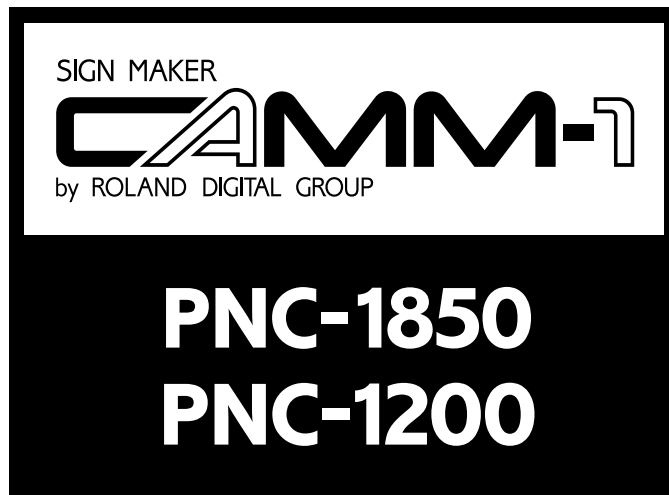




USER'S MANUAL

* This User's Manual is intended for both PNC-1850 and PNC-1200.

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.

The I/O cables between this equipment and the computing device must be shielded.

NOTICE

Grounding Instructions

Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Check with qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

Repair or replace damaged or worn out cord immediately.

Operating Instructions

KEEP WORK AREA CLEAN. Cluttered areas and benches invites accidents.

DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.

DISCONNECT TOOLS before servicing; when changing accessories, such as blades, bits, cutters, and like.

REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure the switch is in off position before plugging in.

USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.

NEVER LEAVE TOOL RUNNING UNATTENDED. **TURN POWER OFF.** Don't leave tool until it comes to a complete stop.

For Canada

CLASS B NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

CLASSE B AVIS

Cet appareil numérique ne dépasse pas les limites de la classe B au niveau des émissions de bruits radio - électriques fixés dans le Règlement des signaux parasites par le ministère canadien des Communications.



KEEP HANDS AWAY WHEN CUTTING TOOL IS IN MOTION.
REGARDEZ BIEN OÙ VOUS METTEZ LES MAINS LORSQUE L'OUTIL DE DECOUPE FONCTIONNE.

CAUTION

- 1) Unauthorized copying or transferral, in whole or in part, of this manual is prohibited.
- 2) The contents of this operation manual and the specifications of this product are subject to change without notice.
- 3) The operation manual and the product have been prepared and tested as much as possible. If you find any misprint or error, please inform us.
- 4) We cannot in any way assume any responsibility whatsoever with regard to whatever consequences that may happen subsequent to the making of changes or alterations to this product. We also cannot in any way assume responsibility for whatever may result when this product is operated, or with regard to whatever results from making use of any explanatory documentation.



ROLAND DG CORPORATION

1227 Ohkubo-cho, Hamamatsu-shi, Shizuoka-ken, JAPAN 432

MODEL NAME

: See the MODEL given on the rating plate.

RELEVANT DIRECTIVE

: EC MACHINERY DIRECTIVE (89/392/EEC)

EC LOW VOLTAGE DIRECTIVE (73/23/EEC)

EC ELECTROMAGNETIC COMPATIBILITY DIRECTIVE (89/336/EEC)

YEARS OF
MANUFACTURE

1996

WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Typographic Conventions

This manual uses certain typographic symbols, outlined below.



This indicates a point requiring particular care to ensure safe use of the product.

DANGER

: Failure to heed this message will result in serious injury or death.

WARNING

: Failure to heed this message may result in serious injury or death.

CAUTION

: Failure to heed this message may result in minor injury.

NOTICE

: Indicates important information to prevent machine breakdown or malfunction and ensure correct use.

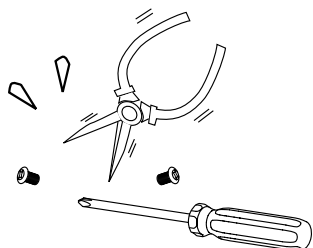


: Indicates a handy tip or advice regarding use.

⚠ To Ensure Safe Use

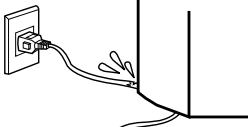
If you find some abnormality, immediately turn off the power switch and check the user's manual to find out what is wrong.

⚠ WARNING
Never disassemble or modify this product.

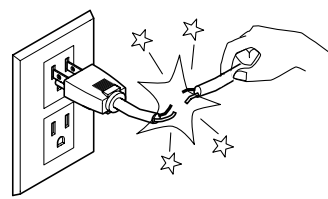


⚠ CAUTION
Handle the power cord with care.

Do not step on or damage the power cord, or allow heavy objects to be placed atop it. Failure to heed this may result in electrocution or fire.

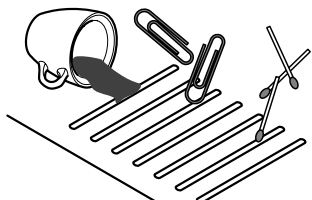


⚠ CAUTION
When pulling the power cord from an electrical socket, be sure to grip the plug.



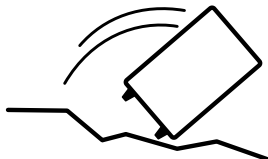
⚠ CAUTION
Do not allow liquids, metal objects or flammables inside the machine.

Fire or breakdown may result.

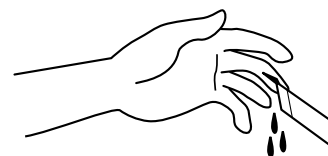


⚠ CAUTION
Install in a level and stable location.

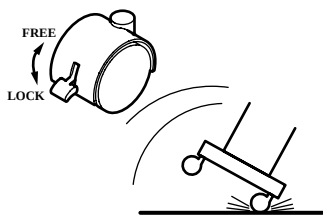
The unit may tip over otherwise.



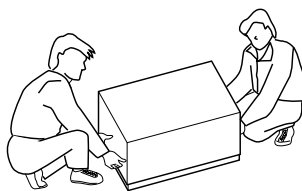
⚠ CAUTION
Handle the blade with care.



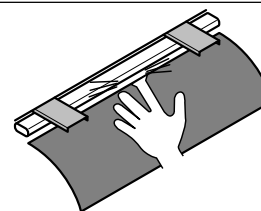
⚠ CAUTION
Release the caster locks for the stand before attempting to move.



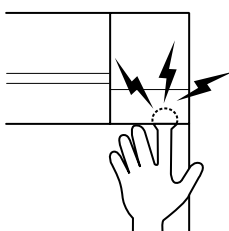
⚠ CAUTION
Unpacking, installation, and moving must be carried out by two or more persons.



⚠ CAUTION
Do not allow the hands within the space to the front or rear of the unit while in operation.

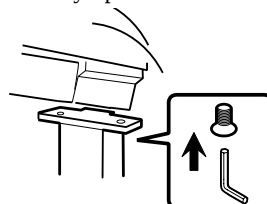


⚠ CAUTION
Use care to avoid pinching the fingers when placing the unit on the stand.



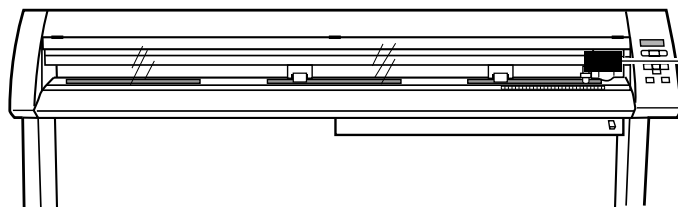
⚠ CAUTION
Use the joining screws to secure the unit to the stand.

The unit may tip over otherwise.



About the Labels Affixed to the Unit

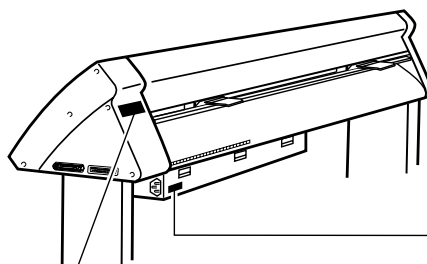
These labels are affixed to the body of this product. The following figure describes the location and content of these messages.



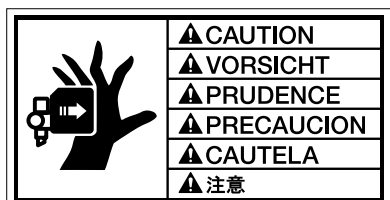
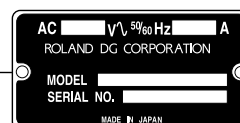
NOTICE

Be sure to press 'PAUSE' key whenever you open the cover when cutting is in progress. Otherwise, you would lose the ongoing data.

Be sure to press 'PAUSE' key whenever you open the cover when cutting is in progress. Otherwise, you would lose the ongoing data.



Rating plate

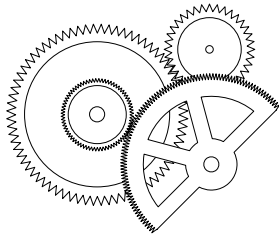


Do not allow the hands within the space to the front or rear of the unit while in operation.

To Ensure Correct Use

NOTICE

This product is a precision instrument and must be handled with care.



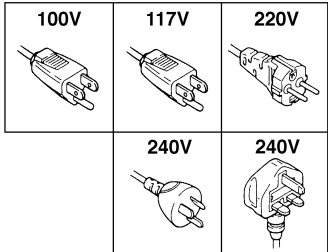
NOTICE

Do not install in an area subject to dust or high humidity or with poor ventilation.



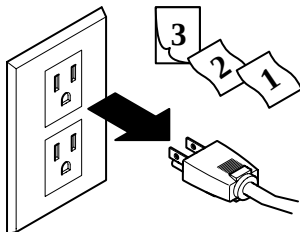
NOTICE

Do not connect to an AC outlet that supplies other than the specified voltage.



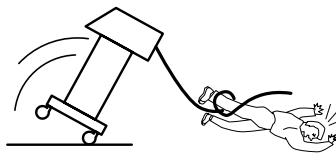
NOTICE

When the unit is not in use for an extended period, detach the power supply plug from the AC outlet.



NOTICE

Arrange the power cord and interface connection cable to prevent tripping when moving around the unit.



Thanks and Best Wishes

Thank you very much for purchasing the CAMM-1 PNC-1850/1200.

Since we wish you many years of productive use of your PNC-1850/1200, we ask you to read this manual and make yourself familiar with the PNC-1850/1200 operational procedures and requirements before running it.

If something seems abnormal, turn OFF the power and reference this manual for answers, tips and procedures to solving the problem.

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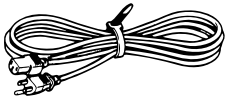
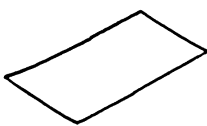
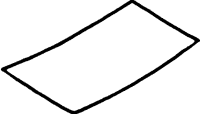
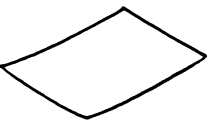
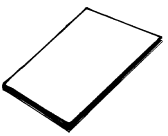
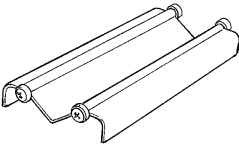
Part 1

1-1 PRECAUTION

- Always be careful whenever the unit is in operation, so as not to risk getting fingers or hair caught in its mechanisms.
 - If you are using a stand, take care not to make the PNC-1850/1200 tip over. When moving the PNC-1850/1200 always unlock the stand casters and use two or more people to complete the job. Single-handedly attempting to use excessive force to move the PNC-1850/1200 may cause the unit to tip over, which is dangerous.
 - Ensure that the power supply voltage is within $\pm 10\%$ of the machine's rated voltage.
 - Never take apart, or alter the construction of this device.
 - Never allow any liquids, metallic objects, or flammable material to get inside the unit.
 - Handle the power cord carefully to prevent damage. Never step on or place heavy objects on the cord.
 - When pulling the power cord from an electrical socket, be sure to grip the plug to prevent damage to the cord or cause electrical shorts.
 - When the machine is not in use for an extended period, remove the power supply plug from the AC outlet.
-
- Do not subject the machine to bumps, or other severe shocks.
 - Never move the tool carriage by hand. Damage and performance inaccuracy may result.
 - When the unit is not in use, keep the pinch rollers raised. The pinch rollers may be deformed if left engaged.

1-2 CHECKING ACCESSORIES

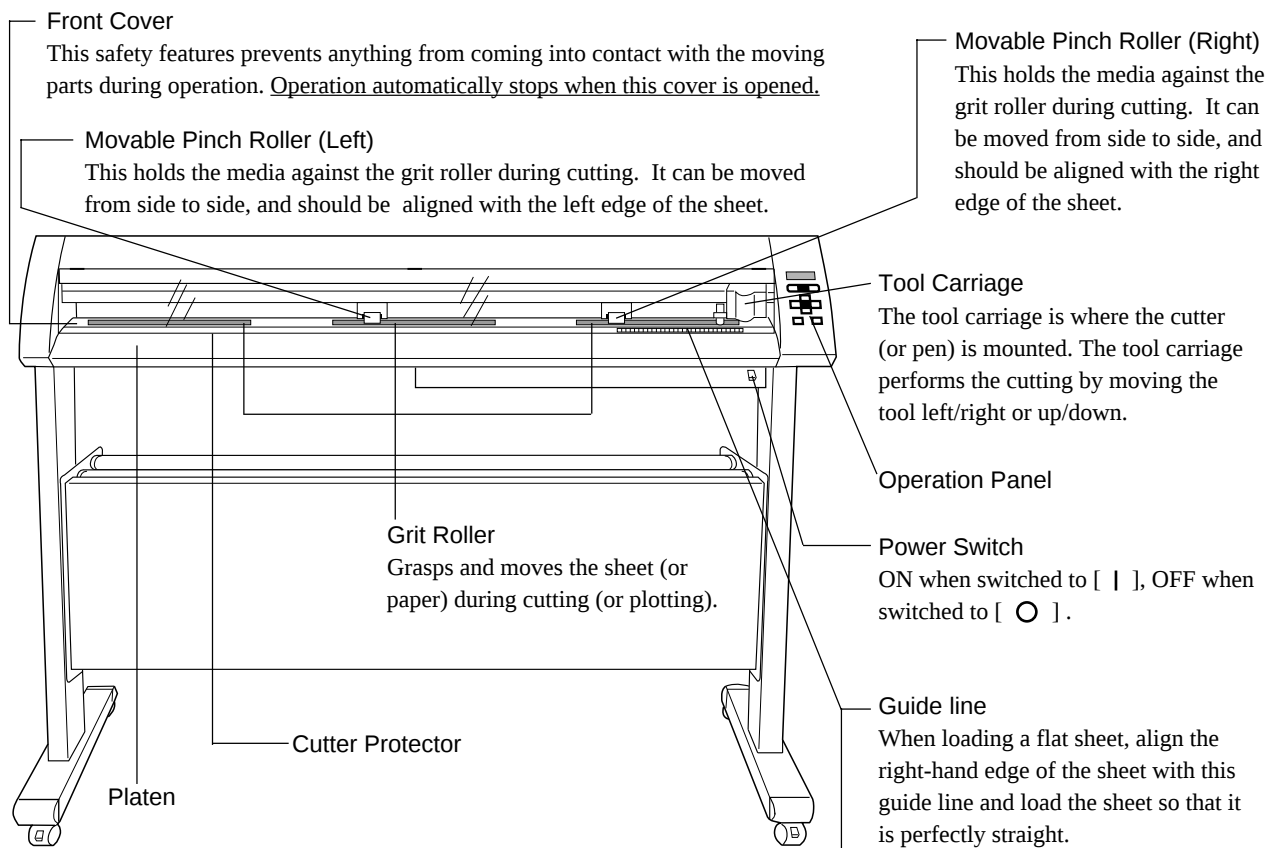
Check the following to make sure that you received all the items that were shipped along with the unit.

 Power Cord: 1	 Blade Holder: 1	 Blade for Sheet (Cemented Carbide blade): 1	 Test-use Sheet: 1	 Test-use Application Tape: 1
 Separate Cutter: 1	 Tweezers (for handling sheet): 1	 Test use Water based Fiber tipped Pen: 1	 Test-use High-quality Paper: 1	 User's Manual: 1
 Sheet Base: 1 * PNC-1200 only				

