Roland

DRAFTING PLOTTER

DPX-3700A
DPX-2700A

USER'S MANUAL

Roland DG Corporation

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.

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 Réglement des signaux parasites par le ministère canadien des Communications.

CE

ROLAND DG CORPORATION
1-6-4 Shinmiyakoda, Hamamatsu-shi, Shizuoka-ken, JAPAN 431-2103
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)

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.

Table of Contents

Thank you very much for purchasing the <DRAFTING PLOTTER> Model DPX-3700A/2700A.

- To ensure correct and safe usage with a full understanding of this product's performance, please be sure to read through this manual completely and store it in a safe location.
- Unauthorized copying or transferal, in whole or in part, of this manual is prohibited.
- The contents of this operation manual and the specifications of this product are subject to change without notice.
- 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.

Typographic Conventions

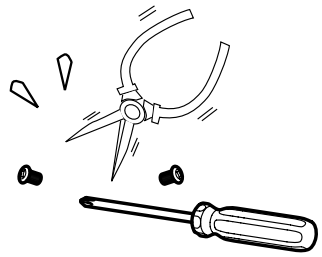
This manual uses certain typographic symbols, outlined below.

⚠ 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.

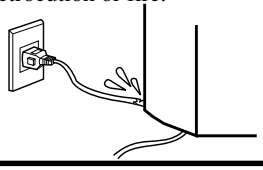
⚠ To Ensure Safe Use

⚠ WARNING
Never disassemble or modify this product.

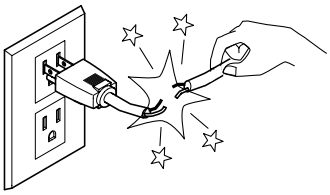


⚠ CAUTION
Handle the power cord with care.

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.

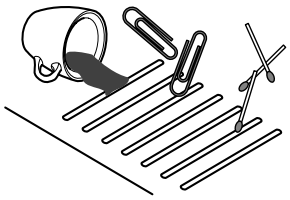


⚠ CAUTION
When pulling the power cord from an electrical socket, be sure to grip the plug.



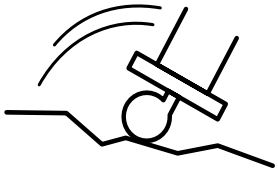
⚠ CAUTION
Do not allow liquids, metal objects or flammables inside the machine.

Fire or breakdown may result.

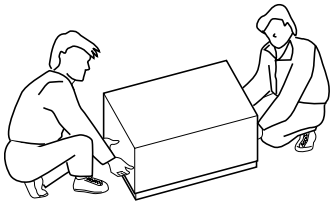


⚠ CAUTION
Install in a level and stable location.

The unit may tip over otherwise.

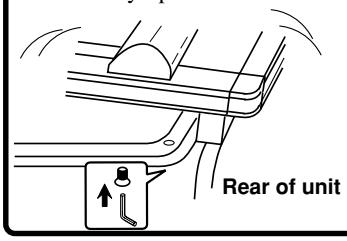


⚠ CAUTION
Unpacking, installation, and moving must be carried out by two or more persons.

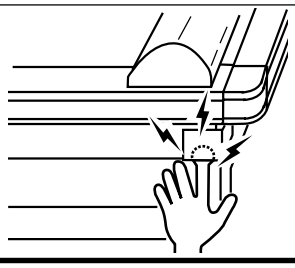


⚠ CAUTION
Use the joining screws to secure the unit to the stand.

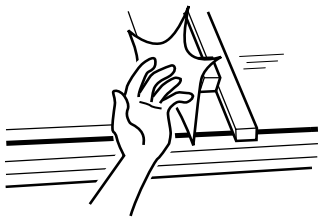
The unit may tip over unless secured.



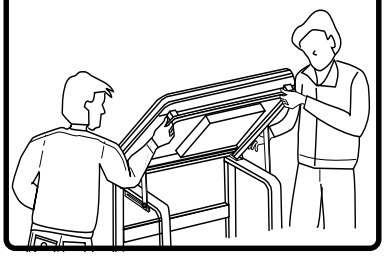
⚠ CAUTION
Use care to avoid pinching the fingers when placing the unit on the stand.



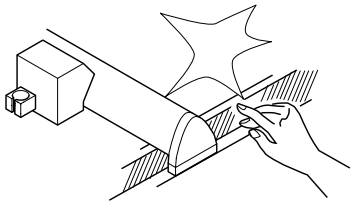
⚠ CAUTION
Do not inadvertently place the hands on the drawing board while in operation.



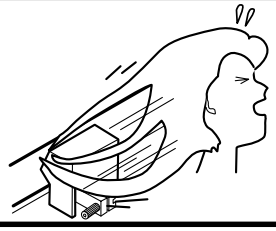
⚠ CAUTION
Tilting the stand is an operation that requires two or more persons to perform.



⚠ CAUTION
Do not insert the fingers into the space between the unit and rail.

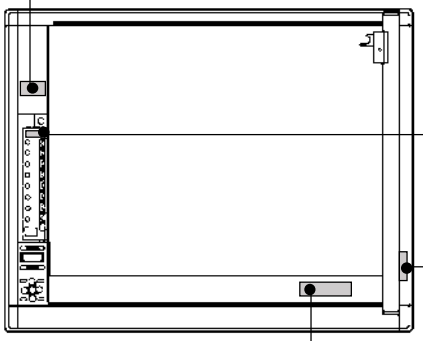


⚠ CAUTION
Do not inadvertently allow the hands, hair, or necktie near the Y rail while in operation.



⚠ 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.



作図動作中にペンストックのペンを交換しないでください。誤動作の原因になります。
ペン交換は、停止状態のとき行ってください。

Do not change pens in the pen stock during plotting – faulty operation may result.
Change pens only while stopped.

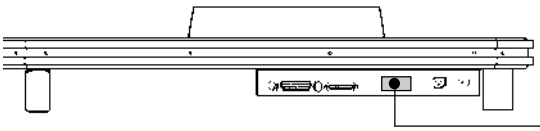
IMPORTANT

Use only pens supplied by this manufacturer. Such pens carry markings that are read by this device, allowing the Auto Pen Control feature to carry out plotting that is optimum for the situation. By using pens produced by other companies, you risk having the paper torn as a result of pen forces that are too strong, as well as risk breaking the tip off pens.

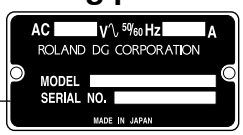
Do not insert the fingers into the space between the unit and rail.

⚠ CAUTION

- Be careful to never scratch the electrostatic paper hold bed with a pointed object (whether it be a pin, knife, screwdriver, whatever).
  By scratching the bed, not only can you cause a reduction in the quality of plots made, but doing so can be quite dangerous, since electrostatic energy at high-voltage courses through the bed.
- When you wish to clean the electrostatic paper hold bed after it becomes dirty, always use only methyl alcohol (industrial-use alcohol). Neutral detergents should never be used, since they will cause a deterioration in the paper holding ability of the bed.
  Methyl alcohol is flammable and is toxic. Read and follow the instructions supplied with it, and make sure to handle it properly.

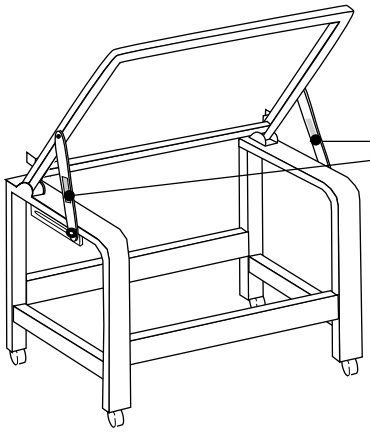


Rating plate



⚠ About the Labels Affixed to the Stand

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

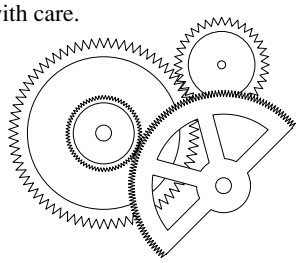


Do not allow the fingers to become caught between the stand and arm.

To Ensure Correct Use

NOTICE

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

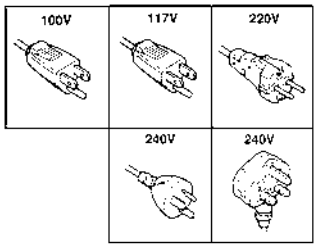


NOTICE

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

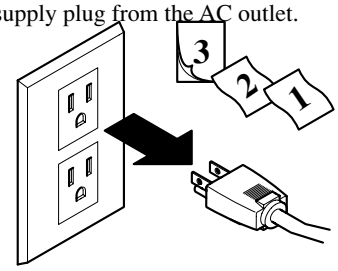
NOTICE

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



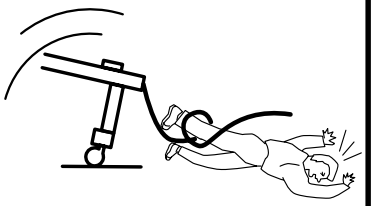
NOTICE

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



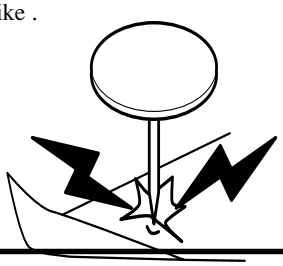
NOTICE

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



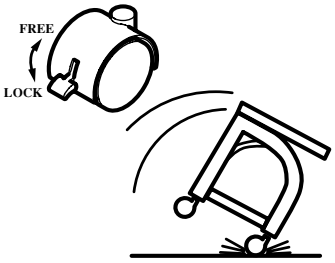
NOTICE

Do not attempt to secure paper or a sheet to the electrostatic adsorption board with tacks or the like .



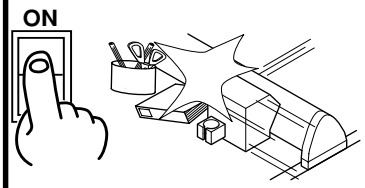
NOTICE

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



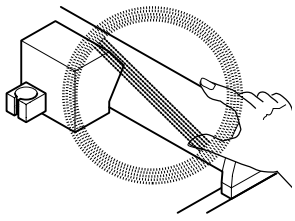
NOTICE

The rail moves simultaneously when the power is switched on. Do not place any object on the drawing board.



NOTICE

Do not grasp the Y-rail when moving the unit.



MEMO

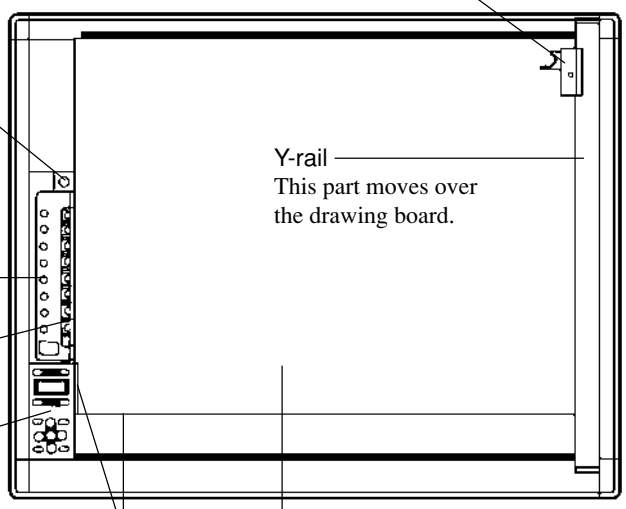
1 Checking Accessories

The following accessories are packed together with the main unit. Before using, be sure to check to make sure that all accessories have been included.

Power cord : 1
Standard ceramic pen (for self-test) : 1 set
Paper (for self-test) : 2
Transparent positioning sticker : 1 set
Dust cover : 1
User's manual : 1

2 Part Names and Functions

Front View



Pen carriage
Holds the pen when plotting.

Ejected lead stocker
When a pencil is used for plotting and the lead is very short, normal lead feed becomes impossible. This short lead will be automatically effected into the effected lead stocker.

Y-rail
This part moves over the drawing board.

Pen stand
Pens can be stored here.

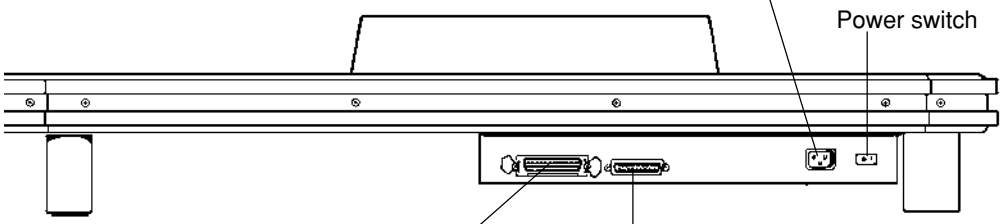
Pen stock
Pens are loaded here.

Control panel
Used to make various settings and operate the DPX.

Drawing board
Use electrostatic adhesion to secure the paper.

Paper guides
When setting the paper to match this guide, use the display menu to select [Guide] listed under [PaperSet].

Side View



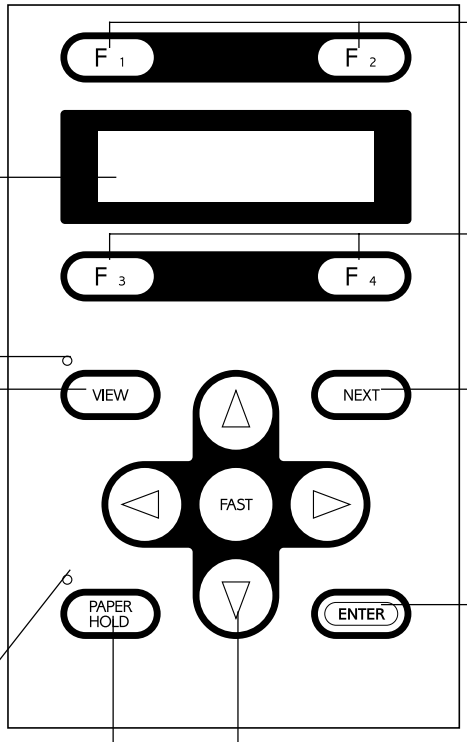
Power connector
Connects to the power cord included with the main unit.

Power switch

Parallel connector (Centronics specifications)
Used for connection to the computer with a parallel cable.

Serial connector (RS-232C)
Used for connection to the computer with a serial cable.

Control Panel



Display
Setting menus and error messages are displayed.

VIEW LED
This LED lights when the (VIEW) key has been pressed and the unit is paused.

(VIEW) key
By pressing the (VIEW) key, it is possible to move the pen carriage to the upper right of the drawing board and pause operation.
By pressing the (VIEW) key again, you can cancel the pause.

PAPER HOLD LED
Lights up during paper hold.

(PAPER HOLD) key
Causes paper to stick to the drawing board. This causes paper to stick to the drawing board.
This key is also pressed to release this adhesion.

(F 1), (F 2), (F 3) and (F 4) keys
Used to select display items.

(NEXT) key
Used to select the next menu on the display.

(ENTER) key
Used to set the value displayed for the item.

Position keys ((◄), (►), (▲), (▼) and (FAST))
Handles pen carriage movement.
Is the (FAST) key is held down and a cursor key pressed, the pen carriage will move quickly.

3 Setting Up and Connection

Setting Up

- Never install this unit in any of the following places, as it could result in damage:
  Places with excessive electrical noise. Places with excessive humidity or dust.
  Places with excessive vibration. Places exposed to strong illumination or direct sunlight.
- Do not allow the main unit to be dropped or subjected to strong shocks.

Use the DPX with the optional stand tilted upright (45°), or use the DPX on a flat surface.
For assembling an optional stand, see the assembly manual of the optional stand.

- Assembly and tilting of the optional stand must always be carried out by at least two persons. When tilting the optional stand, be very careful to avoid pinching your fingers.
- If the installation angle of the DPX has been changed after switching on the power, turn the DPX off and then on again.

Connection

- Always use a power supply with ±10% of the rated voltage.
- Always turn off the power to both the computer and the DPX before connecting or disconnecting cables.
- Cable are available as accessory items. Use only one which matches model of computer you use.
- Never connect or disconnect cables or power cords during operation, and make sure that all connections are secure.

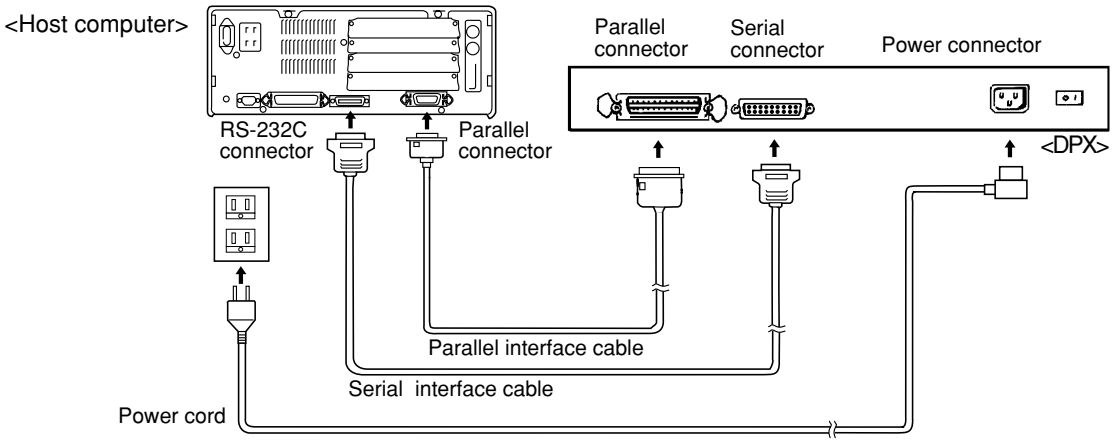
Use the provided power cord to connect the DPX and the power receptacle.

Parallel connection

Use the parallel interface cable to connect the parallel connector on the rear of the DPX with the parallel connector on the host computer. Secure the connectors in place with the lock pins on each end.

Serial connection

Use the serial interface cable to connect the serial connector on the rear of the DPX with the RS-232C connector on the host computer. Secure the connectors in place with the bolts provided on each end.
After its power has been switched on, the DPX can automatically determine and store in memory the type of interface used (and also the communication parameters, if a serial connection is used) according to the data that is downloaded from the computer. This means that there is no need to make these settings on the DPX for the type of interface (or for the communication parameters, if a serial connection is used).
If you want to change the type of interface being used, you must first turn off the power to the computer and the DPX, change the cable connections, and then again switch on the power to the computer and the DPX.



4 Loading the Pens

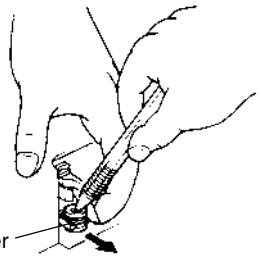
Pen cap rubber

Before loading the pens make sure that the pen cap rubbers are set correctly (The pen cap rubber is mounted on the pen stock when the plotter is packed). The pen cap rubbers help prevent the pen tips from drying out, but they will not perform optimally unless they are mounted correctly.
Pen cap rubbers have fronts and backs, and either may be used depending on the type of pen each protects.

32 Color Plotter Pens Water Based Fiber Tipped Pen Thick Water Based Fiber Tipped Pen Oil Based Pressurized Ball-Point Pen Front 	Non-refillable Ink Pen Refillable Ink Pen Standard Ceramic Pen Rear 
Multi-lead Pencil: Remove the pen cap rubber	

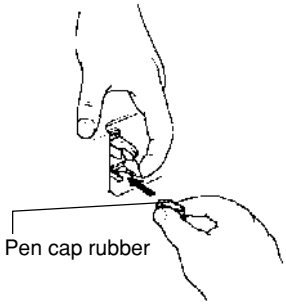
Removal

Pull the pen cap rubber off. They can be relatively easily removed from mechanical pencils and ballpoint pens.



