

Color Video Printer

Instructions for Use

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

UP-25MD



Indications for Use/Intended Use

The Sony UP-25MD printer is a compact, medical grade color printer that can accept analog signal input. It is designed to be integrated into medical imaging systems such as ultrasound, cardiac catheterization laboratory, endoscopy camera processor and other compatible medical imaging systems and produce hard copy prints of still images captured by these systems for the patient record or for referrals.

Notes

- Output images from this equipment cannot be used for diagnostic use.
- This equipment is for medical professionals.
- This equipment is intended for use in medical environments, such as clinics, examination rooms, and operating rooms.

WARNING

To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

No modification of this equipment is allowed.

WARNING

To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

WARNING

To disconnect the main power, unplug the power plug. When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power plug to an easily accessible socket-outlet near the unit. Do not position the ME equipment where it is difficult to unplug the power plug.

If a fault should occur during operation of the unit, operate the disconnect device to switch the power supply off, or disconnect the power plug.

For customers in the U.S.A.

Caution

Federal law (United States of America) restricts this device to sale by or on the order of a licensed healthcare practitioner.

**Rx
ONLY**

Symbols on the product



Consult the instructions for use

Follow the directions in the instructions for use for parts of the unit on which this symbol appears.



This symbol indicates the manufacturer, and appears next to the manufacturer's name and address.



This symbol indicates the EU Importer, and appears next to the EU Importer's name and address.



This symbol indicates the European Community representative, and appears next to the European Community representative's name and address.



This symbol indicates the medical device in the European Community.



This symbol indicates the date of manufacture.



This symbol indicates the serial number.



This symbol indicates the version of the accompanying document.



This symbol indicates the Unique Device Identifier (UDI), and appears next to the bar code representation of the Unique Device Identification.



This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.



Storage and transport temperature

This symbol indicates the acceptable temperature range for storage and transport environments.



Storage and transport humidity

This symbol indicates the acceptable humidity range for storage and transport environments.



Storage and transport pressure

This symbol indicates the acceptable atmospheric pressure range for storage and transport environments.

For accessories



This symbol indicates the batch code.



This symbol indicates "Do not reuse".

For customers in the U.S.A.

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

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of part 15 of FCC Rules.

For customers in Canada

This unit has been certified according to Standard CAN/CSA-C22.2 No.60601-1.

For customers in the U.S.A and Canada

When you use this product connected to 240 V single phase, be sure to connect this product to a center tapped circuit.

Important safeguards and notices for use in the medical environments

1. All devices connected to the unit must be certified or compliant according to IEC 60601-1, IEC 60950-1, and IEC 60065 standards and other IEC/ISO standards applicable to the devices.
2. Furthermore, the system as a whole must comply with IEC 60601-1 standards. All peripheral devices connected to the signal input/output sections of the unit constitute the medical-use system, and therefore, the user is responsible for ensuring that the system as a whole complies with IEC 60601-1 standards. If in doubt, consult qualified Sony service personnel.
3. Connecting the unit to other devices may increase the leakage current.
4. For all peripheral devices connected to the unit that operate on commercial power supplies and do not comply with IEC 60601-1 standards, incorporate an isolation transformer that complies with IEC 60601-1 standards and connect to the commercial power supply via the transformer.

5. The unit generates, uses, and may radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference on other devices. If the unit causes interference (which can be determined by disconnecting the power cord from the unit), try the following.

- Relocate the unit with respect to the affected devices.
- Connect the unit and the affected devices to different branch circuits.

For more information, consult qualified Sony service personnel.

(Applicable standard: IEC 60601-1-2)

Important EMC notices for use in medical environments

- The UP-25MD needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the instructions for use.
- The UP-25MD is intended for use in a professional healthcare facility environment.
- Portable and mobile RF communications equipment, such as cellular phones, can affect the UP-25MD.

Warning

- Portable RF communications equipment should be used no closer than 30 cm (12 inches) to any part of the UP-25MD. Otherwise, degradation of the performance of this equipment could result.
- If the UP-25MD will be used adjacent to or stacked with other equipment, normal operation of the UP-25MD under such configurations should be verified via observation.
- The use of accessories and cables other than those specified, with the exception of replacement parts sold by Sony Corporation, may result in increased emissions or decreased immunity of the UP-25MD.

Guidance and manufacturer's declaration – electromagnetic emissions		
The UP-25MD is intended for use in the electromagnetic environment specified below. The customer or the user of the UP-25MD should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The UP-25MD uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. The UP-25MD is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11 CISPR 32	Class B	
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity

The UP-25MD is intended for use in the electromagnetic environment specified below. The customer or the user of the UP-25MD should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, a relative humidity of at least 30% is recommended.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% U_T (100% dip in U_T) for 0.5/1 cycles ^a 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25/30 cycles ^a (for 0.5 sec) 0% U_T (100% dip in U_T) for 250/300 cycles ^a (for 5 sec)	0% U_T (100% dip in U_T) for 0.5/1 cycles ^a 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25/30 cycles ^a (for 0.5 sec) 0% U_T (100% dip in U_T) for 250/300 cycles ^a (for 5 sec)	Mains power quality should be that of a typical commercial or hospital environment. If the user of the UP-25MD requires continued operation during power mains interruptions, it is recommended that the UP-25MD be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE: U_T is the a.c. mains voltage prior to application of the test level.

a For example, 10/12 means 10 cycles at 50 Hz or 12 cycles at 60 Hz.

Guidance and manufacturer's declaration – electromagnetic immunity

The UP-25MD is intended for use in the electromagnetic environment specified below. The customer or the user of the UP-25MD should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz outside ISM bands ^c	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the UP-25MD, including cables, than the recommended separation distance calculated from the equation appliance to the frequency of the transmitter. Recommended separation distance $d = 1.2 \sqrt{P}$
	6 Vrms 150 kHz to 80 MHz in ISM bands ^c	6 Vrms	
Radiated RF IEC 61000-4-3	3 V/m	3 V/m	IEC 60601-1-2: 2007 $d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz IEC 60601-1-2: 2014 $d = 2.0 \sqrt{P}$ 80 MHz to 2.7 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, ^a should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with following symbol: 
	80 MHz to 2.7 GHz		

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

- a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the UP-25MD is used exceeds the applicable RF compliance level above, the UP-25MD should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the UP-25MD.
- b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.
- c The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 MHz to 40.70 MHz.

Recommended separation distances between portable and mobile RF communications equipment and the UP-25MD

The UP-25MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the UP-25MD can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the UP-25MD as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m				
	IEC 60601-1-2 : 2007			IEC 60601-1-2 : 2014	
	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 2.7 GHz $d = 2.0 \sqrt{P}$
0.01	0.12	0.12	0.23	0.12	0.20
0.1	0.38	0.38	0.73	0.38	0.63
1	1.2	1.2	2.3	1.2	2.0
10	3.8	3.8	7.3	3.8	6.3
100	12	12	23	12	20

For transmitters rated a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Guidance and manufacturer's declaration – electromagnetic immunity

The UP-25MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. Portable RF communications equipment should be used no closer than 30 cm (12 inches) to any part of the UP-25MD. Otherwise, degradation of the performance of this equipment could result.

Immunity test	Band ^a	Service ^a	Modulation	IEC 60601 test level	Compliance level
Proximity fields from RF wireless communications equipment IEC 61000-4-3	380 – 390 MHz	TETRA 400	Pulse modulation 18 Hz	27 V/m	27 V/m
	430 – 470 MHz	GMRS 460 FRS 460	FM ±5 kHz deviation 1 kHz sine	28 V/m	28 V/m
	704 – 787 MHz	LTE Band 13, 17	Pulse modulation 217 Hz	9 V/m	9 V/m
	800 – 960 MHz	GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE Band 5	Pulse modulation 18 Hz	28 V/m	28 V/m
	1,700 – 1,990 MHz	GSM 1800 CDMA 1900 GSM 1900 DECT LTE Band 1, 3, 4, 25 UMTS	Pulse modulation 217 Hz	28 V/m	28 V/m
	2,400 – 2,570 MHz	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE Band 7	Pulse modulation 217 Hz	28 V/m	28 V/m
	5,100 – 5,800 MHz	WLAN 802.11 a/n	Pulse modulation 217 Hz	9 V/m	9 V/m

NOTE: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

^a For some services, only the uplink frequencies are included.

Caution

When you dispose of the unit or accessories, you must obey the laws in the relative area or country and the regulations in the relative hospital regarding environmental pollution.



Warning on power connections

Use a proper power cord for your local power supply.

1. Use the approved Power Cord (3-core mains lead) / Appliance Connector / Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.

2. Use the Power Cord (3-core mains lead) / Appliance Connector / Plug conforming to the proper ratings (Voltage, Ampere).

If you have questions on the use of the above Power Cord / Appliance Connector / Plug, please consult a qualified service personnel.



Warning on power connections for medical use

Customers in the U.S.A. and Canada should use the following type of power cord.

Customers in other countries or regions should use the power cord prescribed by their country or region.

	U.S.A. and Canada
Plug type	HOSPITAL GRADE*
Cord type	Min. Type SJT
	Min. 18 AWG
Minimum rating for plug and appliance couplers	10 A / 125 V
Safety approval	UL Listed and CSA

* Note: Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked “Hospital Only” or “Hospital Grade”.



Caution

Do not use the device in a MR (Magnetic Resonance) environment.
It may cause a malfunction, fire, and unwanted movement.

For the customers in the U.S.A.

SONY LIMITED WARRANTY - Please visit <http://www.sony.com/psa/warranty> for important information and complete terms and conditions of Sony’s limited warranty applicable to this product.

For the customers in Canada

SONY LIMITED WARRANTY - Please visit <http://www.sonybiz.ca/pro/lang/en/ca/article/resources-warranty> for important information and complete terms and conditions of Sony’s limited warranty applicable to this product.

For the customers in Europe

Sony Professional Solutions Europe - Standard Warranty and Exceptions on Standard Warranty.
Please visit https://pro.sony/en_GB/support-services/warranty/support-professional-solutions-europe-standard-product-warranty for important information and complete terms and conditions.

For the customers in Korea

SONY LIMITED WARRANTY - Please visit <http://bpeng.sony.co.kr/handler/BPAS-Start> for important information and complete terms and conditions of Sony’s limited warranty applicable to this product.

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System Overview

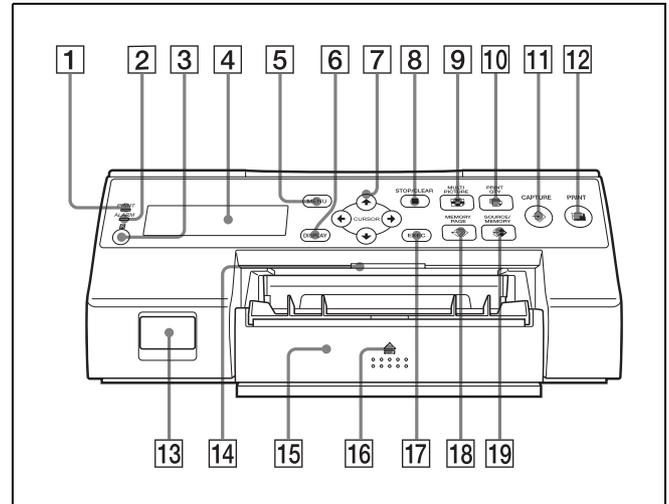
The UP-25MD is a color video printer that captures images from an imaging output device such as video equipment with a simple operation and prints the images at A6 size. It prints images by pressing a thermal head, heated according to the input image data, against a dedicated ink ribbon coated with sublimation ink, transferring the ink onto special thermal printing paper.

The UP-25MD has the following features:

- **High picture quality and high print resolution**
The printer allows you to print out high resolution images in full color (with 256 shades per color, a total of more than 16,700,000 colors in all) in high resolution print mode (approximately 423 dpi).
- **Menu settings to meet your printer's specifications**
By changing the printer settings, you can print multiple reduced images on a single page or insert captions, and create various types of printouts. (See page 28)
Ordinary print operations can be performed using the buttons on the printer. Depending on the operation you want perform, you can use the window display on the printer or a connected monitor display to configure printer settings and perform various adjustments as necessary.
- **HDTV (high-definition television) signal input support**
The printer supports both 1080i and 720p signal types, and can automatically determine the input signal type. When you print HDTV signals or display them on a monitor, they are output with a 16:9 aspect ratio. You can downconvert the signals to SDTV signals with a 4:3 aspect ratio when outputting to a monitor.

Location and Function of Parts and Controls

Front



- 1 PRINT indicator**
Lights while printing is in progress.
- 2 ALARM indicator**
Lights when an error such as a paper jam occurs.
- 3  Remote sensor (page 17)**
Aim the head of the remote control unit toward this sensor.
- 4 Printer window display**
Displays messages similar to those that appear on the monitor, with differences occurring due to the narrower character display range on the printer window.
When operating menus, the printer window also indicates the line on which the menu cursor is positioned.
If errors occur, error messages are displayed.
The contrast of the printer window display can be adjusted on the SYSTEM SETUP menu. (See page 63)
- 5 MENU button**
Press this button to display the menu or to return to the normal screen from the menu.
- 6 DISPLAY button (page 25, 41)**
When the normal screen is displayed, pressing this button selects whether to display screen indicators such as Q1, A, S, etc. Each press of this button toggles the display setting ON and OFF, and the current setting is displayed for a few seconds when the button

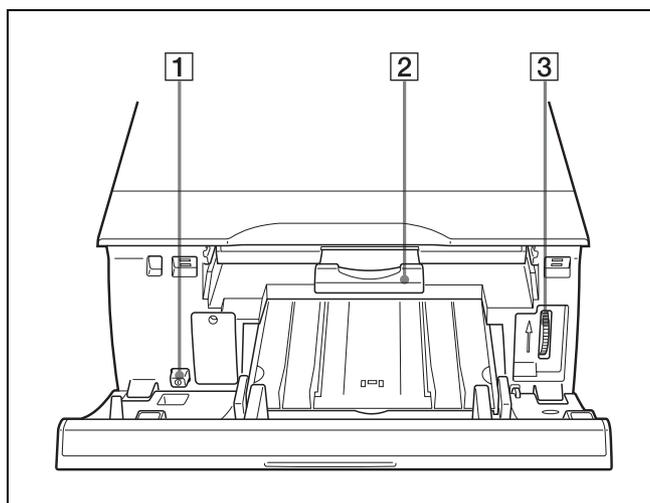
is pressed. The DISPLAY setting in the OUTPUT SETUP menu also changes in conjunction with each press of this button.

When the menu is displayed, pressing this button temporarily hides the menu display on the monitor. The menu display is hidden for as long as the button is pressed.

- 7** **Directional buttons** (←, →, ↑, ↓)
Use these buttons to select menu items and change settings.
- 8** **■ STOP/CLEAR button (page 39)**
When printing is in progress, this button functions as the STOP button. Press this button during continuous printing operations to stop printing after the current item finishes printing.
When printing is not in progress, this button functions as the CLEAR button. Press this button to delete images captured in memory. The images that are deleted when the button is pressed depend on the setting in the FUNCTION SETUP menu. If the button is pressed while the setting is OFF, an error tone will sound.
- 9** **☒ MULTI PICTURE button (page 31)**
Press this button during normal screen display to select the layout (full-size, two reduced images, or four reduced images) in which images are captured to memory. Each press of this button switches the image type in the following sequence: “1, 2, 4, 1...,” and the current selection is displayed for a few seconds when the button is pressed. The MULTI PIX setting in the LAYOUT SETUP menu also changes in conjunction with each press of this button.
- 10** **🖨️ PRINT QTY button (page 26)**
Press this button to select the number of copies to print. You can select up to nine copies, and the current selection is displayed for a few seconds when the button is pressed. The PRINT QTY setting in the PRINTER SETUP menu also changes in conjunction with each press of this button.
You can press this button to change the number of copies to print, even while printing is in progress.
- 11** **↔️ CAPTURE button**
Press this button to capture images to memory for printing.
- 12** **🖨️ PRINT button**
Press this button to print the images that are captured to memory.
- 13** **Ⓜ️ POWER switch**
Use this switch to turn the printer on or off.

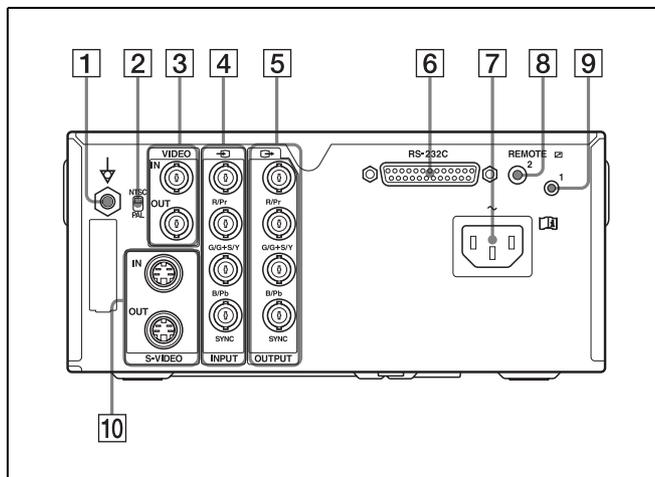
- 14** **Tray light**
Illuminates the output tray. (You can configure the setting for this.) (page 63)
- 15** **Paper feed tray (page 19)**
Load paper in this tray. Printouts stack in the tray above.
- 16** **⬆️ (eject) mark**
Press here to eject the paper feed tray.
- 17** **EXEC button**
Use this button to confirm a menu setting.
- 18** **⏪ MEMORY PAGE button (page 27, 30, 40)**
Press this button to select the memory page to use.
- 19** **⏩ SOURCE/MEMORY button**
Press this button to select the source for images that are output to the monitor. Each press of this button toggles between memory images and input source images.

Inside the Ribbon Door Panel



- 1** **Ⓜ️ POWER switch**
Use this switch to turn the printer on or off. This switch functions even while the ribbon door panel is open.
- 2** **Ribbon tray (page 18)**
Load the ink ribbon in this tray.
- 3** **Dial (page 76)**
Use this dial to clear paper manually when an internal paper jam occurs.

Rear



- 1 **Equipotential ground terminal connector**
Connects to a ground (equipotential) plug to bring the various parts of the system to the same potential.
- 2 **NTSC/PAL switch**
Switch the position as follows according to the video signal being used.
When using NTSC video signals, set the switch to the up position.
When using PAL video signals, set the switch to the down position.
- 3 **VIDEO IN/VIDEO OUT (composite video signal input/composite video signal output) connectors (page 16)**
VIDEO IN connector: Connects to video equipment with composite video signal output connectors.
VIDEO OUT connector: Connects to video equipment with composite video signal input connectors.
- 4 **INPUT (RGB/YpBPr/SYNC video signal input) connectors (page 16)**
Connects to video equipment with RGB/YpBPr signal output connectors.
- 5 **OUTPUT (RGB/YpBPr/SYNC video signal output) connectors (page 15)**
Connects to video equipment with RGB/YpBPr signal input connectors.
- 6 **RS-232C connector (page 17)**
Connects to a computer for controlling the printer.
- 7 **AC IN connector (page 15)**
Connects to the power cord.

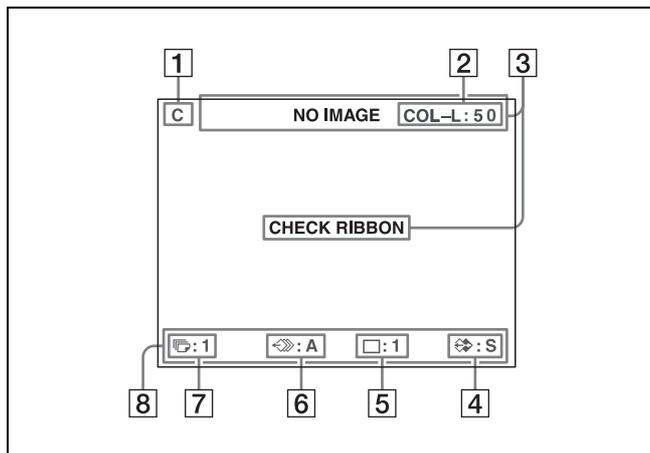
- 8 **REMOTE 2 connector (stereo mini jack) (page 17)**
Connects to an RM-91 Remote Control Unit (not supplied) or an FS-24 Foot Switch (not supplied).
- 9 **REMOTE 1 connector (page 17)**
Connects to an RM-5500 Remote Control Unit (not supplied) for wired remote control.
- 10 **S-VIDEO IN/S-VIDEO OUT (S-Video input/S-Video output) connectors**
S-VIDEO IN connector: Connects to video equipment with S-Video signal output connectors.
S-VIDEO OUT connector: Connects to video equipment with S-Video signal input connectors.

Monitor Display

When the printer is connected to a video monitor and turned on, the following screen is the first screen that appears on the monitor. (This screen is referred to as the “normal” screen in this document.)

When the MENU button is pressed, the menu screen is displayed.

For detailed information on the menu screen, see “Menu Tree” on page 43.



- 1 **C (caption) display section**
C is displayed when the printer is set to print a caption.
- 2 **Ink ribbon type and remaining ink ribbon display section**
Displays the ink ribbon type and the remaining amount of ribbon (indicates the number of printouts that can still be made with the ribbon).
- 3 **Message display section**
Usually messages are displayed on the top line of the screen.
Urgent messages are displayed on the center of the screen.

4 S or M (image type) display section

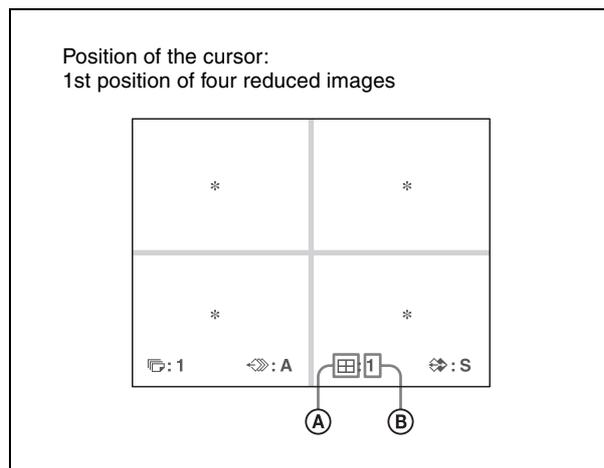
Indicates the type of image being displayed on the monitor.

S (Source): The image from the input signal source is displayed on the screen.

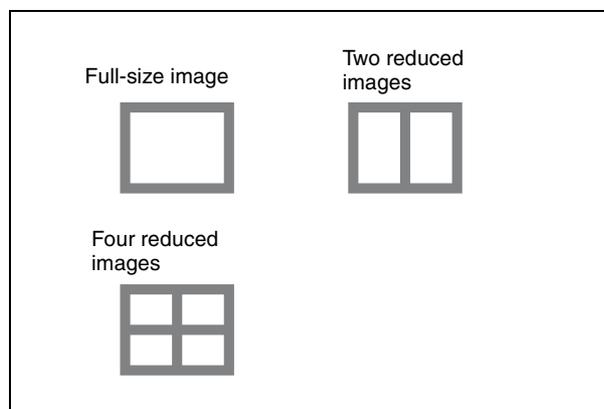
M (Memory): The image captured in memory is displayed on the screen.

5 Printer operation mode display section

Indicates the printer operation mode (type of printouts such as multiple reduced images).

**A Type of printout**

Indicates the type of printout.

**B Position of the cursor**

Indicates the position where the cursor is currently placed and where an image will be captured.

6 Memory page display section

Indicates the currently selected memory page.

Memory pages that are currently being printed or memory pages that are queued for printing will blink.

7 Print quantity display section

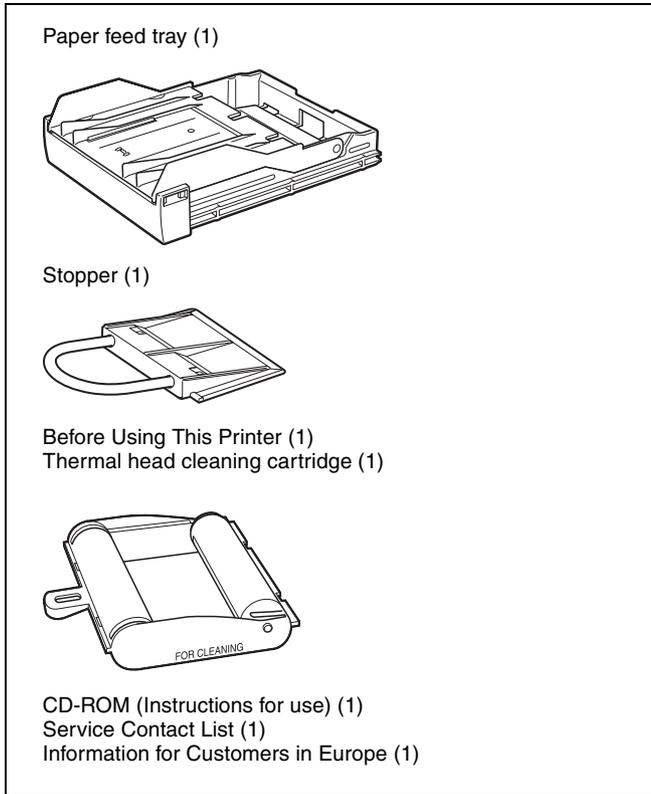
Indicates the number of copies to be printed. This item blinks while the printer is busy.

8 Printer setting status display section

The currently selected status is displayed when either MULTI PICTURE, PRINT QTY, or DISPLAY button is pressed.

Supplied Accessories

This printer is packed with the following accessories. Check that nothing is missing from your package.



Notes

- Retain the original carton and packing materials in case you have to transport this unit in the future.
- When transporting the printer, remove the ink ribbon and paper feed tray, and lock the internal thermal head. For details, see “Transportation” on page 66.

Connections

To enable printing, video equipment to act as an input signal source, and a video monitor to display images or menus must be connected.

The following diagrams illustrate how to make the input, output and remote control connections. Use this as a guide when connecting the cables required to transmit signals to and from the equipment to be used for printing.

Notes

- Turn off the power of each device before attempting to make any connections.
- Connect the AC power cord last.



WARNING

Using this unit for medical purposes

The connectors on this unit are not isolated.

Do not connect any device other than one which conforms to IEC 60601-1 standards.

When an information technology device or AV device that uses an alternating current is connected, current leakage may result in an electric shock to the patient or operator. If use of such a device is unavoidable, isolate its power supply by connecting an isolation transformer, or by connecting an isolator between the connecting cables. After implementing these measures, confirm that the reduced risk now conforms to IEC 60601-1 standards.

Connecting Video Equipment

Connect the video equipment providing the video images to be printed.

Connect the video equipment which will be used in actual printing, using the following diagram as a guide.

Connections for HDTV-signal input and output

Use the RGB/YPbPr/SYNC video signal input and output connectors to connect equipment that will input and output HDTV signals.