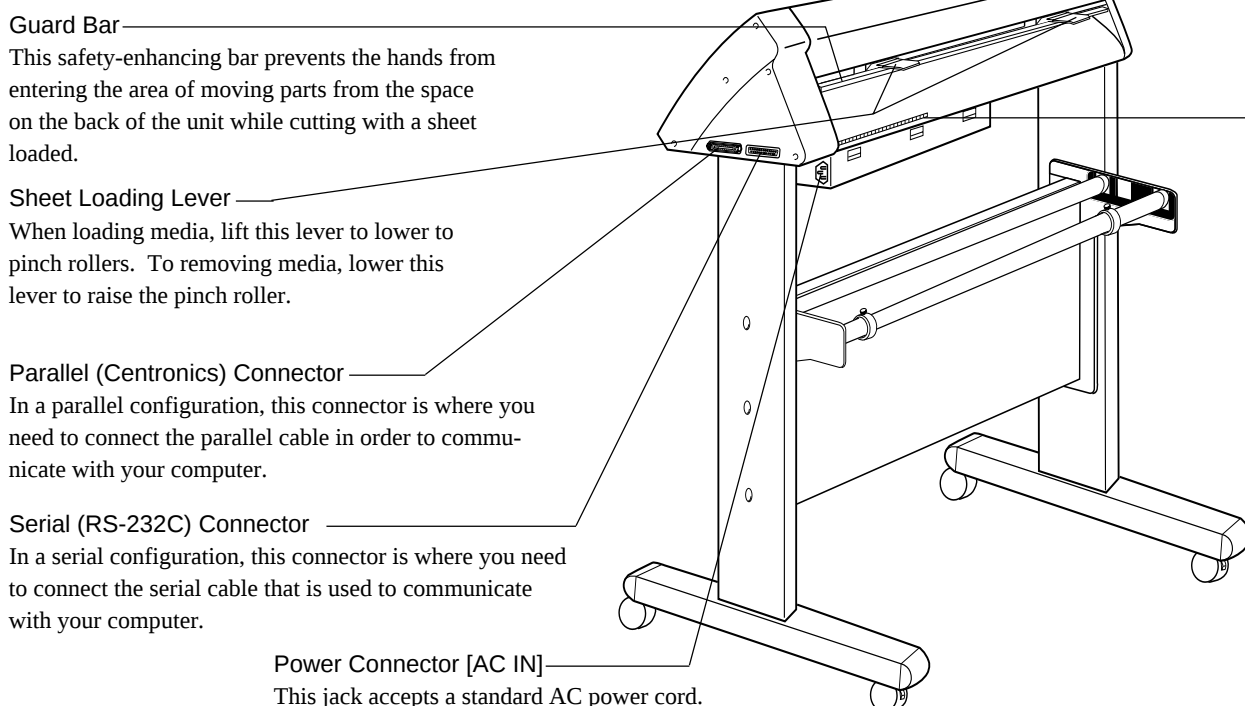
1-3 PART NAMES AND FUNCTIONS

1-3-1 Front View

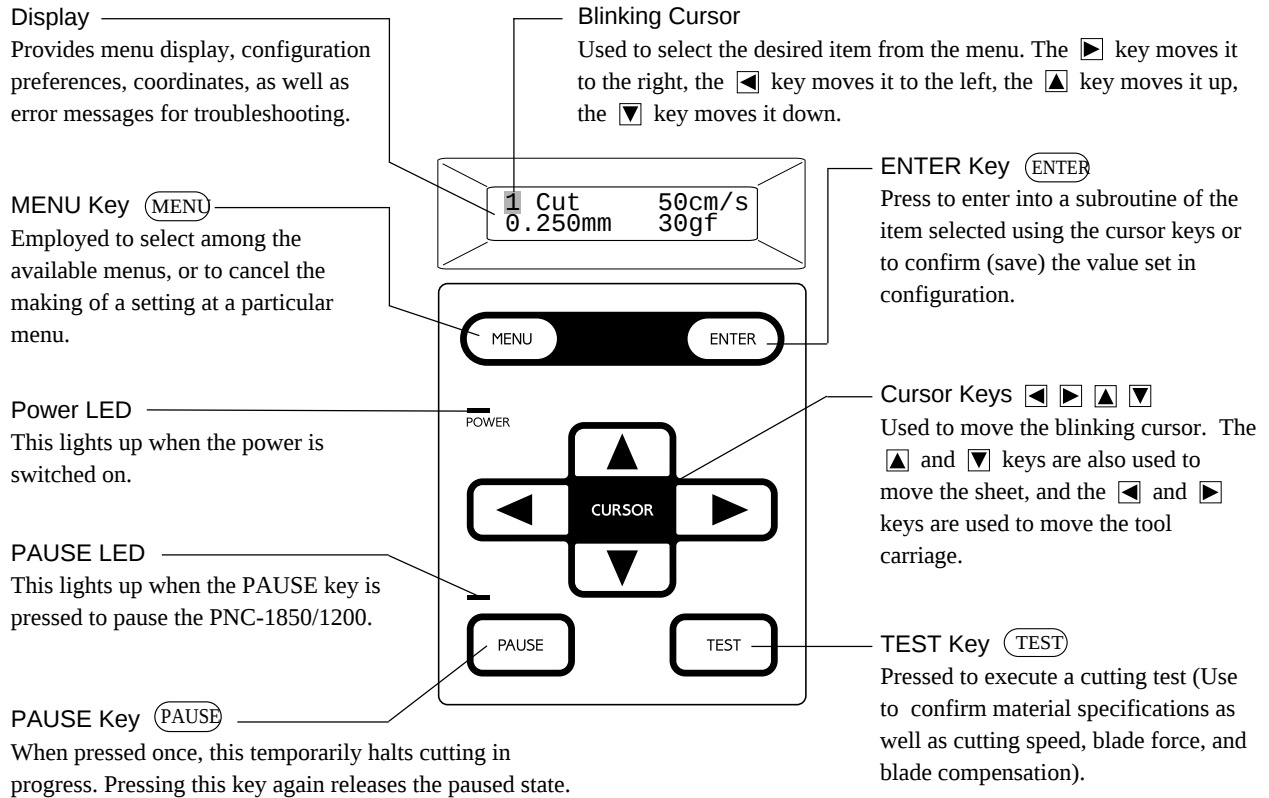
* In the figures shown, the PNC-1850 is installed on the PNS-185 special stand.
Some details of the PNC-1200 differ from the figure.



1-3-2 Rear View



1-3-3 Operation Panel



1-4 BASIC OPERATION

* In this manual, the sections that explain both the PNC-1850 and the PNC-1200 shown only illustrations of the PNC-1850. Some details of the PNC-1200 differ from the figure.

1-4-1 Setting Up and Connection

Setting up

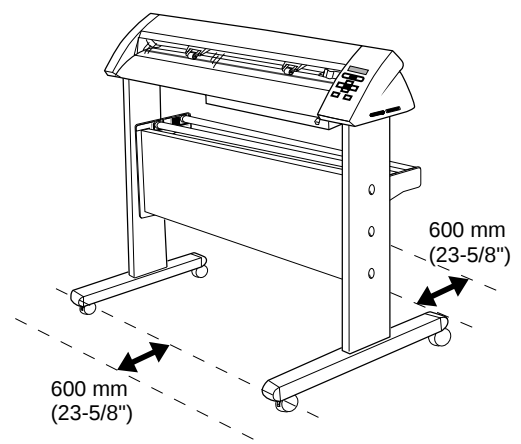
Never install this unit in any of the following situations, as it could result in damage:

- Places where the installation surface is unstable or not level.
- Places with excessive electrical noise.
- Places with excessive humidity or dust.
- Places with poor ventilation, because the PNC-1850/1200 generates considerable heat during operation.
- Places with excessive vibration.
- Places exposed to strong illumination or direct sunlight.

For an explanation of how to assemble the unit and the stand (PNS-185/PNS-121), refer to the "ASSEMBLY INSTRUCTIONS" included with the stand.

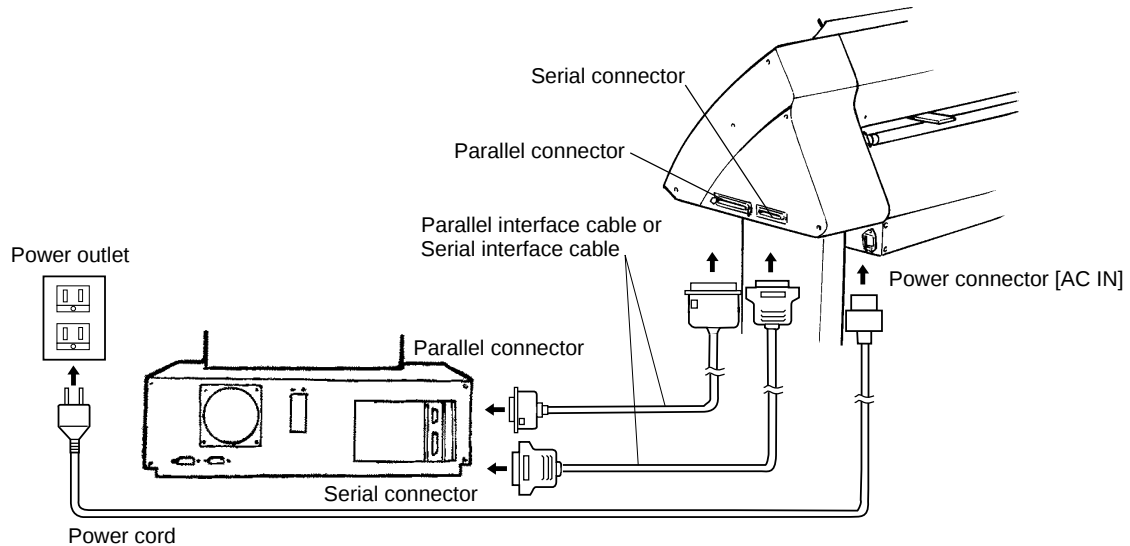
When arranging setup space for the PNC-1850, make sure you have a space that is at least 1,200 mm (47-1/4") high, 1,600 mm (63") wide, and 750 mm (29-1/2") in depth. For the PNC-1200, a space that is at least 1,150 mm (45-5/16") high, 900 mm (35-7/16") wide, and 750 mm (29-1/2") in depth is needed to install the unit on the stand.

Since the sheet moves during cutting, make sure the unit is placed on a stable, sturdy surface. Also make sure the nothing will interfere or block the movement of the media in any closer than 600 mm (23-5/8") to the front or behind the unit.



Connection

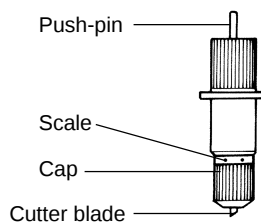
- Always make sure that the power is off on both the computer and the PNC-1850/1200 whenever any cables are connected or disconnected.
- Securely connect the power cord, computer I/O cable and so on so that they will not be unplugged and cause failure during operation.
- Cables are available separately. One which you are sure matches the model of computer being used should be selected.



1-4-2 Installing the Cutter

- Always make sure the power switch is OFF before installing (or replacing) the cutter.
- Do not touch the tip of the blade with your fingers, as the cutting performance of the blade will be impaired.

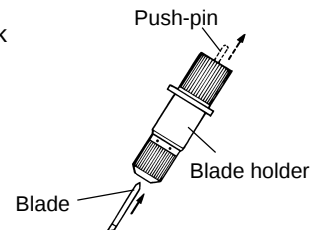
Blade Holder (XD-CH2) Part Names



Installing a Blade in the Blade Holder

Insert a blade into the blade holder until it snaps into place with an audible click.

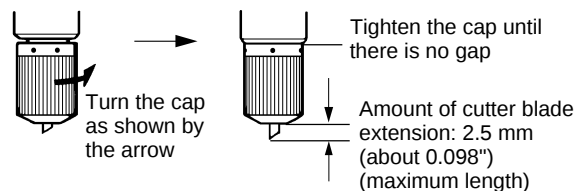
* Take care not to break or chip the blade.



Adjusting the Cutter Blade

The amount of cutter blade extension can be adjusted by rotating the cap. Turn the cap clockwise to retract the blade or counterclockwise to expose it. (Each scale line corresponds to 0.1 mm (about 0.004").) One full turn moves the blade 0.5 mm (about 0.02").) Adjust blade holder before mounting on the tool carriage.

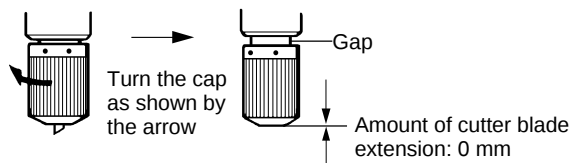
- If an ordinary sheet is to be used, tighten the cap all the way (2.5 mm (about 0.098") of blade extension).



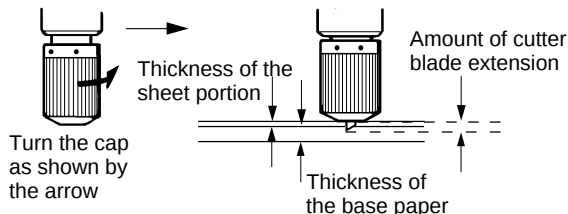
- Blade adjustment may be necessary in the following cases:
 - When cutting a sheet with base paper that is thinner than it's application portion.
 - When cutting a material with no base paper
 - When cutting without making any fine adjustment of blade force

Here's how to adjust the blade.

- (1) Turn the cap as shown by the arrow to align the tip of the blade with the tip of the cap (0 mm of blade extension).



- (2) Turn the cap as shown by the arrow to adjust the amount of blade extension beyond the tip of the cap.

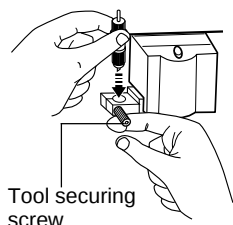


- Take care to ensure that the amount of blade extension does not exceed the thickness of the sheet portion plus the thickness of the base paper.
- If you don't know exactly how thick the sheet portion is, perform out a cutting test and gradually extend the blade. The optimum blade extension leaves a faint score mark on the base paper.

$$\text{Amount of cutter blade extension} = \text{Thickness of the sheet portion} + \frac{\text{Thickness of the base paper}}{2}$$

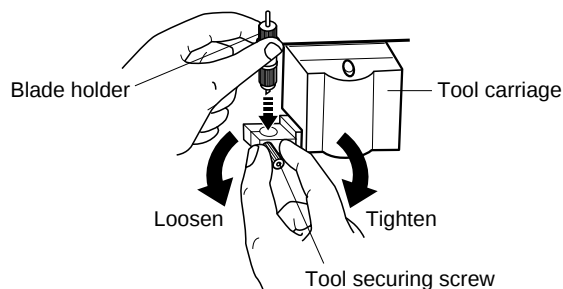
Installing a Blade Holder in the Tool Carriage

As shown in the figure at right, support the tool setscrew from below and install the blade holder. Cutting quality may become poor if installed without supporting the screw in this way.



Loosen the tool securing screw on the tool carriage, then insert the blade holder until the collar is flush with the carriage.

Tighten the tool securing screw until the blade holder is secured in place.

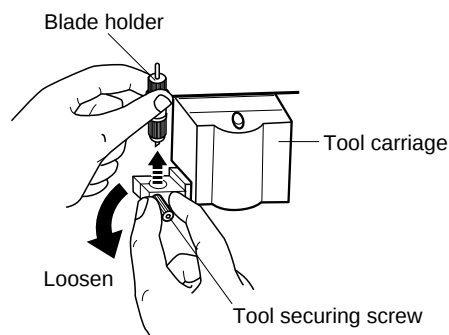


Removal

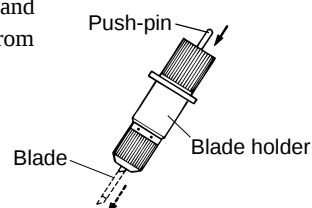
After detaching the blade holder from the tool carriage, do not tighten the tool setscrew. Leave this screw loose.

Tightening the screw makes the hole for inserting the holder to progressively smaller, which in turn makes it difficult to install the blade holder.

- 1) Loosen the tool securing screw on the tool carriage, then remove the blade holder from the tool carriage.



- 2) Press the push-pin and remove the blade from the blade holder.



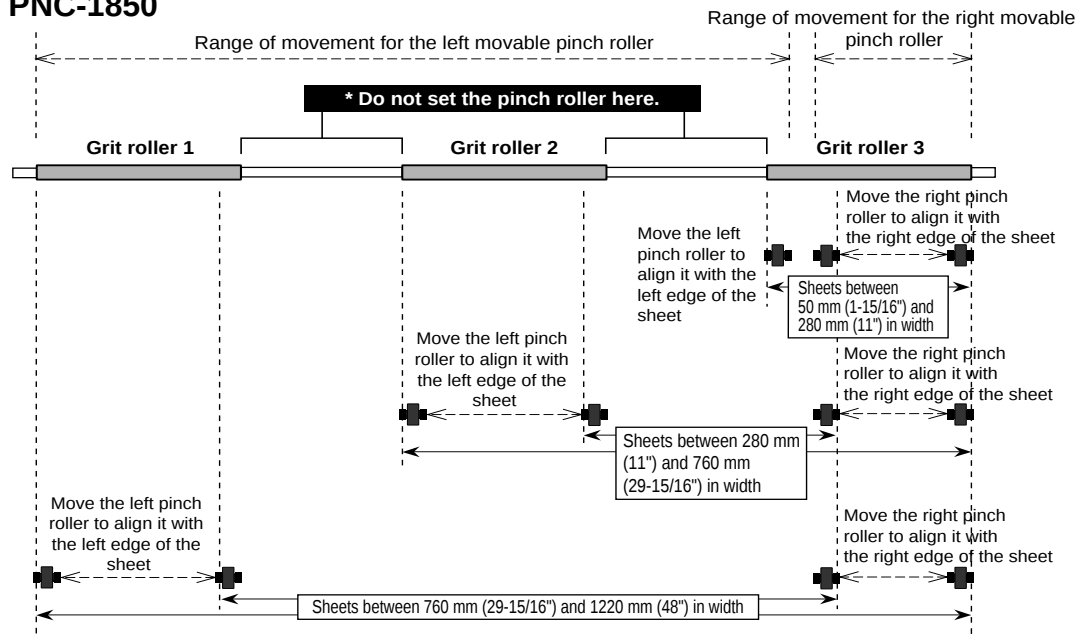
1-4-3 Loading the Sheet

You can load sheet measuring between 50 mm (1-15/16") and 1220 mm (48") in width (horizontal dimension) on the PNC-1850, or sheet measuring between 50 mm (1-15/16") and 762 mm (30") in width (horizontal dimension) on the PNC-1200. However, a sheet with a width of 50 mm (1-15/16") to 762 mm (30") can be loaded only if it is a flat sheet or a rolled sheet with a sheet base. When using a stand (PNS-121), a rolled sheet with a width in the range of 50 mm (1-15/16") to 610 mm (24") can be loaded. There is no particular restriction on sheet length (vertical dimension). This means that you can use either flat sheets such as standard-size sheets (ANSI, ISO, etc.) and cut sheets, or roll sheets.

The grit rollers on the PNC-1850 are divided into three areas that can secure the sheet with the pinch rollers. Also, The grit rollers on the PNC-1200 are divided into two separate areas. The range of movement is determined by the movable pinch rollers on the left and right. Experiment with the range of the left and right movable pinch rollers to determine usable area.

Reference — Sheet Loading Position

PNC-1850



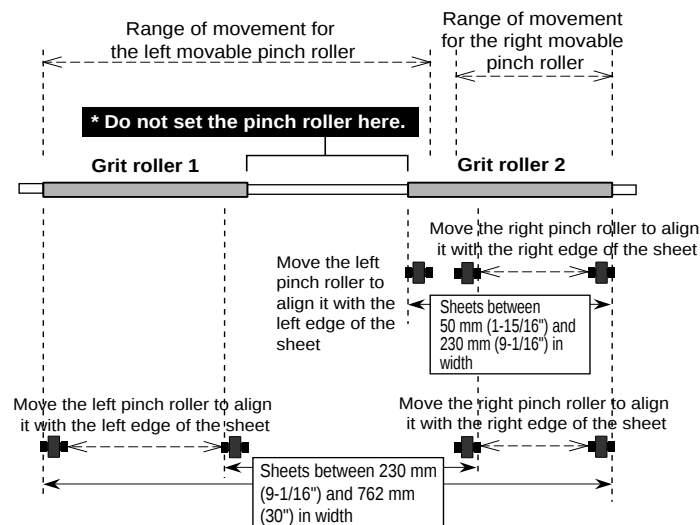
For a sheet between 50 mm (1-15/16") and 280 mm (11") in width, load the sheet above grit roller (3), and move the left and right pinch rollers to the edges of the sheet.

For a sheet between 280 mm (11") and 760 mm (29-15/16") in width, load the left edge of the sheet above grit roller (2) and the right edge of the sheet above grit roller (3), and move the left and right pinch rollers to the edges of the sheet.

For a sheet between 760 mm (29-15/16") and 1220 mm (48") in width, load the left edge of the sheet above grit roller (1) and the right edge of the sheet above grit roller (3), and move the left and right pinch rollers to the edges of the sheet.

The right pinch roller can only be moved above grit roller (3). The left pinch roller can be moved above grit rollers (1) to (3).

PNC-1200



For a sheet between 50 mm (1-15/16") and 230 mm (9-1/16") in width, load the sheet above grit roller (2), and move the left and right pinch rollers to the edges of the sheet.

For a sheet between 230 mm (9-1/16") and 762 mm (30") in width, load the left edge of the sheet above grit roller (1) and the right edge of the sheet above grit roller (2), and move the left and right pinch rollers to the edges of the sheet.

The right pinch roller can only be moved above grit roller (2). The left pinch roller can be moved above grit rollers (1) to (2).

Turning on the Power

Switch on the power switch on the front of the main unit.

Power ON

PNC-1850

PNC-1850
Roland DG Corp.