Mounting

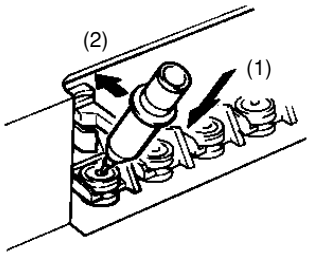
While pressing the pen cap rubber on with your fingers, snap it onto the holder.
Incorrect mounting may result in ink leakage and improper pen exchange.



Loading the Pens

(For additional information on pen types (options), refer to page 11.)

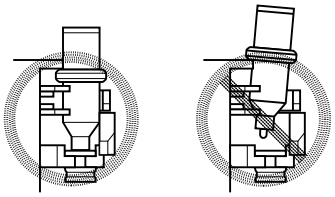
Load the pens in the pen stock. The pen stock can hold eight pens at a time. Remove the cap from the pen, then while pressing down on the pen cap rubber with the tip of the pen as shown in the figure, gently press the pen into place so that the round ridge on the pen goes into the groove on the pen stock.
When loading a super-fine ink pen, use one finger to keep the pen cap rubber held down while loading the pen in the pen stock. The pen tip may be bent if the pen is loaded with the pen tip pressing on the pen cap rubber.

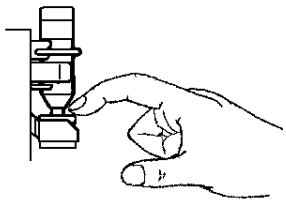


When using ink pen

Before loading into the pen stock, write lightly on a scrap of paper and check ink flow.

If the pen is not loaded correctly it will cause pen exchange errors. Be sure to load the pen correctly as shown below.





After mounting the pen, push the pen cap rubber down.

After use, remove the pens from the pen stock, cap securely, and store. Ink pen dry out especially rapidly, which can cause the ink at the tip to harden and interfere with normal use later.

- Load the pens only in the pen stock. Attempting to mount a pen directly in the pen carriage may cause faulty operation.
- Use only proprietary pens made exclusively for use with the DPX. Failure to do so may result in faulty operation because of differences in pen length.
- The effectiveness of the pen cap covers is only temporary. At the end of the work day, be sure to attach the special pen caps and store the pens.

5 Loading the Paper

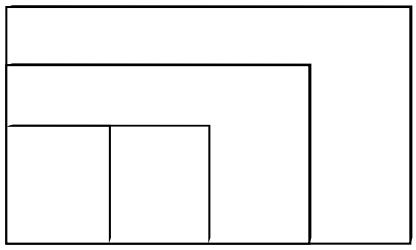
- Do not allow sharp objects (such as a cutter, knife, or screwdriver) to scratch the electrostatic adsorptive surface. This surface carries a high voltage charge and can be extremely dangerous.
- The Y-rail and pen carriage move when the power is turned on. Keep hands and other objects away from the moving parts at this time.
- Do not move the pen carriage by hand. Accuracy be impaired.
- Touching the surface of the paper with the hands may reduce plot quality because of the adsorption of skin oils.
- Adsorptive force may vary according to the type of paper. Adsorption of two or more sheets of paper is not possible.
- Adsorptive force is reduced in areas where temperature is extremely low. At such times, the paper will adsorb is allowed to stand for a short while (10 seconds) after placement on the drawing board.
- When opening a new package of paper, allow the paper to air for 30 minutes to an hour. This airing helps prevent contraction or expansion of the paper due to humidity or temperature.

How to Load Paper on the DPX-3700A/2700A

* When using the plotter for the first time, be sure to peel the protective sheet (a sheet of thin, semi-transparent vinyl) off the drawing board.

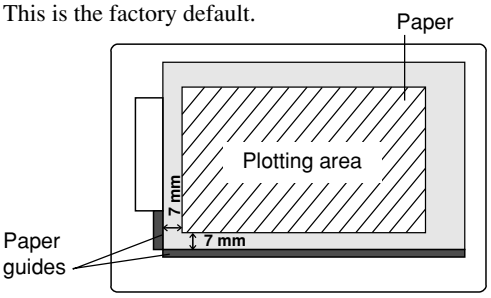
1

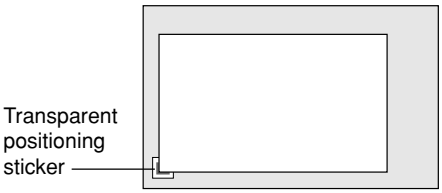
Turn on the power to the DPX
Make sure the PAPER HOLD LED is not lit.
Paper is normally loaded horizontally (i.e., landscape orientation). However, the following sizes of paper should be loaded vertically (i.e., portrait orientation):
ISO A4, ISO B5, JIS A4, JIS B5, ANSI A, and DIN A4.
* When loading paper of nonstandard size, you should set the paper in the lower left of the drawing board.



When [Default] is selected

This is the factory default.

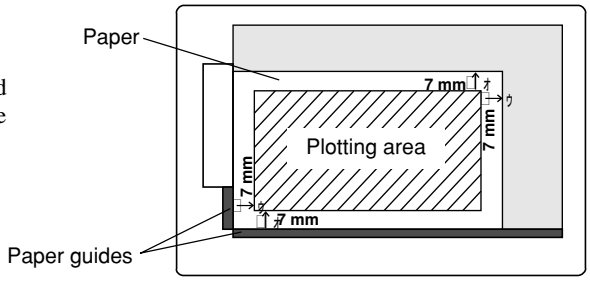




After plotting has been carried out a few times and the position of the paper becomes apparent, affix the transparent positioning sticker included with the plotter to the drawing board. This enables paper to loaded at the same place every time.

When [Guide] is selected

When [Guide] is selected using the [PaperSet] menu, setting is easy because the paper is loaded in the paper guide located in the lower left of the drawing board.
In this case, however, the plotting area is reduced by 7 mm (1/4") in each of the four directions (top, bottom, left, and right).

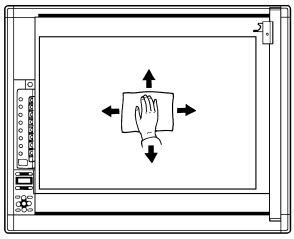


2

Press the (PAPER HOLD) **key once to select the position. Load the paper onto the drawing board while the PAPER HOLD LED is** *blinking*.

3

Remove bubbles and wrinkles from the paper by wiping with a dry cloth.



4

Press the (PAPER HOLD) **key one more time. The PAPER HOLD LED** *lights up* and the paper is secured in place.

5

Set the paper size of the display menu to match the size of the paper loaded in the DPX.

Top menu

```
<ISO-A1>   Clear
Pen<Auto>
```

Press the (F1) key.

```
[ISO-A1]
<ISO-A1>ISO-A2 I
```

Use (F1) to select [ISO-**], [JIS-**], [ANSI-**], ([ANSI ARCH-**],) [DIN-**], [USER 1], [USER 2] and [USER 3].

Use (F3) or (F4) to select a size. Press (ENTER) to enable the setting.

If the Sheet Tears While Plotting...

If an edge of a loaded sheet does not lie flat, it may catch on parts of the pen carriage and tear during plotting.
If an edge of the sheet is not held perfectly flat by suction even after pressing the (PAPER HOLD) **key to cause the sheet to be held, then secure the edge with commercially available drafting tape or the like.**
If the sheet has been torn, then remove the sheet, taking care not to bend any of the parts on the pen carriage. Bending of a pen carriage part may result in partially faint plots when the carriage is loaded with any type of plotting implement other than a pencil.

When Plotting with an Oversize Sheet

1) When the screen at right is shown, press (F1) to display either [USER 1], [USER 2], or [USER 3].
   The currently set coordinate values are displayed at this time.
2) Press the cursor keys and the (FAST) key to move the pen carriage to the upper right edge of the sheet.
3) Press the (ENTER) key.
4) When the screen at right appears, the setting for user size has been completed. This screen indicates that a sheet size of 500 mm x 300 mm has been set.
   After a for example seconds, the following menu appears.

Three user sizes -- [USER 1], [USER 2], or [USER 3] -- can be set. These settings remain stored in memory even after the power is switched off.

Top menu

```
<ISO-A1>   Clear
Pen<Auto>
```

(F1)

```
[USER 1]
X: 920mmY: 615mm
```

Position keys + (FAST)
(ENTER)

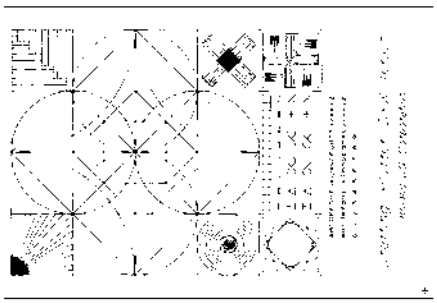
```
User Size Is Set
X: 500mmY: 300mm
```

```
<USER 1>   Clear
Pen<Auto>
```

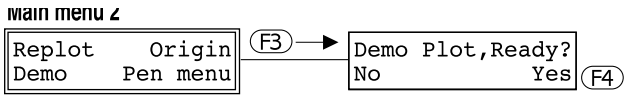
6 Self-testing

A self-test can be carried out to check whether the DPX is functioning correctly. When doing this, the plotter does not have to be connected to the computer.

1) Load pens in the DPX. You can load any number of pens, from one to eight. Demonstration plotting uses all of the pens that have been loaded.
2) Turn on the power to the DPX.
3) Load paper on the DPX (refer to "5 Loading the Paper" on page 5).
   Refer to "13 Display Menus Flowchart" on page 19 and set the paper size of the display menu to match the size of the paper loaded in the DPX.



4) The display will show the top menu. Press the NEXT key twice to display the following. Press the F3 key.



5) Press the F4 key to execute the demonstration plot. The DPX then plots the self-test pattern.
   When the pen is returned to the pen stock and the carriage moves to the upper right of the main unit, the self-test is finished.
   * If you do not want do a demonstration plot, press F3.

7 Downloading Plot Data

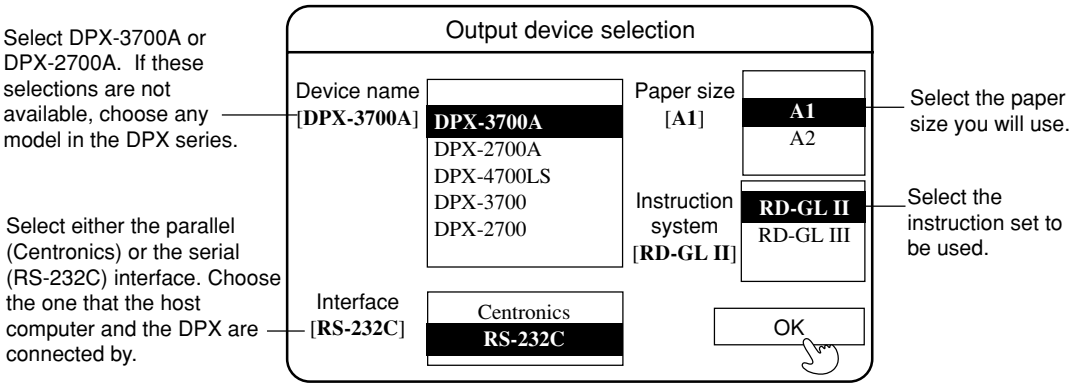
Plot data is downloaded from the host computer to the DPX and plotted out.
This section describes general considerations in data output, and should be referenced for output of data. For additional information on plot data output methods, refer to the user's manual provided with your software.

If you want to completely stop DPX operations, turn off the power supply switch.

Software Settings

When plotting with commercially available application software, select either DPX-3700A or DPX-2700A as the setting for the output device. If these cannot be selected, choose any model in the DPX series -- DPX-4700LS, DPX-3700, DPX-2700, DPX-4600A, DPX-3600, DPX-2600, DPX-3500 or DPX-2500.

Sample Application Software Output Device Selection Screen



Because of the operation of the Auto Protocol function on the DPX, there is no need to make the settings on the DPX for the type of interface or for the communication parameters, if a serial connection is used.

Pausing Plotting Operations

When the (VIEW) key is pressed, the DPX-3700A/2700A returns the pen to the pen stock, moves the pen carriage to the upper-right area of the drawing board, and pauses. Pressing the (VIEW) key again restarts plotting.
If you want to replot from the beginning, stop transmitting plotting data from the computer and clear the buffer. To clear the buffer, select [Clear] on the display menu.

Top menu

```
<ISO-A1>   Clear
Pen<Auto>
```

(F2) →

```
Buffer Clear OK?
NO            YES
```

Press (F4) to clear the buffer and return to the top menu.

Replotting

The replot function uses the plotting data residing in the I/O buffer. If the plotting data sent to this buffer exceeds 1 Mbyte, the DPX begins overwriting data at the beginning of the buffer and replotting cannot be performed.
Attempting to replot under such circumstances will generate an error message on the display.

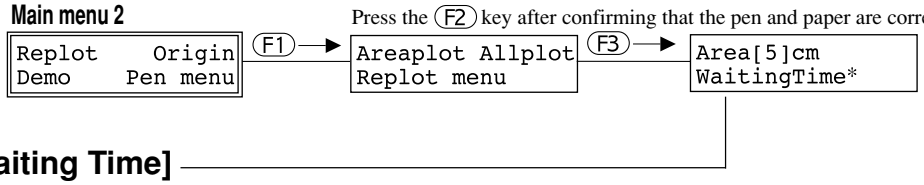
```
Too Big Data
  Can not Replot
```

Select [Clear] and retransmit the data using less than 1 Mbyte.

Copying the plotting data [Allplot]

This function replots using all the data from beginning to the end. Select [Allplot] if you need two or more plots with the same plotting data.

Press the (NEXT) key twice with the top menu displayed.



Press the (F2) key after confirming that the pen and paper are correctly set.

[Waiting Time]

OFF

All data received from the computer is interpreted as plotting data for one page, regardless of transmission timing. For example, if plotting data for one page is sent from the computer and then, after changing the paper, data for a second page is sent, the DPX interprets this as continuous data, and two superimposed plots are created if replot is activated. Make sure that the amount of data does not exceed 1 Mbyte.

ON (when marked with an asterisk)

When ten seconds have passed since data has been transmitted from the computer, the DPX concludes that reception of one page of plotting data is complete. Data transmitted after more than ten seconds have passed is interpreted as plotting data for the next page. Replotting is performed using the data which was last sent from the computer.

When waiting time has been set to ON, then if the data for a single plot is split in two and a pause occurs between sending the two sets of data, the two sets will be interpreted as two different plots. At this time, if a scale setting instruction or similar instruction establishing the entire plot appears only in the first set of data, then the second set will not be plotted in the correct position.

Be sure to send the next batch of data within the time set for the waiting time, or set waiting time to OFF.

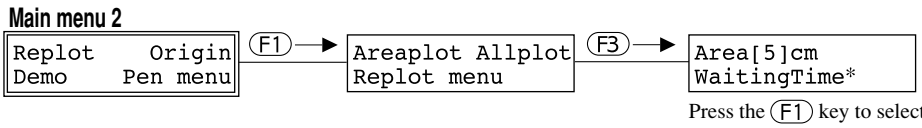
Replotting for a portion of the data [Areaplot]

Replotting of part of the data is a available after completing the plotting, when an imperfection (such as a blurred line) is found.

Selecting the range to be reploted [Area]

Select the perimeter within which corrections are to be made as either a 1 cm (3/8") or 5 cm (1-15/16") square. The whole line, including any part which protrudes beyond the correction perimeter will be redrawn, as long as part of the line is located in the correction perimeter.

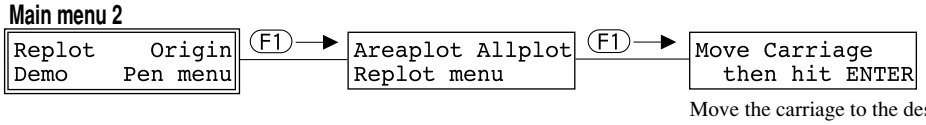
Press the (NEXT) key twice with the top menu displayed.



Press the (F1) key to select [1] or [5].

Replotting for a portion of the data [Areaplot]

Press the (NEXT) key twice with the top menu displayed.



Move the carriage to the desired location using the position key, then press the (ENTER) key. Make the nessary corrections on the plotting.

8 After Plotting

1) Remove the paper.
   Press the (PAPER HOLD) **key to release the electrostatic adsorption and remove the paper**

2) Turn off the DPX.
   Turn off the power to the DPX. If the plotter will not be used for a long time, the power cord should also be unplugged.

3) Remove the pens.
   Remove all pens from the pen stock. Cap and store the pens after use.

9 Care and Maintenance

- Be sure to turn off the power to the DPX before cleaning.
- Never attempt to oil or lubricate the mechanism.

Cleaning the Main Unit

If the unit becomes dirty, wipe gently using a cloth moistened with water or anhydrous alcohol. Wipe the operation panel and display gently with a clean, soft cloth.

Cleaning the Drawing Board

Gently wipe with a soft cloth. If soiling is severe or the adsorptive force of the drawing board is weak wipe gently using a cloth moistened with ethyl alcohol. The DPX use an electrostatic adsorption drawing board, which must never come in contact with water, silicone cloth, neutral detergents, or solvents, as these will irrevocably diminish the electrostatic adsorptive force.

Cleaning the Pen Cap Rubbers

Ink buildup on the pen cap rubbers may soil plots. Remove the pen cap rubbers and wash with water. Replace them on the pen stock after allowing to dry completely (out of direct sunlight).

Cleaning the ejected lead stocker

When plotting with pencils, and pencil leads become short and do not feed out smoothly, these unneeded leads are ejected to the ejected lead stocker located on the upper part of the pen stock. When the ejected lead stocker becomes full, remove it from the DPX and dispose of the leads. (Refer to "Eject Lead Stocker" on page 14.)

10 Pens

This chapter describes the optional pens that can be used with the DPX.

High-Speed Mode

Selecting [HighSpeed] at the [Drawing] menu speeds up acceleration, which can shorten plotting time. This reduction of plotting time is proportionate to the number of short line segments. High-speed plots should be used for draft plots. If high resolution is desired, select [Normal]. The setting is ordinarily at [Normal].

Pen Speed and Pen Force Settings

The DPX-3700A/2700A automatically determines the type of pen installed and makes plots using the appropriate pen speed and pen force for that pen (supported for Roland DG Corp. pens only). However, if problems with the compatibility of the pen and paper cause damage to the pen tip or paper, or if unclear plotting lines result, this menu should be used to adjust the pen speed and pen force settings. If you plan to use pens other than those from Roland DG Corp. (pens which do not have pen-type markers attached which permit the DPX to determine pen types), use this menu to set the appropriate pen speed and pen force for the pen. When using pencils, the pen speed and pen force are set for each pencil installed in the pen stock, and not by grouping. To set the pen speed and pen force, select [Pen] at the top menu of the display and set the value for [Force] or [Speed]. (Refer to "13 Display Menus Flowchart" on page 19.)

* About "pen speed (maximum value)" and "pen force (maximum value)" in the chart...
  This value means that the pen will not be damaged by plotting when set to a number less than this value.

Non-refillable Ink Pen

Pen cap rubber orientation	Plotting distance (with our standard paper)
	0.25 mm: 2500 m (8200') 0.35 mm: 1800 m (5900') 0.50 mm: 1400 m (4500') 0.70 mm: 800 m (2600')
Pen speed (maximum value)	50 cm/sec
Pen force (maximum value)	20 gf

Features

No need to refill ink, and maintenance much simpler than refillable ink pens.
Plots sharp, attractive lines, with no change in line thickness or ink flow even over long periods of time.
When the ink pen is used on tracing paper, the output can be erased with a commercially available ink eraser (unless paper moisture absorption is high).

