MIMAKI

APPAREL CUTTING PLOTTER

CG-100AP

INSTRUCTION MANUAL

Chapter 1 Set-up

The procedures for the initial set-up of the UNIT from unpacking to starting of the service operation shall be explained herein in detail.
Accordingly, the MANUAL must be read throughly when you purchase the UNIT.

Chapter 2 Basic Operation

The basic procedures for preparation of the paper patterns shall be explained in accordance with the flow of the operation.

Chapter 3 Application Functions

Useful functions as the application operations other than the above-mentioned basic operations shall be explained.

Chapter 4 Self Diagnosis Functions

The self diagnosis functions to search probable causes of abnormal operations of the UNIT in plotting and cutting shall be explained.

Chapter 5 Trouble Shooting and Possible Remedy

The schemes for trouble shootings and possible remedies for failed operations shall be explained.

Chapter 6 Appendix

The explanations shall be provided for the merit of the pens to be used, maintenance of the UNIT, specification of the UNIT and so forth. In addition, appropriate forms (Additional Purchase Order Sheet, Inquiry Sheet and etc.) are involved.

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D200310

CE Marking

Class A ITE

Warning : This is class A product. In a domestic environment this product may cause radio interference in which case the user may be take adequate measures.

FCC Statement (U.S.A.)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmhul 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 instruction manual, may cause harmhul interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmhul interference in which case the user will be required to correct the interference at his own expense.

Interference with Televisions and Radios

The UNIT produces high frequency under operation. A set-up or a commissioning under improper conditions as well as an installation at a place being close by other electronic equipment may cause interference each other. Since Televisionsand radios located near by the UNIT may be significantly influenced from radio disturbances (such as noise), the trouble shooting for a radio disturbance if any shall be conducted by turning ON/OFF the power of the UNIT with leaving theinfluenced equipment activated status.

The noise corresponding to the power turning ON/OFF of the UNIT indicates that there is the noise source in the UNIT. The radio disturbance shall be removed by the following procedures.

Turn the antenna bearing of the affected television, radio and so forth.

- Position the UNIT as far as possible apart from the television, radio and so forth.
- Separate the power receptacle of the UNIT from the power receptacles of the radio and television.

CAUTION

- The COMPANY, MIMAKI ENGINEERING CO.,LTD., shall have no liability for any
- kinds of damages (including but not limited to unearned profits, indirect
- Damages, special damages or any other pecuniary damages) caused by the use or an unserviceable state of the UNIT. This COMPANY shall have no liability for any prior notice of possible damage to this company likewise the above mentioned.
- Reproduction of a part or the whole of the Manual without prior written approval from this company is strictly prohibited.

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INSTRUCTION

It is our sincere appreciation for your procurement of our "Apparel Cutting Plotter" CG-100AP (referred to as "the UNIT" hereafter). This instruction manual (referred to as "the MANUAL" hereafter) covers how to operate the UNIT. Your throughly reading and fully understanding of the MANUAL before starting the operation of the UNIT are strongly recommended. In addition the MANUAL should be kept handy all the time for your routine operation.
The MANUAL consists of the following contents.

Remarks

Please contact with the nearest our Branch Office, Distributor or Marketing Department of the COMPANY for any question for contents of the MANUAL.
The MANUAL may be revised from time to time for improvement of the contents without prior notice for which your acknowledgement would be apprecia ted. When the MANUAL becomes illegible by somewhat reason such as burning and/or damage, the MANUAL may be newly purchased from our Branch Office.
Please strictly observe the following precautions, or it will be in danger of personal injury.

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HOW TO READ THE MANUAL

Marking

The following marks are used in the MANUAL.

Caution mark

Cautions for personal injuries, and failures and erroneous operations of the UNIT are indicated.

Hint mark

Informations recommendable for conveniences of operations are shown.

Display Panel/Key Marking

Display panel

To be shown as

<--CLEAR	AUTO CUT-->
<--PEN SET	HALF CUT-->

Words in the display panel for explanations shall be displayed in [ ] like [data clear].
Variable numerals and characters in the display panel shall be displayed as [∗∗∗].
When the arrow (<-) is shown on the display panel, the screen scrolling is enabled. Pressing the [-PAGE+] key scrolls through pages. When the arrow (⬅) is shown in reverse video, there is no screen that can be scrolled into view.

Key

Regardless illustrations and explanations, the displayed as below.
- + symbols are attached from [-F1+] to [-F4+] and [-PAGE+]. There are two cases, i.e. in the case of depressing from the specified symbol side, and in the case of depressing either side.

[-F1+] ..... Both of - + sides may be depressed.

[-F1] ..... - side is depressed.

[F1 +] ..... + side is depressed.

⚠ PRECAUTIONS IN INSTALLATION

Please strictly observe the following precautions in practical use of the UNIT.

• Do not touch the rotating grid roller, or a finger skin and/or nail may becomes off.

• Do not swing the attached cutter, or the cutter edge is jumped out, resulting in a personal injury.

• Once you have turned the power OFF, do not immediately re-turn the power ON. Wait for thirty seconds before re-turning the power ON. Immediately re-turning the power ON can cause the plotter to malfunction.

• Do not move the carriage by hands when powering on. It may cause a failure of the carriage.

• Do not directly attach a pen onto the carriage. Be sure the pen should be set onto the magazine.

• Do not move the position of the UNIT or aplly a vibration to the UNIT during cutting or plotting opdration.

• Keep away from a 1 meter radius from the UNIT during its plotting and cutting operations, or accidents such that hairs are caught by the grid roller or a hand or face is cut by the pattern paper may be occurred.

• Install the UNIT at a place shown belows.
place out of the sun
place free from a wind from such as an air conditioner
place free from an environment filled by dirts, dusts or cigarette smoke
place without affection from a strong vibration
place free from strong electromagnetic source

• Unless otherwise a time to set a paper, put the paper set lever at the UP position.
If the lever is stayed at the DOWN position, the pinch roller may be deform and the paper may be slipped off.

• When a cutting or plotting is started, the installed paper move hard back and forth.
If the paper touches to a body or clothes, a slipage or an erroneous operation may occur.
Be sure there is no obstacle such as a person or a thing in front of the UNIT before starting of the cutting or plotting operation.

DEFINITION OF TERMINOLOGY

The following terminologies shall be defined so as to clarify the meanings for use in the MANUAL.

Host computer

A personal computer transmitting data to the UNIT shall be called as the host computer.

RS-232C connector (RS-232C cable)

An interface connector (cable) in conformity to RS-232C shall be called as the RS-232C connector (cable).

Parallel connector (parallel cable)

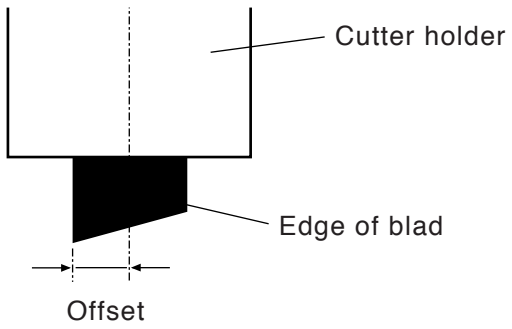
The 8 bit parallel interface connector (cable) in conformity to the standard of the Centronics Corp. shall be called as the parallel connector (parallel cable).

The Tools

The tools is a general term for the pen, sharp pen and cutter.

Tool conditions

The conditions to use the tools shall be called as the tool conditions.
There are four conditions for the tool conditions.
Speed ..... The rate to move the tools and sheet.
Press ..... The force to push the tools onto a paper.
Acceleration ... The rate to increase the speed up to the maximum speed.
Offset ..... The amount of dislocation the edge of a blade from the center of the cutter holder



Plot out

The operation (plotting and cutting) to receive data from the host computer and to output patterns shall be called as the plot out.

Receiving Buffer

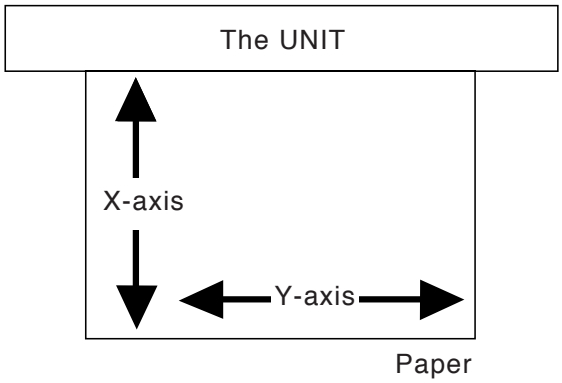
A place to temporarily store data received from the host computer shall be called as the receiving buffer.

Paper load

A behavior to move the installed paper so as to detect the width and length shall be called as the paper load.

X-axis and Y-axis

These axes show the coordinate system of the UNIT.
X-axis is the direction of the sheet feeding.
Y-axis is the direction of the carriage movement.