PNC-1200

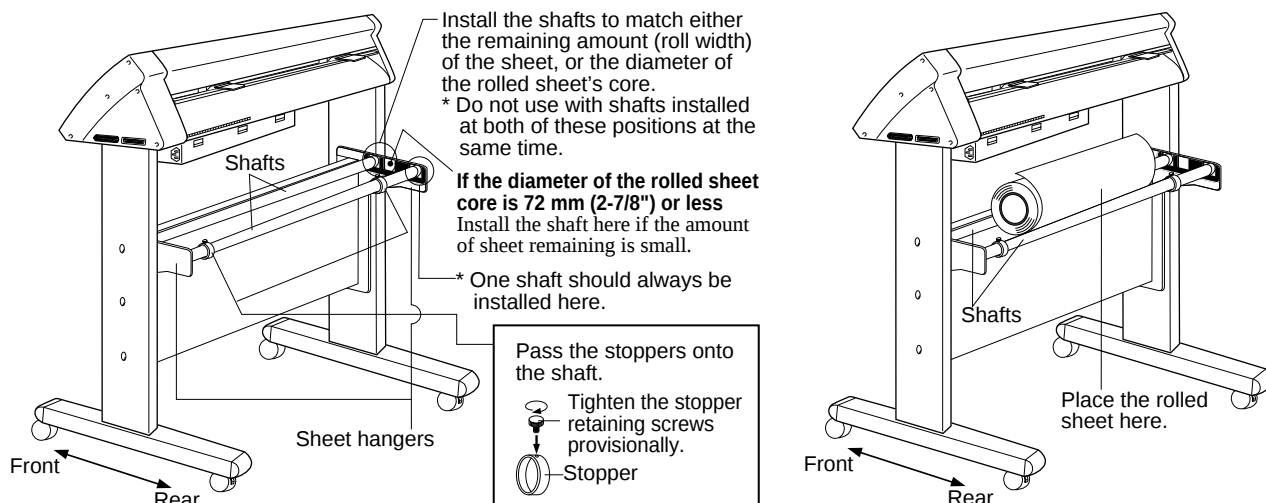
PNC-1200
Roland DG Corp.

When Using Rolled Sheet

When using stand

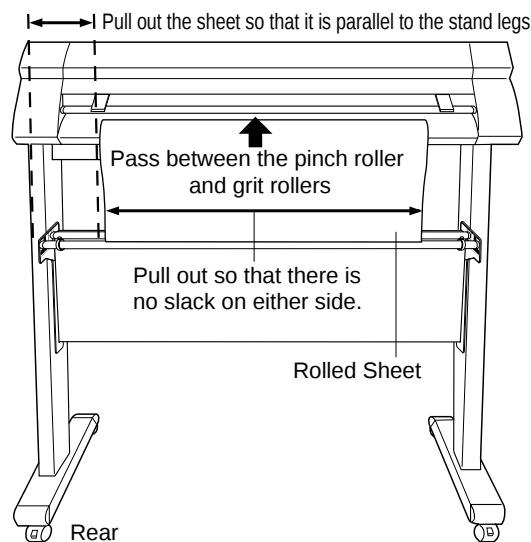
(PNC-1850: PNS-185, PNC-1200: PNS-121 (option))

- (1) Mount the two shafts included with the stand on the sheet hanger and place a rolled sheet on top of the shafts.
(The shafts (2 pieces), stoppers (2 pieces), and stopper retaining screws (2 pieces) are included with the stand.)



- (2) Pull out as much from the roll as needed, and pass the sheet from the back of the main unit to the front as shown in the figure.
At this time, pull the sheet straight out, so that the left and right sides of the sheet are parallel to the legs of the stand. Make sure that the edge of the sheet lies above the grit rollers. Also check to make sure that the left and right pinch rollers can be moved to the left and right edges of the sheet.

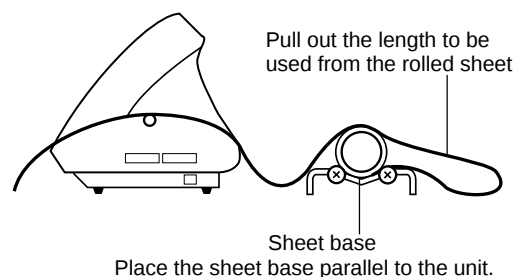
To procedure (3)



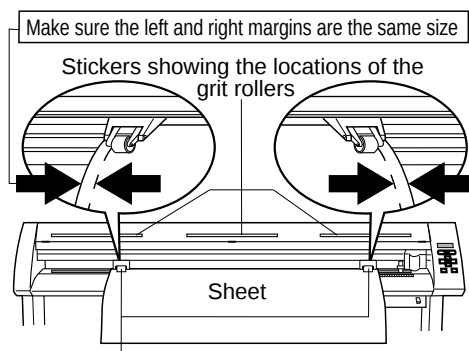
When using sheet base (PNC-1200 only)

- (1) Set the accessory sheet base in back of the unit.
Place the sheet base parallel to the unit.
- (2) Pass the end of the sheet between the pinch rollers and the grit rollers so that it extends from the front of the unit.
Pull out some slack before you begin cutting.

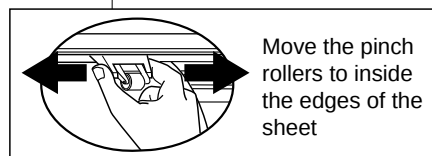
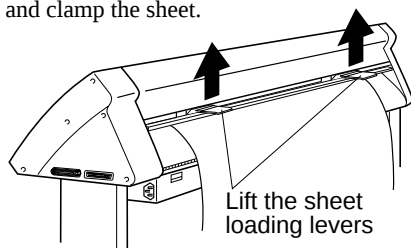
To procedure (3)



- (3) Move the two pinch rollers so that they are close to the left and right edges of the sheet. When doing this, make sure that the pinch rollers are positioned above the grit rollers. Three stickers indicating the locations of the grit rollers are affixed to the back surface of the front cover. You can use these stickers to confirm the locations of the grit rollers when the grit rollers are hidden by the sheet. If the pinch rollers are difficult to move, try moving the sheet loading lever on the back of the unit at the same time.



- (4) Lift the sheet loading lever on the back of the unit to lower the pinch roller and clamp the sheet.



Before attempting to move the pinch roller, be sure to lower the sheet loading lever to raise the pinch roller.

Be sure to move the pinch rollers above the grit rollers when securing a sheet in the unit.

If you try to load a sheet with the pinch rollers at locations that are not above grit rollers, the message shown at right appears on the control panel. If this occurs, raise the sheet loading levers and move the pinch rollers to the proper positions above the grit rollers. Reposition the sheet to match this new alignment, then lower the sheet loading levers to hold the sheet in place.

Change Pinch Roller Position

- (5) When using the stand, secure the rolled sheet on the shafts by making sure that the two stoppers provisionally tightened in step (1) are aligned exactly with the two sides of the rolled sheet, then tighten the stopper retaining screws securely.
- (6) When you close the front cover, the message shown at right appears on the control panel. Press or to display "ROLL," then press the key. * When performing cutting from the edge of the sheet closest to the front of the PNC-1850/1200, select "EDGE." When you press the key, the unit scans the width of the loaded sheet and then aligns the front edge of the sheet with the cutting starting position.

Close the front cover

SELECT SHEET
ROLL EDGE PIECE

- (7) Press the key on the top menu once. Press and align the blinking cursor with the "AREA" display in the top left of the screen, then press . Move the blinking cursor to the numerals below "LENGTH," and change the value with the and cursor keys. Then set the length of the sheet for cutting. (Ensure a small margin by setting a length that is about 0.1 m (3-15/16") longer than the cutting data.) Press to fix the displayed values. Next press or to align the blinking cursor with the "MOVE" display at the lower left of the screen. Press to feed a sheet of the length specified in "LENGTH".

Top menu

1 CUT 50cm/s
0.250mm 30gf

Press once.

AREA AXIS
RELOT SUBMENU

Use or to select.
Press .

AREA LENGTH
MOVE < 5.0m>

Use or to change the value.
Use to select "MOVE."
Press .

Check alignment during the test to make sure it is free of offset and alignment problems, diagonal feed problems, and pinch roller handling problems.

If there are any problems, the sheet was not loaded straight. Repeat the procedure over again, starting from step (2).

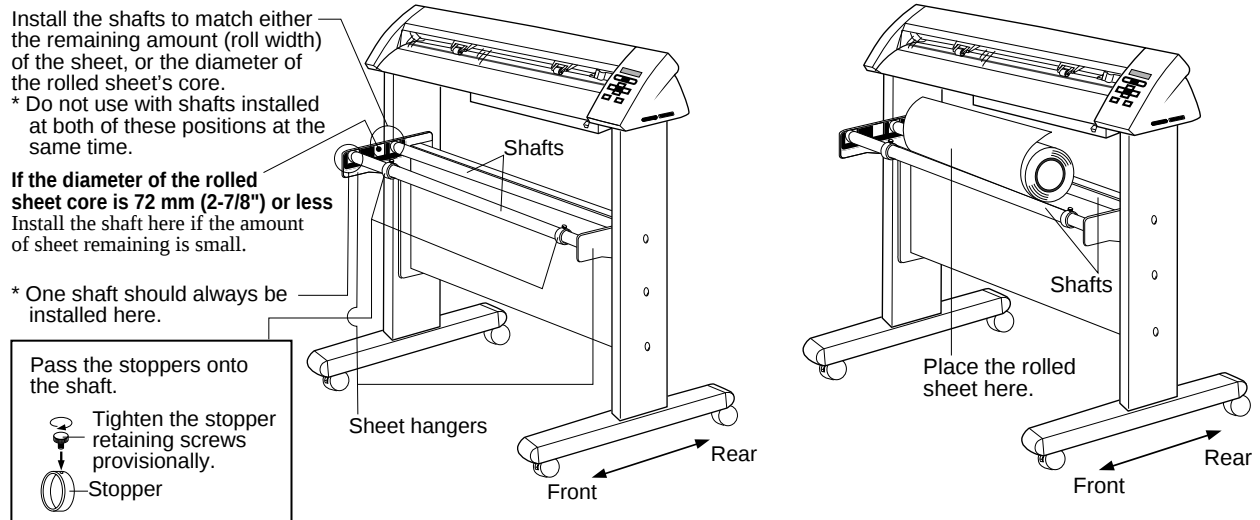
If you turn on "PREFEED" on the display menu, when cutting data is received from the computer (even without using "AREA" to feed the sheet), cutting will be performed automatically after feeding 1 m (39-3/8") of sheet. To prevent sheet offset and alignment problems, we recommend making it a habit to feed the sheet with the "AREA" function after loading.

For details on settings for "PREFEED", refer to page 27.

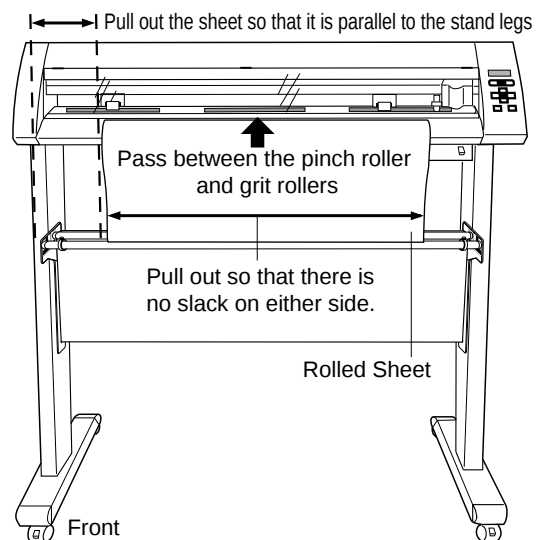
Loading the sheet from the front of the PNC-1850/1200

(When sufficient space cannot be maintained at the back surface of the main body)

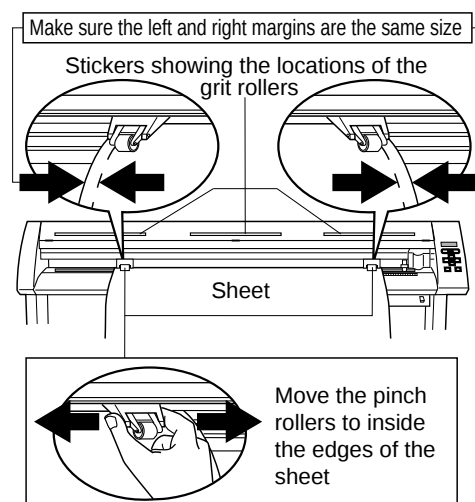
- (1) With reference to the provided PNS-185/121 ASSEMBLY INSTRUCTIONS, mount the PNC-1850/1200 on the stand. One sheet hanger should be at the front of the PNC-1850/1200 (the opposite position from the normal set position).
- (2) Mount the two shafts included with the stand on the sheet hanger and place a rolled sheet on top of the shafts.
(The shafts (2 pieces), stoppers (2 pieces), and stopper retaining screws (2 pieces) are included with the stand.)



- (3) Pull out as much from the roll as needed, and pass the sheet from the front of the PNC-1850/1200 to the back as shown in the figure.
At this time, pull the sheet straight out, so that the left and right sides of the sheet are parallel to the legs of the stand.
Make sure that the edge of the sheet lies above the grit rollers. Also check to make sure that the left and right pinch rollers can be moved to the left and right edges of the sheet.

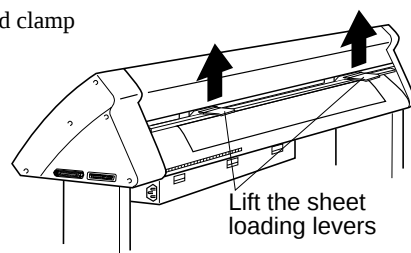


- (4) Move the two pinch rollers so that they are close to the left and right edges of the sheet. When doing this, make sure that the pinch rollers are positioned above the grit rollers.
Three stickers indicating the locations of the grit rollers are affixed to the back surface of the front cover. You can use these stickers to confirm the locations of the grit rollers when the grit rollers are hidden by the sheet.
If the pinch rollers are difficult to move, try moving the sheet loading lever on the back of the unit at the same time.



Before attempting to move the pinch roller, be sure to lower the sheet loading lever.

- (5) Lift the sheet loading lever on the back of the unit to lower the pinch roller and clamp the sheet.



Be sure to move the pinch rollers above the grit rollers when securing a sheet in the unit.

If you try to load a sheet with the pinch rollers at locations that are not above grit rollers, the message shown at right appears on the control panel. If this occurs, raise the sheet loading levers and move the pinch rollers to the proper positions above the grit rollers.

Change Pinch
Roller Position

Reposition the sheet to match this new alignment, then lower the sheet loading levers to hold the sheet in place.

- (6) Secure the rolled sheet on the shafts by making sure that the two stoppers provisionally tightened in step (2) are aligned exactly with the two sides of the rolled sheet, then tighten the stopper retaining screws securely.

- (7) When you close the front cover, the message shown at right appears on the control panel. Press ◀ or ▶ to display “ROLL,” then press the **ENTER** key.

Close the front cover

SELECT SHEET
ROLL EDGE PIECE

- (8) Press the **MENU** key on the top menu once.

Press ◀ ▶ and align the blinking cursor with the “AREA” display in the top left of the screen, then press **ENTER**. Move the blinking cursor to the numerals below “LENGTH,” and change the value with the ▲ and ▼ cursor keys. Always set the value to a minus value here. To feed a 3 m sheet, for example, set the value as -3.0 m. Be sure to set the length slightly longer the actual cut length you want. Next press ◀ or ▶ to align the blinking cursor with the “MOVE” display at the lower left of the screen. Press **ENTER** to feed the sheet by the length set in “LENGTH.”

Top menu

1 CUT 50cm/s
0.250mm 30gf

↓ Press **MENU** twice.

AREA AXIS
RELOT SUBMENU

↓ Use ◀ or ▶ to select.
Press **ENTER**.

AREA LENGTH
MOVE <-3.0m>

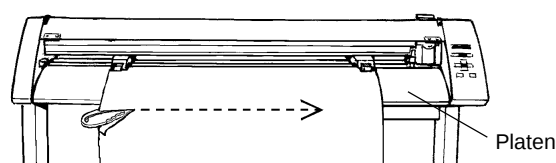
Use ▲ or ▼ to change the value.
Use ▶ to select “MOVE.”
Press **ENTER**.

Check the output sheet to make sure it is free of offset and alignment problems, diagonal feed problems, and pinch roller handling problems.

If there are any of these problems, the sheet was not set straight.

Repeat the procedure over again, starting from step (3).

- (9) Align with the front edge of the platen, and cut with the separate cutter.



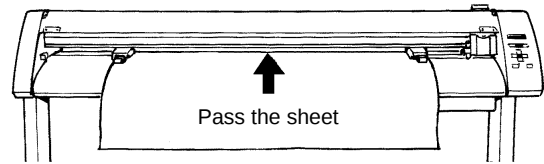
- (10) In the same manner as in step (8), execute “MOVE”. Feed the sheet to about the tool carriage position, toward the rear of the PNC-1850/1200.

When the roll sheet is loaded from the front, the “PREFEED” function cannot be used to cut the sheet. Always turn the “PREFEED” function off before operation.

Because the sheet is cut before the actual cutting data is sent, it is impossible to cut a length longer than the cut length. Set the length to be fed toward the back with “MOVE” slightly longer than actually required.

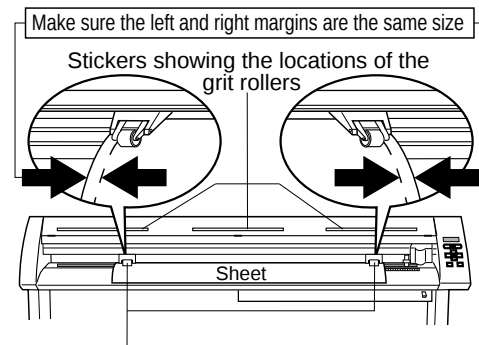
When Using a Flat Sheet (Standard-size Sheet, Cut Sheet, Etc.)

- (1) Pass the sheet between the pinch rollers and the grit rollers.

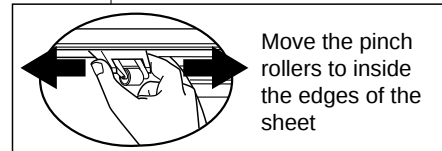


- (2) Move the two movable pinch rollers so that they are close to the left and right edges of the sheet. When doing this, make sure that the pinch rollers are positioned above the grit rollers.

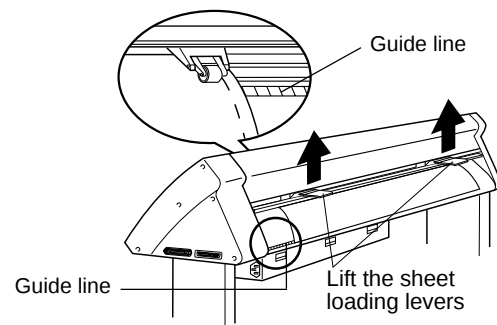
Three stickers indicating the locations of the grit rollers are affixed to the back surface of the front cover. You can use these stickers to confirm the locations of the grit rollers when the grit rollers are hidden by the sheet. If the pinch rollers are difficult to move, try moving the sheet loading lever on the back of the unit at the same time.



Before attempting to move the pinch roller, be sure to lower the sheet loading lever to raise the pinch roller.



- (3) Align the right edge of the sheet with the two guide lines located in front of and behind the grit roller on the control panel side, and load the sheet so that it is completely straight. Lift the sheet loading lever on the back of the unit to lower the pinch roller and clamp the sheet.



- Be sure to move the pinch rollers to positions above the grit rollers when securing a sheet in place.

If you try to load a sheet with the pinch rollers at locations that are not above grit rollers, the message shown at right appears on the control panel. If this happens, raise the sheet loading levers and move the pinch rollers to the proper positions above the grit rollers.

Reposition the sheet to match this new alignment, then lower the sheet loading levers to hold the sheet in place.

Change Pinch Roller Position

- (4) When you close the front cover, the message shown at right appears on the control panel. Press ◀ or ▶ to display “PIECE,” then press the **ENTER** key. The tool carriage will move from side to side and the sheet will move forward and backward to detect the size of the sheet. After this sensing is finished, the front edge of the sheet is aligned with the cutting starting position.

Close the front cover

SELECT SHEET
ROLL EDGE **PIECE**

- (5) If sheet offset or alignment problems become apparent while the 1850/1200 is scanning the piece in step (4) above, the sheet has not been loaded straight. Be sure to load the sheet straight. Set the movable left and right pinch rollers inside the sheet edges.