* This pen is used in combination with the pen holder (available separately), which should be purchased together with the pen.

Refillable Ink Pen

Pen cap rubber orientation	Plotting distance (with our standard paper)
	Ink Pen tip will wear out in 6000 m (19600') to 10000 m (32800') of travel
Pen speed (maximum value)	25 cm/sec
Pen force (maximum value)	20 gf

Features

The same pen can be refilled and used any number of times.
Plots sharp, attractive lines, with no change in line thickness or ink flow even over long periods of time.
Refillable ink pens come in paper and film types. Select the ink pen appropriate for the media you will be using.
When the film ink pen is used on film, the output can be erased with a commercially-available drafting ink eraser.
When the paper ink pen is used on tracing paper, the output can be erased with a commercially available ink eraser (unless paper moisture absorption is high).

* This pen is used in combination with the pen holder (available separately), which should be purchased together with the pen.

32 Color Plotter Pens

Pen cap rubber orientation	Plotting distance (with our standard paper)
	0.3 mm: 400 m (1300') 0.6 mm: 300 m (900')
Pen speed (maximum value)	50 cm/sec
Pen force (maximum value)	35 gf

Features

Variety of colors and shades for colorful expression
Optimum for illustrations, graphs and graphics
Fiber pen tip for simple use
Two pen tip thicknesses - 0.3 mm and 0.6 mm

Following pen colors available:

Black	Brown	Red	Yellow	Green	Blue	Violet	Magenta
Dark Brown	Mahogany	Poppy Red	Golden Yellow	Forest Green	Cobalt Blue	Dark Purple	Purple
Grey	Pine	Orange	Lime Green	Kelly Green	Sky Blue	Mauve	Rose Pink
Warm Grey	Beige	Peach	Lemmon Lime	Olive Green	Ice Blue	Turquoise	Pale Pink

Long-term use will cause the pen tip to wear, causing a gradual increase in line width.
Because these are dye-based inks, plots made with these pens will fade if left exposed to sunlight for long periods. Store plots made using these pens out of direct sunlight.
For drawing of even higher quality, set the pen speed to 10 cm/sec.

Water Based Fiber Tipped Pen

Pen cap rubber orientation	Plotting distance (with our standard paper)
	0.3 mm: 400 m (1300') 0.6 mm: 300 m (900')
Pen speed (maximum value)	50 cm/sec
Pen force (maximum value)	35 gf

Features

Excellent coloration for colorful illustrations
Comes in eight colors (black, red, blue, green, brown, purple, pink, orange), and two pen tip thicknesses (0.3 mm and 0.6 mm)

Long-term use will cause the pen tip to wear, causing a gradual increase in line width.
Because these are dye-based inks, plots made with these pens will fade if left exposed to sunlight for long periods. Store plots made using these pens out of direct sunlight.
For drawing of even higher quality, set the pen speed to 10 cm/sec.

Thick Water Based Fiber Pen

Pen cap rubber orientation	Plotting distance (with our standard paper)
	2 mm: 100 m (300')
Pen speed (maximum value)	50 cm/sec
Pen force (maximum value)	100 gf

Features

Thick water-based fiber tipped pen draws a 2 mm thick line
Comes in eight colors (black, red, blue, green, orange, pink, brown, purple)
Optimum for advertising and illustration, because large areas can be colored quickly

Performance may not be satisfactory where uniform line thickness is essential, or when ink is low. In this case, set pen speed at 15 cm/sec and pen force at 95 gf to 110 gf.
Because these are dye-based inks, plots made with these pens will fade if left exposed to sunlight for long periods. Store plots made using these pens out of direct sunlight.

Standard Ceramic Pen

Pen cap rubber orientation	Plotting distance (with our standard paper)
	0.25 mm: 2000 m (6500') 0.35 mm: 1300 m (4200') 0.50 mm: 700 m (2200') 0.70 mm: 400 m (1300')
Pen speed (maximum value)	40 cm/sec
Pen force (maximum value)	20 gf

Features

The pen tip is a ceramic tube, with ink flowing through it to form the line
Because pen tip diameter is uniform, line thickness is uniform from start until the ink runs out
Pen tip diameters available are 0.25 mm, 0.35 mm, 0.50 mm, and 0.7 mm are available, allowing use for plots or business graphics
Water-soluble ink available in eight colors (black, red, blue, green, orange, pink, brown and purple)

Because these are dye-based inks, plots made with these pens will fade if left exposed to sunlight for long periods. Store plots made using these pens out of direct sunlight.

Water Based Ball-point Pen

Pen cap rubber orientation	Plotting distance (with our standard paper)
	500 m (1600')
Pen speed (maximum value)	50 cm/sec
Pen force (maximum value)	50 gf

Features

Water based ball-point pen with a tip that resists drying out
Optimum for thin line plotting
Can be used at relatively high speed
Comes in four colors (black, red, blue, green)

Ink flow may be degraded when pen speed is extremely slow.
Because these are dye-based inks, plots made with these pens will fade if left exposed to sunlight for long periods. Store plots made using these pens out of direct sunlight.

Oil Based Pressurized Ball-point Pen

Pen cap rubber orientation	Plotting distance (with our standard paper)
	1000 m (3200')
Pen speed (maximum value)	80 cm/sec (in 45° direction)
Pen force (maximum value)	300 gf

Features

Gas is injected into the ball-point cartridge, and ink discharged by the pressure of the gas
Suited or high-speed plotting
Suited for long plot distances
Pen tips do not dry out
Oil-based ink comes with four exchangeable cartridge colors (black, red, blue, green)
*Always use the pressurized ball-point pen as a set with the holder and replacement cartridge.

Multi-lead Pencil

Pen cap rubber orientation	Remove the pen cap rubber.
Pen speed (maximum value)	80 cm/sec (in 45° direction)
Pen force (maximum value)	0.20 mm: 200 gf 0.30 mm: 350 gf 0.40 mm: 450 gf 0.50 mm: 450 gf

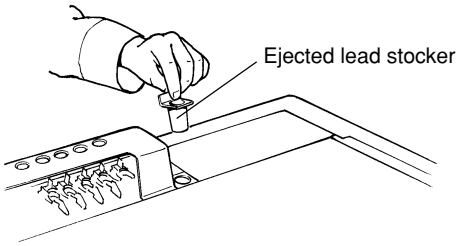
Features

Provides high-speed plotting
Can be mixed with other pen types
Pen force differs with lead thickness
Up to 20 leads can be loaded into one pencil (always use recommended 60 mm long replacement leads)

Multi-lead pencil tips are consumed parts (lasting for approximately 300,000 runs). The tip should be changed if lead does not feed out even after cleaning.
Only leads from Roland DG Corp. should be used. Use of other leads may shorten the useful life expectancy of the multi-lead pencil tip as well as impeding correct lead feed.

Ejected Lead Stocker

When plotting with pencils, and pencil leads become short and do not feed out smoothly, these unneeded leads are ejected to the ejected lead stocker located on the upper part of the pen stock. When the ejected lead stocker becomes full, remove it from the DPX and dispose of the leads.



[PencilKnock] Setting

Using the [PencilKnock] menu of the display menu, set the timing of lead advancing and lead feed. The interval between the first advance and the next is set by using plotting distance. Even when the plotting distance is the same, however, differences in paper and pen force may effect lead consumption. Shorten the advancing interval if lines become disconnected during plotting.

Top menu

```
<ISO-A1>   Clear
Pen<Auto>
```
(F3)
```
Select  PenWidth
Speed      Force
```
(NEXT)
```
Pencil Group
Pencil Knock
```
(F3)
```
[ 50] cm
Down   50cm   Up
```

Use (F3) and (F4) to select.
Press (ENTER) to enable the settings.

Automatic Pencil Grouping Function (supported only when using pencils)

* Because the settings for this function are made automatically, there is no need to make the settings on the display.

When pencils are installed in the pen stock, this function automatically detects lead diameter and treats all pencils with the same lead diameter as one group. If a lead breaks during plotting, this function enables the DPX to automatically exchange that pencil with the next pencil stock number having the same lead diameter, and thereby continue plotting. By loading many pencils of the same type in the pen stock, plotting can be continued for prolonged periods.
If the same type of pencil is not installed in the pen stock, the pencil with the broken lead is returned to the pen stock and the following message is generated on the display.

<Example>

```
Put 0.3mm Lead
 then Push ENTER
```

Replace the lead in the pencil and reinstall in the pen stock. Press the (ENTER) key to restart plotting.
If the message prompting you to refill the leads appears even when leads have been refilled, there may be a pencil lead that is jammed.
* Plotting is performed using the pen speed and pen force values set for each pen.

<Example of the Automatic Pencil Grouping Function>

Pen number	Pen type
1	Multi-lead pencil 0.3 mm
2	Multi-lead pencil 0.5 mm
3	Ink pen
4	Ink pen
5	Multi-lead pencil 0.3 mm
6	Multi-lead pencil 0.3 mm
7	Multi-lead pencil 0.5 mm
8	Multi-lead pencil 0.5 mm

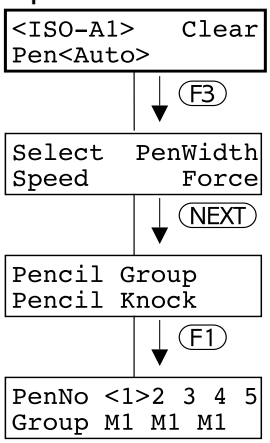
0.3 mm group

0.5 mm group

[Pencil Group] Lead Hardness Grouping

In addition to automatic pencil grouping, the DPX also supports menu setting of groups according to pencil hardness. For example, say a total of three pencils are installed in the pen stock in order from number 1 to number 3. (These are two pencils with 0.3 mm lead diameter and HB hardness, and one pencil with a 0.3 mm lead diameter and B hardness.) Initially, because all pencil numbers are set to Group M1, all three pencils are included in the same group. However, by using the [Pencil Group] menu and setting the pen stock numbers for the HB pencils to Group M1 and then setting the B pencil to Group M2, the three pencils can be divided into two separate groups. If the pencil lead in the number 1 pen stock position cannot be used, the pen carriage automatically takes the pencil in position 2 and continues plotting. However, if the same occurs with the pencil in stock position number 3, the pen carriage will not attempt to continue plotting.

Top menu



Use (F1) and (F2) to select a pen number.
Use (F3) and (F4) to select a group.
Press (ENTER) to enable the settings.

<Example of Grouping>

Pen number	Pen type
1	Multi-lead pencil 0.3 mm HB
2	Multi-lead pencil 0.3 mm HB
3	Multi-lead pencil 0.3 mm B
4	Ink pen
5	Ink pen
6	Ink pen
7	Ink pen
8	Ink pen

Group M1

Group M2

A Request

The DPX-3700A/2700A cannot use the single-lead pencil for the DPX-4600A/3600/2600/3500/2500/3300/2200.
Be sure to use the multi-lead pencil for the DPX-3700A/2700A (60 mm type, M series).

11 Paper

This chapter describes the optional paper that can be used with the DPX. Refer to the table below in paper selection.

Paper type	Characteristics	Compatible pens	Dimensional stability
High-quality paper	This is the most economical white paper. It tends to contract and expand fairly easily, and ink will spread slightly, making it inappropriate for applications requiring high precision.	◊ Refillable ink pen for paper ◊ Non-refillable ink pen ◊ 32 color plotter pens ◊ Water based fiber tipped pen ♦ Thick water based fiber tipped pen ◊ Standard Ceramic pen ◊ Oil based pressurized ball-point pen ♦ Multi-lead pencil	C
Coated paper	Whiteness is higher than high-quality paper. This paper shows minimal contraction or expansion due to changes in environmental factors such as humidity.	◊ Water based fiber tipped pen ◊ Thick water based fiber tipped pen ♦ 32 color plotter pens ◊ Oil based pressurized ball-point pen	C
Tracing paper	Common natural type tracing paper. Suited to blueprints. Ink pen is the best pen type.	♦ Refillable ink pen for paper ♦ Non-refillable ink pen ◊ 32 color plotter pens ◊ Water based fiber tipped pen ◊ Thick water based fiber tipped pen ◊ Standard Ceramic pen ◊ Oil based pressurized ball-point pen ♦ Multi-lead pencil	C
Vellum	Resin-impregnated tracing paper. Offers superior dimensional stability, and is suited to blueprints. Ink pen is the best pen type.	♦ Refillable ink pen for paper ♦ Non-refillable ink pen ♦ Multi-lead pencil	B
Drafting film	Polyester film, with a matte finish on both sides. Has low expansion and contraction, and shows small change over time, making it optimum for jobs where precision is essential. Use optional ink pens for film.	♦ Refillable ink pen for film ♦ Non-refillable ink pen for film ◊ Oil based pressurized ♦ Multi-lead pencil	A
Water based OHP film	This is transparent film for use with overhead projector (OHP) devices.	♦ 32 color plotter pens	A
Oil based OHP film		♦ Oil based fiber tipped pen	A

♦ Optimum
◊ Good

A ↑ No expansion or contraction
B
C ↓ Little expansion or contraction

Plot quality and paper

Plot quality changes with the following conditions:

Condition	Effect
Ambient temperature and humidity	Paper expansion and contraction causes offset and ink blotting
Pen speed	The line will be faint if the pen speed is too high
Pen force	Pen and paper will be damaged if set too high, and line will be faint is set too low
Paper type	Moisture absorption characteristics and surface roughness will affect line darkness, coloration and pen clogging.

- Paper expands and contracts by absorbing the moisture in the air.
  Always plot after getting the paper accustomed to the ambient temperature and humidity. This optimum time will vary with the specific paper type, but generally 30 to 60 minutes after removal from the paper bag is appropriate.
- Oil on the paper surface may cause poor performance.
  Take care when loading the paper to prevent transfer of oils or dirt from your hand to the paper surface.

When using paper not supplied by Roland DG Corp., observe the following points in making your selection:

- Does the ink work well with the paper? (Moisture absorption characteristics, coloration)
- Is the ink faint? (At the rated pen speed)
- Does the ink spread? (Line thickness should not change with time)
- Speed of drying (If one line crosses another, ink should not mix)
- Does pen clog?
- Other factors such as paper strength, etc.

12 Plotting Area

- The table below shows the values in effect when [Origin] in the display menu is set to [DPX] (default values).
- When [Guide] is selected using the [PaperSet] menu and the paper is loaded in the paper guide located in the lower left of the drawing board, the plotting area is reduced by 7 mm (1/4") in each of the four directions (top, bottom, left, and right).

	Paper size				Plotting area							
					RD-GLII				RD-GLIII			
Unit	mm		inch		mm		mm		mm		mm	
Paper	X	Y	X	Y	LLx	LLy	URx	URy	LLx	LLy	URx	URy
ISO A1 *1	841	594			-432.50	-297.00	408.50	297.00	0	0	841.00	594.00
ISO A2	594	420			-309.00	-210.00	285.00	210.00	0	0	594.00	420.00
ISO A3	420	297			-222.00	-148.50	198.00	148.50	0	0	420.00	297.00
ISO A4 *2	297	210			-148.50	-117.00	148.50	93.00	0	0	297.00	210.00
ISO B2 *1	707	500			-365.50	-250.00	341.50	250.00	0	0	707.00	500.00
ISO B3	500	353			-262.00	-176.50	238.00	176.50	0	0	500.00	353.00
ISO B4	353	250			-188.50	-125.00	164.50	125.00	0	0	353.00	250.00
ISO B5 *2	250	176			-125.00	-100.00	125.00	76.00	0	0	250.00	176.00
JIS A1 *1	841	594			-432.50	-297.00	408.50	297.00	0	0	841.00	594.00
JIS A2	594	420			-309.00	-210.00	285.00	210.00	0	0	594.00	420.00
JIS A3	420	297			-222.00	-148.50	198.00	148.50	0	0	420.00	297.00
JIS A4 *2	297	210			-148.50	-117.00	148.50	93.00	0	0	297.00	210.00
JIS B2 *1	728	515			-376.00	-257.50	352.00	257.50	0	0	728.00	515.00
JIS B3	515	364			-269.50	-182.00	245.50	182.00	0	0	515.00	364.00
JIS B4	364	257			-194.00	-128.50	170.00	128.50	0	0	364.00	257.00
JIS B5 *2	257	182			-128.50	-103.00	128.50	79.00	0	0	257.00	182.00
ANSI D *1	863.6	558.8	34	22	-443.75	-279.50	419.75	279.50	0	0	863.50	559.00
ANSI C	558.8	431.8	22	17	-291.50	-216.00	267.50	216.00	0	0	559.00	432.00
ANSI B	431.8	279.4	17	11	-228.00	-139.75	204.00	139.75	0	0	432.00	279.50
ANSI A *2	279.4	215.9	11	8.5	-139.75	-120.00	139.75	96.00	0	0	279.50	216.00
ANSI Arch. D *1	914.4	609.6	36	24	-469.20	-304.80	445.20	304.80	0	0	914.40	609.60
ANSI Arch. C *1	609.6	457.2	24	18	-316.80	-228.60	292.80	228.60	0	0	609.60	457.20
DIN A1 *1	[915]	[655]			-432.50	-297.00	408.50	297.00	0	0	841.00	594.00
DIN A2	[625]	[450]			-309.00	-210.00	285.00	210.00	0	0	594.00	420.00
DIN A3	[450]	[330]			-222.00	-148.50	198.00	148.50	0	0	420.00	297.00
DIN A4 *2	[330]	[240]			-148.50	-117.00	148.50	93.00	0	0	297.00	210.00

*1 Supported on DPX-3700A only.

*2 Paper is normally loaded horizontally (i.e., landscape orientation). However, the sizes of paper indicated by "*2" must use vertical (portrait) orientation.

Values in square brackets ("[ ]") are the DIN size settings for this product. They do not represent DIN standards (plotting area).

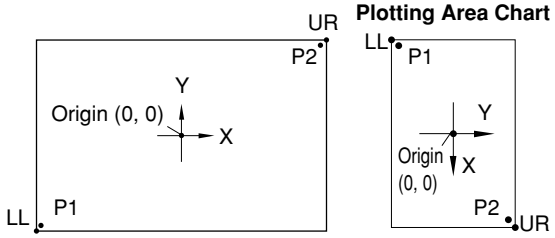
Calculating the number of steps for the hard clip, P1 default, and P2 default.

• RD-GL II

Hard Clip	P1, P2 Default
LLx = (-1) × ((x × 40 ÷2) + 480)	P1x = LLx + 800 + 960
LLy = (-1) ÷ (y × 40 ÷2)	P1y = LLy + 800
URx = (x × 40 ÷2) - 480	P2x = URx - 800
URy = y × 40 ÷2	P2y = URy - 800

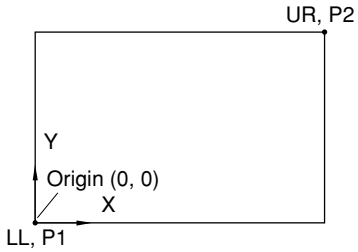
* When note "*2" in the Plotting Area Chart on the previous page applies (i.e., portrait orientation is used), make calculations after swapping the values for "x" and "y" in the table above.

When note "*2" in the Plotting Area Chart



• RD-GL III

Hard Clip	P1, P2 Default
LLx = 0	P1x = 0
LLy = 0	P1y = 0
URx = x × 40	P2x = URx
URy = y × 40	P2y = URy



[Origin]

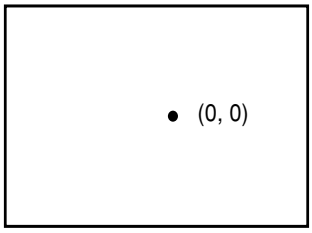
This moves the location of the origin. When RD-GL III has been chosen, no selection other than [LL] can be made.

DPX: Sets the origin at a point slightly to the right of the center of the paper which was set using the paper size setting menu.