CLEANING OF PLOTTER SECTIONS

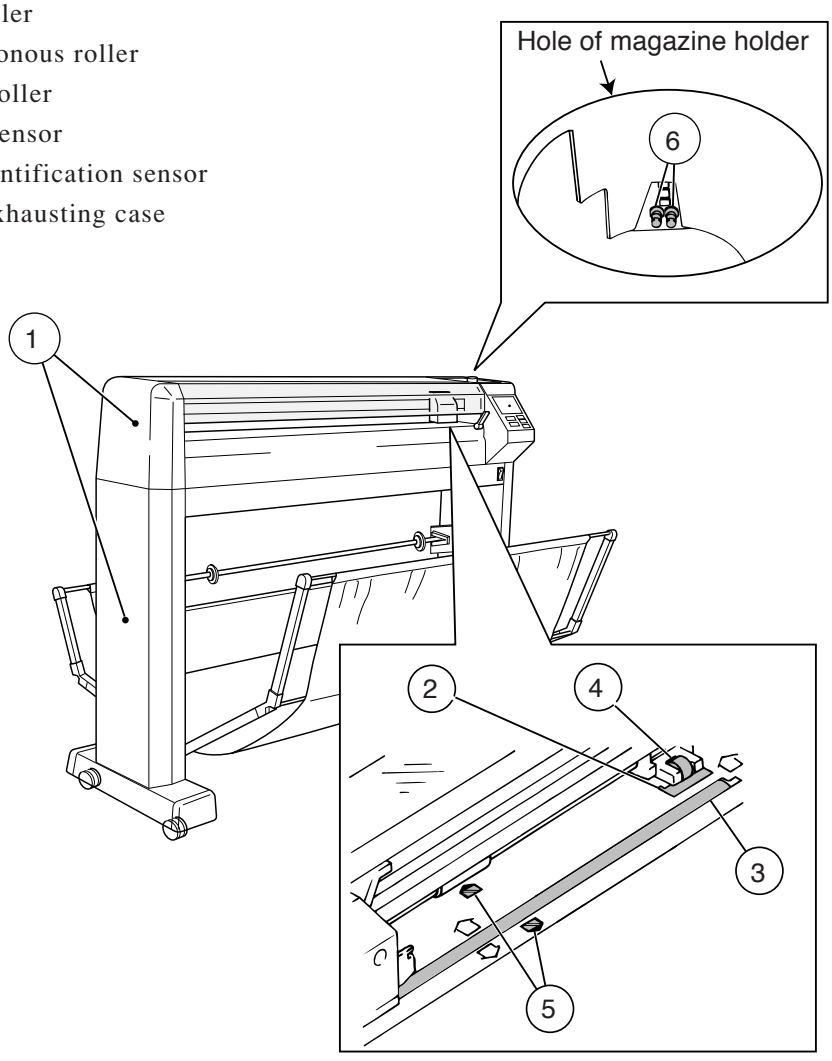
CAUTION

Strictly follow the following cautions, or an electrical shock or a failure of the UNIT may well be resulted in.

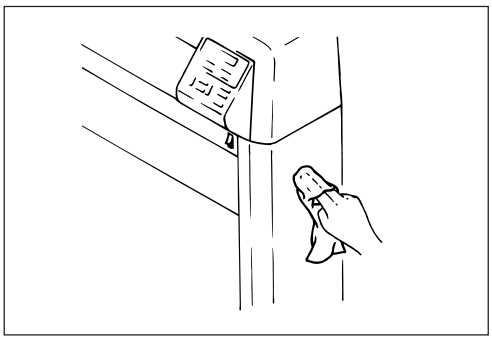
- **When the cleaning is performed, the power cable must be disconnected, and the power of the UNIT must be turned OFF.**
- **Do never disassemble the UNIT for the cleaning.**
- **Positively use the specified cleaning compound.**
- **Care must be taken to prevent inside of the UNIT from moisture. When the cleaning solvent (alcohol, benzine) is used, care shall be taken not to exessively use.**

The cleaning procedures for each section of the plotter are explained.
The cleaning shall be achieved at least once a month so as to maintain accuracy of the plotter and use it for a long time. The sections requiring the cleaning are as follows.

1. Surface and stand of the plotter
2. Grit roller
3. Synchronous roller
4. Pinch roller
5. Paper sensor
6. Pen identification sensor
7. Lead exhausting case

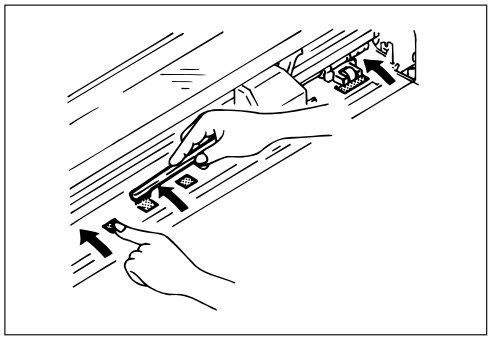


Surface and stand of plotter



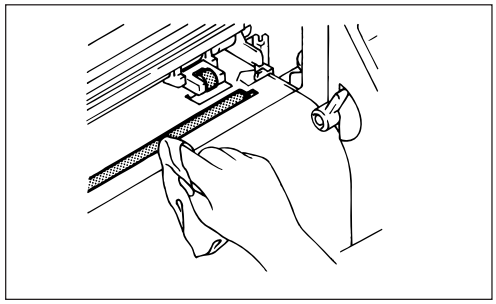
Wipe off with dry and soft cloth. For a heavy contamination, soak alcohol in the cloth and wipe off.

Grit rollers



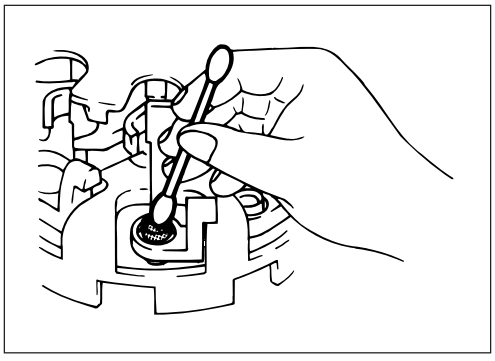
Lift the media set lever upward, then lift the pinch roller upward. The grit roller will be rotated by pushing it along with the arrow by a finger. There are seven grit rollers in the UNIT, and all rollers will be rotated by rotating one of them. Remove the contaminants such as waste paper deposited on the grit rollers with a hard tooth brush and a like. Be sure then to eliminate entering contaminants such as hair and waste paper into a space between the grit rollers and platen.

Synchro roller, Pinch roller



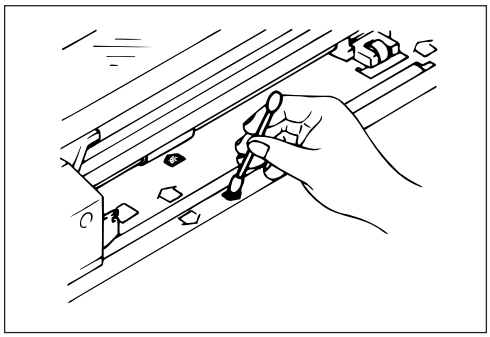
Soak benzine in a soft cloth and wipe off.

Magazine and Pen cap rubber



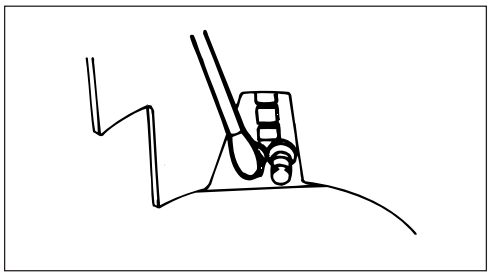
Wipe off the ink deposited on the pen cap rubber and white powder deposited on the magazine and pen holder with an applicator soaked with alcohol.

Paper sensor



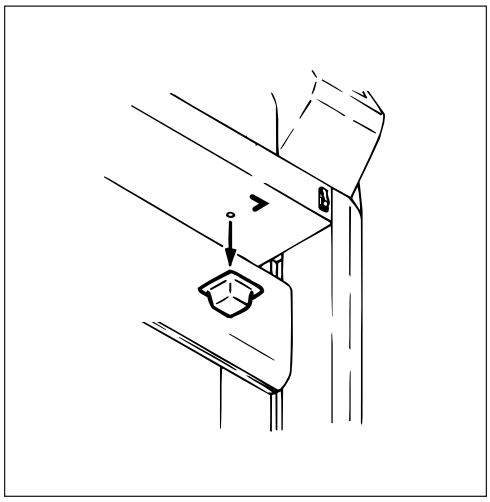
Wipe off the contaminants such as dust deposited on the surface of sensor with an dried applicator.

Pen identification sensor



Clean up the contaminants such as dust deposited on the surface of sensor with an dried applicator.

