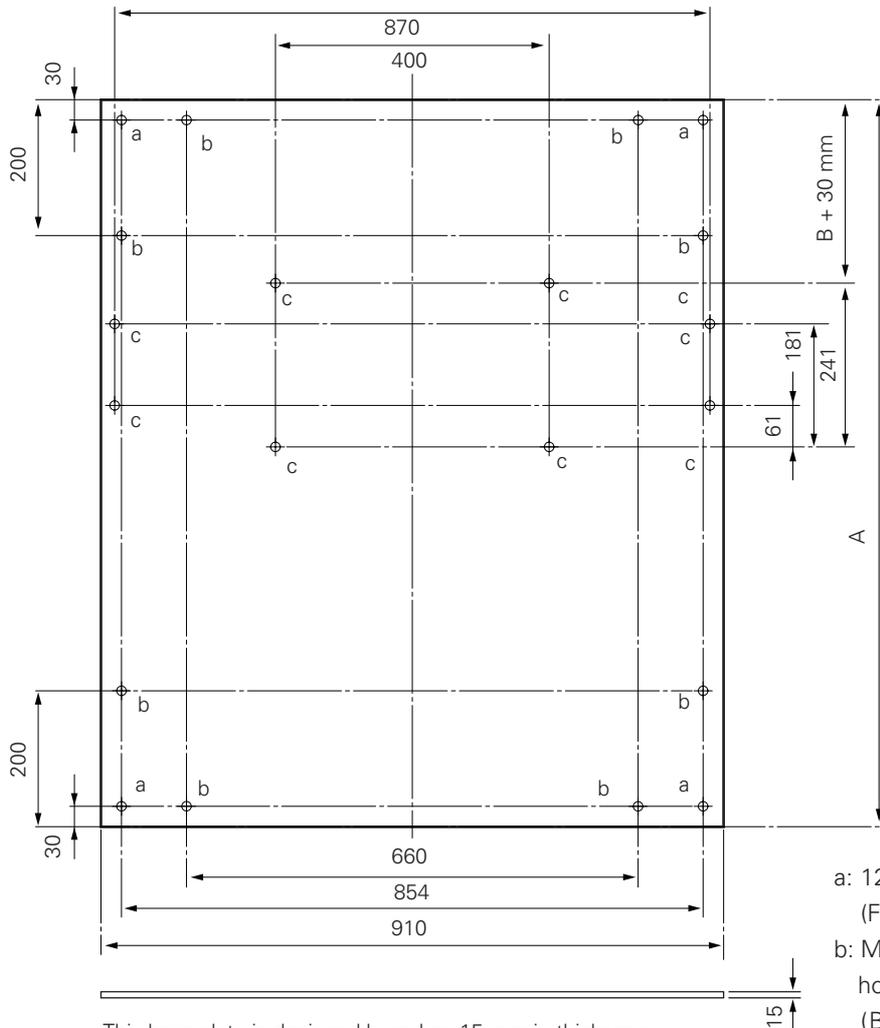
This base plate is designed based on 15 mm in thickness.

Figure 4.11.5-3)

Dimension of a base plate for stacking two and three units (when not fixed to the floor).

When stacking the multiple installation metal fixtures for two units and three units, the value of the fore-mentioned base plate A and B should be decided according to Figure 4.11.5-4), using the value when the combined height of the cradle and base plate is C.

<Relationship between the height of a cradle and the sizes of the front and

rear of the base plate (A value and B value)>

(300 ≤ cradle height ≤ 1500)
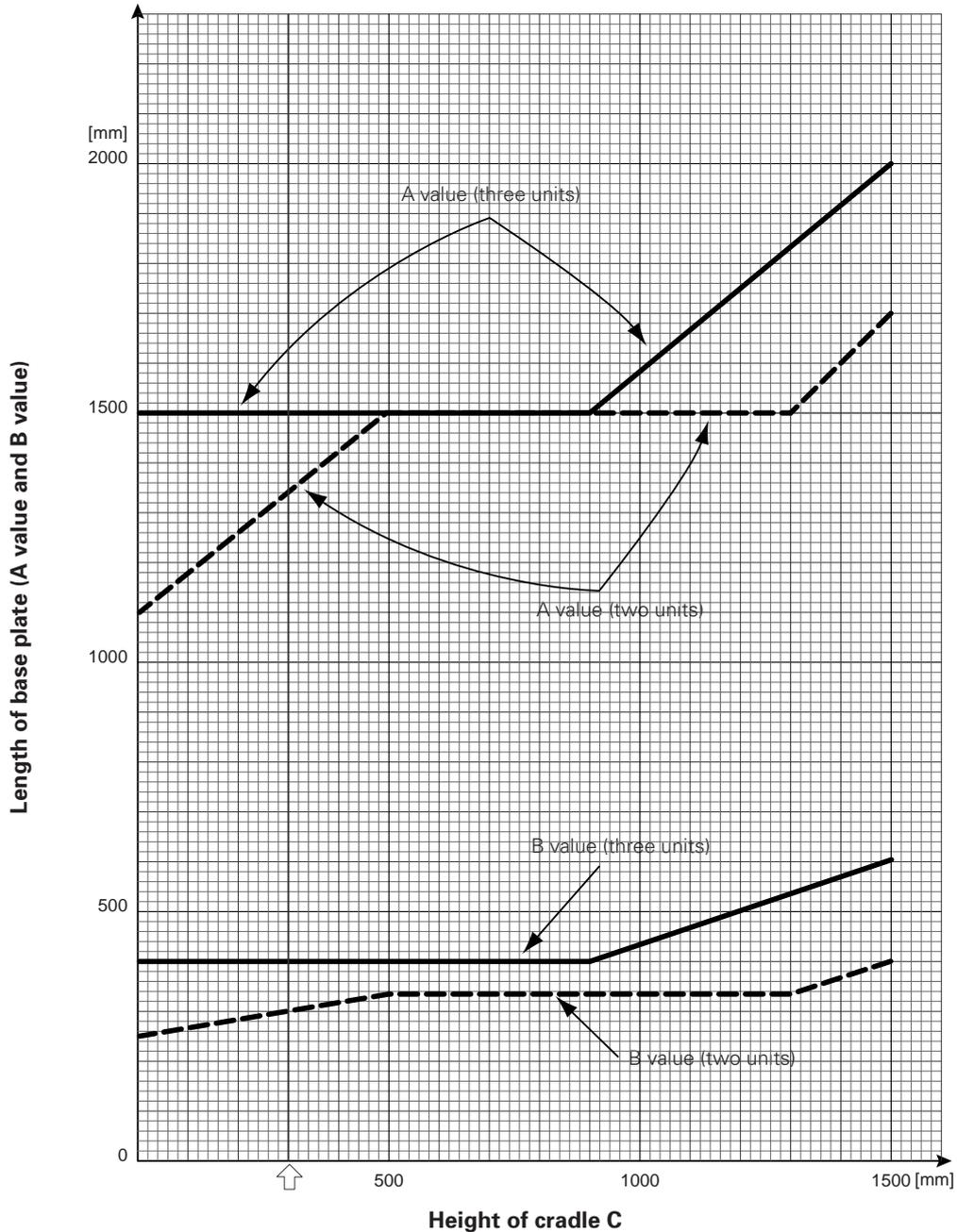
(Example) Where C=300

	A	B
Two units	1330	300
Three units	1500	400

Figure 4.11.5-4)

125

How to mount standard optional items (PDM-4001)

Dimension of base plates for one column of two units and one column of three units when not fixed to the floor)

(In case of two columns or more, this is not necessary)

When fixing the base plates on the floor, using the multiple installation fixtures for one column of two units and two columns of three units, read the values indicating the side direction (size: 910) in Figure 4.11.5-3) as 919 + 2D and 919 + 2E, respectively (See Figure 4.11.5-5).

Reference)

Use the D and E values in Figure 4.11.5-6)

However, the upper limit of the cradle height should be 1500 mm.
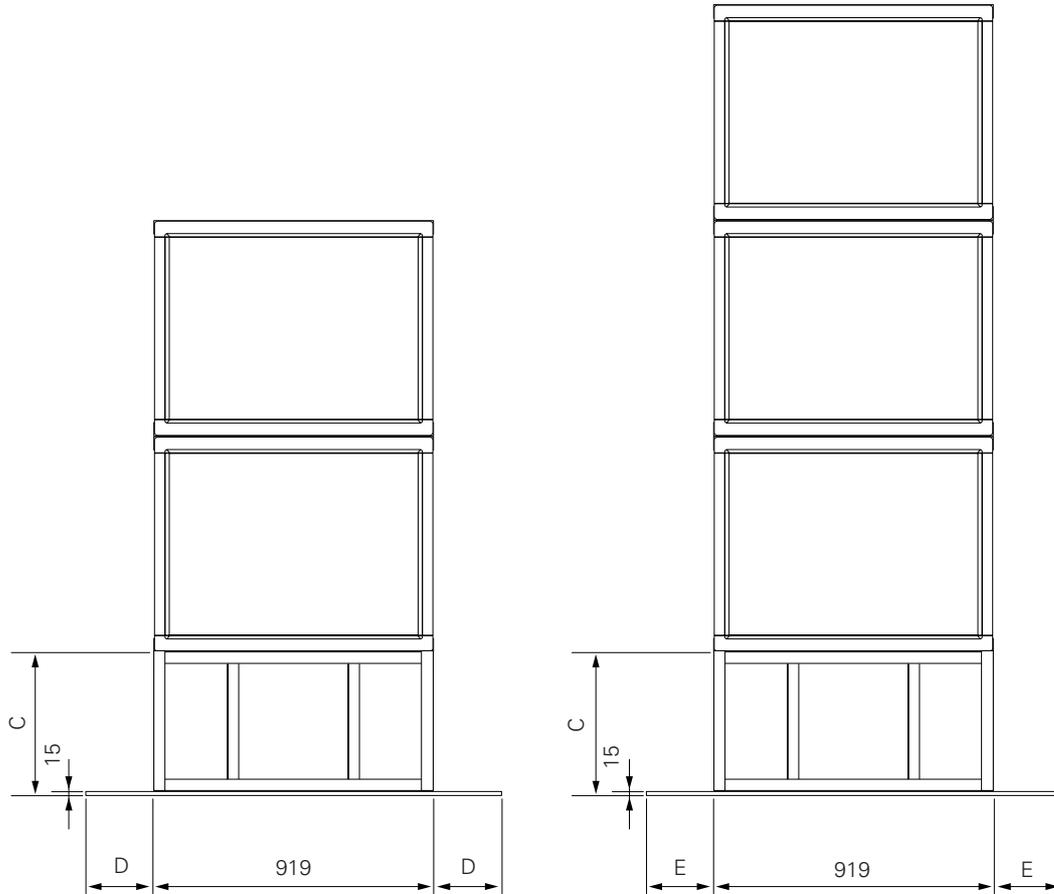
For one column of two units   For one column of two units

Figure 4.11.5-5)

Height of cradle and dimension of base plate when not fixed to the floor
(300 ≤ cradle height ≤ 1500)

Height of cradle
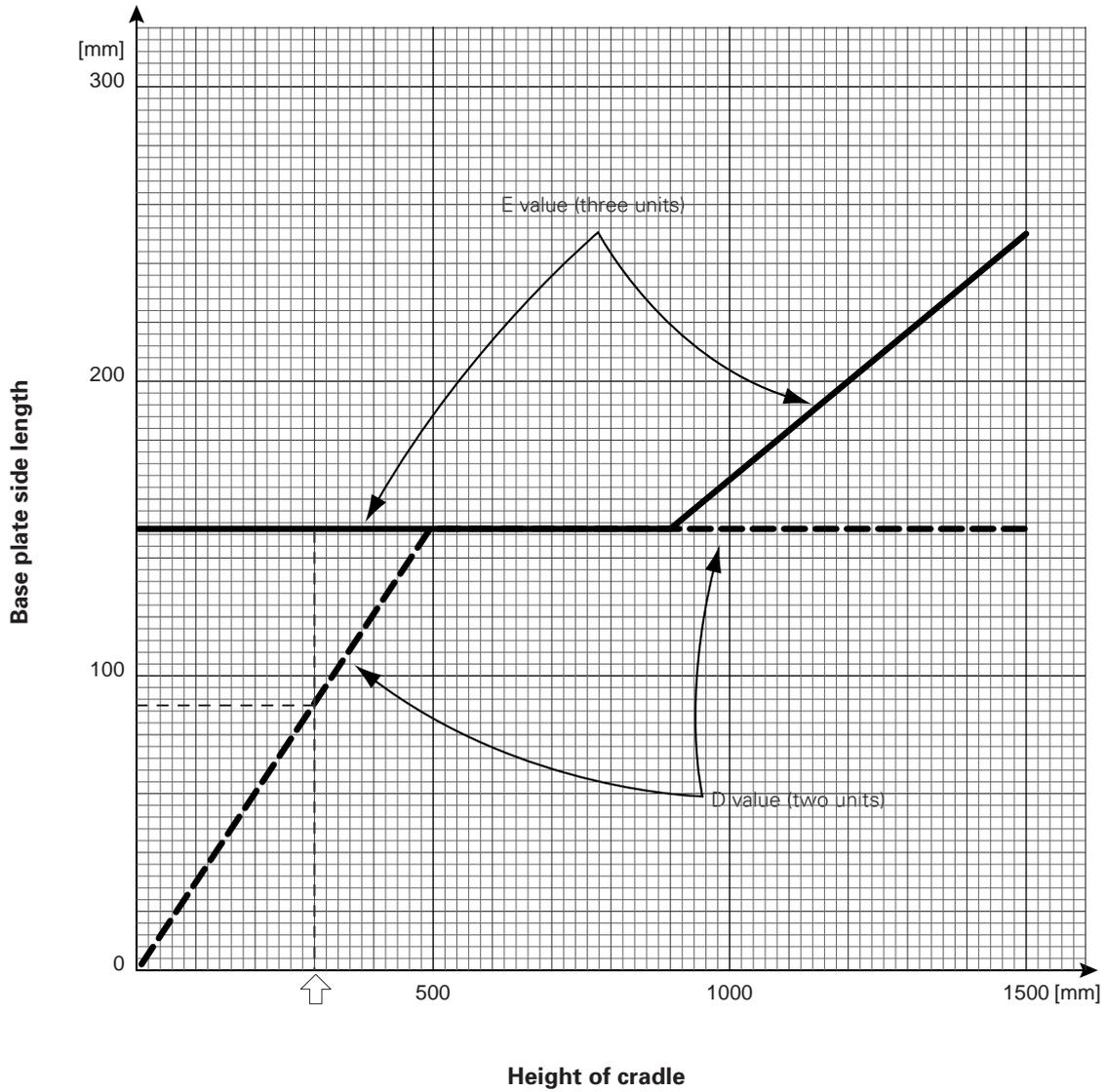
(Example) Where C=300

	A	B	dimension (mm)
Two units	150		919+180=1099
Three units		150	919+300=1219

Figure 4.11.5-6)

How to mount standard optional items (PDM-4001)
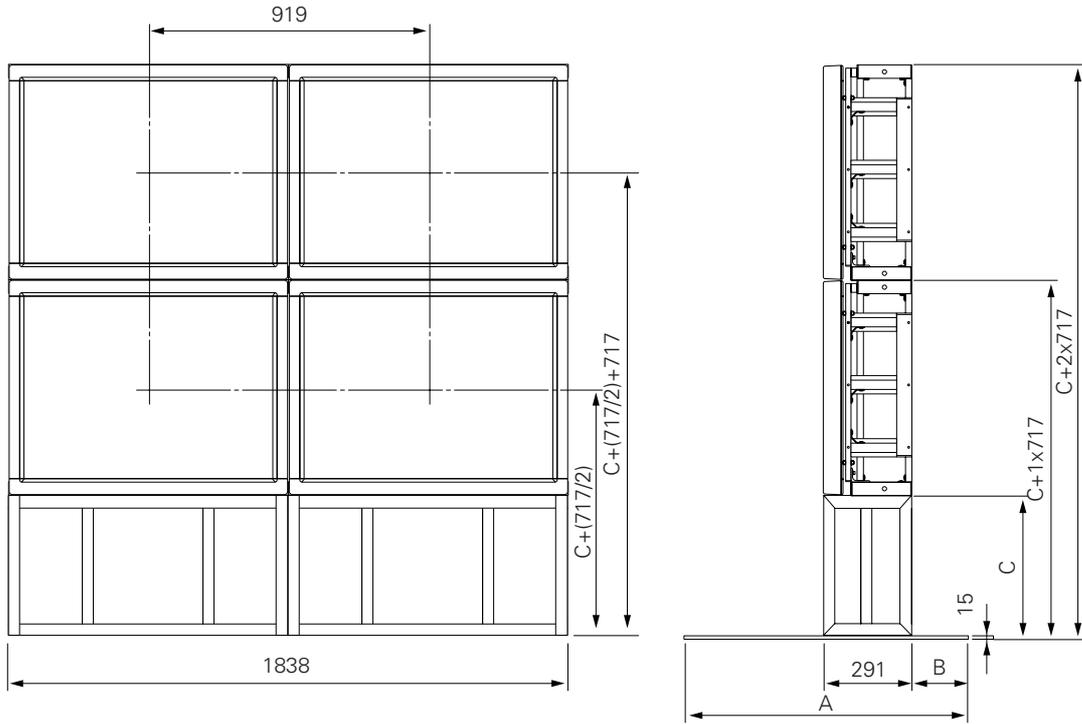
Reference drawing of 2 x 2 = 4-surface multiple installation

Figure 4.11.5-7)
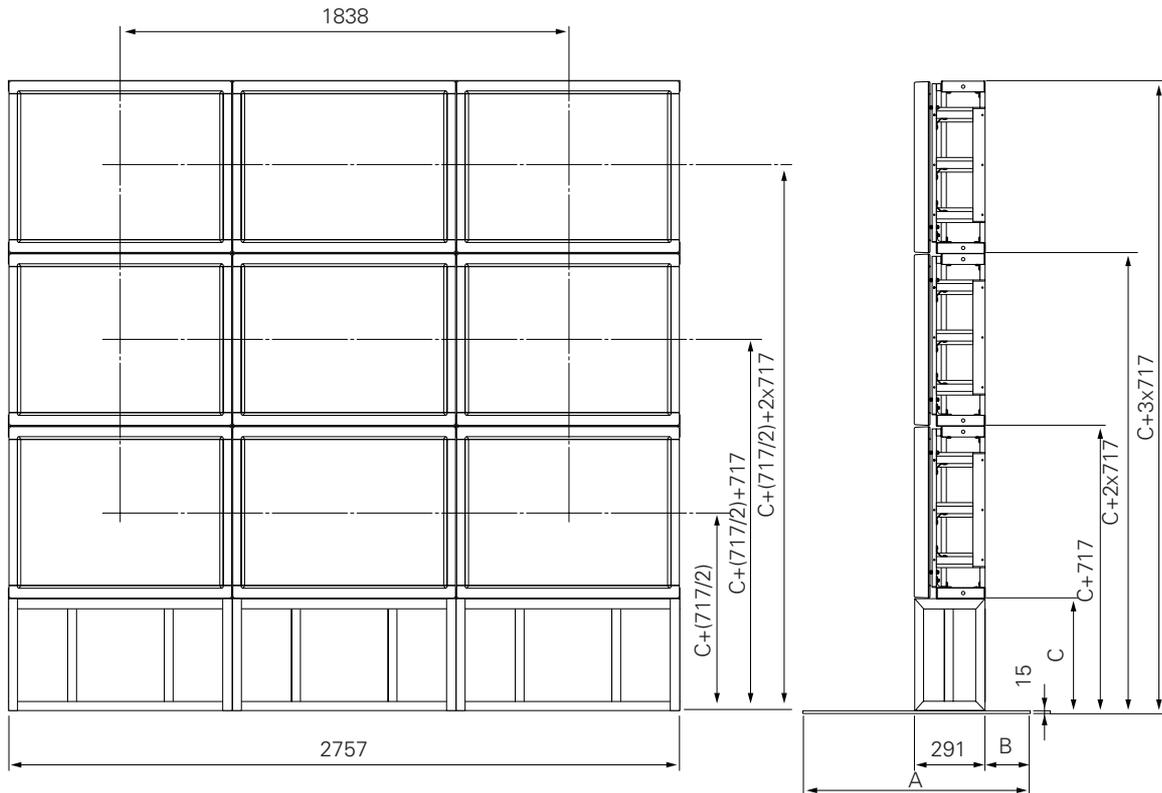
Reference drawing of 3 X 3 = 9-surface multiple installation

Figure 4.11.5-8)

Reference drawing of 4 x 4 = 16-surface multiple installation (Securing by using anchors, etc. is needed)
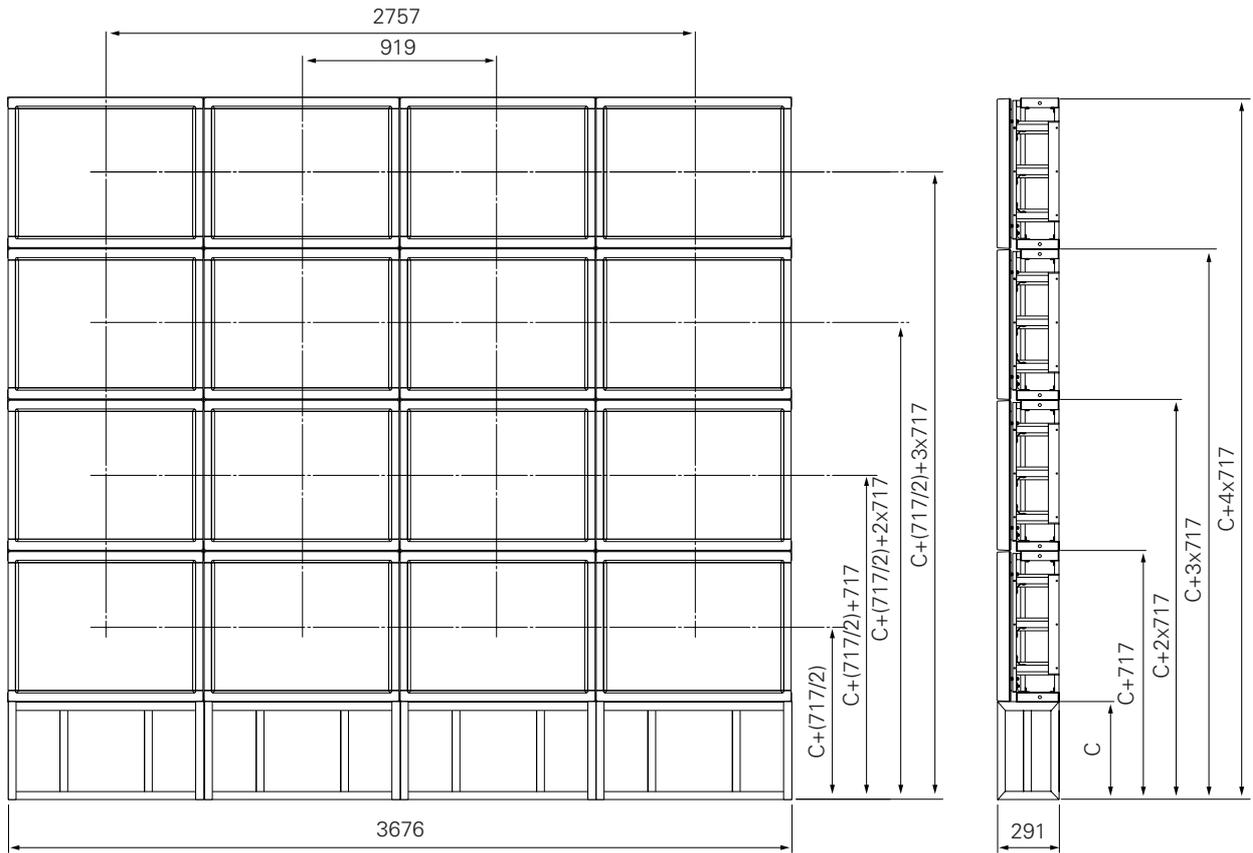
Figure 4.11.5-9)

How to mount standard optional items (PDM-4001)

2) Connections between a plasma display main body and multiple installation metal fixtures

Do not stack vertically in excess of four units. The multiple installation metal fixtures may deform or break, if you do so.
* For safety reasons, make sure that two workers work together.
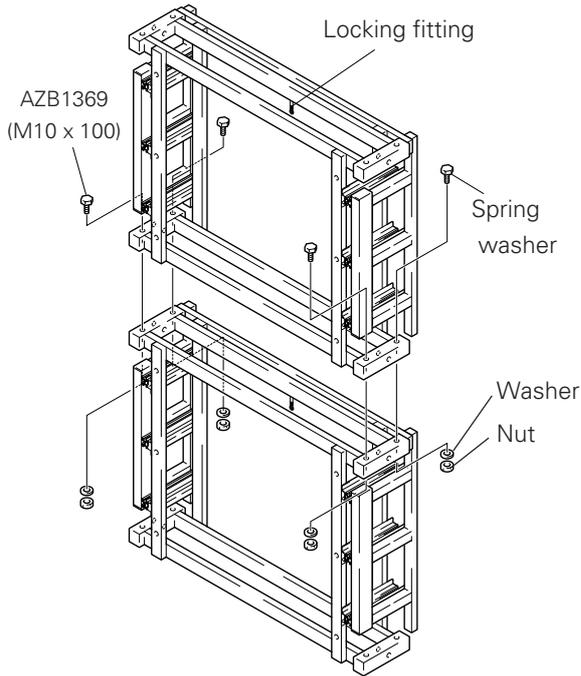
1) Connecting upper and lower fixtures

① Place an upper multiple installation metal fixture with the locking fitting put on the upper side of a lower one, insert AZB 1369 (M 10 X 100) into the connecting holes, and roughly adjust the positioning.