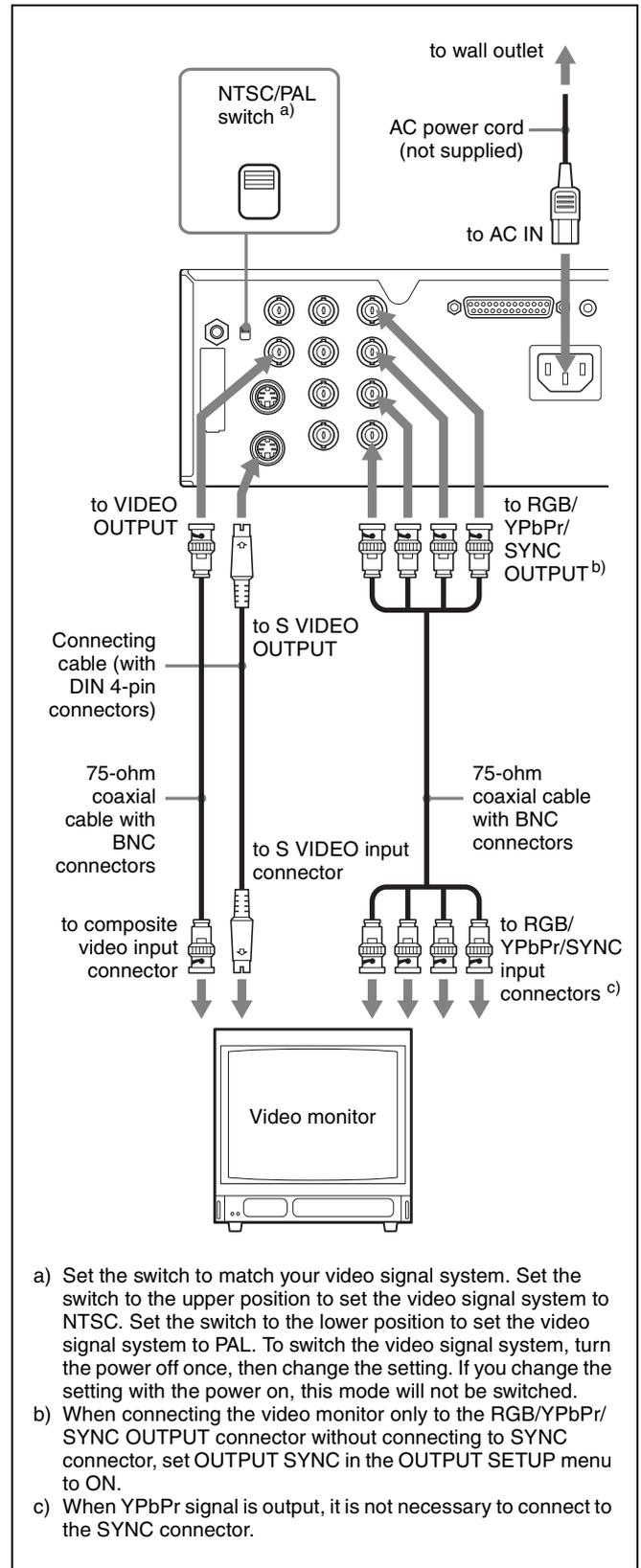
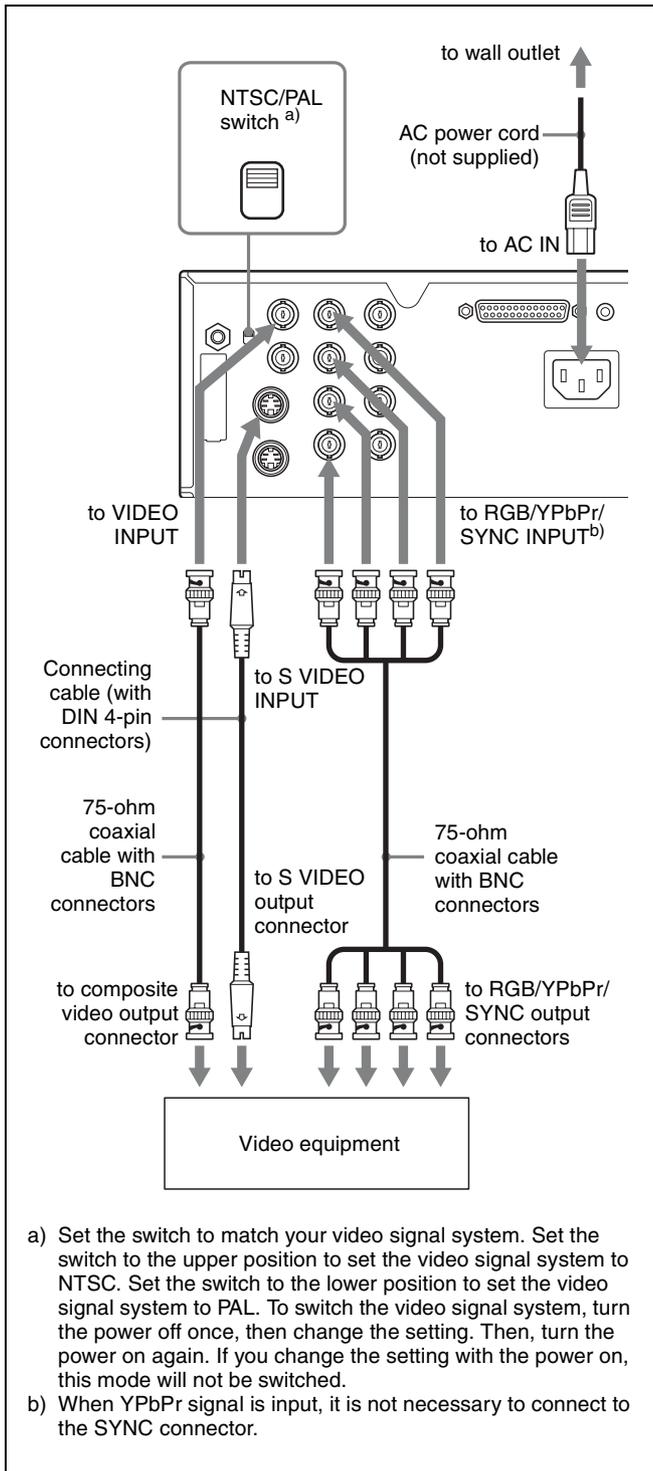
In addition, set the NTSC/PAL switch on the rear panel of the printer as follows, based on the video system (NTSC/PAL) you will use.

Video system	Switch position
NTSC	• Up
PAL	• Down

Supported signals for the RGB/YPbPr/SYNC video signal input and output connectors are as follows.

NTSC setting: 480/59.94i (SD), 1080/59.94i, 720/59.94p

PAL setting: 576/50i (SD), 1080/50i, 720/50p

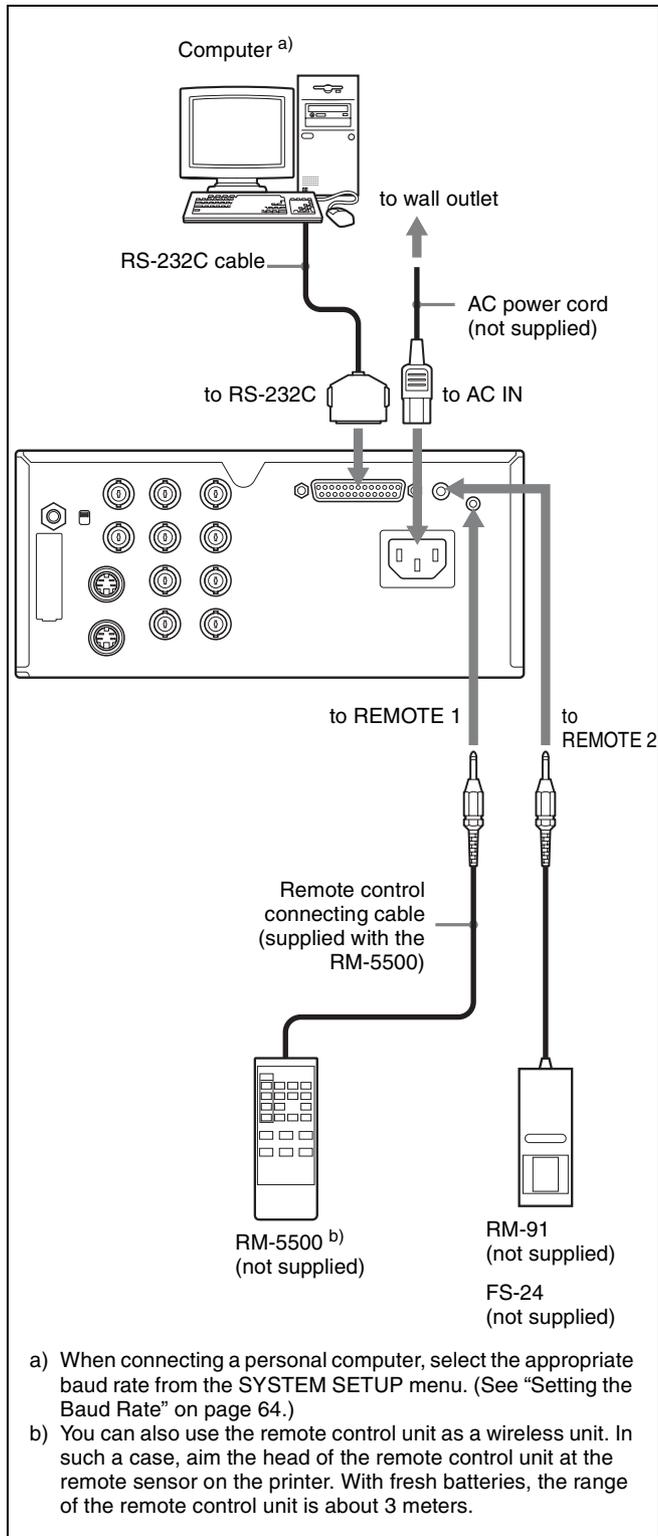


Connecting the Video Monitor

Connect a video monitor to view captured images and to check those to be printed. Connect a suitable video monitor which will be used in actual printing, using the following diagram as a guide.

Making Connections to Enable Remote Control

The printer can be controlled remotely by connecting an RM-5500 Remote Control Unit (not supplied), an RM-91 Remote Control Unit (not supplied), an FS-24 Foot Switch (not supplied), or a personal computer.



Before Printing

Once the printer is connected to the computer (page 15), you must load the paper and the ink ribbon as described below before you can actually begin printing.

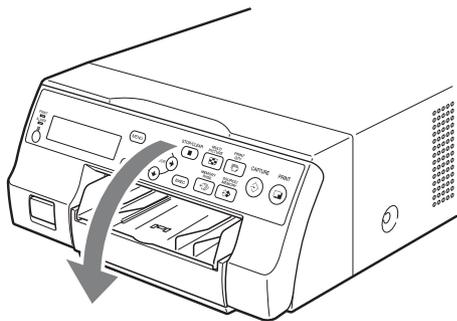
Loading the Ink Ribbon

Note

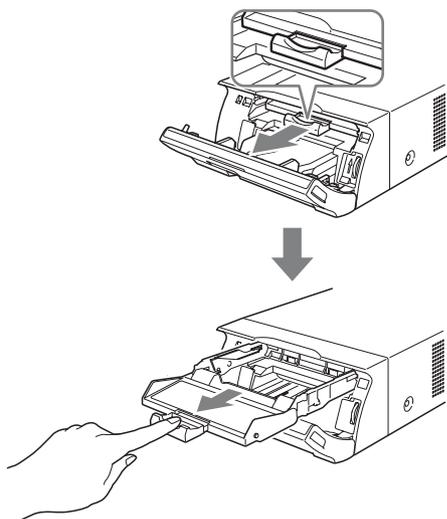
When using the printer for the first time, the thermal head may be set to its transport position. Be sure to turn on the printer and release the head from its transport position before removing the ribbon tray.

Do not open the ribbon door panel if "PLEASE WAIT" appears on the printer window display.

- 1 Open the ribbon door panel.

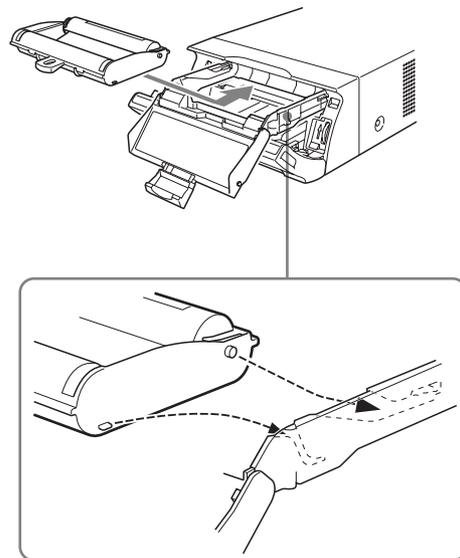


- 2 Pull the ribbon tray straight out of the printer.



- 3 Load the ink ribbon.

- ① Align the two pegs on each side of the ink ribbon with the slots on the ribbon tray.



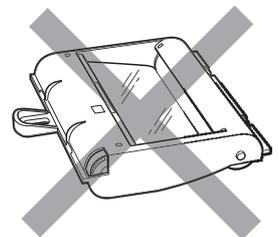
Notes

- Make sure to load the ink ribbon with the front and back oriented correctly.

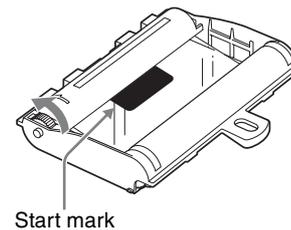
Right



Wrong



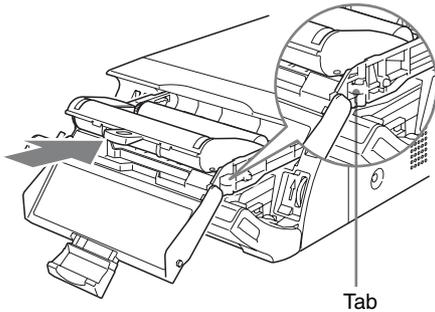
- Before loading the ink ribbon, make sure to position the start mark as shown below and remove any slack by turning the gear in the direction of the arrow.



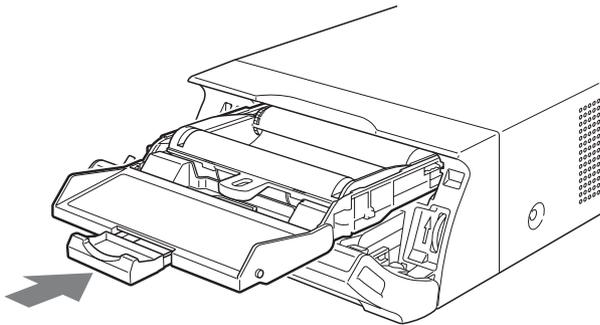
- ② Slide the ink ribbon straight into the ribbon tray until completely inserted.

Note

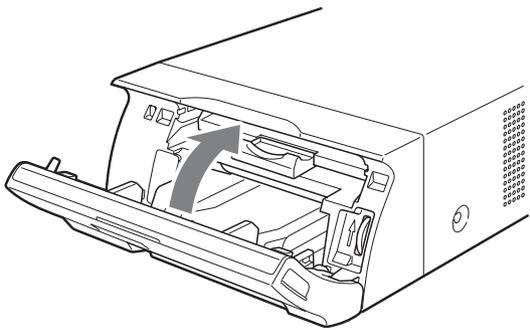
Do not touch the white tabs on the sides of the ribbon tray. Doing so may result in improper loading of the ink ribbon.



- 4 Slide the ribbon tray straight into the printer until completely inserted.



- 5 Close the ribbon door panel.

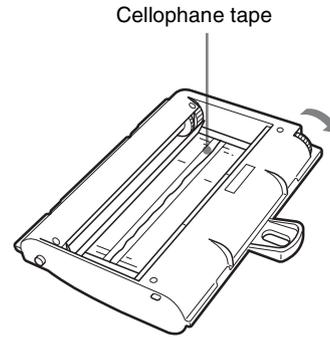


To remove the ribbon tray

To remove the ribbon tray when replacing the ink ribbon, for example, pull the tray straight out.

If the ink ribbon tears during use

Cellophane tape, etc., can be used to repair a torn ink ribbon so that the remainder of the ribbon can be used.



Wind the ink ribbon until the cellophane tape is no longer visible by turning the black (or gray) gear at the winding end in the direction of the arrow. (Make sure the ink ribbon does not sag.)

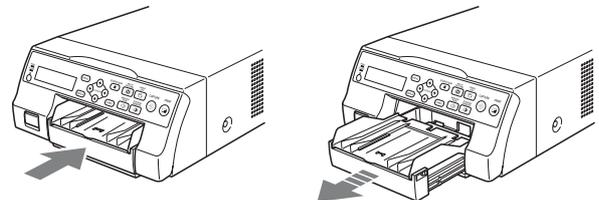
Loading the Paper

Follow the steps below to load paper into the paper feed tray and to insert the tray into the printer. When using the printer for the first time, begin with step 2.

Notes

- Be careful not to touch the print side of the paper.
- Use only the recommended paper for this printer. Other types of paper may cause printer malfunctions, such as paper jams. For details about compatible ink ribbons and paper, see “Ink Ribbon and Paper” on page 69.
- When the message “CHANGE RIBBON” appears on the printer window display, the ink ribbon is used up. Replace the ribbon and load the printer with new paper.
- Be careful when inserting and removing the paper feed tray, because it may cause the printer to shift position and fall.

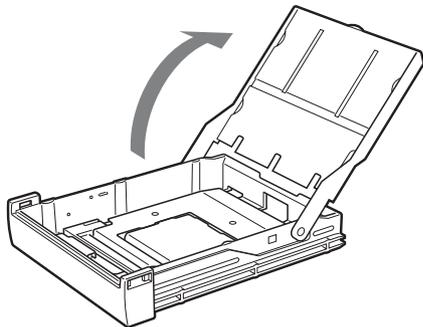
- 1 Press the ▲ mark on the paper feed tray to eject the tray.



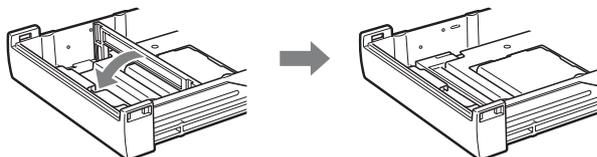
- 2 Open the lid of the paper feed tray, and load the paper and protective sheet together with the print side facing up.

When using printing pack UPC-21L

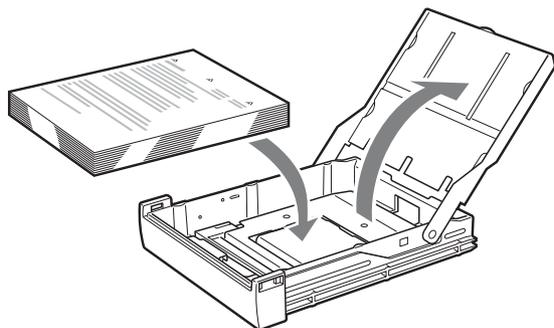
- ① Open the paper feed tray.



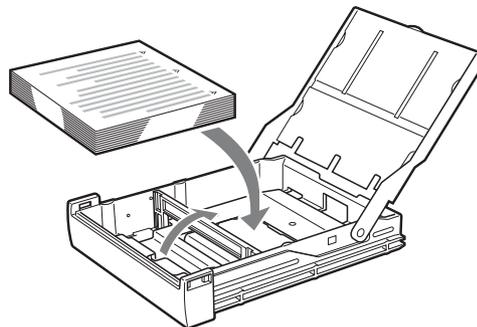
- ② If the paper feed tray partition is raised, lower it.



- ③ Neatly stack and load the paper in the paper feed tray, aligning the “▲” mark on the protective sheet with the “△” mark inside the tray.



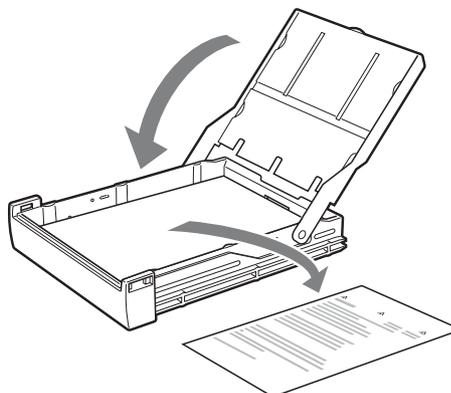
- ③ Neatly stack and load the paper in the paper feed tray, aligning the “▲” mark on the protective sheet with the “△” mark inside the tray.



Notes

- When the paper runs out, do not just add more paper. Replace both the paper and the ink ribbon. Replenishing the paper midway may cause a paper jam.
- When handling the paper, do not touch the print side. Fingerprints and dust may adhere to the print side and soil it. To prevent the print side from becoming soiled, handle the paper with the protective sheet (with printed warnings) attached.
- Load the paper properly so that it fits completely in the paper feed tray. If the paper is bent, it will protrude from the paper feed tray and may not feed properly. Make sure to handle each ream of paper by the protective sheet and to remove any bends in the paper before using it.
- Do not put a mixture of different types of paper in the paper feed tray.

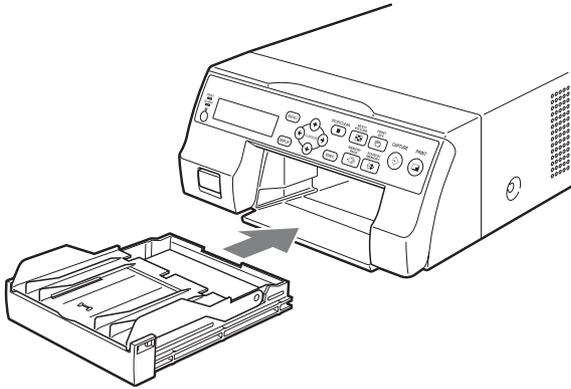
- 3 Remove the protective sheet and close the lid.



Note

Make sure to keep the protective sheet after removing it. The reverse side of the protective sheet (without printing), can be used as a cleaning sheet to clean the thermal head. For details about cleaning, see “Cleaning the thermal head” on page 67.

- Insert the paper feed tray into the printer until it clicks into place.



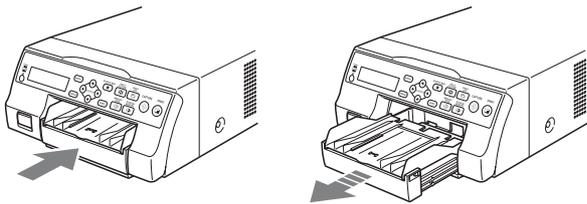
Notes

- If the paper feed tray cannot be completely inserted in the printer, check the tray insertion area and remove any paper found there.
- Do not allow more than 10 printouts to accumulate. Leaving too many printouts in the output tray could cause a paper jam.

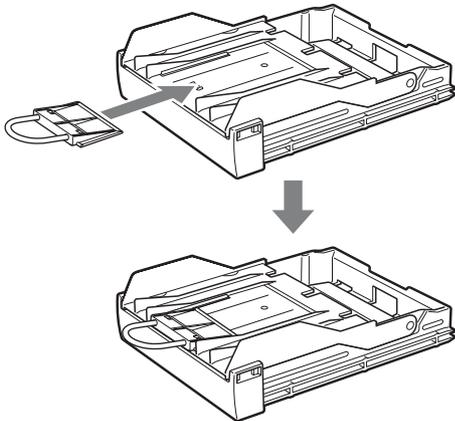
Attaching the Stopper

When multiple printouts are ejected, the printouts that accumulate on the paper feed tray may fall out. To prevent this, attach the stopper to the paper feed tray.

- Press the ▲ mark area of the paper feed tray, and remove the tray.



- Fit the stopper into the two slits on the lid of the paper feed tray, and insert it all the way in.

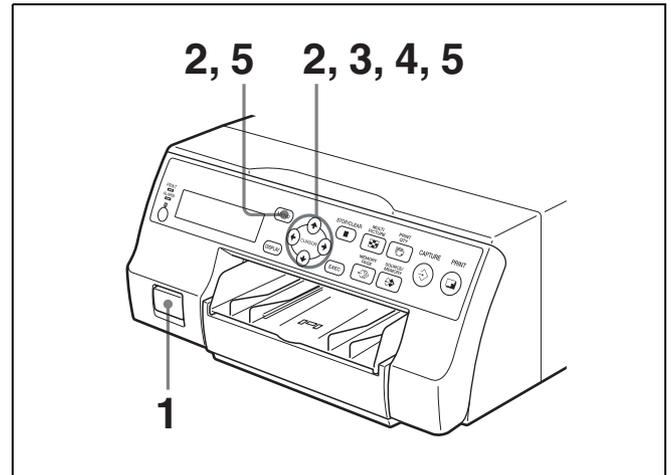


Note

Do not pull on the metallic portion of the stopper.

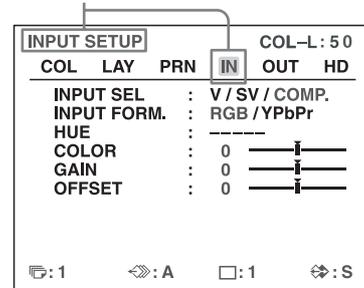
Selecting the Input Signal

Before printing, select the appropriate input signal (the input connector to which the signal to be printed is being input) VIDEO, S VIDEO, or COMP.



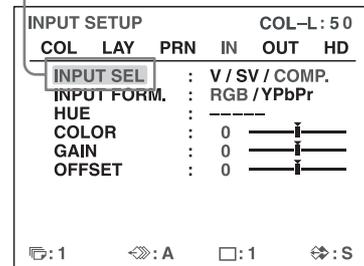
- Turn on the video monitor and the printer.
- Press the MENU button and display the INPUT SETUP menu by pressing the ↑, ↓, ← or → button.

Highlight IN in green by pressing the ↑, ↓, ← or → button, then the INPUT SETUP menu appears.



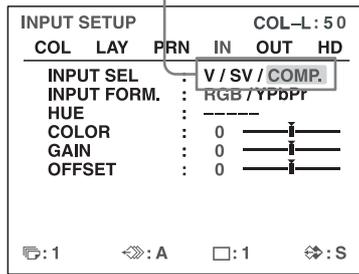
- Select INPUT SEL by pressing the ↑ or ↓ button.

Highlight INPUT SEL in green by pressing the ↑ or ↓ button.



- 4 Select the desired input signal by pressing the ◀ or ▶ button.

Highlight the desired input signal in green by pressing the ◀ or ▶ button. The selected input signal turns green and is spelled out.



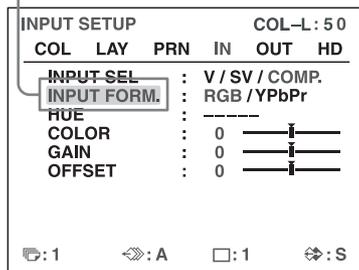
Source signal of the image to be printed	Video monitor and printer window display (the selected input signal is spelled out)
Signal from video equipment connected to the VIDEO IN connector	V → VIDEO
Signal from video equipment connected to the S VIDEO IN connector	SV → S-VIDEO
Signal from video equipment connected to the RGB/YPbPr/SYNC INPUT connectors	C → COMP.

When you select COMP.

When you use the RGB/YPbPr INPUT connectors to input the image data, select the appropriate type of the input signal.

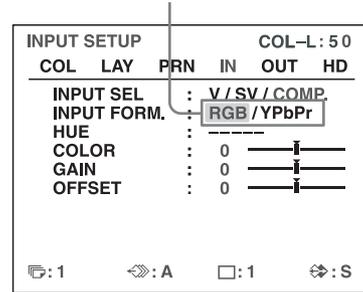
- ① Select INPUT FORM. by pressing the ↑ or ↓ button.

Highlight INPUT FORM. in green by pressing the ↑ or ↓ button.



- ② Select the type of the input signal by pressing the ◀ or ▶ button.

Highlight the desired input signal in green by pressing the ◀ or ▶ button.



Signal input to the RGB/YPbPr/ Select SYNC INPUT connectors

RGB input signal	RGB
YPbPr input signal	YPbPr

The format of the component signal output from the RGB/YPbPr/SYNC OUTPUT connector depends on the component signal selected here.

Note

The INPUT FORM. setting is enabled for SDTV-signal inputs and outputs. For details about HDTV signals, see “Configuring HDTV-Signal Inputs and Outputs” on page 59.

When using SDTV signals, set the SD/HD SEL setting in the HDTV SETUP menu to SD or AUTO. (See page 59)

- 5 Press the MENU button. The normal screen appears.