Lead exhausting case

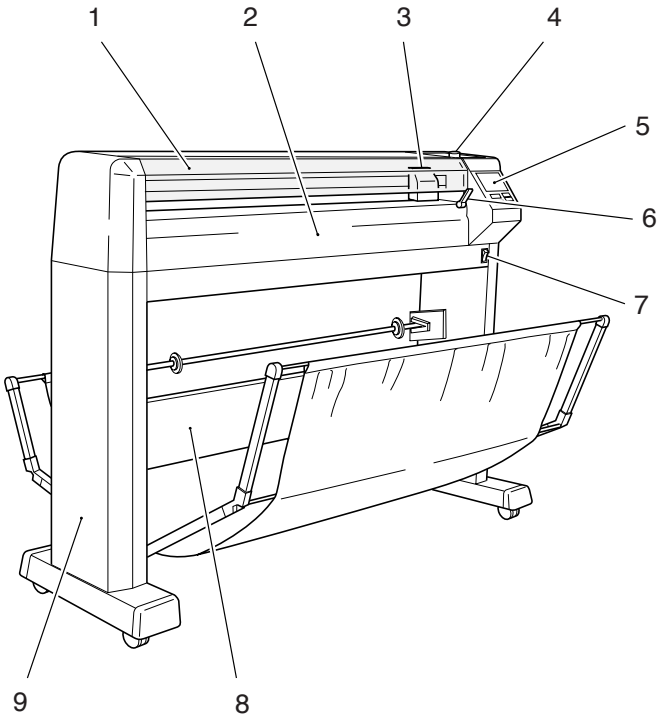


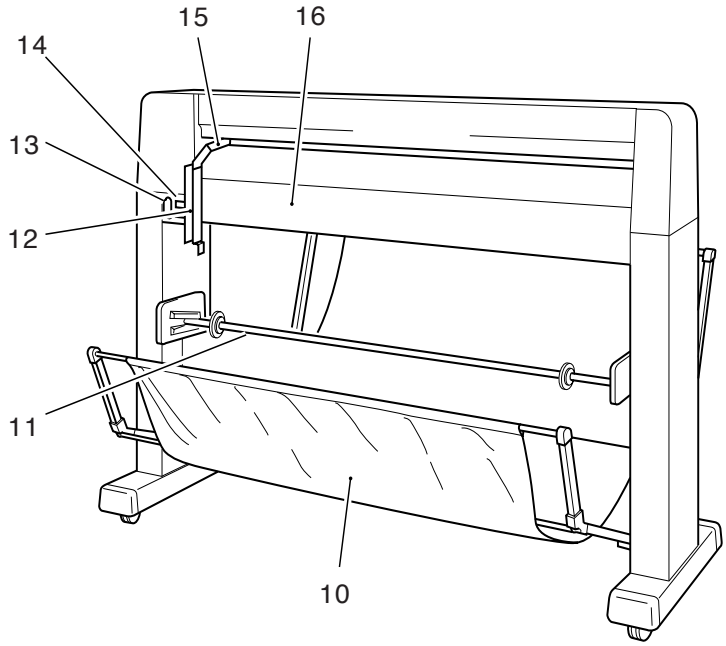
Throwout the waste lead collected in the case.

CHAPTER 1 SET-UP

This chapter covers all necessary precautions for the initial set-up before start using unit. This chapter therefore must be read before practical use.

CONFIGURATION NAME AND FUNCTION





1 Front cover

This prevents contact with the movable parts of the plotter during plotout.

2 Platen

This is the working table for the plotout.

3 Carriage

The head holding the tools moves left and right.

4 Magazine

The tools are installed. Maximum 8 pens can be set.

5 Control panel

The necessary set up for the plotter operation is accomplished.

6 Paper set lever

The paper setting is accomplished by using this lever.

7 Power switch

The power is turned ON or turned OFF.

8 Stand stay

A rolling motion of the main unit is suppressed.

9 Stand

This is the portion to support the plotter main unit. The casters equipped therewith allow the plotter to move easily.

10Paper basket

The basket catches the plot out pattern paper.

11Roll shaft

This is to set the roll paper.

12Roll paper stopper

This is to stop rotating of the roll paper when it is set.

13AC inlet

The power cable is connected.

14Interface connector

This is the serial interface connector for the RS-232C configuration.

15Clamp arm

The arm moves the roll paper stopper up and down.

16Cover for electrical component

This is the cover to protect the electrical component. This is the serial interface connector for the RS-232C configuration.

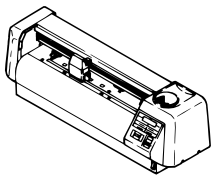
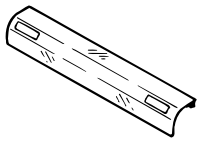
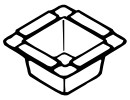
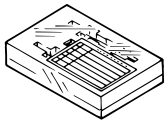
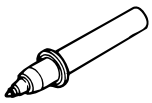
PACKING CHECK

CAUTION

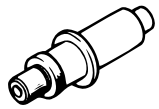
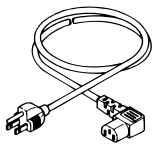
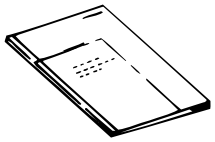
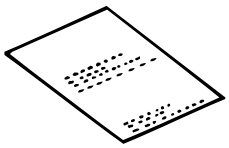
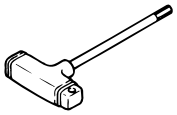
- **Handle the main unit and stands by two persons when unpacked from the containers.**

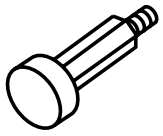
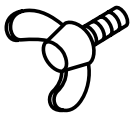
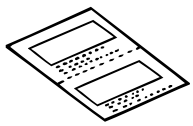
Unpack in accordance with the procedures shown on the carton, and confirm the attachments in the packing list. If any missing is found, please contact with our agent or branch office.

Main unit

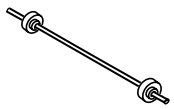
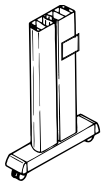
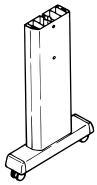
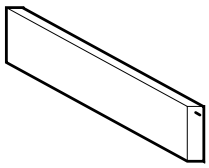
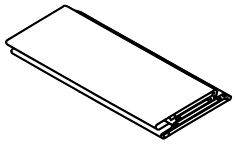
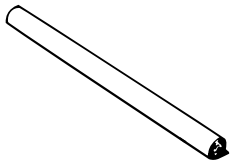
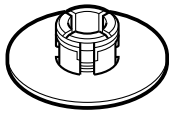
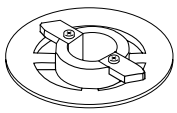
Part Name		Part No.	Qty	Illustration	Remarks
	Main unit		1		
	Front cover	M002066	1		
Box for Accessory	Magazine	M000924	1		
	Wastelead case	M000641	1		
	Mechanical pen set	OWP-XP-NS35	1		Respectively 1ea for 0.3/0.5mm with spare leads
	Water ball pen	40HP06-S	1		Black Zea Respectively 1ea forred, blue and green.

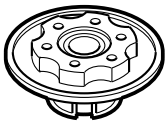
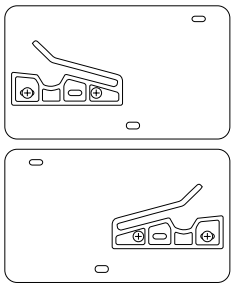
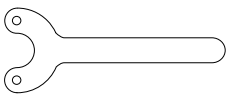
PACKING CHECK

Part Name		Part No.	Qty	Illustration	Remarks
Box for Accessory	Cutter holder	M002061	1		With 2ea of spare blade
	Power cable	VM0234-VM0089A-4M (100V)	1		One the three power cables has been factoryfactory-attached at at the time of delivery.
		VM0306B-VM304B-4N (200V)			
	Grounding adapter	YM-19207-0	1		For 2P-3P conversion
	Instruction manual	D200258	1		
	Packing list		1		
	T-hexagonal wrench	NO.9200-H6-150	1		For stand assembly
	Rubber cap	M700107	4		For stand assembly
	Butterfly nut	N4 (1 type)	4		For paper basket installation

Part Name		Part No.	Qty	Illustration	Remarks
Box for Accessory	Roll paper stopper assembly	M002063	1		
	Stopper screw	M002064	2		
	Rolling collar	Ø4x25	4		For paper bascket installation
	Spacer	M600525	4		For paper bascket installation
	Bolt	CP8x25	2		For main unit installation
	Wing bolt	M4 (Type 1) x 10	4		For roll stays (right, left) installation
	Warranty	D900019	1		

Box for stand

Part Name	Part No.	Qty	Illustration	Remarks
Roll shaft assembly	M002308	1		
Left stand assembly	M002146	1		Left hand looking at front ways
Right stand assembly	M002145	1		Right hand looking at front ways
Stand stay	M002147	1		
Paper basket assembly	M002065	1		
Roll paper	PDW950x40m, 70k	1		
Flange for 2 inch	M600186	2		
3 inch roll holder assembly right	M002316	1		