② Next, temporarily attach washers and nuts finger tight. After readjusting the positioning of the upper and lower fixtures, tighten the bolts finally.
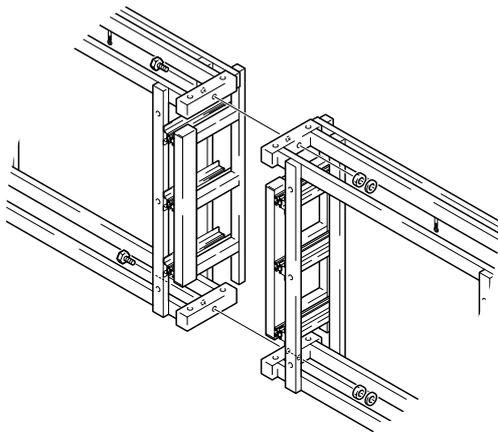
2) Connecting left and right fixtures

Place washers and nuts as well as the attached AZB 1369, using holes each on a upper part and a lower part on the left and right side of the multiple installation metal fixtures, temporarily tighten as much as possible by finger tightening. After readjusting the positioning of the left and right frames, tighten them finally.

3) Securing the multiple installation metal fixtures

For installation, separately prepare cradles and base plates for multiple frames. Use eight or more M10 bolts to secure the base plate and the cradles, and the cradles and the multiple frames. As there may be a danger of a drop or fall, etc., depending on the number of multiple units to be installed and the installation site, it is recommended that a specialized contractor be employed to take necessary measures to prevent the drop or fall for safety reasons.

3) Preparation for mounting a plasma display

When shipped, a multiple installation fixture is secured with two nuts and two hexagon socket bolts so that the slide frame will not slide during transportation.
Before mounting a plasma display, remove these two nuts and two hexagon socket bolts, and make preparations so that the slide frame will slide when the locking fittings are released. Keep the removed nuts and bolts safely as they may be used later.

Remove the nuts.

919 (Outer size of metal fixture)

717 (Outer size of metal fixture)

Remove the bolts (both left and right bolts)
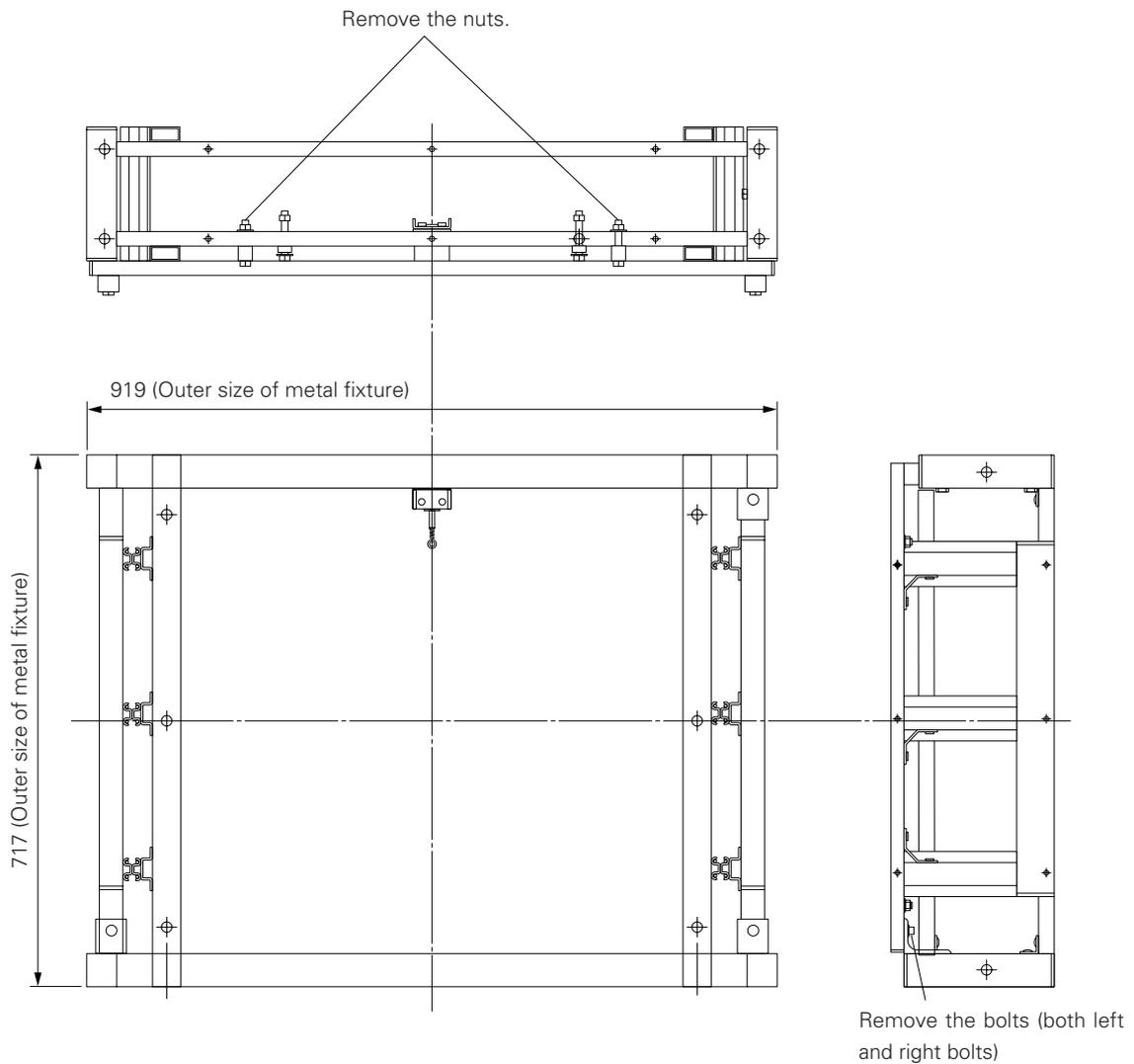
How to mount standard optional items (PDM-4001)

4) Mounting a plasma display

Bolts for secur-
ing the monitor
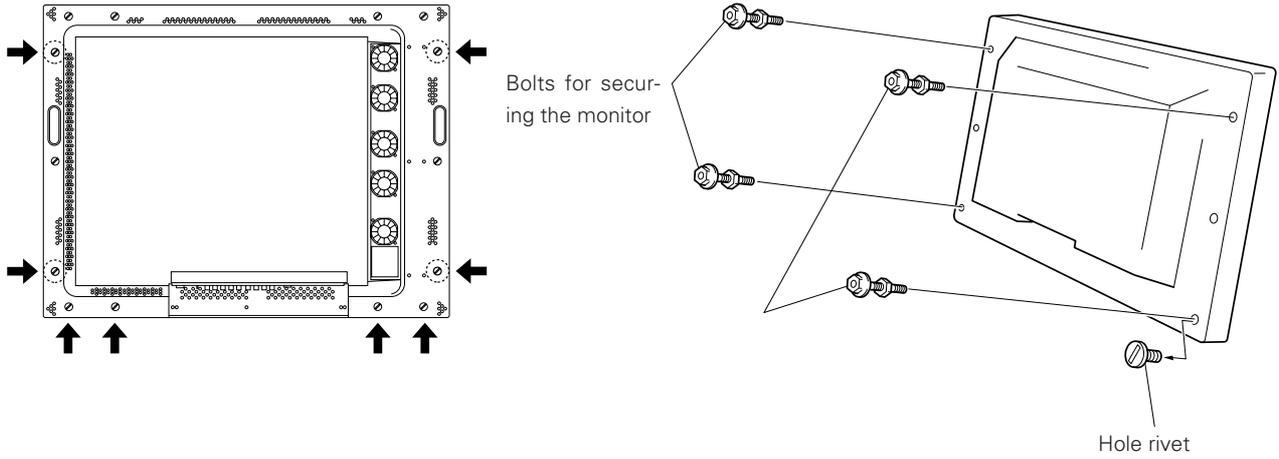
Hole rivet

1. Remove hole rivets (at four points as shown by an arrow) from the backside of the display using a coin, etc.
2. Insert the attached monitor securing bolts into multiple installation fixtures at the points as shown in the above drawing of a plasma display.
3. Release the locking fittings, and pull out the slide frame (See the next page on how to release them).
4. Insert the monitor securing bolts into potbellied holes located on the front side of the plasma display.

When placing the nuts, ensure that the end of a nut and a thread are aligned on the same surface.

⚠️ **Caution** **When returning the pulled-out frame, be careful not to pinch your fingers.**
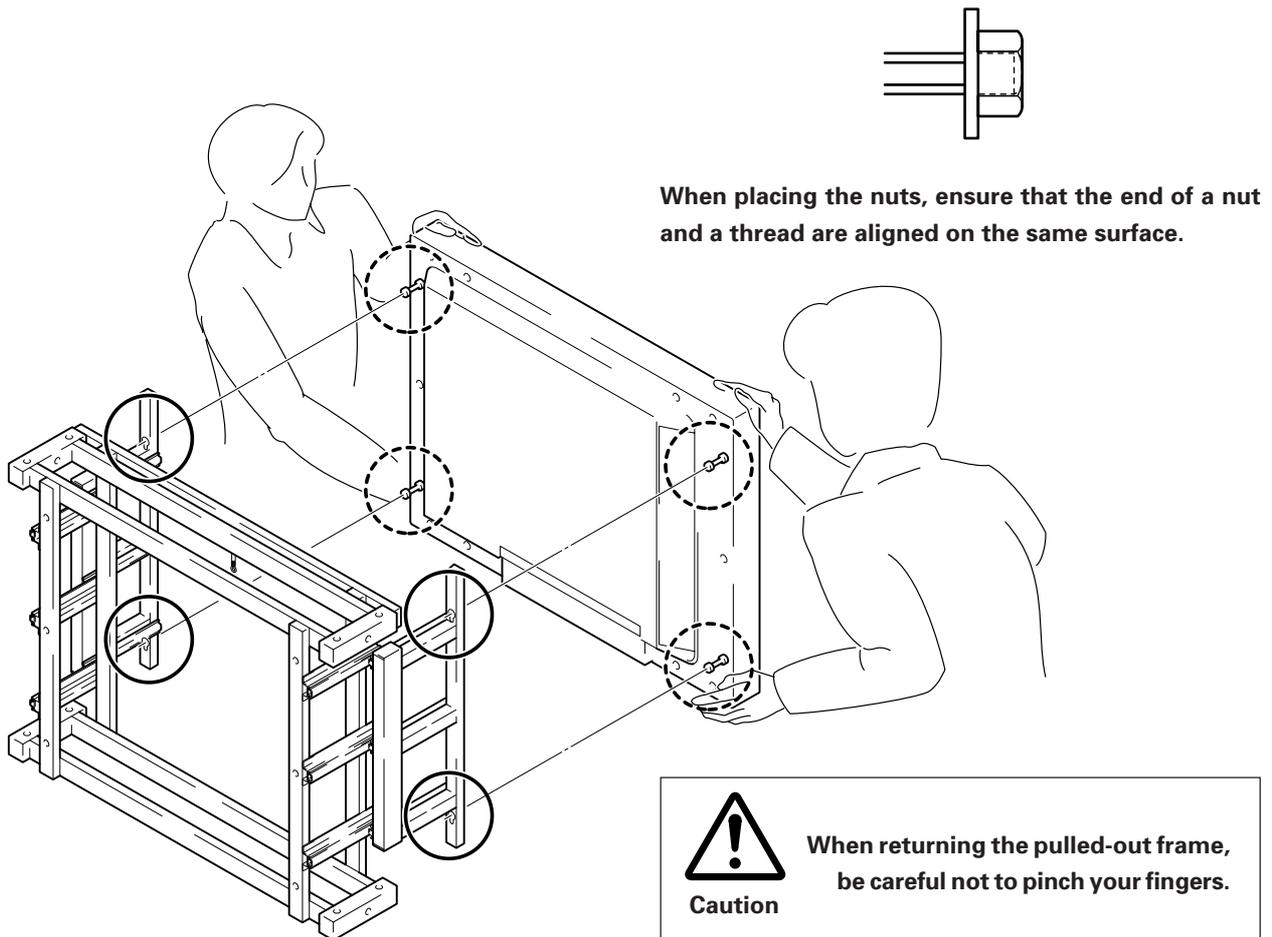
5. Tighten the nuts to secure the monitor.
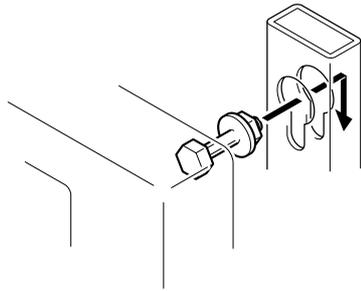
Insert a monitor securing bolt into a potbellied hole on the slide frame, and lower the bolt.

Plasma display

Tighten the nut.
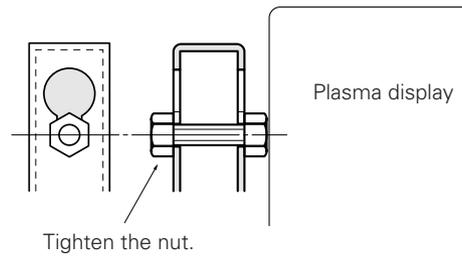
6. Mounting a chain to release the locking fitting.

The multiple installation fixture is so designed that the plasma display can be drawn forward for easy maintenance by releasing the locking fittings. Attaching a chain to the locking fitting allows to easily release the locking mechanism from the lowermost area.

For multiple installation, tags in three different colors (red, blue and yellow) are provided so that they can easily differentiate each column or each unit from the others. It is, therefore, recommended that those tags are attached to the chains.

7. Sliding prevention mechanism

A sliding prevention mechanism is provided to prevent any accident so that the plasma display will not inattentively slide out when the multiple installation fixtures are mounted forward tilted or downward tilted.

• If you use those two nuts and two bolts that were removed when making preparations for installation as shown below, it is possible to prevent sliding.

Place the nuts.

919 (Outer size of metal fixture)

717 (Outer size of metal fixture)

Hook

Chain

Remove the bolts (both left and right bolts)
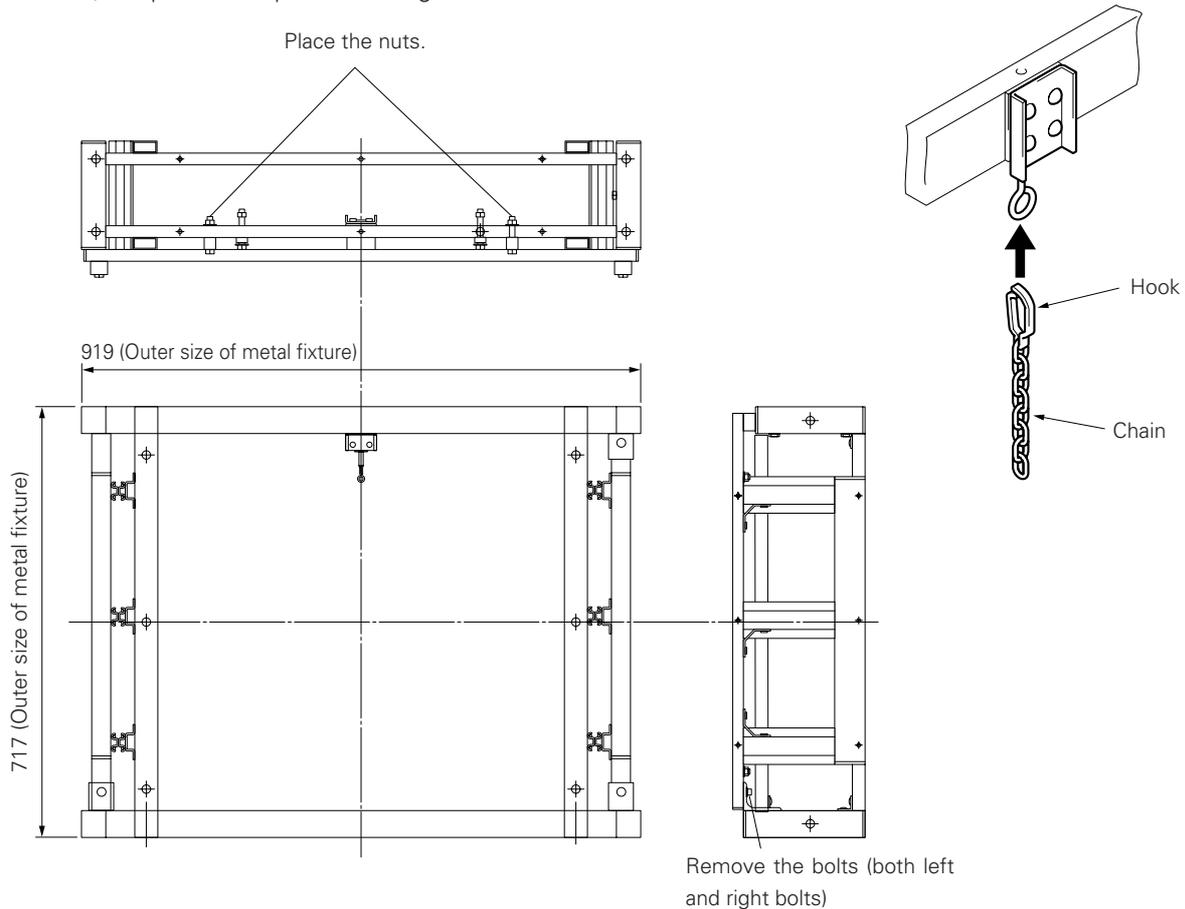
How to mount standard optional items (PDM-4001)

5) Securing the multiple installation fixtures, cradles and base plate

1. When securing cradles and multiple installation fixtures, mount them by inserting M10 bolts into ø12 x 8 holes and using M10 nuts and washers, which are located on the bottom panel of a fixture as shown below.

120

30

400

870

8ø 12 through hole
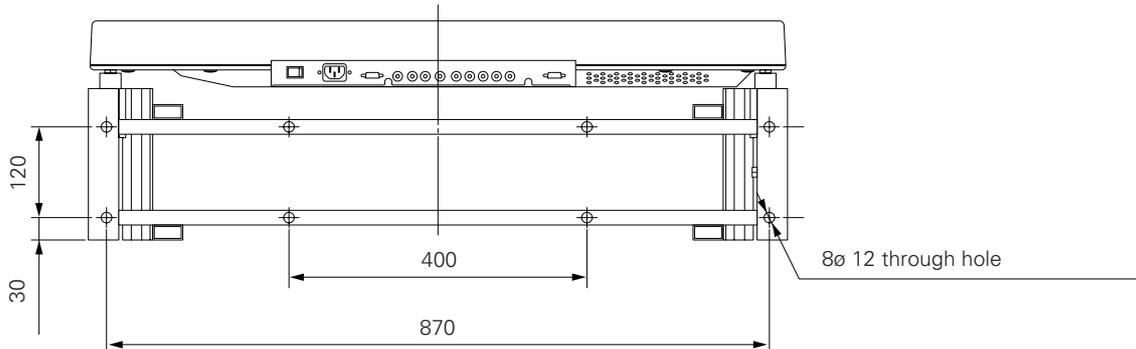
2. Use M10 x 8 bolts and M10 X 8 washers to secure cradles and base plate, using ø 10 x 8 holes on the bottom side of the cradle and M10 X 8 taps on the base plate.

* Make sure to place the base plate on a flat and horizontal floor.
* When the base plate is not secured to the floor, the multiple installation fixtures can be stacked up to two units in addition to the two-unit cradles, and up to 3 units in addition to 3-unit cradles.
* When securing to the floor, see the Procedure 3 in Page 113.