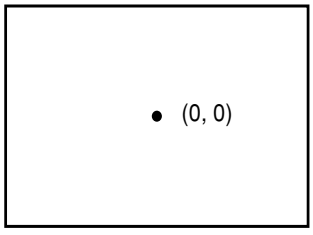
Center: Sets the origin at a position located in the center of the paper which was set using the paper size setting menu.

LL: Sets the origin at a position located at the lower-left point of the paper which was set using the paper size setting menu.

[DPX]



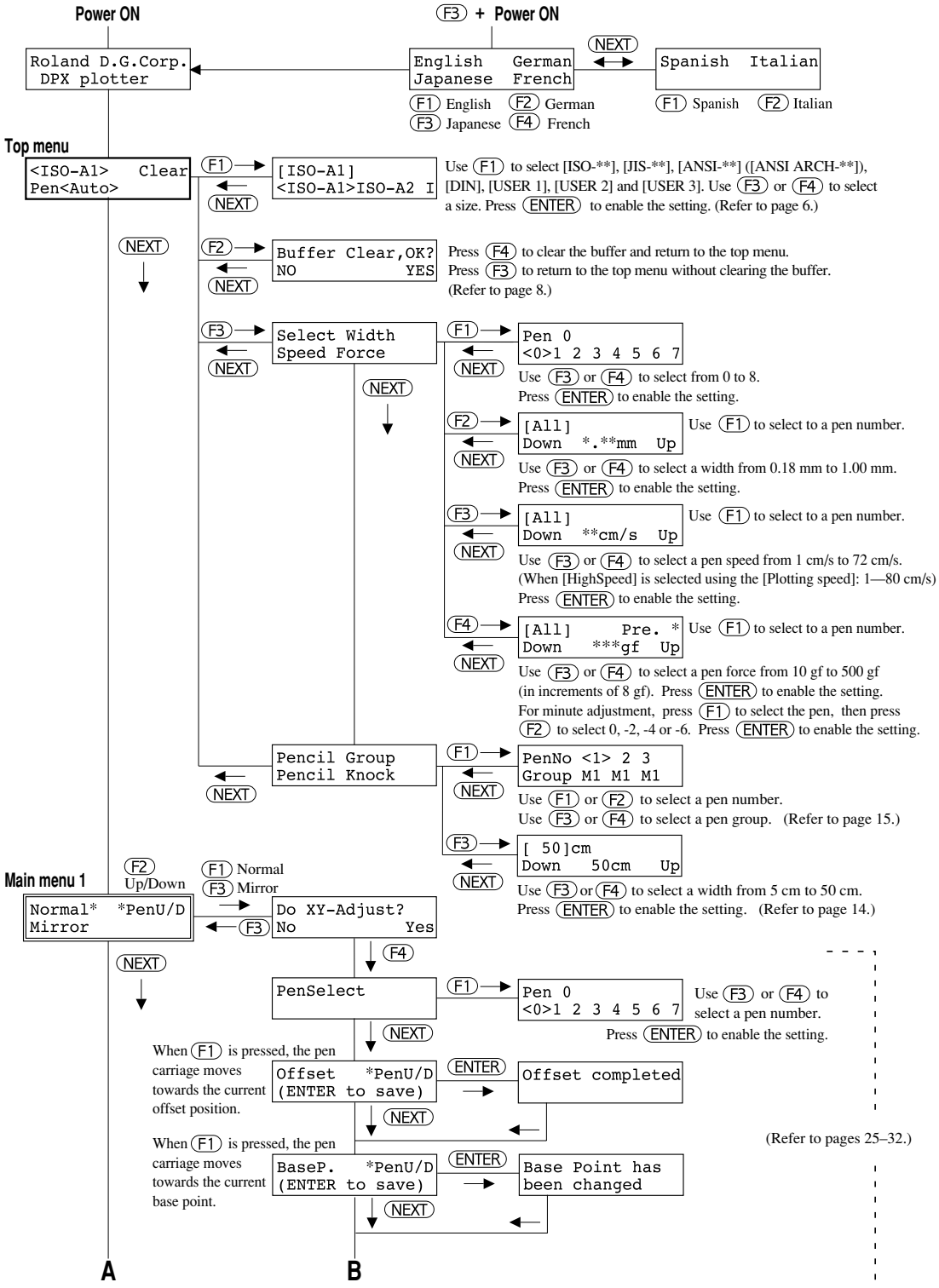
[Center]

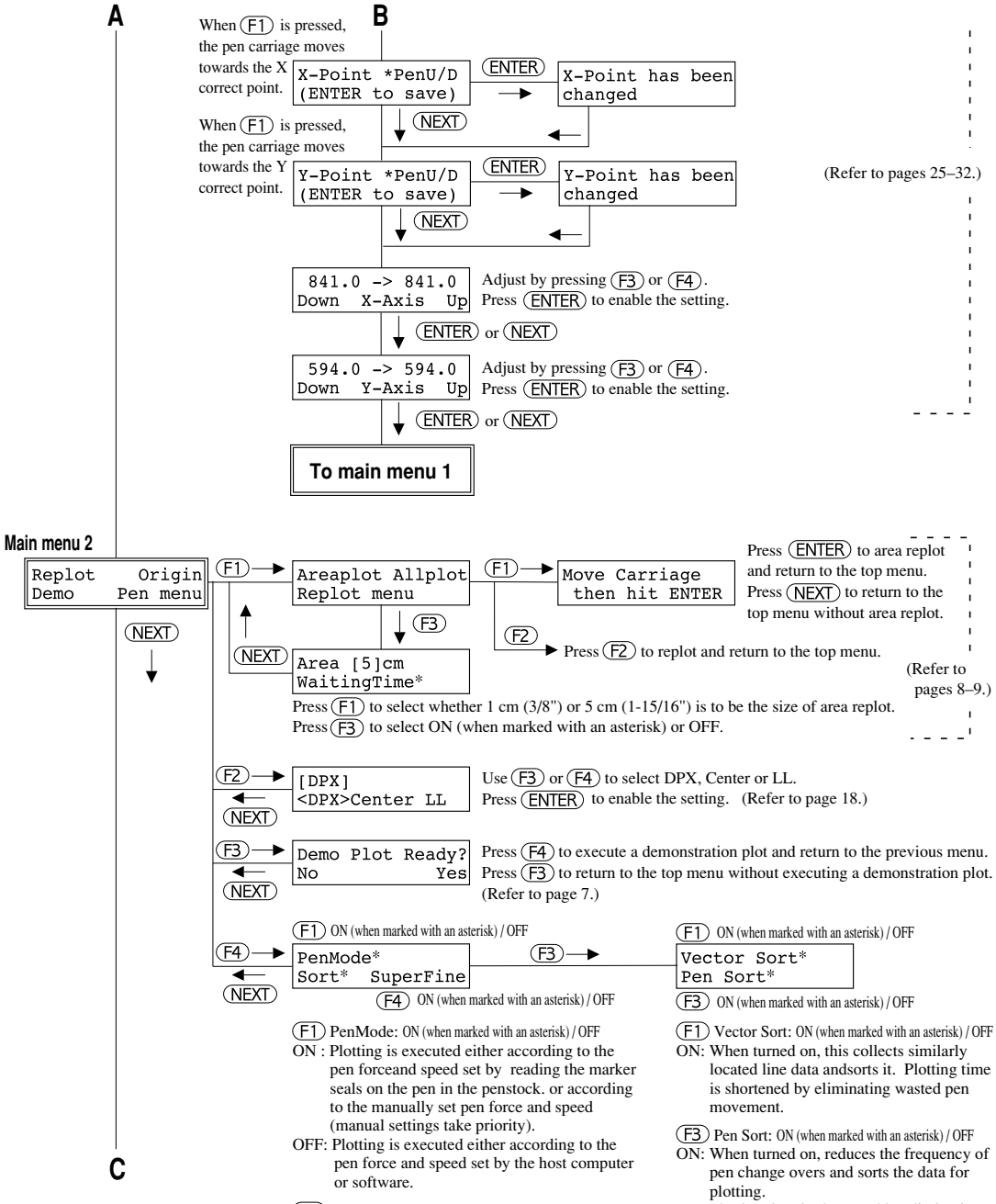


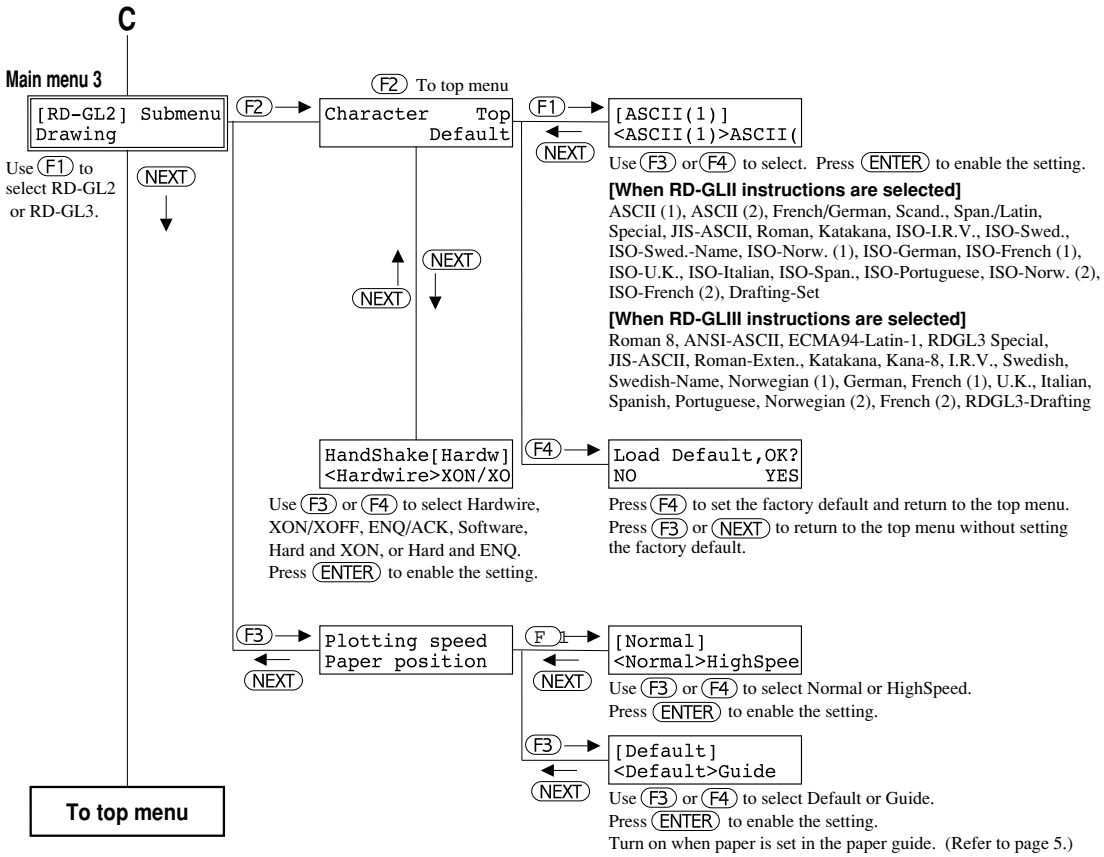
[LL]

When [Guide] is selected using the [PaperSet] menu, the paper is shifted to the bottom left, and the DPX decreases the plotting area proportionately.
For further details, refer to "5 Loading the Paper" on page 5.

13 Display Menus Flowchart




A
B
When F1 is pressed, the pen carriage moves towards the X correct point.
X-Point *PenU/D
(ENTER to save)
ENTER
X-Point has been changed
NEXT
When F1 is pressed, the pen carriage moves towards the Y correct point.
Y-Point *PenU/D
(ENTER to save)
ENTER
Y-Point has been changed
NEXT
(Refer to pages 25–32.)
841.0 -> 841.0
Down X-Axis Up
Adjust by pressing F3 or F4.
Press ENTER to enable the setting.
ENTER or NEXT
594.0 -> 594.0
Down Y-Axis Up
Adjust by pressing F3 or F4.
Press ENTER to enable the setting.
ENTER or NEXT
To main menu 1
Main menu 2
Replot Origin
Demo Pen menu
NEXT
F1
Areaplot Allplot
Replot menu
F1
Move Carriage
then hit ENTER
Press ENTER to area replot and return to the top menu.
Press NEXT to return to the top menu without area replot.
F3
F2
Press F2 to replot and return to the top menu.
NEXT
Area [5]cm
WaitingTime*
(Refer to pages 8–9.)
Press F1 to select whether 1 cm (3/8") or 5 cm (1-15/16") is to be the size of area replot.
Press F3 to select ON (when marked with an asterisk) or OFF.
F2
[DPX]
<DPX>Center LL
Use F3 or F4 to select DPX, Center or LL.
Press ENTER to enable the setting. (Refer to page 18.)
NEXT
F3
Demo Plot Ready?
No Yes
Press F4 to execute a demonstration plot and return to the previous menu.
Press F3 to return to the top menu without executing a demonstration plot.
(Refer to page 7.)
NEXT
F1 ON (when marked with an asterisk) / OFF
F4
PenMode*
Sort* SuperFine
F3
F4 ON (when marked with an asterisk) / OFF
NEXT
F1 ON (when marked with an asterisk) / OFF
Vector Sort*
Pen Sort*
F3 ON (when marked with an asterisk) / OFF
F1 PenMode: ON (when marked with an asterisk) / OFF
ON : Plotting is executed either according to the pen forceand speed set by reading the marker seals on the pen in the penstock. or according to the manually set pen force and speed (manual settings take priority).
OFF: Plotting is executed either according to the pen force and speed set by the host computer or software.
F4 SuperFine (super-fine pen mode):
ON (when marked with an asterisk)/OFF
Set this to ON when using a 0.13 mm or 0.18 mm ink pen.
F1 Vector Sort: ON (when marked with an asterisk) / OFF
ON: When turned on, this collects similarly located line data andsorts it. Plotting time is shortened by eliminating wasted pen movement.
F3 Pen Sort: ON (when marked with an asterisk) / OFF
ON: When turned on, reduces the frequency of pen change overs and sorts the data for plotting.
Plotting time is shortened by eliminating wasted pen movement.
C


C
Main menu 3
[RD-GL2] Submenu
Drawing
F2
To top menu
Character Top
Default
F1
[ASCII(1)]
<ASCII(1)>ASCII(
NEXT
Use F3 or F4 to select. Press ENTER to enable the setting.
[When RD-GLII instructions are selected]
ASCII (1), ASCII (2), French/German, Scand., Span./Latin, Special, JIS-ASCII, Roman, Katakana, ISO-I.R.V., ISO-Swed., ISO-Swed.-Name, ISO-Norw. (1), ISO-German, ISO-French (1), ISO-U.K., ISO-Italian, ISO-Span., ISO-Portuguese, ISO-Norw. (2), ISO-French (2), Drafting-Set
[When RD-GLIII instructions are selected]
Roman 8, ANSI-ASCII, ECMA94-Latin-1, RDGL3 Special, JIS-ASCII, Roman-Exten., Katakana, Kana-8, I.R.V., Swedish, Swedish-Name, Norwegian (1), German, French (1), U.K., Italian, Spanish, Portuguese, Norwegian (2), French (2), RDGL3-Drafting
Use F1 to select RD-GL2 or RD-GL3.
NEXT
HandShake[Hardw]
<Hardwire>XON/XO
F4
Load Default,OK?
NO YES
Use F3 or F4 to select Hardwire, XON/XOFF, ENQ/ACK, Software, Hard and XON, or Hard and ENQ.
Press ENTER to enable the setting.
Press F4 to set the factory default and return to the top menu.
Press F3 or NEXT to return to the top menu without setting the factory default.
F3
Plotting speed
Paper position
[Normal]
<Normal>HighSpee
Use F3 or F4 to select Normal or HighSpeed.
Press ENTER to enable the setting.
[Default]
<Default>Guide
Use F3 or F4 to select Default or Guide.
Press ENTER to enable the setting.
Turn on when paper is set in the paper guide. (Refer to page 5.)
To top menu

14 Explanation of Display Menus

This section explains the menus shown in the display. The expression "factory default" in the chart refers to default values set at the time shipment from the factory.
The methods for making settings at primary menus are described in "15 Settings for Each Function" on the following page. For other menus, refer to the pages indicated in the "Remarks" column of the chart, or see "13 Display Menus Flowchart" on page 19.

[When the DPX power is turned off]
Settings are:
♦ : Stored in memory
◊ : Not stored in memory
— : Unrelated to turning the power on or off

Display menu	Explanation	Remarks	Factory default	•
Allplot	Replots the entire plot.	Refer to "Replotting" on page 8 for further details.	—	—
Area	This selects the size of the portion to replot when performing an area plot.	Refer to "Replotting" on page 8 for further details.	5 cm	♦
Areaplot	This replots a portion of a plot.	Refer to "Replotting" on page 8 for further details.	—	—
BaseP.	This sets the base point when performing axis alignment or distance alignment.	For details, refer to "Setting the base point" on pages 26 and 31.	—	—
Character	Selects character set when plotting with character sets other than English. Setting is not required when the character set is selected by the software and treated graphically.	Character sets determined by the software are given priority over those set with this function. Software settings are canceled by turning off the power supply and then turning it on again. Items which may be selected differ depending on whether RD-GL II or RD-GL III is selected by the DPX command set.	For RD-GLII: ASCII (1) For RD-GLIII: Roman 8	♦
Clear	Deletes the data which resides in the DPX buffer.	This should be used when plotting is stopped before finishing or during replotting. For details, refer to "Pausing Plotting Operations" on pages 8.	—	—
Default	Returns all setting values to their factory defaults.	For a listing of the values given these settings at the time of shipment, refer to "Factory Default" table.	—	—
Demo	This is used to confirm that the DPX is operating properly and that there are no problems.	Refer to "6 Self-testing" on page 7.	—	—
Drawing	Choosing this moves to the menu for setting [Plotting speed], and [Paper position].		—	—
Force	This sets the pen force for the pen installed in the pen stock. Because pen types are automatically determined, setting is not necessary. When making this setting, first select the pen number at the [Select] menu. When using pens from Roland DG Corp., pen force can be set separately for each type of pen corresponding to the pen numbers in the pen stock. The DPX stores these settings in memory even after the power to the unit has been turned off.	Refer to "Pen Speed and Pen Force Settings" on page 11.	Varies according to pen type	♦
HandShake	This sets the handshake mode required for serially connecting the DPX with the computer.	Supports selection of [Hardwire], [XON/XOFF], [ENQ/ACK], [Software], or [Hard & ENQ]. (These are displayed in abbreviated form.)	Hardwire	♦
ISO-**/JIS-**/ ANSI-**/ ANSI ARCH-**/ DIN-**/USER *	Choosing this moves to the menu for setting the paper size. Sets to match the loaded paper.	For further details, refer to "5 Loading the Paper" on page 5. For details of the USER size setting, see "When Plotting with an Oversize Sheet" on page 6.	ISO-A1 or ISO-A2	♦
Mirror	Select this to plot on the reverse side of a sheet (film).	[MIRROR*] is displayed when this has been selected. Refer to "Plotting on the reverse side" on page 29 for further details.	—	—