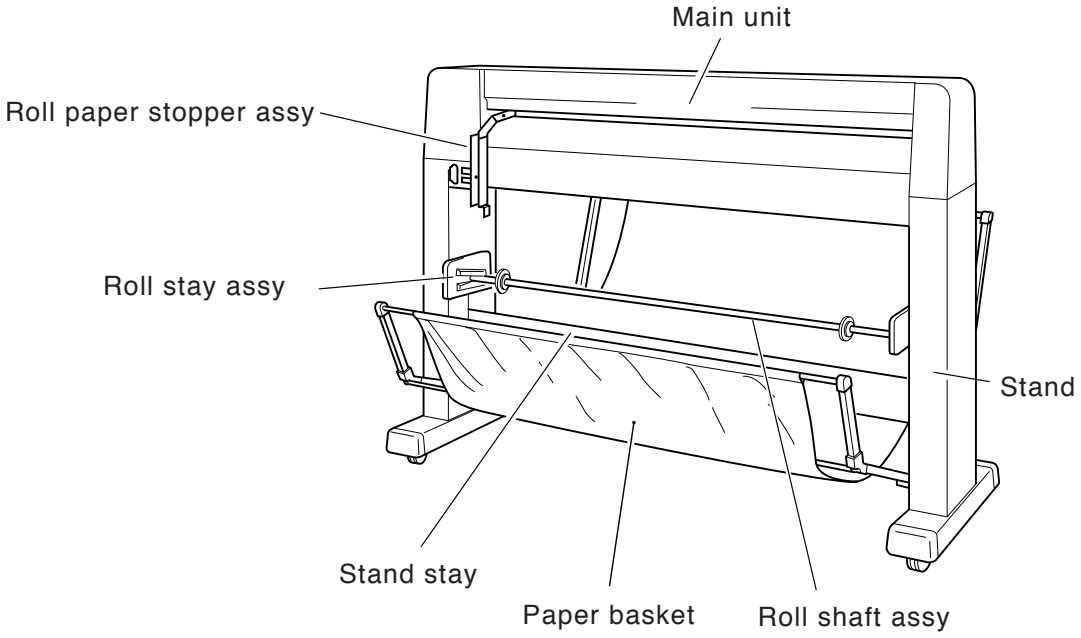
Part Name	Part No.	Qty	Illustration	Remarks
3 inch roll holder assembly left	M000815	1		
Roll stay assembly	M002310(right) M002311(left)	1each		
Handle assembly	M000794	1		

ASSEMBLY OF PLOTTER

General Description

Assemble the plotter in order as instructed below, or you can not install all of the parts.

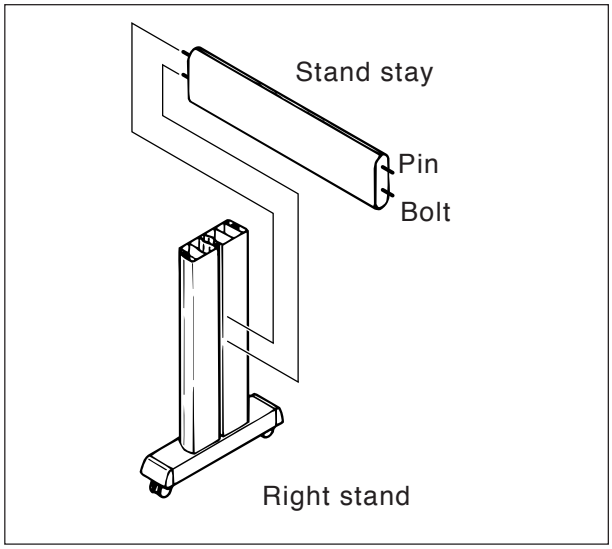
1. Assemble the stands, stand stay and main unit.
2. Install the roll shaft assembly.
3. Install the paper basket.
4. Install the roll paper stopper assembly.



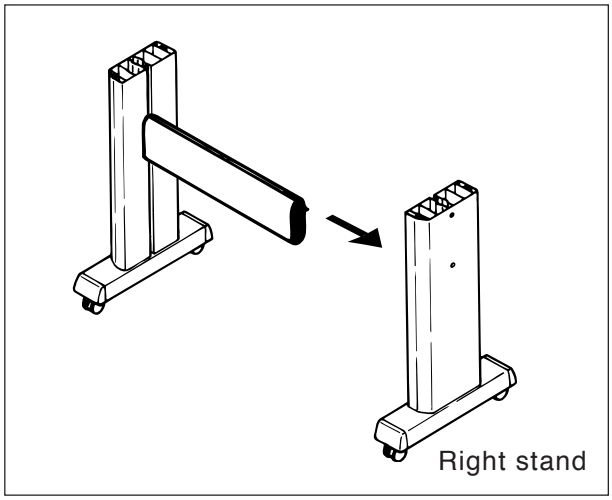
Assembly

CAUTION

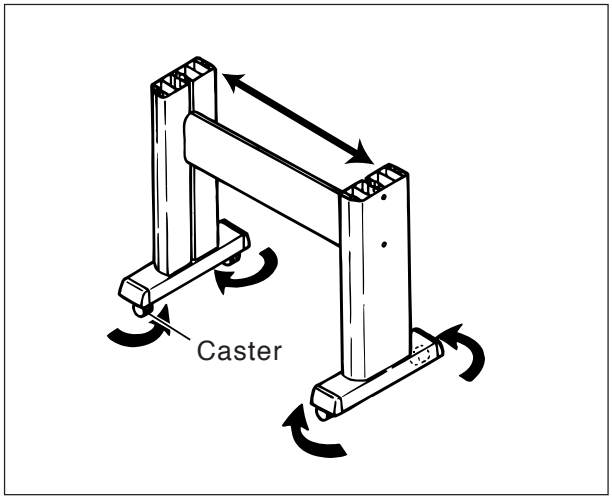
- **The assembly work must be achieved by at least two persons. If not, a personal injury may be resulted in by dropping a heavy part on the body.**
- **The assembly work must be achieved in an open place with space of at least 3m x 4m.**



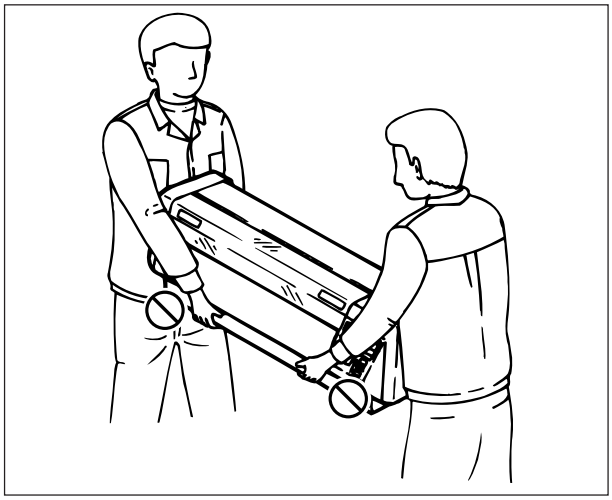
1. Insert the pin and bolt of the stand stay into the hole of the left stand with putting the pin side upward.



2. Insert the pin and bolt of the other stand stay into the hole of the right stand.



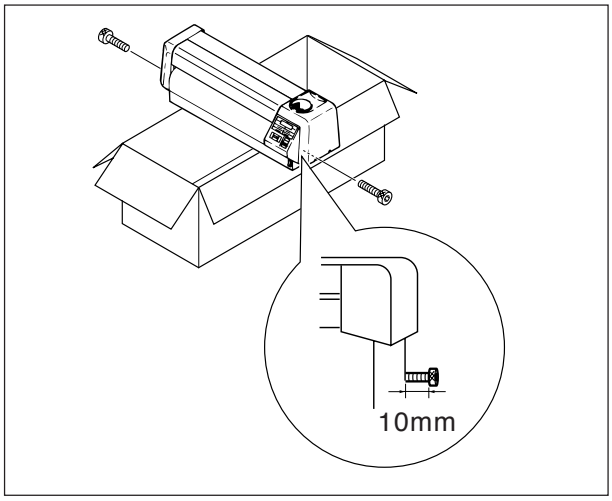
3. Turn the caster inward so as to widely open the top ends of the right and left stands.



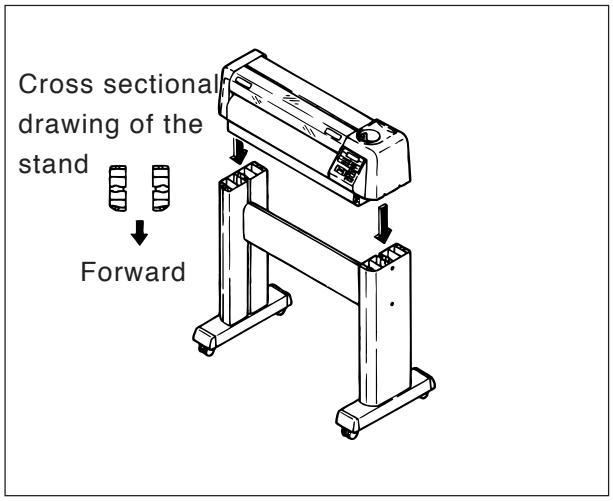
4. Remove the main unit from the packing box by two persons. Hold the main unit at positions near its center portion.