Two-unit base plate for two units

Three-unit base plate for three units
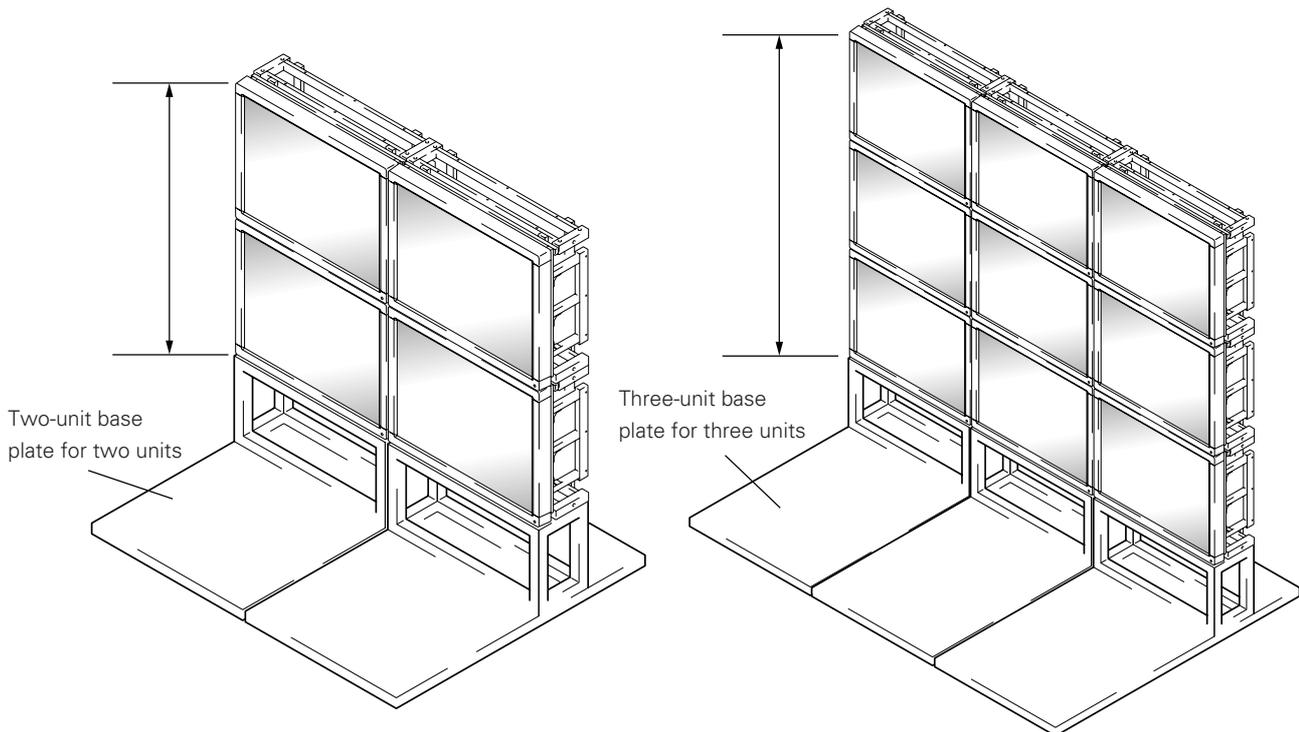
3. It is possible to stack up to four units using the multiple installation fixtures. For four-unit stacking, it is necessary to take measures against falling by either securing the cradle to the floor with anchors, securing the upper portion by suspending from the ceiling or bolting to the ceiling or securing the back side to the wall with bolts, etc.

Upper portion

To prevent falling, use these holes to secure the upper portion by suspending from the ceiling or the wall.

Cradle

floor

Back side
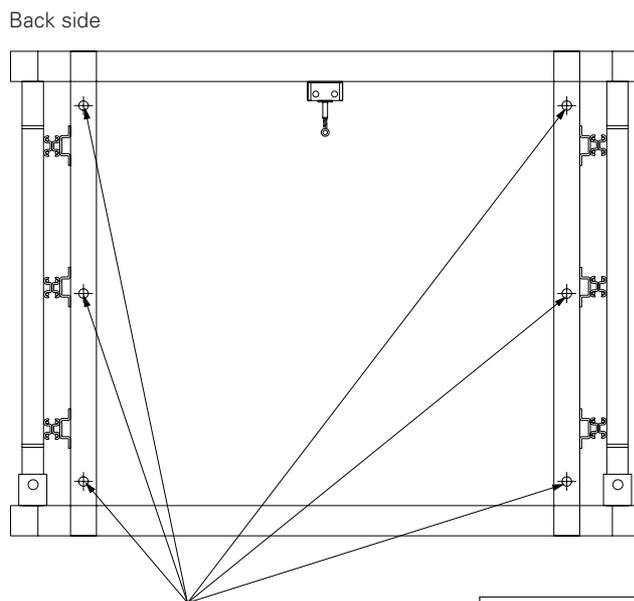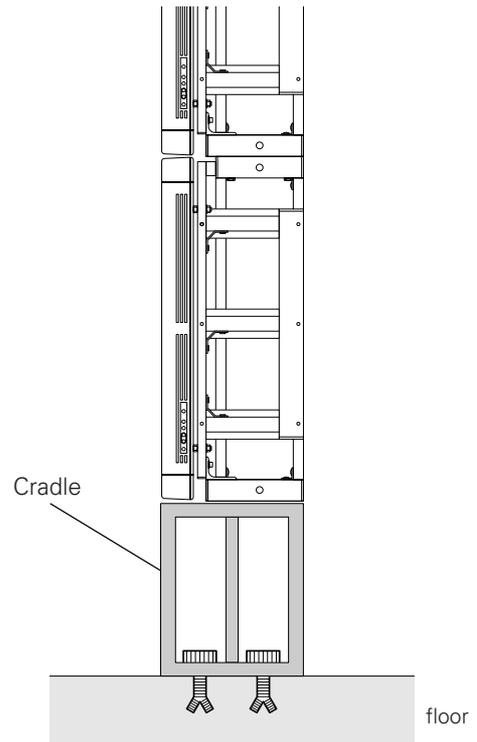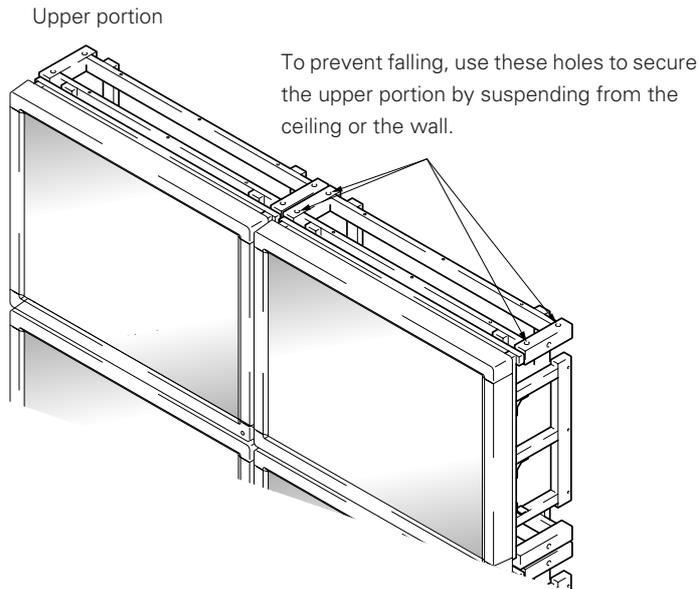
To prevent falling, use these holes to secure to the wall, etc.

Secure the cradle using anchors. Moreover, for the actual examples of installation works in which suspension bolts and anchors were used, see the attached manual (ZMZ014) for the installation and implementation of the exclusive fixture (TVK series) for the system monitor.

⚠ **Caution**

- **Make sure to confirm the strength after installing anchors. They may come off due to defective installation or concrete work.**
- **For detailed information on the size and strength of anchors, see the product catalogs of anchors, etc.**
- **We are not responsible for any accidents or damages caused due to insufficient strength of anchors or defective anchor installation work.**

How to mount standard optional items (PDM-4001)

6) Installation conditions for two-unit multiple fixture (PDM-4001)

When the rear side is attached to the wall.

Partition

919

291

A+2x717

A

10

100

When connecting laterally, make sure to provide a partition between the left and right units to be connected.
When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

Installation conditions

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~40°C	0~40°C	0~35°C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Attach a double-sided tape etc within this range.   **Attach a double-sided tape etc within this range.**

40   C.L   40

2- Δ14

$230 \, ^{0}_{-2}$

90 ± 1

677 ± 1

$717 \, ^{0}_{-2}$

Precaution for mounting:
- Ensure to align the holes on the lateral faces of the metal fixtures with the above holes.
- The above shows the dimension for one shelf usage, and in case of using two shelves, use two pieces each.

Material : Sheet made of resin etc (t=0.3 to 1.0)

7) Other installation conditions

(1) Wall hanging installation

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

When connecting laterally, make sure to provide a partition between the left and right units to be connected.

When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

(2) Tilted installation (5 to 25 degrees)

Put additional reinforcing crosspieces

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

When connecting laterally, make sure to provide a partition between the left and right units to be connected.

When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

• In case of tilted installation, never fail to provide necessary reinforcement.

How to mount standard optional items (PDM-4001)

8) Installation conditions for 3-unit multiple fixture (PDM-4001)

When the rear side is attached to the wall.

Partition

291

291

919

A+3x717

100

10

A

When connecting laterally, make sure to provide a partition between the left and right units to be connected.

When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

Installation conditions

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Attach a double-sided tape etc within this range.

Attach a double-sided tape etc within this range.

40

C.L

40

2-∆14

$230 \, ^{0}_{-2}$

90 ± 1

677 ± 1

$717 \, ^{0}_{-2}$

Precaution for mounting:
- Ensure to align the holes on the lateral faces of the metal fixtures with the above holes.
- The above shows the dimension for one shelf usage, and in case of using two shelves, use two pieces each.

Material : Sheet made of resin etc (t=0.3 to 1.0)

9) Other installation conditions

(1) Wall hanging installation

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

When connecting laterally, make sure to provide a partition between the left and right units to be connected.

When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

300 mm or more — Open

(2) Tilted installation (5 to 25 degrees)

Put additional reinforcing crosspieces

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

When connecting laterally, make sure to provide a partition between the left and right units to be connected.

When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

• In case of tilted installation, never fail to provide necessary reinforcement.

How to mount standard optional items (PDM-4001)

10) Installation conditions for 4-unit multiple fixture (PDM-4001)

When the rear side is secured tightly to the wall:

Partition

291

$A+4\times717$

100

10

A

919
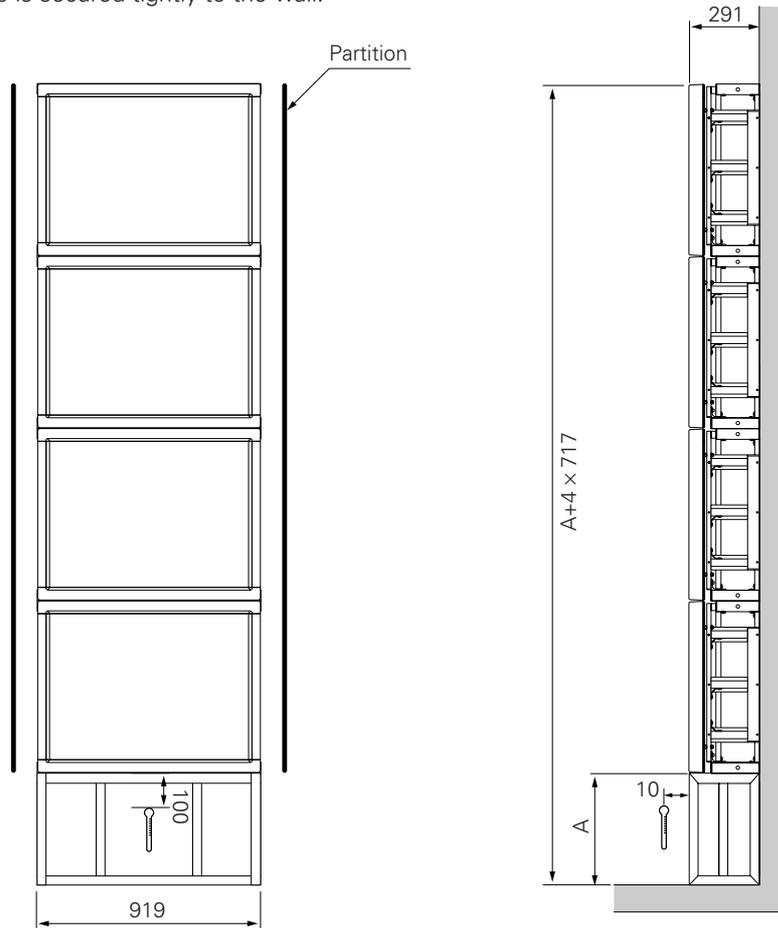
When connecting laterally, make sure to provide partitions on both left and right sides.
When installing in a series side by side, there is no need for a left or right partition.

Installation conditions

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

Attach a double-sided tape etc within this range. **Attach a double-sided tape etc within this range.**

40   C.L   40

$2\cdot\Delta14$

$230\ ^{0}_{-2}$

$90\ \pm1$

$677\ \pm1$

$717\ ^{0}_{-2}$

Precaution for mounting:
- Ensure to align the holes on the lateral faces of the metal fixtures with the above holes.
- The above shows the dimension for one shelf usage, and in case of using two shelves, use two pieces each.

Material : Sheet made of resin etc (t=0.3 to 1.0)

11) Other installation conditions

(1) Wall hanging installation

300 mm or more | Open

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

When connecting laterally, make sure to provide a partition between the left and right units to be connected.

When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

(2) Tilted installation (5 to 25 degrees)

Put additional reinforcing crosspieces.

VIDEO	PC-9800 (56.4Hz) Machintosh (66.7Hz) VGA (60Hz)	PC-9800 (70.1Hz) VGA (72.8Hz, 75Hz)
0~35°C	0~35°C	0~30°C

When connecting laterally, make sure to provide a partition between the left and right units to be connected.

When installing in a series side by side, there is no need for a partition between the left and right units to be connected.

* When mounting the down converter (PDA-4003), the same working temperature conditions apply.

How to mount standard optional items (PDA-4002)

4.13 Protective filter: PDA-4002

4.13.1 Specifications and features (Protective filter: PDA-4002)

1) Specifications

Transmittance .... Transmittance of light in the visible spectrum - 92%
Outer dimensions .... 916 (W) × 96.3 (D) × 718.2 (H) mm
Weight .... 3.6 kg (Filter only)
34.4 kg <35.2 kg> (metal fixture with plasma display PDP-V402 < PDP-V402E>)
Material .... Acrylic
Packing dimensions .... 1115 (W) × 815 (D) × 76 (H) mm
Packing weight .... 7.6 kg
Accessories
Metal fixture ....4 pcs
Hexagonal socket button head bolt (M8 x18) ....8 pcs
Washer ....8 pcs
Decorative screw ....4 pcs
Filter ....1 pc

2) Features
Mounting this product can improve the strength of the front of the panel of the plasma display.

4.13.2 Assembling and installing the metal fixture and mounting the plasma display

1) Outer-dimension diagram (Unit: mm)

Filter weight ....3.6 kg
Filter weight + display weight ....34.4 kg <35.2 kg> (when PDP-V402 <PDP-V402E> is mounted)
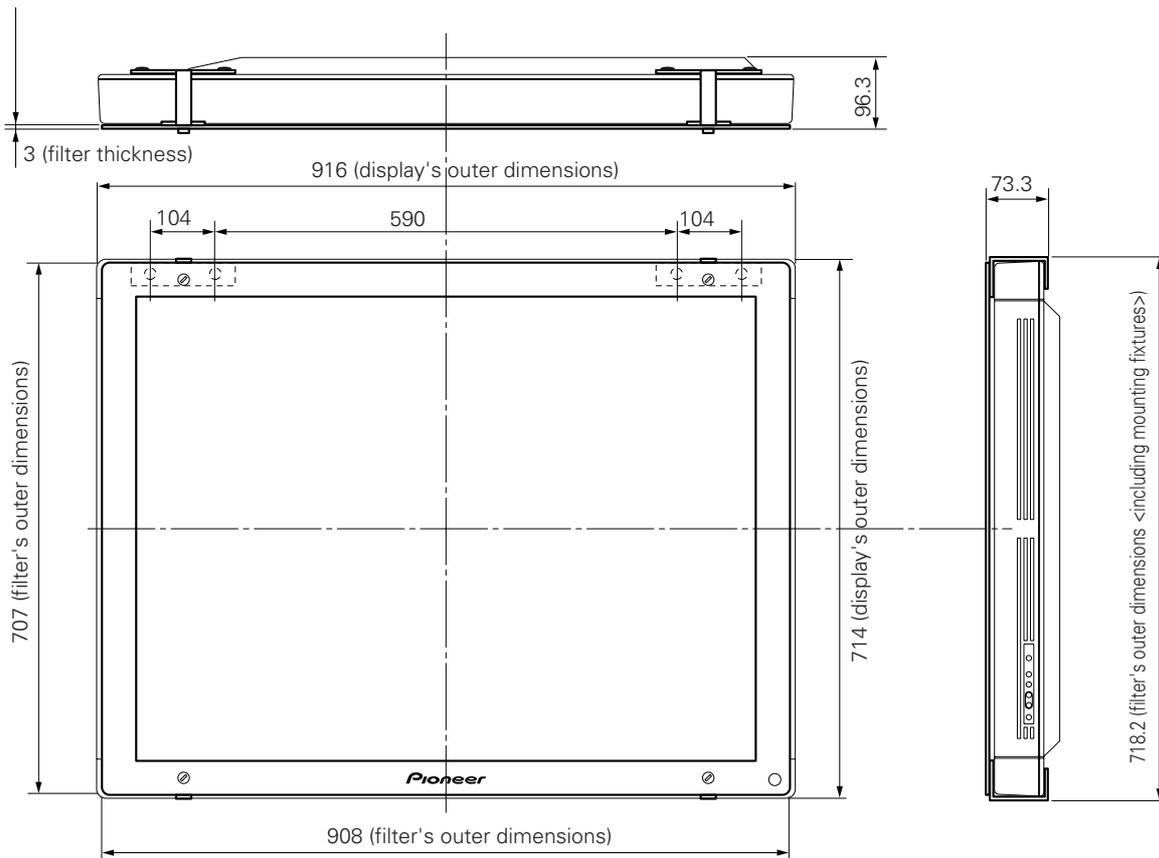
2) Mounting procedure

1. Remove the hole rivets (eight points) indicated by the arrows using a coin or the like.
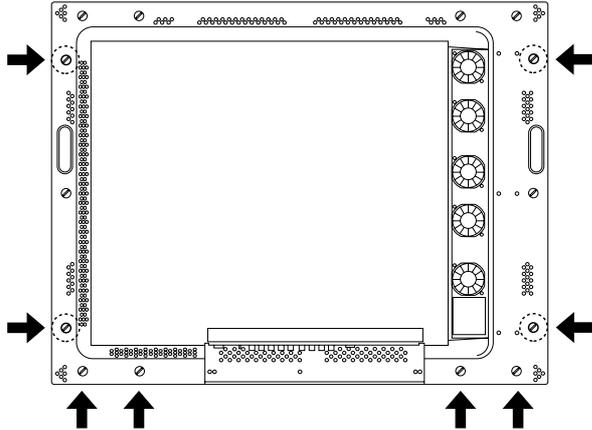
3. The metal fixture installed (seen from the back of plasma display)
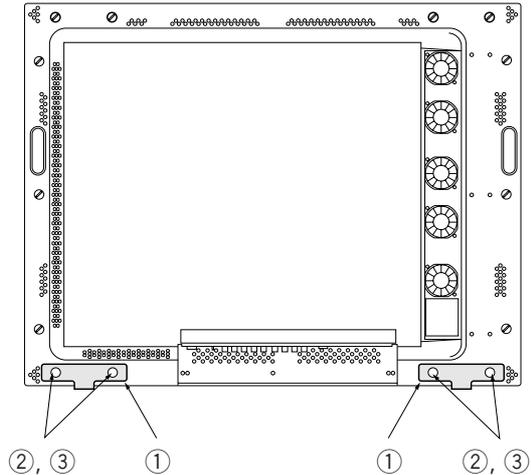
2. Install two metal fixtures to the bottom of the plasma display using the hexagonal socket button bolt and washer, according to the outer shape of the fixture.
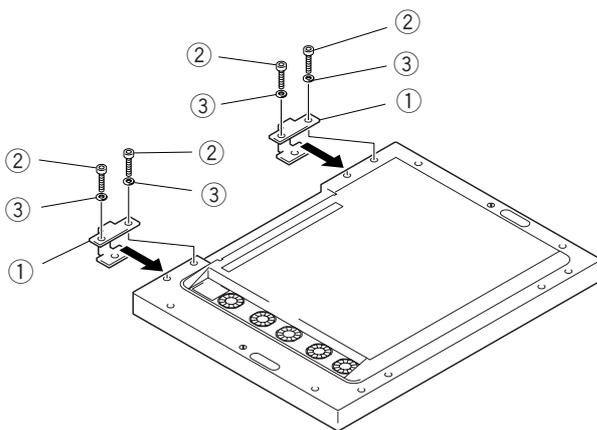
4. Assembling the filter
   Place the filter with the light-accepting window at the bottom, as shown. Peel off the protective film from the rear of the filter, then attach the metal fixture ① at the two positions on top of the filter in the direction indicated in the drawing, using the decorative screws.

Light-accepting window
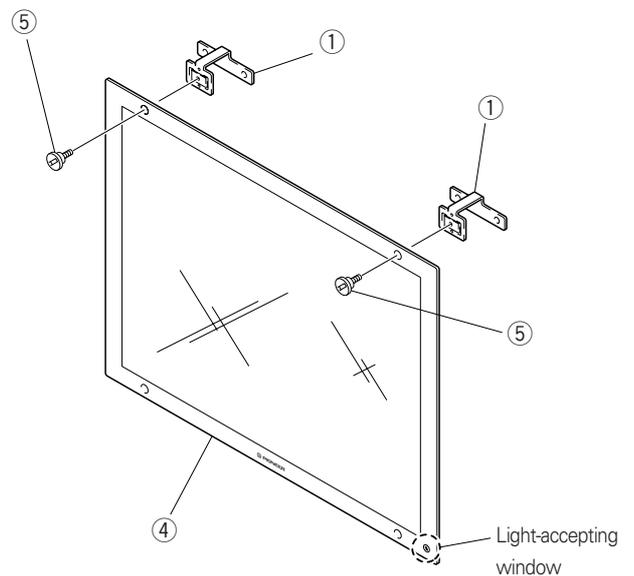
How to mount standard optional items (PDA-4002)

5. Assembling the filter

Install the filter assembled in Step 4, hanging it on the metal fixture from the top of the plasma display.
Set the bottom of the filter outside the metal fixture and attach with the decorative screws.