SELECT SHEET
ROLL EDGE **PIECE**

- If the sheet curls toward the sheet face (cut face), it will cause the sheet to slip when loaded onto the PNC-1850/1200, and may adversely affect cutting. In this case pre-bend the sheet downward so that the sheet edge is not caught the front cover and guard bar during operation.
- If the sheet strikes the shaft that is installed on the stand, then remove the shaft.

1-4-4 Selecting the Interface

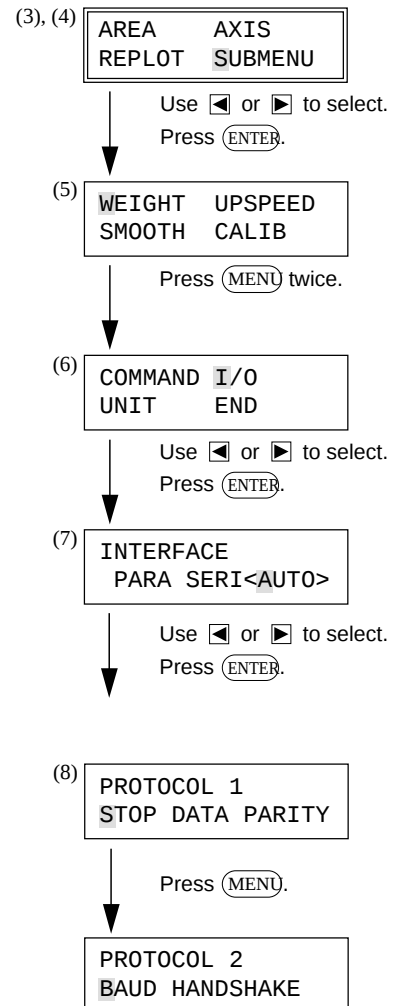
Use the control panel to select the type of interface.

The selected interface type and communication parameters are stored in memory even after the power is switched off. To change the interface type or the communication parameters, configurations must be re-entered.

- (1) Set the output port for the computer (or software) to “Parallel” for a parallel connection, or to “Serial” or “RS-232C” for a serial connection.
* The method used to make this setting varies according to the software used. For details, refer to the manual for your software.
- (2) Close the front cover.
- (3) Press the **(MENU)** key to display the menu shown at right.
- (4) Use the **◀** and **▶** keys to move the blinking cursor to “SUBMENU” and press **(ENTER)**.
- (5) Press the **(MENU)** key twice.
- (6) Use the **◀** and **▶** keys to move the blinking cursor to “I/O” and press **(ENTER)**.

* The PNC-1850/1200 is equipped with an auto-interface function, and so when left set to “AUTO,” it will automatically determine whether a parallel or serial connection is used. When a serial connection is used, however, it is necessary to set the communication parameters to match those set for the computer (and/or software).

- (7) Pressing the **◀** or **▶** key will sequentially display “PARA,” “SERI,” and “AUTO.”
If you are using a parallel connection, display “PARA” or “AUTO” and press **(ENTER)**.
If a serial connection is used, display “SERI” or “AUTO” and press **(ENTER)**. Then set the communication parameters for the PNC-1850/1200 to match those selected for the computer (and/or software).
- (8) When “SERIAL” or “AUTO” is selected, the menu at right then appears on the display. Set each parameter to match the parameters used by the computer or software. (Refer to “Setting the protocol for a Serial connection” on page 28.)
* If the communication parameters for the computer and the PNC-1850/1200 are not identical, the cutting data cannot be received correctly, which may result in faulty operation.



1-4-5 Cutting Test - Setting Cutting Speed, Blade Force, and Blade Compensation

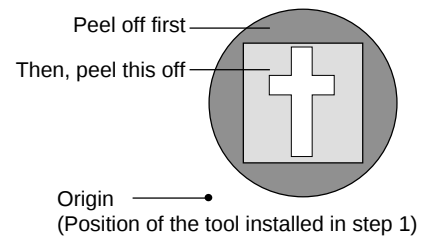
For optimum performance, it is necessary to set cutting conditions that match the sheet, giving consideration to the sheet's thickness and type of material. The PNC-1850/1200 has an internal "cutting test" to check the cutting conditions. This "cutting test" allows you to determine settings for the cutting speed, blade force and the amount of offset. Experiment with different settings for different types of material and adjust the configuration accordingly.

Procedure

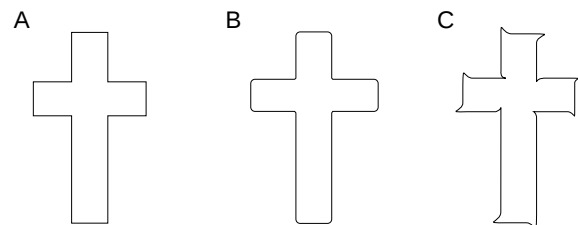
- 1) Install a blade and load a sheet, then close the front cover (see from page 7 to 13).
Use the , ,  and  keys to move the tool carriage to the position on the sheet for executing the cutting test.

- Note that an area of approximately 2 square centimeters (a little less than a square inch) is required to make a test cutout (given that the tip of the cutter after it has moved is at the origin at lower-left).

- 2) Press the **(TEST)** key for 0.5 seconds or more. Cutting test starts.
The resulting cutouts will then appear as illustrated.
- 3) Confirm the cutting speed and the blade force. Peel off the round section (marked by ). Confirm that you can peel off the square section (marked by ), but do not remove it. Also remove the square section (marked by ). If the blade leaves a slight trail on the base paper, you have achieved optimum cutting speed and blade force.



- 4) The remaining cross-shaped area is used to check whether the offset value is set correctly. When the offset value has been correctly set, the corners of the figure should appear cleanly cut as shown in A of the figure below. If the offset value is too small, the corners will appear slightly rounded as illustrated by B; an offset value which is too large will result in a cut figure similar to C.



If the sheet was not cut correctly in steps 1) through 4) of the cutting test, change the cutting conditions. Repeat the cutting test and adjustment until the optimal cutting speed, blade force, and blade compensation are found.

Adjusting cutting speed

- 1) With a blade installed, a sheet loaded, and the front cover closed, check the display to make sure that the message at right is shown. If you see a different menu, press the **(MENU)** key until the message shown at right appears.
- 2) Press  or  to move the blinking cursor to value on the right side of the upper line of the display.
- 3) Using the  and  keys, alter the displayed value.
Select a speed from 1 cm/sec to 85 cm/sec (in increments 1 cm/sec). (When "HEAVY" is selected for "WEIGHT": 1—50 cm/s.)
- 4) Press **(ENTER)** to confirm the selection.
If you haven't yet pressed **(ENTER)**, you can cancel the setting by pressing **(MENU)** instead.

1 CUT	50cm/s
0.250mm	30gf

The settings are now complete.

Adjusting blade force

- 1) With a blade installed, a sheet loaded, and the front cover closed, check the display to make sure that the message at right is shown. If you see a different menu, press the **(MENU)** key until the message shown at right appears.
- 2) Press  or  to move the blinking cursor to value on the right side of the lower line of the display.
- 3) Using the  and  keys, alter the displayed value.
Select a speed from 30 gf to 500 gf (in increments 10 gf).
- 4) Press **(ENTER)** to confirm the selection.
If you haven't yet pressed **(ENTER)**, you can cancel the setting by pressing **(MENU)** instead.

1 CUT	50cm/s
0.250mm	30gf

The settings are now complete.

If the blade force is too weak, the sheet will not be cut completely. If the blade force is too strong, blade life will be shortened. Additionally, be aware other problems can be caused by high force settings:

The sheet is easily torn

The blade pierces the sheet

Cutting extends through the base paper, and normal advancing of the sheet becomes impossible

The unit suffers damage

Adjusting blade compensation

- 1) With a blade installed, a sheet loaded, and the front cover closed, check the display to make sure that the message at right is shown. If you see a different menu, press the **(MENU)** key until the message shown at right appears.

1 CUT	50cm/s
0.250mm	30gf

- 2) Press **◀** or **▶** to move the blinking cursor to value on the left side of the lower line of the display.

- 3) Using the **▲** and **▼** keys, alter the displayed value.

The range of values that can be set is from 0 to 1.000 mm (in increments 0.025 mm).

- 4) Press **(ENTER)** to confirm the selection.

If you haven't yet pressed **(ENTER)**, you can cancel the setting by pressing **(MENU)** instead.

The settings are now complete.

For more information on the blade compensation, see “*.*** mm Setting blade compensation” on page 24.

For Sheets with a Strong Adhesive Layer

If you are using a sheet with a strong adhesive layer, the adhesive layer may adhere to itself immediately when cut. This means that even though the sheet has actually been cut, it may appear as if it has not been cut, and blade force may mistakenly be set too high.

If a cutting test shows that the sheet peels easily and the blade traces on the base paper are optimal, then the sheet is being cut.

Take care not to set the blade force excessively high.

1-4-6 Downloading Cutting Data

The unit will begin cutting when it receives cutting data sent from computer.

Software Setting

When cutting with commercially available application software, select PNC-1850/1200 as the setting for the output device. (If the PNC-1850/1200 cannot be selected, choose any model in the PNC-1100, PNC-1000A, PNC-950 or PNC-900.)

Select either the parallel (Centronics) or serial (RS-232C) interface. Choose the one that the host computer and the PNC-1850/1200 are connected by.

Pausing Cutting Operations

If you want to stop the PNC-1850/1200 momentarily while it is performing cutting, follow the procedure described below.

- 1) Press the **(PAUSE)** key. The PAUSE LED begins to flash and cutting pauses. When the LED stops flashing and remains steadily lit, the message shown at right appears on the display.

CONT->PAUSE
STOP->ENTER

- 2)

Continue cutting (or plotting)

Press the **(PAUSE)** key. The PAUSE LED goes out and cutting resumes.

Abort cutting

First of all, stop the flow of data being sent by the computer.

Press the **(ENTER)** key. Cutting stops and you will see the top menu.

Continuing Cutting

Cutting after changing the sheet

Again carry out the procedure described from “1-4-3 Loading the Sheet” on page 8 to “1-4-6 Downloading Cutting Data” on page 16.

* There is no need to perform the procedure described under “1-4-4 Selecting the Interface.” Also, if a sheet of the same type is used, there is no need to perform a cutting test.

Continuing cutting on the same sheet

Refer to “Setting the origin point” on page 25 to set the origin for the area where cutting is to be carried out next.

If the sheet has not been fed to the cutting point when using roll sheets, use the “AREA” function on the display menu to feed the sheet. Then send cutting data from the computer to the PNC-1850/1200.

Repeating the same cutting

The "Replot" feature allows you to create numerous copies of same cutting. Refer to "Repeating the same cutting" on page 27.

Do not inadvertently open the front cover while the unit is in motion.

Always make sure that the tool carriage or sheet has come to a complete stop before opening the front cover.

If the front cover is opened while the unit is in motion, then operation stops and an error message appears on the display. Turn off the power switch to cancel the error.

Cutting cannot be resumed by simply closing the front cover again — the power switch must be turned off.

To perform cutting with data in use when cutting was interrupted, follow this procedure:

- (1) Turn on the power switch to cancel the error, and make sure that the blade and sheet are loaded correctly.
- (2) Refer to "Setting the Origin Point" on page 25 to set the origin at a location on the sheet which has not yet been cut.
- (3) Cutting starts when you operate the computer to send cutting instructions.

Motor Error
Power ON Again

1-4-7 Applying the Completed Cutout

- Make sure beforehand that the surface where the work is to be stuck is clean and free of all dust or oily deposits.
- When applying the work to a transparent surface, such as a window, you can use a water-based pen (which can be wiped off) after wards to mark guidelines on the reverse side of the glass, to aid in getting the work aligned properly.
- If you discover after it is stuck in place that air bubbles were trapped under the work, use a needle to puncture them. Then you can smooth out the sheet so that it sticks securely.

- 1) Open the front cover.

For roll sheets

To make it easier to separate the finished cutout, you should direct that a rectangle be cut around the targeted work.

Use the separate cutter to cut off the completed portion from the roll.

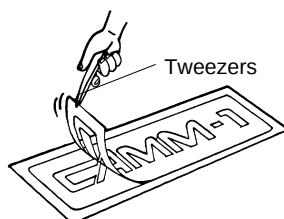
For a Flat Sheet (Standard-size Sheet, Cut Sheet, Scrap, Piece, Etc.)

Lower the sheet loading levers and remove the sheet from the PNC-1850/1200.

* If a portion that can still be cut remains, then instead of removing the sheet, use the separate cutter included with the unit to detach the portion that has been cut, just as is done when using a rolled sheet.

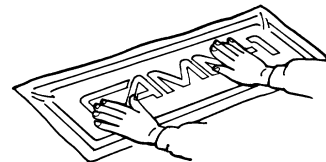
- 2) Strip/Weed away all unneeded portions from the completed work.

*You should have weed boards or rectangles drawn around work to facilitate weeding.

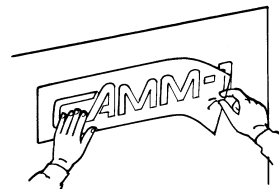


- 3) Stick application tape over the completed work.

Press down firmly or use a squeegee on the application tape to remove air bubbles. If you do not press firmly enough the cut area will not stick to the surface.

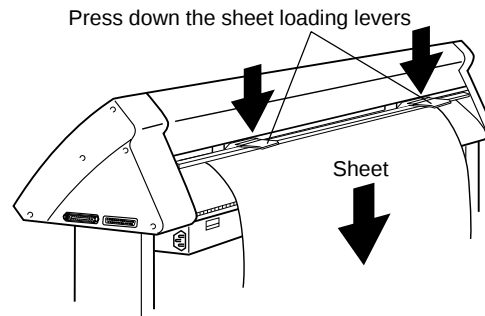


- 4) Carefully apply the work at the desired location, while keeping it as straight as possible. Rub over the application tape to make sure the work is firmly stuck in place. Then peel off the application tape.



1-4-8 When Completed Cutting

- 1) When cutting is finished, press down the sheet loading levers and remove the sheet.



- 2) If a cutter was used, wipe the cutter with a soft cloth to remove any pieces of the sheet that may be adhering to it. If a pen was used, remove the pen from the tool carriage and cap it securely.
- 3) Turn the power off. If you not intended to used the unit for an extended period of time, you should pull the plug for the power cord out of the outlet.

1-5 CARE AND MAINTENANCE

Precautions in cleaning

- Always turn off the PNC-1850/1200 before cleaning it.
- Never lubricate the mechanisms.
- Use a small amount of water or alcohol for cleaning. Never use solvents such as benzene or thinner.

Cleaning the body

Use water or alcohol to clean, and wipe gently with a clean cloth. Wipe the operation panel and display gently with a clean, soft cloth.

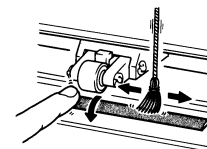
Cleaning the platen

If the platen is dirty clean with alcohol or water and wipe gently with a cloth.

Cleaning the grit rollers

With the sheet loading levers lowered and the pinch rollers raised, use a commercially available brush to remove dust and other detritus. Brush horizontally while rotating the grit rollers.

If dust builds up it may prevent the paper from being held securely, and degrade plot precision.



Cleaning the pinch rollers

With the sheet loading levers lowered and the pinch rollers raised, use a cloth moistened with water or alcohol and wipe gently to clean.

Cleaning the front cover

Use water or alcohol and clean with a soft cloth. If severe a neutral detergent may be used. Never use anything other than water, alcohol or a neutral detergent.

Cleaning the blade holder cap

If sheet debris is adhering to the inner surface of the cap for the blade holder, loosen and remove the cap, then remove the sheet debris.

Part 2

2-1 ABOUT THE CUTTING AREA

Maximum cutting area

PNC-1850: Width of 1195 mm (47") (horizontal direction), and length of 24,998 mm (984-1/8") (vertical direction)

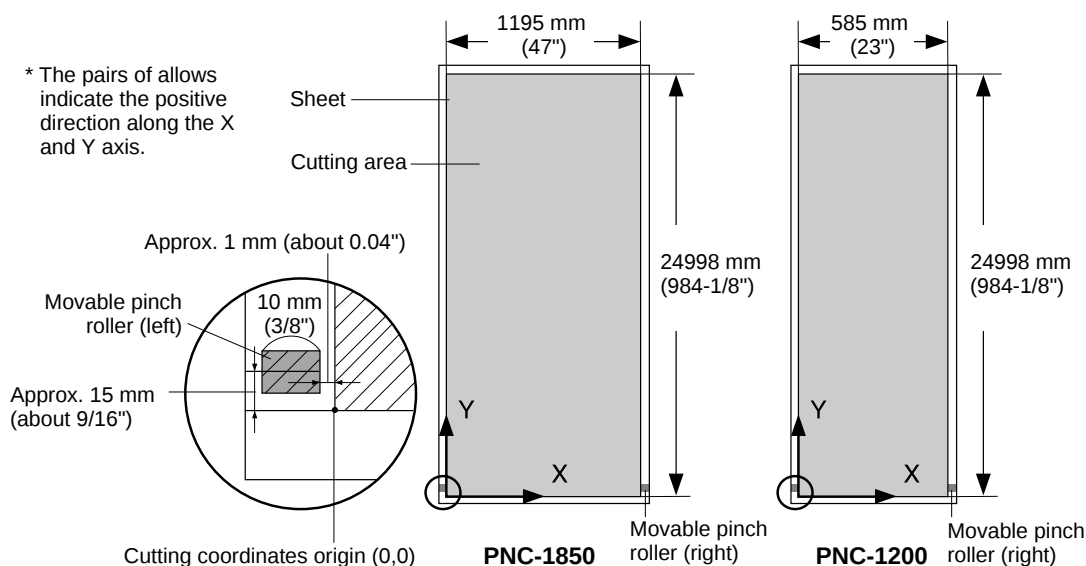
PNC-1200: Width of 585 mm (23") (horizontal direction), and length of 24,998 mm (984-1/8") (vertical direction)

Acceptable sheet widths

PNC-1850: 50 mm—1220 mm (1-15/16"—48")

PNC-1200: 50 mm—610 mm (1-15/16"—24")

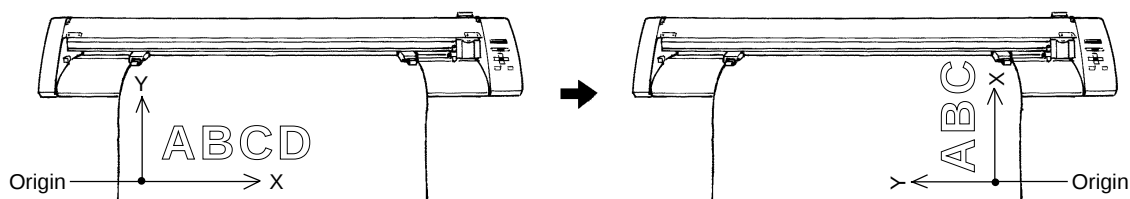
The cutting area along the horizontal plane (the direction in which the tool carriage moves) is determined by the position of the pinch rollers. The workable area spans the length between the two rollers, minus a margin of about 1 mm (about 0.04") on both sides. If the sheet length is greater than 1,600 mm (62-15/16") when a flat sheet (paper) has been loaded, the PNC-1850/1200 determines it to be a rolled sheet and sets the sheet length to 24,998 mm (984-1/8").



Whenever you employ the Rotate function (which allows you to rotate a character 90 degrees), the origin will be located at the sheet's lower-right.