CAUTION

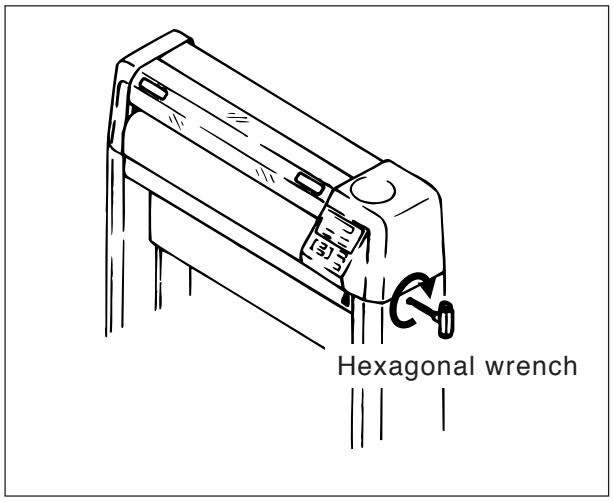
- **If the positions at the both ends of the main unit are held, it is possibility to put the hands between the main unit and stand.**



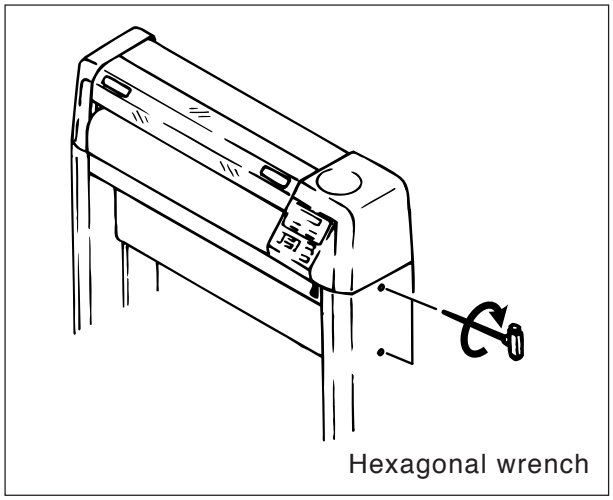
5. Put the main unit on the packing box once, insert the bolts into the holes at the both side faces.



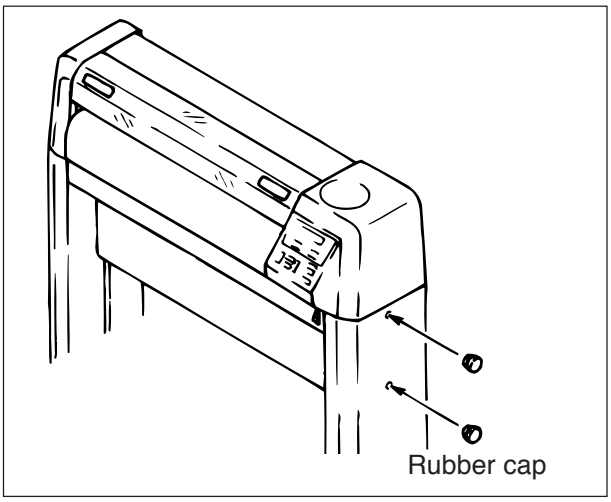
6 Enbed the main unit onto the stands. Align the front face of the main unit with the front face of the stands fot the enbedding.



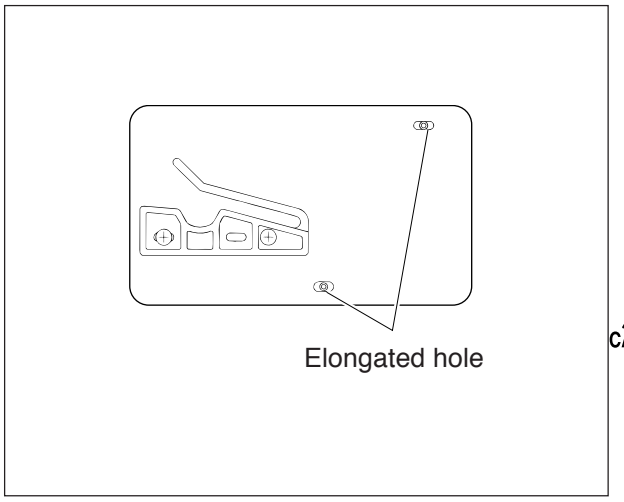
7 Insert the hexagonal wrench into the hole of the stand and finally tighten the bolt.



8 Finally tighten the stand stay bolt once tightened temporarily.

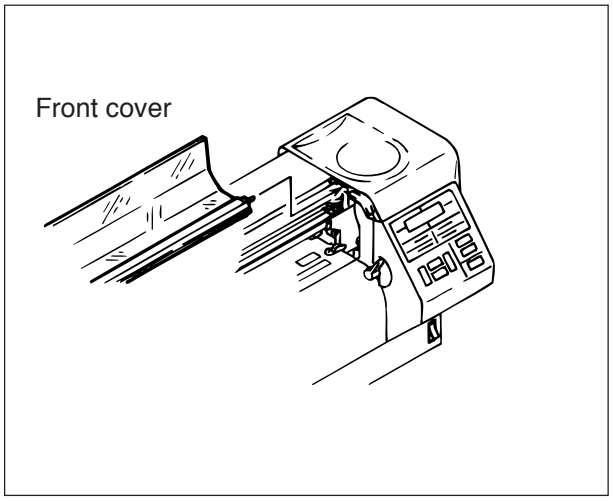


9 Plug the rubber caps into the holes of the stand for the tightened bolts.

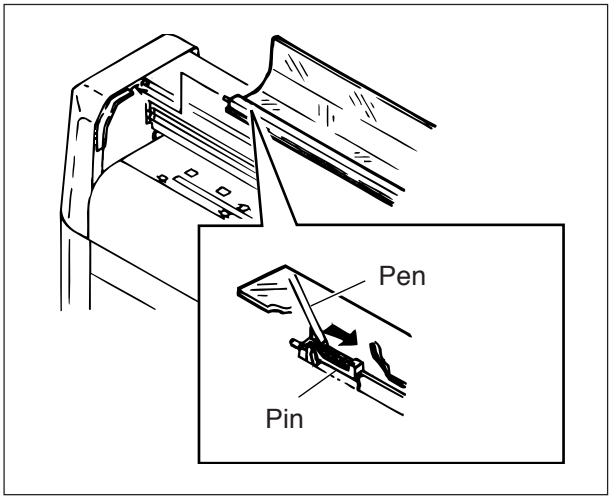


10 Position the elongated hole of the roll stay assy. so that the screw hole of the stand comes at the nearly center portion of the above elongated hole. Secure with four butterfly bolts (Left hand: 2ea, Right hand:2ea)

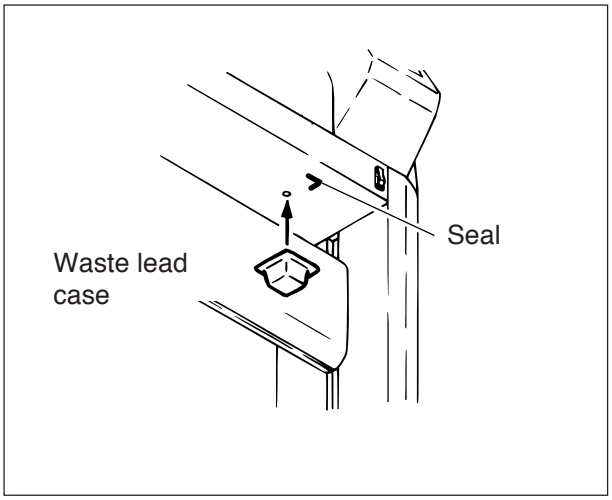
CAUTION Be sure to finely adjust the roll stays after placing a sheet of paper on the roll stays. (See page 2-8.)



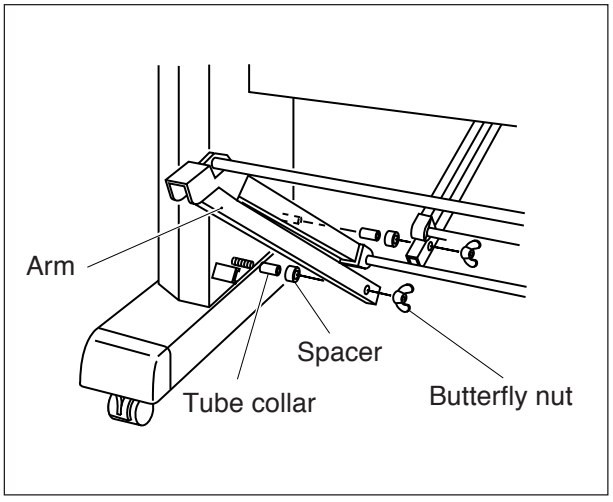
11 Install the front cover. Insert the right side pin into the hole of the main unit.



12 Put the pin at the front cover left side (refer to the figure) to the right with pen. Insert the pin, as it is, into the hole of the main unit.

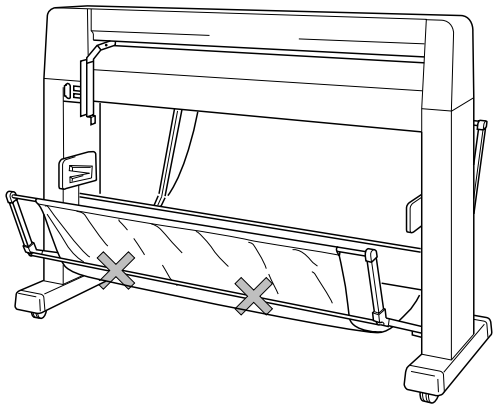


13 Install the waste lead case. Align the seal at the bottom of the main unit and the corner of the case for the installation.
A magnet enables the waste lead case to be installed.