⚠

Always install from above the filter.
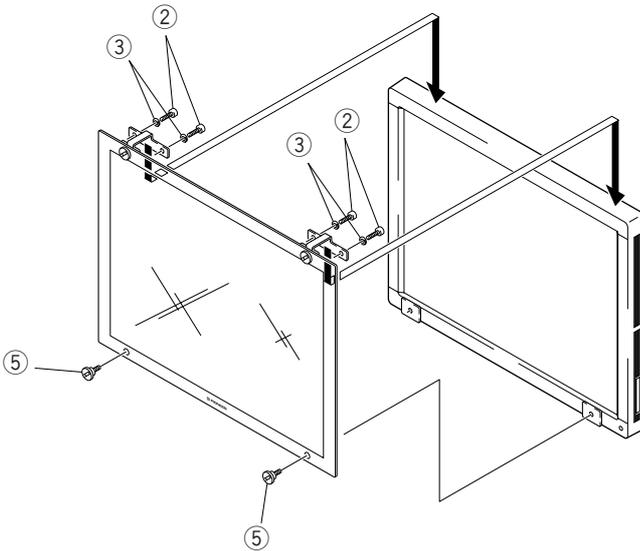
6. The metal fixture installed (as seen from the back of the plasma display)
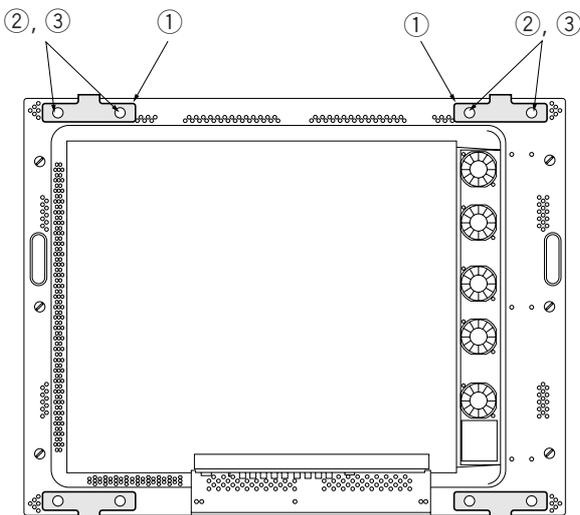
7. With the filter installed (front)

When all assembly work is complete, peel off the protective film on the front of the filter.
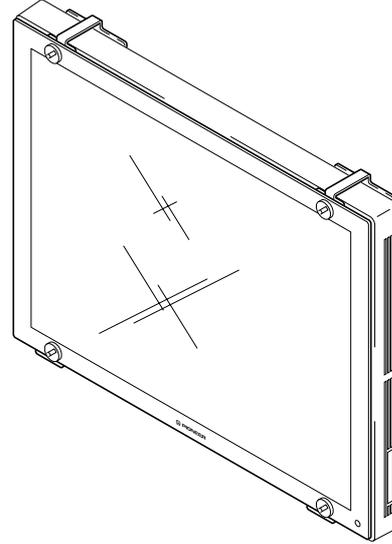
8. Maintenance

The filter surface is delicate, due to its special anti-glare coating. To clean the filter surface, brush dust from the surface and wipe with a soft cloth. Do not use hard or abrasive materials, such as tissue paper.

Use of solvents such as benzene or thinner will damage and discolor the filter coating.

If the inside of the filter becomes dirty, unscrew the decorative screws and remove the filter. In this case, unscrew the bottom screws first.

Handling the filter carefully, clean the inside surface in the same way as for the outer surface.
Install the filter by reversing the above procedures, beginning by first tightening the decorative screws on the top. Make sure the screws are adequately tightened.

4.13.3 Mounting the PDP bracket (PDK-4005) with PDA-4002 mounted

To attach the PDP bracket (PDK-4005) with the PDA-4002 mounted, tighten along with the filter-supporting metal fixture, as shown below.

Hexagonal socket head button bolt (M8 x M18) (supplied with the PDA-4002)

M8 wave washers (supplied with the PDK-4005)

Hexagonal socket head button bolt (M8 x M18) (supplied with the PDA-4002)

Hexagonal socket head button bolt (M8 x M18) (supplied with the PDA-4002)

Hexagonal socket head button bolt (M8 x M18) (supplied with the PDA-4002)
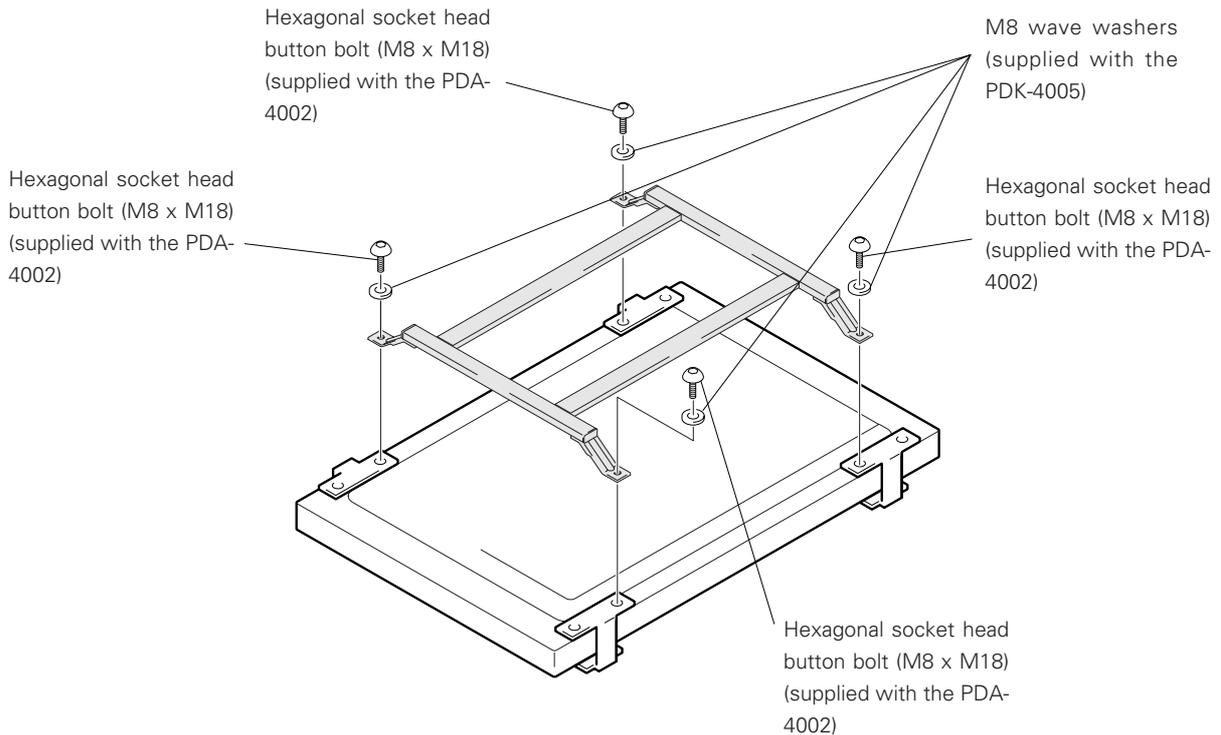
⚠ Caution In this case, use both the hexagonal socket-head button bolt (M8 x 18) and the washer supplied with the PDA-4002. If the PDK-4005 is tightened using the hexagonal socket-head button bolt (M8 x 14) supplied with the PDK-4005, the screw is too short to provide sufficient strength. To ensure safe operation, use the M8 x 18 bolt.

How to mount standard optional items (PDP-S03-LR)

4.14 Speaker system: PDP-S03-LR

4.14.1 Before operation

- The speaker's nominal impedance is 8 Ω. Connect to a stereo amplifier capable of driving loads ranging from 4 to 16 Ω.

- Observe the following precautions to protect the speaker from damage caused by high input.
  - Do not apply inputs higher than the recommended level.
  - Turn off power to the amplifier before inserting or removing the pin-plug.
  - Do not turn up audio volume beyond recommended levels, when increasing the high-frequency output with a graphic equalizer.
  - Particularly with relatively low-capacity amplifiers, do not drive close to their rated maximums. (Doing so will produce square waves that can destroy tweeters.)
- Handle the speaker grilles and cabinet carefully to prevent damage caused by shock.

- To protect the speaker from excessive input and abnormal signals, the system contains an automatic return-type protective device. When excessive input is applied to the speaker, the protective device activates to kill sound output. If this occurs, decrease the amplifier volume. The sound should return in 5 to 10 seconds.

4.14.2 Specifications

Cabinet
    Closed type, magnetic-resistance type

Speakers (2-way system)
    Low or medium toned (woofer) .... Elliptical cone type × 2
    Tweeter .... 2.5-cm dome type

Nominal impedance .... 8 Ω

Regenerative frequency band .... 50 Hz - 60.000 Hz

Output sonic levels .... 84 dB/W (1 m)

Permissible input
    Maximum input (EIAJ) .... 12 W
    Rated input (EIAJ) .... 4 W

Crossover frequency .... 4 kHz

Outer dimensions .... 74 (W) × 98 (D) × 714 (H) mm

Weight .... 2.7 kg (one unit)

Accessory (for 2 units)

2 speaker cords (5 m), 4 countersunk screws, 4 hexagonal socket head screws, 1 hexagonal wrench, 4 washers M8 (ϕ 25), metal fixture (for upper left) × 1, metal fixture (for upper right) × 1, metal fixture (for lower) × 2, mounting plate (for left) × 1, mounting plate (for right) × 1 1 copy of warranty and 1 copy of Operating Instructions (Japanese only)

Specifications and appearance are subject to change without notice, for purposes of improvement.

* The electromagnetic resistance design (EIAJ) is a speaker system conforming to the technical standards of the Electronic Industries Association of Japan.

Caution

When mounting a speaker system on both sides of the display, the operation panel cannot operate this display.

4.14.3 Assembling and installing the metal fixture and mounting the plasma display

1) Outer dimension diagram (Unit: mm)

Speaker weight .... 2.7 × 2 = 5.4 kg

Plasma display (PDP-V402 <PDP-402E>) + speaker weight .... 36.2 kg <37.0kg>
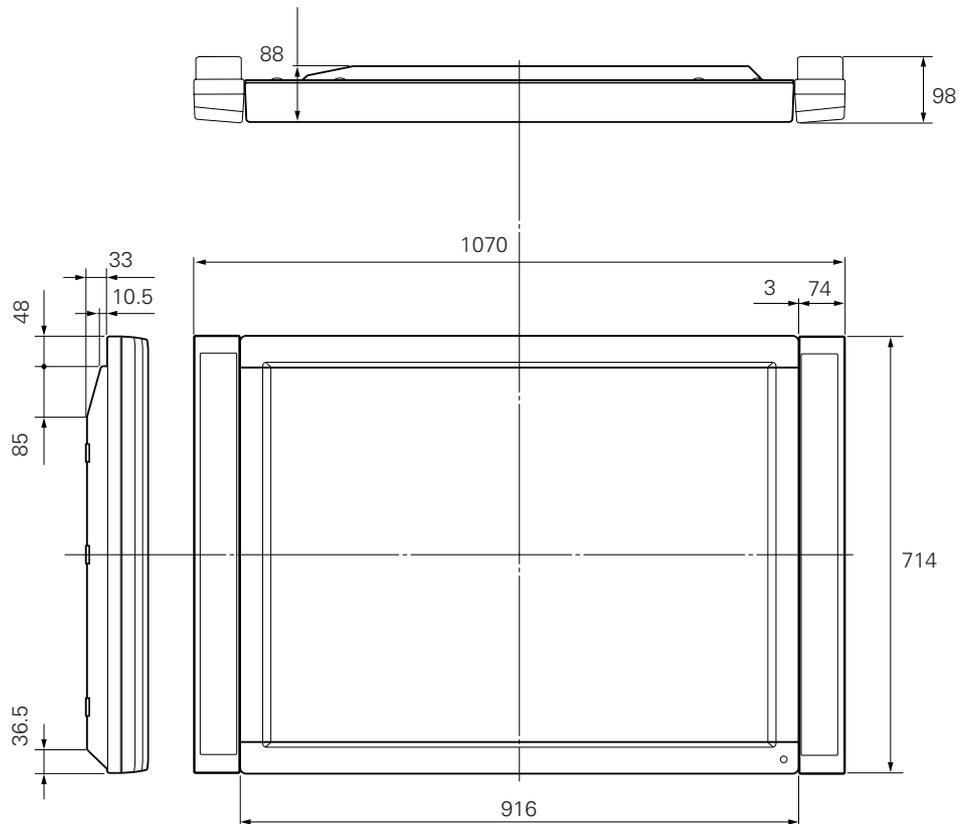
How to mount standard optional items (PDP-S03-LR)

2) Installing procedure

Install the speaker according to the procedure (1) through (3) below:**The illustrations below show the speaker (for right) to be mounted to the right of the display.**

> **Caution:**
> When the speaker is mounted to the display, the operation panel of the display cannot be used. A remote controller supplied to the display should be used.

(1) Affixing the mounting plate to the speaker

Set the mounting plate to 0.5 to 1cm below the top of the speaker.

Seal (2 places)

Mounting plate

1. Make sure of right and left speakers by confirming the indication of "Right" and "Left" on the rear side. Set the mounting plate to the corresponding speaker so as to get a proper combination of speaker and mounting plate.
2. Peel off two seals at the affixing plane on the mounting plate.
3. Make sure of the position to be affixed and affix the mounting plate to the side of the speaker.

(Note) Attach mounting plates to speakers only when speakers are to be mounted on to the display.

(2) Installing the metal fixture on the speaker

• Washers M8 (ϕ 25) are supplied for third-party metal fixtures.
• Mount commercial fixtures by the two-point mounting method to the mounting holes provided at the center or bottom of the back of the speaker. These mounting holes are at different levels. To make the hole levels even, use additional washers until they are flush.

Mounting metal fixture (for upper side)

Mounting plate

Countersunk screw

1. Since the upper metal fixtures are distinguished between right and left ones, make sure of speakers and right and left metal fixtures properly before setting up.
2. Install the metal fixtures at the position as shown in the figure to the left.

Metal fixture (for lower side)
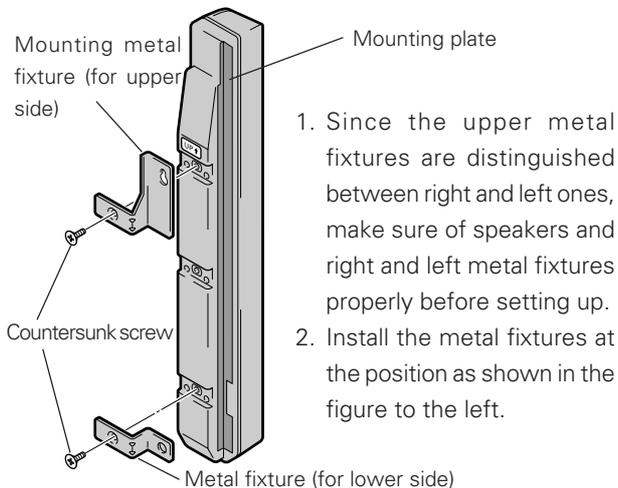
(3) Installing the speaker to the side of the plasma display

Plasma display

UP↑

Hexagon socket screws
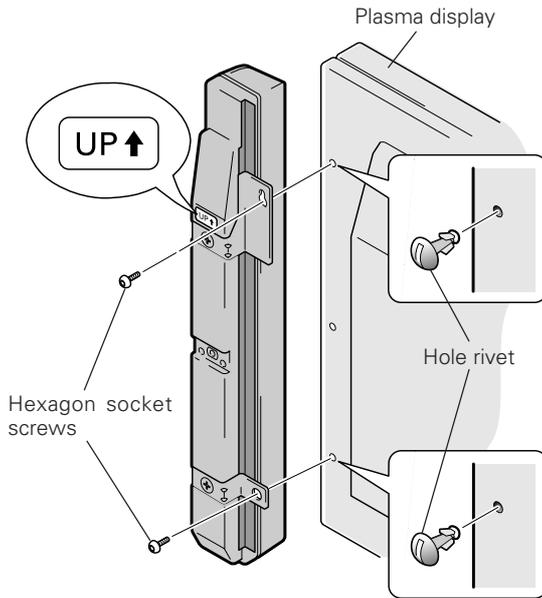
Hole rivet

1. Remove the hole rivets (two places on a single side) from the rear of the display (by turning the hole rivet with a coin and so forth).
2. Make sure of right and left position by looking at the indication of "Right" and "Left" on the rear side of the speakers. With the "UP↑" indication placed upward, install the upper metal fixture first and then the lower one on the display.
   (To make allowance for clearance correction, temporarily install the display.)
3. Adjust the position of the display so that the clearance between the speakers and the display is even, then fully tighten the screws.

⚠ **Caution**

• When you install the speakers, using screws other than those provided may cause the speakers to fall or malfunction. Use only the screws provided for installation.
• When the display is to be moved after installing the speakers, do not hold the speaker itself. Please move the display by holding its lower side.

(3) Connection with a stereo amplifier

1. Turn off the power switch of a stereo amplifier.
2. Connect an input terminal of the speaker system with a speaker output terminal of the stereo amplifier using the supplied speaker cords. Polarity of the input terminal is positive (+) for red terminal (right terminal in the figure below) and negative (-) for black (left terminal in the figure below).

① Remove the wire covering and keep the end of each wire together.

② Press the respective lever down, insert the applicable wire into the hole and then release the lever.

⊖ terminal ⊕ terminal

To ⊖ pole.   To ⊕ pole.
(Speaker output terminal of the stereo amplifier)
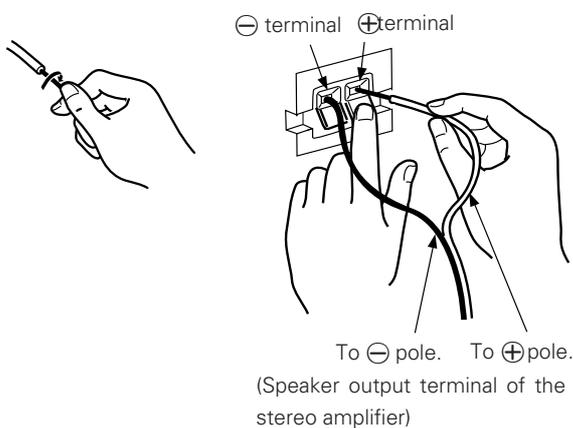
- Make sure that the end of the cord is securely connected with the terminals by lightly pulling the cord after connection. Incomplete connection may cause broken sound or noise.
- If the cord wiring sticks out and the positive and negative wires short, the stereo amplifier will be subjected to an excessive load, and operation may stop or a malfunction may occur.
- When wrong polarity (+, -) of either speaker system (right or left) is connected to the stereo amplifier, proper stereo effects may not be obtained due to insufficient bass or loss of sound orientation feeling.

(4) Installing procedure of commercially available metal fixture

Washers M8 (ϕ 25) are supplied to use together with commercially available metal fixtures.

- Fix commercially available metal fixture at either position of mounting holes for commercially available metal fixture at the center or bottom of the rear side of the speakers with two bolts. Since there is a difference in step between these two mounting holes, the washer is used to diminish that difference.

Washer M8 (ϕ 25)

Fix the fixture by two bolts at either position. Use the washer for lower mounting hole to compensate the difference in step between two holes.

(5) Cleaning the cabinet

- Lightly wipe off dust or dirt by a polishing cloth or a dry cloth.
- If the cabinet is very dirty, clean off the dirt using a soft cloth dipped in a neutral cleanser diluted 5 - 6 times, then wipe off any moisture using a dry cloth. Do not use a furniture wax or cleaner because it may dissolve or discolor the surface.
- Note that the surface may be dissolved or discolored when thinner, benzene, or spray type insecticide is stuck there.
- If using a chemically impregnated cloth, take care to observe the caution notices applying to use of the cloth.

How to mount standard optional items
(Precautions for installing the optional speaker)

4.14.4 Precautions for mounting various metal fixtures after the optional speakers are attached to the plasma display main body

When various metal fixtures are to be mounted after the optional speakers have been mounted to the plasma display, the following steps and precautions must be observed, depending on the specific type.

1) Tilted stand (PDK-4001)

Washer
(supplied with the PDK-4001)

Bolt
(supplied with the PDK-4001)

Washer
(supplied with the PDK-4001)

Bolt
(supplied with the PDK-4001)

Washer of ϕ 25-mm outer diameter
(supplied with the optional speaker)
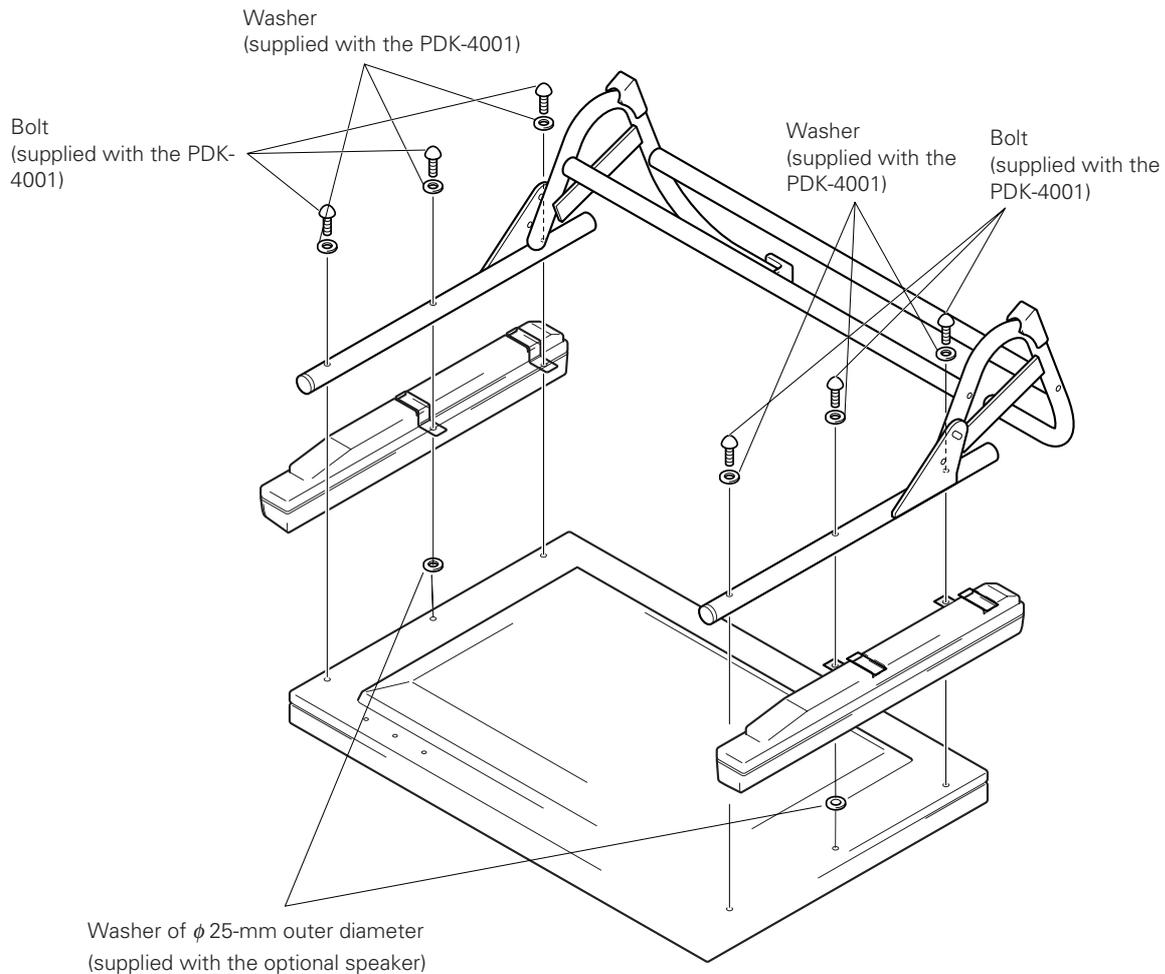
Fig. 1

When mounting the optional speaker, tighten the PDK-4001 and optional speaker with the mounting screws supplied with the PDK-4001. However, for the center section with no speaker metal fixture, align the height by inserting under the speakers the outer diameter ϕ 25 mm washers supplied with the speaker.