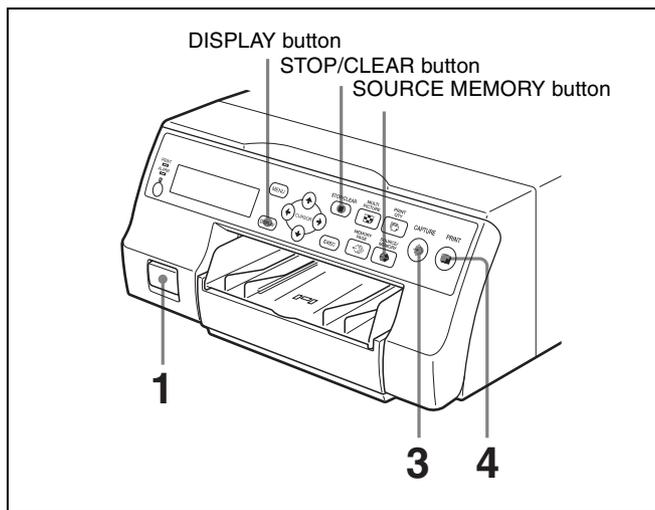
Making Full-Size Image Printouts

This section explains how to make a full-size image printout. The operations described here constitute the basic procedure for making a printout.

Before making a full-size image printout

Make sure that the following preparations have been performed, and refer to the reference pages as necessary. Make sure to perform these preparations while the printer is turned off.

- All connections should have already been made. (See page 15.)
- Ensure that the appropriate ink ribbon/paper set is being used and that they are correctly loaded. (See pages 18, 19 and 69.)
- Select the input signal to be used to make a printout. (See page 21.)
- Set the printer to capture one full-size image into memory. (See page 32.)
- Select the appropriate memory page. (See page 30.)
- Confirm the printout color quality (using, for example, the LOAD COLOR number). (See page 48.)



- 1 Turn on the video monitor and the printer.

- 2 Start the video source to display the source image on the video monitor.
This operation is done using the controls of the video equipment acting as the source.



- 3 Press the CAPTURE button at the instant the image you want to print appears on the screen. The image is captured into memory. The memory image is displayed on the screen. Which image appears after this, the source image or the memory image, depends on the setting made with the FUNCTION SETUP facility of the printer. (See page 32.)



If the captured image is blurred

A quickly moving image may be blurred when captured. Should this occur, change the memory mode setting to FIELD, then print it again. Although the blur should be eliminated, the ultimate print quality will be slightly degraded. Select the FIELD mode on the LAYOUT SETUP menu. (See “Selecting the memory mode” on page 29.)

Note

Usually, it is recommended that you make printouts in FRAME mode. (The default setting is FRAME.) You can confirm the memory mode setting on the bottom part of the video monitor.



When FRAME mode is selected:



When FIELD mode is selected:

To change the image captured in memory

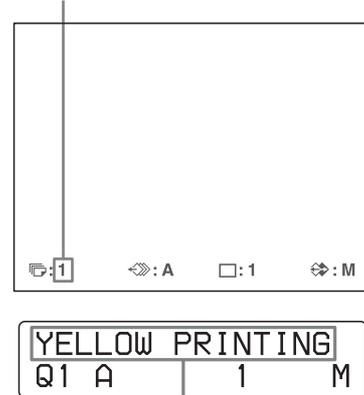
- ① To display the source image when the memory image is displayed on the screen, press the SOURCE/MEMORY button.
- ② Press the CAPTURE button at the instant the image you want to print appears. The previous image is replaced with the new one.

4 Press the PRINT button.

The printing time depends on the print speed settings.

On the video monitor, Q display blinks in the color which is being printed.

The color changes as follows during printing:
Start → yellow → magenta → cyan → finish



On the printer window display, the color indication changes as the color printing precedes:
Start → YELLOW → MAGENTA → CYAN → finish

Notes

- Do not turn off the power during printing. If you do so, paper may not be ejected and may jam in the printer.
- Do not open the front door or not to remove the paper tray during printing. Doing so may cause the paper jamming because paper is not ejected correctly.
- Do not leave more than 10 sheets of printouts on the paper tray. Doing so may cause a paper jam. Even if fewer than 10 sheets of printouts have been accumulated on the paper tray, the printer may stop printing for various reasons and the message “REMOVE PRINTS” appears. In such a case, remove printouts accumulated on the paper tray. The printer will start to print automatically.
- You can not change the printer application mode or settings using the WINDOW SETUP menu during printing.

To stop printing

- When you make one printout, you can not stop printing midway. Wait until a printout pops out on the paper tray.
- When you make multiple copies, press the STOP/CLEAR button. (For detailed information on setting the print quantity, see “Making Multiple Copies of Identical Printouts” on page 26.) The printer stops printing when the page currently printing is completed. Also, any printing job queued are cancelled.

If the printer does not print

While an error message is displayed on the video monitor and printer window display.

Proceed as described in “Error/Warning Messages” on page 73.

To change the printout speed

You can select the speed using the PRN SPEED item on the PRINTER SETUP menu.

PRN SPEED	When you want to
NORMAL	Make a printout at normal speed. You can create printouts with high-density black.
HIGH	Make a printout at high speed.

For detailed information on how to operate the menu, see “Basic Menu Operations” on page 44.

When you want to see an image that is hidden below a screen message

You can erase screen messages (such as Q1, A and so on) from the video monitor by pressing the DISPLAY button. The screen message disappears. To display a screen message, press the DISPLAY button again. (See “Erasing the Screen Display on the Video Monitor” on page 41.) You can also erase the information about ink ribbon and paper. (See “Displaying the Ink Ribbon Type and Remaining Amount of the Ink Ribbon” on page 64.)

If a black line appears on the printout

Sometimes, a black line appears on the printout, although it does not appear on the video monitor. This black line can be eliminated from the printout. (See “When a Black Frame or Lines Show up on the Printouts” on page 50.)

If the color quality of the printouts is not satisfactory

You can obtain satisfactory color quality of the printouts by compensating for the input signal and/or adjusting the color quality of the printouts. (See “Compensating for the Input Signals” on page 47, “Specifying Colors for Adjustment (HSV Adjustment)” on page 54 and “Adjusting the Printout Color” on page 48.)

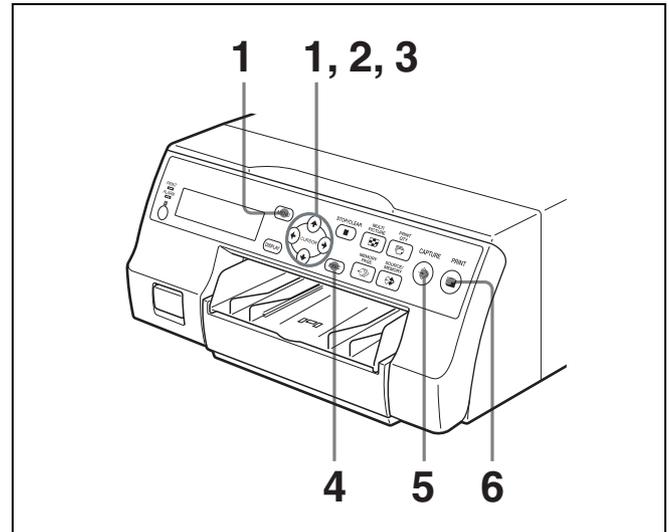
When you load a new ink ribbon and paper, the color balance may change due to differences caused by the new pair of ink ribbon and paper in the new printing pack. It is recommended that you adjust the color balance each time you load a new ink ribbon and paper. (“Adjusting the Color Balance” on page 52.)

When storing your printouts:

- Avoid storing the printout in a location subject to high temperatures, high humidity, excessive dust or direct sunlight.
- Do not stick tape on a printout. Also, avoid leaving a plastic eraser on a printout or placing a printout in contact with materials which contain plasticizer (under a desk mat, for example).
- Do not allow alcohol or other volatile organic solvents to come into contact with the printouts.

Making Printouts with the Desired User Set Number

You can register all the printer settings as a user settings. The printer allows you to register three sets of settings as User Set 1, 2 and 3. (See “Registering a User Set” on page 64.) By selecting a desired user set number, the printer functions according to the corresponding settings. You can change a part of the selected user settings and make printouts.



- 1 Press the MENU button, and display the PRINTER SETUP menu by pressing the \uparrow , \downarrow , \leftarrow or \rightarrow button.

Highlight PRN in green by pressing the \uparrow , \downarrow , \leftarrow or \rightarrow button, then the PRINTER SETUP menu appears.

PRINTER SETUP		COL-L: 50
COL	LAY	PRN IN OUT HD
PRINT QTY	:	1 [1-9]
GAMMA	:	S / NORMAL / H
PRN SPEED	:	/ HIGH
LOAD USER	:	1 / 2 / 3 EXEC
- AAAA CCCC -		
SYSTEM	:	PRESS \rightarrow
FUNCTION	:	PRESS \rightarrow
C-BALANCE	:	PRESS \rightarrow
HSV	:	PRESS \rightarrow
\rightarrow : 1	\rightarrow : A	\rightarrow : 1 \rightarrow : S

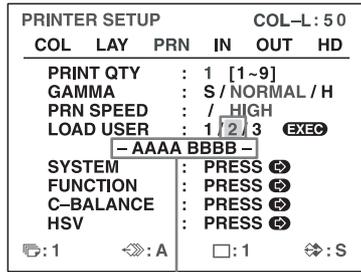
- 2 Select LOAD USER by pressing the \uparrow or \downarrow button.

Highlight LOAD USER in green by pressing the \uparrow or \downarrow button. The currently selected load user number is lit in green.

PRINTER SETUP		COL-L: 50
COL	LAY	PRN IN OUT HD
PRINT QTY	:	1 [1-9]
GAMMA	:	S / NORMAL / H
PRN SPEED	:	/ HIGH
LOAD USER	:	1 / 2 / 3 EXEC
- AAAA CCCC -		
SYSTEM	:	PRESS \rightarrow
FUNCTION	:	PRESS \rightarrow
C-BALANCE	:	PRESS \rightarrow
HSV	:	PRESS \rightarrow
\rightarrow : 1	\rightarrow : A	\rightarrow : 1 \rightarrow : S

- 3 Select the desired user number by pressing the ← or → button.

Highlight the desired user number in green by pressing the ← or → button. The user name of the selected user number appears below.



User name of the user set number selected

- 4 Press the EXEC button. The printer functions according to the settings selected in step 3.
- 5 Press the CAPTURE button at the instant the image you want to print appears on the screen. The image is captured into memory according to the user set selected in step 3.
- 6 Press the PRINT button. The printer makes printouts according to the user set selected in step 3.

Making Multiple Copies of Identical Printouts

You can make up to 9 copies of identical printouts.

Setting the printout quantity

The following two methods are available to set the number of printouts.

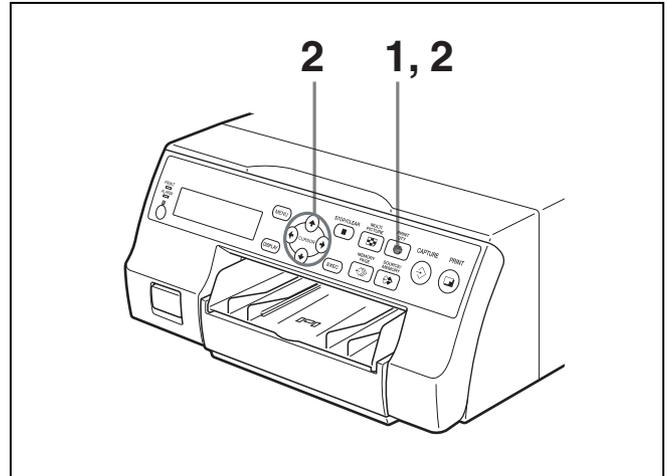
- Using the PRINT QTY button
- Using the menu

You can change the designated number of copies before printing or any time during printing.

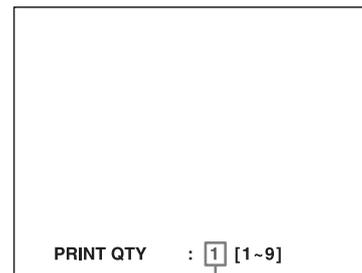
Note

When you change the designated number of copies during printing, only the number of copies of printouts which are being currently printed is changed. When printing is completed, the number of copies is reset to the one set before starting printing.

To set the printout quantity by using the PRINT QTY button

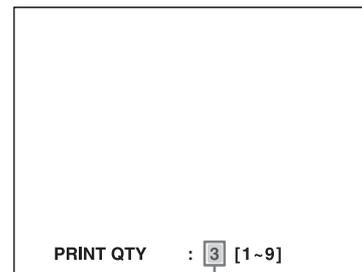


- 1 Press the PRINT QTY button. The following screen appears. If you do not perform any operation after you press the PRINT QTY button, the currently set number of copies appears for a few seconds, after which it disappears.



Currently selected number of copies

- 2 Press the PRINT QTY button until the desired number appears, while the screen shown in step 1 is displayed. Repeatedly pressing the PRINT QTY button increases the number up to a maximum of 9. When the number reaches 9, if the button is pressed again, it goes back to 1. Or repeatedly pressing the → button also increases the number up to a maximum of 9. When the number reaches 9, if the → button is pressed again, it goes back to 1.



Press the PRINT QTY button or → button until the desired number appears.

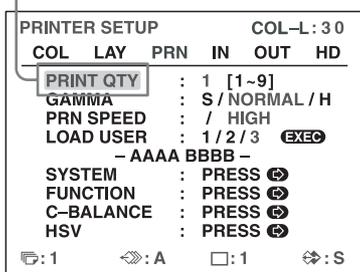
To decrease the number of copies

While the screen which appears in step 1 is displayed, press the ← button. Each time you press the ← button, the number decreases. When the number reaches 1, if the ← button is pressed again, it goes up to 9.

Setting the printout quantity using the menu

- 1 Display the PRINTER SETUP menu according to the operations of step 1 described in “Making Printouts with the Desired User Set Number” on page 25.
- 2 Select PRINT QTY by pressing the ↑ or ↓ button.

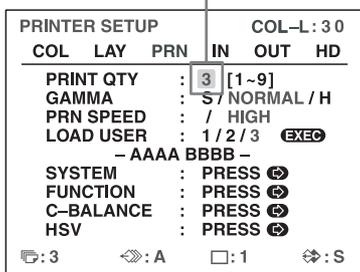
Highlight PRINT QTY in green by pressing the ↑ or ↓ button.



- 3 Select the desired number of copies by pressing the ← or → button.

When you want to	Button
Decrease the quantity.	←
Increase the quantity.	→

Display the desired number of copies by pressing the ← or → button.



- 4 Press the MENU button.
The normal screen appears.

Note

Do not leave more than 10 sheets of printouts on the paper tray. Doing so may cause a paper jam. Even if fewer than 10 sheets of printouts have been accumulated on the paper tray, the printer may stop printing for various reasons and the message “REMOVE PRINTS” appears. In such a case, remove printouts accumulated on the paper tray. The printer will start to print remaining copies automatically.

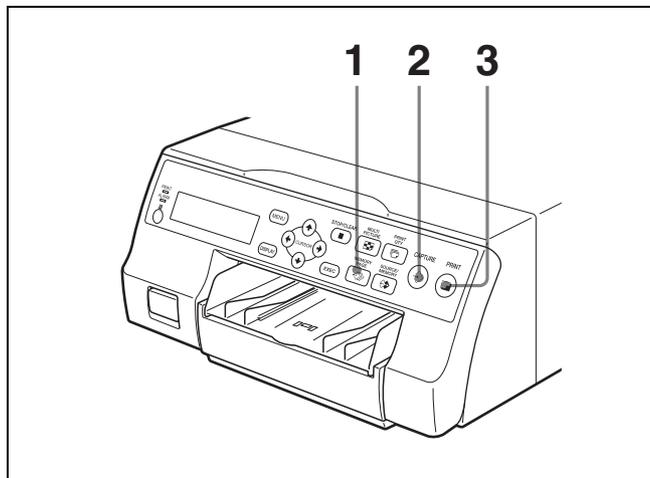
If the paper runs out during printing

The printer stops the printing operation. Load the paper into the paper tray and press the PRINT button.

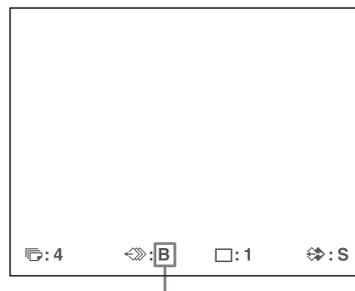
However, the printout quantity is reset to the original quantity requested before printing was stopped. For example, if the printout quantity is set to 5, and the paper runs out when three copies are printed, the printout quantity is reset to 5. If you want to print only the remaining copies, set the printout quantity to 2 after loading the paper. (See “Loading the Paper” on page 19.)

Capturing Another Image While Printing

While the printer is printing, you can queue printing jobs by capturing another image into another memory page to be printed once the printer becomes free. The number of usable memory pages depend on the type of printouts and settings. (See “Memory page” on page 30.)



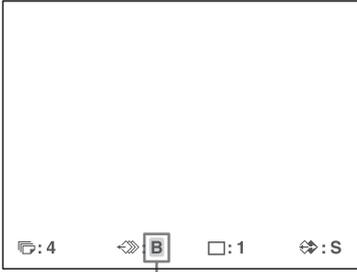
- 1 Select the desired memory page by pressing the MEMORY PAGE button.
Pressing the MEMORY PAGE button switches the memory page.



The available memory pages do not blink.

- 2 Press the CAPTURE button at the instant the image you want to print appears on the screen.

- Press the PRINT button.
The image captured in step 2 is queued. The image is printed as soon as all previous printing jobs have been completed.



Memory page whose image has been queued for printing (blinks on the video monitor)
The memory page display stop blinking and lights up on the video monitor once printing has been completed.

Note

Another image cannot be stored in a memory page in which an image has already been queued for printing (memory page indication blinks). In such a case, the “PLEASE WAIT PRINTING MEMORY” message also appears.

- To queue another memory page, repeat steps 1, 2 and 3.

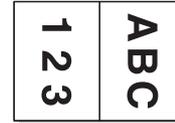
Making Variations of Printouts

You can capture various kinds of images in memory and make variations of printouts using the images captured in memory.

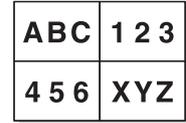
Printout of a full-size image



Printout of two reduced images



Printout of four reduced images



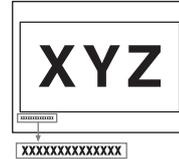
You can also make printouts of multiple reduced images with white borders. (See “Making a printout with white borders” on page 34.)

Captions can also be inserted in printouts. (See “Making Printouts with a Caption” on page 35.)

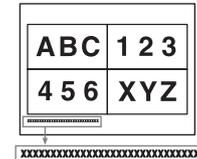
Printing captions

The caption position on printouts of two reduced images differs depending on whether SDTV signals or HDTV signals are used. The caption position also differs depending on the printing pack used.

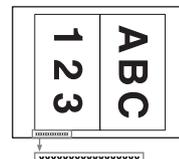
Printout of a full-size image



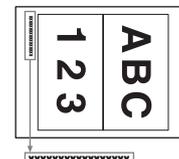
Printout of four reduced images



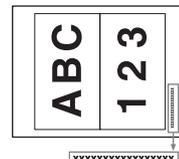
Printout of two reduced images (SDTV signal)



Printout of two reduced images (HDTV signal, UPC-21L)



Printout of two reduced images (HDTV signal, UPC-21S)



Selecting the Memory Mode

Frame mode/field mode

To make printouts, it is first necessary to capture the image in memory.

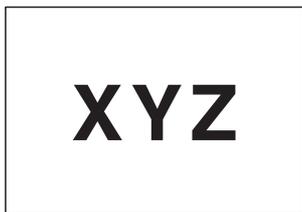
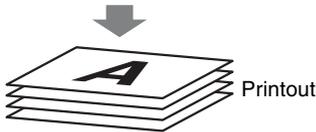
When capturing an image, there are two ways to use the memory, one is called frame mode and the other is called field mode.

Frame mode: An image is captured in a memory area. Printouts with high resolution can be obtained.

Video monitor



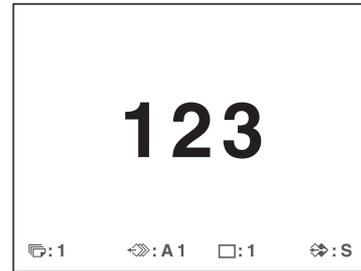
The image displayed on the video monitor is captured in memory page A.



A still subject can be printed with high resolution.

Field mode: A memory area is divided into two, and images can be captured in each. In this way a quickly moving subject can be printed with less blurring.

Video monitor

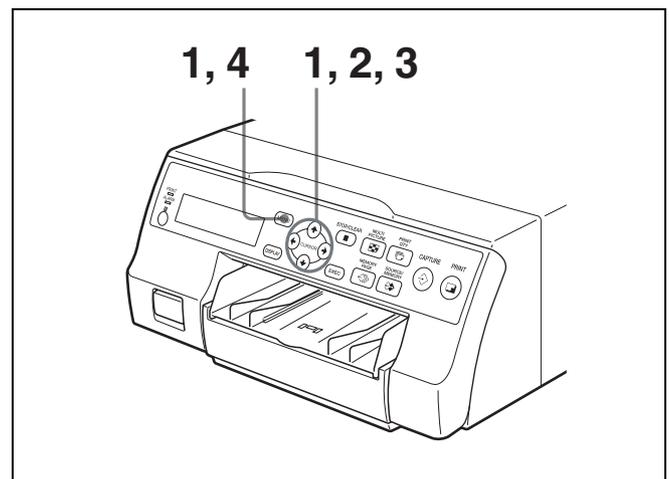


The image displayed on the video monitor is captured in memory page A1.



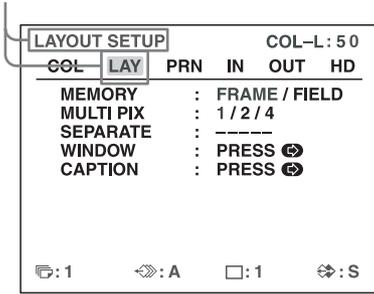
A quickly moving subject can be printed with less blurring.

Selecting the memory mode



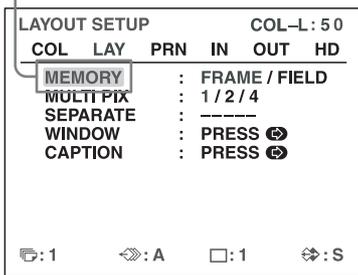
- 1 Press the MENU button and display the LAYOUT SETUP menu by pressing the ← or → button.

Highlight LAY in green by pressing the ← or → button, then the LAYOUT SETUP menu appears.



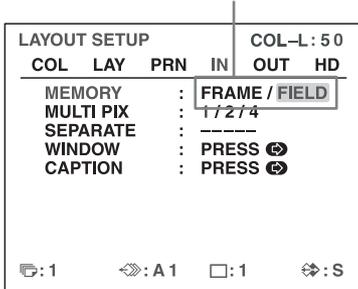
- 2 Select MEMORY by pressing the ↑ or ↓ button.

Highlight MEMORY in green by pressing the ↑ or ↓ button.



- 3 Select the desired memory mode by pressing the ← or → button.

Highlight the desired memory mode in green by pressing the ← or → button.



Mode	Contents
FRAME	We recommend that, whenever possible, you print in this mode.
FIELD	Select this mode to reduce blurring when you print a quickly moving image.

Note

If the input signal type is 720p, the memory mode is fixed at FRAME mode. “- - - -” appears for the MEMORY setting in the LAYOUT SETUP menu, and FIELD mode is not available.

- 4 Press the MENU button.
The normal screen appears.

Selecting a Memory Page

Memory page

A memory area in which an image is captured is called a memory page in this manual.

The number of usable memory pages depends on the type of the reduced images selected and on the memory mode.

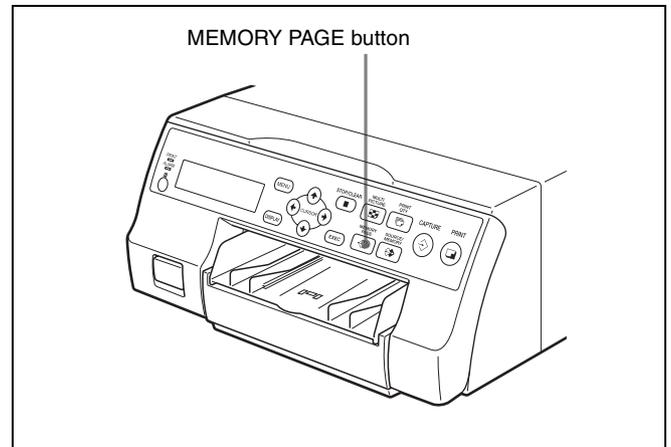
Usable memory page	Type of reduced images to be captured in memory
FRAME	FIELD ^{a)}
A, B, C, D, E, F, G, H	A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2
A, B, C, D	A1, A2, B1, B2, C1, C2, D1, D2
A, B	A1, A2, B1, B2

a) Cannot be selected when the input signal type is 720p.

Note

Images of differing signal types (SDTV/1080i/720p) cannot coexist on the same multiple reduced image screen. If you change the input signal type with the SD/HD SEL setting in the HDTV SETUP menu, the images stored in the memory will be overwritten the next time you capture images.

Selecting a memory page



Press the MEMORY PAGE button repeatedly until the desired memory page appears.



Currently selected memory page

Making a Printout of Multiple Different Reduced Images

You can capture multiple images in a memory page and make a printout with those reduced images. This section explains how to make a printout with multiple reduced images.

A printout having multiple reduced images is made using the procedure below.

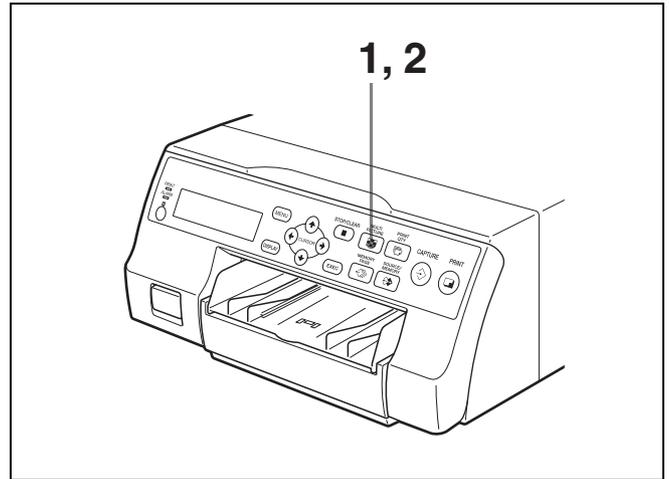
- Determining the number of reduced images (See below.)
- Selecting the memory page (See page 30.)

Selecting the number of reduced images to be captured in memory

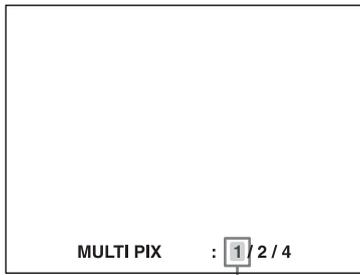
The following two methods are available to select the number of reduced images:

- Using the MULTI PICTURE button
- Using the menu

To select the desired type of reduced images to be captured in memory using the MULTI PICTURE button



- 1** Press the MULTI PICTURE button.
The following screen appears. If you do not perform any operation after you press the MULTI PICTURE button, the current setting appears for a few seconds, after which it disappears.



The currently selected type of reduced images to be captured in memory is lit in green.