[0° Rotation]

[90° Rotation]



2-2 ABOUT THE BLADE

If the blade becomes dull

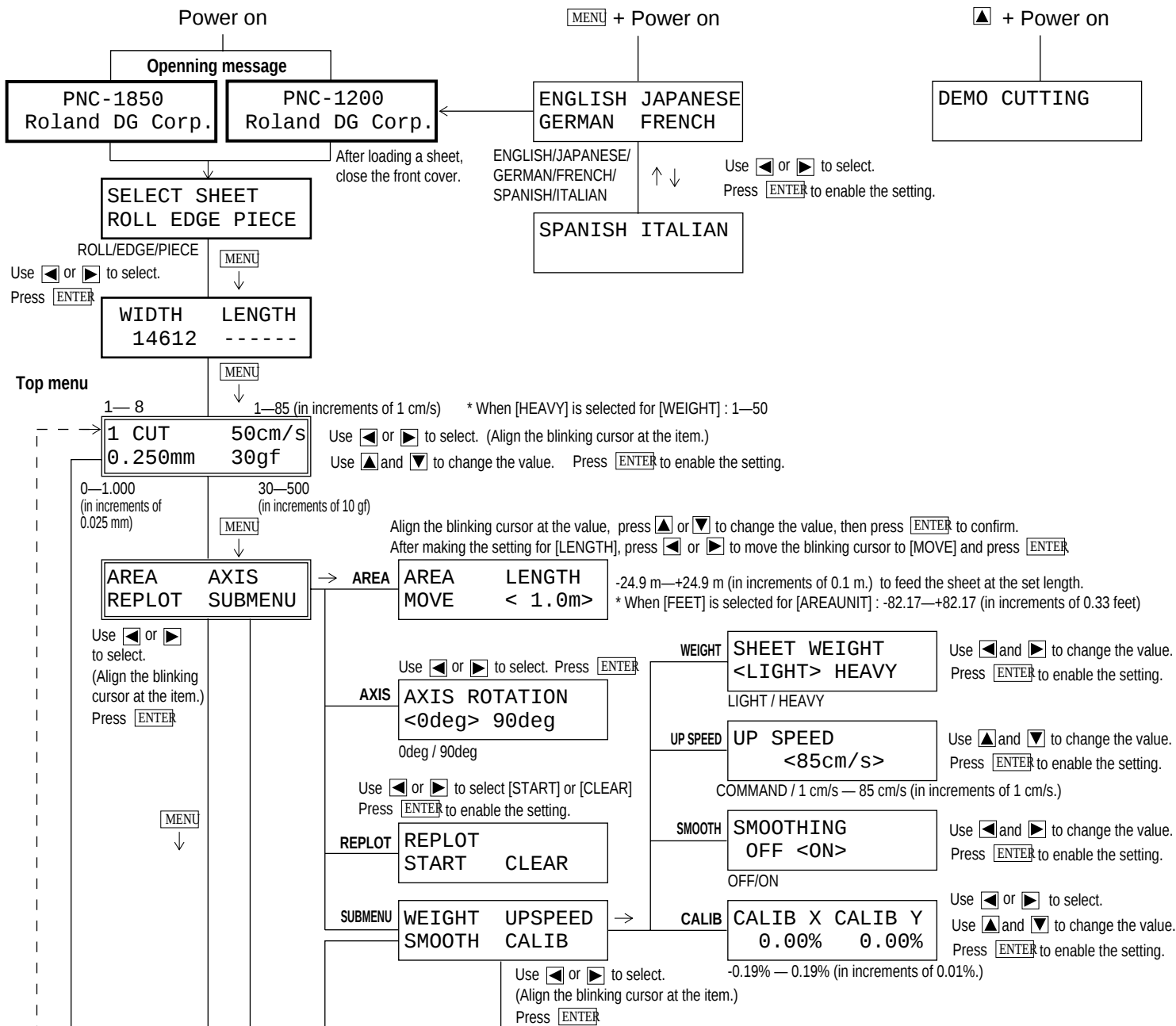
When the blade starts to lose its sharpness, gradually increase the pen force (refer to “** gf Setting blade force” on page 24).

Increasing the pen force temporarily allows the cutter to compensate for a dull blade. However, increasing the blade force should be a temporary measure. Consider replacing the blade immediately.

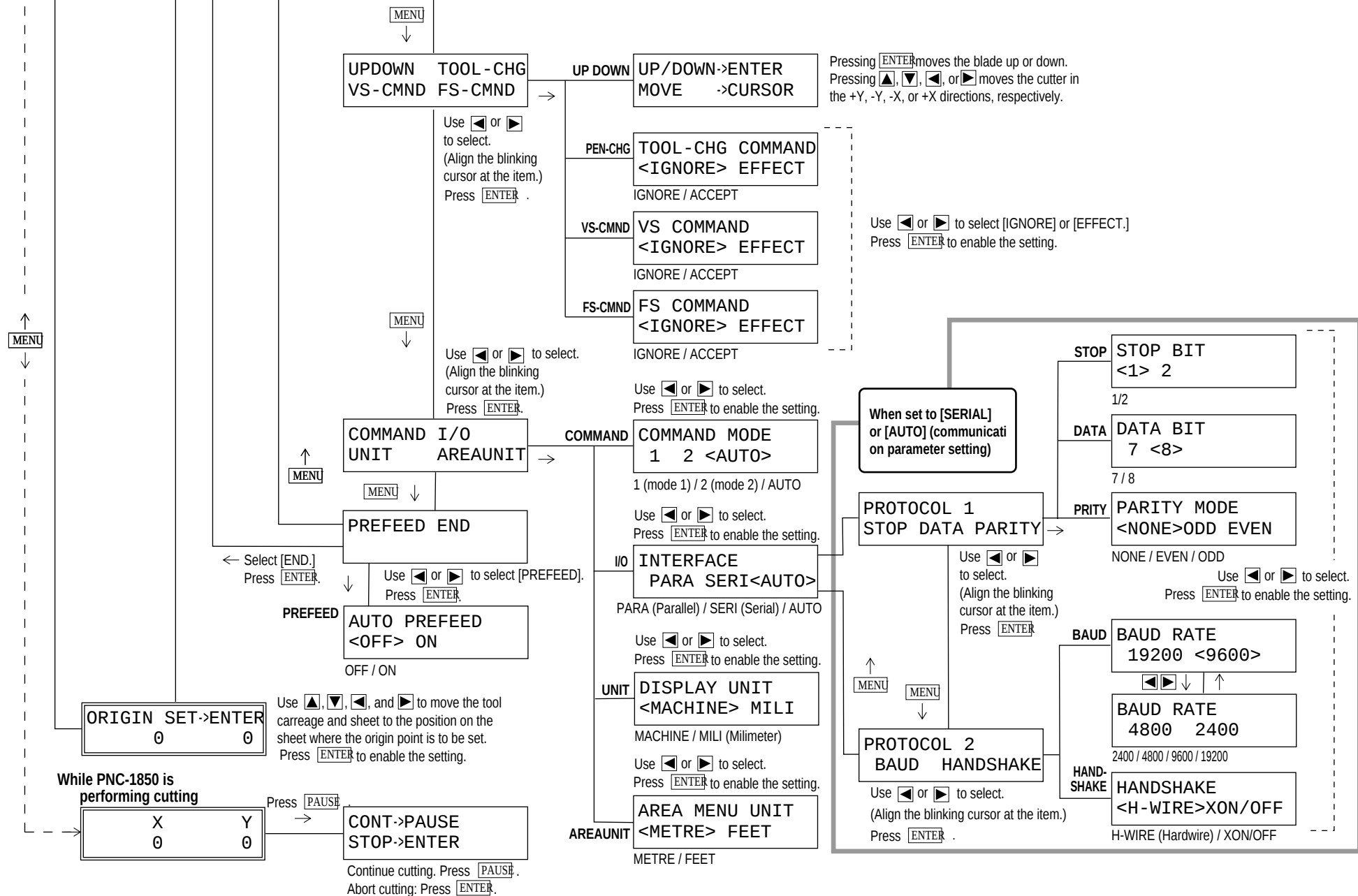
The life of a blade is determined mainly by the amount of cutting it performs.

The total cutting length actually obtained can vary considerably depending on the thickness, density, and type of adhesive layer that the sheet has. By matching the force and blade settings to the type of material that is being used, the life of the blade can be extended. Excessive forces will cause the blade to wear more quickly.

2-3 DISPLAY MENUS FLOWCHART



See “2-4 EXPLANATION OF DISPLAY MENUS” on page 22 for a detailed description of each setting.
Changing the value and pressing the **ENTER** key enables the setting. If you have changed a value but have not yet pressed **ENTER**, you can abandon the change and return to the original value by pressing the **MENU** key.
To return to the menu selection screen from any of the menu value setting screens, press the **MENU** key.



2-4 EXPLANATION OF DISPLAY MENU

- Set values are stored in memory, and are not lost even if the power is switched off and back on again.
- Changing a value and pressing the **ENTER** key enables the setting. If you have changed a value but have not yet pressed **ENTER**, you can abandon the change and return to the original value by pressing the **MENU** key.
- This explanation frequently refers to a “top menu.” This top menu is the screen shown below. This menu appears after you load a sheet, close the front cover, and select the sheet type.

1 CUT	50cm/s
0.250mm	30gf

• Determining the type of sheet loaded

SELECT SHEET

Display readout

SELECT SHEET
ROLL EDGE PIECE

Available settings

ROLL, EDGE, and PIECE

Explanation

This determines the type of sheet that has been loaded. The PNC-1850/1200 automatically determines the width and length according to the type of sheet loaded.

ROLL: Select this when a rolled sheet has been loaded on the PNC-1850/1200.

EDGE: This loads a rolled sheet and starts cutting from the front edge of the sheet.

PIECE: Select this when a flat sheet (paper) has been loaded on the PNC-1850/1200.

Procedure

This is displayed after loading a sheet and closing the front cover.

Refer to “1-4-3 Loading the Sheet” on page 8.

• Setting cutting conditions

1—8

Selecting and storing cutting parameters

Display readout

1 CUT 50cm/s
0.250mm 30gf

Factory default setting

1

Available settings

1, 2, 3, 4, 5, 6, 7 and 8

Explanation

It is possible to set the cutting parameters to match the tool and sheet, and store them for later use. It is also possible to set plotting parameters to match pen and paper conditions and store them.

Five items can be stored: “** cm/s” (cutting speed), “*.*** mm” (blade compensation), “**gf” (blade force), “UP SPEED” (tool movement speed during tool-up), and “WEIGHT”. Eight patterns of these settings can be stored.

* When setting the cutting parameters set “*.*** mm” between 0.025 and 1.000 mm, and when setting pen plotting parameters set to 0.000 mm.

When the “*.*** mm” (blade compensation) value on the bottom line is 0.025 to 1.000 mm “CUT” will be displayed, and when set to 0.000 mm “PEN” will be displayed. In other words, when the value is set to 0.000 mm, the plotter assumes automatically that you are using a pen. In this case, substitute the work “cut” with the word “plot” in this section. Refer to “2-5 PLOTTING ON PAPER MEDIA” on page 32 for details on plotting on paper.

Procedure

This is set on the top menu.

Use the ◀ or ▶ keys to move the blinking cursor to the left of the top display line (referred to below as the tool number). Use the ▲ and ▼ keys to display the tool number (1 to 8) that you wish to set the cutting parameters to.

First, set the values for “** cm/s” (cutting speed), “*.*** mm” (blade compensation), and “** gf” (blade force) on the same screen. Use the ◀ or ▶ keys to move the blinking cursor to the item to be changed, and use the ▲ and ▼ keys to change the displayed values, and press **ENTER** to save them.

Press **MENU** once. Use the ◀ or ▶ keys to move the blinking cursor to the “SUBMENU” item at the right of the bottom line, and press **ENTER**. Use the ◀ or ▶ keys to move the blinking cursor to “WEIGHT”, and press **ENTER**. Change the value with the ◀ or ▶ keys and press **ENTER** to save the value.

Press **MENU** to return to the initial screen, and press the ◀ or ▶ keys to move the blinking cursor to “UPSPEED”. Press **ENTER**. Use the ▲ and ▼ keys to change the value, and press **ENTER** to save it.

The values set for each item are now stored to the tool number shown at the left of the top line. To store other parameters, display another tool number and repeat the process.

Before cutting use the ◀ or ▶ keys to move the blinking cursor to the tool number on the top menu, and press the ▲ and ▼ keys to select the tool number needed for the mounted current and sheet. When data is sent from the computer cutting will be executed in accordance with those cutting parameters. Even if a screen other than the top menu is displayed, cutting parameters will be those for the tool number selected on the top menu.

When cutting is executed to a tool selection command (SP command) from the computer, the PNC-1850/1200 tool number cutting parameters are set to match the software (or driver). Turn on “TOOL-CHG” on the display menu. For information on “TOOL-CHG”, refer to “TOOL-CHG COMMAND Enabling tool change commands” on page 30.

**** cm/s**

Setting cutting speed

Display readout

1 CUT	50cm/s
0.250mm	30gf

Factory default setting

50 cm/s

Settings range

1—85 cm/s (in increments of 1 cm/s)

When “HEAVY” is selected for “WEIGHT” :

1—50 cm/s (in increments of 1 cm/s)

Explanation

This sets the speed on the tool movement during cutting (i.e., when the tool is down). The setting must match the conditions of the loaded sheet and blade. Perform a cutting test and make the appropriate settings.

If “VS COMMAND” is set to “EFFECT,” cutting is performed at the speed set with the VS command send from the computer.

Procedure

This setting is made at the top menu.

Press ◀ or ▶ to move the blinking cursor to “** cm/s” on the right side of the upper line of the display.

Use ▲ and ▼ to change the value. Display the value for the setting and press **ENTER** to save it.

For more details, refer to “1-4-5 Cutting Test” on page 15.

. mm****Setting blade compensation****Display readout**

1 CUT	50cm/s
0.250mm	30gf

Factory default setting

0.250 mm

Settings range

0 to 1.000 mm

(in increments of 0.025 mm)

Explanation

This sets the amount of offset from the center to the cutting tip of the blade. When cutting two lines that form a corner, this offset rounds the angle of intersection, resulting in a rounded corner.

When blade compensation has been set, the PNC-1850/1200 performs this compensation automatically.

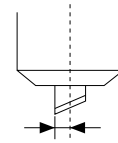
The setting must match the conditions of the loaded sheet and blade. Perform a cutting test and make the appropriate settings.

It is sufficient if the setting made here is within an adjustment range of ± 0.05 mm from the offset value for the cutter blade. (For example, if the cutter blade is 0.250 mm, the setting should be between 0.200 and 0.300.)

The offset for the cutter blade included with the unit is 0.250 mm.

* When a pen has been installed to perform plotting, there is no need to set blade compensation, because the tip of the pen lies along the center axis. In this case, the setting "0.000 mm" should be made.

Center axis



Offset

Procedure

This setting is made at the top menu.

Press or to move the blinking cursor to "*.*** mm" on the left side of the lower line of the display.

Use and to change the value. Display the value for the setting and press to save it.

For more details, refer to "1-4-5 Cutting Test" on page 15.

**** gf****Setting blade force****Display readout**

1 CUT	50cm/s
0.250mm	30gf

Factory default setting

30 gf

Settings range

30—500 gf

(in increments of 10 gf)

Explanation

This sets the amount of pressure or force of the blade during cutting. The setting must match the conditions of the loaded sheet and blade. Perform a cutting test and make the appropriate settings.

Procedure

This setting is made at the top menu.

Press or to move the blinking cursor to "*.*** mm" on the right side of the lower line of the display.

Use and to change the value. Display the value for the setting and press to save it.

For more details, refer to "1-4-5 Cutting Test" on page 15.

SMOOTHING**Cutting smooth curves****Display readout**

SMOOTHING
OFF <ON>

Factory default setting

ON

Available settings

ON / OFF

Explanation

If you want the curves of circles and arcs to be cut smoothly, set this to "ON."

When on, however, small text or intricate designs may also be cut with rounded corners. If this happens, change the setting to "OFF" and perform cutting again.

Procedure

At the top menu, press the key once. Press or to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, and press . Next, use or to move the blinking cursor to "SMOOTH" on the left side of the lower line of the display, and press again. Change the value with or and press to save the new setting.

SHEET WEIGHT

Cutting thicker sheets

Display readout

SHEET WEIGHT
<LIGHT> HEAVY

Factory default setting

LIGHT

Available settings

LIGHT / HEAVY

Explanation

This is used to make adjustment when using a sheet that is slightly thicker than ordinary.

This value is normally set to "LIGHT".

If an overload during cutting prevents the sheet from being cut cleanly, or if "Motor Error" is displayed on the screen, set to "HEAVY." This will change the setting ranges for "***cm/s" and "UP SPEED" to 1—50 cm/s, in 1 cm/s steps.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, and press **(ENTER)**. Next, use **◀** or **▶** to move the blinking cursor to "WEIGHT" on the left side of the upper line of the display, and press **(ENTER)** again. Change the value with **◀** or **▶** and press **(ENTER)** to save the new setting.

UP SPEED

Setting tool movement speed during tool-up

Display readout

UP SPEED
<85cm/s>

Factory default setting

85 cm/s

Settings range

COMMAND /

1—85 cm/s (in increments of 1 cm/s)

When "HEAVY" is selected for "WEIGHT":

1—50 cm/s (in increments of 1 cm/s)

Explanation

This sets the speed of movement when the tool is raised and moves to the next position for cutting during a cutting operation.

If "VS COMMAND" is set to "EFFECT," cutting is performed at the speed set with the VS command send from the computer.

If set to "COMMAND," "UP SPEED" is the same as the setting for "*** cm/s," regardless of whether set to "EFFECT" or "IGNORE."

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, and press **(ENTER)**. Next, use **◀** or **▶** to move the blinking cursor to "UPSPEED" on the right side of the upper line of the display, and press **(ENTER)** again. Change the value with **▲** or **▼** and press **(ENTER)** to save the setting.

• Setting the origin point

ORIGIN SET

Display readout

ORIGIN SET->ENTER
0 0

Explanation

Set a user origin at an arbitrary point on the sheet.

After the sheet has been loaded, be sure to set the origin to the bottom left of the sheet.

Procedure

At the top menu, press the **(MENU)** key twice.

Use **▲**, **▼**, **◀** and **▶** to move the tool carriage and sheet to the position on the sheet where the origin point is to be set. Press **(ENTER)** to enable the new setting.

* Because the origin point is not sent unless **(ENTER)** is pressed, this function can also be used simply for moving the tool.

• Rotating the origin point

AXIS ROTATION

Display readout

AXIS ROTATION <0deg> 90deg

Factory default setting

0 deg

Available settings

0 deg / 90 deg

Explanation

This rotates the cutting coordinate origin by 90 degrees. This is normally set to “0deg,” which means that the origin is at the bottom left of the sheet. Setting this to “90deg” moves the origin to the bottom right of the sheet, thereby rotating the cutting pattern by 90 degrees.

* Don’t forget that the coordinate axis changes when the origin is rotated.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to “ROTATE” on the right side of the upper line of the display, and press **(ENTER)**.

Use **◀** and **▶** to change the value and press **(ENTER)** to save the setting.

• Feed the loaded sheet

AREA

Display readout

AREA	LENGTH
MOVE	< 1.6m>

Factory default setting

1.6 m

Settings range

-24.9—+24.9 m

(in increments of 0.1 m)

When “FEET” is selected for “AREA UNIT” :

-82.17—+82.17 f (feet)

(in increments of 0.33 feet)

Explanation

Before performing cutting, feed the sheet to make sure that it has enough material to complete the area test and the intended design.