2) Ceiling-suspension metal fixture for plasma display (PDK-4002 / PDK-4003 / PDK-4004)

When a ceiling suspension metal fixture is to be mounted to the plasma display with the optional speaker, use the monitor mounting bolt to tighten the display and speaker, as shown in Fig.2. Then, as shown in Fig.3, use the ϕ 25-mm washers supplied with the optional speaker and the monitor mounting bolts not used to fix the speaker at the center section to tighten the assembly, . Follow the usual steps for mounting the normal ceiling suspension metal fixture.
 After mounting the optional speaker, it will be difficult to see the monitor mounting bolts. Take appropriate precautions when mounting the optional speaker.

Monitor-mounting bolt (supplied with the PDK-4002, PDK-4003, PDK-4004)

Monitor-mounting bolt (supplied with the PDK-4002, PDK-4003, PDK-4004)

Hole rivet   **Fig. 2**

Monitor mounting bolt (supplied with the ceiling suspension metal fixture for the plasma display)

Washer of ϕ 25-mm outer diameter (supplied with optional speaker)

Ceiling-suspension metal fixture for plasma display

Fig. 3
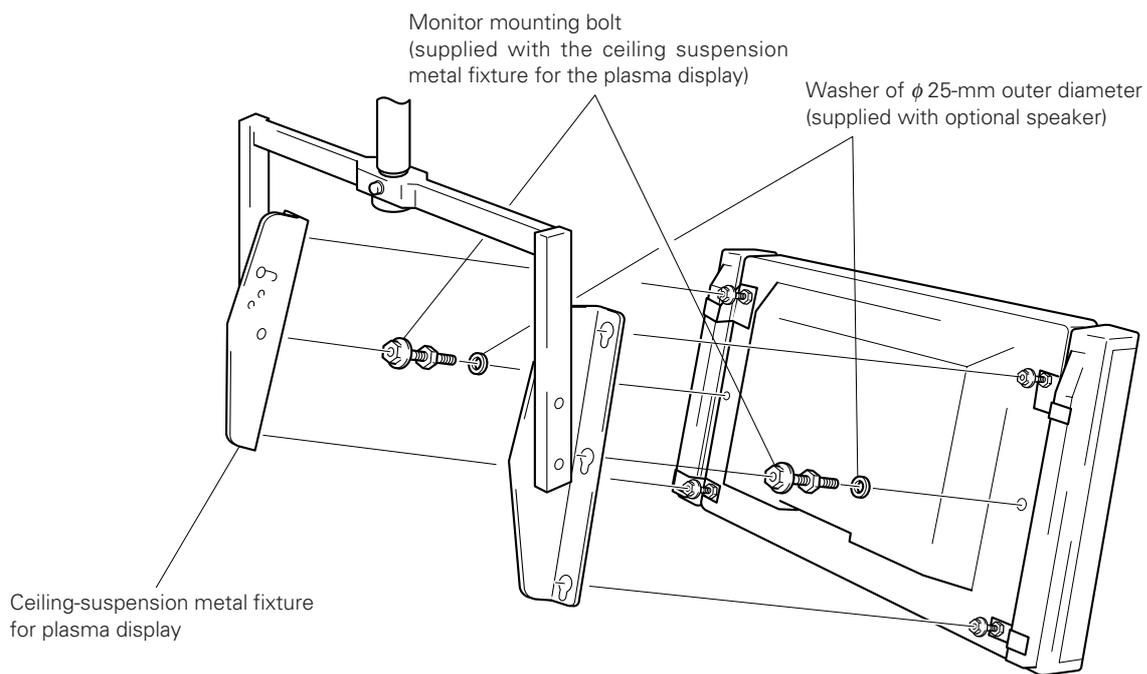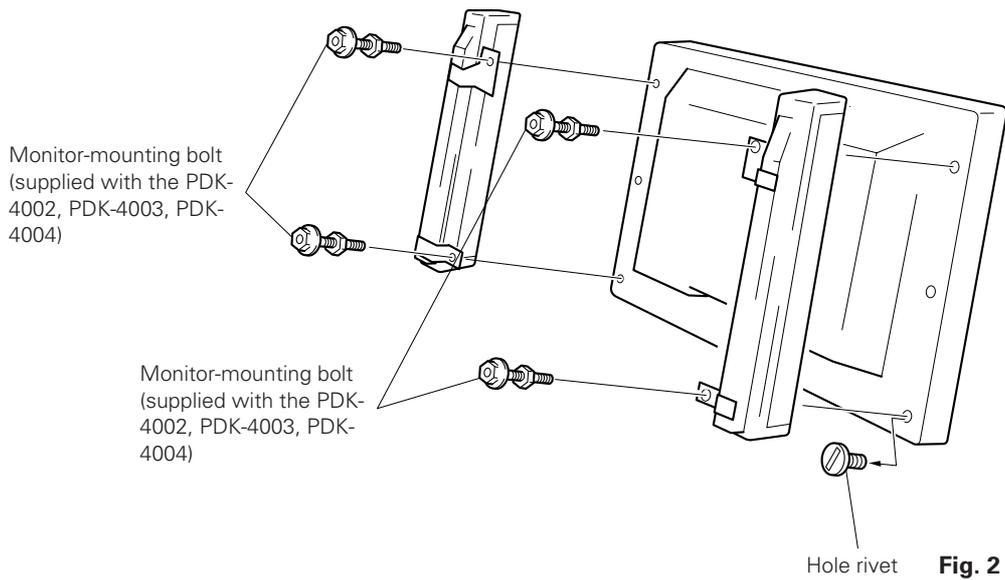
This shows the PDK-4002. The same illustration applies to the PDK-4003 and PDK-4004. Optional speakers mounted to both sides of the PDK-4003 may interfere with each other, depending on the specific tilt or angle.

How to mount standard optional items
(Precautions for installing the optional speaker)

3) Wall-hanging metal fixture (PDK-4006)

When the wall hanging metal fixture is mounted to the plasma display with the optional speaker, use the monitor-mounting bolt to tighten the speaker, as indicated in Fig.4. Next, as shown in Fig.5, follow the usual steps for mounting the wall hanging metal fixture.

 After the optional speaker is mounted, it will be difficult to see the monitor-mounting bolt attaching section on the wall hanging metal fixture side and the angle setting screw section. Take appropriate precautions when mounting the optional speaker.
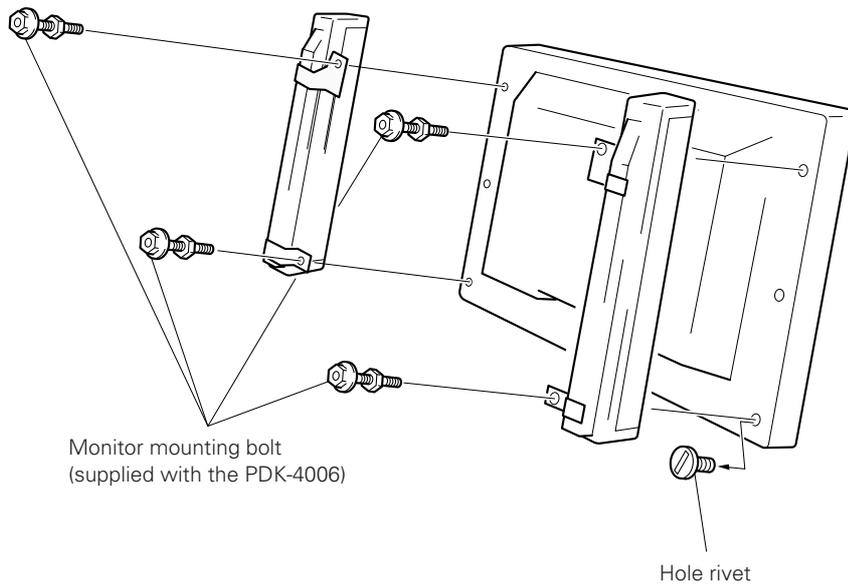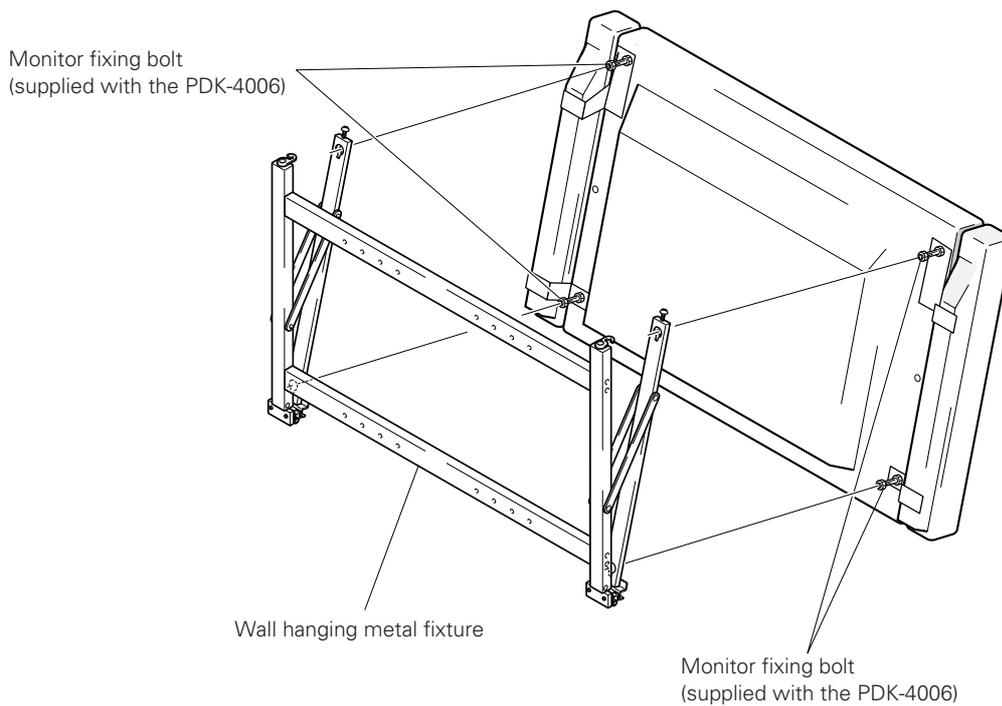
Monitor mounting bolt
(supplied with the PDK-4006)

Hole rivet

Fig. 4

Monitor fixing bolt
(supplied with the PDK-4006)

Wall hanging metal fixture

Monitor fixing bolt
(supplied with the PDK-4006)

Fig. 5

1) Normal Operating Mode

Intended for video playback, this mode enables the following basic operations:

- Switching to STANDBY status (POWER OFF)
- Input switching
- Key Lock/Unlock switching (this must be done using a button found only on the main unit.)
- Switching to Menu or RS-232C adjustment mode

Additionally, Normal operating mode also enables some of the RS-232C controls (as discussed in "5.4.3 RS-232C Commands").

2) Menu Mode

Use this mode to set picture quality, image position, and other characteristics.

Refer to "5.3 Menu Mode" for further details.

The mode allows you to change adjustment data within certain limits, based on values adjusted in Integrator or RS-232C adjustment modes (discussed later).

For more information, refer to "5.2 Menu Mode."

3) Integrator Mode

This mode provides adjustment functions for the integrator.

White balance adjustment and various other setting items are available in addition to those in Menu mode.

Refer to "5.3 Integrator Mode" for further details.

4) RS-232C Adjustment Mode

This mode enables various adjustments and settings using a PC.

Some adjustment items are available only in this mode.

Refer to "5.4 RS-232C Adjustment Mode" for further details.

Combination use of remote, Unit operation panel, and PC.

5.1.2 Combination in use of remote, unit operating panel, and PC

- The remote, and the operating panel of the main unit may be used together.

    Example: You can enter Menu mode through the operating panel of the main unit, then make adjustments using the remote.

- Depending on which has transmitted the more recent command, either the remote or the operating panel(of the main unit), or RS-232C may originate the command currently in effect.

Example:

Operation	Action
Press the MENU button on the remote (or on the operating panel of the main unit)	→ Enters Menu mode. At this time, the only available RS-232C commands are: • <AJY> • <POF>
Now, issue an <AJY> command from a PC.	→ Menu mode is disabled and RS-232C adjustment mode is activated. At this time, only the following options are available from the remote(or the operating panel of the main unit): • Power switch • MENU button • KEY LOCK/UNLOCK button

Before making adjustments

5.1.3 List of adjustable items

(1) Menu-mode adjustable items/variable range/variable amount for each input

	Variable range	1 STEP Variable amount	INPUT 1 VIDEO	INPUT 2 Y/C	INPUT 3 RGB 1	INPUT 4 RGB 2
CONTRAST	–96 to +96	× 3	○	○	○	○
BRIGHT	–96 to +96	× 3	○	○	○	○
COLOR	–96 to +96	× 3	○	○		
TINT	–96 to +96	× 3	○	○		
SHARPNESS	–96 to +96	× 3	○	○		
CLK. FRQ.	–32 to +32	× 1			○	○
CLK. PHS.	–128 to +127	× 1			○	○
HOR. POS.	–32 to +32	× 1			○	○
VER. POS.	–32 to +32	× 1			○	○

(2)   List of Integrator mode adjustable items/variable range for each input

	Variable range	INPUT 1 VIDEO	INPUT 2 Y/C	INPUT 3 RGB 1	INPUT 4 RGB 2
<PICTURE PARAMETER>					
CONTRAST	000 to (128) to 255	○	○	○	○
BRIGHT	000 to (128) to 255	○	○	○	○
COLOR	000 to (128) to 255	○	○		
TINT	000 to (128) to 255	○	○		
SHARPNESS	000 to (128) to 255	○	○		
CLK. FRQ.	000 to (128) to 255			○	○
CLK. PHS.	000 to (128) to 255			○	○
HOR. POS.	000 to (128) to 255	○ (Note:1)	○ (Note:1)	○	
VER. POS.	000 to (128) to 255	○ (Note:2)	○ (Note:2)	○	○
<WHITE BALANCE>					
R HIGH	000 to (128) to 255	○	○	○	○
G HIGH	000 to (128) to 255	○	○	○	○
B HIGH	000 to (128) to 255	○	○	○	○
R LOW	000 to (128) to 255	○	○	○	○
G LOW	000 to (128) to 255	○	○	○	○
B LOW	000 to (128) to 255	○	○	○	○
<WHITE BALANCE>					
COLOR MODE	2/1	○ (Note:3)			
BAND RATA	1200~19200BPS	○ (Note:3)			
AUTO RGB2	ON/OFF	○ (Note:3)			
MP MODE	ON/OFF			○ (Note:4)	
NTSC MASK	BLACK/GRAY/OFF	○ (Note:3)			
FULL MASK	OFF/WHITE/RED/GREEN/BULUE etc.	○ (Note:3)			
OSD	ON/OFF	○ (Note:3)			

(Note:1) Variable range is 111 to (128) to 145.

(Note:2) Variable range is 123 to (128) to 133.

(Note:3) Common setting for all functions.

(Note:4) Common setting for RGB1 and RGB2.

5.1.4 Picture quality and white-balance adjustment memory

This machine contains the following 44 memory areas.

Note that there are only 20 adjustable areas, since the FACTORY area is read-only.
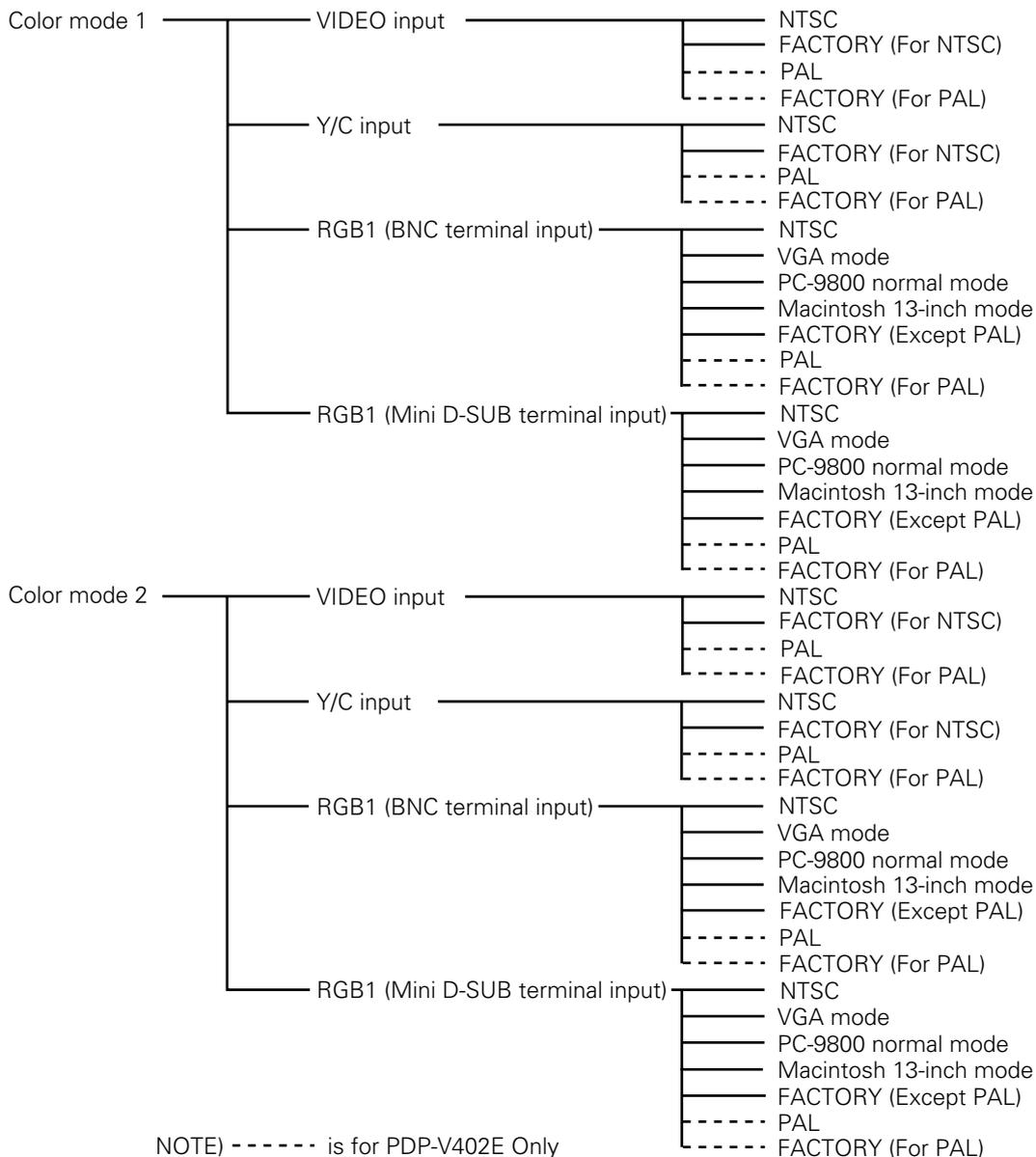
```
Color mode 1 ──────── VIDEO input ──────────── NTSC
                                               FACTORY (For NTSC)
                                          ----- PAL
                                          ----- FACTORY (For PAL)
                      Y/C input ─────────────── NTSC
                                               FACTORY (For NTSC)
                                          ----- PAL
                                          ----- FACTORY (For PAL)
                      RGB1 (BNC terminal input) ─── NTSC
                                               VGA mode
                                               PC-9800 normal mode
                                               Macintosh 13-inch mode
                                               FACTORY (Except PAL)
                                          ----- PAL
                                          ----- FACTORY (For PAL)
                      RGB1 (Mini D-SUB terminal input) ─ NTSC
                                               VGA mode
                                               PC-9800 normal mode
                                               Macintosh 13-inch mode
                                               FACTORY (Except PAL)
                                          ----- PAL
                                          ----- FACTORY (For PAL)

Color mode 2 ──────── VIDEO input ──────────── NTSC
                                               FACTORY (For NTSC)
                                          ----- PAL
                                          ----- FACTORY (For PAL)
                      Y/C input ─────────────── NTSC
                                               FACTORY (For NTSC)
                                          ----- PAL
                                          ----- FACTORY (For PAL)
                      RGB1 (BNC terminal input) ─── NTSC
                                               VGA mode
                                               PC-9800 normal mode
                                               Macintosh 13-inch mode
                                               FACTORY (Except PAL)
                                          ----- PAL
                                          ----- FACTORY (For PAL)
                      RGB1 (Mini D-SUB terminal input) ─ NTSC
                                               VGA mode
                                               PC-9800 normal mode
                                               Macintosh 13-inch mode
                                               FACTORY (Except PAL)
                                          ----- PAL
                                          ----- FACTORY (For PAL)
```

NOTE) - - - - - - is for PDP-V402E Only

- VGA mode
  640 dots × 480 lines/horizontal-scanning frequency 31.47 kHz/vertical-scanning frequency 59.94 Hz
  Horizontal-scanning frequency 37.86 kHz/ vertical-scanning frequency 72.81Hz, horizontal-scanning frequency 37.5 kHz/ vertical-scanning frequency 75.00Hz
- PC-9800/normal mode
  640 dots × 400 lines/horizontal-scanning frequency 24.83 kHz/vertical-scanning frequency 56.42 Hz, horizontal-scanning frequency 31.5 kHz/vertical-scanning frequency 70.1 Hz
- Macintosh 13-inch mode
  640 dots × 480 lines/horizontal-scanning frequency 35.00 kHz/vertical-scanning frequency 66.67 Hz

Quality and white-balance adjustment data are of the following 10 types:

CONTRAST, BRIGHT., COLOR, TINT, SHARPNESS, R HIGH, G HIGH, B HIGH, R LOW, G LOW, B LOW

COLOR, TINT, and SHARPNESS cannot be adjusted when RGB1,2 is input. TINT cannot be adjusted for PDP-V401E when PAL signals are input. This mode can select white-balance adjustment data synchronized with input function and input signal. If you need to switch between Color mode 1 and Color mode 2, depending on the input function, link to a PC and use command (CM1, CM2) to perform the switch for each input function.