- Select the type of reduced images to be captured in memory by pressing the MULTI PICTURE button, while the screen which appears in step 1 is displayed. Press the MULTI PICTURE button repeatedly until the color of the type of reduced images to be captured in memory turns green on the video monitor, or until the type of reduced images to be captured in the memory is displayed on the printer window display. Each time you press the MULTI PICTURE button, the type of reduced-image printout changes in the following sequence: 1, 2, 4, 1....

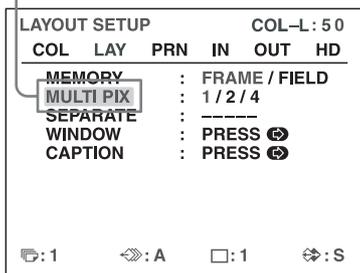
Type	Number of reduced images
1	1 (Full-size image)
2	2 (Two reduced images)
4	4 (Four reduced images)

The screen is reset to the normal screen after a few seconds.

To select the type of reduced images to be captured in the memory using the menu

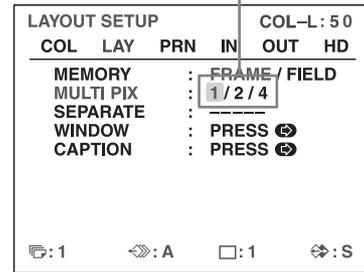
- Display the LAYOUT SETUP menu according to the operations of step 1 described in “Selecting the memory mode” on page 29.
- Select MULTI PIX by pressing the **↑** or **↓** button.

Highlight MULTI PIX in green by pressing the **↑** or **↓** button.



- Select the type of reduced images to be captured in memory by pressing the **←** or **→** button.

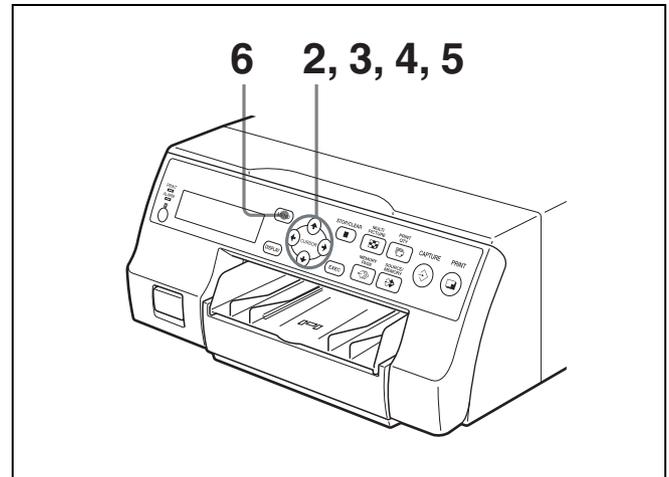
Highlight the type of reduced images to be captured in memory in green by pressing the **←** or **→** button.



- Press the MENU button. The normal screen appears.

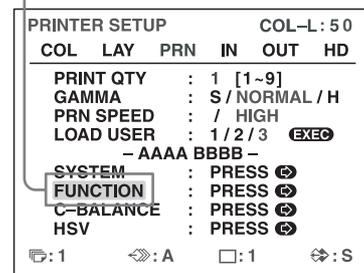
Deciding which image is displayed on the video monitor after capturing an image

You can switch image displayed on the video monitor after capturing an image, a memory image or a source image.



- Display the PRINTER SETUP menu according to the operations of step 1 described in “Making Printouts with the Desired User Set Number” on page 25.
- Select FUNCTION by pressing the **↑** or **↓** button.

Highlight FUNCTION in green by pressing the **↑** or **↓** button.

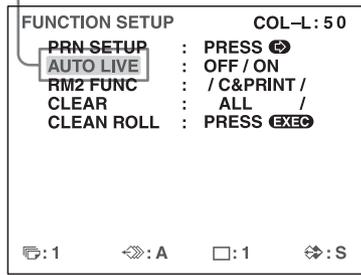


- Press the **→** button.

The FUNCTION SETUP menu appears.

- 4 Select AUTO LIVE by pressing the **↑** or **↓** button.

Highlight AUTO LIVE in green by pressing the **↑** or **↓** button.



- 5 Select which image appears on the video monitor after the image is captured, by pressing the **←** or **→** button.

When	Setting
The image captured in memory appears just after the printer captures the image, and the memory image remains on the video monitor.	OFF
The image captured in memory appears just after the printer captures the image, then after a few seconds, the source memory appears, whenever you press the CAPTURE button.	ON

- 6 Press the MENU button.
The normal screen appears.

To return to the PRINTER SETUP menu

In step 6, position the cursor at PRN SETUP and press the **→** button.

The PRINTER SETUP menu appears again.

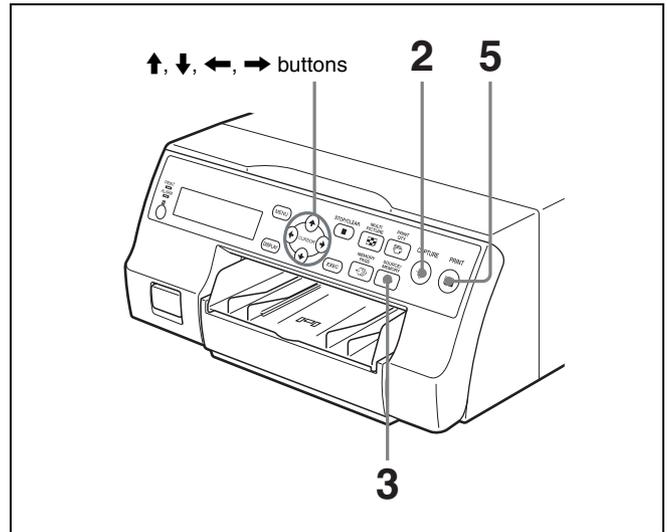
Making a printout with multiple reduced images

This subsection explains how to make printouts of multiple reduced images taking, as an example, the making of a printout of four reduced images.

Before making the printout of four reduced images

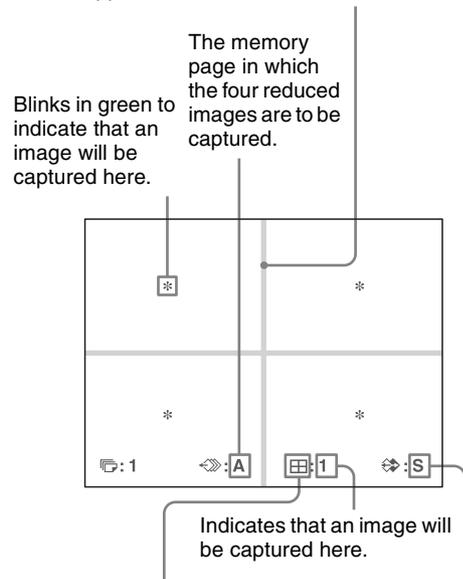
- Confirm the printout color quality (using, for example, the LOAD COLOR number). (See page 48.)
- Set the layout to four reduced images. (See page 31.)
- Select the appropriate memory page. (See page 30.)
- Select which image will appear after the image has been captured into memory, the memory image or the source image. (See page 32.)

- Select whether the white borders are to be added. (See page 34.)
The white border setting for printouts of four reduced images can be made before or after the four images are captured to memory.



- 1 Output images from the video device (source images) onto the monitor.
This operation is done using the controls of the video equipment acting as the source.

In the mode where white borders are to be attached around the images, the white borders appears on the screen.



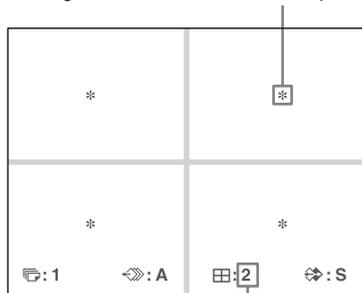
Type of multiple reduced images to be captured

Indicates that the images from a piece of video equipment are displayed on the screen.

- 2 Press the CAPTURE button at the instant the image you want to print appears on the screen.
The image is captured in the location indicated by the green blinking star on the video monitor or the position number displayed on the printer window

display in step 1. The green blinking star (referred to as the cursor) on the video monitor moves to the next position and the number on the printer window display advances by 1.

The blinking cursor moves to the next position.



The number advances by 1.

At this time, the image captured in memory is displayed on the video monitor. However, the image to be displayed after a few seconds depends on the setting of AUTO LIVE in the FUNCTION SETUP menu. (See page 32.)

When the image captured in memory is kept being displayed, go to step 3.

When the source image is displayed, go to step 4.

- 3** Press the SOURCE/MEMORY button.
The source image appears on the video monitor.
- 4** Repeat steps 2 and 3 until you have captured four images when the memory image remains on the video monitor.
Repeat step 2 until you have captured four images when the source image appears on the video monitor.

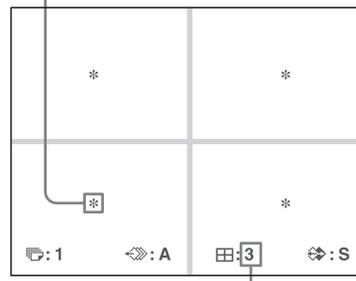
To replace a captured image

Example: When you want to change the image captured in the third position.

- ① Select the third position where the image which you want to replace is located by pressing the **↑**, **↓**, **←** or **→** button.

Pressing the **↑**, **↓**, **←** or **→** button moves the cursor one position by one position vertically or horizontally.

Press the **↑**, **↓**, **←** or **→** button until the third cursor blinks green.



Press the **↑**, **↓**, **←** or **→** button until a 3 appears.

- ② Display the source image on the video monitor.
For detailed information on how to display the source image, see step 3.
- ③ Press the CAPTURE button at the instant the image you want to print appears.
The previously captured image is replaced with the newly captured image.

To keep a previously captured image

Skip images that you want to keep by pressing the **↑**, **↓**, **←** or **→** button.

- 5** Press the PRINT button.
The four reduced images are printed on one sheet of paper.
Whether white borders are attached depends on the setting of SEPARATE in the LAYOUT SETUP menu. (See page 34.)

If the printout is blurred

When you make a printout of a full image, or two or four reduced images captured in memory in FRAME mode, the images on a printout may be blurred. Should this occur, change the memory mode setting to FIELD on LAYOUT SETUP menu (“Selecting the memory mode” on page 29), then print it again. Although the blur should be eliminated, the ultimate print quality will be slightly degraded.

Note

Usually, it is recommended that you make printouts in FRAME mode. Check the setting on the LAYOUT SETUP menu.

Making a printout with white borders

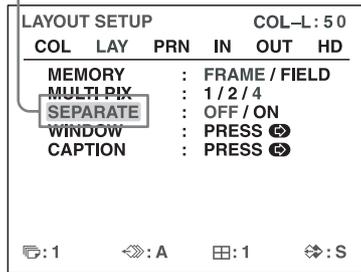
The unit allows you to decide whether or not the images are printed with white borders.

Note

This setting is also effective for the images which have been captured.

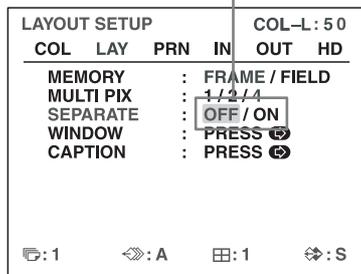
- 1 Display the LAYOUT SETUP menu according to the operations of step 1 described in “Selecting the memory mode” on page 29.
- 2 Select SEPARATE by pressing the ↑ or ↓ button.

Highlight SEPARATE in green by pressing the ↑ or ↓ button.



- 3 Select whether the images are printed with or without white borders by pressing the ← or → button.

Switch the desired setting to green by pressing the ← or → button.



When you want to	Setting
Print the images without white borders.	OFF
Print the images with white borders.	ON ^{a)}

a) F is attached to the type of printout at the printer operation mode display section in the printer window display. Example: 4F

- 4 Press the MENU button. The normal screen appears.

Making Printouts with a Caption

Making Printouts With a Caption

A caption, such as comments, can be added to a printout below the image.

You can input up to 58 characters on one line.

About the CAPTION menu

A caption is entered from the CAPTION menu.

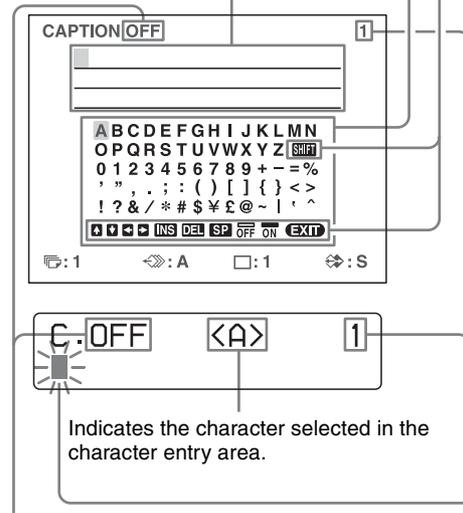
A brief explanation of each item of the CAPTION menu is given below.

Non-text caption entry operations.

Character entry area
 The character or symbol where the cursor is located is highlighted in green and this highlighted character is to be entered.

Character display area
 The cursor lit in green indicates the position where a character can be entered. The entered characters are displayed here.

Video monitor



ON: displayed when printing with a caption.
 OFF: displayed when printing without a caption.

Indicates the position where the character is to be input in the character display area.

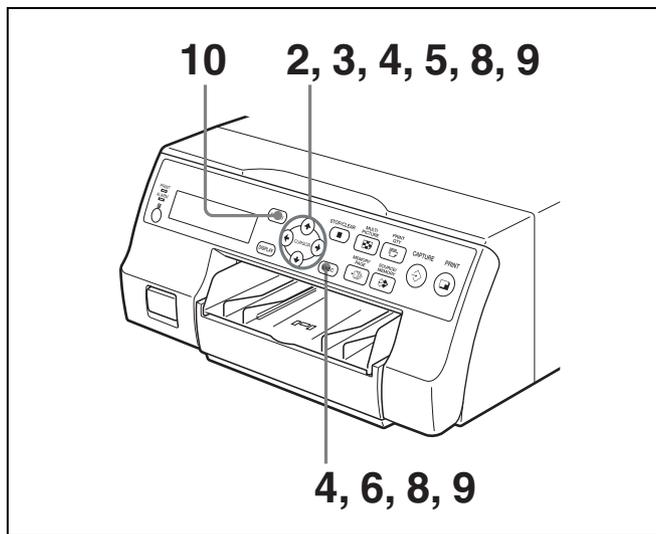
Non-text caption entry operations

Display in the CAPTION menu	Function
INS	Inserts one character without erasing the highlighted character.
DEL	Deletes a highlighted character and characters shift back by one.
SP	Puts one space at the position of the highlighted character by erasing that character. One space is left.
OFF	Selects printing without a caption.
ON	Selects printing with a caption.
EXIT	Returns from the CAPTION menu to the LAYOUT SETUP menu.
SHIFT	Selects either capital letters or small letters.

Entering a Caption

Enter a caption as follows.

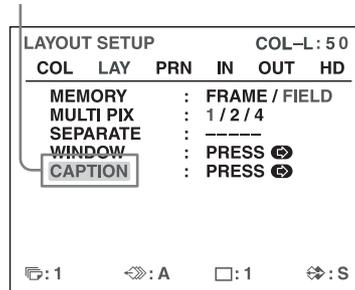
The setting remains effective until you enter a new setting – even if you turn the power off.



1 Display the LAYOUT SETUP menu according to the operations of step 1 described in “Selecting the memory mode” on page 29.

2 Select CAPTION by pressing the **↑** or **↓** button.

Highlight CAPTION in green by pressing the **↑** or **↓** button.



3 Press the **→** button.
The CAPTION menu appears.

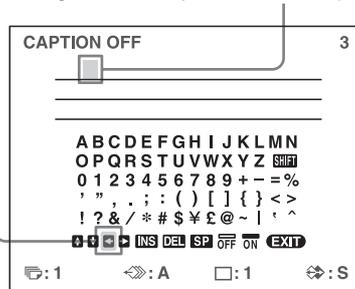
4 Position the cursor (the line lit in green) at the point where you want to enter the character in the character display area.

To move the cursor

- ① Select the arrow corresponding to the direction in which you want to move the green cursor in the character display area, by pressing the **↑**, **↓**, **←** or **→** button.
- ② Press the EXEC button.
Each time you press the EXEC button, the cursor moves one position in the designated direction.

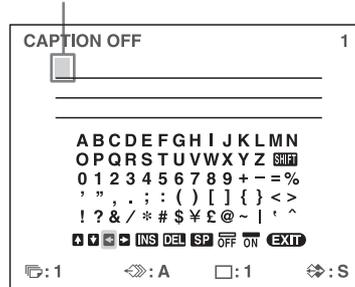
Example: Move the cursor to the left by two.

- ① Highlight the **←** button in green. The cursor is currently positioned here (lit in green).



- ② Press the EXEC button twice.

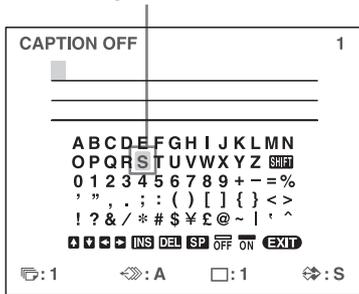
The blinking cursor moves to this position.



- 5 Select the character you want to enter by pressing the **↑**, **↓**, **←** or **→** button.

Example: Enter S.

Highlight S in green by pressing the **↑**, **↓**, **←** or **→** button. S blinks in green.



When you enter characters on the printer window display:

It is recommended that you display the characters to be entered on the printer window display by pressing either **←** or **→** button.

When the cursor is positioned at the right end:

The cursor moves to the left end on the next line when you press the **→** button.

For example, when the cursor is positioned at N, pressing the **→** button results in the cursor moving to O at the left end on the next line.

To select either capital letters or small letters

You can change the characters in the character entry area from capital letters to small letters or vice versa.

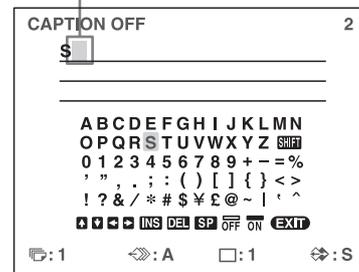
- ① Highlight SHIFT in green by pressing the **↑**, **↓**, **←** or **→** button on the video monitor. Or display SHIFT or shift on the printer window display. When characters are displayed in capital letters in the character entry area, shift is displayed in the printer window display. When displayed in small letters, SHIFT is displayed.
- ② Press the EXEC button. Capital letters are changed to small letters, or small letters are changed to capital letters in the character entry area.

Note

Characters already entered (displayed in the character display area) are not changed even if letters are changed in the character entry area.

- 6 Press the EXEC button. The character selected in step 5 appears at the point where the green cursor is positioned in the character display area, after which the cursor moves to the next position.

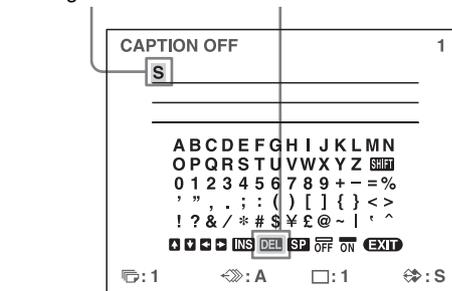
The cursor moves to this position.



When you enter the wrong character in the above example

- ① Select **←** by pressing the **↑**, **↓**, **←** or **→** button, then press the EXEC button. The cursor moves back by one and the character entered in step 5 is highlighted in green.
- ② Select DEL by pressing the **↑**, **↓**, **←** or **→** button.

Highlight DEL in green by pressing the **↑**, **↓**, **←** or **→** button. DEL blinks in green.



- ③ Press the EXEC button. The character selected in ① is deleted. When the character to be deleted is located among previously entered characters, the characters after the deleted one shift back by one.

- 7 Repeat steps 4, 5 and 6 to enter the remaining characters of the caption.

To enter a space

- ① Position the green cursor at the point where you want to enter a space.
- ② Select SP by pressing the **↑**, **↓**, **←** or **→** button.
- ③ Press the EXEC button. A single space is entered and the green cursor moves to the next position.

To replace a previously entered character without changing the number of characters

You can replace a previously entered character with a new one.

- ① Position the green cursor at the character to be replaced by performing the operations explained in step 4.
- ② Overwrite the invalid character with the correct character by performing the operations explained in steps 5 and 6.
The previously entered character is replaced with the new one.

To add characters midway

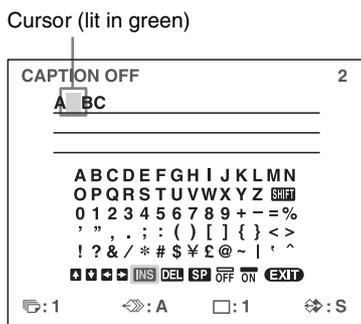
- ① Position the cursor at the position where a character is to be added by performing the operations explained in step 4.
- ② Select INS by pressing the \uparrow , \downarrow , \leftarrow or \rightarrow button. Then press the EXEC button.
A single space is inserted between characters and the cursor is positioned at the space.
- ③ Enter the character to be added.
When it is necessary to change the CAPTION ON/OFF setting, go to step 8. If not, go to step 9.

Example: Add a character between A and B.

- ① Move the cursor to B. (B is highlighted in green.)

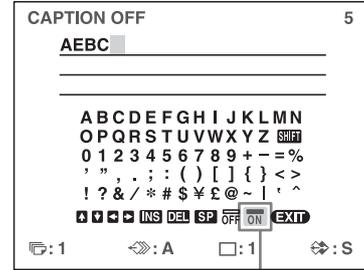


A single space is inserted between A and B and the green cursor is positioned at the space.



- 8 Set the CAPTION ON/OFF function to ON.

- ① Select ON by pressing the \uparrow , \downarrow , \leftarrow or \rightarrow button.

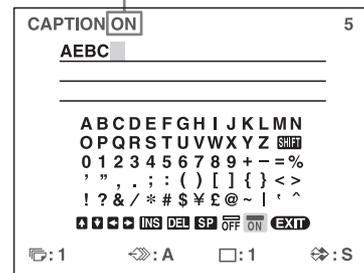


Highlight ON by pressing the \uparrow , \downarrow , \leftarrow or \rightarrow button. ON blinks in green.

Select OFF to make printouts without a caption.

- ② Press the EXEC button.

The display changes from OFF to ON.



- 9 After entering the caption, highlight EXIT by pressing the \uparrow , \downarrow , \leftarrow or \rightarrow button, then press the EXEC button.
The LAYOUT SETUP menu appears.

- 10 Press the MENU button.

Note

Characters entered in steps 4 to 7 are stored after completing the operation of step 7. These characters remain even after you turn off the printer.

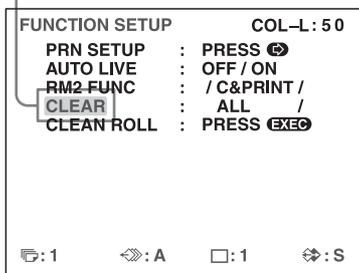
Deleting Images Stored in Memory

You can use the STOP/CLEAR button to delete individual reduced images captured to a memory page, or to delete all of the images from one or all of the memory pages. Whether the images of all memory pages or only a single memory page are deleted depends on the setting of CLEAR in the FUNCTION SETUP menu. As the STOP/CLEAR button functions as the STOP button when printing is in progress, images cannot be deleted while printing is in progress.

Setting the Function of the STOP/CLEAR Button

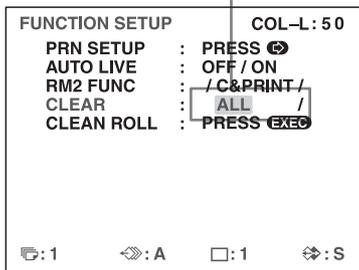
- 1 Display the FUNCTION SETUP menu according to the operations of steps 1 to 3 described in “Deciding which image is displayed on the video monitor after capturing an image” on page 32.
- 2 Select CLEAR by pressing the ↑ or ↓ button.

Highlight CLEAR in green by pressing the ↑ or ↓ button.



- 3 Select the function of the STOP/CLEAR button by pressing the ← or → button.

Highlight the desired function in green by pressing the ← or → button.



When you want to	Settings
Delete images of all memory pages.	ALL
Delete images of a single memory page.	PAGE
Delete the reduced image.	PART
Disable functioning as the CLEAR button.	OFF

- 4 Select PRN SETUP by pressing the ↑ or ↓ button. Then, press the → button. The PRINTER SETUP menu appears. Once you set the function of the STOP/CLEAR button, the STOP/CLEAR button functions according to the setting until the function setting is changed.

To return to the normal screen
Press the MENU button.

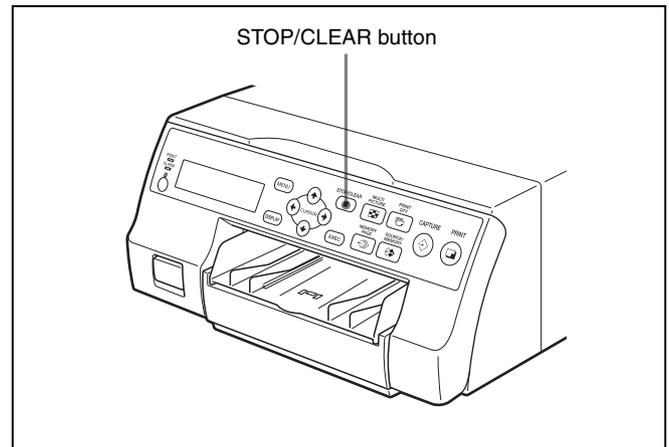
Deleting Images Stored in Memory

Note

You cannot restore images once they have been deleted.

Deleting images in all memory pages simultaneously

Before deleting images in all memory pages
Set CLEAR to ALL in the FUNCTION SETUP menu.



Press the STOP/CLEAR button.
All images captured in the printer are cleared.

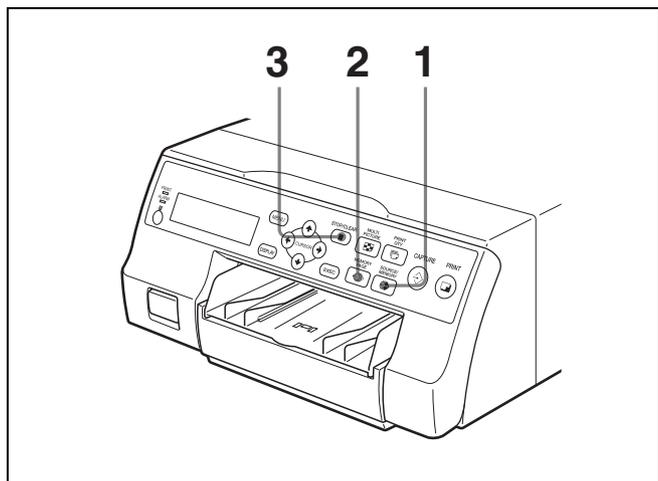
Notes

- Even if you press the STOP/CLEAR button when the source image is displayed on the video monitor, the memory image appears without deleting images in the memory pages. In this case, press the STOP/CLEAR button again. All images stored in the printer are cleared.
- An image which is being printed cannot be cleared.

Deleting images in a certain memory page

Before deleting images

Set CLEAR to PAGE in the FUNCTION SETUP menu.