Also, this checks whether enough sheet remains to cut the data when performing continuous cutting on the same sheet.

For instance, suppose that the length of the design is one meter. This means that there must be at least one meter of sheet remaining. You can use this menu to feed the sheet and check whether there is enough sheet left, as well as check the alignment of the media.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to “AREA” on the left side of the upper line of the display, then press **(ENTER)**.

Move the blinking cursor to “LENGTH” and use **▲** and **▼** to change the value. Set the length of sheet for checking (the approx. length of the intended design). Press **(ENTER)** to enable. Next, press **▶** to move the blinking cursor to “MOVE” on the left side of the bottom line of the display. Press **(ENTER)** to feed the sheet by the length set for “LENGTH.”

AREA UNIT

Display readout

AREA MENU UNIT
<METRE> FEET

Factory default setting

METRE

Available settings

METRE / FEET

Explanation

Sets the units used to specify length in display menu “AREA”. Units may be set to either “METRE” or “FEET”.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to “SUBMENU” on the right side of the lower line of the display, and press **(ENTER)**, then press **(MENU)** key twice. Use **◀** or **▶** to move the blinking cursor to “AREAUNIT” on the right side of the lower line of the display, and press **(ENTER)** again.

Use **◀** and **▶** to change the value and press **(ENTER)** to save the setting.

PREFEED

Display readout

AUTO PREFEED
<OFF> ON

Factory default setting

OFF

Available settings

ON / OFF

Explanation

Set to on for automatic sheet feed at cutting. If this is set to on, when cutting data is sent from the computer, the plotter will automatically execute cutting after a 1 m (39-3/8") feed.

After the sheet is loaded be sure to feed the sheet by the length needed for cutting with the "AREA" function. (Some data may cause feed over 1 m (39-3/8") , such as when the next point of movement is located more than 1 m (39-3/8") to the rear.)

* If the "AREA" function is used to feed the sheet in advance, the sheet will not be automatically fed even when "PREFEED" is set to on.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, and press **(ENTER)**, then press **(MENU)** key three times. Use **◀** or **▶** to move the blinking cursor to "PREFEED" on the left side of the upper line of the display, and press **(ENTER)** again.

Use **◀** and **▶** to change the value and press **(ENTER)** to save the setting.

• Correct for the cutting distance error based on actual measurement

CALIB

Display readout

CALIB X CALIB Y
0.00% 0.00%

Factory default setting

0.00%

Settings range

-0.19—0.19%
(in increments of 0.01%)

Explanation

This makes adjustment for distance over the X or Y axis. There may be a discrepancy between size of the data sent from the computer and the size actually cut, and this setting makes adjustment for such errors.

Before making this setting, first measure the results of cutting, compare them with the data sent from the computer, and then calculate the amount of distance adjustment.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, and press **(ENTER)**.

Next, use **◀** or **▶** to move the blinking cursor to "CALIB" on the right side of the lower line of the display, and press **(ENTER)** again. Use **◀** or **▶** to align the blinking cursor with "CALIB X" or "CALIB Y," then press **▲** or **▼** to change the value. Press **(ENTER)** to save the setting.

• Repeating the same cutting - Deletes any data in the replot buffer

RELOT

Display readout

RELOT
START CLEAR

Explanation

RELOT: Repeats the same cutting sequence.

CLEAR: Deletes any data in the replot buffer.

*Once you turn the power OFF, all data that until then was kept stored will be lost. For this reason, the same cutting cannot be made when you turn power ON again.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "RELOT" on the left side of the lower line of the display, and press **(ENTER)**.

To start replotting, move the blinking cursor **◀** or **▶** to "START" and press **(ENTER)**. To erase the data in the replot buffer, move the blinking cursor **◀** or **▶** to "CLEAR" and press **(ENTER)**.

• Selecting the instruction set

COMMAND MODE

Display readout

```
COMMAND MODE
1 2 <AUTO>
```

Factory default setting

AUTO

Available settings

1 (mode 1) / 2 (mode 2) / AUTO

Explanation

This selection enables the type of instructions that are understood by the unit.

You can set the unit to accept either CAMM-GL III mode 1 instructions ("1") or mode 2 instructions ("2").

When set to "AUTO," the PNC-1850/1200 automatically detects the type of instructions first received after turning on the power, and sets itself to accept those instructions.

To change the type of instructions, first change the setting, then switch the power to the unit off and back on again.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, press **(ENTER)**, then press **(MENU)** twice. Use **◀** or **▶** to move the blinking cursor to "COMMAND" on the left side of the upper line of the display, and press **(ENTER)** again. Change the value with **◀** or **▶** and press **(ENTER)** to save the setting.

• Selecting the connection interface

INTERFACE

Display readout

```
INTERFACE
PARA SERI<AUTO>
```

Factory default setting

AUTO

Available settings

PARA (Parallel) / SERI (Serial)
/ AUTO

Explanation

This selects the interface for connecting a computer to the PNC-1850/1200.

Set this to "PARALLEL" for a parallel connection or to "SERIAL" for a serial connection.

When set to "AUTO," the PNC-1850/1200 automatically detects whether a parallel or serial type interface is used when data is first received after turning on the power, and sets itself accordingly. To change the type of interface, first switch off the power to the unit, change the cable connection, then turn the unit back on again. See "1-4-4 Selecting the Interface" on page 14 for details.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, press **(ENTER)**, then press **(MENU)** twice. Use **◀** or **▶** to move the blinking cursor to "I/O" on the right side of the upper line of the display, and press **(ENTER)** again. Change the value with **◀** or **▶** and press **(ENTER)** to save the setting.

• Setting the protocol for a serial connection

* The screen shown here appears when "SERI" (Serial) or "AUTO" is selected for "INTERFACE."

STOP BIT

Stop bit

Display readout

```
STOP BIT
<1> 2
```

Factory default setting

1

Available settings

1 / 2

Explanation

This marker tells the system when a character data set end.

Procedure

At the screen following selection of either "SERIAL" or "AUTO" for "INTERFACE," use **◀** or **▶** to move the blinking cursor to "STOP" on the left side of the lower line of the display, then press **(ENTER)**.

Use **◀** or **▶** to change the value, and press **(ENTER)** again to save the setting.

DATA BIT

Data bit

Display readout

DATA BIT
7 <8>

Factory default setting

8

Available settings

7 / 8

Explanation

The size (length) of one block of data.

Procedure

At the screen following selection of either “SERIAL” or “AUTO” for “INTERFACE,” use ◀ or ▶ to move the blinking cursor to “DATA” in the center of the lower line of the display, then press **ENTER**.

Use ◀ or ▶ to change the value, and press **ENTER** again to save the setting.

PARITY MODE

Parity check

Display readout

PARITY MODE
<NONE>ODD EVEN

Factory default setting

NONE

Available settings

NONE / EVEN / ODD

Explanation

Parity is used to check whether data was received correctly.

Procedure

At the screen following selection of either “SERIAL” or “AUTO” for “INTERFACE,” use ◀ or ▶ to move the blinking cursor to “PARITY” on the right side of the lower line of the display, then press **ENTER**.

Use ◀ or ▶ to change the value, and press **ENTER** again to save the setting.

BAUD RATE

Baud rate

Display readout

BAUD RATE
19200 <9600>

Factory default setting

9600

Available settings

2400 / 4800 / 9600 / 19200

Explanation

Determines the speed of data transmission.

Procedure

At the screen following selection of either “SERIAL” or “AUTO” for “INTERFACE,” press **MENU**.

Use ◀ or ▶ to move the blinking cursor to “BAUD” on the left side of the lower line of the display, then press **ENTER**.

Press ◀ or ▶ to change the value, and press **ENTER** again to save the setting.

HANDSHAKE

Handshake

Display readout

HANDSHAKE
<H-WIRE>XON/OFF

Factory default setting

H-WIRE

Available settings

H-WIRE (Hardwire) / XON/OFF

Explanation

Sets the handshake mode for when the PNC-1850/1200 is connected the host computer via the serial interface.

Procedure

At the screen following selection of either “SERIAL” or “AUTO” for “INTERFACE,” press **MENU**.

Use ◀ or ▶ to move the blinking cursor to “HANDSHAKE” on the right side of the lower line of the display, then press **ENTER**.

Press ◀ or ▶ to change the value, and press **ENTER** again to save the setting.

• Giving priority to settings from the computer

TOOL-CHG COMMAND

Enabling tool change commands

Display readout

```
TOOL - CHG  COMMAND
<IGNORE>  EFFECT
```

Factory default setting

IGNORE

Available settings

IGNORE / EFFECT

Explanation

This sets the handling of tool select (SP instruction). When cutting is executed, normally set this to “IGNORE”.

When a tool select command (SP command) is sent from the computer, it will be ignored if this is set to “IGNORE”. If set to “EFFECT”, SP change commands will be received. If tool changes are needed set this to “EFFECT”.

When plotting with pen and paper, set to “EFFECT” if pen change is needed (or if data includes pen change commands). Select the top menu tool number (number at left of top line on display) and software (or driver) pen number to match the pen to be used.

For plot data without pen changes, or if pen change data is present but you will ignore it, set “IGNORE”. In this case, before sending the data from the computer select the tool number from the top menu with the correct plotting parameters (or set a tool number if there isn’t one).

Refer to page 32 “2-5 PLOTTING ON PAPER MEDIA” for additional information on plotting.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to “SUBMENU” on the right side of the lower line of the display, press **(ENTER)**, then press **(MENU)** again.

Use **◀** or **▶** to move the blinking cursor to “TOOL-CHG” on the right side of the upper line of the display, and press **(ENTER)** again. Change the value with **◀** or **▶** and press **(ENTER)** to save the new setting.

* See “2-5 PLOTTING ON PAPER MEDIA” on page 32 for a description of operation when a pen change command is received.

When “EFFECT” is selected and a tool select command is sent from the computer, the following message will be displayed, and all operation will halt.

When this message is displayed and the tool must be changed, open the front cover, and insert the appropriate tool into the tool carriage and close the front cover. Press **(ENTER)** and plotting will restart.

If tool change is not required, press **(ENTER)** when the message is displayed and plotting will restart.

If the tool select command from the computer specifies the tool number, select the tool number from the top menu.

```
TOOL - CHG : TOOLN02
```

VS COMMAND

VS command (Velocity Select)

Display readout

```
VS COMMAND
<IGNORE>  EFFECT
```

Factory default setting

IGNORE

Available settings

IGNORE / EFFECT

Explanation

To perform cutting at the speed determined by a VS command (tool speed setting command) sent from the computer, set this to “EFFECT.” When set to “IGNORE,” cutting is performed using the values for “** cm/s” and “UPSPEED” set at the top menu.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to “SUBMENU” on the right side of the lower line of the display, press **(ENTER)**, then press **(MENU)** again.

Use **◀** or **▶** to move the blinking cursor to “VS-CMND” on the left side of the lower line of the display, and press **(ENTER)** again. Change the value with **◀** or **▶** and press **(ENTER)** to save the setting.

FS COMMAND

FS command (Force Select)

Display readout

```
FS COMMAND
<IGNORE>  EFFECT
```

Factory default setting

IGNORE

Available settings

IGNORE / EFFECT

Explanation

To perform cutting at the tool force determined by an FS command (tool force setting command) sent from the computer, set this to “EFFECT.” When set to “IGNORE,” cutting is performed using the value for “*** gf” set at the top menu.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to “SUBMENU” on the right side of the lower line of the display, press **(ENTER)**, then press **(MENU)** again.

Use **◀** or **▶** to move the blinking cursor to “FS-CMND” on the right side of the lower line of the display, and press **(ENTER)** again. Change the value with **◀** or **▶** and press **(ENTER)** to save the new setting.

• Other setting

ENGLISH JAPANESE GERMAN FRENCH SPANISH ITALIAN

Changing the language used for display

Display readout

ENGLISH JAPANESE
GERMAN FRENCH

Factory default setting

ENGLISH

Available settings

ENGLISH, FRENCH, GERMAN,
SPANISH, ITALIAN and JAPANESE

Explanation

The PNC-1850/1200 is capable of displaying all its menus in either of six languages, English, French, German, Spanish, Italian and Japanese.

Procedure

While holding down the **(MENU)** key, turn the power on.
Using the **◀** or **▶** to select. Press **(ENTER)** to save the setting.

DISPLAY UNIT

Setting the coordinate unit used for display

Display readout

DISPLAY UNIT
<MACHINE> MILI

Factory default setting

MACHINE

Available settings

MACHINE / MILLIMETER

Explanation

This sets the type of unit for coordinate values that appear on the display. Set this to "MECHANICAL UNIT" for display in cutting coordinate units (1 = 0.025 mm), or to "MILLIMETER" for display in millimeters.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, press **(ENTER)**, then press **(MENU)** twice. Use **◀** or **▶** to move the blinking cursor to "UNIT" on the left side of the lower line of the display, and press **(ENTER)** again. Change the value with **◀** or **▶** and press **(ENTER)** to save the new setting.

DEMO CUTTING MODE

Performing demo cutting

Display readout

DEMO CUTTING

Factory default setting

—

Explanation

This performs an operation check when the PNC-1850/1200 is not working correctly.

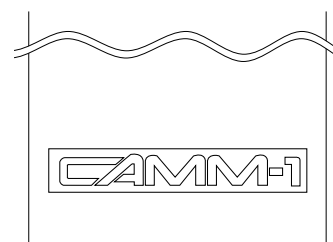
Procedure

* A computer is not required in order to carry out the self-test.

Refer to "1-4-2 Installing the cutter" and install a blade holder in the tool carriage. Hold down the **▲** on the panel while you turn the power ON.

Load the sheet, following the procedure described in "1-4-3 Loading the sheet." Close the front cover and use the display menu to select the type of sheet loaded. After sensing the sheet size, the PNC-1850/1200 begins demo cutting.

Operation is normal if the figure shown at right is cut.



UP/DOWN MOVE

Moving the blade

Display readout

UP/DOWN->ENTER
MOVE ->CURSOR

Explanation

This moves the tool up or down. It also moves the tip of the blade in any of four directions (-X, +X, -Y, or +Y).

With the tool down, the tool carriage can be moved with the four cursor keys to cut the sheet.

Procedure

At the top menu, press the **(MENU)** key once. Press **◀** or **▶** to move the blinking cursor to "SUBMENU" on the right side of the lower line of the display, press **(ENTER)**, then press **(MENU)** again.

To move the tool up or down, press **(ENTER)**. To move in the -X, +X, -Y, or +Y direction, press **◀**, **▶**, **▲**, or **▼**, respectively.

2-5 PLOTTING ON PAPER MEDIA

Before cutting, plotting using pen and paper can ensure that your design is correct without wasting materials.

This feature can also be used to plot template designs on thick sheets that may not be able to be cut.

* Since the design of the PNC-1850/1200 differs inherently from that of dedicated plotters, it does not accommodate functions such as high-speed plotting, automatic pen changes, pen dry protection, or the like.

Combination of pens and paper media

You can load paper measuring between 50 mm (1-15/16") and 1220 mm (48") in width on the PNC-1850, or paper measuring between 50 mm (1-15/16") and 762 mm (30") in width on the PNC-1200. However, a paper with a width of 50 mm (1-15/16") to 762 mm (30") can be loaded only if it is a flat paper or a rolled paper with a sheet base. When using a stand (PNS-120), a rolled paper with a width in the range of 50 mm (1-15/16") to 610 mm (24") can be loaded.

Be sure to use high-quality paper. Any of the three types of pens listed below can be used.

- Water based fiber tipped pen
- Thick water based fiber tipped pen
- 32 color plotter pens

Optimal Pen Speed / Pen Force

Set the conditions described below.

Water based fiber tipped pen/32 color plotter pens

- Optimal pen speed : 10—50 cm/sec (Set a low Pen Speed value to ensure clear plots with no faintness.)
- Optimal pen force : 30—60 gf

Thick water based fiber tipped pen

- Optimal pen speed : 10—50 cm/sec
- Optimal pen force : 35—120 gf

Pen Replacement

Pens will eventually wear out. Should the tip become rough, and produce scratchy lines, gradually increasing the pen force. If increasing the pen force does not help, the pen should be replaced.

Procedure for plotting

There are two types of plotting:

(A) Plot instead of cutting the sheet with a cutter.

(B) Plot with plotter CAD software (RD-GL I). (* RD-GL I and CAMM-GL III mode 2 are not 100% compatible.)

In general, there is no pen change in (A). In type (B) there may or may not be pen change.

- 1) Mount the pen in the tool carriage (see page 7 “1-4-2 Installing a Blade”).
- 2) Load the paper, and close the front cover (see page 13 “When Using a Flat Sheet”).

3) (A) When pen change is not required

(plot data without pen changes, or plot data with pen changes which will be ignored)

When the top menu is displayed press the ◀ or ▶ keys and move the blinking cursor to the tool number at the left of the top line.

Use the ▲ and ▼ keys to display the tool number for the pen parameters you wish to use.

If there is already a tool number with parameters stored, then display a different tool number.

Press the ◀ or ▶ keys to move the blinking cursor to “*. ** mm”, and then change the value to “0.000 mm” with the ▲ and ▼ keys. The tool number display on the top line will change from “CUT” to “PEN”.

Use the ◀ or ▶ keys to move the blinking cursor to “** cm/s”, and change the value with the ▲ and ▼ keys. Press the ◀ or ▶ keys to move the blinking cursor to “** gf”, and change the value with the ▲ and ▼ keys. “** cm/s” and “** gf” should use values for the mounted pen, as per the section on “Optimal Pen Speed/Pen Force”.

Press (ENTER) and fix the settings.

Press the (MENU) key. Use the ◀ or ▶ keys to move the blinking cursor to “SUBMENU” on the right of the bottom line, and press (ENTER). Use the ◀ or ▶ keys to move the blinking cursor to “WEIGHT” and press (ENTER). Use the ◀ or ▶ keys to move the blinking cursor to “LIGHT”, and press (ENTER) to save the setting.

Press (MENU) and return to the last screen. Use the ◀ or ▶ keys to move the blinking cursor to “UPSPEED” and press (ENTER). Change the value with the ▲ and ▼ keys, and press (ENTER) to save the setting.

Top menu

1 CUT	50cm/s
0.250mm	30gf



5 PEN	50cm/s
0.000mm	30gf

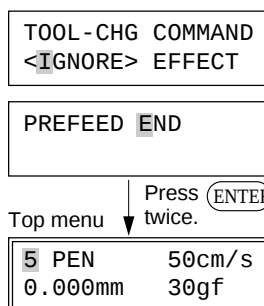
SHEET WEIGHT
<LIGHT> HEAVY

UP SPEED
<50cm/s>

Press **(MENU)** twice. Use the **◀** or **▶** keys to move the blinking cursor to “TOOL-CHG” and press **(ENTER)**. Use the **◀** or **▶** keys to move the blinking cursor to “IGNORE” and press **(ENTER)** to save the setting.

Press **(MENU)** three times, and when the screen shown to the right is displayed use the **◀** or **▶** keys to move the blinking cursor to “END”. Press **(ENTER)**. Press **(MENU)** once to return to the top menu.

This completes storage of the pen plotting parameters in the tool number. Because there is no pen change, leave this tool number displayed.



(B) When there is pen change (plot data with pen change)

Set the PNC-1850/1200 plotting parameters to match the software settings for the pen number.

For example, if eight pens are to be used in plotting, set pen parameters 1 through 8 in the software (or driver) to match the PNC-1850/1200 tool numbers.