Note: When no signal or not applicable signal is input, the memory area for NTSC is selected automatically.

Before making adjustments

5.1.5 Phase-adjustment memory

This machine contains the following 10 memory areas.

Of these, note that only 8 are adjustable, since the FACTORY area is read-only.
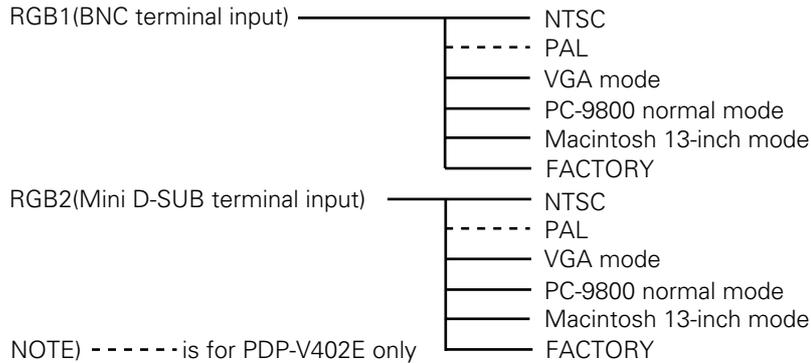
RGB1(BNC terminal input) —————— NTSC
- - - - - PAL
—————— VGA mode
—————— PC-9800 normal mode
—————— Macintosh 13-inch mode
—————— FACTORY

RGB2(Mini D-SUB terminal input) —————— NTSC
- - - - - PAL
—————— VGA mode
—————— PC-9800 normal mode
—————— Macintosh 13-inch mode

NOTE) - - - - - is for PDP-V402E only   —————— FACTORY

- VGA mode

  640 dots × 480 lines/horizontal-scanning frequency 31.47 kHz/vertical-scanning frequency 59.94 Hz

  Horizontal-scanning frequency 37.86 kHz/ vertical-scanning frequency 72.81Hz, horizontal-scanning frequency 37.5 kHz/ vertical-scanning frequency 75.00Hz

- PC-9800 normal mode

  640 dots × 400 lines/horizontal-scanning frequency 24.83 kHz/vertical-scanning frequency 56.42 Hz, horizontal-scanning frequency 31.5 kHz/vertical-scanning frequency 70.1 Hz

- Macintosh 13-inch mode

  640 dots × 480 lines/horizontal-scanning frequency 35.00 kHz/vertical-scanning frequency 66.67 Hz

Phase adjustment data are of the following 4 types:

  CLQ.FRQ., CLK.PHS., HOR.POS., VER.POS.

These settings are automatically selected according to input function and input signal.

Note: When no signal or no applicable signal is input, the memory area for NTSC is selected automatically.

5.1.6 Last memory

On this machine, the items below are saved as the latest data in the memory, except when the following is performed without satisfying memory timing requirements:

- Turning off main power
- Removing the power cord from the plug socket
- Turning off the plug socket breaker

No.	ITEM	MEMORY TIMING
1	STANDBY/ON	Approx. 4 seconds after operation
2	Input function	When the system is controlled through the main body operation panel or the remote control Approx. 4 seconds after operation Controlled with the RS-232C command When switching is performed within RS-232C adjustment mode and: a) when STANDBY status is activated b) when the non-operational period lasts approx. 30 seconds and the OSD indication disappears c) when switching to Normal Operations mode using the \<AJN\> command d) when switching to Normal Operations mode by pressing the main-body operation-panel button e) when switching to Normal Operations mode after the input signal is switched externally f) when switching to Menu mode by pressing the MENU button g) when switching to Normal Operations mode by pressing the button on the main body operation panel or remote control, in KEY LOCK status Note: When switching is performed in Normal Operations mode, data is not saved as the latest data in the memory.
3	Color mode	When the system is controlled through the main body operation panel or the remote control. Approx. 4 seconds after setting by the SET button Controlled with the RS-232C Command When switching is performed within RS-232C adjustment mode and: a) when STANDBY status is activated b) when the non-operational period lasts approx. 30 seconds and the OSD indication disappears c) when switching to Normal Operations mode using the \<AJN\> command d) when switching to Normal Operations mode by pressing the main-body operation-panel button e) when switching to Normal Operations mode after the input signal is switched externally f) when switching to Menu mode by pressing the MENU button g) when switching to Normal Operations mode by pressing the button on the main body operation panel or remote control, in KEY LOCK status Note: When switching is performed in Normal Operations mode, data is not saved as the latest data in the memory.
4	BAUD RATE	When the system is controlled through the main body operation panel or the remote control. Approx. 4 seconds after setting by the SET button Controlled with the RS-232C Command Approx. 4 seconds after operation

Before making adjustments

No.	ITEM	MEMORY TIMING
5	HOUR METER counting No.	At any time, and when STANDBY status is activated
6	KEY LOCK/UNLOCK	Approx. 4 seconds after operation
7	Mask color when PC-9800 is used	Approx. 4 seconds after operation
8	Setting of mask when NTSC is used	Approx. 4 seconds after operation
9	MP mode	Approx. 4 seconds after operation
10	CONTRAST adjustment data	When adjusting using the main body operation panel or remote control, 　a) when STANDBY status is activated 　b) when the non-operational period persists for approx. 180 seconds, and operation is switched to Normal Operations mode 　c) when switching to Normal Operations mode by pressing the MENU button 　d) when switching to Normal Operations mode by pressing the KEY LOCK button on the main body 　e) when switching to Normal Operations mode after the input signal is switched over externally 　f) when switching to RS-232C adjustment mode using the <AJY> command 　g) when hierarchy is restored by pressing the SET button. When adjusting using the RS-232C command, 　a) when STANDBY status is activated 　b) when the non-operational period persists for approx. 30 seconds, and the OSD indication disappears 　c) when switching to Normal Operations mode using the <AJN> command 　d) when switching to Normal Operations mode by pressing the main-body operation-panel button 　e) when switching to Normal Operations mode after the input signal is externally switched over 　f) when switching to Menu mode by pressing the MENU button 　g) when switching to Normal Operations mode by pressing the main-body operation-panel button or the remote control, in KEY LOCK status 　h) when adjustment items are changed
11	BRIGHT. adjustment data	
12	COLOR adjustment data	
13	TINT adjustment data	
14	SHARPNESS adjustment data	
15	R HIGH adjustment data	
16	G HIGH adjustment data	
17	B HIGH adjustment data	
18	R LOW adjustment data	
19	G LOW adjustment data	
20	B LOW adjustment data	
21	CLK.FRQ. adjustment data	
22	CLK.FHS. adjustment data	
23	HOR.POS. adjustment data	
24	VER.POS. adjustment data	
25	AUTO RGB2	Approx. 4 seconds after operation
26	OSD enable / disable	Approx. 4 seconds after operation
27	FULL MASK	Approx. 4 seconds after operation 　Note: However, when FULL MASK is set using the remote control and main operation panel, the last memory operation is not performed.
28	SCART RGB	Approx. 4 seconds after operation

• When the breaker is turned on or off to start or stop an entire system, such as a permanent system, the timing conditions above are required in order to save the latest data in the memory.

5.1.7 Aging
• When power is turned on, input signals that will not cause screen burnout, such as a 100% white signal or LD animation, perform aging (for approx. 30 min) until the system is stable. After aging, adjustments may be performed smoothly and accurately.

Note: Screen burnout may occur if PAUSE operation is used for long display.

Performing adjustments on the plasma display operation panel and remote control

5.2 Menu mode

5.2.1 Various adjustments and setting
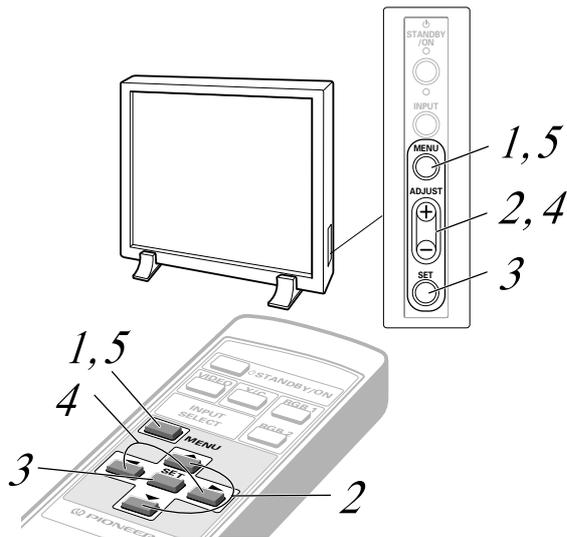
1) RGB-1 (BNC) or RGB-2 (MINI D-SUB) Input:

Adjust the picture quality for each input: the RGB-1 (BNC), the RGB-2 (MINI D-SUB), the video, and the Y/C.

* Refer to page 51 for the sources.

1 Switch to the MENU screen.

2 Choose the item to be adjusted.

3 Finalize your choice.

Make adjustment concerning each item as follows:

CONTRAST .... Adjusts the contrast of the picture according to the brightness of the environment so that you can watch the picture easier.

BRIGHT .... Adjusts the brightness of the picture so that you can watch the darker parts of the picture easier.

CLK.FRQ. .... When part of the letters in the picture is missing, or if the displayed image is distorted as a rainbow-like noise, use (–32 to +32) this function. This function is to adjust the frequency of the internal clock signal for the video signal input.
   NOTE:
   HOR.POS may need to be adjusted in some cases if CLK.FRQ has been adjusted.

CLK.PHS. .... When some letters in the picture flicker and the color becomes distorted, use (–128 to +127) this function. Adjust it to minimize the flicker and the color distortion. This function is to adjust the phase of the internal clock signal, which is adjusted with the CLK. FRQ function.

HOR.POS. .... Adjust the horizontal position of the (–32 to +32) picture.

VER.POS. .... Adjust the vertical position of the (–32 to +32) picture.

INIT. .... Returns the above picture settings to their center values. *1

SCART RGB .... This switches the synchronizing signal (ON/OFF) mode. <u>Always leave it OFF, except for</u> (Displayed only <u>RGB input to a unit with a Euro AV</u> for RGB-1) <u>terminal.</u>
(PDP-V402 ONLY)

*1
When you select INIT., the message on the right is displayed.
Select "YES" or "NO" by using the ◄ or ► button.
Selecting "YES" and pressing the SET button sets back all picture quality settings to their default values.
When "NO" is selected, all settings will remain as they are.

1

Remote control

MENU

Main unit

MENU

☑ **PICTURE PARAMETER**
CONTRAST ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
BRIGHT. ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
CLK. FRQ. +10
CLK. PHS. − 5
HOR. POS. 0
VER. POS. + 8
INIT.
SCART RGB OFF
    SET : SEL.   MENU : EXIT

• Displayed only for RGB-1. (PDP-V402 ONLY)

2

Remote control

Main unit

ADJUST

☑ PICTURE PARAMETER
CONTRAST ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
BRIGHT. ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
CLK. FRQ. +10
CLK. PHS. − 5
HOR. POS. 0
VER. POS. + 8
INIT.
SCART RGB OFF
    SET : SEL.   MENU : EXIT

• Displayed only for RGB-1. (PDP-V402 ONLY)

• The currently selected item will be displayed in purple.

3

Remote control

SET

Main unit

SET

☑ **PICTURE PARAMETER**

CONTRAST ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
◄/► : ADJ.   SET : EXIT

☑ **PICTURE PARAMETER**

INITIALIZE?
YES◄►NO

SET : EXIT

If "NO" has been selected, SET:EXIT will be displayed here.
If "YES" has been selected, SET:INIT will be displayed.

4

Remote control ①

◄ ►

➡

Main unit

ADJUST ②

+

−

☑ **PICTURE   PARAMETER**

CONTRAST ▥▥▥▥▥▥▥▥▥▥▥
◄／► : ADJ.   SET : EXIT

☑ **PICTURE   PARAMETER**

CLK. FRQ.   + 1 0
◄／► : ADJ.   SET : EXIT

5

Remote control

MENU

➡ • Return to the normal screen.

Main unit

MENU

4 **Adjust the picture quality concerning the selected item.**

① In case of CONTRAST and BRIGHT:
② In case of CLK.FRQ., CLK PHS., HOR.POS. and VER.POS.:

To return to the step-2 screen, press the SET button.
Repeat steps 2 through 4 to adjust the other items.

5 **When you have completed the setting, return to the normal screen.**
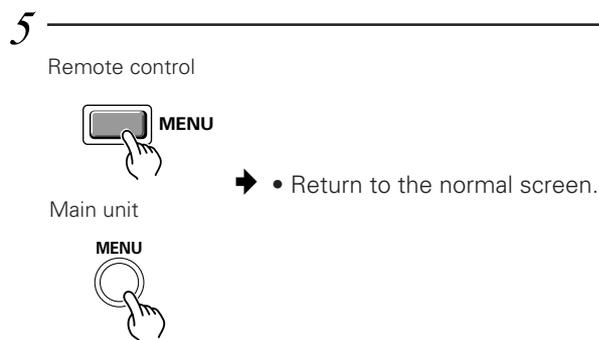
NOTE:

When the interlaced signals such as NTSC, PAL(PDP-V402E only), etc. are input from the RGB input terminal, adjust the HOR. POS. and VER. POS. (horizontal and vertical positions) so that the image becomes positioned in the center of the screen.
The picture may not be reproduced properly if the positions are altered extremely from the original ones.

Performing adjustments on the plasma display operation panel and remote control
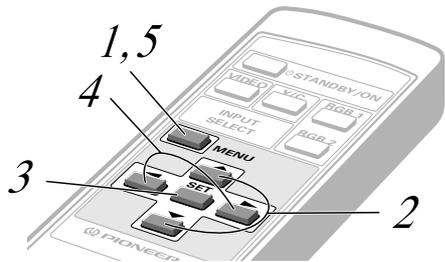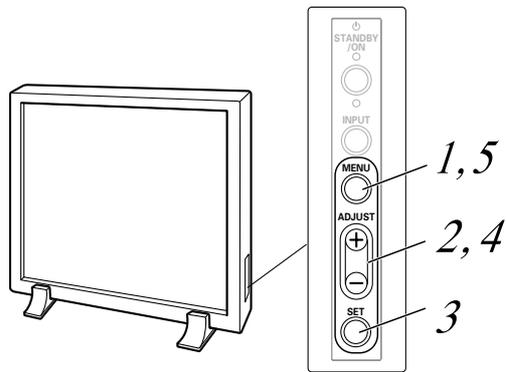
2) **Video or Y/C Input**

1 Switch to the MENU screen.

The currently selected item will be displayed in purple.

2 Choose the item to be adjusted.

1

Remote control
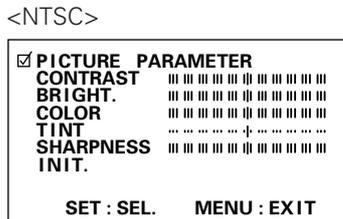
MENU

<NTSC>

```
☑ PICTURE  PARAMETER
  CONTRAST    ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  BRIGHT.     ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  COLOR       ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  TINT        ··· ··· ··· ··· ··· ·|· ··· ··· ··· ···
  SHARPNESS   ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  INIT.

      SET : SEL.     MENU : EXIT
```

Main unit

MENU

<PAL> (PDP-V402E only)

```
☑ PICTURE  PARAMETER
  CONTRAST    ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  BRIGHT.     ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  COLOR       ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  SHARPNESS   ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  INIT.


      SET : SEL.     MENU : EXIT
```

2

Remote control

<NTSC>

```
☑ PICTURE  PARAMETER
  CONTRAST    ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  BRIGHT.     ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  COLOR       ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  TINT        ··· ··· ··· ··· ··· ·|· ··· ··· ··· ···
  SHARPNESS   ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  INIT.

      SET : SEL.     MENU : EXIT
```

• The currently selected item will be displayed in purple.

Main unit

ADJUST

```
☑ PICTURE  PARAMETER
  CONTRAST    ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  BRIGHT.     ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  COLOR       ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  SHARPNESS   ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
  INIT.

      SET : SEL.     MENU : EXIT
```

<PAL> (PDP-V402E only)

3

Remote control

SET

Main unit

SET

➡

☑ **PICTURE PARAMETER**

CONTRAST ▥▥▥▥▥▥▥▥▥▥▥▥
◄ / ► : ADJ.   SET : EXIT

4

Remote control

◄ ►

① ☑ **PICTURE PARAMETER**

CONTRAST ▥▥▥▥▥▥▥▥▥▥▥▥
◄ / ► : ADJ.   SET : EXIT

② ☑ **PICTURE PARAMETER**

Main unit

ADJUST

+
−

TINT ⋯⋯⋯⋯⋯⋯┼⋯⋯⋯⋯⋯
◄ / ► : ADJ.   SET : EXIT

• Only in the NTSC mode

5

Remote control

MENU

➡ • Returns to the normal screen.

Main unit

MENU

3 **Finalize your choice.**

Make adjustments for each item as follows:
CONTRAST ....Adjusts the contrast of the picture according to the brightness of the environment so that you can watch the picture easier.
BRIGHT ....Adjusts the brightness of the picture so that you can watch the darker parts of the picture, (such as night scenes and dark hair), easier.
COLOR ....Adjusts the color of the picture as desired. (Set it to a little lower position than that you want, to obtain natural pictures.)
TINT ....Adjusts the tint of the picture so that the face color looks natural. (Possible to adjust when the NTSC signal is inputted.)
SHARPNESS ......Normally set to their center values. But if you want images to be displayed in softer tones, adjust it to the left from the center position.
INIT ....Returns the above picture settings to their center values. *1

*1

When you select ⃞INIT.⃞, the message on the right is displayed.
Select "YES" or "NO" by using the ◄ or ► button.
Selecting "YES" and pressing the SET button sets back all picture quality settings to their default values.
When "NO" is selected, all settings will remain as they are.

☑ **PICTURE PARAMETER**

INITIALIZE?

YES◄►NO
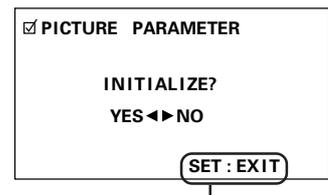
SET : EXIT

If "NO" has been selected, SET:EXIT will be displayed here.
If "YES" has been selected, SET:INIT will be displayed.

4 **Adjust the picture quality concerning the selected item.**

① In case of the items other than TINT:
② In case of TINT:

To return to the step-2 screen, press the SET button.
Repeat Steps 2 through 4 to adjust the other items.

5 **When you have completed the setting, return to the normal screen.**

165

Integrator mode

5.3 Integrator mode

5.3.1 Adjustments and setting in the integrator mode

1) Integrator mode main menu (for VIDEO and Y/C input)

```
☑ P I C T U R E   P A R A M E T E R
   C O N T R A S T              1 2 8
   B R I G H T .                1 2 8
   C O L O R                    1 2 8
 * T I N T                      1 2 8
   S H A R P N E S S            1 2 8
   P O S I T I O N
   I N I T .
 ☐ W H I T E   B A L A N C E
 ☐ A D D I T I O N A L   S E T   U P
 ☐ T O T A L   I N I T I A L
```

* Adjustments cannot be carried out for PDP-V402E if PAL signals are input.
  Adjustment items will also not be displayed.

This mode is entered from STANDBY by pressing the Menu button and pressing the power button within three seconds. Using the remote control, select the adjustment item with the ▲ and ∞ buttons, then select with the SET button. Using the operation panel of the main body, select the adjustment item with the + and – buttons, and confirm your selection with the SET button.

2) Integrator mode main menu (for RGB1, 2 input)

```
☑ P I C T U R E   P A R A M E T E R
   C O N T R A S T              1 2 8
   B R I G H T .                1 2 8
   C L K . F R Q .              1 2 8
   C L K . P H S .              1 2 8
   H O R . P O S .              1 2 8
   V E R . P O S .              1 2 8
   I N I T .
 ☐ W H I T E   B A L A N C E
 ☐ A D D I T I O N A L   S E T   U P
 ☐ T O T A L   I N I T I A L I Z E
```

This mode is entered from STANDBY by pressing the Menu button and pressing the power button within three seconds. Using the remote control, select the adjustment item with the ▲ and ∞ buttons, then select with the SET button. Using the operation panel of the main body, select the adjustment item with the + and – buttons, and confirm your selection with the SET button.

3) Quality and phase adjustment

```
┌─────────────────────────────────────────────────────┐
│                                                       │
│    ☑ P I C T U R E    P A R A M E T E R               │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│    C O N T R A S T                      1 2 8         │
│                                                       │
└─────────────────────────────────────────────────────┘
```
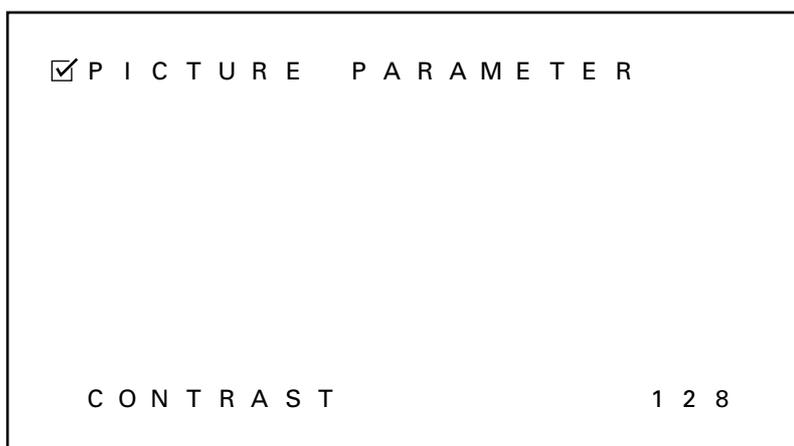
Using the remote control, make adjustments with the ◄ and ► buttons. Using the operation panel, make adjustments with using the +, – buttons. The range of possible adjustments is 000 - 255 (Note). Values set in this mode become the central values to be adjusted in Menu mode.
The following parameters can be adjusted in this item.
    When VIDEO and Y/C are input   : CONTRAST, BRIGHT., COLOR., TINT, SHARPNESS., HOR.POS., VER.POS.
    When RGB1 and RGB2 are input : CONTRAST, BRIGHT., CLK.FRQ., CLK.PHS., HOR.POS., VER.POS.
Note: When VIDEO and Y/C are input, the range of possible adjustments of HOR.POS. and VER.POS. is 111 to (128) to 145 and 123 to (128) to 133, respectively.