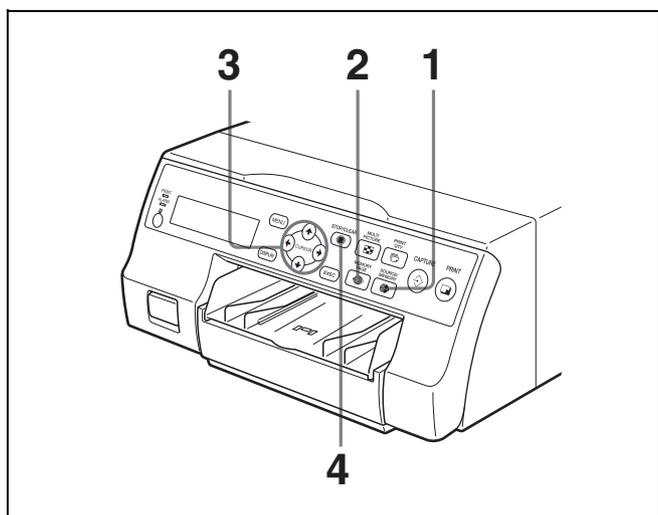


- 1** Press the SOURCE/MEMORY button when the source image is displayed on the video monitor. The image captured in memory is displayed on the screen.
- 2** Select the memory page from which images are to be deleted by pressing the MEMORY PAGE button.
- 3** Press the STOP/CLEAR button. The images in the memory page selected in step 2 is deleted.

Deleting a certain reduced image

Before deleting images

Set CLEAR to PART in the FUNCTION SETUP menu.



- 1** Press the SOURCE/MEMORY button when the source image is displayed on the video monitor. The image captured in memory is displayed on the screen.
- 2** Select the memory page from which the reduced image is to be deleted by pressing the MEMORY PAGE button.
- 3** Select the reduced image that you want to delete by pressing the **↑**, **↓**, **←** or **→** button.

Make the cursor at the reduced image to be deleted blink in green.

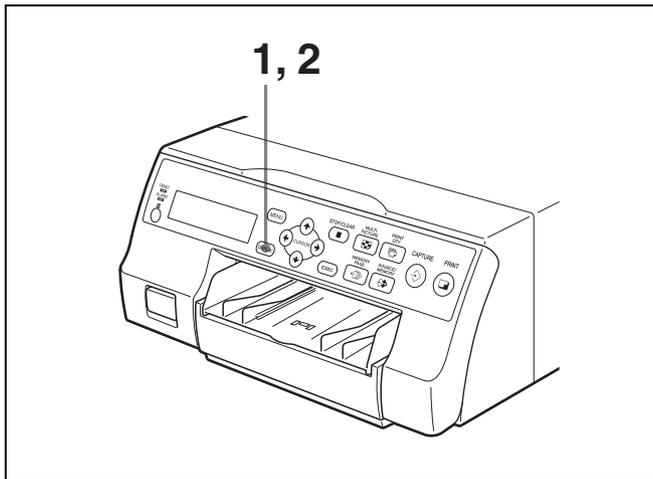


- 4** Press the STOP/CLEAR button. The reduced image selected in step 3 is deleted.

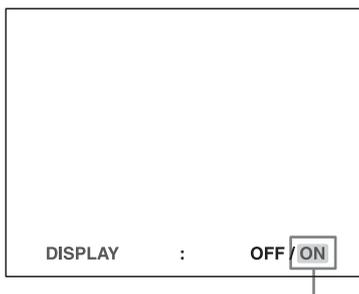
Erasing the Screen Display on the Video Monitor

You can erase characters displayed on the video monitor (Q1, A and so on) when, for example, it is hard to see the image that is hidden behind the screen display. The printer operation is the same, regardless of whether those characters are displayed on the video monitor. Since the same characters are displayed in the printer window display, perform operations watching them in the printer window display.

For detailed information on displaying the ink ribbon type and the remaining amount of the ink ribbon, see “Displaying the Ink Ribbon Type and Remaining Amount of the Ink Ribbon” on page 64.



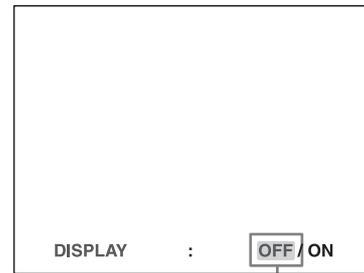
- 1** Press the DISPLAY button. The current setting appears. The video monitor is reset to the normal screen after a few seconds.



The currently selected setting is lit in green.

- 2** Select OFF. While the screen which appears in step 1 is displayed, press the DISPLAY button repeatedly until the color of OFF turns green on the video monitor, or until OFF is displayed in capital letters in the printer window display.

Each time you press the DISPLAY button, the setting changes in the following sequence: ON → OFF → ON....



Highlight OFF in green.

To display characters on the video monitor
Select ON.

To set the monitor display from the menu
You can also set whether characters are displayed on the video monitor by changing DISPLAY to ON or OFF in the OUTPUT SETUP menu. The setting of the DISPLAY button also changes according to the setting of DISPLAY in the OUTPUT SETUP menu, and vice versa.

When you want to see an image that is hidden below a menu

You can erase the menu temporarily while holding the DISPLAY button down.

Note

The error messages are always displayed regardless of the setting of the monitor display.

Functions That Can be Set on Menus

You can set up the printer to meet various specifications. Once you have adjusted and stored the settings, the printer operates according to those settings until their values are modified.

You can set up the printer according to its intended purpose, connected equipment, or your individual preferences. You can store up to three sets of user settings, called user set 1, 2 and 3.

Functions that can be set on those menus are as follows:

Menu	Functions to be set	Reference pages
COLOR ADJUST	Adjusting the printout color (color intensity and contrast) and sharpness	48
	Selecting the memory mode	29
	Selecting the type of printout	31
LAYOUT SETUP	Selecting whether or not white borders are added to multiple reduced images	34
	Eliminating the black lines produced on the printout	51
	Entering a caption	35
PRINTER SETUP	Setting the print quantity	26
	Adjusting the tone of the printout	50
	Selecting the print speed	25
SYSTEM SETUP	Adjusting the brightness of the printer window display	63
	Setting the tray light mode	63
	Setting the cleaning message display function	63
	Setting the baud rate for computer communication	64
	Selecting whether or not the operation and error tones sound	63
	Adjusting the contrast of printouts	47
	Printing menu configurations	64
Registering user settings	64	
USER NAME	Editing the user name	64

Menu	Functions to be set	Reference pages
FUNCTION SETUP	Selecting the image which appears after storing the image into memory, the source image or the memory image	32
	Assigning the function to remote control units connected to the REMOTE 2 connector	62
	Setting the function of the CLEAR button	39
COLOR BALANCE	Adjusting the color balance	52
HSV	Adjusting printout colors (specify colors for adjustment)	54
HDTV SETUP	Selecting the input signal	59
	Selecting the input signal type	59
	Selecting the input signal format	59
	Selecting the synchronization method for input signals	60
	Selecting the output signal type	60
	Selecting the downconvert method	61
INPUT SETUP	Selecting the input signal	21
	Compensating for the input signals	47
OUTPUT SETUP	Erasing the screen display	41
	Selecting whether or not information about the ink ribbon is displayed	64
	Selecting the output signal from the printer	47
	Selecting whether the printer synchronizes with the internal sync signal included in channel G of the RGB signals	16
	Matching the video monitor color to the printout color	47

Menu Tree

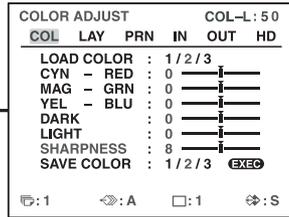
Normal screen



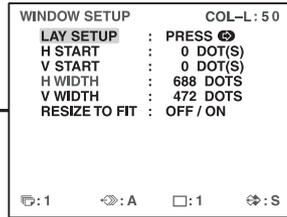
Press the MENU button.

For reference pages of each menu, see the table on "Functions That Can be Set on Menus" on page 42.

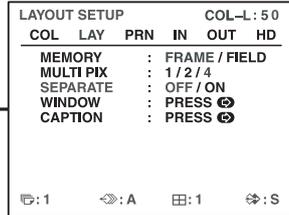
COLOR ADJUST menu



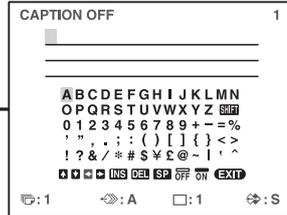
WINDOW SETUP menu



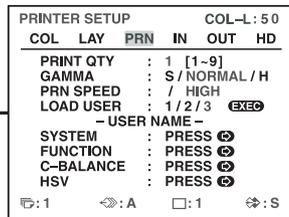
LAYOUT SETUP menu



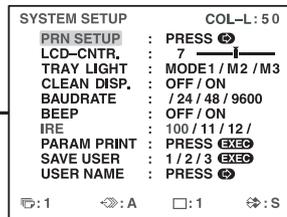
CAPTION menu



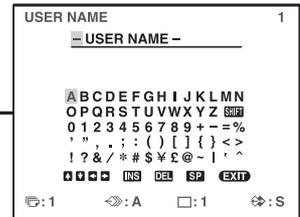
PRINTER SETUP menu



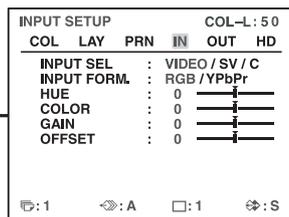
SYSTEM SETUP menu



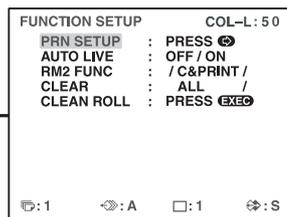
USER NAME menu



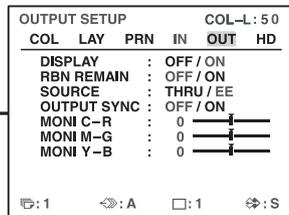
INPUT SETUP menu



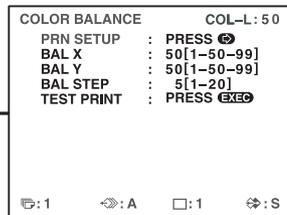
FUNCTION SETUP menu



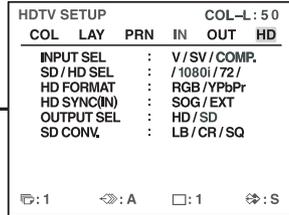
OUTPUT SETUP menu



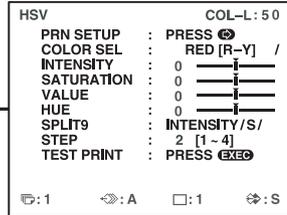
COLOR BALANCE menu



HDTV SETUP menu



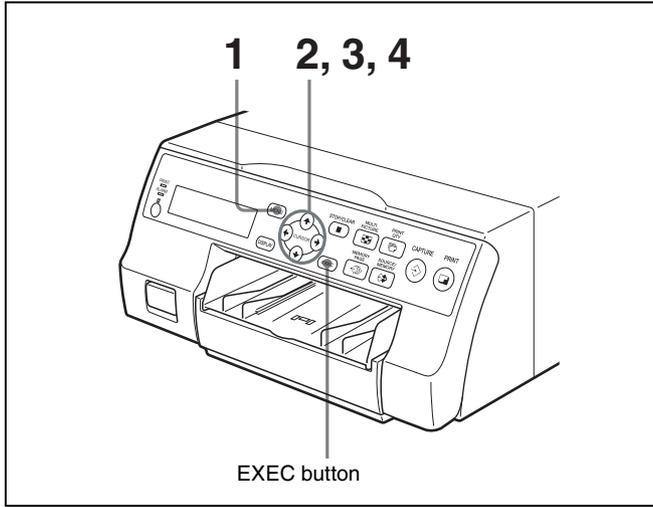
HSV menu



Adjustment

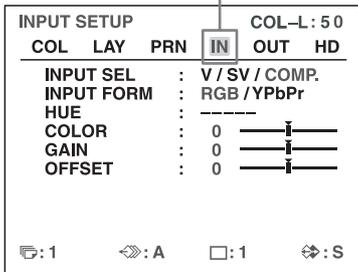
Basic Menu Operations

In this section, in addition to the video monitor, the printer window display is also introduced.



- 1 Press the MENU button.
The previously selected menu appears.

The menu currently displayed on the screen is lit in green.

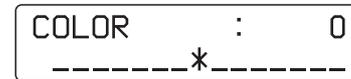
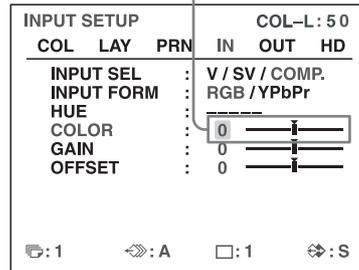


The name of the menu currently displayed appears in capital letters.

When the cursor (that is highlighted in green) is not positioned on the top line:

Move the cursor to the top line by pressing the **↑** or **↓** button.

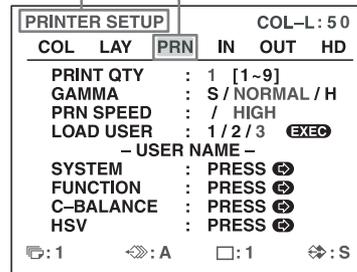
The cursor is not positioned on the top line.



- 2 Display the desired menu by pressing the **←** or **→** button.

Example: To display the PRINTER SETUP menu

Highlight PRN in green by pressing the **←** or **→** button, then the PRINTER SETUP menu appears.

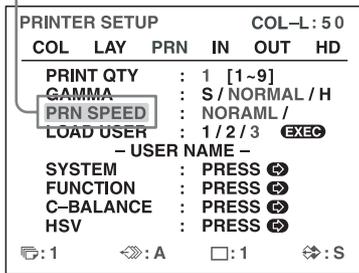


Display PRN in capital letters by pressing the **←** or **→** button. The PRINTER SETUP appears.

3 Select the desired item by pressing the **↑** or **↓** button.

Example: To select PRN SPEED on the PRINTER SETUP menu

Highlight PRN SPEED in green by pressing the **↑** or **↓** button.



Press the **↑** or **↓** button until PRN SPEED appears.

4 Change the setting by pressing the **←** or **→** button.

To change the selection:

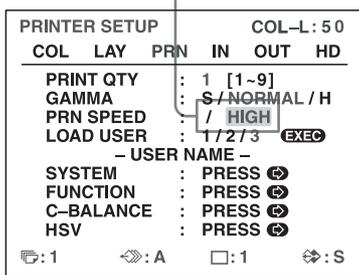
Switch the desired selection to green by pressing the **←** or **→** button.

Note

When / is displayed at both ends of a selection or at either the right or left end, there are more selections in this direction. Press the **←** or **→** button to display more selections.

Example: To select HIGH of the PRN SPEED item on the PRINTER SETUP menu

Highlight HIGH in green by pressing the **←** or **→** button.



Display HIGH in capital letters by pressing the **←** or **→** button.

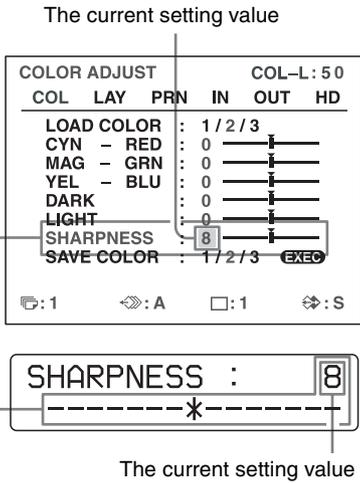
When - - - - is displayed at the selection:

- - - - is displayed when changing the selection is ineffective. The following table lists the case where the selection is ineffective.

Selected item	Item that cannot be changed (when - - - - is displayed at the selection)
1 is selected for MULTI PIX on the LAYOUT SETUP menu.	SEPARATE (LAYOUT SETUP menu)
COMP. is selected for INPUT SEL on the INPUT SETUP or HDTV SETUP menu.	HUE (INPUT SETUP menu)
COMP. is selected for INPUT SEL on the INPUT SETUP or HDTV SETUP menu, and 720p is selected for SD/HD SEL on the HDTV SETUP menu.	MEMORY (LAYOUT SETUP menu)
-OR- AUTO is selected for SD/HD SEL and 720p signal input mode is enabled.	
YPbPr is selected for INPUT FORM. on the INPUT SETUP menu.	OUTPUT SYNC (OUTPUT SETUP menu)
-OR- COMP. is selected for INPUT SEL on the INPUT SETUP or HDTV SETUP menu, and 1080i or 720p is selected for SD/HD SEL on the HDTV SETUP menu.	
-OR- HD is selected for OUTPUT SEL on the HDTV SETUP menu while HDTV signals are being input in AUTO mode.	
AUTO is selected for SD/HD SEL on the HDTV SETUP menu.	HD SYNC (IN) (HDTV SETUP menu)
-OR- YPbPr is selected for HD FORMAT on the HDTV SETUP menu.	
HD is selected for OUTPUT SEL on the HDTV SETUP menu.	SD CONV. (HDTV SETUP menu)

To change the setting values:

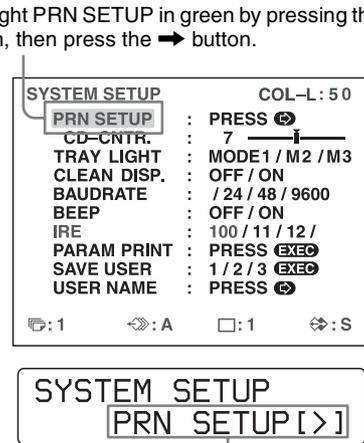
Press the ← or → button to decrease or increase the setting values.



The setting value increases every time you press → button and decreases every time you press the ← button.

To return from the sub menu:

Select the menu on the top line, then press the → button.



Press the ↑ or ↓ button until PRN SETUP appears, then press the → button.

To reset the values to factory setting:

Position the cursor at the item to be reset to defaults, then press the ← and → buttons simultaneously.

When there are sub menus:

When there are sub menus, PRESS [>] is displayed on the selection part of the menu. Select the desired sub menu by pressing the ↑ or ↓ button, then press the → button.

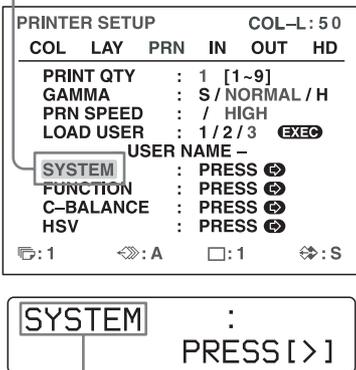
Example: On the PRINTER SETUP menu

To display the SYSTEM SETUP sub menu:

Select SYSTEM by pressing the ↑ or ↓ button, then press the → button.

The SYSTEM SETUP menu appears.

Highlight SYSTEM in green by pressing the ↑ or ↓ button, then press the → button.



Press the ↑ or ↓ button until SYSTEM appears, then press the → button.

Adjusting the Color and Picture Quality

Compensating for the Input Signals

A video image recorded under poor conditions may be of poor color quality. If the signal is an NTSC or PAL composite video signal or separate luminance (Y) and chrominance (C) signals, you can correct the color and level of the input signal to a certain extent.

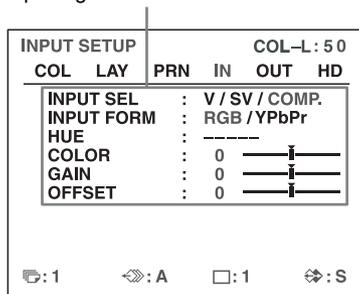
Note

You cannot adjust an image once it has been captured in memory. If you want to make adjustments, capture that image again, after making the adjustment.

Confirmation

When the memory image is displayed on the video monitor, press the SOURCE/MEMORY button to display the image from the video source.

Items to be used for compensating for the input signals



To adjust the color intensity, hue, contrast and brightness

Adjustment	Menu adjustment item (Adjustment range)	Button to be pressed and result of the operation	
		← button	→ button
Hue	HUE ^{a)} (-14 to 0 to 14)	The hue becomes purplish.	The hue becomes greenish.
Color intensity	COLOR ^{b)} (OFF to 0 to 14)	The color intensity weakens.	The color intensity strengthens.
Contrast	GAIN (-14 to 0 to 14)	The contrast weakens.	The contrast strengthens.
Brightness	OFFSET ^{c)} (-14 to 0 to 14)	Becomes darker.	Becomes brighter.

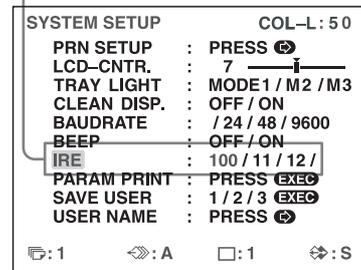
a) Adjust the color such that skin tones appear natural. For the HUE adjustment, you can correct the color intensity and hue of an

- NTSC and PAL composite video signal or a separated luminance (Y) and chrominance (C) signal.
- b) On a setting of step -14, OFF appears and the image, displayed on the video monitor, becomes black and white.
- c) When a component (RGB or YPbPr signal) signal is input, you cannot adjust OFFSET below 0.

Adjusting the contrast of printouts

When you want to change the contrast of printouts without changing the contrast of the video monitor, compensate for the level of the input signal using the IRE item in the SYSTEM SETUP menu.

Items to be used when adjusting the contrast of printouts



The selected IRE is displayed in three digits.

When	IRE value (the selected IRE is displayed in 4 digits.)
Resetting to the standard adjustment	10 → 100
The printout is a little whitish.	11 → 110
The printout is whitish.	12 → 120
The printout is very whitish.	13 → 130

Notes

- Do not compensate for the input signal too much. Doing so results in the whole of the printout becoming dark.
- To have the adjustment result reflected in the printout, you need to capture a new image.

Matching the Video Monitor Color to the Printer Color

To match the color of the monitor image to that of the printout, adjust the monitor and printer colors such that the monitor color is the same as that of the printout.

The printer outputs either of two kinds of video signals based on the printer settings.

- EE (E to E): Signals are output to the monitor after being processed by the printer's circuitry.
- THRU (THROUGH): Signals are output to the monitor as is.

Adjustment on the video monitor

The monitor color may not be adjusted correctly even if the printer color is correctly adjusted. Check the color of the video monitor before adjusting the printout color. In such a case, use the THRU signal by setting SOURCE to THRU on the OUTPUT SETUP menu or turning off the power of the printer to send out the through signal from the video equipment to the video monitor.

After adjusting the color of the video monitor using video monitor controls, adjust the color of the printer's output signal.

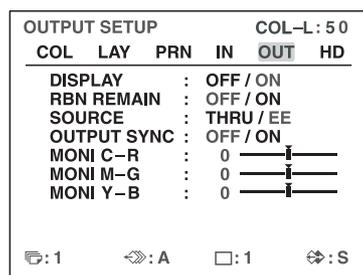
Adjustment on the printer

Note

This adjustment is performed to adjust the color of the printer output signal when the monitor color is unsatisfactory. This adjustment does not affect the printout itself. To adjust the color of the printout, see "Adjusting the Printout Color" on page 48 and "Specifying Colors for Adjustment (HSV Adjustment)" on page 54.

- 1 Display the OUTPUT SETUP menu.

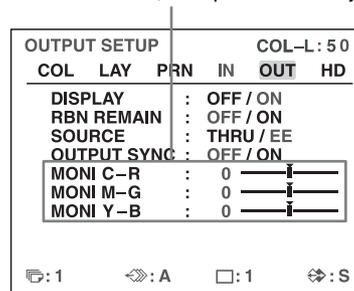
OUTPUT SETUP menu



- 2 Select SOURCE by pressing the **↑** or **↓** button.
- 3 Select EE by pressing the **←** or **→** button.
- 4 Press the MENU button.
The normal screen appears.
- 5 Capture a new image to memory and make a printout. Adjust the settings on the printer side by comparing the printout with the image on the monitor, as follows.
- 6 Display the OUTPUT SETUP menu again.
- 7 Adjust the monitor while comparing the printout with the image on the monitor.

Menu adjustment item (Adjustment range)	When you want to	Button to be pressed	Adjustment direction on the menu
MONI C-R (-14 to 0 to 14)	Make the screen more reddish.	→ button	Toward R (red)
	Make the screen become cyan (blue).	← button	Toward C (cyan)
MONI M-G (-14 to 0 to 14)	Make the screen more greenish.	→ button	Toward G (green)
	Make the screen become magenta (pink).	← button	Toward M (magenta)
MONI Y-B (-14 to 0 to 14)	Make the screen more bluish.	→ button	Toward B (blue)
	Make the screen more yellowish.	← button	Toward Y (yellow)

Select the desired item, then perform the adjustment.



Adjusting the Printout Color

You can adjust the printout quality by adjusting the color intensity, printout contrast and sharpness and tone (GAMMA) of the printout.

Adjusting the color intensity, contrast and sharpness

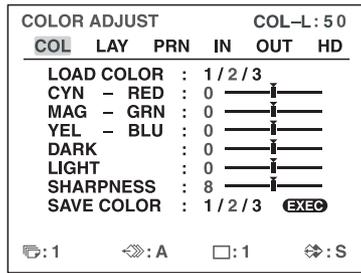
You can store up to three types of settings and manage these settings using the LOAD COLOR numbers 1, 2 and 3. The color intensity, picture contrast and sharpness of a printout are determined by recalling one of the three settings according to their LOAD COLOR numbers. This is useful when you are using more than one item of video equipment, each having different characteristics, when you want to print images having different color qualities and picture contrast, or when multiple users access a single printer.

Also, you can make a printout using temporarily set values, without clearing the stored adjustment values.

Perform the adjustments while viewing the images captured in memory.

1 Display the COLOR ADJUST menu.

COLOR ADJUST menu

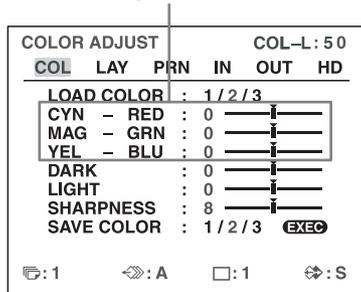


2 Select the LOAD COLOR number of the values to be adjusted or to be modified by pressing the ← or → button.

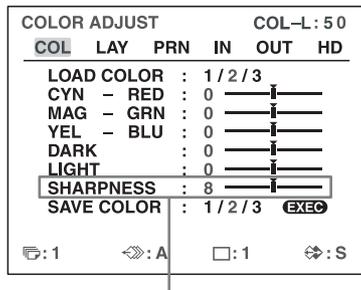
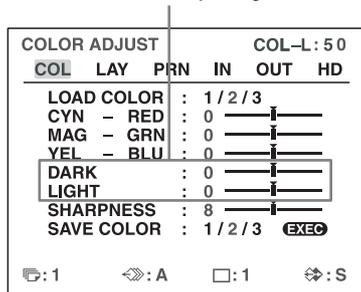
When modifying, you can preserve the original settings. (See “To retain the originally set value” on page 50.)

3 Adjust the printout color.

Items to be used for adjusting the color intensity



Items to be used for adjusting the contrast



Items to be used for adjusting the sharpness

To adjust the color intensity (RED/GREEN/BLUE)

The RED, GREEN and BLUE color component settings are divided into 15 steps, from -7 to +7, indicated by a value and graph. The center of the graph (0) corresponds to the standard setting.

Menu Adjustment item (Adjustment range)	When you want to	Button to be pressed	Adjustment direction on the menu
CYN-RED (-7 to 0 to 7)	Make the image reddish.	→ button	Toward RED
	Make the image cyan.	← button	Toward CYN (cyan)
MAG-GRN (-7 to 0 to 7)	Make the image greenish.	→ button	Toward GRN (green)
	Make the image magenta (pink).	← button	Toward MAG (magenta)
YEL-BLU (-7 to 0 to 7)	Make the image bluish.	→ button	Toward BLU (blue)
	Make the image yellowish.	← button	Toward YEL (yellow)

To adjust the contrast (DARK/LIGHT)

The contrast settings are divided into 15 steps, from -7 to +7, indicated by a value and graph. The center of the graph (0) corresponds to the standard setting.

Adjustment item (Adjustment range)	When you want to
DARK (-7 to 0 to 7)	Adjust the dark area of an image.
LIGHT (-7 to 0 to 7)	Adjust the light area of an image.

To adjust the sharpness (SHARPNESS)

You can set the sharpness to any of 15 steps from 1 to 15. A setting of step 8 corresponds to the standard sharpness (default setting).