Display menu	Explanation	Remarks	Factory default	•
Normal	Ordinarily, [Normal] should be selected instead of [Mirror].	[Normal*] is displayed when this has been selected.	—	—
Offset	Moves the paper's plotting position.	Moves the bottom left paper position as the standard. For details, refer to “Setting the offset point” on pages 26 and 30.	—	—
Origin (in main menu 2)	Choosing this moves to the menu for setting [Origin].		—	—
Origin	Selects one of three choices and moves the origin point.	Refer to “Origin” on page 18 for further details.	DPX	♦
PaperSet	Set this to [Guides] when loading a sheet in alignment with the paper guides.	The plotting position moves to the lower left and the plotting area becomes smaller. For further details, refer to "5 Loading the Paper" on page 5.	Default	♦
Pen	Choosing this moves to the menu for setting [Select], [Pen Width], [Speed], and [Force].		—	—
Pen menu	Choosing this moves to the menu for setting [PenMode], [Sort], and [SuperFine].		—	—
Pencil Group	This sets lead hardness grouping when pencils are used.	For further details, refer to “[Pencil Group] Lead Hardness Grouping” on page 15.	M1	♦
Pencil Knock	Sets the distance for advancing the lead during pencil plotting.	Supports 5 cm settings within the range of 50 cm to 5 cm. For further details, refer to “[Pencil Knock] Setting” on page 14.	50 cm	♦
PenMode	When ON is setting, performs plotting using the pen force and pen speed values which are read from the pen mark for the pen taken from the pen stock, or using the settings for pen force and pen speed manually set using the [Force] and [Speed] selections (manual settings take priority).	[PenMode*] is displayed when this has been selected.	ON	♦
PenSort	When ON is setting, reduces the frequency of pen changeovers and sorts the data for plotting. Plotting time is shortened by eliminating wasted pen movement.	[PenSort*] is displayed when this has been selected.	ON	◊
PenU/D	Moves the pen up and down when a pen has been loaded on the pen carriage.		—	—
PenWidth	Sets the width for the pen loaded in the pen stock. When making this setting, first select the pen number at the [Select] menu.	When line width is set with the software, it is not necessary to make the setting on the DPX.	0.30	◊
Plotting speed	This sets the plotting speed.	Plotting time is shortened when [HighSpeed] is selected.	Normal	♦
Pre.	This adjusts overall pen force.	Supports settings ranging from 0 to 4.	0	♦
RD-GL2/3	Selects the instruction set for plotting instructions sent from the software (the computer).	The origin point changes to the approximate center of the plotting area when set to [RD-GL2] (RD-GLII) and to the lower left of the plotting area when set to [RD-GL3] (RD-GLIII).	RD-GL 2	♦
Replot	Choosing this move to the menu for setting [Areaplot], [Allplot], and [Replot menu].	For further details, refer to “Replotting” on page 8.	—	—
Replot menu	Choosing this move to the menu for setting [Area] and [WaitingTime].	For further details, refer to “Replotting” on page 8.	—	—
Select	Selects a pen loaded in the pen stock. This is used when setting [Width], [Speed], [Force], [Offset], or axis alignment.	Selection is not supported when no pens have been loaded in the pen stock.	—	—
Sort	Choosing this moves to the menu for setting [Vector Sort] and [Pen Sort].		—	—
Speed	Sets the pen speed for the pens loaded in the pen stock. Because pen types are automatically determined, this setting is not necessary. When making this setting, first select the pen number at the [Select] menu. When using pens from Roland DG Corp., pen speed can be set separately for each type of pen corresponding to the pen numbers in the pen stock. The DPX stores these settings in memory even after the power to the unit has been turned off.	Refer to “Pen Speed and Pen Force Settings” on page 11.	Varies according to pen type	♦

Display menu	Explanation	Remarks	Factory default	•
Submenu	Choosing this moves to the submenu.		—	—
SuperFine	Set this to ON when using a 0.13 mm or 0.18 mm ink pen.	[*SuperFine] is displayed when this has been selected.	OFF	♦
Top	Choosing this returns to the top menu.		—	—
VectorSort	When ON is setting, this collects similarly located line data and sorts it. Plotting time is shortened by eliminating wasted pen movement.	[VectorSort*] is displayed when this has been selected.	ON	◊
WaitingTime	When data has not been received for more than ten seconds, this function judges that the data for plotting one complete page has been received.	Refer to “Replotting” on page 8 for further details.	ON	♦
X-Axis	When plotting in alignment with a grid, such as when plotting on section film, this sets the X-axis distance from the base point.	For further details, refer to “Correcting the distance” on pages 28 and 32.	—	—
X-Point	This aligns the coordinate axis in the X-axis direction during plotting with the coordinate axis in the X-axis direction of the loaded sheet. This can be used to make adjustment when the loaded sheet is not perfectly straight, or when the grid markings of a section film or the like are slightly uneven because of shrinkage or expansion of the material.	Maximum rotation is five degrees. For further details, refer to “Setting the X correction point” on pages 27 and 31.	—	—
Y-Axis	When plotting in alignment with a grid, such as when plotting on section film, this sets the Y-axis distance from the base point.	For further details, refer to “Correcting the distance” on pages 28 and 32.	—	—
Y-Point	This aligns the coordinate axis in the Y-axis direction during plotting with the coordinate axis in the Y-axis direction of the loaded sheet. This can be used to make adjustment when the loaded sheet is not perfectly straight, or when the grid markings of a section film or the like are slightly uneven because of shrinkage or expansion of the material.	Maximum rotation is five degrees. For further details, refer to “Setting the Y correction point” on pages 27 and 31.	—	—

A plus sign (*) is displayed when the menu for setting only ON/OFF is set to ON.

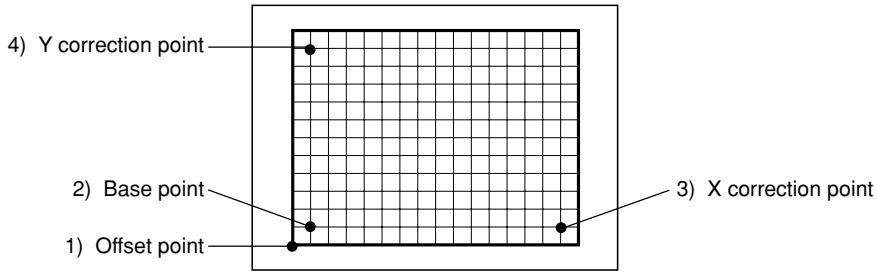
15 Setting for Each Function

Creating the Plotting on Section Film

When using a section film in plotting, the slightest discrepancy in the angle of the paper setting will result in a discrepancy between the measured angle and the actual plotting. In order to avoid such a discrepancy, the DPX has a feature to set a total of four points.
* The optional digitizing scope can be used to set points with greater accuracy.

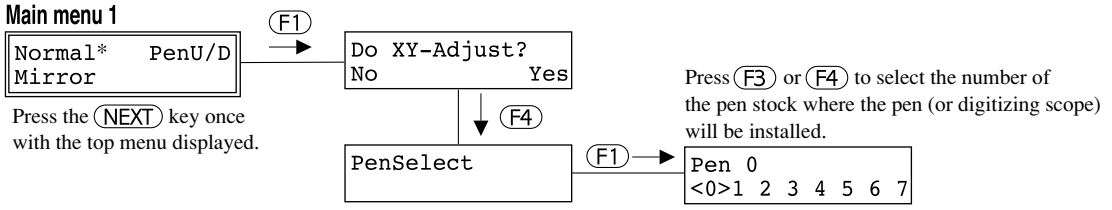
[Example of setting the points]

It is recommended to set the points shown below (except for the offset point) on the thin lines instead of the thick lines (which are used to indicate the outer frame) on the section film.



Installing the pen (or optional digitizing scope)

Install the pen on an unoccupied pen stock. When installing the optional digitizing scope, remove the pen cap rubber before installing the device on the pen stock.



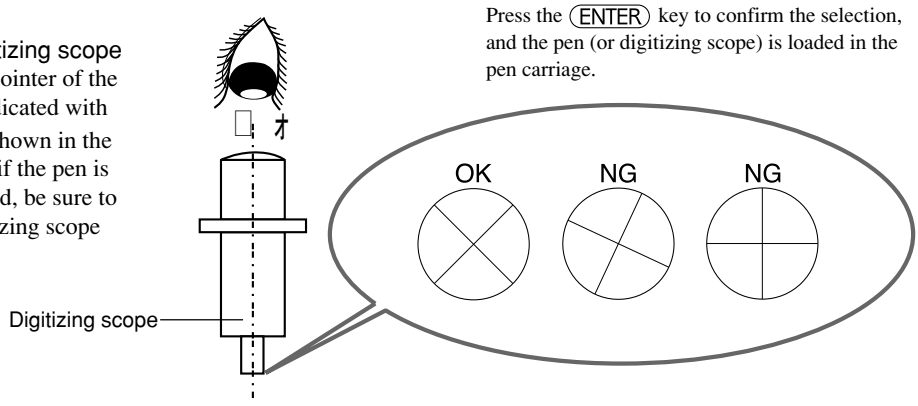
Press the NEXT key once with the top menu displayed.

Press F3 or F4 to select the number of the pen stock where the pen (or digitizing scope) will be installed.

Press the ENTER key to confirm the selection, and the pen (or digitizing scope) is loaded in the pen carriage.

When using a digitizing scope

Make sure that the pointer of the digitizing scope (indicated with "×") is located as shown in the figure. In addition, if the pen is positioned downward, be sure to look down the digitizing scope from the top.

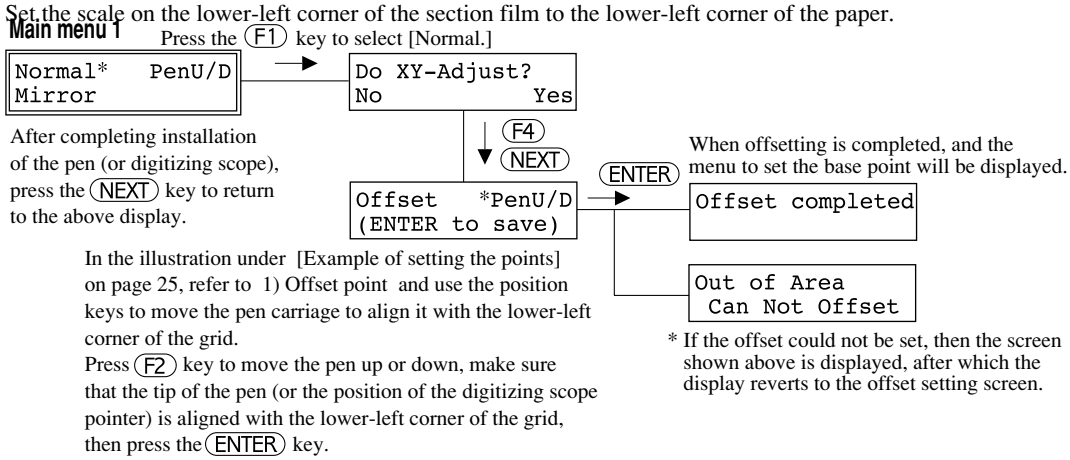


Adjust the scale at the lower-left corner

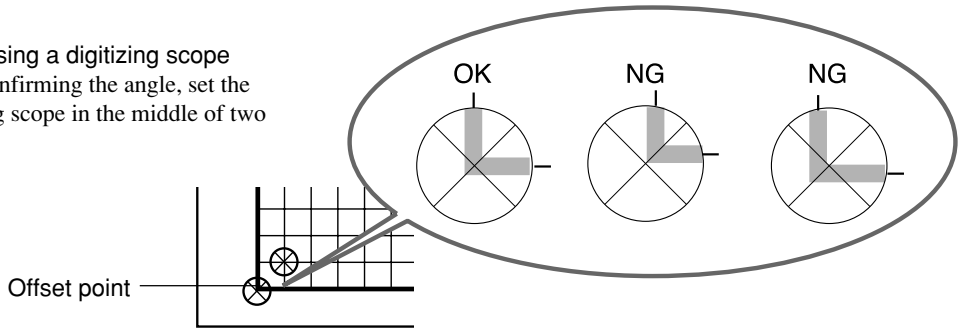
(See "[Example of setting the points]" on page 25.)

1) Setting the offset point: [Offset]

Set the scale on the lower-left corner of the section film to the lower-left corner of the paper.



When using a digitizing scope
When confirming the angle, set the digitizing scope in the middle of two lines.

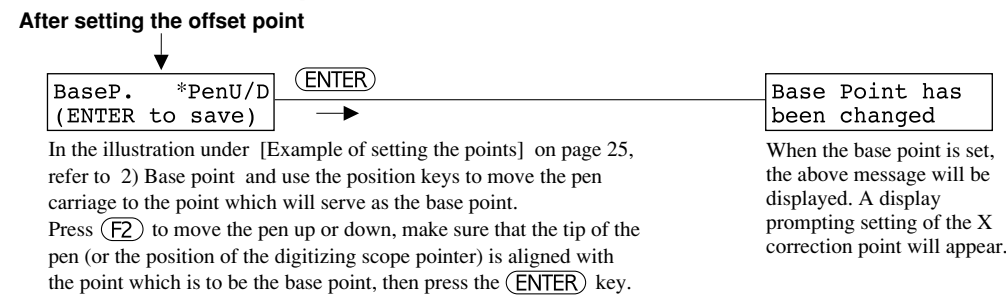


Correcting the axes

(See "[Example of setting the points]" on page 25).

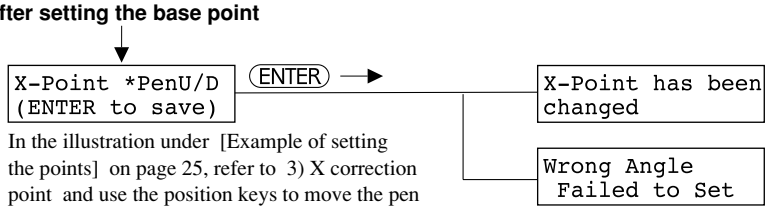
Adjust the X and Y coordinates of the plotting to those of the set paper. The angle is adjustable within ±5°. In this manner, the plotting can be adjusted to the angle of the paper, even though it is set slightly tilted. In addition, the plotting can be adjusted according to the angle of the scale on the section film even though it is tilted because of expansion or contraction of the film.

2) Setting the base point: [BaseP.]



3) Setting the X correction point: [X-Point]

After setting the base point



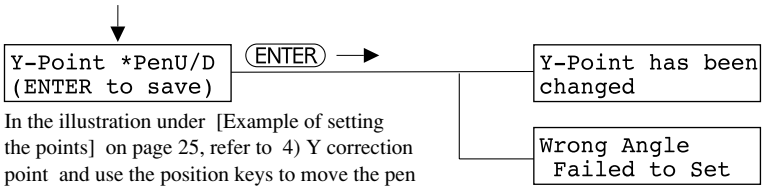
When X correction point is set, and the menu to set the Y correction point will be displayed.

In the illustration under [Example of setting the points] on page 25, refer to 3) X correction point and use the position keys to move the pen carriage to the X correction point.
Press (F2) to move the pen up or down, make sure that the tip of the pen (or the position of the digitizing scope pointer) is aligned with the X correction point, then press the (ENTER) key.

* If the angle with the base point is –5¡ or more, the X correction point cannot be set. In this case, the display returns to the base point setting screen. Re-load the sheet, refer to Adjust the scale at the lower-left corner on page 26, and carry out the procedure again.

4) Setting the Y correction point: [Y-Point]

After setting the X correction point



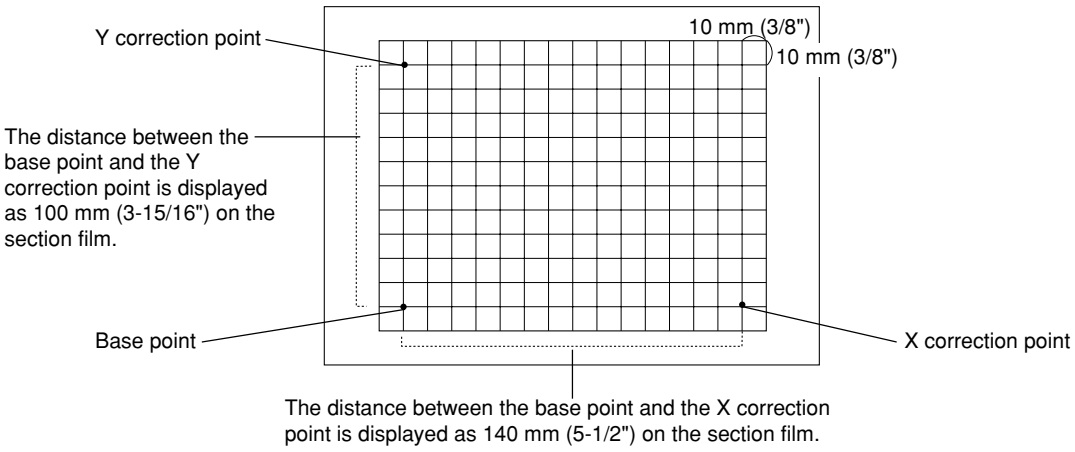
When Y correction point is set, and the menu to set the correcting the distance will be displayed.

In the illustration under [Example of setting the points] on page 25, refer to 4) Y correction point and use the position keys to move the pen carriage to the Y correction point.
Press (F2) to move the pen up or down, make sure that the tip of the pen (or the position of the digitizing scope pointer) is aligned with the Y correction point, then press the (ENTER) key.

* If the angle with the base point is –5¡ or more, the Y correction point cannot be set. In this case, the display returns to the base point setting screen. Re-load the sheet, refer to Adjust the scale at the lower-left corner on page 26, and carry out the procedure again.

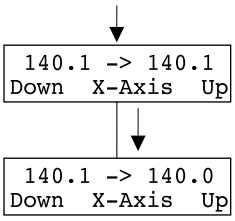
Correcting the distance

The scale on the section film may differ slightly from the actual scale, because of expansion or contraction of the film. The DPX enables correction of the discrepancy by adjusting the scale on the section film to the actual scale, in order to create precise plottings according to the scale on the section film. See the following examples:
If the distance between the base point and the X correction point is displayed as 140 mm (5-1/2") on the section film
and the distance between the base point and the Y correction point is displayed as 100 mm (3-15/16"):



Correcting the distance for X axis: [X-Axis]

After setting the Y correction point

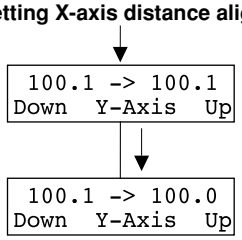


The distance between the base point and the X correction point recognized by the DPX will be displayed on at the upper left on the screen.
Press the (F3) or (F4) key to make the figure displayed on the upper right of the screen equal to the distance measured on the section film. Press the (ENTER) key to execute.

Press the (NEXT) key to continue with the setting of the correcting the distance for Y axis.

Correcting the distance for Y axis: [Y-Axis]

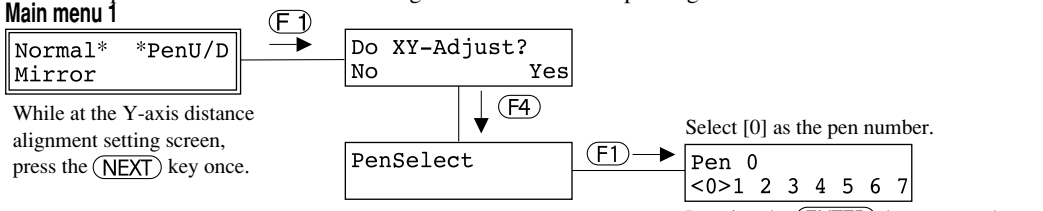
After setting X-axis distance alignment



The distance between the base point and the Y correction point recognized by the DPX will be displayed on at the upper left on the screen.
Press the (F3) or (F4) key to make the figure displayed on the upper right of the screen equal to the distance measured on the section film. Press (ENTER) the key to execute.

The above procedure concludes the making of corrections when plotting on the section film.

Main menu 1



While at the Y-axis distance alignment setting screen, press the (NEXT) key once.

Select [0] as the pen number.

Pressing the (ENTER) key returns the pen (or digitizing scope) to the pen stock.

If a digitizing scope is being used, it should be removed from the pen stock before attempting to plot.