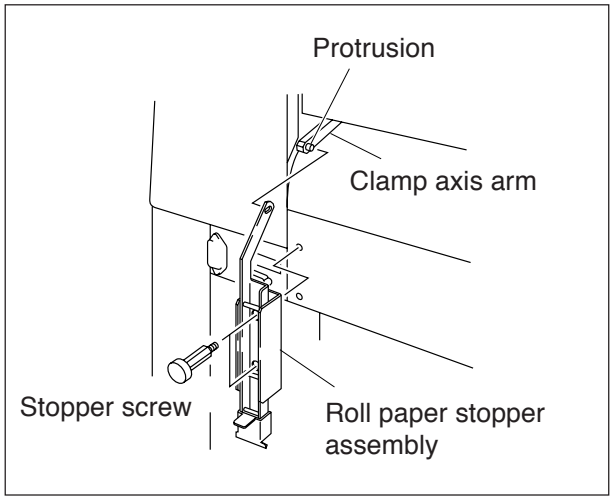


14 Install the paper basket.
Position the longer arm so as to be located at the front side.
Sequentially insert the following parts in order into the screw protruded inside of the stand.

1. Tube collar
2. Spacer
3. Hole of basket
4. Fasten with butterfly nut



- **Set the pipe so that it comes at inside portion of the paper basket cloth.**



15 Install the roll paper stopper.
Fit the guide hole of the roll paper stopper assembly onto the protrusion of the clamp arm located on the platen.
Install onto the electrical equipment cover with 2ea of the stopper screws.

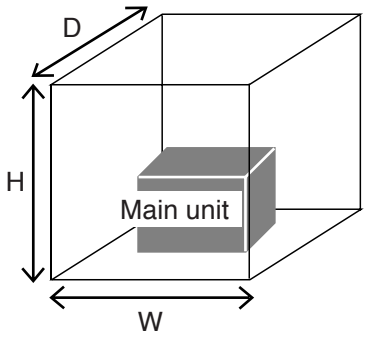
CAUTION

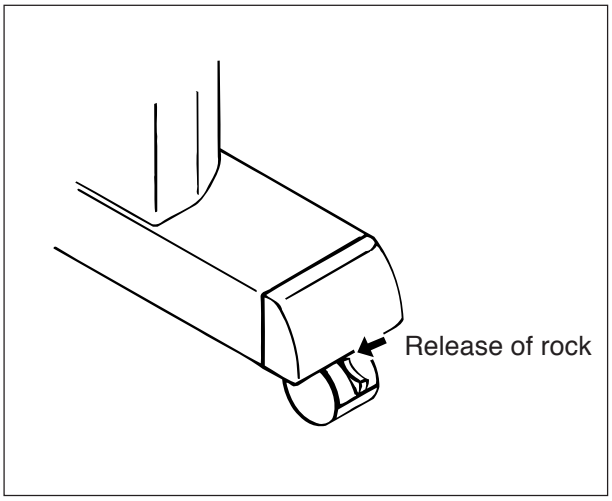
Make sure that the roll paper stopper normally functions after placing a roll paper on the machine. (See page 2-6.)

SET-UP OF PLOTTER

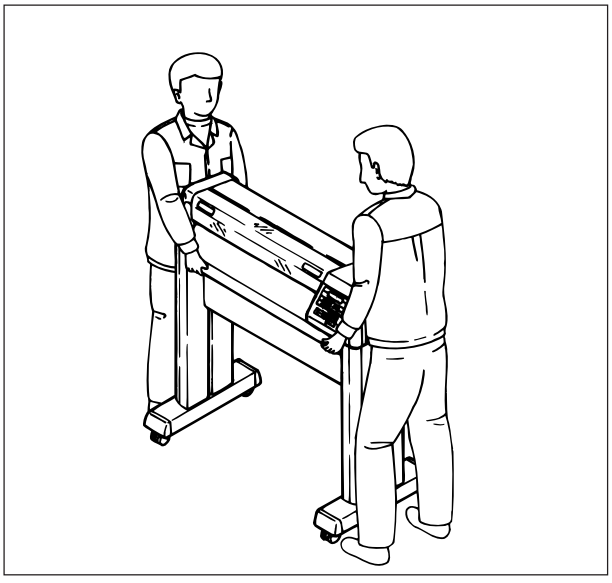
When the assembly work completes, set up the plotter at a place where meets the following conditions.

- A place out of the direct ray of the sun
  Environment of operation : 5-40°C, 35-75% (Rh)
  Environment of accuracy assurance : 15 -25°C, 35-75% (Rh)
  Without dew condensation
- A place free from a wind from such as an air conditioner
- A place free from the air filled by dirts, dusts or cigarette smoke
- A place without affection from a strong vibration
- A place free from strong electromagnetic source
- A place ensuring a space of at least
  2000mm[W] x 1500mm[D] x 2000mm[H]

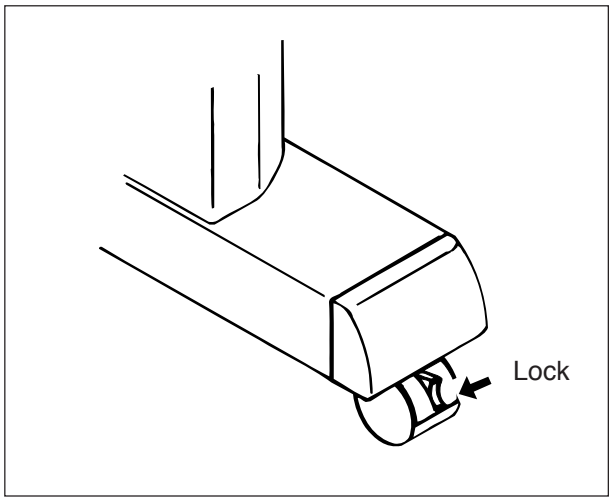




1 Release the stopper of the caster. When the stopper of the caster (4ea) are lifted, the locks are released, and the plotter becomes movable.



2 Move the plotter to the place where the plotter is located. The moving must be accomplished by two persons.



3 When the plotter is arrived at the place where it is set up, secure it at the position with locking the stopper.

CONNECTION OF CABLES

General Description

CAUTION

- **Connect the interface cable first and the power cable next in order.**
- **Use the interface cable specified by this COMPANY only.**
- **Turn off the power of the plotter and host computer**

Connect the following two cables so as to operate the UNIT.
Prepare the interface cable specified by this COMPANY and the attached power cable.

1 Connect the UNIT with the host computer. ---> Interface cable
2 Supply the power ---> Power cable

Interfaces

The UNIT equips with the RS-232C interface as the standard component
A parallel interface is also prepared as an optional component.
Please use the interface applicable to the specification of the host computer and application software. The interface connector is located at the back of the main unit.

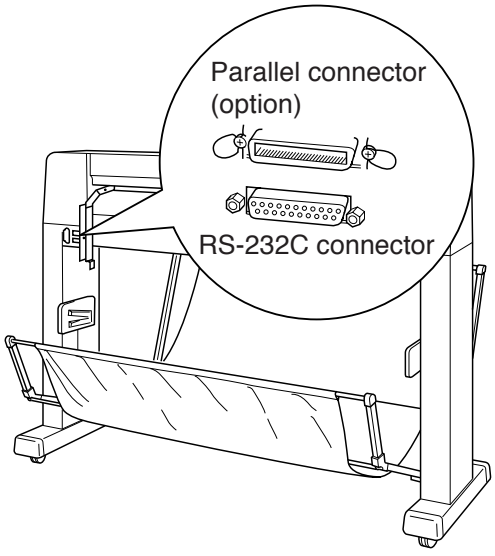
RS-232C interface:

It is necessary to establish the condition (communication condition) such as the datatransfer rate for using this interface. Establish the communication condition in accordance with the specification of the internal software of the host computer and application software.

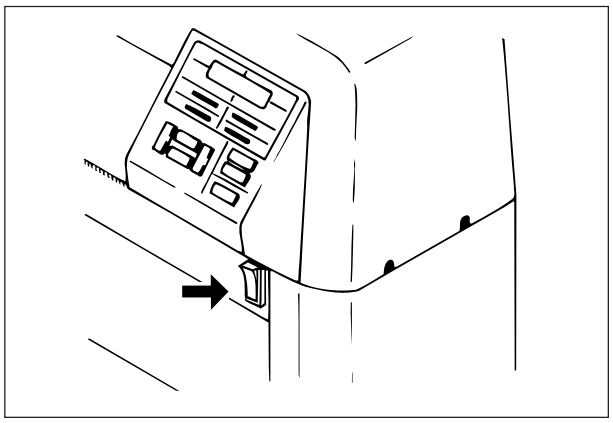
Parallel interface:

Since the specification of this interface is almost unified, this interface can be connected without setting the communication condition.