When you want to	Content of settings
Make a soft outline.	To the left (toward step 1)
Make a normal outline.	Centered (step 8)
Make a sharp outline.	To the right (toward step 15)

Adjustment

Once you have changed the value

Once you have changed the value, TEMP (TEMPORARY) appears on the menu screen. TEMP indicates that the settings are temporary and have not yet been stored. If you turn off the power of the printer while TEMP is displayed, the adjusted values are not stored.

- 4 Select the SAVE COLOR number to which new settings are to be stored using the SAVE COLOR item.

To retain the originally set value

Select a SAVE COLOR number which is different from the LOAD COLOR number selected in step 2.

- 5 Press the EXEC button. The settings are registered in the SAVE COLOR number selected in step 4. TEMP disappears from the menu.

To continue settings for another LOAD COLOR number: Repeat steps 2 to 5.

To finish the setting: Press the MENU button. The normal screen appears.

To copy the settings made for one LOAD COLOR number to another LOAD COLOR number

- 1 Select the source LOAD COLOR number for which the settings to be copied are stored on the COLOR ADJUST menu.
- 2 Select the target SAVE COLOR number to which data is to be copied.
- 3 Press the EXEC button. Settings stored for the LOAD COLOR number selected in step 1 are copied to the SAVE COLOR number selected in step 2.

To recall the LOAD COLOR number in which printout color settings (color intensity, contrast and sharpness) are stored

Switch the desired LOAD COLOR number to green on the COLOR ADJUST menu. On the printer window display, display the desired LOAD COLOR number.

The settings of the currently selected LOAD COLOR number are displayed.

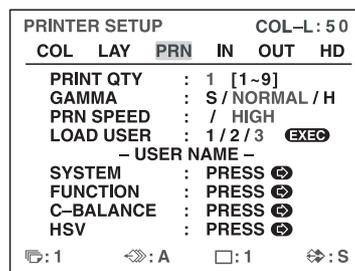
The printout is made according to the setting of the selected LOAD COLOR number as long as you do not modify those settings.

Adjusting the tone of the printout

You can adjust the tone so that the details in the white or black part are clearly printed.

- 1 Display the PRINTER SETUP menu.

PRINTER SETUP menu



- 2 Select GAMMA, and then the desired tone. The selected tone is spelled out.

When you want to	Setting
Make a printout of an image where there are a lot of white or light-colored areas.	S → SOFT
Make a printout of a normal image.	N → NORMAL
Make a printout of an image where there are a lot of black or dark-colored areas.	H → HARD

When a Black Frame or Lines Show up on the Printouts

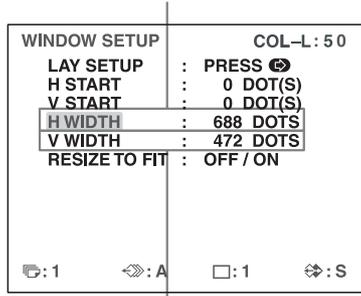
When you print an image that is narrower or wider than the standard screen size, a black frame may be printed or the image may be partially cut. Or, a black line may show up on the printout even though it does not appear on the video monitor. Any portion for which there is no video signal is printed in black. This may occur when you make printouts after connecting a different video source or play back using different video software. In such a case, you can adjust the printout area by moving the screen either horizontally or vertically.

This adjustment is applied to the printout area of images that are already captured. You do not need to capture the images again.

- 1 Display the WINDOW SETUP menu from the LAYOUT SETUP menu.

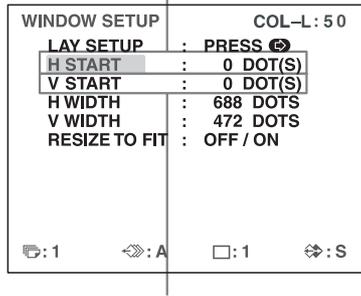
- 2** Perform adjustments according to the printout obtained by using the V START, V WIDTH, H START and H WIDTH items.

Item to be used for eliminating the vertical line at the right side



Item to be used for eliminating the horizontal line on the bottom

Item to be used for eliminating the vertical line at the left side



Item to be used for eliminating the horizontal line at the top

When a horizontal black line is produced on the printout

To eliminate a horizontal black line produced at the top:

Adjust the top position of the image to be printed using the V START item.

Note

A black line may appear at the bottom while you adjusting the top. You can eliminate it using the V WIDTH item.

To eliminate a horizontal black line produced at the bottom:

Adjust the bottom position of the image to be printed using the V WIDTH item.

When a vertical black line is produced on the printout

To eliminate a vertical black line produced on the left side:

Adjust the left position of the image to be printed using the H START item.

Note

A black line may appear on the right side while you adjusting on the left side. You can eliminate it using the H WIDTH item.

To eliminate a vertical black line produced on the right side:

Adjust the right position of the image to be printed using the H WIDTH item.

To reset the values to defaults

For H START, H WIDTH, V START and V WIDTH items, you can reset the values to defaults in pairs.

To reset the values for vertical settings, position the cursor at either V START or V WIDTH, and then press the ← and → buttons simultaneously.

To reset the values for horizontal settings, position the cursor at either H START or H WIDTH, and then press the ← and → buttons simultaneously.

Screen position and size settings adjusted in the WINDOW SETUP menu are stored individually for each input signal type (SDTV, 1080i, 720p) configured with SD/HD SEL in the HDTV SETUP menu. Therefore, the default setting values differ as follows for each input signal type.

Input signal	H WIDTH	H START	V WIDTH	V START
SDTV (NTSC)	688	0	472	0
SDTV (PAL)	688	0	556	0
1080i	1920	0	1080	0
720p	1280	0	720	0

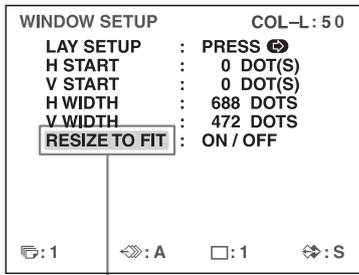
To check the adjustment result

Print to check that no black frame appears on the printout, that the image is not partially cut, and that no black line appears.

Fitting the Printout to the Paper

- 1 Display the WINDOW SETUP menu from the LAYOUT SETUP menu.

2 Select RESIZE TO FIT.



Highlight RESIZE TO FIT in green.

Setting	When you want to
OFF	Print the image with the printout area adjusted on the WINDOW SETUP menu
ON	Print the adjusted image to fit to the paper

The RESIZE TO FIT setting is stored individually for each input signal type (SDTV, 1080i, 720p) configured with SD/HD SEL in the HDTV SETUP menu.

Adjustment

Adjusting the Color Balance

Use this function to adjust the colors in printouts to match the colors displayed on the monitor.

Adjustments to the color balance are not reflected in the monitor display.

It is recommended that you adjust the color balance each time you load a new set of ink ribbon and paper.

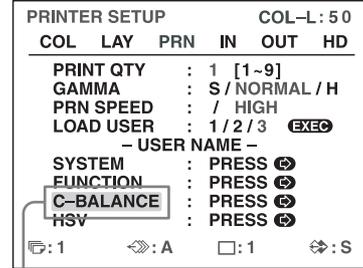
You should use the ink ribbon and paper that are contained in the same package as a pair. The color balance may differ depending on each pair.

Once you have adjusted and stored the settings, the printer operates according to those settings until their values are modified.

Before adjusting the color balance

Reset all items on the COLOR ADJUST menu to their center values. (See “Adjusting the Printout Color” on page 48.)

1 Display the COLOR BALANCE menu from the PRINTER SETUP menu.



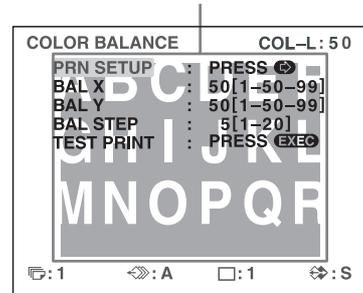
Select C-BALANCE, then press the → button.

The COLOR BALANCE menu appears. The highlighted area on the COLOR BALANCE menu will be printed to be used for adjusting the color balance. You can move this area to any place on the video monitor.

Note

If the layout was set to two or four reduced image display, the image on which the cursor was positioned will be displayed in full size.

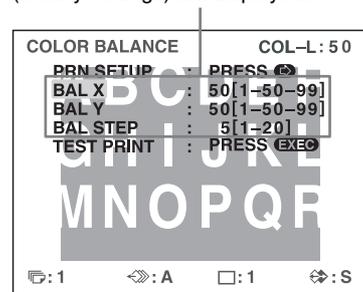
The area that will be captured in memory. (This area is highlighted and is two third the size of the whole screen.)



When you adjust the color balance for the first time after you purchase the printer, the values of BAL X, BAL Y and BAL STEP are set to 50, 50 and 5 at the factory setting.

When you have adjusted the color balance already, the values adjusted previously are displayed on the COLOR BALANCE menu.

The currently adjusted values of BAL X, BAL Y and BAL STEP
On this COLOR BALANCE menu, the default values (factory settings) are displayed.

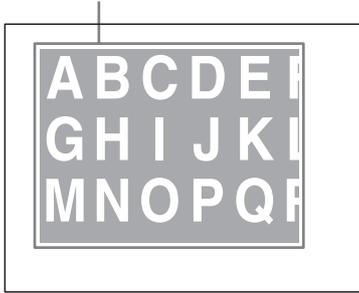


To reset the values to the factory setting (50/50/5)

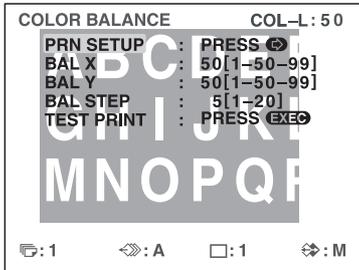
Select each item by pressing the **↑** or **↓** button, then press the **←** and **→** buttons at the same time. The currently selected item is reset to the default.

- Decide the position of the source image to be used for adjusting the color balance.
To decide the position of the source image, move the highlighted area by pressing the **↑**, **↓**, **←** or **→** button while holding down the DISPLAY button.

Move the highlighted part to the desired image position by pressing the **↑**, **↓**, **←** or **→** button while holding down the DISPLAY button. (The COLOR BALANCE menu disappears temporarily.)

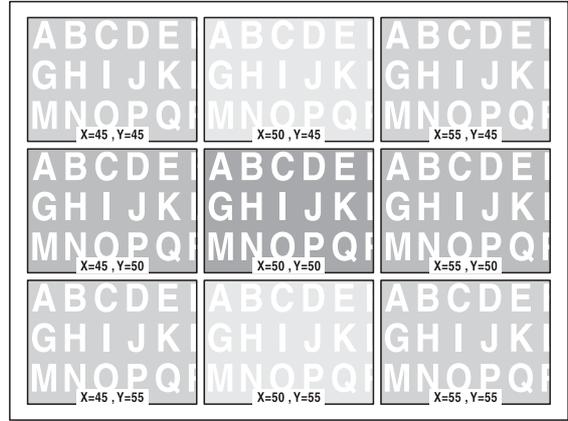


- Press the CAPTURE button.
The image captured in memory appears.

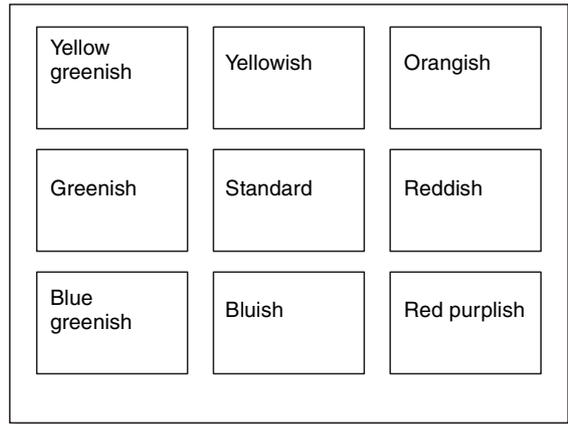


- Select TEST PRINT by pressing the **↑** or **↓** button, then press the EXEC button.
Nine identical images of the position selected in step 2 are printed on a sheet of paper as a test print. Each image has a different color balance.

This print operation can also be performed by pressing the PRINT button while the COLOR BALANCE menu is displayed.

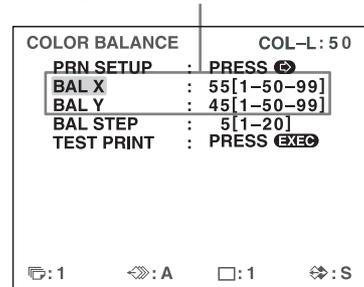


Example of the actual color change in the test print



- Select the image which has the best color balance among the nine images.
If you want to change the color balance after you see the printout, adjust the color balance again, referring to “To readjust the color balance” on page 54.
- Display the values of BAL X and BAL Y corresponding to the ones of the image selected in step 5 by using the **←** or **→** button.
Example: When the color balance (55 & 45) of the image printed on the top right is the best:

Display 55 for BAL X and 45 for BAL Y by pressing the **←** or **→** button.



The color balance of the printed image has been adjusted to the values selected in step 5.

To readjust the color balance

When the desired color balance cannot be obtained in step 5, readjust the color balance.

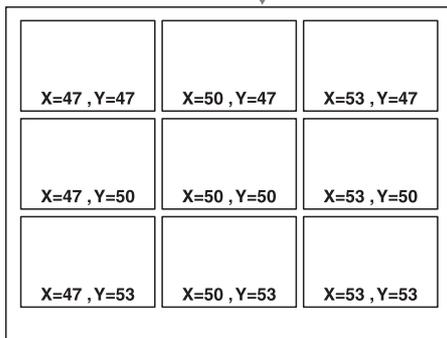
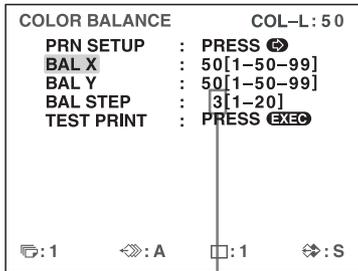
You can also perform precise adjustment following the same operation procedures.

- 1 Display the values of BAL X and BAL Y of the image which is the most appropriate among nine images by using the **←** or **→** button. In this case, you can perform either precise adjustment or a broad adjustment by changing the value of BAL STEP.

To perform precise adjustment

To perform color balance adjustment within the current color balance range, reduce the value of BAL STEP.

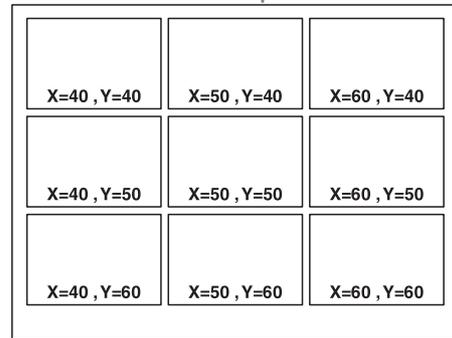
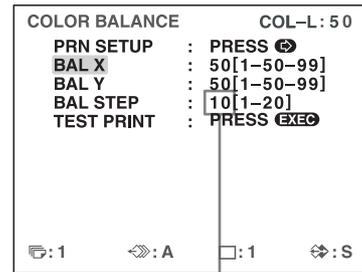
If you change BAL STEP from 5 to 3, the color balances of the test print are changed as illustrated.



To perform broad adjustment

To perform color balance adjustment beyond the current color balance range, increase the value of BAL STEP.

If you change BAL STEP from 5 to 10, the color balances of the test print are changed as illustrated.



- 2 Make a test print by repeating steps 2, 3 and 4 in “Adjusting the Color Balance” on page 52.
- 3 Select the image with the best color balance among the 9 images. If there is not the image with the best color balance, repeat steps 1 and 2 until you have obtained the best color balance.
- 4 Go back to step 6 in “Adjusting the Color Balance” on page 52.

Specifying Colors for Adjustment (HSV Adjustment)

Use this function to select a specific color within printouts for adjustment. You can specify RED, YELLOW, GREEN, CYAN, BLUE, or MAGENTA for adjustment.

This function does not affect grayscale (black and white) data. In addition, the results of color adjustment will not be reflected on the monitor.

If you capture the adjustments to memory, they are retained even after the printer is turned off and until new adjustments are captured to memory.

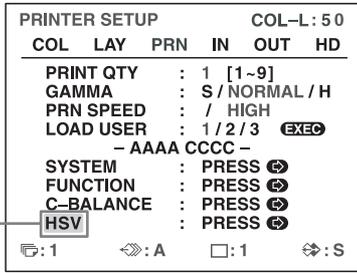
Before performing HSV adjustment

Reset all color settings (RED, GREEN, BLUE) on the COLOR ADJUST menu to their center positions.

Note

If grayscale data is changed due to COLOR ADJUST menu and color balance adjustments, the adjustments of this function may affect the picture quality.

- 1 Display the HSV adjustment menu from the PRINTER SETUP menu.

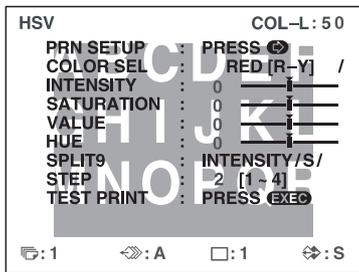


Highlight HSV in green by pressing the ↑ or ↓ button, then press the → button.

The highlighted area on the HSV adjustment menu will be printed to be used for HSV adjustment. You can move this area to any place on the video monitor.

Note

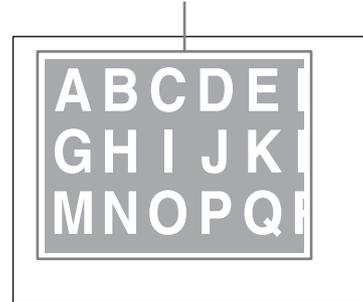
If the layout was set to two or four reduced image display, the image on which the cursor was positioned will be displayed in full size.



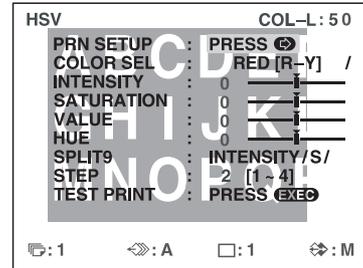
- 2 Decide the position of the source image to be used for HSV adjustment.

To decide the position of the source image, move the highlighted area by pressing the ↑, ↓, ← or → button while holding down the DISPLAY button.

Move the highlighted part to the desired image position by pressing the ↑, ↓, ← or → button while holding down the DISPLAY button. (The HSV adjustment menu disappears temporarily.)

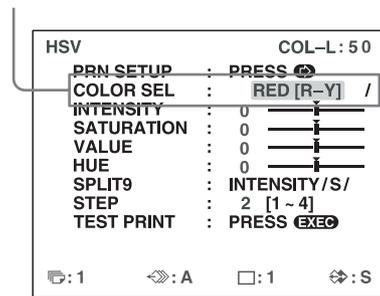


- 3 Press the CAPTURE button. The image captured in memory appears.



- 4 Specify the color to adjust. Specify the color with COLOR SEL.

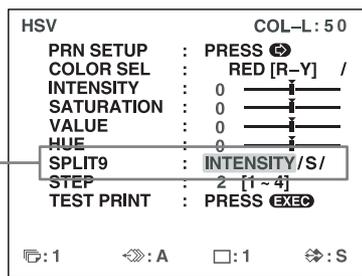
Highlight COLOR SEL in green by pressing the ↑ or ↓ button, then specify the color to adjust using the ← or → button.



COLOR SEL	Description
RED [R-Y]	Specifies red for adjustment. When adjusting the INTENSITY, the hues between red and yellow (R-Y) are specified.
YEL [Y-G]	Specifies yellow for adjustment. When adjusting the INTENSITY, the hues between yellow and green (Y-G) are specified.

COLOR SEL	Description
GRN [G-C]	Specifies green for adjustment. When adjusting the INTENSITY, the hues between green and cyan (G-C) are specified.
CYN [C-B]	Specifies cyan for adjustment. When adjusting the INTENSITY, the hues between cyan and blue (C-B) are specified.
BLU [B-M]	Specifies blue for adjustment. When adjusting the INTENSITY, the hues between blue and magenta (B-M) are specified.
MAG [M-R]	Specifies magenta for adjustment. When adjusting the INTENSITY, the hues between magenta and red (M-R) are specified.

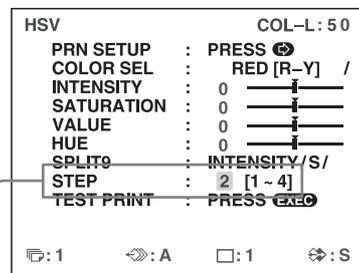
5 Specify the parameter to adjust. Specify the parameter with SPLIT9.



Highlight SPLIT9 in green by pressing the \uparrow or \downarrow button, then specify the parameter using the \leftarrow or \rightarrow button.

SPLIT9	Description
INTENSITY	Specifies the hue of the color range (ex: [R-Y]) selected with COLOR SEL as the parameter for adjustment.
SATURATION	Specifies the saturation of the color selected with COLOR SEL as the parameter for adjustment.
VALUE	Specifies the brightness of the color selected with COLOR SEL as the parameter for adjustment.
HUE	Specifies the hue of the color selected with COLOR SEL as the parameter for adjustment.

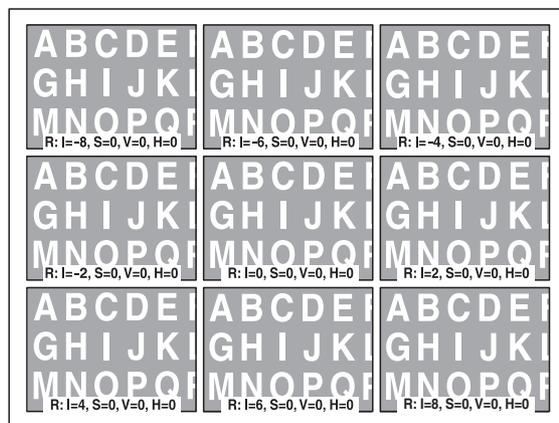
6 Specify the step setting. Specify the step setting with STEP.



Highlight STEP in green by pressing the \uparrow or \downarrow button, then specify the step setting using the \leftarrow or \rightarrow button.

Specify the incremental amount of change in the parameter selected with SPLIT9 that will appear in HSV adjustment printouts. Select a value from 1 to 4, selecting lower values for precise adjustments and larger values for broader adjustments.

7 Select TEST PRINT, then press the EXEC button. Nine identical images of the position selected in step 2 are printed on a sheet of paper as a test print. The values for the parameter specified with SPLIT9 vary in each image. (You can also create the same test print by pressing the PRINT button at the HSV adjustment menu.)



The specified color and the INTENSITY, SATURATION, VALUE, and HUE values of the specified color appear in order as captions in the image.

Specified color

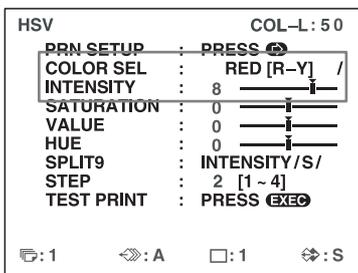
- R: RED [R-Y]
- Y: YEL [Y-G]
- G: GRN [G-C]
- C: CYN [C-B]
- B: BLU [B-M]
- M: MAG [M-R]
- I = INTENSITY value of specified color
- S = SATURATION value of specified color
- V = VALUE value of specified color

H = HUE value of specified color

The changes in the parameter specified with SPLIT9 that appear in the test print are as follows.

-STEP*4	-STEP*3	-STEP*2
-STEP*1	STANDARD	+STEP*1
+STEP*2	+STEP*3	+STEP*4

- 8 Select the image that has the best adjustments among the nine images.
If you want to change the adjustment values again, refer to “To readjust parameter values” on page 58.
If you want to adjust a different parameter, repeat the procedure from step 5.
If you want to adjust a different color, repeat the procedure from 4.
- 9 Display the parameter values corresponding to the ones of the image selected in step 8 by using the ← or → button.
Example: When the INTENSITY value of 8 for RED [R-Y] in the image printed on the bottom right is best



The HSV of printouts will be adjusted to the values selected in step 8.

Parameter adjustments

The adjustment range for parameters is ±16. The parameter value and a slider are displayed on the screen. The value of 0 is located at the center of the slider.

Parameter	Description
INTENSITY	Adjusts the hue of the color range (ex: [R-Y]) selected with COLOR SEL. If RED [R-Y] is selected for COLOR SEL, for example, the hue of colors between red and yellow is more red when the slider is closer to the right, and more yellow when closer to the left. This value is used as a base parameter for HSV adjustment printouts. Data is stored separately for each color selected with COLOR SEL ([R-Y], [Y-G], [G-C], [C-B], [B-M], [M-R]).
SATURATION	Adjusts the saturation of the color selected with COLOR SEL. Saturation values increase in the right direction and decrease in the left direction. This value is used as a base parameter for HSV adjustment printouts. Data is stored separately for each color selected with COLOR SEL (RED, YEL, GRN, CYN, BLU, MAG).
VALUE	Adjusts the brightness of the color selected with COLOR SEL. Brightness values increase in the right direction and decrease in the left direction. This value is used as a base parameter for HSV adjustment printouts. Data is stored separately for each color selected with COLOR SEL (RED, YEL, GRN, CYN, BLU, MAG).
HUE	Adjusts the hue of the color selected with COLOR SEL. A value of -16 rotates the hue -30 degrees, and a value of 16 rotates the hue 30 degrees. This value is used as a base parameter for HSV adjustment printouts. Data is stored separately for each color selected with COLOR SEL (RED, YEL, GRN, CYN, BLU, MAG).

To reset the values to the factory setting

Select each item with the cursor, then press the ← and → buttons at the same time.

As data is stored separately for each COLOR SEL color, be sure to perform the above procedure for each COLOR SEL color if you want to reset all the settings.

10 If you want to adjust another parameter, repeat steps 5 to 9.

11 If you want to adjust another color, repeat steps 4 to 9.

To readjust parameter values

If the desired parameter values were not obtained in step 8 of “Specifying Colors for Adjustment (HSV Adjustment),” readjust the parameters.

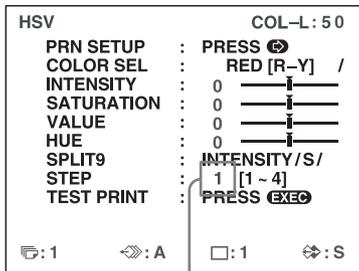
You can also perform precise adjustment following the same operation procedures.

1 Display the parameter values of the image that is the most appropriate among the nine images by using the ← or → button.

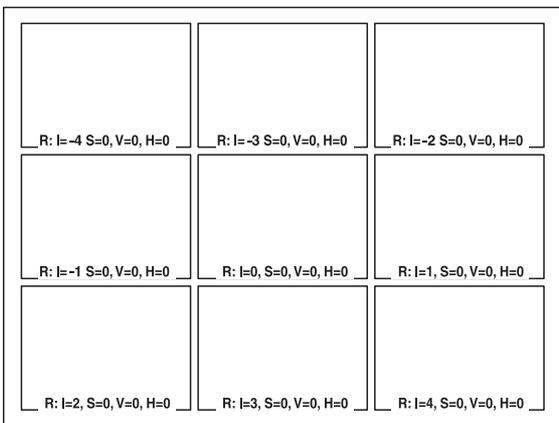
You can select whether to perform precise adjustments or broad adjustments by changing the STEP value.

To perform precise adjustment

To perform parameter adjustment within the current parameter range, reduce the current STEP value.

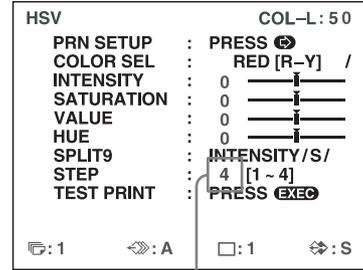


The HSV test print will appear as follows when STEP is set to 1.