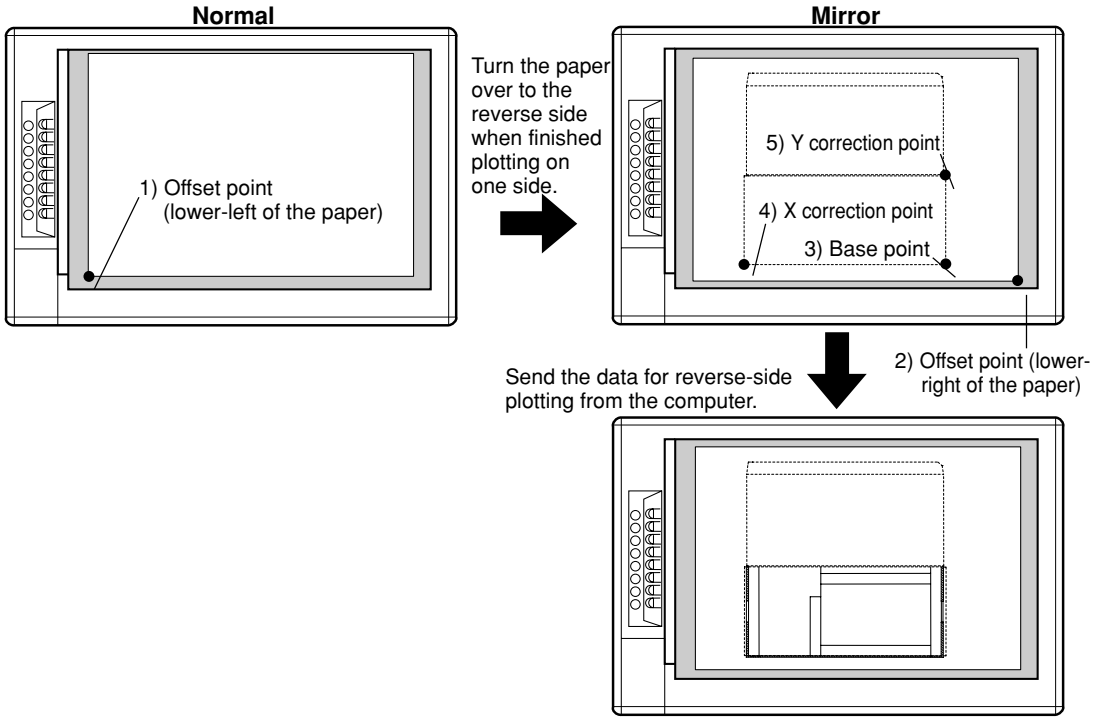
The values for the offset setting, axis compensation and distance compensation are ignored in any of the following cases (meaning you will have to correct all the settings from the beginning):

- Immediately after turning on the power
- When changing the paper size
- When switching between front-side plotting and reverse-side plotting
- When selecting [No] in response to the message [Do XY-Adjust?]

Plotting on the Reverse Side

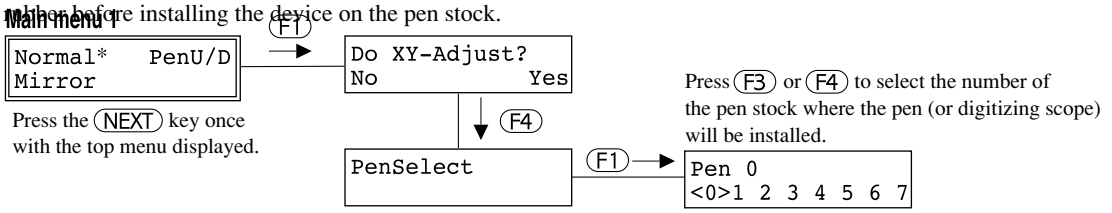
If you are performing reverse-side plotting, so that there will be no discrepancy between the front and reverse plottings, you will need to set reference points on both the front and the reverse side. There must be five such points, as shown below. Be sure to set the points at both ends of a line, not in the middle of a line.
* The optional digitizing scope can be used to set points with greater accuracy.

[Example of setting the points]



Installing the pen (or optional digitizing scope)

Install the pen on an unoccupied pen stock. When installing the optional digitizing scope, remove the pen cap either before installing the device on the pen stock.

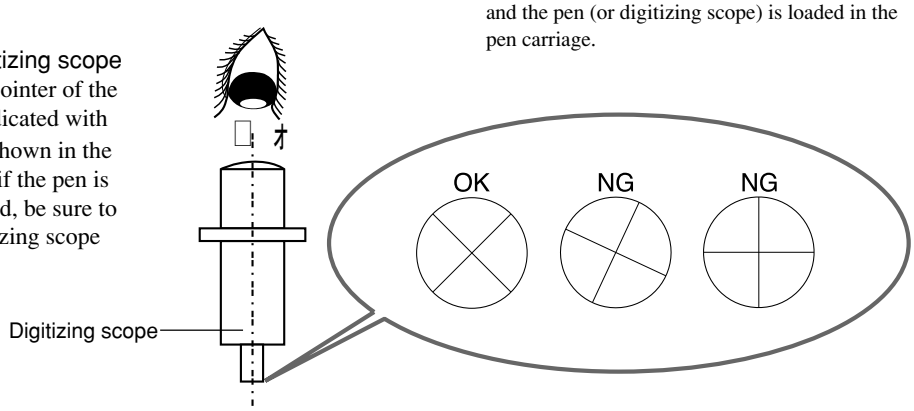


Press the (NEXT) key once with the top menu displayed.

Press (F3) or (F4) to select the number of the pen stock where the pen (or digitizing scope) will be installed.

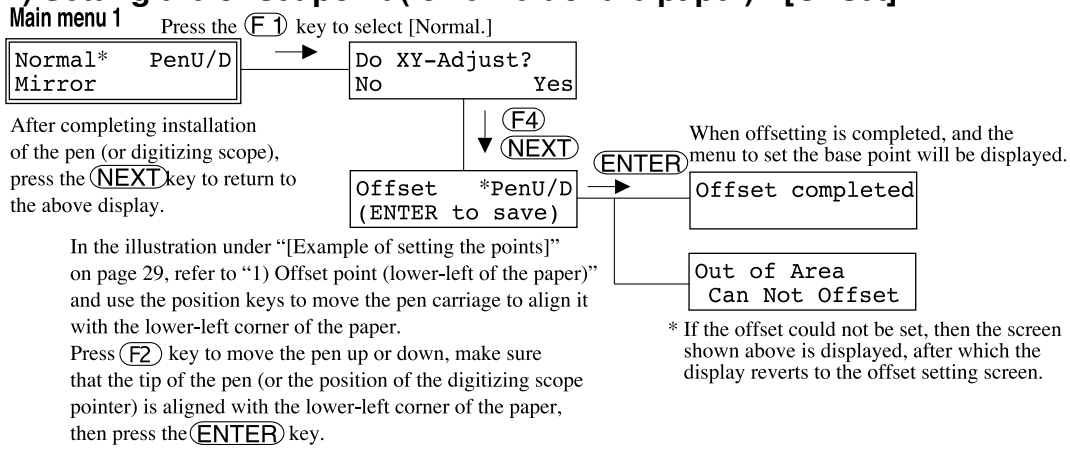
Press the (ENTER) key to confirm the selection, and the pen (or digitizing scope) is loaded in the pen carriage.

When using a digitizing scope
Make sure that the pointer of the digitizing scope (indicated with "×") is located as shown in the figure. In addition, if the pen is positioned downward, be sure to look down the digitizing scope from the top.

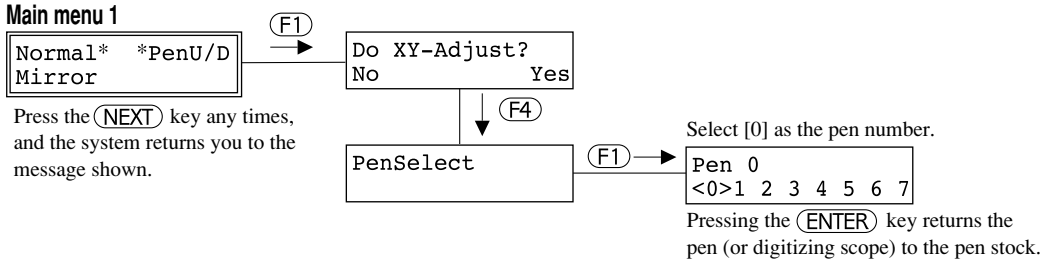


Adjust the lower-left of the paper (See "[Example of setting the points]" on page 29.)

1) Setting the offset point (lower-left of the paper) : [Offset]



After setting the offset point (the lower-left cornet of the sheet), return the pen (or digitizing scope) to the pen stock.

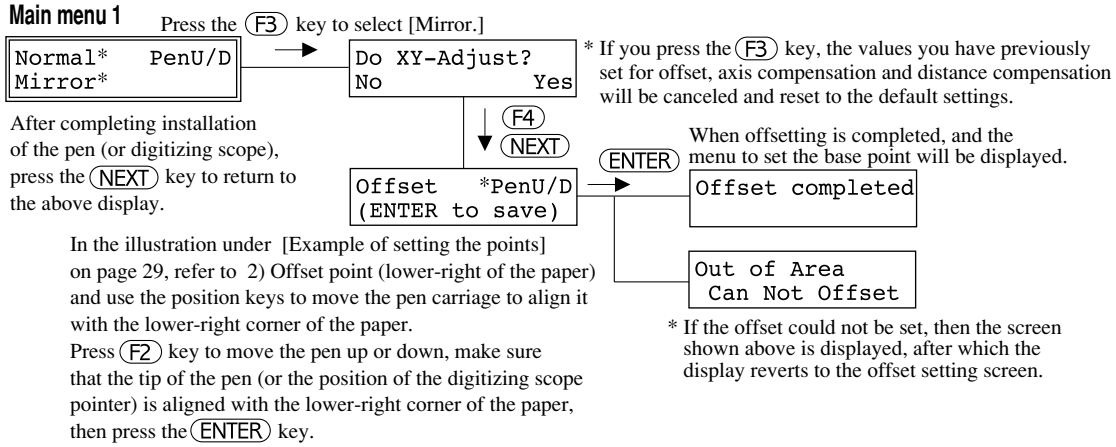


Adjust the lower-right of the paper

(See "[Example of setting the points]" on page 29.)

2) Setting the offset point (lower-right of the paper) : [Offset]

With the paper reversed and the plotting points set, set the pen (or digitizing scope) to the carriage (see "Installing the pen (or optional digitizing scope)"). Once the pen (or digitizing scope is set, set the carriage to the position of the lower-right point of the paper. If you are executing reverse-side plotting, even without setting all the points the same as for front-side plotting, with the lower-right position set here the front and reverse plottings will be aligned. However, since this only applies to moved paper that does not cross the boundaries for maximum plotting range, this method of setting cannot be done if you are using maximum-sized paper.



Correcting the axes

(See "[Example of setting the points]" on page 29.)

Adjust the X and Y coordinates of the plotting to those of the set paper. The angle is adjustable within ±5°. In this manner, the plotting can be adjusted to the angle of the paper, even though it is set slightly tilted. With the X and Y axes of the front-side plotting aligned, if you are doing reverse-side plotting, set the paper so that there is no discrepancy from the front-side plotting.

3) Setting the base point: [BaseP.]

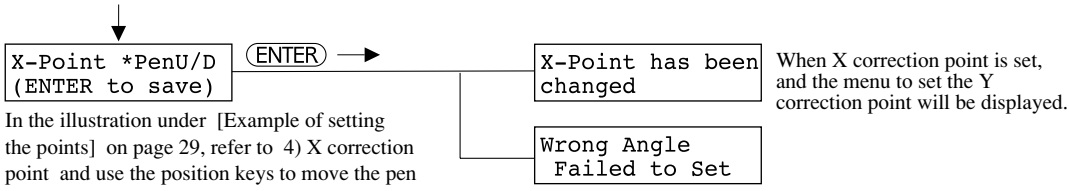
After setting the offset point

In the illustration under [Example of setting the points] on page 29, refer to 3) Base point and use the position keys to select an intersection point of lines parallel to the X and Y axes when plotting on the front of the sheet, and move the pen carriage to the selected point.
Press (F2) to move the pen up or down, make sure that the tip of the pen (or the position of the digitizing scope pointer) is aligned with the point which is to be the base point, then press the (ENTER) key.

When the base point is set, the above message will be displayed. A display prompting setting of the X correction point will appear.

4) Setting the X correction point: [X-Point]

After setting the base point



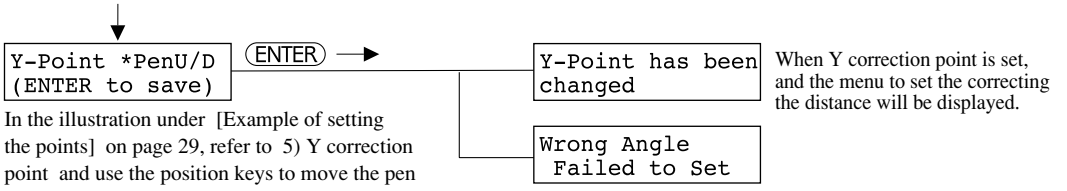
In the illustration under [Example of setting the points] on page 29, refer to 4) X correction point and use the position keys to move the pen carriage to the left edge of the line used when setting the base point (i.e., the line parallel to the X axis).
Press (F2) to move the pen up or down, make sure that the tip of the pen (or the position of the digitizing scope pointer) is aligned with the X correction point, then press the (ENTER) key.

When X correction point is set, and the menu to set the Y correction point will be displayed.

* If the angle with the base point is –5¡ or more, the X correction point cannot be set. In this case, the display returns to the base point setting screen. Re-load the sheet, refer to Adjust the lower-left of the paper on page 30, and carry out the procedure again.

5) Setting the Y correction point: [Y-Point]

After setting the X correction point



In the illustration under [Example of setting the points] on page 29, refer to 5) Y correction point and use the position keys to move the pen carriage to the left edge of the line used when setting the base point (i.e., the line parallel to the Y axis).
Press (F2) to move the pen up or down, make sure that the tip of the pen (or the position of the digitizing scope pointer) is aligned with the Y correction point, then press the (ENTER) key.

When Y correction point is set, and the menu to set the correcting the distance will be displayed.

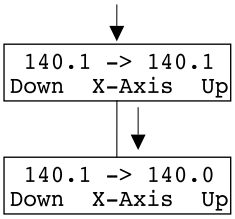
* If the angle with the base point is –5¡ or more, the Y correction point cannot be set. In this case, the display returns to the base point setting screen. Re-load the sheet, refer to Adjust the lower-left of the paper on page 30, and carry out the procedure again.

Correcting the distance

Use only gentle force to change the size of the paper. If you move the paper used for front-side plotting, the size of the plotting on the front may differ slightly from that immediately after completion of plotting. Therefore, if you execute reverse-side plotting in such a state, a discrepancy in alignment will result, giving you an inaccurate plotting. Here, the difference between the distance recognized by the DPX and that sent by the computer is corrected. The range within which correction can be made is 1%. The numerical values shown in the explanation below are given as examples.

Correcting the distance for X axis: [X-Axis]

After setting the Y correction point

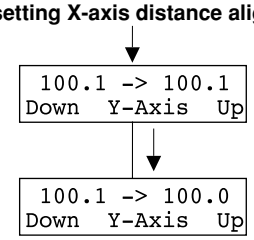


The distance between the base point and the X correction point recognized by the DPX will be displayed on at the upper left on the screen.
If you press the (F3) or (F4) key, the value displayed on the right will be the same as the distance set on the computer. Press the (ENTER) key to execute.

Press the (NEXT) key to continue with the setting of the correcting the distance for Y axis.

Correcting the distance for Y axis: [Y-Axis]

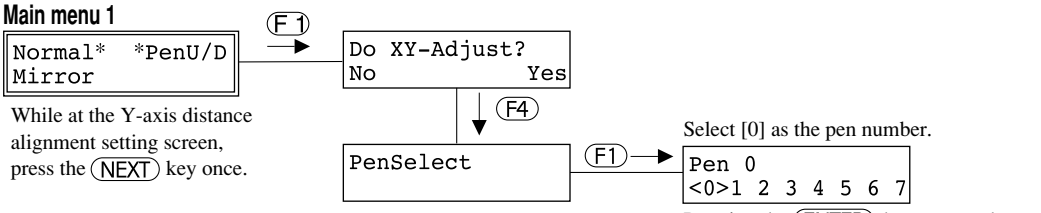
After setting X-axis distance alignment



The distance between the base point and the Y correction point recognized by the DPX will be displayed on at the upper left on the screen.
If you press the (F3) or (F4) key, the value displayed on the right will be the same as the distance set on the computer. Press the (ENTER) key to execute.

With this the correction is completed if you are performing reverse-side plotting.

Main menu 1



While at the Y-axis distance alignment setting screen, press the (NEXT) key once.

Select [0] as the pen number.

Pressing the (ENTER) key returns the pen (or digitizing scope) to the pen stock.

If a digitizing scope is being used, it should be removed from the pen stock before attempting to plot.

The values for the offset setting, axis compensation and distance compensation are ignored in any of the following cases (meaning you will have to correct all the settings from the beginning):

- Immediately after turning on the power
- When changing the paper size
- When switching between front-side plotting and reverse-side plotting
- When selecting [No] in response to the message [Do XY-Adjust?]

Plotting with the Refillable Ink Pen

Using the refillable ink pen

Do not leave the pen with the tip down for a long time. Changes in temperature will cause expansion and contraction of the air in the ink tank, resulting in leakage of ink. Having only a small amount of ink left in the ink tank will allow expansion of the air in the tank, resulting in leakage of ink. Refill ink promptly. Using the refillable ink pen on unsuitable paper will result in clogging of the pen. Use only our brand of refill ink, or pen clogging may result. If the ink is hard or the tip clogged, Do not shake the pen with excessive force or the internal pin may be bent or dislodged, especially on fine ink pens. Follow the instructions described in "If the pen tip is clogged."

Care and maintenance

Prior to storing the pen, or when planning not to use the pen for a long time, clean the pen according to the instructions described in "Washing the pen." If the pen is left without washing, the ink on the tip will harden and it will be difficult to restore it to full performance.

Washing the pen

1) Remove the pen tip from the holder, and discard the ink left in the ink tank.
2) Wash the pen tip, holder and ink tank in running water.
3) Once the water runs clear, shut off the water and wipe the parts dry.

> Ultrasonic cleaners can provide fast and efficient cleaning.
> If there is any ink left in the pen, it can lead to clogging.

If the pen tip is clogged

If the ink is hard or the tip clogged, use the following procedure to restore the pen.

1) Soak the pen tip in the pen cleaner fluid (listed below) for one or two days.
2) Wash thoroughly in water, so that no pen cleaner remains on the tip. If any pen cleaner remains, it will degrade plotting performance.

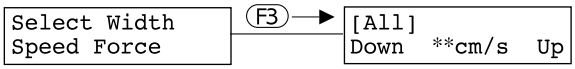
Purchase pen cleaner fluid at a stationary or drafting supply house.

Settings for plotting using the refillable ink pen

The following operations are required on the display menu when plotting with the refillable ink pen. Select the settings according to the conditions described below, since settings such as plotting speed and pen force will vary depending on the diameter of the pen.