*   Adjustments cannot be carried out for PDP-V402E if PAL signals are input. Adjustment items will not also be displayed.

4) Quality and phase adjustment (adjustment reset)

```
┌─────────────────────────────────────────────────────┐
│                                                       │
│    ☑ P I C T U R E    P A R A M E T E R               │
│                                                       │
│                                                       │
│           I N I T I A L I Z E ?                       │
│                                                       │
│              Y E S ◄  ► N O                           │
│                                                       │
│    ☐ W H I T E    B A L A N C E                       │
│    ☐ A D D I T I O N A L    S E T    U P              │
│    ☐ T O T A L    I N I T I A L I Z E                 │
│                                                       │
└─────────────────────────────────────────────────────┘
```
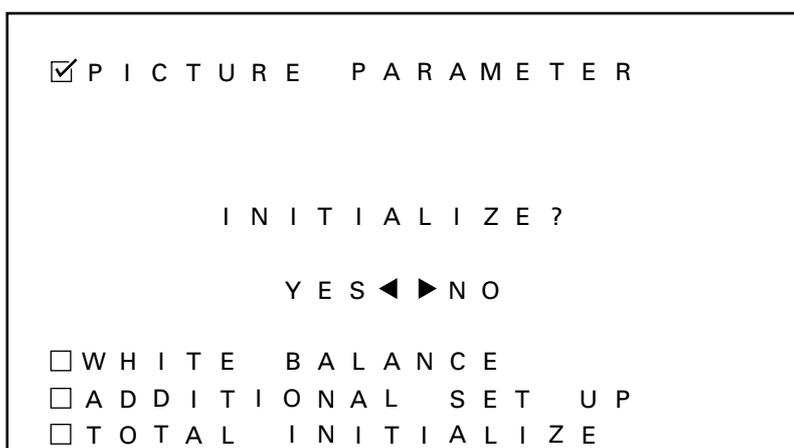
This function returns adjusted values, and are set in adjustment mode to factory-preset values, which are within the range of values currently held in the selected memory area. Selecting "YES" with the remote control ◄ button or operation panel + button restores factory-preset values. Selecting "NO" with the remote control ► button or operation panel – button restores the current status. Select the following:
    "YES" to restore factory-preset values
    "NO" to avoid restoring factory-preset values
and press the SET button.
In either case, you are returned to the above adjustment mode when selection is complete.

Integrator mode

5) White-balance adjustment menu

```
┌─────────────────────────────────────────────┐
│                                             │
│   □ P I C T U R E    P A R A M E T E R      │
│   ☑ W H I T E    B A L A N C E              │
│     R   H I G H                     1 2 8   │
│     G   H I G H                     1 2 8   │
│     B   H I G H                     1 2 8   │
│     R   L O W                       1 2 8   │
│     G   L O W                       1 2 8   │
│     B   L O W                       1 2 8   │
│     I N I T .                               │
│   □ A D D I T I O N A L    S E T    U P     │
│   □ T O T A L    I N I T I A L I Z E        │
│                                             │
└─────────────────────────────────────────────┘
```

Using the remote control, select the desired item with the ▲ and ∞ buttons, and enter that choice with the SET button. Using the operation panel, select the desired item with the + and – buttons and confirm your selection with the SET button.

6) White-balance adjustment

```
┌─────────────────────────────────────────────┐
│                                             │
│   □ P I C T U R E    P A R A M E T E R      │
│   ☑ W H I T E    B A L A N C E              │
│                                             │
│                                             │
│                                             │
│                                             │
│                                             │
│                                             │
│                                             │
│     R   H I G H                     1 2 8   │
│                                             │
└─────────────────────────────────────────────┘
```

Adjustments are made either with the remote control ◄ and ► buttons or with the operation panel + and – buttons. The adjustment range is 000 - 255. A value adjusted here becomes the center value in the new mode.
This item may be used to adjust the following parameters:

RED HIGH	: RED of high luminance
GREEN HIGH	: GREEN of high luminance
BLUE HIGH	: BLUE of high luminance
RED LOW	: RED of low luminance
GREEN LOW	: GREEN of low luminance
BLUE LOW	: BLUE of low luminance

7) Integrator white-balance adjustment (adjustment reset)

```
┌─────────────────────────────────────────────────┐
│                                                 │
│    ☐ P I C T U R E    P A R A M E T E R         │
│    ☑ W H I T E    B A L A N C E                 │
│                                                 │
│                                                 │
│            I N I T I A L I Z E ?                 │
│                                                 │
│              Y E S ◄  ► N O                      │
│                                                 │
│                                                 │
│                                                 │
│    ☐ A D D I T I O N A L    S E T    U P         │
│    ☐ T O T A L    I N I T I A L I Z E            │
│                                                 │
└─────────────────────────────────────────────────┘
```

This function returns adjusted values, and are set in adjustment mode to the factory-preset values, which are within the range of values currently held in the selected memory area. Selecting "YES" with the remote control ◄ button or operation panel + button restores factory-preset values. Selecting "NO" with the remote control ► button or operation panel – button restores the current state. Select the following:

"YES" to restore factory-preset values

"NO" to avoid restoring factory-preset values

and press the SET button.

In either case, you are returned to the above adjustment mode when selection is complete.

8) Various setting menu

```
┌─────────────────────────────────────────────────┐
│                                                 │
│    ☐ P I C T U R E    P A R A M E T E R         │
│    ☐ W H I T E    B A L A N C E                 │
│    ☑ A D D I T I O N A L    S E T    U P         │
│      C O L O R    M O D E        1              │
│      B A U D    R A T E        4 8 0 0 B P S    │
│      A U T O    R G B 2        O F F            │
│      N T S C    M A S K        B L A C K        │
│      F U L L    M A S K                         │
│      O S D                     O N              │
│      H O U R    M E T E R      1 2 3 4 5        │
│    ☐ T O T A L    I N I T I A L I Z E            │
│                                                 │
└─────────────────────────────────────────────────┘
```

Operation is the same as with other input functions. With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and – buttons, then confirm your selection with the SET button.

Integrator mode

9) Various setting menu (PC-9800, VGA, or MAC is input)

```
┌─────────────────────────────────────────────┐
│                                               │
│   ☐ P I C T U R E    P A R A M E T E R        │
│   ☐ W H I T E    B A L A N C E                │
│   ☑ A D D I T I O N A L    S E T    U P       │
│     C O L O R    M O D E        1             │
│     B A U D    R A T E          4 8 0 0 B P S │
│     A U T O    R G B 2          O F F         │
│     M P    M O D E              O F F         │
│     F U L L    M A S K                        │
│     O S D                       O N           │
│     H O U R    M E T E R        1 2 3 4 5     │
│   ☐ T O T A L    I N I T I A L I Z E          │
│                                               │
└─────────────────────────────────────────────┘
```

Operation is the same as with other input functions. With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and – buttons, then confirm your selection with the SET button.

10) Color-mode-setting

```
┌─────────────────────────────────────────────┐
│                                               │
│                                               │
│     C O L O R    M O D E                      │
│                                               │
│       ▶      1                                │
│              2                                │
│                                               │
│                                               │
│                                               │
│                                               │
│                                               │
│                                               │
└─────────────────────────────────────────────┘
```

Operation is the same as with other input functions. With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and – buttons, then confirm your selection with the SET button. Operating these buttons enables adjustment of picture quality and white-balance parameters. Selecting COLOR MODE 1 selects the normal picture-quality and white-balance values. Selecting COLOR MODE 2 selects the best picture quality for applications in which pictures are taken again. The system is factory-preset to COLOR MODE 1.

11) Baud-rate setting
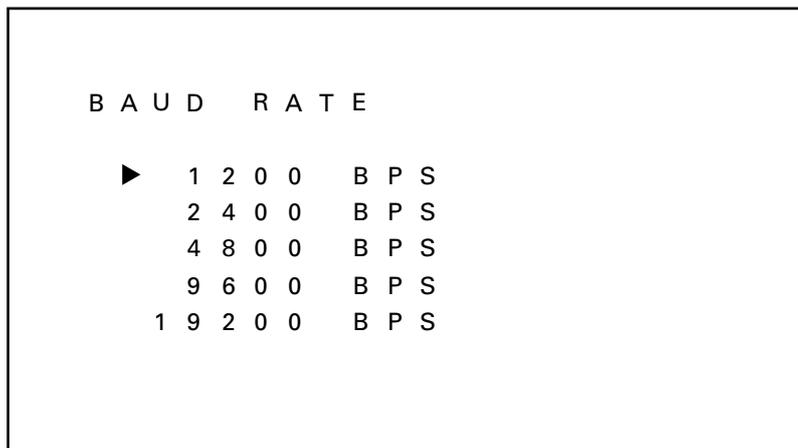
```
┌─────────────────────────────────────────────┐
│                                               │
│      B A U D    R A T E                       │
│                                               │
│     ▶   1 2 0 0     B P S                     │
│         2 4 0 0     B P S                     │
│         4 8 0 0     B P S                     │
│         9 6 0 0     B P S                     │
│       1 9 2 0 0     B P S                     │
│                                               │
│                                               │
│                                               │
│                                               │
└─────────────────────────────────────────────┘
```

Operation is the same as with other input functions. With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and – buttons, then confirm your selection with the SET button. This function selects the communication rate (baud rate) for external RS-232C communications.
The factory-preset value is 4800BPS.

12) RGB2 priority mode setting
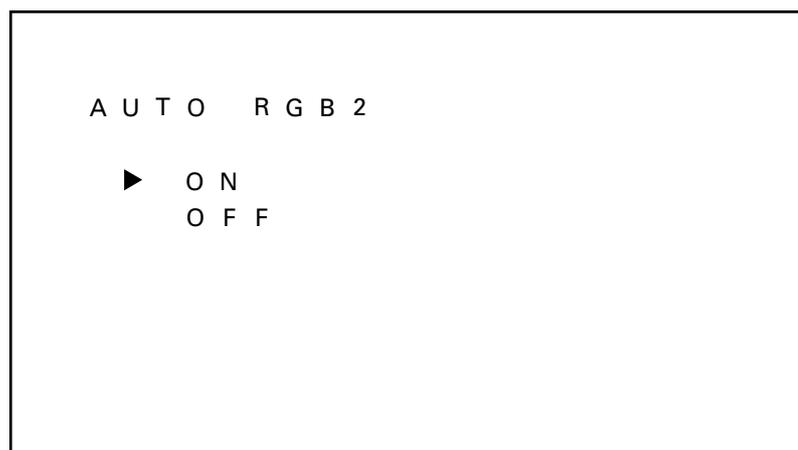
```
┌─────────────────────────────────────────────┐
│                                               │
│      A U T O    R G B 2                       │
│                                               │
│     ▶   O N                                   │
│         O F F                                 │
│                                               │
│                                               │
│                                               │
│                                               │
│                                               │
│                                               │
└─────────────────────────────────────────────┘
```

Operation is the same as with other input functions. With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and – buttons, then confirm your selection with the SET button.
With the mode set to ON, the function automatically changes over to RGB2 (Dsub) when a signal is input (Note) into RGB2 (Dsub). When there is no input signal for RGB2 (Dsub), the function is automatically restored to the previous one.
(Note) As it is operated based on whether there is HD or a composite sink, this function does not operate in case of Gon
     Sync signal.
The factory-preset value is OFF.

Integrator mode

13) Mask for screen top/bottom for NTSC input

```
        N T S C    M A S K

        ▶    B L A C K
             G R A Y
             O F F
```

This function is valid only when NTSC signals are input. With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and – buttons, then confirm your selection with the SET button.
This function selects black or gray mask (MASK GRAY/BLACK) processing for approximately 10 lines at the top or bottom of the screen, or reproduction of images (MASK OFF) for the whole screen (480 lines).
The factory-preset value is BLACK.

Precautions
• If masked display is used for extended periods, the unmasked and masked areas of the display may begin to exhibit slightly different display characteristics, as a result of varying rates of phosphor deterioration.
   For example, on a masked display receiving NTSC signals that rarely displays a full-screen 480 lines, the top and bottom masked sections will experience no phosphor deterioration, resulting in possible differences in luminance and white-balance from the image area.
• Depending on the input source, the display may exhibit some anomalies when the mask is removed, such as a wavering display at the top on the screen.

14) MP (Motion Picture) mode-setting mode

```
        M P    M O D E

        ▶    O N
             O F F
```
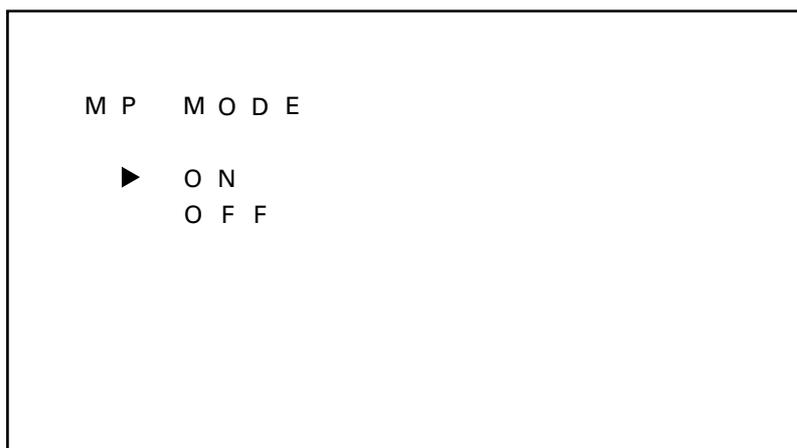
This function is valid only for PC-9800, VGA, and MAC input signals (and for NTSC inputs double-rate-converted from RGB-1 and RGB-2 terminals). With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and – buttons, then conf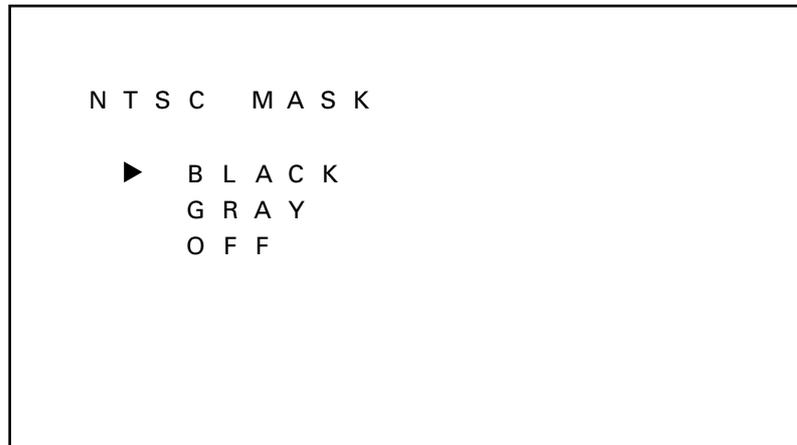irm your selection with the SET button. This function allows the selection appropriate for image-sequence processing or for stills or animations. Select ON for stills and OFF for animations.

• MP mode
When animations such as those used in games are reproduced in the input of non-interlaced signals, including non-interlaced computer signals, the "stripe-like shadow" may appear in parts of the resulting image. Known as pseudo-contour, this phenomenon results from the method of gradation expression used to express. Changing the MP mode to ON can greatly reduce pseudo-contour, though gradation expression may be less sharp, depending on the particular input signal.

15) FULL MASK setting

```
┌─────────────────────────────────────────┐
│                                         │
│    F U L L    M A S K                   │
│                                         │
│       ▶    E X I T                      │
│            R E D                        │
│            G R E E N                    │
│            B L U E                      │
│            Y E L L O W                  │
│            M A G E N T A                │
│            C Y A N                      │
│            W H I T E                    │
│                                         │
└─────────────────────────────────────────┘
```

Operation is the same as with other input functions. With the remote control, use the ▲ and ∞ buttons to select the item to be set, and confirm your selection with the SET button. With the operation panel, select the item with the + and - buttons, then confirm your selection with the SET button.

 For example, if WHITE is selected and the set button is pressed, the control screen is displayed as white regardless of the input signal. During this time, neither PLAY operation or On Screen Display can be used. To reset, press the set button again or turn the power OFF/ON using the remote control or the main operation panel. (Note: Use this for aging, panel burnout reduction, etc.)

(Note): When FULL MASK setting is performed with RS-232C, data is saved as the latest data in the memory. In this case, to cancel the setting, select <AJY> with RS-232C followed by the cancel command <FMN>.

16) OSD indication setting

```
┌─────────────────────────────────────────┐
│                                         │
│    O S D                                │
│                                         │
│       ▶    O N                          │
│            O F F                        │
│                                         │
│                                         │
│                                         │
│                                         │
│                                         │
│                                         │
└─────────────────────────────────────────┘
```

Operation is the same as with other input functions. With the remote control, use the ▲ and ∞ buttons to select the mode to be set, and confirm your selection with the SET button. With the operation panel, select the mode with the + and - buttons, then confirm your selection with the SET button.

 This function disables OSD indication such as function display. When it is not necessary to select OSD indication for automatic operation, set to "OSD:OFF". Even during "OSD:OFF" setting, MENU and KEY LOCK/UNLOCK setting can be displayed.
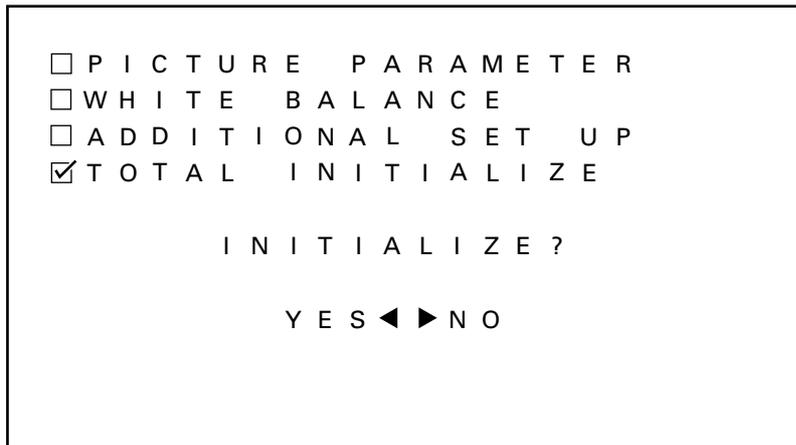
The factory-preset value is ON.

* Even when [OSD:OFF] are being set, it is possible to indicate the following OSD:

① Indicates menu

② Indicates announcement while KEY KOCK is being set, and indicated KEY LOCK/UNLOCK setting.

Integrator mode

17) Initial reset setting mode (total adjustment)

```
┌─────────────────────────────────────────┐
│                                         │
│    ☐ P I C T U R E   P A R A M E T E R  │
│    ☐ W H I T E   B A L A N C E          │
│    ☐ A D D I T I O N A L   S E T   U P  │
│    ☑ T O T A L   I N I T I A L I Z E    │
│                                         │
│          I N I T I A L I Z E ?          │
│                                         │
│            Y E S ◄   ► N O               │
│                                         │
│                                         │
└─────────────────────────────────────────┘
```

This function restores adjusted values for PICTURE PARAMETER and WHITE BALANCE to factory-preset values, which are within the range of values currently held in the selected memory area. Selecting "YES" with the remote control ◄ button or operation panel + button restores factory-preset values. Selecting "NO" with the remote control ► button or operation panel – button restores the current state. Select the following:

"YES" to restore factory-preset values

"NO" to avoid restoring factory-preset values

and press the SET button.

In either case, you are returned to the above adjustment mode when selection is complete.

18) PC-9800 mask

This function selects the color of the mask section at the top and bottom of the screen when PC-9800 is input with input function of RGB 1 or RGB 2.

Black or gray

Images are displayed over 400 lines.
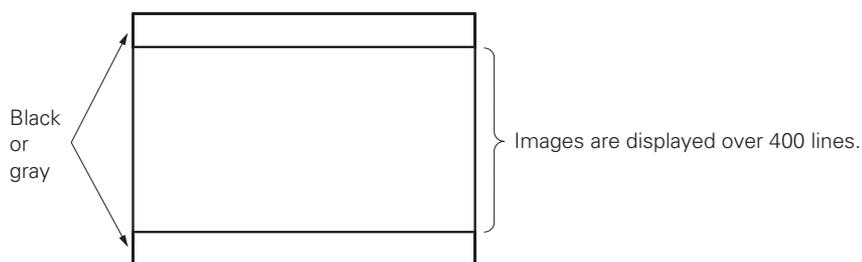
The display is factory-set to black.

This function can be set only through RS-232C commands.

Activate RS-232C adjustment mode and

Send a <MKB> command to set the black mask section.

Send a <MKG> command to set the gray mask section.

Depending on the input signal, the rate of phosphor deterioration in the masked section may differ from that in the unmasked section. For example, a display with mask section color set to BLACK that receives PC-9800 signals and rarely displays a 480-full-line display will suffer no phosphor deterioration in the top and bottom mask sections and demonstrate better luminance and white-balance for the full 480-line display than for other 400-line displays.

5.3.2 Precautions

• Input cannot be switched over in Menu or Integrator modes.

   First select the input to adjust, then move to Menu mode or Integrator mode.

• The system automatically exits Menu mode or Integrator mode if one of the following occurs:

a) The main switch is turned off (AC OFF).

b) STANDBY status is invoked.

c) A non-operational period persists for approx. 180 seconds.

d) The KEY-LOCK button of the main body is pressed.

e) Input signals are externally switched-over, or a no-signal state arises.

f) The system is switched to RS-232C adjustment mode with an <AJY> command.

g) The protective circuit (P.D.) is activated.

Note: For a) and g), only the item currently being adjusted is not placed in latest data in the memory.

5.4 RS-232C adjustment mode

The main body is equipped with an RS-232C port to allow different operations using an external PC, including adjustment of picture quality, white-balance, and phase.

5.4.1 Precaution

- The contents of adjustment are placed in last-memory with the <AJN> command.
  Once adjustments are complete, perform <AJN>. The display for screen adjustment disappears.
- Some RS-232C commands can be used in normal mode (during normal operation). Refer to "5.4.3, RS-232C commands table"
- The system automatically exits RS-232C command mode when one of the following occurs:
    a) The main power switch is turned off.
    b) STANDBY status is invoked.
    c) Any button on the operation panel is pressed.
    d) Input signals are externally switched over, or a no-signal status arises.
    e) The MENU button is used to switch to MENU mode.
    f) While in KEY LOCK status, buttons on the operation panel or the remote control are pressed.
    g) The protective (P.D.) circuit is activated.
    Note: For a) and g), only the item currently being adjusted is not placed in last memory.
- Space in the unit's RS-232C communications buffer is limited. When many commands are sent in one communication, the system may not receive all commands or function properly.