With a water-based fiber-tipped black 0.3 mm marker set as tool number 1, match the software (or driver) settings for pen number 1 to it. In the same way, set the plot parameters for tool number 1 on the PNC-1850/1200 to a water-based fiber-tipped pen. With a thick (2.0 mm) black water-based fiber-tipped pen as tool number 2, match the software (or driver) settings for pen number 2 to it. In the same way, set the plot parameters for tool number 2 on the PNC-1850/1200 to a thick water-based fiber-tipped pen. DO the same for the other 6 pens as well.

Set the software (or driver) pen number parameters for each pen, then perform the following operations:

When the top menu is displayed press the **◀** or **▶** keys and move the blinking cursor to the tool number at the left of the top line.

Use the **▲** and **▼** keys to display the tool number for the pen parameters you wish to use. If you wish to save existing tool number parameters, then display a different tool number.

Press the **◀** or **▶** keys to move the blinking cursor to “*. ** mm”, and then change the value to “0.000 mm” with the **▲** and **▼** keys. The tool number display on the top line will change from “CUT” to “PEN”.

Use the **◀** or **▶** keys to move the blinking cursor to “** cm/s”, and change the value with the **▲** and **▼** keys. Press the **◀** or **▶** keys to move the blinking cursor to “** gf”, and change the value with the **▲** and **▼** keys. “** cm/s” and “** gf” should use values for the mounted pen, as per the section on “Optimal Pen Speed/Pen Force”.

Press **(ENTER)** and save the settings.

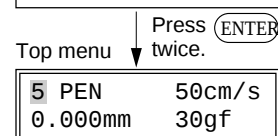
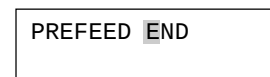
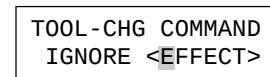
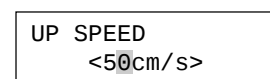
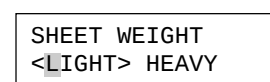
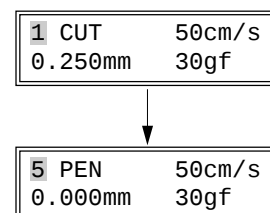
Press the **(MENU)** key. Use the **◀** or **▶** keys to move the blinking cursor to “SUBMENU” on the right of the bottom line, and press **(ENTER)**. Use the **◀** or **▶** keys to move the blinking cursor to “WEIGHT” and press **(ENTER)**. Use the **◀** or **▶** keys to move the blinking cursor to “LIGHT”, and press **(ENTER)** to fix the setting.

Press **(MENU)** and return to the last screen. Use the **◀** or **▶** keys to move the blinking cursor to “UPSPEED” and press **(ENTER)**. Change the value with the **▲** and **▼** keys, and press **(ENTER)** to save the setting.

Press **(MENU)** twice. Use the **◀** or **▶** keys to move the blinking cursor to “TOOL-CHG” and press **(ENTER)**. Use the **◀** or **▶** keys to move the blinking cursor to “EFFECT” and press **(ENTER)** to save the setting.

Press **(MENU)** three times, and when the screen shown to the right is displayed use the **◀** or **▶** keys to move the blinking cursor to “END”. Press **(ENTER)**. Press **(MENU)** once to return to the top menu.

This completes storage of the pen plotting parameters in the tool number. Repeat the process for the remaining tool numbers.

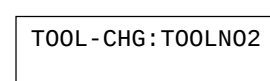


4) When plot data is sent from the computer, plotting will start.

When tool change is used - When “TOOL-CHG” is set to “EFFECT” and a pen change command is sent from the computer, the right message will be displayed, and all operation will halt.

When this message is displayed and the tool must be changed, open the front cover, and insert the appropriate pen into the tool carriage. Press **(ENTER)** and plotting will restart.

If tool change is not required, press **(ENTER)** when the message is displayed and plotting will restart.



2-6 WHAT TO DO IF....

2-6-1 What to do if....

PNC-1850/1200 troubleshooting

Are the computer and the PNC-1850/1200 connected correctly?

Correctly connect the computer and the PNC-1850/1200 (see “1-4-1 Installation and Connections” on page 6).

Are the computer and the PNC-1850/1200 linked with the right cable ?

The type of cable you need is determined by your computer and the software you are using. Even if the computer is the same, running different software may require a different cable. Use the cable specified in your software.

Is the PNC-1850/1200 power on ?

Turn on the power.

Is the PNC-1850/1200 in the temporary halt state ? Is operation paused?

If the PAUSE LED lights up and the (ENTER) key is pressed during cutting, and the message appears on the display, the unit is paused (refer to “Pausing Cutting Operations” on page 16).

To resume cutting, press (PAUSE).

To abort cutting, first stop the flow of cutting instructions from the computer. Then press (ENTER). This stops cutting.

CONT->PAUSE STOP->ENTER

Is the interface setting correct?

At the display menu, make the correct setting for the interface connecting the computer and the PNC-1850/1200 (refer to “1-4-4 Selecting the Interface” on page 14).

If connected via the serial port, do the communication parameters for the PNC-1850/1200 match those of the computer ?

At the display menus, make the correct settings for the communication parameters (refer to “1-4-4 Selecting the Interface” on page 14).

Is the front cover closed?

Close the front cover when performing cutting (see “1-4-3 Loading a Sheet” on page 8).

Is the computer set up correctly ?

Check the following items:

- DIP switches
- Memory switches
- Interface board
- Communication parameters
- Other settings

Read the computer user’s manual and set it up correctly.

Is the OS set up correctly ?

Check the following items:

- Output port selection
- Output device selection
- Output port open
- Communication Parameters
- Other settings

Check the OS’s user’s manual and set it up correctly.

Are the application software settings correctly ?

Check the following items:

- Output device specifications (select a device name that matches the instruction system.
If the wrong device is selected an incorrect instruction may be output, resulting in an error).
- Communication Parameters
- Other settings

Check the software user’s manual and set it up correctly.

The power does not come on.

Is the power cord connected correctly?

Connect the power cord included with the PNC-1850/1200 to the unit, and plug the other end securely into an electrical outlet (see “1-4-1 Installation and Connections” on page 6).

Is the PNC-1850/1200 power on ?

Turn on the power (see “Turning on the Power” on page 9).

If the message

PINCH ROLLER UP

appears on the display

This is displayed when the sheet type is selected on the “SELECT SHEET” menu, and the movable pinch rollers (left and right) are lifted.

Check that a sheet is loaded, lift the sheet loading lever, and lower the left and right movable pinch rollers. When the movable pinch rollers are lowered, the display message will change to “SELECT SHEET.”

If the message

Change Pinch
Roller Position

appears on the display

the location of one or more of the pinch rollers is not correct.

If this happens, raise the sheet loading levers and move the pinch rollers to the proper positions above the grit rollers.

Reposition the sheet to match this new alignment, then lower the sheet loading levers to hold the sheet in place.

If the message

COVER OPEN

appears on the display

This is displayed when the sheet type is selected on the “SELECT SHEET” menu, and the front cover opened.

Close the front cover and the display message will change to “SELECT SHEET.”

If the message

COVER OPEN
Power ON Again

appears on the display

This is displayed when the front cover is opened during cutting. Cutting operation is halted, and the message is displayed on the screen.

To clear the error, turn off the power. Even if the front cover is closed again, cutting will not be repeated unless the power is turned off and then back on again. For cutting of interrupted data use the following procedure

- 1) Turn the power off and back on again to clear the error, and check that cutter and sheet are correctly mounted.
- 2) Refer to Setting the origin point “Setting the origin point” on page 25, and set the origin where you wish to cut.
- 3) Send a cut command from the computer to start cutting.

If the message

Motor Error
Power ON Again

appears on the display

Shows motor error status.

This is displayed when the PNC-1850/1200 is heavily loaded, such as during a paper jam, when heavy stock is cut across a long distance without initial sheet feed, or when the sheet is abruptly pulled from the roll during cutting.

In this case, turn the power off and back on again (if a paper jam has occurred, clear the jam before turning the power back on).

For large cutting data with a roll sheet, use the “AREA” function on the display menu to feed the roll sheet by the length of the cut (ensure a small margin by setting a length that is about 0.1 m longer than the cutting data).

When using heavy stock, set the display menu “WEIGHT” to “HEAVY” (see “SHEET WEIGHT Cutting thicker sheets” on page 25).

If the above message is displayed even after “WEIGHT” is set to “HEAVY,” turn the power off and then back on again, and reduce the “**cm/s” value in the display menu. See “** cm/s Setting cutting speed” on page 23.

The sheet is not cut properly

Are the blade and blade holder installed correctly and securely ?

Install these so that there is no looseness (see “1-4-2 Installing the cutter” on page 7).

Is the blade chipped ?

If it is, replace it with a new one (see “1-4-2 Installing the cutter” on page 7).

Check if there are any dirty deposits on the blade.

If dirty, remove and clear the blade.

Are blade speed, blade compensation, and cutting speed appropriate for the sheet being cut?

Perform a cutting test and use the display menu to select the appropriate values (refer to “1-4-5 Cutting Test” on page 15).

Is a thick sheet being used?

If you are using a thick sheet, use the display menu to set “SHEET WEIGHT” to “HEAVY” (refer to “SHEET WEIGHT Cutting thicker sheets” on page 25).

The sheet slips away from the pinch rollers during the cutting process

Are the sheet loading lever on both the left and right sides raised?

If a sheet loading lever has not been raised, then the sheet has not been secured in place. Make sure that the pinch rollers on the left and right sides are within the boundaries of the sheet, and raise the sheet loading levers. (Refer to “1-4-3 Loading the Sheet” in on page 8).

Make sure the sheet is parallel with the grit roller.

If the front edge of the sheet you are working with is at an angle, cut off the odd-shaped part to make it straight, then align it so that it is parallel with the grit roller.

If the sheet is fed for a long distance, the sheet will be less likely to slip out of alignment if the pinch rollers are moved inward slightly (5 to 25 mm).

When a roll sheet is loaded, use the display menu “AREA” function to feed a sheet by the length to be used (ensure a small margin by setting a length that is about 0.1 m longer than the cutting data), make sure the pinch rollers are still in contact with the sheet (not off the left or right edges, or on the edges), and then cut.

If the sheet is pulled while cutting it is more likely that sheet misalignment and motor errors will occur.

If a sheet with holes for sprocket feed is being used, placing the pinch roller above the hole portion may cause the sheet to slip. Be sure to set the pinch roller over the sheet to the inner side of the hole portion.

If a flat sheet (such as a standard-size sheet or cut sheet) has been loaded, has the “PIECE” setting been selected for the sheet type?

When loading the sheet, select “PIECE” for the “SELECT SHEET” display menu (refer to “1-4-3 Loading a Sheet” on page 8).

Make sure that the left and right edges of the sheet do not touch the inner surfaces, front cover and guard bars of the PNC-1850/1200 during cutting. Such contact may not only damage the sheet, but could also make normal sheet advancing impossible and cause the sheet to slip.

2-6-2 Error messages

An error message will appear if incoming data has any of the errors listed in table. Since the error is shown in the display for informational purposes, the data transfer continues and you are allowed to perform the next operation.

To get the error message to go away, press the **(MENU)** key.

Note that even though the error message is no longer displayed after you press the **(MENU)** key, the PNC-1850/1200 will retain in memory the fact that the error occurred. To clear the error internally, you can give the default instruction, IN; or the error code output instruction, OE. (The error can be cleared by turning the power off.)

The error messages and their meanings are as follows:

Error message	Meaning
Er1:Command Not Recognized	Appears if an instruction that the PNC-1850/1200 cannot interpret is sent. This error is generated if an instruction from the "mode2" set is sent when the unit has been set to recognize "mode1," or viceversa. Change the setting for the recognized instruction set, using the control panel, and this error should no longer occur.
Er2:Wrong Number of Parameters	Appears if the number of parameters differs from the permissible number.
Er3:Out of Parameter range	Appears if the value specified for a parameter is out of the permissible range.
Er5:Unknown Character Set	Appears if an unusable character is specified.
Er10:Output Request Overlap	Appears if an output instruction is sent from the computer during execution of a previous output instruction. More precisely, there is a certain amount of delay between the moment an output instruction is given and the instant actual output begins. This error message appears if the new output request arrives during this delay time. (The delay time can be set using the [ESC].M instruction.)
Er11:Command Not Recognized	Appears if a device control instruction that the PNC-1850/1200 cannot interpret is sent.
Er12:Wrong Parameter	Appears if an invalid parameter has been specified for a device control instruction.
Er13:Out of Parameter range	Appears if the value for a device control instruction parameter exceeds the permissible limit.
Er14:Termination Error	Appears if the number of parameters for a device control instruction is more than that permissible.
Er15:Framing/ Parity Error	Appears if a framing error, parity error, or overrun error occurs at the time of data reception.(There is a problem with one of these settings: Baud Rate, Parity, Stop Bits, or Data Bits. The protocol settings for the PNC-1850/1200 must be made correctly in order to match the settings your computer is set to use.)
Er16:Buffer Overflow	Appears if the I/O buffer has overflowed.(There is a problem with the connecting cable, or the settings for Handshaking. Make sure you are using a cable appropriate for the computer being used. Also, check that the setting for Handshaking is correct.)
Er18: Indeterminate	Appears if a communication error other than "Er10" through "Er16", one uninterpretable by the PNC-1850/1200, occurs during data communications.

2-7 LIST OF CAMM-GL III INSTRUCTIONS

* 1: $-(2^{26}-1) \sim +(2^{26}-1)$

* 4: $-(2^{26}-1)\% \sim +(2^{26}-1)\%$

* 2: $0 \sim +(2^{26}-1)$

* 5: $0\% \sim +(2^{26}-1)\%$

* 3: $-(2^{26}-1)^{\circ} \sim +(2^{26}-1)^{\circ}$

mode 1

Instruction	Format	Meaning of Parameter	Range ([] is default)	Explanation
H	H	None		Move to User Origin
D	D x1, y1..., xn, yn	xn: Absolute X-axis coordinate yn: Absolute Y-axis coordinate	*1 *1	Cut Absolute Line
M	M x1, y1...xn,yn	xn: Absolute X-axis coordinate yn: Absolute Y-axis coordinate	*1 *1	Tool-up to Absolute Coordinate Point
I	I Δx1, Δy1...,Δxn, Δyn	Δxn: Relative X-axis coordinate Δyn: Relative Y-axis coordinate	*1 *1	Cut Relative Line
R	R Δx, Δy	Δxn: Relative X-axis coordinate Δyn: Relative Y-axis coordinate	*1 *1	Tool-up Move to Relative Coordinate Point
L	L p	p: Line pattern	-5 — +5 [0]	Specify Line Type
B	B l	l: Pitch length	*2 [1.5% of (P2-P1)]	Specify Broke Line Pitch
X	X p,q,r	p: Coordinate axis q: Tick interval r: Number	0, 1 *1 1—32767	Plot Coordinate System
P	P c1c2...cn	cn: Character		Plot Character
S	S n	n: Character size	0—127 [61]	Set Character Size
Q	Q n	n: Rotation angle (90° as a unit)	0 — 3 [0]	Specify Character Rotate Angle
N	N n	n: Number of special symbol	1—15	Plot Special Symbol
C	C x, y, r, Ø1, Ø2,(Ød)	x, y: Center coordinates r: Radius Ø1•Ø2: Start angle • End angle Ød: Chord tolerance	*1 *1 *1 *1 [5°]	Cut Arc
E	E r, Ø1, Ø2,(Ød)	r: Radius Ø1•Ø2: Start angle • End angle Ød: Chord tolerance	*1 *1 *1 [5°]	Cut Arc from Tool Position
A	A x, y	x: Center x coordinate y: Center y coordinate	*1 [0] *1 [0]	Specify G & K Center Coordinate
G	G r,Ø1, Ø2,(Ød)	r: Radius Ø1: Start angle Ø2: End angle Δd: Chord tolerance	*1 *1 *1 *1 [5°]	Cut Arc Around A-Instruction Center
K	K n, l1, l2	n: Division line angle l1: Division line end point distance l2: Division line start point distance	*1 *1 *1	Plot Division Line
T	T n, x, y, d, t	n: Hatching pattern x, y: Rectangle size d: Hatching spacing t: Hatching angle	0—3 *1 *1 1—4	Plot and Hatch Rectangle
^	[mode 2 instruction] [parameter]..., [parameter] [terminator]			Call mode 2

mode 2

Instruction	Format	Meaning of Parameter	Range ([] is default)	Explanation
AA	AA x,y,Øc(,Ød);	x, y: Absolute center coordinates Øc: Center angle Ød: Chord tolerance	*1 *1 *1 [5°]	Arc Absolute
AR	AR Δx, Δy,Øc(,Ød);	Δx, Δy: Relative center coordinates Øc: Center angle Ød: Chord tolerance	*1 *1 *1 [5°]	Arc Relative
CA	CA n; CA;	n: Character set number	0—4, 6—9, 30—39 [0]	Alternate Character set
CI	CI r(,Ød);	r: Radius Ød: Chord tolerance	*1 *3 [5°]	Circle
CP	CP nx,ny; CP;	nx: Number of characters in X-axis direction ny: Number of characters in Y-axis direction	*1 *1	Character Plot
CS	CS n; CS;	n: Character set number	0—4, 6—9, 30—39 [0]	Standard Character Set
DF	DF;	None		Default
DI	DI run, rise; DI;	run: X-axis direction vector rise: Y-axis direction vector	*1 [1] *1 [0]	Absolute Direction
DR	DR run, rise; DR;	run: X-axis direction vector rise: Y-axis direction vector	*1 [1] *1 [0]	Relative Direction
DT	DT t;	t: Label terminator	[[ETX] (CHR\$(3))]	Define Label Terminator
EA	EA x, y;	x, y: Absolute XY coordinates of opposite angle of rectangle	*1	Edge Rectangle Absolute
ER	ER Δx, Δy;	Δx, Δy: Relative XY coordinates of opposite angle of rectangle	*1	Edge Rectangle Relative
EW	EW r, Ø1, Øc(,Ød);	r: Radius Ø1: Start angle Øc: Center angle Ød: Chord tolerance	*1 *3 *3 *3 [5°]	Edge Wedge
FT	FT n(d(,Ø)); FT;	n: Pattern d: Spacing Ø: Angle	1—5 [1] *2 [(P2x-P1x) x 0.01] *3 [0°]	Fill Type
IM	IM e; IM;	e: Error mask value	0—255 [223]	Input Mask
IN	IN;	None		Initialize
IP	IP P1x, P1y, P2x, P2y; IP;	P1x, P1y: XY coordinates of P1 P2x, P2y: XY coordinates of P2	*1 *1	Input P1 & P2
IW	IW LLx, LLy, URx, URy; IW;	LLx, LLy: lower left coordinates of window URx, URy: Upper right coordinates of window	*1 [0] *1	Input Window
LB	LB c1c2c3...cn [label terminator]	c: Character string		Label
LT	LT n(l); LT;	n: Pattern number l: 1 pitch length	0—6 [solid line] *5 [1.5%]	Line Type
OA	OA;	None		Output Actual Point
OC	OC;	None		Output Commanded Position
OE	OE;	None		Output Error
OF	OF;	None Executing OF outputs "40, 40 [TERM]".		Output Factor
OH	OH;	None		Output Hard-Clip Limits
OI	OI;	None Executing OI outputs "1850 [TERM]" on the PNC-1850 or "1200 [TERM]" on the PNC-1200.		Output Identification
OO	OO;	None When the PNC-1850/1200 receives an OO instruction from the computer, "0,0,0,0,1, 0,0,0 [TERM]" is output. The "1" in this output indicates that circle and arc commands have been loaded.		Output Option Parameter
OP	OP;	None		Output P1 & P2
OS	OS;	None		Output Status
OW	OW;	None		Output Window
PA	PA x1, y1(...xn, yn); PA;	xn, yn: Absolute XY coordinates	*1	Cut Absolute
PD	PD x1, y1(...xn, yn); PD;	xn, yn: XY coordinates	*1	Tool Down
PR	PR Δ1, Δy1(...Δxn, Δyn); PR;	Δxn, Δyn: Relative XY coordinates	*1	Cut Relative