Pens diameter	Pen speed	Pen force
ϕ 0.25 mm or more	25 cm (9-13/16")/sec.	18 g
ϕ 0.18 mm	20 cm (7-7/8")/sec. or less	18 g or less
ϕ 0.13 mm	10 cm (3-15/16")/sec or less	10 g or less

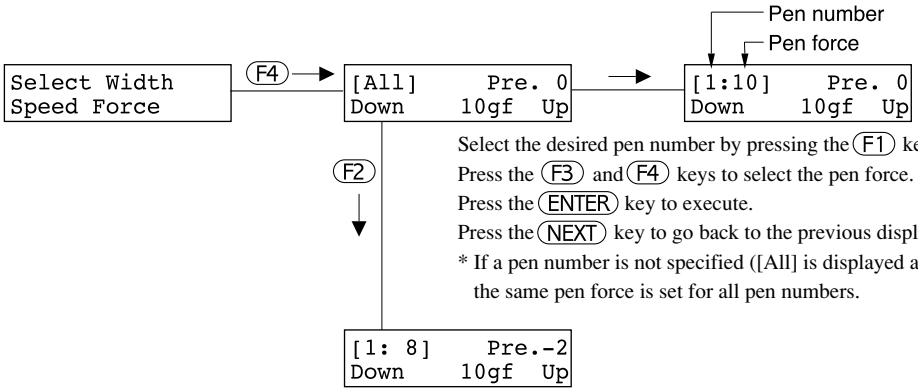
Setting speed: [Speed]



Select the desired pen number by pressing the F1 key. Press the F3 and F4 keys to select the plotting speed. Press the ENTER key to execute.
Press the NEXT key to go back to the previous display.
* If a pen number is not specified ([All] is displayed at the top right), the same pen speed is set for all pen numbers.

Setting force: [Force]

There are two ways of selecting the pen force: One gives the settings for every 8 gf, the other finer settings between 0 gf and -6 gf. Select the force according to the type of the pen. When selecting the force based on fine settings, the function for selecting settings for all pen numbers at the same time is not available.



Select the desired pen number by pressing the F1 key.
Press the F3 and F4 keys to select the pen force.
Press the ENTER key to execute.
Press the NEXT key to go back to the previous display.
* If a pen number is not specified ([All] is displayed at the top right), the same pen force is set for all pen numbers.

Press the F2 key to adjust the pen force downward for fine settings.
The force can be adjusted downward from the current force within a range of 0 6 gf (in increments of 2 gf).
* In the case above, [Force] (pen force) is set to [10 gf], and [Pre.] (fine adjustment) is set to this value minus 2 gf, which is [8 gf].

To adjust the pen force upward, press the F4 key to adjust the force one stage higher, then press the F2 key to adjust it downward. After reaching the desired force, press the ENTER key to execute.

16 What to Do If...

NOTICE

If you want to completely stop the operation of the DPX-3700A/2700A, turn off the power switch.

What to Do If...

Pen force and speed cannot be set automatically

Are you using a pen that has not been supplied by Roland DG Corp.?
Manually set force and speed through display operation.

Is the DPX exposed to strong illumination?
Under bright lights the DPX may not be able to read the marker. Try moving the DPX to a spot with dimmer illumination.

"Command Not Recognized" is displayed

Have you selected the right instruction system?
Select the correct instruction system.

If you are using application software to output plot data, have you selected the correct plotter?
Check the software user's manual and select the right plotter (see page 8 for information on plotter selection).

Plotted line terminates abruptly

Is the pen speed set too high for the pen being used?
Reduce the pen speed through display operation.

Is the pen force set too low for the pen being used?
Increase the pen force through display operation.

Is pen ink running low?
Refill if the pen is refillable, or replace with a new one if not.

Pen is not grasped or returned normally

Is the pen mounted correctly in the pen stock?
Mount the pen correctly as described on page 4.

Is the pen cap rubber mounted correctly on the pen, and in the right orientation?
Mount the pen cap rubber correctly as described on page 4.

The plotting paper tears

Are you using a pen that has not been supplied by Roland DG Corporation?
To correct the problem, manually set the pen force and pen speed using the menu-driven display. All pens supplied by Roland DG Corporation have an attached reflective sticker showing the pen type. If this reflective sticker is peeling off or has become soiled, proper pen force and speed control cannot be established by the DPX resulting in damage to the plotting paper and pen tip. To avoid such problems, we at Roland DG Corporation respectfully request that you use only our pens.
Additionally, the pen type may not be read correctly is the marker area of the pen is subjected to strong light.

Moving the pen carriage while the pen is lifted will leave a stain on the paper

Is the tip of the pen and/or the pen carriage clean?
If not clean, remove the stain (or dust) from the tip of the pen and/or the pen carriage.

Plot quality is poor

Is the paper of the recommended type?
Read "11 Paper" on page 16, and use the appropriate type of paper for the DPX.

Is the paper loaded correctly?
Read "5 Loading the paper" on page 5, and load the paper correctly.

Do the pens match the paper type?
Read "10 Pens" on page 11 and "11 Paper" on page 16, and use an appropriate type of pen.
Has [HighSpeed] been selected for the [Drawing] mode?
Change the setting to [Normal].

Plot size is wrong

If application software is being used, is the setting for the output size correct?
Read the operation manual for the software you are using, and make the correct settings for the output position and range.

Output position and range are wrong

If you are using commercial application software, are the settings for output position and range correct?
Refer to the manual for the software you are using to make the correct settings for output position and range.

Has the origin point been set at the correct position?
If the software you are using requires you to set the origin point, use the [Origin] menu to make the setting at the correct position.

Plot size or position is wrong when replotting

Is the setting for waiting time correct?
When waiting time has been set to ON, then if the data for a single plot is split in two and a pause occurs between sending the two sets of data, the two sets will be interpreted as two different plots. At this time, if a scale setting instruction or similar instruction establishing the entire plot appears only in the first set of data, then the second set will not be plotted in the correct position.
Be sure to send the next batch of data within the time set for the waiting time, or set waiting time to OFF.

If the DPX doesn't run...

DPX plotter

Is the DPX in the temporary halt state?

If so, the green (VIEW) key LED will be lit. Press the (VIEW) key to cancel that halt state.

Is the DPX power on?
Turn on the power.

Is the DPX operating incorrectly?
Follow the procedure described under "6 Self-testing" on page 7 to execute a self-test. If the self-test finds a problem, check to make sure that the problem is not due to the computer or the software.

Computer

Is the computer set up correctly?

Check the following items:

• DIP switches • Memory switches • Interface board • Other

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

Connection cable

Are the computer and the plotter 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 cable making a secure connection?

Connect securely.

Software

Is the OS (Operating System) set up correctly?

Check the following items:

• Output port selection • Output device selection • Output port open • Other

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

Are the application software settings correct?

Check the following items:

• Output device specification (select a plotter name that matches the instruction system. If the wrong plotter is selected an incorrect instruction may be output, resulting in an error).

• Communication parameters • Other

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

List of Warning Messages

Warning message	Remarks
`Wrong Angle` `Failed to Set`	The axis-alignment angle is supported up to ±5 degrees. First set the paper and then correct the angle.
`Out of Area` `Can Not Offset`	The maximum plotting range cannot exceed the plotting range for the set paper size. The offset should be set so that plotting is within the maximum plotting range.
`Pen Change Error` `Power On again`	Pen changeover failed. Turn off the power, check the situation of the pens and pen installation and then turn on the power again.
`Take off Pen` `then Push ENTER`	The pen cannot be installed directly onto the pen carriage. Remove the pen and press (ENTER).
`Set Pen` `then Push ENTER`	No pens are available in the pen stock. Install pens in the pen stock and press (ENTER).
`Put 0.3mm Lead` `then Push ENTER`	The pencil lead has run out. Fill the pencil with new leads and press (ENTER).
`Too Big Data` `Can not Replot`	Replot and area plot are not supported when plotting data exceeds 1 Mbyte. Clear the DPX I/O buffer using the [Clear] menu selection and retransmit the data from the computer.
`Motor Error` `Power On again`	A malfunction has occurred with the motor. Turn off the power and turn it on again.
`Caution` `Can not Replot`	Replot (area plot) cannot be performed.

List of Error Messages

Error message	Remarks
#1 Command Not Recognized	When an unrecognizable command is transmitted, that command is ignored.
#2 Wrong Number of Parameters	When the number of parameters supported by a command is incorrect, that command is ignored.
#3 Out of Parameter Range	When a parameter value is outside that parameter's range, it is ignored.
#5 Unknown Character Set	When a character set code not included in the current character set is specified, that character is ignored. Use [Character] on the menu to search for available character set codes.
#6 Position Overflow	The overflow positions are ignored.
#7 Polygon Buffer Overflow	The overflow was ignored.
#10 Output Request Overlap	When executing an output request command, another output request command was sent (only the first one received is effective).
#11 I/O Command Not Recognized	When a device control command error has occurred, that command is ignored.
#12 Wrong I/O Parameter	This error message occurs when an unsuitable device control command parameter is specified (the initial value is set for the parameter which generated the error).
#13 Out of I/O Parameter Range	This error message occurs with overflow of a device control command parameter.
#14 Too Many I/O Parameters	This error message occurs when there are too many parameters or when not terminated using a colon.
#15 Error in I/O Transmission	This error message occurs when a framing error, parity error, or overrun error occurs during data transmission.
#16 I/O Buffer Overflow	This error message occurs when the I/O buffer overflows. (Under such circumstances, the plotter cannot perform plotting correctly.)
#17 Baudrate Error	This error message occurs when there is an error with the setting for the rate of transmission. Turn off the power and then turn it on again before transmitting data from the computer again.
#18 I/O Error Indeterminate	An error other than those listed above has occurred.

17 List of RD-GL II Related Instructions

The list provides the instruction compatibility of the DPX-3700A/2700A with the RD-GL II instruction system and the parameters of these instructions.

The list uses marks, each of which means:

◯ : Compatible
● : Ignored

*1 : $-(2^{23})$ — $+(2^{23}-1)$
*2 : 0 — $+(2^{23}-1)$
*3 : $-(2^{23})$ — $+(2^{23}-1)^{\circ}$
*4 : $-(2^{15})$ — $+(2^{15}-1)$
*5 : Decimal fractions are rounded.

A “RD-GL II Programmer's Manual” is available for separate purchase for those wishing to create their own programs for this machine. For further information, please contact the nearest Roland DG Corp. dealer or distributor.

Instruction	Compatibility	Parameter range { }: Default
AA	◯	x, y: *1 Øc: *3 Ød: *3 {5°}
AF	●	None
AH	●	None
AP	◯	n: 0—255 *5 32 and 128 are turned OFF if the parameter is omitted. 1: Automatic pen up 16: Pen sort 2: Automatic pen return 32: Ignored 4: Pen change merge 64: Vector sort 8: Pen up merge 128: Pen group convert
AR	◯	Δx, Δy: *1 Øc: *3 Ød: *1 {5°}
BL	◯	cn: Character
CA	◯	n: -1, 0—60, 70, 80, 99
CC	◯	Øc: *3 {5°}
CI	◯	r: *1 Ød: *3 {5°}
CM	◯	n1: 0—3 *5 {0} n2: 0 or 1 *5 {0}
CP	◯	nx: *1 *5 ny: *1 *5
CS	◯	n: -1, 0—60, 70, 80, 99
CT	◯	n: 0 or 1 *5 {0}
DC	◯	None
DF	◯	None
DI	◯	run: *1 {1} rise: *1 {0}
DL	◯	n: 33—126 *5 pc: -128 *5 xn, yn: -127—+127 *5
DP	◯	None
DR	◯	run: *1 {1} rise: *1 {0}
DS	◯	s: 0—1 (RD mode) *5 {0} 0—3 (ISO mode) n: -1, 0—60, 70, 80, 99 *5
DT	◯	t: Label terminator {[ETX] (03h)}
DV	◯	n: 0 or 1 *5 {0}
EA	◯	x, y: *1
EC	●	n: *1

Instruction	Compatibility	Parameter range { }: Default
EP	◯	None
ER	◯	Δx, Δy: *1
ES	◯	w: *1 {0} h: *1 {0}
EW	◯	r: *1 Ø1: *3 Øc: *3 Ød: *1 {5°}
FP	◯	None
FR	●	None
FS	◯	f: 1—62 n: 1—8 {All eight pens} The pen force is set to the value of the FS instruction when the pen mode is Manual, you cannot change it using the FS instruction when the pen mode is Auto.
FT	◯	n: 1—6 *5 {1} d: *1 {(P2x - P1x)✕ 0.01} Ø: *3 {0°}
GM	◯	pl: Polygon buffer dl: Downloadable character buffer r1: Always 0, r2: Always 0, ps: Ignored (Always 0) The minimum, maximum and default values of each buffer are shown in the table below.
GP	◯	g: 1—8 *5 h: 1—8 *5 i: 1—8 *5 {1} j: 1—5000 (m) {100}
IM	◯	e: 0—255 *5 {223}
IN	◯	n: -1
IP	◯	P1x, P1y: *1 P2x, P2y: *1
IV	◯	s: 0—1 (RD mode) *5 0—3 (ISO mode) *5 {0} t: 0 or 1 *5 {0}

Buffer type	Min. value	Max. value	Default value
Polygon buffer	4	40886	6144
Downloadable character buffer	444	40882	6144
Pen sort buffer	72	40954	25672

Instruction	Compati-bility	Parameter range { }: Default
IW	○	LLx, LLy: URx, URy: Maximum plotting area
KY	○	k: 1—4 (A numeral set to the parameter k corresponds to a function key number.) 1: F1 key 2: F2 key 3: F3 key 4: F4 key f: 0—12 The functions allotted to the parameter f are as follows: 0: Cancel key 1: View 2: Pen up 3: Pen down 4: P1 5: P2 6: Speed 7: Ignored 8: Force 9: Ignored 10: Reset 11: Clear 12: Ignored
LB	○	cn: Character
LO	○	n: 1—9, 11—19 *5 {1}
LT	○	n: -6—+6 l: *2(%) {4%}
NR	○	None
OA	○	None
OC	○	None
OD	○	None
OE	○	None
OF	○	None
OH	○	None
OI	○	None
OK	○	None
OL	○	None
OO	○	None
OP	○	None
OS	○	None
OT	○	None
OW	○	None
PA	○	xn, yn: *1
PB	○	None
PD	○	xn, yn: *1
PG	●	None
PM	○	n: 0, 1, 2 {PM0PM2;}
PR	○	Δxn, Δyn: *1
PS	○	l: *1 w: *1
PT	○	d: 0.1—5.0 (mm) {0.3mm}
PU	○	xn, yn: *1

Instruction	Compati-bility	Parameter range { }: Default
RA	○	x, y: *1
RO	○	n: 0, 90 {0°}
RR	○	Δx, Δy: *1
SA	○	None
SC	○	Xmin, Ymin: *1 Xmax, Ymax: *1 type: 0, 1, 2 left: 0—100 (%) bottom: 0—100 (%) Xfactor: *1 Yfactor: *1
SG	○	g: 0—8 {0}
SI	○	w: *1 (cm) {0.285 cm} h: *1 (cm) {0.375 cm}
SL	○	tan Ø: *1 {0}
SM	○	s: CHR$(33)—CHR$(58), CHR$(60)—CHR$(126) (If no parameter, symbol mode OFF)
SP	○	n: 0—8 {0}
SR	○	w: *1 (%) {0.285 cm} h: *1 (%) {0.375 cm}
SS	○	None
TL	○	lp: *1 (%) {0.5%} lm: *1 (%) {0.5%}
UC	○	c: 8388608—-9999,+9999—+8388607 Δxn: -9998—+9998 Δyn: -9998—+9998
UF	○	d1—d20: *2
VS	○	v: 1—72 cm/sec n: 1—8 {All eight pens} The pen speed is set to the value of the VS instruction if pen mode is Manual, but you cannot change the pen speed using the VS instruction of pen mode is Auto.
WD	○	cn: Character
WG	○	r: *1 Ø1: *3 Øc: *3 Ød: *3 {5°}
XT	○	None
YT	○	None

The following RD-GL III instructions can be used when the DPX-3700A/2700A is in RD-GL II mode.

Instruction	Compati-bility	Parameter range { }: Default
AT	○	Xinter, Yinter: *1 Xend, Yend: *1 chord angle: *1 {5°}
BP	○	kind: 2, 3 value: Depends on kind
DF	○	None
IN	○	n: 1
IR	○	P1x: *4 {0%} P1y: *4 {0%} P2x: *4 {100%} P2y: *1 {100%}
LT	○	line type: -8—+8, 99 {Solid line} pattern length: *2 (%) {4%} mode: 0, 1 {0}

Instruction	Compati-bility	Parameter range { }: Default
PE	○	XY: *1 flag: ":", "<", ">", "=", "7" value: Depends on flag
PG	○	n: *1 For the DPX-3700A/2700A , the instruction does mode switching only without page feeding.
RP	○	n: 1—99 {1}
RT	○	Xinter, Yinter: *1 Xend, Yend: *1 chord angle: *1 {5°}
UL	○	index: ±1—±8 gap: *2

18 List of RD-GL III Related Instructions

The list provides the instruction compatibility of the DPX-3700A/ 2700A with the RD-GL III instruction system and the parameters of these instructions.

A “RD-GL III Programmer's Manual” is available for separate purchase for those wishing to create their own programs for this machine. For further information, please contact the nearest Roland DG Corp. dealer or distributor.