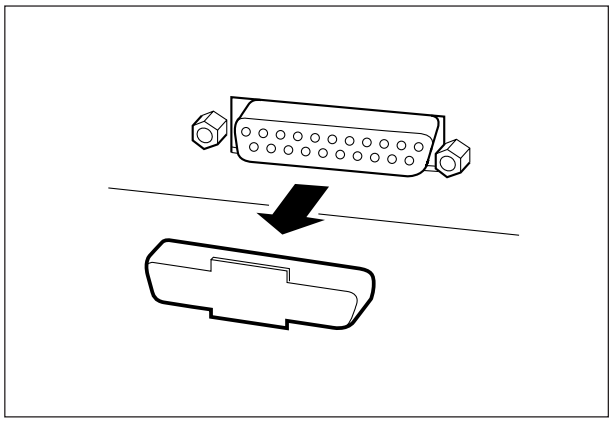
- **The communication can be achieved faster than that of RS-232C interface.**



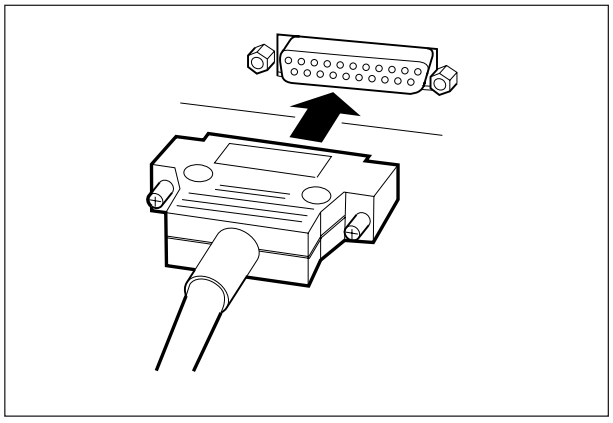
Connection of Interface Cable: RS-232C Cable



1 Make sure that the plotter power switch is turned OFF. Turn OFF the switch if it is selected at ON position.



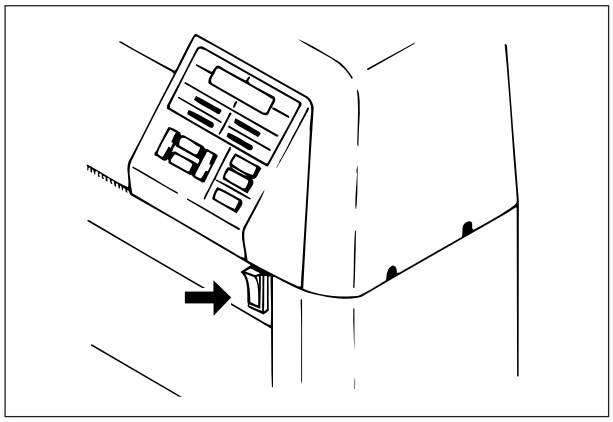
2 Remove the dust cover of RS-232C connector at the back of the plotter main unit.
The removed cover shall be kept in storage with other attached accessories.



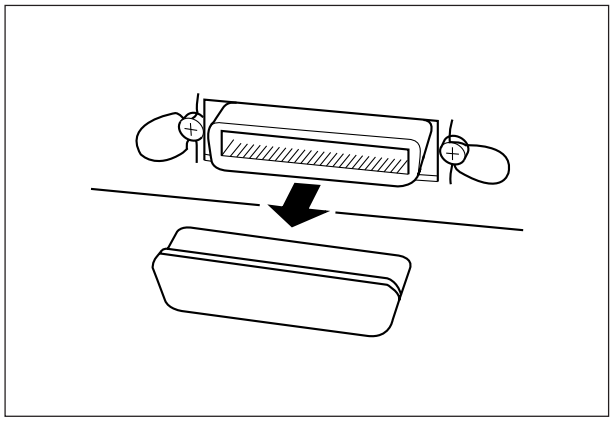
3 As confirming the correct direction of the connector of the RS-232C cable, insert into the RS-232C connector. Secure the connection by tightening the screw.

4 Make sure that the host computer power is turned OFF, and insert the connector of the RS-232C cable into the RS-232C connector of the host computer.
(Refer to the instruction manual of the host computer for the details.)

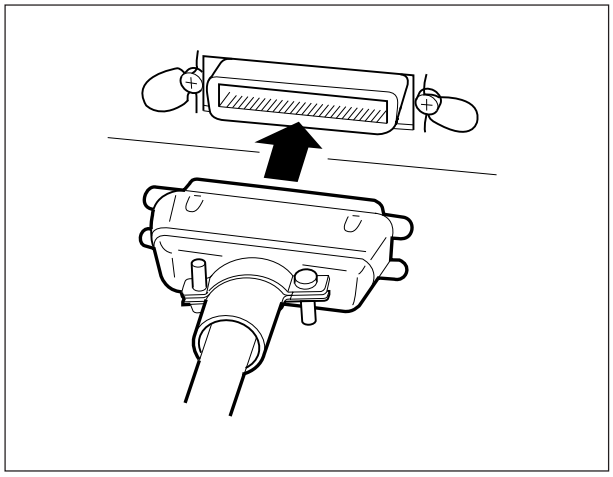
Connection of Interface Cable: Parallel Cable



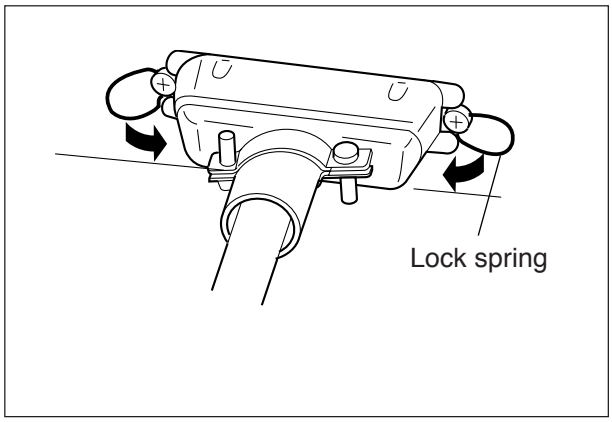
1 Make sure that the plotter power switch is turned OFF. Turn OFF the switch if it is selected at ON position.



2 Remove the dust cover of the parallel connector (option to be embodied in the factory) at the back of the plotter main unit. The removed cover shall be kept in storage with other attached accessories.



3 As confirming the correct direction of the connector of the parallel cable, insert into the parallel connector.



4 ecure the connector with the lock spring.

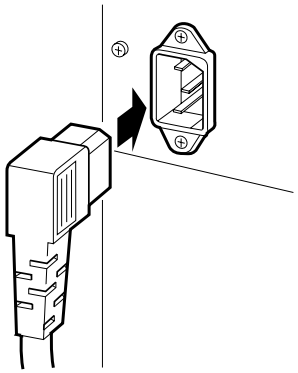
5 Make sure that the host computer power is turned OFF, and insert the connector of the parallel cable into the parallel connector of the host computer. (Refer to the instruction manual of the host computer for the details.)

Connection of Power Cable

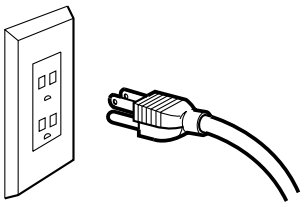
CAUTION

- **Connect the power cable to the receptacle with the grounding connection, or there are possibilities of an electric shock and/or a damage of the plotter.**
- **Put the power switch of the plotter into OFF position when the power cable is connected.**
- **Check the power cable against the label affixed on the AC inlet of the plotter. Then, connect the power cable to a receptacle with the following specifications.**

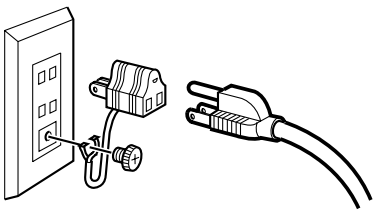
Domestic/Overseas 100V		Overseas 200 V	
Voltage	**: AC100-120V±10%**	**Voltage**	**: AC200-240V±10%**
Frequency	**: 50/60Hz±1%**	**Frequency**	**: 50/60Hz±1%**
Current	**: 1.5A and over**	**Current**	**: 0.75A and over**



1 Connect the power cable to the power inlet of the plotter.



In the case of 3 pins receptacle



In the case of 2 pins receptacle

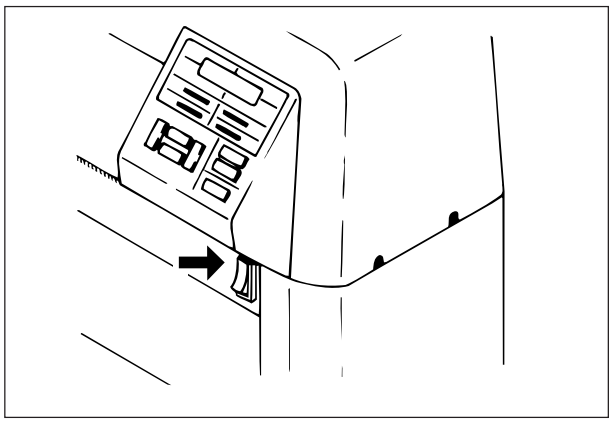
2 Connect the power cable to a 3 pins power receptacle. For the connection to a 2 pins receptacle, install the grounding adapter, attached accessory, to the power cable, then properly ground the bonding cable (green).