Instruction	Format	Meaning of Parameter	Range ([] is default)	Explanation
PT	PT d; PT;	d: Pen thickness (mm)	0.1—5.0 mm [0.3 mm]	Pen Thickness
PU	PU x1, y1(...xn, yn); PU;	xn, yn: XY coordinates	*1	Tool Up
RA	RA x, y;	x, y: Absolute XY coordinates of opposite angle of rectangle	*1	Shade Rectangle Absolute
RO	RO n; RO;	n: Rotation angle	0 and 90 [Value set by control panel]	Rotate Coordinate System
RR	RR Δx, Δy;	Δx, Δy: Relative XY coordinates of opposite angle of rectangle	*1	Shade Rectangle Relative
SA	SA;	None		Select Alternate Set
SC	SC Xmin, Xmax, Ymin, Ymax; SC;	Xmin, Ymin: User XY coordinates of P1 Xmax, Ymax: User XY coordinates of P2	*1 *1	Scaling
SI	SI w, h; SI;	w: Character width (cm.) h: Character height (cm.)	-128—+127.99999 [3.8 cm] -128—+127.99999 [5 cm]	Absolute Character Size
SL	SL tanØ; SL;	tanØ: Character slant	*1 [0]	Character Slant
SM	SM s; SM;	s: Character or symbol	*4 [Clears symbol mode]	Symbol Mode
SR	SR w, h; SR;	w: Character width (%) h: Character height (%)	*1 [3.8%] *1 [5%]	Relative Character Size
SS	SS;	None		Select Standard Set
SP	SP n; SP;	n: Tool number	0—8 (0: ignored) [Value set by control panel]	Tool Select
TL	TL lp(,lm); TL;	lp: Tick length in positive direction lm: Tick length in negative direction	*4 [0.5%] *4 [0.5%]	Thick Length
UC	UC (c,)Δx, Δy,(c,).....,Δxn, Δyn; UC;	c: Tool control value Δxn: Units of movement in X-axis direction Δyn: Units of movement in Y-axis direction	-(67108863)—99, +99—+(67108863) -99<Δxn<+99 -99<Δyn<+99	User Defined Character
VS	VS v; VS;	v: Tool speed (cm/sec.)	1—85 cm/sec. [Value set by control panel]	Velocity Select
WD	WD c1c2... cn [label terminator] WD [label terminator]	cn: Character	[CHR\$(32)—CHR\$(127), CHR\$(160)—CHR\$(223)]	
WG	WG r, Ø1, Øc(,Ød);	r : Radius Ø1 : Start angle Øc : Center angle Ød : Chord tolerance	*1 *3 *3 *3 [5°]	Shade Wedge
XT	XT;	None		X-Tick
YT	YT;	None		Y-Tick

mode 1, mode 2 common instruction

Instruction	Format	Meaning of Parameter	Range ([] is default)	Explanation
!FS	!FS f [terminator]	f	30—500g (in increments of 10g) [Value set by control panel]	Force Select
!NR	!NR [terminator]	None		Not Ready
!PG	!PG n [terminator]	n:	-24998—+24998 mm	Page Feed
!ST	!ST n [terminator]	n:	0, 1 [Value set by control panel]	Select Tool

2-8 DEVICE CONTROL INSTRUCTIONS

Device control instructions are used to determine the communication sequence between the PNC-1850/1200 and computer through RS-232C interface and/or tell the PNC-1850/1200 the current computer state. Among them, some device control instructions set the output specifications of mode 2 instructions.

Each device control instruction is organized with three letters: ESC (1Bh), “.” and one uppercase letter. Device control instructions are of two types: one with parameters and the other without parameters.

Parameters can be omitted. A semicolon “;” is used as a delimiter to separate parameters if they are input in succession. A “,” without parameters means that parameters were omitted.

If parameters are omitted, the default value is set. For a device control instruction with parameters, a terminator needs to be input in order to signify the end of instructions. A colon “:” is used as the terminator which cannot be omitted.

Instruction	Format	Parameter	Range ([] is default)	Explanation
Handshake Instructions				
ESC .B Output Remaining Buffer Capacity	[ESC].B	None		Outputs the current remaining buffer capacity to the computer.
ESC .M Set Handshake Output Specifications (1)	[ESC].M<P1>;<P2>; <P3>;<P4>;<P5>;<P6>;	P1: Delay time P2: Output trigger character P3: Echo terminator P4: Output terminator P5: Output terminator P6: Output initiator	0—32767 (msec) [0 (msec)] [0 (Sets nothing)] [0 (Sets nothing)] [13 ([CR])] [0 (Sets nothing)] [0 (Sets nothing)]	Sets handshake output specifications. Note: When you specify some values to <P4> and <P5>, always set 0 to <P6>. When you specify some value to <P6>, always set 0 to <P5>.
ESC .N Set Handshake Output Specifications (2)	[ESC].N<P1>;<P2>; <P3>; ;<P11>;	P1: Intercharacter delay P2-P11 : Xoff character (for Xon/Xoff) Immediate response character (for ENQ/ACK)	0—32767 (msec) [0 (msec)] [All 0 (Sets nothing)]	Sets an intercharacter delay, and also an Xoff character for performing the Xon/Xoff handshake.
ESC .H Sets ENQ/ACK Handshake Mode1	[ESC].H<P1>;<P2>; <P3>; ;<P12>;	P1: The number of bytes for data block P2: ENQ character P3-P12 : ACK character (only when <P2> is set)	0—15358 (byte) [80 (byte)] [0 (Sets nothing)] [All 0 (Sets nothing)]	When receiving the ENQ character set by <P2>, compares the value set by <P1> and the remaining buffer capacity, and returns the ACK character to the host computer when the remaining buffer capacity is larger. The [ESC].H with no parameter performs a dummy handshake.
ESC .I Set Xon/Xoff Handshake and ENQ/ACK Handshake Mode2	[ESC].I<P1>;<P2>; <P3>; ;<P12>;	P1: Limit of the remaining buffer capacity (for Xon/Xoff) The number of data block bytes (for ENQ/ACK (mode2)) P2: ENQ character (for ENQ/ACK (mode2)) 0 (for Xon/Xoff) P3-P12 : Xon character(for Xon/Xoff) ACK character (for ENQ/ACK (mode2))	0—15358 (byte) [80 (byte)] [0 (Sets nothing)] [All 0 (Sets nothing)]	Used for performing the Xon/Xoff handshake and the ENQ/ACK handshake mode 2. The [ESC].I instruction with no parameter performs a dummy handshake. In a dummy handshake, always returns the ACK character to the host computer, regardless of the remaining buffer capacity, when receiving the ENQ character.
ESC .@ Controls DTR	[ESC].@ P1;P2:	P1: Ignored P2: DTR signal control	0—255 [1]	Controls the DTR signal (No. 20 pin of RS-232C). An even number parameter (e.g. 0) always sets the DTR signal to High without performing the hardware handshake. An odd number parameter (e.g. 1) performs the hardware handshake and controls the DTR signal according to the remaining buffer capacity.

Instruction	Format	Parameter	Range ([] is default)	Explanation										
Status Instructions														
ESC .O Outputs the Status of Buffer, Pause	[ESC].O	None		Outputs the status codes of PNC-1850/1200 shown in the table below. <table><tr><th>Code</th><th>Meaning</th></tr><tr><td>0</td><td>Data remaining in buffer.</td></tr><tr><td>8</td><td>Buffer empty.</td></tr><tr><td>16</td><td>Data remaining in buffer. PNC-1850/1200 being paused (Pause On being displayed).</td></tr><tr><td>24</td><td>Buffer empty. PNC-1850/1200 being paused (Pause On being displayed).</td></tr></table>	Code	Meaning	0	Data remaining in buffer.	8	Buffer empty.	16	Data remaining in buffer. PNC-1850/1200 being paused (Pause On being displayed).	24	Buffer empty. PNC-1850/1200 being paused (Pause On being displayed).
Code	Meaning													
0	Data remaining in buffer.													
8	Buffer empty.													
16	Data remaining in buffer. PNC-1850/1200 being paused (Pause On being displayed).													
24	Buffer empty. PNC-1850/1200 being paused (Pause On being displayed).													
ESC .E Output RS-232C Error Code	[ESC].E	None		Upon reception of this instruction, the PNC-1850/1200 will output the error codes related to data transmission (RS-232C.) At the same time, it displays an error and clears (clear the 5th bit of the status byte.) For information on displayed error messages, refer to "2-6-2 Error Messages."										
ESC .L Output I/O buffer size	[ESC].L	None		PNC-1850/1200 outputs the size of the I/O buffer to the computer when receiving this instruction. It usually outputs 1024 (bytes).										
Abort Instructions														
ESC .J Abort Device Control Instruction	[ESC].J	None		Aborts both the currently executed device control instruction and output.										
ESC .K Abort CAMM-GLIII Instruction	[ESC].K	None		Continues to execute the CAMM-GL III instruction in operation, aborts other incoming CAMM-GL III instructions and clears the data buffer.										
ESC .R Initialize Device Control Instruction	[ESC].R	None		Initializes all settings established by the device control instructions. Execution of [ESC].R brings the same states as the following device control instructions are executed. [ESC].J, [ESC].M.; [ESC].N.; [ESC].H.; [ESC].I: and [ESC].@:										

Appendices

Appendix 1 CHARACTER SETS



Automatic backspace

Appendix 2 LIST OF OPTIONS

Option name	Product number	Description
Special stand for the PNC-1200	PNS-121	Special stand for the PNC-1200 -- 1 set
Spare blade (for standard vinyl sheet)	ZEC-U1005	Cemented carbide blades (5 pieces -- 1 set)
Spare blade (for thick, fluorescing vinyl sheet)	ZEC-U5025	Cemented carbide blades (5 pieces -- 1 set)
Spare blade (for sandblast stencil)	ZEC-U1715	Cemented carbide blades (5 pieces -- 1 set)
Blade holder	XD-CH1	Blade holder (1 piece)
Adjustable depth blade holder	XD-CH2	Blade holder (1 piece)
Water-based fiber-tipped pens	XD-4SPA-WNG XD-4SPB-WNG XD-4SPC-WNG XD-4SPA-WWG XD-4SPB-WWG XD-4SPC-WWG	0.3 mm 4 black 0.3 mm one each-black, red, blue, and green 0.3 mm one each-orange, pink, blown, and violet 0.6 mm 4 black 0.6 mm one each-black, red, blue, and green 0.6 mm one each-orange, pink, blown, and violet
Thick water-based fiber-tipped pens	XD-4SPA-WBG XD-4SPB-WBG XD-4SPC-WBG XD-4SPD-WBG XD-4SPE-WBG XD-4SPF-WBG XD-4SPG-WBG XD-4SPH-WBG XD-4SPI-WBG XD-4SPJ-WBG	2.0 mm 4 black 2.0 mm one each-black, red, blue, and green 2.0 mm one each-orange, pink, blown, and violet 2.0 mm 4 red 2.0 mm 4 blue 2.0 mm 4 green 2.0 mm 4 orange 2.0 mm 4 pink 2.0 mm 4 blown 2.0 mm 4 violet
32 color plotter pens (0.3 mm)	XR-2P1A-WN—XR-2P8A-WN XR-2P1B-WN—XR-2P8B-WN XR-2P1C-WN—XR-2P8C-WN XR-2P1D-WN—XR-2P8D-WN	Fiber tip pen (0.3 mm) x 2 in 1 color
32 color plotter pens (0.6 mm)	XR-2P1A-WW—XR-2P8A-WW XR-2P1B-WW—XR-2P8B-WW XR-2P1C-WW—XR-2P8C-WW XR-2P1D-WW—XR-2P8D-WW	Fiber tip pen (0.6 mm) x 2 in 1 color

Appendix 3 SPECIFICATIONS

	PNC-1850	PNC-1200
Mechanism	Media-movement method	
Driving method	Digital control servo motor	
Maximum cutting area	Width: 1195 mm (47") Length: 24998 mm (984-1/8")	Width: 585 mm (23") Length: 24998 mm (984-1/8")
Acceptable sheet widths	50 mm—1220 mm (1-15/16"—48")	50 mm—762 mm (1-15/16"—30") (*)
Acceptable paper widths	50 mm—1220 mm (1-15/16"—48")	50 mm—762 mm (1-15/16"—30") (*)
Acceptable paper types	High-quality paper	
Number of tools	1	
Tools	Cutters: special cutter for CAMM-1 series Pens: Water-based fiber-tipped pens, Thick water-based fiber-tipped pens (options) and 32 color plotter pens (options)	
Max. cutting speed	During cutting: 850 mm/sec. (in all directions) During tool-up: 1202 mm/sec. (in 45° direction)	
Cutting speed	10 mm/sec—850 mm/sec (in increments of 10 mm/sec.)	
Blade force	30 gf—500 gf (in increments of 10 gf)	
Mechanical resolution	0.005 mm/step (Minimum controllable resolution: 0.005 mm x 5 step = 0.025 mm/step)	
Software resolution	0.025 mm/step	
Distance accuracy	Error of less than +/- 0.2% of distance travelled, or 0.1mm, whichever is grater	
Repetition accuracy	0.1 mm or less (excluding stretching/contraction of the sheet) • Range for assured repetition accuracy (**) For sheets with a width exceeding 610 mm (24"): Length 4,000 mm (157-7/16") (PNC-1850 only) For sheets with a width of 610 mm (24") or less : Length 8,000 mm (315-15/16")	
Interface	Parallel (Centronics compatible), Serial (RS-232C)	
Buffer size	1 Mbyte (Expandable up to 3 Mbyte)	
Instruction system	CAMM-GL III (mode1 and mode2)	
Switches	Power switch	
Control switches	[ENTER], [MEN], [TEST], [PAUSE], [◀], [▶], [▲], [▼]	
LED	POWER LED, PAUSE LED	
Display	Liquid crystal display unit; 16-character by 2 lines	
Power consumption	1.1A/117V, 0.5A/220-230V, 0.5A/240V	
Acoustic noise level	Cutting mode: under 62dB (A) Standby mode: under 40dB (A) (According to ISO 7779)	
Dimensions	1540 mm (W) x 300 mm (D) x 285 mm (H) (60-11/16" (W) x 11-13/16" (D) x 11-1/4" (H)) (1540 mm (W) x 640 mm (D) x 1150 mm (H) (60-11/16" (W) x 25-1/4" (D) x 45-5/16" (H)) (with stand))	945 mm (W) x 300 mm (D) x 295 mm (H) (37-1/4" (W) x 11-13/16" (D) x 11-5/8" (H)) (945 mm (W) x 640 mm (D) x 1132 mm (H) (37-1/4" (W) x 25-1/4" (D) x 44-5/8" (H)) (with stand))
Weight	36.5 kg (80.5 lb.) (59 kg (130.1 lb.) (with stand))	25 kg (55.1 lb.) (43.5 kg (95.9 lb.) (with stand))
Temperature	5—40°C (41—104°F)	
Humidity	35%—80% (non-condensing)	

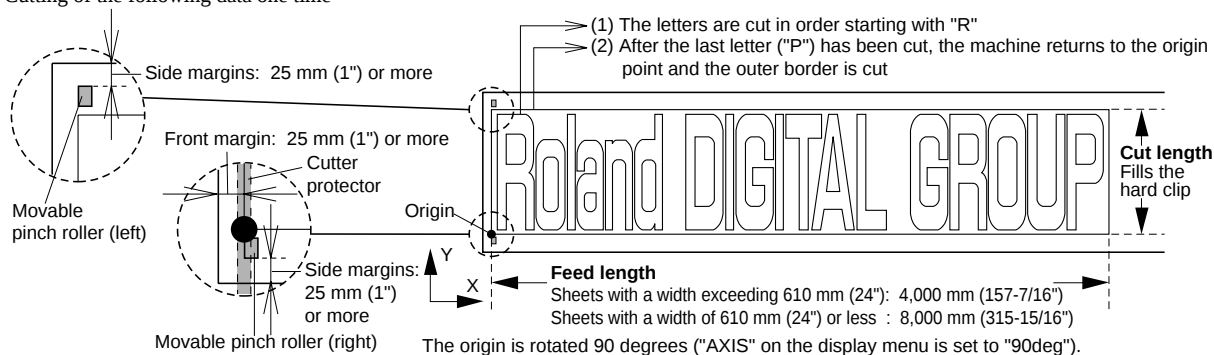
(*) However, a sheet (paper) with a width of 50 mm (1-15/16") to 762 mm (30") can be loaded only if it is a flat sheet (paper) or a rolled sheet (paper) with a sheet base. When using a stand (PNS-121), a rolled sheet (paper) with a width in the range of 50 mm (1-15/16") to 610 mm (24") can be loaded.

(**) The following conditions must be satisfied:

- Sheet type: 3M Scotchcal Mastercut Film, ARLON Series 2100
- Special stand (a roll sheet must be set at the rear and on the inner sheet hanger)
- Side margins: 25 mm (1") or more for both the left and right margins
- Front margin: 25 mm (1") or more

(After loading the sheet, using the display menu to select "EDGE" as the sheet type automatically sets a front margin of 25 mm (1").)

- Use of the display menu's "AREA" function to perform feed of the sheet length plus 0.2 m and set the sheet correctly
- Cutting of the following data one time

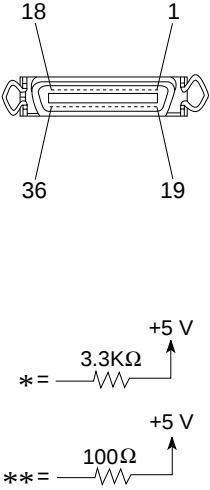


Interface Specifications

Parallel	
Standard	In compliance with the specifications of Centronics
Input signals	$\overline{\text{STROBE}}$ (1 BIT), DATA (8 BIT)
Output signals	BUSY (1 BIT), $\overline{\text{ACK}}$ (1 BIT)
Level of input/output signals	TTL level
Transmission method	Asynchronous
Serial	
Standard	RS-232C specifications
Transmission method	Asynchronous, duplex data transmission
Transmission speed	2400, 4800, 9600, 19200 (selected using panel keys)
Parity check	Odd, Even, or None (selected using panel keys)
Data bits	7 or 8 bits (selected using panel keys)
Stop bits	1 or 2 bits (selected using panel keys)
Handshake	DTR or Xon/Xoff (selected using panel keys)

Specification of the Parallel interface

Sinnal number	Terminal number	Sinnal number	Pin connection
NC	36	18	HIGH**
HIGH*	35	17	GND
NC	34	16	GND
GND	33	15	NC
HIGH*	32	14	NC
NC	31	13	HIGH*
GND	30	12	GND
	29	11	BUSY
	28	10	$\overline{\text{ACK}}$
	27	9	D7
	26	8	D6
	25	7	D5
	24	6	D4
	23	5	D3
	22	4	D2
	21	3	D1
	20	2	D0
	19	1	$\overline{\text{STROBE}}$



Specification of the Serial interface

Signal number	Terminal number	Signal number	Pin connection
NC	25	13	NC
NC	24	12	NC
NC	23	11	NC
NC	22	10	NC
NC	21	9	NC
DTR	20	8	NC
NC	19	7	SG
NC	18	6	DSR
NC	17	5	CTS
NC	16	4	RTS
NC	15	3	RXD
NC	14	2	TXD
	1	FG	