The list uses marks, each of which means:

- ◯ : Compatible
- ● : Ignored
- ╳ : Incompatible

integer	range
i	-8388608—8388607
i0	0—8388607
i1	1—8388607

real	range
r	-8388608.000—8388607.999
r0	0.000—8388607.999
r1	1.000—8388607.999

clamped integer	range
ci	-32768—32767
ci0	0—32767
ci1	1—32767

clamped real	range
cr	-32768.000—32767.999
cr0	0.000—32767.999
cr1	1.000—32767.999

Instruction	Compatibility	Parameter range [ ] : Effective range { } : Default
Kernel		
Basic Layout Group		
DF	○	None
IN	○	n: i [i]
IP	○	P1x, P1y, P2x, P2y: i [i]
IR	○	P1x, P1y, P2x, P2y: r [ci] {0, 0, 100, 100 (%)}
IW	○	XLL,YLL: i [i] XUR,YUR: i [i]
PG	○	n: i [i]
RO	○	angle: i0 [0°, 90°, 180°, 270°] {0°}
RP	○	ci1 [1—99] {1}
SC	○	Xmin, Xmax: r [i] Ymin, Ymax: r [i] Xfactor, Yfactor: r [i] type: ci [0, 1, 2] {0} left: r [0—100] {50} bottom: r [0—100] {50}
Vector Group		
AA	○	Xcenter, Ycenter: r [r] sweep angle: r [±360°] chord angle: r [0.5°—180°] {5°}
AR	○	Xincrement: r [r] Yincrement: r [r] sweep angle: r [±360°] chord angle: r [0.5°—180°] {5°}
AT	○	Xinter, Yinter: r [r] Xend, Yend: r [r] chord angle: r [0.5°—180°] {5°}
CI	○	radius: r [r] chord angle: r [0.5°—180°] {5°}
PA	○	X, Y: r [r]
PD	○	X, Y: r [r]
PE	○	XY: r [r] flag : {“:”, “<”, “>”, “=”, “7”} value:
PR	○	X, Y: r [r]

Instruction	Compatibility	Parameter range [ ] : Effective range { } : Default
PU	○	X, Y: r [r]
RT	○	Xinter, Yinter: r [r] Xend, Yend: r [r] chord angle: r [0.5°—180°] {5°}
Polygon Group		
EA	○	X, Y: r [r]
ER	○	X, Y: r [r]
EW	○	radius: r [r] start angle: r [±360°] sweep angle : r [±360°] chord angle: r [0.5°—180°] {5°}
EP	○	None
FP	○	None
PM	○	polygon definition: ci [0, 1, 2]
RA	○	X, Y: r [r]
RR	○	X, Y: r [r]
WG	○	radius: r [r] start angle : r [±360°] sweep angle: r [±360°] chord angle: r [0.5°—180°] {5°}
Line and Fill Attributes Group		
AC	○	X, Y : r [r] {Lower-left corner of hard limits}
FT	○	fill type: i [1—4, 10] {1} option1, option2: r [Depend on type.]
LA	○	kind: [1—3] {1} value: i or r [Depend on kind.]
LT	○	line type: ci [-8—8, 99] {Solid line} pattern length: r [>0] {4% of diagonal distance} mode: ci [0, 1] {0}
PW	○	width: i0 [0—409.6 mm] pen: [0—8]
RF	●	index width height pen number
SM	○	character [33—58, 60—126, 161, 254] (decimal code)

Instruction	Compati-bility	Parameter range [ ] : Effective range { } : Default
SP	○	pen number: i0 [ci0] {0}
UL	○	index: ci [±1—±8] gapn (n:1—20): cr0 [cr0]
WU	○	type: i [0, 1] {0}
Character Group		
AD	○	kind: i [1—4, 6, 7] value: r [Depend on kind.]
CF	●	fill mode: edge pen:
CP	○	spaces: cr [cr] lines: cr [cr]
DI	○	run: r [cr] {1} rise: r [cr] {0}
DR	○	run: r [cr] rize: r [cr]
DT	○	label terminator: mode: i [0, 1] {1}
DV	○	path: i [0, 1, 2, 3] {0 (horizontal)} line: i [0, 1] {0 (normal line feed)}
ES	○	width: r [cr] {0} height: r [cr] {0}
LB	○	None
LO	○	position: i [1—9, 11—19] {1}
SA	○	None
SD	○	kind : i [1—4, 6, 7] value: r [Depend on kind.]
SI	○	width: r [cr] height: r [cr]
SL	○	tangent of angle: r [cr] {0}
SR	○	width: r [cr] height: r [cr]
SS	○	None
TD	○	mode: i [0, 1] {0 (normal)}
Technical Graphics Extension		
BP	○	kind: i [2, 3] value: i [Depend on kind.]
CT	○	mode: i [0, 1] {0}

Instruction	Compati-bility	Parameter range [ ] : Effective range { } : Default
DL	○	character number: i [33—126] up: i [-128] X, Y: i [-127—127]
EC	●	n: i
FR	●	None
MC	●	None
MG	●	None
MT	○	type : i [0, 1, 2, 3, 4, 5] {0 (paper)}
NR	○	timeout: i [0—7200] {0}
OE	○	None
OH	○	None
OI	○	None
OP	○	None
OS	○	None
PS	○	length: i [i] width: i [i]
QL	○	quality level: i [0—100] {0}
ST	○	switches: i [-1, 0, 1, 2]
VS	○	pen velocity: i1 [1—72] pen number: i1 [1—8]
Palette Extension		
CR	×	None
NP	○	n: ci0 [2, 4, 8, 16, 32] {8}
PC	×	None
SV	×	None
TR	×	None
Digitizing Extension		
DC	○	None
DP	○	None
OD	○	None
Dual-Context Extension		
ESC %#A	×	None
ESC E	×	None
FI	×	None
FN	×	None
SB	×	None

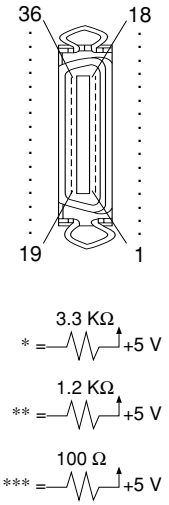
19 The Specifications of the Interfaces

Parallel Interface (in compliance with specifications of Centronics)

Connector

Signal Name	Terminal Number		Signal Name
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	$\overline{\text{STROBE}}$

Pin Connection

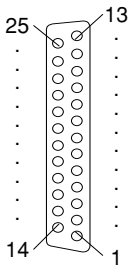


Serial Interface (RS-232C)

Connector

Signal Number	Terminal Number		Signal Number
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
S.RXD	16	4	RTS
NC	15	3	RXD
S.TXD	14	2	TXD
		1	FG

Pin Connection



Device Control Instructions

Device control instructions are used to determine the communication sequence between the plotter and computer through RS-232C interface and/or tell the plotter the current computer state. Among them, some device control instructions set the output specifications of RD-GLII/III 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.
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} {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 .P Select Handshake	[ESC].Pn:	n : Handshake type	0—3 {0}	Sets the type of handshake used. The types of handshakes corresponding to the parameters 0 to 3 and the setting combinations of their equivalent device control instructions are as follows:

n	Hand-shake	Equivalent device control instruction
0	ENQ/ACK (dummy)	[ESC].I: [ESC].M: [ESC].N: [ESC].@:
1	Xon/Xoff	[ESC].I80;;17: [ESC].M50;;10;13: [ESC].N10;19: [ESC].@;0:
2	ENQ/ACK (mode 2)	[ESC].I80;5;6: [ESC].M;17;10;13: [ESC].N: [ESC].@;0:
3	Hardwire	[ESC].I: [ESC].M: [ESC].N: [ESC].@;1:

<table>
<tr><th>Instruction</th><th>Format</th><th>Parameter</th><th>Range ({ } is default)</th><th>Explanation</th></tr>
<tr><td colspan="5">Status Instructions</td></tr>
<tr><td>ESC .A
Output Model Name</td><td>[ESC].A:</td><td>None</td><td></td><td>When receiving this instruction, returns the following characters to the host computer.
3700A (DPX-3700A)
2700A (DPX-2700A)</td></tr>
<tr><td>ESC .O
Output Status Word</td><td>[ESC].O:</td><td>None</td><td></td><td>Outputs the decimal value that represents the statusof a plotter. This value is the sum of bits shown in the table below.
<table>
<tr><th>Bit No.</th><th>Bit value</th><th>Decimal value</th><th>Meaning</th></tr>
<tr><td>0</td><td>1</td><td></td><td>Unused (Always 0)</td></tr>
<tr><td>1</td><td>2</td><td>0
1</td><td>Still does not draw.
Already drew.</td></tr>
<tr><td>2</td><td>4</td><td></td><td>Unused (Always 0)</td></tr>
<tr><td>3</td><td>8</td><td>0
8</td><td>Data exist in I/O buffer
No data exists in I/O buffer</td></tr>
<tr><td>4</td><td>16</td><td>0
16</td><td>Pause OFF
Pause ON</td></tr>
<tr><td>5</td><td>32</td><td>32</td><td>Unused (Always 0)</td></tr>
<tr><td>6, 7</td><td>64,128</td><td></td><td>Unused (Always 0)</td></tr>
<tr><td>8</td><td>256</td><td>256</td><td>Always ON (256)</td></tr>
<tr><td>9</td><td>512</td><td>0</td><td>WD, OK or [ESC].O instruction was executed.
A function key was pressed in the Keyboard Mode.</td></tr>
<tr><td>10—15</td><td></td><td></td><td>Unused (Always 0)</td></tr>
</table></td></tr>
<tr><td>ESC .E
Output RS-232C Error Code</td><td>[ESC].E</td><td>None</td><td></td><td>Outputs an error code related to RS-232C interface (see the table below), and clears the error simultaneously. At the same time, the error being displayedis canceled.
<table>
<tr><th>Error code</th><th>Meaning</th></tr>
<tr><td>0</td><td>No I/O errors</td></tr>
<tr><td>10</td><td>During an output instruction being executed, another output instruction is sent (only the current instruction is effective)</td></tr>
<tr><td>11</td><td>An error occurs in a device control instruction.</td></tr>
<tr><td>12</td><td>Incorrect parameters are set to a device controlinstruction (the default value is set to the erroneous parameter)</td></tr>
<tr><td>13</td><td>Parameters are overflowing</td></tr>
<tr><td>14</td><td>The number of the parameters set is more than specified or a colon ':' was not used to terminate</td></tr>
<tr><td>15</td><td>Framing error, parity error or over-run error at the time of data receipt</td></tr>
<tr><td>16</td><td>The I/O buffer overflows (In this case, the plotter cannot draw properly.)</td></tr>
<tr><td>17</td><td>Baudrate is set incorrectly</td></tr>
<tr><td>18</td><td>Other I/O errors occur</td></tr>
</table></td></tr>
<tr><td>ESC .L
Output I/O buffer size</td><td>[ESC].L</td><td>None</td><td></td><td>Outputs the current logic size of the I/O buffer. Note that the output is done only when the I/O buffer is empty.</td></tr>
</table>

<table>
<tr><th>Instruction</th><th>Format</th><th>Parameter</th><th>Range ({ } is default)</th><th>Explanation</th></tr>
<tr><td>ESC .T
Set Each Buffer Size</td><td>[ESC].T<P1>;<P2>;
<P3> ;<P4>;<P5>;<P6>;</td><td>P1: The size of the physical I/O buffer
P2: The size of the polygon buffer
P3: The size of the downloadable character buffer
P4: Ignored
P5: Ignored
P6: The size of the pen sort buffer</td><td>{1024 (byte)}
{6144 (byte)}
{6144 (byte)}
{25672 (byte)}</td><td>Allocates the 40 KB data buffer to the I/O buffer, polygon buffer and downloadable character buffer by defining the parameters.
A [ESC].T instruction without parameters allocates each buffer size to the default value, and then clears data in the buffers. If the sum of the four parameters exceeds 40960, the allocation of the 40 KB data buffer is readjusted. The maximum vale, minimum value and default value of each buffer are shown in the table below. Ifspecifying a value more than the maximum, the maximum value is set. If specifying a value other than 0 and less than the minimum, the minimum value is set. If 0 is specified, 2 is set to the I/Obuffer, 4 to the polygon buffer, and 0 to the downloadable character buffer, and 72 to the pen sort buffer.
<table>
<tr><th>Buffer type</th><th>Min. value</th><th>Max. value</th><th>Default value</th></tr>
<tr><td>I/O buffer</td><td>2</td><td>40884</td><td>1024</td></tr>
<tr><td>Polygon buffer</td><td>4</td><td>40886</td><td>6144</td></tr>
<tr><td>Downloadable character buffer</td><td>444</td><td>40882</td><td>6144</td></tr>
<tr><td>Pen sort buffer</td><td>72</td><td>40954</td><td>25672</td></tr>
</table>
</td></tr>
<tr><td>ESC .S
Output Each Buffer Size</td><td>[ESC].Sn:</td><td>n : Buffer type</td><td>0—6 {0}</td><td>Outputs the currently set capacity of a User-definable buffer. The each buffer capacity corresponding to the parameters 0 to 6 are as follows.
0: Whole data buffer capacity
1: Physical I/O buffer capacity
2: Polygon buffer capacity
3: Downloadable character capacity
4, 5: Outputs 0 always
6: Pen sort buffer capacity</td></tr>
<tr><td colspan="5">Abort Instructions</td></tr>
<tr><td>ESC .J
Abort Device Control Instruction</td><td>[ESC].J:</td><td>None</td><td></td><td>Aborts both the currently executed device control instruction and output.</td></tr>
<tr><td>ESC .K
Abort RD-GL II (RD-GL III) Instruction</td><td>[ESC].K:</td><td>None</td><td></td><td>After executing only the current RD-GLII or RD-GLIII instruction, clears the data buffer.</td></tr>
<tr><td>ESC .R
Initialize Device Control Instruction</td><td>[ESC].R:</td><td>None</td><td></td><td>Initializes all settings established by the device control instructions. However, each buffer size set by the [ESC].T instruction is taken over.</td></tr>
<tr><td colspan="5">Monitor Mode Instructions</td></tr>
<tr><td>ESC .Y ESC .(
Plotter ON</td><td></td><td></td><td></td><td>Ignored.</td></tr>
<tr><td>ESC .Z ESC .)
Plotter OFF</td><td></td><td></td><td></td><td>Ignored.</td></tr>
<tr><td>ESC .@
Set Monitor Mode and Control DTR</td><td></td><td></td><td></td><td>Ignored.</td></tr>
<tr><td>ESC Q
Set Monitor Mode</td><td></td><td></td><td></td><td>Ignored.</td></tr>
</table>

20 Character Sets

RD-GL II

Character	Character Set Number		
	Fixed-Space Vector Font	Variable-Space Arc Font	Fixed-Space Arc Font
ANSI ASCII (1)	0	10	20
ANSI ASCII (2)	1	11	21
French/German	2	12	22
Scandinavian	3	13	23
Spanish/Latin	4	14	24
Special	5	15	25
JIS ASCII	6	16	26
Roman	7	17	27
Katakana	8	18	28
ISO I.R.V.	9	19	29

Draws, at the current pen location, the symbols having codes 41-51 (hexadecimal) from character set numbers 5, 15, and 25.

Character	Character Set Number		
	Fixed-Space Vector Font	Variable-Space Arc Font	Fixed-Space Arc Font
ISO Swedish	30	40	50
ISO Swedish Name	31	41	51
ISO Norway (1)	32	42	52
ISO German	33	43	53
ISO French (1)	34	44	54
ISO U.K.	35	45	55
ISO Italian	36	46	56
ISO Spanish	37	47	57
ISO Portuguese	38	48	58
ISO Norway (2)	39	49	59
ISO French (2)	60	70	80
Drafting Set	99	–	–

When confirming the character set, you can use the following program in BASIC to output characters to the DPX (this program works with paper of any size).

* The program given below is an example for use when the DPX is connected to the computer via the serial port and RD-GL II is also selected as the instruction system.

```
100 CLS
110 CLOSE:OPEN "COM1:9600,N,8,1,CS65535,
    DS65535" AS #1
120 PRINT #1,"IN;"
130 PRINT #1,"IP;SC0,10000,0,10000;SI1,1;"
140 PRINT #1,"PA;PU5000,5000;"
150 WHILE( 1 )
160     GOSUB 210
170     PRINT #1,"CS";CHARNUM;";";"SS;"
180     PRINT #1,"SP1;LB";CHR$(CHARCODE);CHR$(3)
190     PRINT #1,"SP;"
200 WEND
210 'INPUT PARAMETER
220 INPUT "INPUT CHARACTER SET NUMBER( 0 - 80, 99 ) = ",CHARNUM
230 INPUT "INPUT CHARACTER CODE( &H21 - &H7E )       = &H",CCODE$
240 PRINT
250 CHARCODE = VAL( "&H" + CCODE$ )
260 RETURN
```

RD-GL III

Character	Character Set Number		
	Fixed-Space Vector Font	Drafting Font	Fixed-Space Arc Font
Roman 8	0 (48)	0 (49)	0 (50)
Norwegian (1)	4 (48)	4 (49)	4 (50)
Roman Extension	5 (48)	5 (49)	5 (50)
French (1)	6 (48)	6 (49)	6 (50)
Italian	9 (48)	9 (49)	9 (50)
JIS ASCII	11 (48)	11 (49)	11 (50)
ECMA-94 Latin 1	14 (48)	14 (49)	14 (50)
Swedish Name	19 (48)	19 (49)	19 (50)
ANSI ASCII	21 (48)	21 (49)	21 (50)
Norwegian (2)	36 (48)	36 (49)	36 (50)

Character	Character Set Number		
	Fixed-Space Vector Font	Drafting Font	Fixed-Space Arc Font
U.K.	37 (48)	37 (49)	37 (50)
French (2)	38 (48)	38 (49)	38 (50)
German	39 (48)	39 (49)	39 (50)
Katakane	43 (48)	43 (49)	43 (50)
Spanish	83 (48)	83 (49)	83 (50)
I.R.V.	85 (48)	85 (49)	85 (50)
Swedish 1	115 (48)	115 (49)	115 (50)
Portuguese	147 (48)	147 (49)	147 (50)
Kana 8	267 (48)	267 (49)	267 (50)
RD-GLIII Drafting	563 (48)	–	–
RD-GLIII Special	595 (48)	595 (49)	595 (50)

Draws, at the current pen location, the symbols having codes 41-51 (hexadecimal) from character set numbers 595 (48), 595 (49), and 595 (50).

Note: With the exception of character set 563 (RD-GLIII-Drafting), three fonts can be selected with the SD or AD instructions. The item “value” shown below is the number specified in the AD instruction for “kind=7”. Character set 563 is a vector font with fixed character width.

Value	Font
48	Fixed-Space vector font
49	Drafting font
50	Fixed-Space arc font

21 Specification of DPX-3700A/2700A

	DPX-3700A	DPX-2700A
Feature	Flatbed	
Max. plotting area	X axis: 925 mm (36-3/8") Y axis: 620 mm (24-3/8")	X axis: 600 mm (23-9/16") Y axis: 467 mm (18-3/8")
Media sizes	ISO A1, A2, A3 and A4 ISO B2, B3, B4 and B5 JIS A1, A2, A3 and A4 JIS B2, B3, B4 and B5 DIN A1, A2, A3 and A4 ANSI D, C, B and A ANSI Arch. D and C	ISO A2, A3 and A4 ISO B3, B4 and B5 JIS A2, A3 and A4 JIS B3, B4 and B5 DIN A2, A3 and A4 ANSI C, B and A
Number of pens	8	
Paper type	High quality paper (Chart paper), coated paper, tracing paper, drafting film, vellum, water based OHP film and oil based OHP film	
Pen type	Non-refillable ink pen, Refillable ink pen, 32 color plotter pens, water based fiber tipped pen, thick water based fiber tipped pen, ceramic pen, water based ball-point pen, oil based fiber tipped pen, oil based pressurized ball point pen and multi-lead pencil	
Paper holding method	Electrostatic Adsorption	
Max. plotting speed	1131 mm/sec in 45° direction (when [HighSpeed] is selected)	
Max. acceleration	1.4 G (in 45° direction)	
Max. pen force	500 gf	
Number of pen up/down	33 repeats/sec.	
Mechanical resolution	0.005 mm/step	
Software resolution	0.025 mm/step	
Distance accuracy	Whichever the greater value of ±0.1 mm or ±0.05 % of moving distance (with drafting film)	
Repetition accuracy	±0.05 mm or less (same pen/with drafting film)	
Right-angle accuracy	±0.4 mm/600 mm	
Pen change accuracy	±0.25 mm or less	
Interface	Parallel (in compliance with specifications of Centronics), Serial (RS-232C)	
Buffer Size	1M byte (800 Kbytes for replot buffer)	
Instruction system	RD-GL II, RD-GL III	
Convenience features	Pencil Grouping function, Smoothing function (plots smooth lines for circles and arcs), High speed mode, Replot function (all plot and area plot), Pen sorting function, Dual independent axis alignment and Super fine pen mode	
Control switch	(F1), (F2), (F3), (F4), (ENTER), (NEXT), (VIEW), (PAPER HOLD), (◄), (►), (▲), (▼), (FAST)	
LED	[VIEW] and [PAPER HOLD]	
Display	Liquid crystal display (16 characters x 2 lines)	
Power consumption	0.5A/117 V 0.3A/220-230 V 0.3A/240 V	
Acoustic noise level	Drawing mode: less than 60 dB (A) (according to ISO 7779)	
External dimensions	1214 mm (W) x 172 mm (H) x 841 mm (D) (47-13/16" [W] x 6-13/16" [H] x 33-1/8" [D])	889 mm (W) x 172 mm (H) x 688 mm (D) (35-1/16" [W] x 6-13/16" [H] x 27-1/8" [D])
Weight	27 kg (59.5 lb.)	24 kg (52.9 lb.)
Operating temperature	5—40°C (41—104°F)	
Operating humidity	35 %—75 % (non-condensing)	

The Specifications of the Interface

[Parallel]	
Standard	In compliance with the specifications of Centronics
Input Signal	$\overline{\text{STROBE}}$ (1BIT), DATA (8BIT)
Output Signal	BUSY (1BIT), $\overline{\text{ACK}}$ (1BIT)
I/O Signal Level	TTL level
Transmission Method	Asynchronous
[Serial]	
Standard	RS-232C specifications
Transmission Method	Asynchronous, duplex data transmission
Transmission Speed	1200, 2400, 4800, 9600, 19200
Parity Check	Odd, Even, None
Data Bits	7 bits or 8 bits
Stop Bits	1 bit or 2 bits

R8-991012