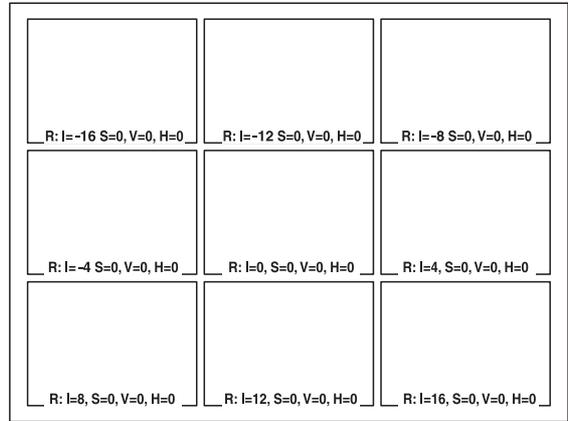


To perform broad adjustment

To perform parameter adjustment beyond the current parameter range, increase the current STEP value.



The HSV test print will appear as follows when STEP is set to 4.



2 Make a test print by repeating steps 2 to 7 in “Specifying Colors for Adjustment (HSV Adjustment).”

3 Select the most appropriate image among the nine images.

If you cannot find an appropriate image, repeat steps 1 and 2 until you can find an appropriate image.

4 Go back to step 8 in “Specifying Colors for Adjustment (HSV Adjustment).”

Configuring HDTV-Signal Inputs and Outputs

Selecting the Input Signal

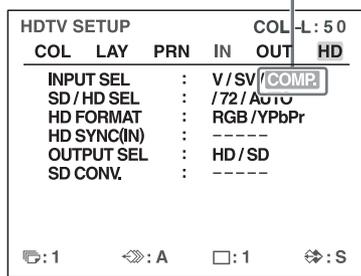
Select the input signal based on the input connector being used to connect the video equipment.

With HDTV signals, select COMP.

You can also configure the INPUT SEL setting from the INPUT SETUP menu. When you change the setting in the INPUT SETUP menu, the change is also reflected in the HDTV SETUP menu.

- 1 Display the HDTV SETUP menu.
- 2 Select INPUT SEL by pressing the **↑** or **↓** button, and select the input signal for printing by pressing the **←** or **→** button.

Highlight the desired input signal in green by pressing the **←** or **→** button.



Source of image to be printed	Setting (abbreviated display/display when selected)
Video equipment connected to the VIDEO IN connector on the printer's rear panel	V/VIDEO
Video equipment connected to the S-VIDEO IN connector on the printer's rear panel	SV/S-VIDEO
Video equipment connected to the RGB/YPbPr/SYNC INPUT connectors on the printer's rear panel	C/COMP.

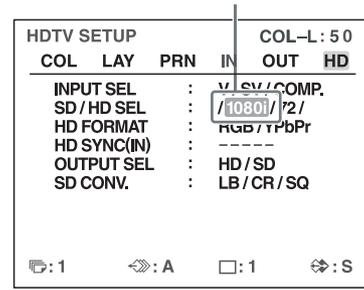
Selecting the Input Signal Type

Select the input signal type. You can also set the printer to automatically detect the type of signal input. This setting is only enabled when INPUT SEL is set to COMP.

- 1 Display the HDTV SETUP menu.

- 2 Select SD/HD SEL by pressing the **↑** or **↓** button, and select the input signal type for printing by pressing the **←** or **→** button.

Highlight the desired input signal type in green by pressing the **←** or **→** button.



Signal to be input	Setting (abbreviated display/display when selected)
SDTV signals	SD
1080i	108/1080i
720p	72/720p
Detect and switch the signal type automatically	AUTO

“HD” appears on the printer window display when SD/HD SEL is set to 1080i or 720p, or when HDTV signals are input while SD/HD SEL is set to AUTO.

“HD” appears



Note

Automatic input signal detection is not possible for equipment connected to the VIDEO IN and S-VIDEO IN connectors, so be sure to select an input signal under INPUT SEL.

Selecting the Input Signal Format

Select the format for HDTV signal input.

Note on output signals during HDTV signal input

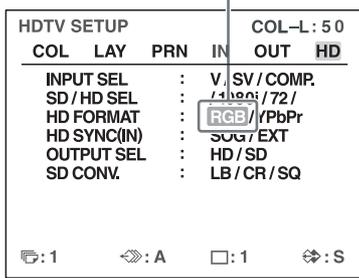
When OUTPUT SEL is set to HD, signals are output in the format you select here.

When OUTPUT SEL is set to SD, signals are output in the format you select under the INPUT FORM. setting of the INPUT SETUP menu.

- 1 Display the HDTV SETUP menu.

- 2 Select HD FORMAT by pressing the **↑** or **↓** button, and select the HDTV signal format by pressing the **←** or **→** button.

Highlight the desired format in green by pressing the **←** or **→** button.



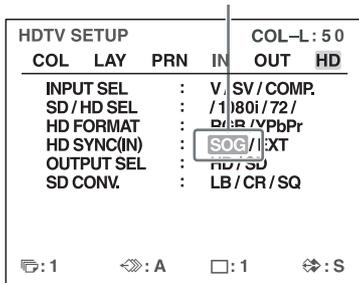
Signal to be input	Setting
RGB signals	RGB
YPbPr signals	YPbPr

Selecting the Synchronization Method for Input Signals

Select the synchronization method for HDTV signals. Under normal circumstances, select the SOG setting. When HD FORMAT is set to YPbPr, the HD SYNC setting is fixed to SOG and cannot be configured. When SD/HD SEL is set to AUTO, the HD SYNC setting is automatically determined and set to SOG or EXT. In either case, “-----” appears for the HD SYNC setting.

- 1 Display the HDTV SETUP menu.
- 2 Select HD SYNC by pressing the **↑** or **↓** button, and select the method for signal synchronization by pressing the **←** or **→** button.

Highlight the desired method for signal synchronization in green by pressing the **←** or **→** button.



Synchronization method	Setting
Sync on Green method	SOG (SYNC ON G in the printer window display)
Separate sync method	EXT

Selecting the Output Signal Type

With HDTV signal input, you can select whether the printer outputs signals to a video monitor unchanged or converts them to SDTV signals.

If you want the printer to output SDTV signals, be sure to select the downconvert method using the SD CONV. menu item that follows.

Even if you choose to downconvert to SDTV signals with this setting, images will still be printed in a 16:9 aspect ratio.

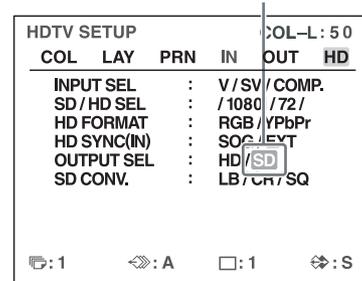
Note on output formats

When HD is selected here, signals are output in the format selected under HD FORMAT.

When SD is selected here, signals are output in the format you select under the INPUT FORM. setting of the INPUT SETUP menu.

- 1 Display the HDTV SETUP menu.
- 2 Select OUTPUT SEL by pressing the **↑** or **↓** button, and select the output method by pressing the **←** or **→** button.

Highlight the desired output method in green by pressing the **←** or **→** button.



Signal to be output	Setting
Unconverted HDTV signals	HD
Downconverted SDTV signals	SD

Note

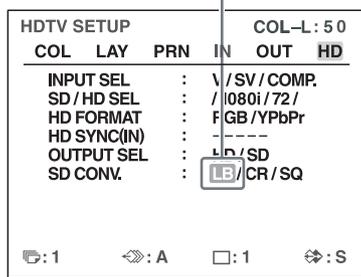
When HD is selected, no signal is output from the composite video output connector or the S-video output connector on the rear panel of the printer.

Selecting the Downconvert Method

When downconverting HDTV signals for output as SDTV signals, select the downconverting method. Image resolution is reduced and the aspect ratio changes to 4:3 when you downconvert the signals. This setting is not available when OUTPUT SEL is set to HD.

- 1 Display the HDTV SETUP menu.
- 2 Select SD CONV. by pressing the **↑** or **↓** button, and select the output method by pressing the **←** or **→** button.

Highlight the desired downconvert method in green by pressing the **←** or **→** button.

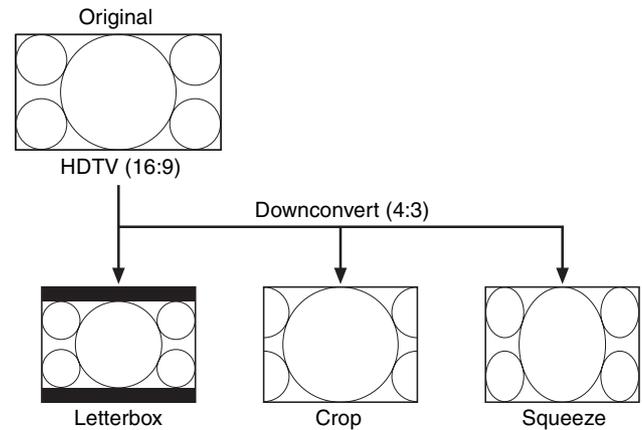


Downconvert method	Setting
Letterbox	LB
Crop	CR
Squeeze	SQ

Letterbox: Compresses the HDTV image to fit the SDTV screen size while preserving the original aspect ratio. Mattes (black bars) appear above and below the image. The entire HDTV image is output without changes to its shape, but objects appear smaller in size.

Crop: Crops the left and right edges of the HDTV image. Objects located in the left and right edges of the HDTV image are not output.

Squeeze: Compresses the HDTV image horizontally into 4:3 aspect ratio. The entire HDTV image is output, but objects appear vertically stretched.



Making Various Settings

Assigning Functions to the Remote Control Unit

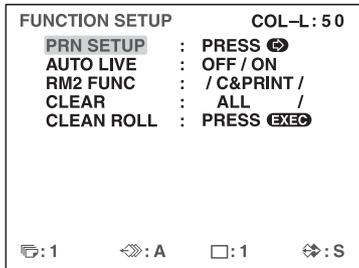
You can control the printer using the RM-91 Remote Control Unit (not supplied) connected to the REMOTE 2 connector on the rear panel of the printer.

Using the FUNCTION SETUP menu, you can assign a function to the remote control unit connected to the REMOTE 2 connector.

In addition, the printer can be remotely controlled by a pulse signal input to REMOTE 2. (See page 70.)

You can also control the printer remotely by connecting a computer to the RS-232C connector.

- 1 Display the FUNCTION SETUP menu from the PRINTER SETUP menu.



- 2 Select RM2 FUNC, then assign a function to the switch on the remote control unit.

Function to be assigned	Operation
CAPTURE	Press the switch to capture an image to memory. Has the same function as the CAPTURE button on the printer.
PRINT	Press the switch to start printing. Has the same function as the PRINT button on the printer.
C & PRINT ^{a)} (CAPTURE & PRINT)	Each press of the switch captures an image to a memory page that does not have a print queue, and starts a print operation. If you press the switch while a previous print operation is in progress, the current print operation is queued and will begin when the previous one completes.
CYCLIC-C ^{b)} (CYCLIC CAPTURE)	Each press of the switch captures an image to a memory page that does not have a print queue. When the current memory becomes full, previously captured images will be overwritten.

Function to be assigned	Operation
CAP-STOP ^{b)} (CAPTURE STOP)	Each press of the switch captures an image to memory. When the last memory page is reached, the "HIT ANY KEY" message appears and image capturing is disabled.
BACK-SP ^{a)}	Each press of the switch moves the cursor on the reduced image screen to the previous position.
POINTER+	Each press of the switch moves the cursor on the reduced image screen to the next position.
STOP	Press the switch to end print operations once the current print operation completes.
CAP/SRC (CAPTURE/SOURCE)	Press the switch while a memory image is displayed to switch to source image display. If you press the switch while a source image is displayed, the source image is captured to memory. However, pressing the switch does not switch memory pages. If you press the switch again, the next image will be captured to the same page.
CAP/S PAGE ^{b)} (CAPTURE/SOURCE PAGE)	Press the switch while a memory image is displayed to switch to source image display. If you press the switch while a source image is displayed, the source image is captured to memory. The unit switches to the next memory page after each capture operation. However, captured images are not printed.
PRINT & PAGE	Press the switch to start printing and move to the next memory page. The switch will only function properly when captured images exist on the current memory page.
SRC & CAP (SOURCE & CAPTURE)	The source image appears while you hold down the switch, and an image is captured to memory the moment you release the switch. However, pressing the switch does not switch memory pages.
SRC & C PAGE ^{b)} (SOURCE & CAPTURE PAGE)	The source image appears while you hold down the switch, and an image is captured to memory the moment you release the switch. The unit switches to the next memory page after each capture operation. However, captured images are not printed.

- a) When you use the remote control unit with this function, confirm that the source image is displayed on the video monitor. If not, press the SOURCE/MEMORY button so that the source image will be displayed. When multiple reduced images are being captured, after the last image is captured, the printer prints the captured image (or queues printing), then the printer goes to the next memory page.

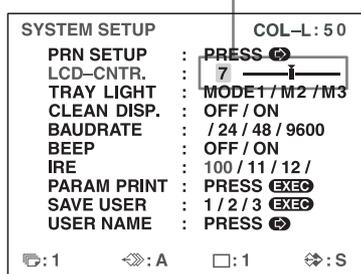
- b) When multiple reduced images are being captured, after the last image is captured, the printer goes to the next memory page.

Adjusting the Contrast of the Printer Window Display

When it is hard to read the contents of the printer window display, adjust the contrast using the menu.

- 1 Display the SYSTEM SETUP menu from the PRINTER SETUP menu.
- 2 Select the LCD-CNTR. item, then adjust the contrast of the printer window display.

Adjust the contrast by pressing the ← or → button.



Note

When the slider is set to the far left, the setting will appear as OFF, and the printer window display will remain blank. However, error messages will still be displayed.

Setting the Tray Light

Select the function of the printer's tray light.

- 1 Display the SYSTEM SETUP menu from the PRINTER SETUP menu.
- 2 Select TRAY LIGHT, then select the tray light function.

Function	Setting (abbreviated display/display when selected)
The tray light shines for approx. 5 seconds after printouts eject.	M1/MODE1
The tray light is always on.	M2/MODE2
The tray light is always off.	M3/MODE3

Setting the Cleaning Message Display Function

Select whether to display a message requesting thermal head cleaning. This message appears for approximately 6 seconds after you press the Ⓟ POWER switch to turn on the printer.

- 1 Display the SYSTEM SETUP menu from the PRINTER SETUP menu.
- 2 Select CLEAN DISP., then select whether to display the message.

When you want to	Setting
Not display messages that request thermal head cleaning.	OFF
Display messages that request thermal head cleaning.	ON

Selecting Whether the Operation and Error Tones Sound

Whenever you press a button on the front door, the operation tone sounds (one time). When an error occurs, the alarm tone sounds (three times). You can turn these tones on and off using the menu.

- 1 Display the SYSTEM SETUP menu from the PRINTER SETUP menu.
- 2 Select the BEEP item, then select whether or not the operation and error tones sound by pressing the ← or → button.

When you want to	Selection
Sound the tones.	ON
Disable the tones.	OFF

Setting the Baud Rate

When controlling the printer with a computer connected to the printer's RS-232C connector, select the appropriate baud rate. For details, contact your nearest Sony dealer.

- 1 Display the SYSTEM SETUP menu from the PRINTER SETUP menu.
- 2 Select the BAUDRATE item, then select the desired baud rate by pressing the ← or → button.

Baud rate (bps)	Baud rate displayed on the menu. (The display changes from first two digit indication to four digit indication.)
1200	12 → 1200
2400	24 → 2400
4800	48 → 4800
9600	96 → 9600

Printing Menu Configurations

You can print almost all menu configurations, with the exception of some menus.

Notes

- The configurations of SAVE USER of the SYSTEM SETUP menu and SAVE COLOR of the COLOR ADJUST menu cannot be printed.
- Set the number of copies to "1". Otherwise multiple copies will be printed.
- Correctly load the ink ribbon and paper, and ensure no error message is displayed.

- 1 Display the SYSTEM SETUP screen from the PRINTER SETUP menu.
- 2 Select PARAM PRINT and press the EXEC button. The menu configurations are printed.

Displaying the Ink Ribbon Type and Remaining Amount of the Ink Ribbon

You can always display the remaining amount on the video monitor.

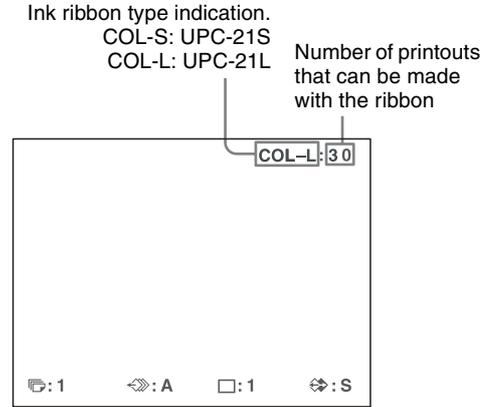
Note

Use the ribbon remaining display as a criterion.

- 1 Display the OUTPUT SETUP menu.
- 2 Select the RBN REMAIN item, then select whether or not the type of ink ribbon and the remaining amount are to be displayed on the monitor.

When you want to	Setting
Display the ink ribbon type and remaining amount.	ON
Erase the information about the ink ribbon type and remaining amount.	OFF

Ink ribbon information

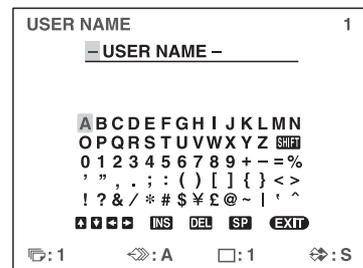


Registering a User Set

You can store up to three settings of all the printer specifications set or adjusted by using the buttons or the menu, and store those settings as a user set. The printer retains these setting - even if you turn off the power. Thus, different operators can make printouts with different settings by recalling the appropriate user set. If the data of the recalled user set is modified, the printer operates according to the modified data. In such a case, the modified data remains effective until another user set is recalled on the PRINTER SETUP menu, even if you turn off the power.

After you finish all of the required settings, proceed as follows to register them as a user set.

- 1 Display the SYSTEM SETUP menu from the PRINTER SETUP menu.
If you want to name a user set, go to step 2.
If you do not want to name a user set, go to step 4.
- 2 Select the USER NAME item, then press the → button.
The USER NAME menu appears.



For detailed information on how to enter characters, see “Entering a Caption” on page 36.
You can use up to 16 characters.

- 3 Select EXIT by pressing the **↑**, **↓**, **←** or **→** button on the USER NAME menu, then press the EXEC button.
The SYSTEM SETUP menu appears again.
- 4 Select the SAVE USER item, then select the desired user set number.
- 5 Press the EXEC button.
All data currently set and adjusted are registered in the user set number selected in step 4.
When you name a user set in step 2, the user name is also registered at the same time.

The printer operates according to this registered data unless you recall another user set. Also, if you modify the settings, the modified data remains effective until another user set is recalled, even if you turn off the power.

To make another user set

Perform all required settings and adjustments using the menus, then register them with another user set number.

To recall the user set and print

Select the desired user set by using the LOAD USER item on the PRINTER SETUP menu, then press the EXEC button to execute the selected user set.

The printer operates according to the recalled user set.

To retain the originally set values

Example: Modify the settings made for user set 1. Retain the original settings of user set 1 and register the modified set values as user set 2.

- 1 Select user set 1 from the LOAD USER item on the PRINTER SETUP menu.
- 2 Press the EXEC button to execute the selected user set 1.
- 3 Modify the recalled set values.
- 4 Select 2 from the SAVE USER item on the SYSTEM SETUP menu.
- 5 Press the EXEC button.
The set values, modified in step 3, are registered as user set 2.

To copy the existing user set

You can copy an existing user set to another user set number.

- 1 Select the source user set number from the LOAD USER item on the PRINTER SETUP menu.
- 2 Press the EXEC button to execute the selected user set.
- 3 Select the target user set number with SAVE USER on the SYSTEM SETUP menu.
- 4 Press the EXEC button.
The set values of the source user set, selected in step 1, are copied to the target user set number selected in step 3.

Returning All Configurations to Default Settings

The default settings are registered for a user number that has no user settings registered. Selecting a user number that has no user settings registered returns all menu configurations to the default settings.

Notes

- If you return all menu configurations to the default settings, comments that were created in the CAPTION menu will also be deleted.
- If user settings are registered for all user numbers, the configurations cannot be returned to default settings.

- 1 Select a user number that has no user settings registered in LOAD USER of the PRINTER SETUP menu.
- 2 Press the EXEC button.
All menu configurations are returned to the default settings.

Precautions

In addition to the following precautions, be sure to refer to the safety warnings and notices at the beginning of this manual.

Safety

If “CLEAN HEAD” appears on the monitor or printer window display

The message “CLEAN HEAD” appears on the monitor or printer window display when the number of printed pages reaches 1,000 and it is time to clean the thermal head. For details, see “Cleaning the thermal head” on page 67.

When the thermal head needs cleaning, the message appears for approximately 6 seconds after you press the ① POWER switch to turn on the printer.

The message reappears each time you turn the printer on until cleaning has been performed.

Also, the “CLEAN HEAD” message display function can be turned on or off in the SYSTEM SETUP menu with the CLEAN DISP. setting (page 63).

If “CLEAN ROLL” appears on the monitor or printer window display

If all paper in the paper feed tray is used up during a printing operation, the printer executes automatic paper feed roller cleaning. If the internal sensor detects an excessive amount of dust on the paper feed roller, “CLEAN ROLL” appears on the monitor or printer window display. In this case, perform manual paper feed roller cleaning. For details, see “Manual paper feed roller cleaning” on page 68.

The message about roller cleaning appears at the end of printing if the paper feeding power is low.

Installation

Avoid placing the unit in a location subject to:

- direct or excessive sunlight
- high humidity
- extremely high or low temperatures
- mechanical vibration
- excessive dust
- instability

For safety, do not place an object, such as a computer monitor, on top of the unit.

Caution

To prevent internal heat built-up, maintain sufficient space around the printer (at least 10 cm (4 in.)). Do not obstruct the ventilation holes on the sides of the printer.

Transportation

When transporting the printer, follow the steps below to remove all accessories and repack the unit in its original packaging. Transporting the printer with the accessories installed may damage the printer.

- 1 Remove the ink ribbon and paper feed tray.
- 2 Lock the internal thermal head.
 - ① Press the ① POWER switch to turn on the printer, and wait for “SET RIBBON SET PAPER” to appear on the printer window display.
 - ② Simultaneously press ←, →, and the MENU button.

The printer operation sound continues for approximately 4 seconds, and the message “PLEASE WAIT” appears on the printer window display.
 - ③ When the printer operation sound stops and the message “TRANSPORT MODE” appears in the display, press the ① POWER switch to turn off the printer.

The thermal head is locked.

Note

If the message “PLEASE REMOVE RIBBON” appears on the printer window display, remove the ink ribbon and perform the procedure again.

To unlock the thermal head

Turn on the printer again. The thermal head unlocks, and the ink ribbon can be loaded.

When the printer will be inactive for a long time

- Press the ① POWER switch to turn off the printer, and then disconnect the power cord.
- Remove the partially used paper and ink ribbon from the printer, reseal them in their original bags, and store them in a cool, dark location. Before unsealing and reusing the stored paper and ink ribbon, allow them to return to room temperature to prevent water condensation.

On condensation

- If the printer is subjected to wide and sudden changes in temperature, such as when it is moved from a cold room to a warm room or when it is left in a room with a heater that tends to produce quantities of moisture, condensation may form inside the printer. In such cases the printer will probably not work properly, and may even develop a fault if you persist in using it. If moisture condensation forms, turn off the power and leave the printer standing for at least one hour.
- If the printing pack is subjected to wide and sudden changes in temperature, condensation may form on the ink ribbon or paper inside. This will cause the printer to

malfunction. Also, if the printing pack is used in this state, spots are likely to appear on the printout.

Cleaning the cabinet

Note

Before you clean the printer, be sure to turn off the power and disconnect the power cord.

When the cabinet becomes dirty

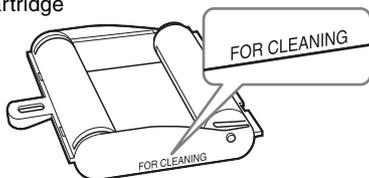
When solvents such as benzene or thinner, or acid, alkaline or abrasive detergent, or chemical cleaning cloths are used on the printer surface, the surface finish may be damaged. Take care with respect to the following:

- Clean the printer surface with a 50 to 70 v/v% concentration of isopropyl alcohol or a 76.9 to 81.4 v/v% concentration of ethanol.
- Stubborn stains may be removed with a soft cloth such as a cleaning cloth lightly dampened with mild detergent solution and then cleaned using the above chemical.
- Do not use unnecessary force to rub the printer surface with a stained cloth. The printer surface may be scratched.
- Do not keep the printer surface in contact with a rubber or vinyl resin product for a long period of time. The surface finish may deteriorate or the coating may come off.

Cleaning the thermal head

If marks and stripes appear on printouts, clean the thermal head using the supplied thermal head cleaning cartridge and cleaning sheet.

Thermal head cleaning cartridge



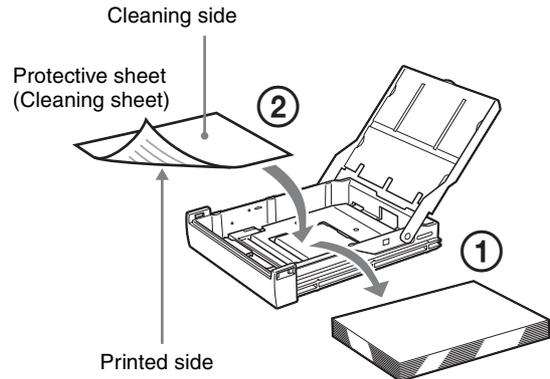
To maintain print quality, we recommend that you perform cleaning regularly and whenever you replace printing pack (when the printing pack in use runs out).

To perform cleaning on the thermal head, the reverse side of the protective sheet supplied with printing packs UPC-21S and UPC-21L can be used as a cleaning sheet.

- 1 Press the paper feed tray to eject it. Remove all paper from the feed tray. Remove any paper remaining in the tray insertion area. ①
- 2 Turn over the protective sheet (the cleaning sheet) that was removed in step 3 of “Loading the Paper” (page 19), and load it in the paper feed tray with the reverse side (the unprinted side) facing up. ②

Note

Once a protective sheet has been used as a cleaning sheet, do not use it again.



- 3 Insert the paper feed tray into the printer.
- 4 Load the thermal head cleaning cartridge into the printer. When an ink ribbon is loaded in the printer, remove it before loading the thermal head cleaning cartridge. The procedure is the same as loading an ink ribbon. For details, see “Loading the Ink Ribbon” on page 18. Once the thermal head cleaning cartridge is loaded and the ribbon door panel is closed, the message “CLEAN HEAD:PRESS EXEC” appears on the printer window display.

Note

If the paper feed tray is not inserted, the message “CLEAN HEAD:SET SHEET” appears on the printer window display. In such cases, insert the paper feed tray.

- 5 Press the EXEC button. The cleaning operation begins. During the cleaning operation, “CLEAN HEAD:NOW CLEANING” appears on the printer window display. After the cleaning sheet is ejected, “CLEAN HEAD:FINISHED” appears on the printer window display, and the cleaning operation finishes.

Note

Do not turn off the printer while “CLEAN HEAD:NOW CLEANING” appears on the printer window display.

- 6** Remove the thermal head cleaning cartridge. The thermal head cleaning cartridge can be used for future cleanings, so keep it in a safe place and do not discard it.