5.4.2 Interface

1) Connector
    D-sub 9 pin (male)
2) Pin arrangements

Pin No.	Signalμ
1	NC (Not connected)
2	TXD (Transmit Date)
3	RXD (Receive Date)
4	NC (Not connected)
5	GND
6	NC (Not connected)
7	NC (Not connected)
8	RTC (Request To SEND)
9	NC (Not connected)
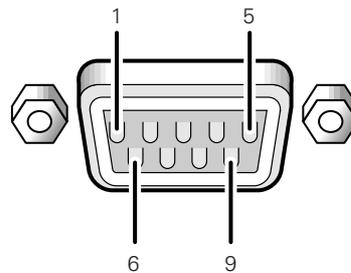
3) Baud rate

4800 bps (possible settings include 1200, 2400, 9600, and 19200 bps)

Notes: Set this value so that the machine's baud rate equals the PC baud rate.

4) Data format

Start : 1-bit

Data : 8-bit

Parity : 0 (no parity)

Stop : 1-bit

5) Connection

6) Protocol

From PC to plasma display

Personal computer for control (PC-9800)		Plasma display	Personal computer for control (DVS-V)		Plasma display
RXD 3 TXD 2 CTS 5 GND 7	◄ ► ◄	2 TXD 3 RXD 8 RTS 5 GND	RXD 2 TXD 3 CTS 8 GND 5	◄ ► ◄	2 TXD 3 RXD 8 RTS 5 GND

Straight cable
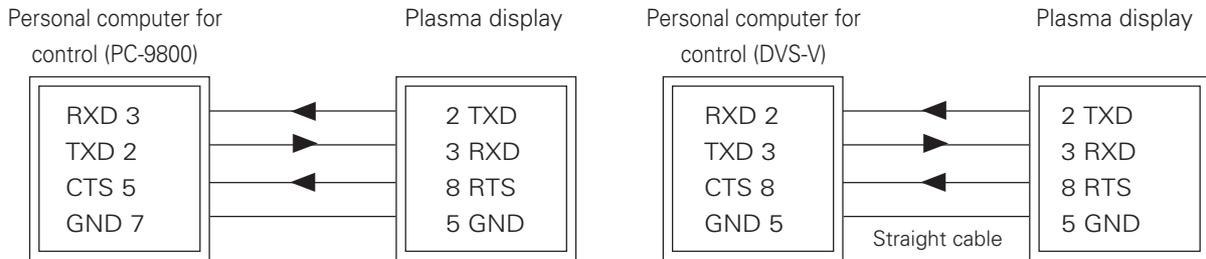
* Third-party D-sub 9P-D-sub 25P conversion cables are available commercially.

(1) When commands are sent serially (one by one).

STX	COMMAND	ETX

STX=02h ETX=03h   COMMAND 3-Byte (ASCII)

(2) When groups of commands are sent

STX	COMMAND	COMMAND	COMMAND	ETX

Up to three commands may be sent at a time. [note]

(3) In the case of commands followed by numbers in the 0-255 range

STX	COMMAND	ARGUMENT	ETX

ARGUMENT : 3-Byte (ASCII)

Bad Example 1) Send the <PON> and <POF> commands one by one. (Allow 3 seconds or longer between commands.)

STX	PON	AJY	CNT	ETX

Bad Example 2) Send input switching commands <IN 1 - 4> and "AJY" commands separately. (Allow at least 1.5 seconds after

STX	POF	PON	ETX

Bad Example 3) input switching commands <IN 1 - 4> are set before sending any other commands.)

STX	IN2	AJY	CNT	ETX

RS-232C adjustment mode

5.4.3 RS-232C commands table

Explanation of the tables

- Normal validity : Indicates whether normal mode can be used. Commands that may be used even when not in RS-232C adjustment mode (after sending <AJY> commands).
- Number direct : Commands sent directly followed by numbers (3 digits), which immediately become the new adjusted values.
- UP/DOWN command : Commands followed by UPn/DWn (n is any number from 0 to 9) are capable of incrementing adjustment values up or down in increments of their values.

○: Valid   ×: Invalid

	Command name	Name	Validity in normal mode	Validity of number-direct command	Validity of UP/DOWN command	Function
A	AJN	ADJUST NO	×	×	×	Exits RS-232C adjustment mode.
	AJY	ADJUST YES	○	×	×	Activates RS-232C adjustment mode.
	A4N	AUTO INPUT NO	×	×	×	Turns OFF SCART RGB.
	A4Y	AUTO INPUT YES	×	×	×	Turns ON SCART RGB.
B	BRT	BRIGHTNESS	×	○	○	Adjust BRIGHTNESS.
	BHI	BLUE HIGH	×	○	○	Adjust BLUE HIGH-LIGHT.
	BLW	BLUE LOW	×	○	○	Adjust BLUE LOW-LIGHT.
	BR1	BAUD RATE 1	×	×	×	Sets the RS-232C baud rate to 1200bps.
	BR2	BAUD RATE 2	×	×	×	Sets the RS-232C baud rate to 2400bps.
	BR3	BAUD RATE 3	×	×	×	Sets the RS-232C baud rate to 4800bps.
	BR4	BAUD RATE 4	×	×	×	Sets the RS-232C baud rate to 9600bps.
	BR5	BAUD RATE 5	×	×	×	Sets the RS-232C baud rate to 19200bps.
C	CFR	CLOCK FREQ.	×	○	○	Adjust PLL frequency.
	CM1	COLOR MODE 1	○	×	×	Makes white-balance adjusting data Mode 1.
	CM2	COLOR MODE 2	○	×	×	Makes white-balance adjusting data Mode 2 (retake).
	CNT	CONTRAST	×	○	○	Adjust CONTRAST.
	CNN	SCART RGB NO	×	×	×	Turns OFF RGB2 priority mode.
	CNY	SCART RGB YES	×	×	×	Turns ON RGB2 priority mode.
	COL	COLOR	×	○	○	Adjusts COLOUR (except for RGB setting).
	CPH	CLOCK PHASE	×	○	○	Adjust PLL phase.
D	DIN	DISP NO	×	×	×	Disable OSD indication (except for menu screen, etc.).
	DIY	DISP YES	×	×	×	Enables OSD indication (except for menu screen, etc.).
	DOF	DISPLAY OFF	×	×	×	Turns OFF OSD indication.
	DW0	DOWN 10	×	—	—	Makes the adjustment value 10 DOWN.
	DWn	DOWN n	×	—	—	Makes the adjustment value n DOWN.
	DWF	DOWN FULL	×	—	—	Minimize the adjustment value.
F	FMN	FULL MASK NO	×	×	×	Cancels FULL MASK.
	FMY	FULL MASK YES	×	×	×	Turns ON FULL MASK WHITE.
	FMR	FULL MASK RED	×	×	×	Turns ON FULL MASK RED.
	FMG	FULL MASK GREEN	×	×	×	Turns ON FULL MASK GREEN.
	FMB	FULL MASK BLUE	×	×	×	Turns ON FULL MASK BLUE.
	FMK	FULL MASK YELLOW	×	×	×	Turns ON FULL MASK YELLOW.
	FMM	FULL MASK MAGENTA	×	×	×	Turns ON FULL MASK MAGENTA.
	FMC	FULL MASK CYAN	×	×	×	Turns ON FULL MASK CYAN.
	FRP	FRESH POSITION	×	×	×	Restores picture quality, white-balance adjusting data to center values.
	FRW	FRESH WHITE BAL.	×	×	×	Returns phase adjustment data to center values.

	Command name	Name	Validity in normal mode	Validity of number-direct command	Validity of UP/DOWN command	Function
G	GHI	GREEN HIGH	×	O	O	Adjusts GREEN HIGH-LIGHT.
	GLW	GREEN LOW	×	O	O	Adjusts GREEN LOW-LIGHT.
	GPS	GET POSI. DATA	×	×	×	Outputs phase-adjustment values.
	GST	GET STATUS	×	×	×	Outputs various set values.
	GS2	GET STATUS 2	×	×	×	Output various set values (T x D)
	GWB	GET W/B DATA	×	×	×	Output values for picture quality and white-balance.
H	HMD	HOUR METER DISP.	×	×	×	Adjusts horizontal phase.
	HPS	H POSITION	×	O	O	Displays hour meter.
I	IN1	INPUT1	O	×	×	Selects VIDEO input.
	IN2	INPUT2	O	×	×	Selects Y/C input.
	IN3	INPUT3	O	×	×	Select RGB1 input.
	IN4	INPUT4	O	×	×	Select RGB2 input.
K	KLN	KEY LOCK NO	×	×	×	Enables input to the operation panel or remote control.
	KLY	KEY LOCK YES	×	×	×	Disables input to the operation panel or remote control.
M	MKB	MASK BLACK	×	×	×	Sets top and bottom mask sections to black when PC-9800 is input.
	MKG	MASK GRAY	×	×	×	Sets top and bottom mask sections to gray when PC-9800 is input.
	MPN	MP MODE NO	×	×	×	Turns OFF MP (Motion Picture) mode.
	MPY	MP MODE YES	×	×	×	Turn ON MP mode.
N	NMB	NTSC MASK BLACK	×	×	×	Sets top and bottom mask sections to black when NTSC is input.
	NMG	NTSC MASK GRAY	×	×	×	Sets top and bottom mask sections to gray when NTSC is input.
	NMN	NTSC MASK ON	×	×	×	Turns OFF top and bottom mask sections when NTSC is input.
P	POF	POWER OFF	O	×	×	Turn off power.
	PON	POWER ON	O	×	×	Turn on power.
R	RHI	RED HIGH	×	O	O	Adjusts RED HIGH-LIGHT.
	RLW	RED LOW	×	O	O	Adjusts RED LOW-LIGHT.
S	STD	STD. W/B DATA	×	×	×	Restores white-balance adjustment data to factory-preset values.
	STP	STD. POSI. DATA	×	×	×	Returns phase adjustment data to factory-preset values.
	SHP	SHARPNESS	×	O	O	Adjusts SHARPNESS (except for RGB 1 & 2 input).
T	TNT	TINT	×	O	O	Adjusts TINT (except for RGB 1 & 2 inputs, and PAL signal for the PDP-V401E).
U	UP0	UP 10	×	—	—	Makes the adjustment value 10UP.
	UPn	UP n	×	—	—	Makes the adjustment value nUP.
	UPF	UP FULL	×	—	—	Maximizes the adjustment value.
V	VPS	V POSITION	×	O	O	Adjusts vertical phase.

RS-232C adjustment mode

5.4.4 List of GET commands

What are GET commands?
- Commands to output adjustment data from the PC connected to the plasma display to another personal computer
- Adjustment data is output for each input function, each input mode, and each mode.
- Adjustment data is output in ASCII.

Note: Data in < > indicates a command name.

1) <GPS> (GET POSITION DATA) — Phase-adjustment data is output in the following format:
  (1) STX (02H)
  (2) Adjustment data for <CFR>/CLOCK FREQ (3BYTE).
  (3) Adjustment data for <CPH>/CLOCK PHASE (3BYTE).
  (4) Adjustment data for <HPS>/HOR.POSITION (3BYTE).
  (5) Adjustment data for <VPS>/VER.POSITIOIN (3BYTE).
  (6) ETX (03H)

Note:Not valid when VIDEO and Y/C are input.

2) <GWB> (GET W/B DATA) — Data for picture quality and white-balance are output in the following format:
  (1) STX (02H)
  (2) Adjustment data for <CNT>/CONTRAST (3BYTE).
  (3) Adjustment data for <BRT>/BRIGHTNESS (3BYTE).
  (4) Adjustment data for <COL>/COLOR (3BYTE). Note 1)
  (5) Adjustment data for <TNT>/TINT (3BYTE). Note 1, 2)
  (6) Adjustment data for <SHP>/SHARPNESS (3BYTE). Note 1)
  (7) Adjustment data for <RHI>/RED HIGH-LIGHT (3BYTE).
  (8) Adjustment data for <GHI>/GREEN HIGH-LIGHT (3BYTE).
  (9) Adjustment data for <BHI>/BLUE HIGH-LIGHT (3BYTE).
  (10) Adjustment data for <RLW>/RED LOW-LIGHT (3BYTE).
  (11) Adjustment data for <GLW>/GREEN LOW-LIGHT (3BYTE).
  (12) Adjustment data for <BLW>/BLUE LOW-LIGHT (3BYTE).
  (13) ETX (03H)

Note: 1) When the input function is INPUT = RGB 1, 2, dummy data is output.
      2) The dummy data is output when PAL signals are input for PDP-V402E.

3) <GST> (GET STATUS) — The status of each setting is output in the following format:
  (1) STX (02X)
  (2) PC software version   (5 BYTE): Output by command name.
     Example: 5559A: Indicates version A.
  (3) Input function status   (3 BYTE): Output by command name.
     Example: IN1: Indicates VIDEO input.
  (4) COLOR MODE Status   (3 BYTE): Output by command name.
     Example: CM1: COLOR MODE = 1.
  (5) OSD indication, Enable/Disable setting state   (3 BYTE): Output by command name.
     Example: DIY: Indicate OSD indication and Enable.
  (6) Remote control Enable/Disable status, and operation panel   (3 BYTE): Output by command name.
     Example: KLY: Indicates Operation Disabled.
  (7) RGB2 priority mode setting state,   (3 BYTE): Output by command name.
     Example: A4N: Indicate RGB2 priority mode OFF.
  (8) SCART RGB mode setting state,   (3 BYTE): Output by command name.
     Example: CNN: Indicate SCART RGB mode OFF.
  (9) Hour meter value   (5BYTE)
     Example: 00020: Accumulated conduction time is 20 hours.
  (10) ETX (03H)

4) GS2 (GET STATUS 2) - The status of each setting is output in the following format:

 (1) STX (02H)

 (2) MP mode setting status   (3 BYTE): Output by command name.
    Example: MPY: Indicates MP mode ON.

 (3) NTSC Top/Bottom mask-mode setting status (3 BYTE): Output by command name.
    Example: NMG: Indicates Gray Mask On.

 (4) PC98 mask-mode setting status   (3 BYTE): Output by command name.
    Example: MKB: Indicates mask setting of black.

 (5) FAN rotation state   (3 BYTE)
    Example: FCH: High rpm
        FCL: Low rpm

 (6) ETX (03H)

5.5 KEY LOCK/UNLOCK

5.5.1 Functions

To prevent tampering following installation, invoke "KEY LOCK" status to prevent use of "the main-body operation panel" or "the remote control". (RS-232C commands are valid.)

If an attempt is made to use "the operation panel" or "the remote control", the screen displays "KEY LOCK" at the top right.

The system is factory-set to "KEY UNLOCK" to enable use of "the operation panel" and "the remote control".

5.5.2 Setting method

KEY LOCK status can be set in two ways.

1) Operation panel of the main body (hidden button)

Press the KEY LOCK/UNLOCK button located in the opening between the STANDBY/ON button and INPUT button.

The button toggles between KEY LOCK and KEY UNLOCK settings.

2) RS-232C commands

Activate RS-232C adjustment mode and

send a <KLY> command to set for KEY LOCK status, or

send a <KLN> command to set for KEY UNLOCK.

6.1 Pseudo contour

When input function is RGB 1 or RGB 2, and a gradation image (such as human face and skin) moves at a speed, the "stripe-like shadow" may appear in that image. This "stripe-like shadow" is known as the "pseudo contour".

This phenomenon is an illusion of human eyes attributable to the gradation expression method peculiar to the plasma display. This phenomenon does not appear in stills picture images.

The problem of this noise (pseudo contour) has been solved by using PIONEER's unique driving system, and achieved high picture quality (particularly, for animation).Note that this technology is effective, only when operation is for NTSC (interlace signal) and computer images (no-interlace signal), with MP mode ON. Therefore, when the following signals are inputted, this phenomenon may appears when MP mode is OFF:

- VGA animation signal (when a high speed game software and video CD play on PC.
- NTSC double scanning signal (using double raster, etc.)

Various precautions for operation

6.2 Precautions

- When the power to the display repeats turning off, some circuits mey be faulty (because of defective parts, etc.). Turn off the power to the plasma display and turn on the switch again after several seconds. When the power is turned off again, the system may be faulty. When it normally works, the system can be used without problems.

- When the same images (such as stills and telop) are on the display for hours, images are printed on the display and not disappear. To prevent this trouble, examine the contents of software, showing method, system configuration, etc.

- When the following signals are inputted, the screen may be abnormal:
    VTR signal on which dubbing (copying) has been repeated
    VTR signal that is protected by the copy guard
    Scrambled CATV signal
    Signal in which the phase of synchronizing signal is extremely off the position of the phase of picture signal.

- When the power is turning on or input is switched over, it requires some time for the screen to appear or for input to change over, regardless of operation from buttons on the main body, remote controller, or RS-232C. Take into account this point for direction.

    (1) When the power is turned on
        Maximum 7 seconds
    In either case of the main power on, or power on from standby, take into accounts that it requires approx. up to seven seconds for images to appear.
    For approx. 3 seconds in the standby state, pushing the power-on key cannot make operation valid.

    (2) When input is switched over:
        Usual   Approximately 0.5 seconds
        Maximum   Approximately 1.0 seconds
    Images becomes blackout, because the system stops driving to make the plasma display emit plasma and must rewrite the contents of the image memory. In addition, to switch over input between different frequencies, it takes more time to convert the arrangement of the contents of the image memory. (maximum approx. 1.0 seconds).
    Take into account this point for direction.

- This device is so designed that the fans will automatically increase the number of rotation to cool the inside of the device in order to protect both the panel and circuits, when the ambient temperature exceeds about 40$ (in such a case, it is likely that the fan rotation noise will increase).
    Moreover, the starting temperature of the above-mentioned guaranteed operation will vary, depending on such factors as image signal design, air permeability of external environment, and whether or not there is any dust on or around the ventilating holes of the main body.
    Operate this machine with the ambient temperature of 40 °C or lower.

- If the power is automatically turned off, and the standby indicator flickeres green during operating this machine, the following causes will be possible and take the proper steps:
    ① The ambient temperature exceeds 55 °C.
        Operate this machine with the ambient temperature of 40 °C or lower.
    ② In the cases that the ventilating hole is blocked or some parts abnormally heats up, temperature in the machine is abnormally high.
        Remove the power plug. Then, contact an after-sales service representative and ask for repair.

- **Remove the plug from the plug socket before maintenance.**

- **Maintenance of the cabinet/remote controller**

  Do not use solvent such as benzene and thinner. The cabinet and remote controller may deteriorate in quality or the paint may peel off.

  Use a soft cloth to wipe off dust lightly.

  When they are very dirty, put a soft cloth in detergent diluted with water, fully wring it and wipe with it. Finish cleaning with a dry soft cloth.

- **Maintenance of screen (protective front panel)**

  The screen (protective front panel) surface is treated by special coating to prevent reflection. This causes the panel to be very delicate. Use a dry soft cloth for maintenance after wiping dust off. Do not wipe it with tissue paper or hard paper.

  Do not use solvent such as benzen and thinner to maintain this panel. Using solvent may result in discoloration of the panel. We recommend cleaning cloth and cleaning liquid.

Name	Type No.
Cleaning cloth: MiniMax	GED-009
Cleaning cloth: Wiping cloth	AED1174
Cleaning liquid: B4	GEM1004

  If the panel is slightly dirty, brush any dust off the panel and lightly wipe with a Mini Max or Wiping Cloth.

  If the panel it is very dirty, brush any dust off the panel, and then apply a small amount of B4 to the edge of a Mini Max or Wiping Cloth and clean the dirty panel. In this state, the surface of the panel is unevenly cleaned. When the B4 is dry, rub the surface with a dry Mini Max or Wiping Cloth.
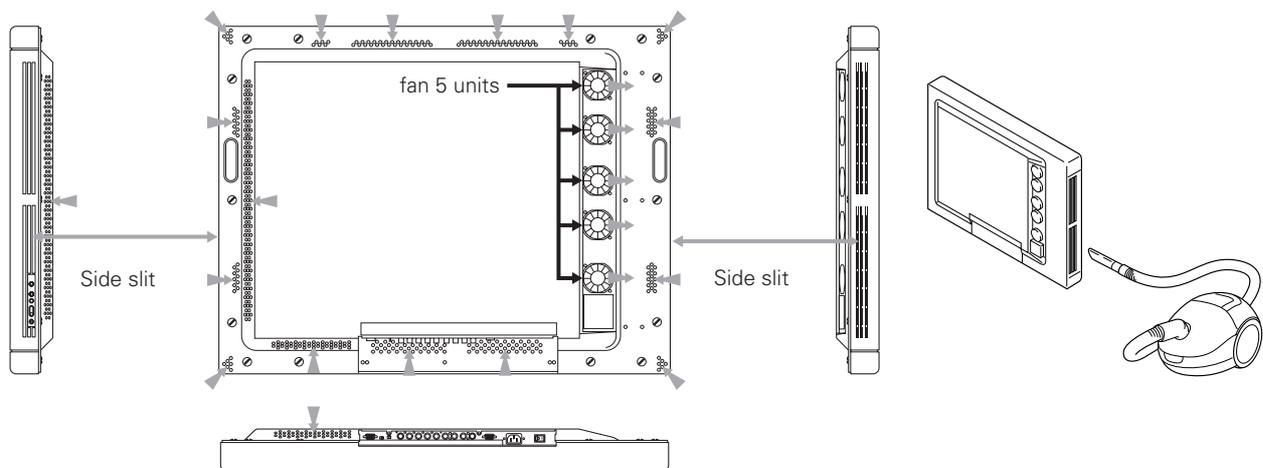
Care and cleaning of ventilating holes

Remove with a vacuum cleaner set to 'LOW' the dust that gathered in the side slits of the main body and the ventilating holes on the backside (See the above figure) at least once a month as a rule of thumb. Moreover, for maintenance of ventilating holes, make sure to turn OFF the main body power supply switch.

> **Cautions:**
>
> In case the device is operated without removing accumulated dust, the temperature inside the device will abnormally increase, resulting in failures.
> Make sure to regularly clean the ventilating holes.

- **Readjusting white balance**

  This device uses phosphor as with CRT, and if it is used for a long period of time, it is likely that phosphor deteriorates and luminance decreases. Since green and blue phosphors are likely to deteriorate slightly earlier than red phosphor, we recommend you to readjust the white balance every 1,000 hours.

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