Notes

- The protective sheet that has been used as a cleaning sheet cannot be used again.
- The thermal head cleaning cartridge is reusable. Store it in package to protect it from dust and other particles.

Automatic paper feed roller cleaning

If all paper in the paper feed tray is used up during a printing operation, the printer executes automatic paper feed roller cleaning.

During the cleaning operation, “CLEANING” appears on the printer window display.

When the cleaning operation finishes, the paper feed tray is ejected automatically.

Notes

- Do not turn off the printer while “CLEANING” appears on the printer window display.
- When the cleaning operation finishes, the paper feed tray is ejected automatically.

Manual paper feed roller cleaning

If “CLEAN ROLL” appears on the monitor or printer window display, execute manual paper feed roller cleaning.

- 1** Press the paper feed tray to eject it. Remove all paper from the feed tray. Remove any paper remaining in the tray insertion area.
- 2** Insert the empty paper feed tray into the printer.
- 3** Display the FUNCTION SETUP menu from the PRINTER SETUP menu (page 43), and select “CLEAN ROLL.” “CLEAN ROLL:PRESS EXEC” appears on the printer window display.
- 4** Press the EXEC button. The manual paper feed roller cleaning operation begins and “CLEAN ROLL:NOW CLEANING” appears on the printer window display.

When the cleaning operation finishes, the paper feed tray is ejected automatically.

Notes

- Do not turn off the printer while “CLEAN ROLL:NOW CLEANING” appears on the printer window display.
- When the cleaning operation finishes, the paper feed tray is ejected automatically.
- Insert the empty paper feed tray into the printer. If the paper feed tray is not inserted, the printer may be damaged.

Ink Ribbon and Paper



Do not re-use

Doing so may result in malfunction and negatively affect printing results.

Color Printing Pack UPC-21S

Contains color ink ribbons and paper for 240 sheets worth of high-speed, high-sensitivity printing, including:

- 3 ink ribbons for 80 sheets worth of printing each
- 3 reams of paper (90 × 100 mm) with 80 sheets each

Color Printing Pack UPC-21L

Contains color ink ribbons and paper for 200 sheets worth of high-speed, high-sensitivity printing, including:

- 4 ink ribbons for 50 sheets worth of printing each
- 4 reams of paper (100 × 144 mm) with 50 sheets each

About the Color Printing Pack (UPC-21S/UPC-21L)

Notes

- When the paper runs out, replace both the paper and the ink ribbon.
- Use the ink ribbon and the paper in the carton as a set. Do not mix with other varieties of ink ribbon or paper.
- Since like other color dyes, the dyes used in this ink ribbon may discolor in time, the product will neither be replaced nor is a warranty against any color change given.

Storing paper

- Avoid storing paper in a location subject to high temperatures and humidity, excessive dust, or direct sunlight.
- Remove the partially used paper and ink ribbon from the printer, reseal them in their original bags, and store them in a cool, dark location. Before unsealing and reusing the stored paper and ink ribbon, allow them to return to room temperature to prevent water condensation.

Notes for preserving your printouts

- Keep printouts in a dark and cool place.
- Be sure not to stick plastic tape onto the printout. Also avoid leaving a plastic eraser on top of the printout or putting the printout between objects which contain plasticizer (a desk mat, etc.)
- Be sure not to pour any alcohol or other volatile organic solvents onto the printouts.

Specifications

Power Requirements

100 V to 240 V AC, 50/60 Hz

Input Current 1.7 A to 1.0 A

Operating Temperature

5 °C to 35 °C (41 °F to 95 °F)

Operating Humidity

20% to 80% (no condensation allowed)

Operating Pressure

700 hPa to 1,060 hPa

Storage and Transport Temperature

-20 °C to +60 °C (-4 °F to +140 °F)

Storage and Transport Humidity

20% to 80% (no condensation allowed)

Storage and Transport Pressure

700 hPa to 1,060 hPa

Dimensions

Approx. 212 × 98 × 398 mm (w × d × h)

Weight

Approx. 5.7 kg (printer only)

Printing system Dye transfer sublimation thermal printing

Thermal head 423 dpi

Gradations 8-bit (256-level) processing each for yellow, magenta, and cyan

Picture elements

Full-image print using UPC-21S:

1,600 × 1,260 dots

Full-image print using UPC-21L:

2,132 × 1,600 dots

Printing time

UPC-21S

Approx. 19 seconds (high speed print)

UPC-21L

Approx. 29 seconds (high speed print)

TV system

Select from NTSC/PAL signal system (using NTSC/PAL switch)

HDTV IN/OUT signals

1080i/59.94i, 1080/50i (2:1 interlace)

720/59.94p, 720/50p (progressive)

Input connectors

RGB/YPbPr (BNC × 3):

0.7 V_{p-p}

SYNC ON G: 0.3 V_{p-p}, sync negative

SYNC (BNC × 1)

0.3 to 4 V_{p-p}, sync negative

S VIDEO (4-pin mini-DIN × 1):

Y: 1 V_{p-p}, sync negative

C: 0.286 V_{p-p} (NTSC), 0.3 V_{p-p} (PAL)

VIDEO (BNC × 1) :

1 V_{p-p}, sync negative

AC IN (for power input)

Output connectors

RGB/YPbPr (BNC × 3):

0.7 V_{p-p}

SYNC ON G: 0.3 V_{p-p}, sync negative

SYNC (BNC × 1)

0.3 to 4 V_{p-p}, sync negative

- S VIDEO (4-pin mini-DIN × 1):
 - Y: 1 Vp-p, sync negative
 - C: 0.286 Vp-p (NTSC), 0.3 Vp-p (PAL)
- VIDEO (BNC × 1):
 - 1 Vp-p, sync negative

Controls connectors

- REMOTE 1: special mini jack × 1
For RM-5500 Remote Control Unit (not supplied)
- REMOTE 2 (automatic printing connector): Stereo mini jack: × 1
For optional RM-91 Remote Control Unit or FS-24 Foot Switch
- RS-232C (Computer control interface):
D-SUB 25-pin connector × 1
Output: 5-kilohm load
Typical ± 8 V
Input: 5-kilohm load
High level 5 to 15 V
Low level -5 to -15 V

Supplied accessories

- Paper feed tray (1)
- Stopper (1)
- Before Using this Printer (1)
- CD-ROM (instructions for use) (1)
- Thermal head cleaning cartridge (1)
- Service Contact List (1)
- Information for Customers in Europe (1)

Optional accessories

- Color Printing Pack UPC-21S: 240 sheets (80 sheets × 3)
- Color Printing Pack UPC-21L: 200 sheets (50 sheets × 4)
- FS-24 Foot Switch
- RM-91 Remote Control Unit*
- RM-5500 Remote Control Unit*

* Discontinued product. For details about product availability, contact your nearest Sony dealer.

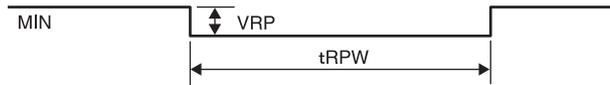
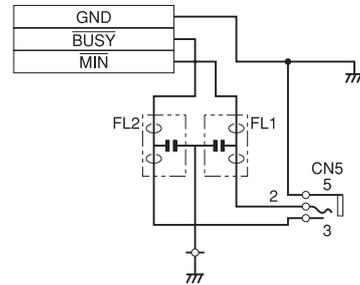
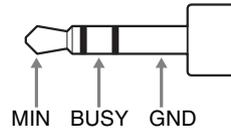
Caution

Do not use the FS-24 in a place (such as an operating room) exposed to liquids, etc., since the FS-24 conforms to IPX3 waterproof Ingress Protection Rating. In such a place, use a product which conforms to IPX6 or higher.

Using the automatic printing capabilities (REMOTE 2)

If you send remote control pulse signals as illustrated through the REMOTE 2 connector, the printer can be remotely controlled according to the remote control setting (“Making Various Settings” on page 62).

CAPTURE timing pulse for REMOTE 2:
REMOTE 2 connector pin assignment:



Item	Description	MIN	TYP	MAX	Unit	Remark
tRPW	Remote control pulse width	100	-	-	mSEC	-
VRP	Remote control pulse level	-	-	5	V	TTL level

Design and specifications are subject to change without notice.

Medical Specifications

- Protection against electric shock:
 - Class I
- Protection against harmful ingress of water:
 - Ordinary
- Degree of safety in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:
 - Not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide
- Mode of operation:
 - Continuous

Notes

- Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF FAILURE TO PRINT CONTENT OF ANY TYPE OR LOSS OF DATA DUE TO FAILURE OF THIS UNIT OR ITS PRINTING MEDIA, ASSOCIATED SOFTWARE, EXTERNAL STORAGE, OR OTHER EXTERNAL DEVICE.
- SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.

Troubleshooting

If Damage is Suspected

The following troubleshooting checks will help you correct the most common problems you may encounter with your unit. Before proceeding with these trouble checks, first check that the power cord is firmly connected. Should the problem persist after you have applied the remedy, unplug the unit and contact your Sony dealer or local authorized Sony service facility.

Symptom	Possible causes and remedies
Nothing appears on the video monitor even if you press any of the operation buttons.	<ul style="list-style-type: none">• The POWER switch of the printer is not set to ON. →Set the POWER switch of the printer to ON.• The POWER switch of the video monitor is not set to ON. →Set the POWER switch of the monitor to ON.• Connections may not be correct. →Check connections and rectify, if necessary. (See page 16.)• The SYNC setting for output signals is incorrect. →Configure the correct setting for OUTPUT SYNC on the OUTPUT SETUP menu.• An SD monitor is connected while HDTV signals are being input. Set SD/HD SEL to SD on the HDTV SETUP menu. (See page 59.)
No message appears on the normal screen.	An incorrect signal is input. →Select another input signal on the INPUT SETUP menu. (See page 21.) Or, set the connected video equipment to playback mode, if it is currently set to another modes such as stop mode.
No message or image appears on the normal screen.	<ul style="list-style-type: none">• If an image captured in memory appears when the SOURCE/MEMORY button is pressed, SOURCE on the OUTPUT SETUP menu is set to THRU. →Change the SOURCE setting to EE. (See page 47.)• When the menu is displayed by pressing the MENU button, the DISPLAY setting of the video monitor is set to OFF. →Set the DISPLAY setting to ON by pressing the DISPLAY button. (See page 41.)
No message appears on the printer window display.	The contrast of the printer display window is not set correctly. →Adjust the brightness of the printer window display using the LCD-CNTR. item on the SYSTEM SETUP menu. (See page 63.)

Symptom	Possible causes and remedies
The printer does not print.	<ul style="list-style-type: none"> An error message appears on the display. → Perform the steps described in “Error/Warning Messages” on page 73. Paper that cannot be used with this printer has been loaded. → Load the correct paper. Use only ink ribbons and paper for this printer. (See page 69.) The paper is not loaded correctly. → Check which side of the paper is the printing side, then load the paper again. (See page 19.)
A black line appears on the printout.	Any portion for which there is no signal is printed in black. → Adjust the image area to be printed. (See page 50.) Then, capture a new image and print it.
The printed image is partially cut out.	Only part of the video signal has been stored. → Adjust the image area to be printed. (See page 50.) Then, capture a new image and print it.
The printout is blurred.	A quickly moving image has been stored. → Set the memory mode to FIELD by using the MEMORY FRAME/ FIELD item on the LAYOUT SETUP menu, then print it. (See page 29.)
The ink ribbon does not load.	<ul style="list-style-type: none"> You are trying to load an ink ribbon that is not compatible with this printer. → Load a compatible ink ribbon (page 69). The thermal head is locked. → Turn on the printer. The thermal head unlocks, and the ink ribbon can be loaded. The ink ribbon is not inserted in the correct position. → Insert the ink ribbon in the correct position.
The paper does not feed.	<ul style="list-style-type: none"> The leading edge of the paper is folded. → Remove the paper with the folded leading edge from the paper feed tray. The paper is not correctly oriented in the paper feed tray. → Check the paper orientation. For S-size paper, use the paper feed tray with the partition raised. The paper feed roller are dirty. → Perform manual paper feed roller cleaning (page 68).
The printout color is very pale.	The paper is not loaded correctly. → Check which side of the paper is the printing side, then load the paper again. (See page 19.)

Symptom	Possible causes and remedies
The printer ejects a blank sheet of paper, and then the ALARM indicator lights and the message “CHANGE RIBBON” appears on the printer window display.	The ink ribbon has been used up. → Replace the ink ribbon (page 18). Do not reuse the ejected paper.
There are marks and stripes on the print side.	The thermal head is dirty. → Perform thermal head cleaning (page 67).

Error/Warning Messages

There are two kinds of messages: error messages and warning messages. This section lists these messages together with their possible causes and remedies. Note the messages and act accordingly.

Error Messages

If a problem occurs, the ALARM lamp lights in orange and an error message stating the problem appears on the monitor and in the printer window display.

In the error message introduced in the following tables, “nn” indicates the number or symbol displayed in the actual message.

Error message		Possible causes and remedies
On the video monitor	On the printer window display	
SET RIBBON	SET RIBBON	There is no ink ribbon loaded. →Load the ink ribbon. (See page 18.)
SET PAPER	SET PAPER	<ul style="list-style-type: none"> Paper has been exhausted. →Load the paper. (See page 19.) Also, replace the ink ribbon. There is no paper tray loaded. →Install the paper tray. (See page 19.)
SET RIBBON AND PAPER	SET RIBBON SET PAPER	There are neither ink ribbon nor paper are loaded. →Load the ink ribbon and paper. (See pages 18 and 19.)
REMOVE PRINTS	REMOVE PRINTS	The maximum number of printouts has accumulated on the paper tray. →Remove the printouts. Printing starts again.
REMOVE PAPER	REMOVE PAPER	<ul style="list-style-type: none"> Paper has jammed inside the printer. →Remove any jammed paper from the printer. (See page 76.) In some cases, this message may remain even after the jammed paper is removed. To clear the message, try removing the paper feed tray and reinserting it with paper loaded inside. The base plate of the printer is detached. →Attach the base plate securely. (See page 77)
CHECK PAPER : PROCESS nn	CHECK PAPER nn PROCESS	
CHECK PAPER : LOAD nn	CHECK PAPER nn LOAD	
CHECK PAPER : EJECT nn	CHECK PAPER nn EJECT	
REMOVE PAPER TRAY	REMOVE PAPER TRAY	The paper jams around the paper tray. →Remove the paper tray and pull out any jammed paper. (See page 76.) In some cases, this message may remain even after the jammed paper is removed. To clear the message, try removing the paper feed tray and reinserting it with paper loaded inside.
CHANGE RIBBON	CHANGE RIBBON	The ink ribbon has been exhausted. →Replace the old one with a new ink ribbon. (See page 18.) (The ink ribbon cannot be reused.) In this case, if the white paper is ejected. Discard this paper.
CLOSE RIBBON DOOR	CLOSE RIBBON DOOR	The ribbon door panel is open. →Close the ribbon door panel.
CHECK RIBBON	CHECK RIBBON	An ink ribbon that can not be used with this printer has been loaded. →Load the appropriate ink ribbon. (See page 69.)
CHECK RIBBON nn	CHECK RIBBON nn	<ul style="list-style-type: none"> The ink ribbon has torn. →Repair the torn ink ribbon. (See page 19.) When this message appears even though the ink ribbon is not torn, contact your Sony service facility or your Sony dealer to clear the error status.

Error message		Possible causes and remedies
On the video monitor	On the printer window display	
PAPER MISMATCH	PAPER MISMATCH	<ul style="list-style-type: none"> The ink ribbon and paper are mismatched. →Use ink ribbons with paper from the same printing pack. (See page 69.) In addition, do not reuse paper that has been previously ejected.
SWITCH LEVER	SWITCH LEVER	<p>An ink ribbon that can not be used with this printer has been loaded. →Load the appropriate ink ribbon. (See page 69.)</p>
MECHA TROUBLE:HEAD nn	MECHA TROUBLE nn HEAD	<p>The thermal head is malfunctioning. →Turn the printer off, and then on again. If the error message persists, consult your Sony dealer.</p>
MECHA TROUBLE:TEMP nn	MECHA TROUBLE nn TEMP	<p>The internal temperature of the printer is abnormal. →Turn the printer off, and then on again. If the error message persists, consult your Sony dealer.</p>
MECHA TROUBLE:FAN nn	MECHA TROUBLE nn FAN	<p>A malfunction occurred with the printer's internal fan. →Turn the printer off, and then on again. If the error message persists, consult your Sony dealer.</p>
CLEAN HEAD : SET SHEET	CLEAN HEAD: SET SHEET	<p>A cleaning sheet has not been set. →Insert the paper feed tray with a cleaning sheet placed inside. (See page 67.)</p>
	CLEAN ROLL: REMOVE PAPER	<p>Paper remains in the paper feed tray. →Remove any paper remaining in the tray.</p>
	CLEAN ROLL: SET TRAY	<p>The paper feed tray is not inserted. →Insert the paper feed tray after removing any paper.</p>

Warning Messages

In case of a warning, only warning messages appear. The ALARM lamp does not light.

Warning message		Possible causes and remedies
On the video monitor	On the printer window display	
HIT ANY KEY.	HIT ANY KEY.	<p>This message appears when the remote control unit is used in CAP-STOP (CAPTURE STOP) mode and when the printer stops capturing images once images have been captured to all memory pages (to the last point of the last memory page). →Press any button. Printer operation is enabled after this.</p>
INPUT MISMATCH	INPUT MISMATCH	<ul style="list-style-type: none"> The input image signals from the input device (VTR, video camera, etc.) do not match the NTSC/PAL switch setting. →Input signals that match the NTSC/PAL switch setting. The input image signals from the input device (VTR, video camera, etc.) do not match the SD/HD SEL setting in the HDTV SETUP menu. →Input component signals that match the SD/HD SEL setting. A signal other than a video signal (such as an audio signal, etc.) is input. →Input the correct video signal.
NO INPUT	NO INPUT	<ul style="list-style-type: none"> The printer is not receiving an input signal from equipment corresponding to the input selected on the INPUT SETUP menu. →Check the input signal selected on the INPUT SETUP menu. (See page 21.) →Check whether the video equipment is outputting a video signal in playback mode. →Check that the connections between the signal source equipment and the printer are secure. (See page 15.)

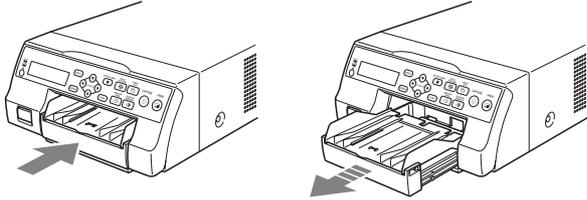
Warning message		Possible causes and remedies
On the video monitor	On the printer window display	
NO IMAGE	NO IMAGE	The image is not captured in the memory page. → Capture the image in memory then start printing. (See page 23.)
PLEASE WAIT PRINTING MEMORY	PLEASE WAIT PRINTING MEMORY	In the selected memory page, the captured image is being printed or queued. → Retry the operation once the printer finishes printing.
PLEASE WAIT ADJUSTING HEAD TEMP	PLEASE WAIT ADJUSTING TEMP	The temperature of the thermal head is being adjusted. → Leave the printer until this message disappears. The printer starts printing automatically.
CLEAN HEAD	CLEAN HEAD	The thermal head requires cleaning. → Refer to “Cleaning the thermal head” on page 67, and clean the head. You can select whether to display this message with the CLEAN DISP. setting in the SYSTEM SETUP menu. (See page 63.)
PLEASE REMOVE RIBBON	PLEASE REMOVE RIBBON	You attempted to enter TRANSPORT MODE with an ink ribbon loaded inside the printer. → Remove the ink ribbon before entering TRANSPORT MODE. (See page 66.)
CLEAN ROLL	CLEAN ROLL	Perform manual paper feed roller cleaning. → Refer to “Manual paper feed roller cleaning” on page 68, and clean the paper feed roller. This message appears at the end of printing if the paper feeding power is low.

Clearing a Paper Jam

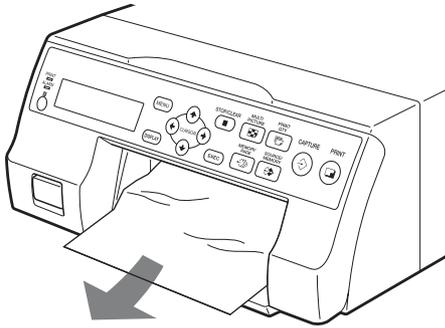
If the ALARM indicator on the ribbon door panel lights after printing starts, or if the “REMOVE PAPER” or “CHECK PAPER” message appears on the printer window display, a paper jam may have occurred inside the printer.

If the message does not disappear after removing the paper feed tray and reinserting it with paper loaded inside, perform the following to clear the jammed paper.

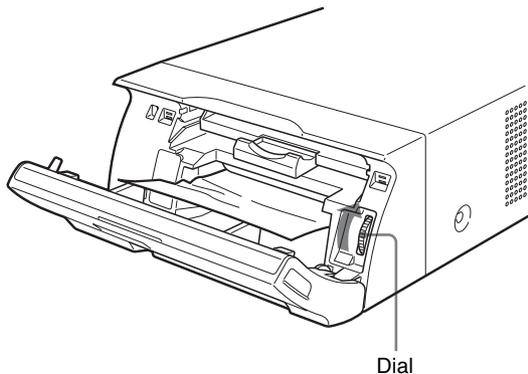
- 1 Press the ▲ mark on the paper feed tray to eject the tray.



- 2 Clear any paper that jammed halfway.

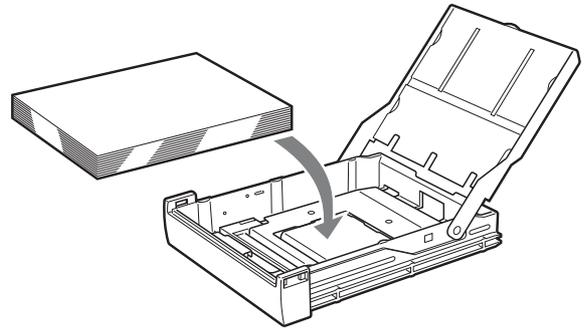


When the paper jam is deep inside the printer and cannot be cleared, open the ribbon door panel and turn the dial upward. This ejects the paper jammed deep inside.



If the paper jam cannot be cleared even by turning the dial, refer to “If a paper jam cannot be cleared” on page 76.

- 3 Load the paper properly.



Notes

- Do not reuse the paper removed in step 2.
- Only use paper from the printing packs recommended for this printer.

- 4 Insert the paper feed tray into the printer.

If a paper jam cannot be cleared

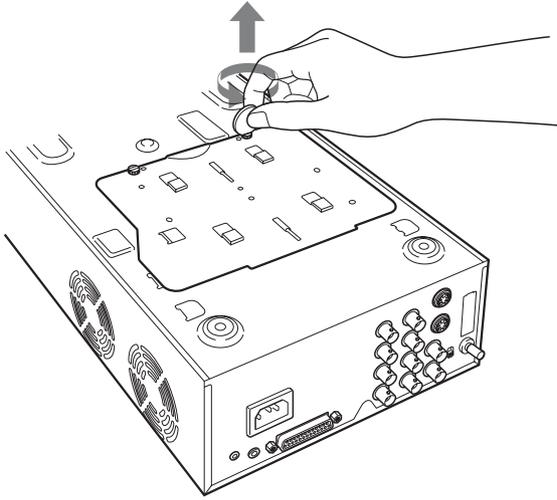
Follow the steps below to open the base plate on the printer and clear the paper jam.

Notes

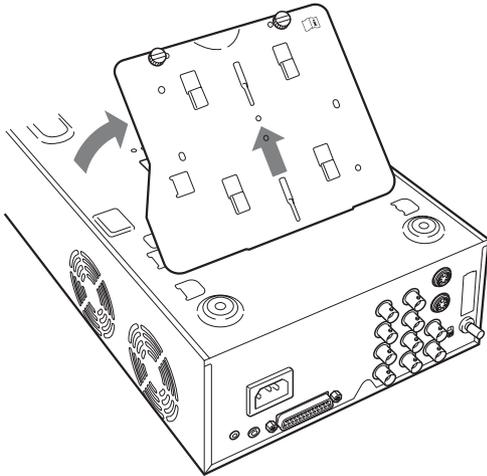
- Before clearing a paper jam with the following procedure, press the ① POWER switch to turn off the printer, but also unplug the power cord from the wall outlet.
- Before turning over the printer, disconnect any connecting cables. Bending or twisting cables can damage them and may cause a fire hazard or an electric shock hazard.
- When it is necessary to touch internal printer parts to remove a paper jam inside the printer, be careful not to damage the internal parts.

- 1 Press the ① POWER switch to turn off the printer, and then unplug the power cord and connecting cables.
- 2 Eject the paper feed tray from the printer.
- 3 Turn the printer over.

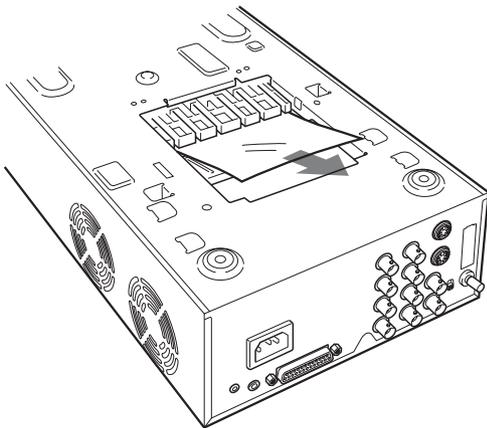
- 4** Using a flat tool, such as a coin, to remove the two screws securing the base plate.



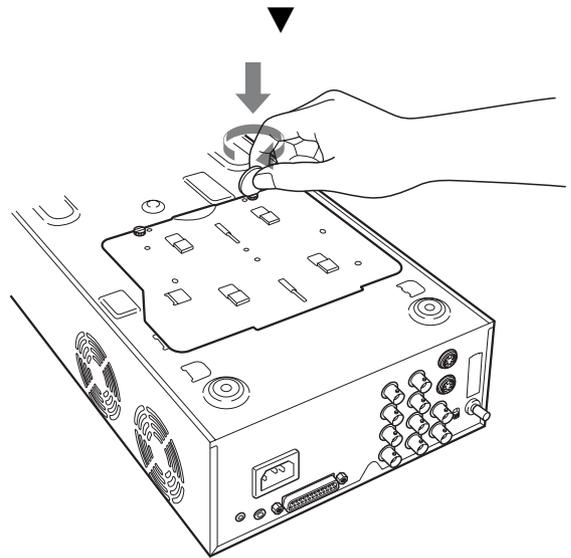
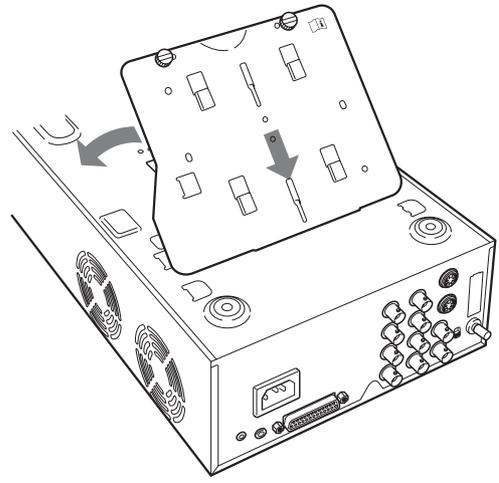
- 5** Lift up the base plate and remove it from the printer.



- 6** Carefully clear the jammed paper.



- 7** Reattach the base plate.



Caution

Be sure to reattach the base plate that was removed.
The printer cannot print with the base plate removed.

If a paper jam still cannot be cleared

Consult your Sony dealer. Do not attempt to remove the paper by force.

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