POWER ON/OFF

CAUTION

- **Make sure the following items before turning the power ON.**
  The media set lever shall be the up position.
  The movable portion of the plotter and nearby shall be cleared from the media, pen and etc.

Turning the power ON



1 Turn the power ON. The power indicating lamp will be turned ON.

System Version *-**
448KB

System Version *-**
448KB + 1MB

2 The display as shown left will be appeared.

- **When the optional receiving buffer is incorporated, the display as shown left will be appeared.**

3 The carriage moves to the right end.

CHANGE CUTTER BLADE?
⬅YES NO➡

4 When a magazine is loaded on the plotter, the message shown in the illustration given at the left will appear on the display panel.
If you have replaced the cutter with a new one before turning the power ON, press the [-F3+] key.
In any case other than the above, press the [-F4+] key.
If no magazine is loaded on the plotter, proceed to Step 6.

MAGAZINE INITIAL

5 Initialize the magazine.

<--CLEAR	AUTO CUT-->
<--PEN SET	HALF CUT-->

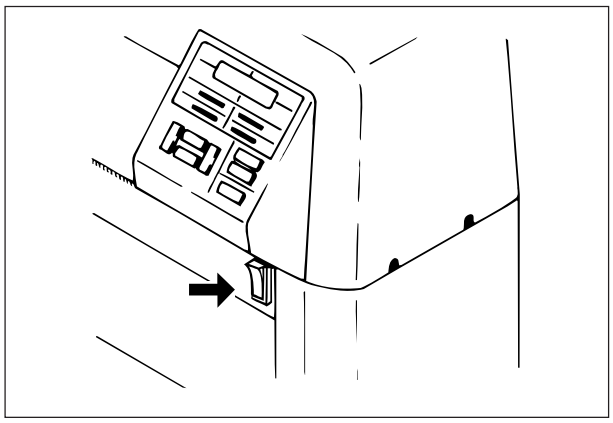
6 When movement of the carriage and magazine, the display as shown left will be appeared.

- **If no display is obtained by the procedure described Subpara. 6, the media set lever is at the down position. Raise the set lever upward, and the display will be appeared.**

Turning the Power OFF

CAUTION

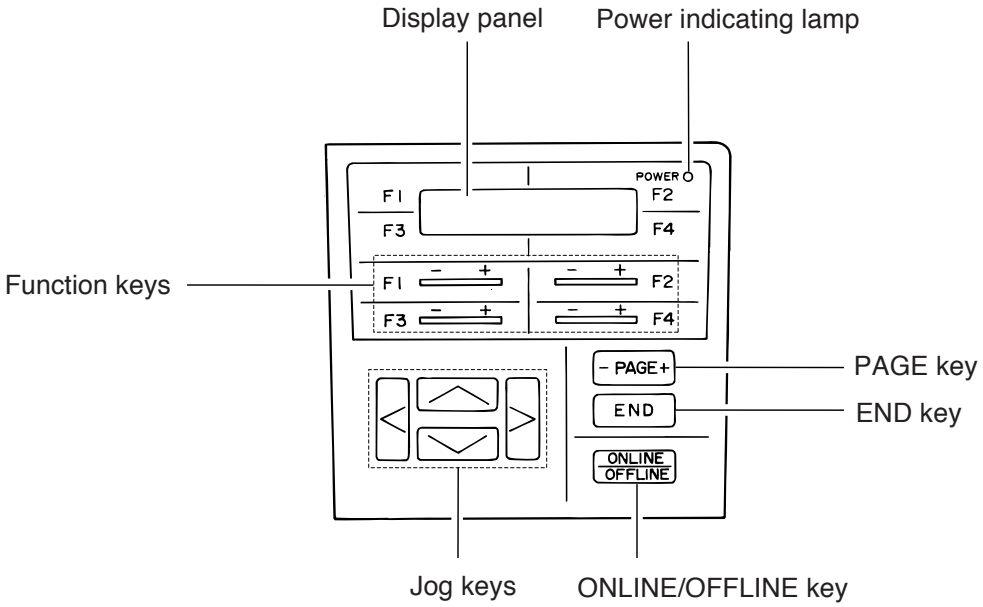
- **Do not turn OFF the power while receiving data or existing due out data. If not, a malfunction will be resulted in by turning ON the power at the next time.**



1 Put the power SW at the OFF position. The power indicating lamp will be lighted OFF, as well as the display on the LCD will be faded out.

CONTROL PANEL COMPONENTS

The names and functions of the control panel components shall be explained.



Name	Marking	Functions
Display panel	LCD	Status of the plotter and setting items are displayed by means of 20 characters by 2 rows.
Power lamp	Power lamp	Green lamp will be lighted on by turning the power ON.
Function keys	-F1+	The key shall be used for selection of items or input of set values. Both sides have symbols, and no making differece by pressing either side.
PAGE key	- PAGE + - PAGE PAGE +	The key shall be used for changing pages of the menu and submenu. When both sides have symbols, either side may be pressed. If one side has a symbol, which shall be pressed.
END key	END	The key shall be pressed for entering the set values.
ONLINE/ OFFLINE key	ONLINE OFFLINE	The key shall be pressed to change over the offline mode and online mode. When pressing the key under online mode, the operation will halts.
Jog keys	< > ^ v	The key shall be used to move media and carriage and input the set values.

OPERATION MODES

General Description

When turning the power ON, the UNIT becomes under the "ONLINE MODE".
The UNIT involves the following modes.

OFFLINE mode

The mode to establish various kinds of the plotter settings.

ONLINE mode

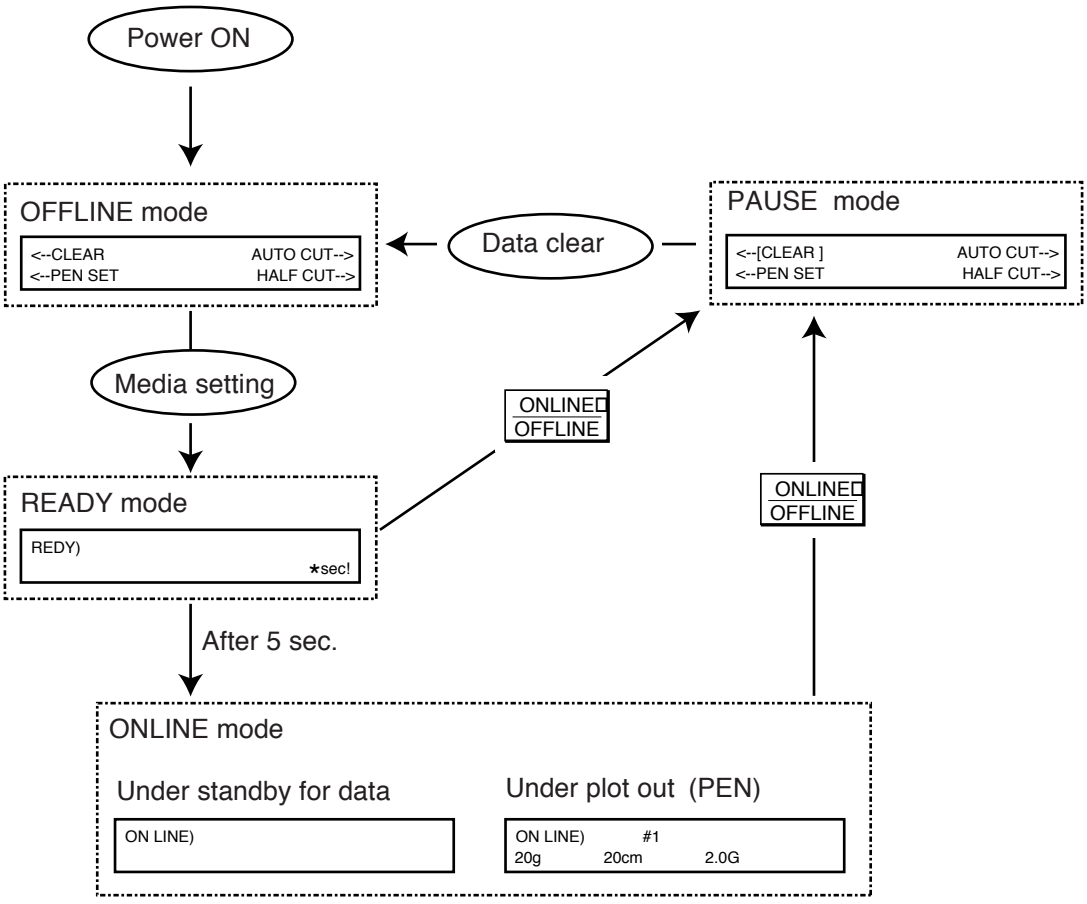
The mode to plot out the data received from the host computer. When media is set and the paper load is executed, the mode automatically changed over to the "ONLINE" mode.

READY mode

This mode means the time for 5 seconds after the media setting and paper loading.

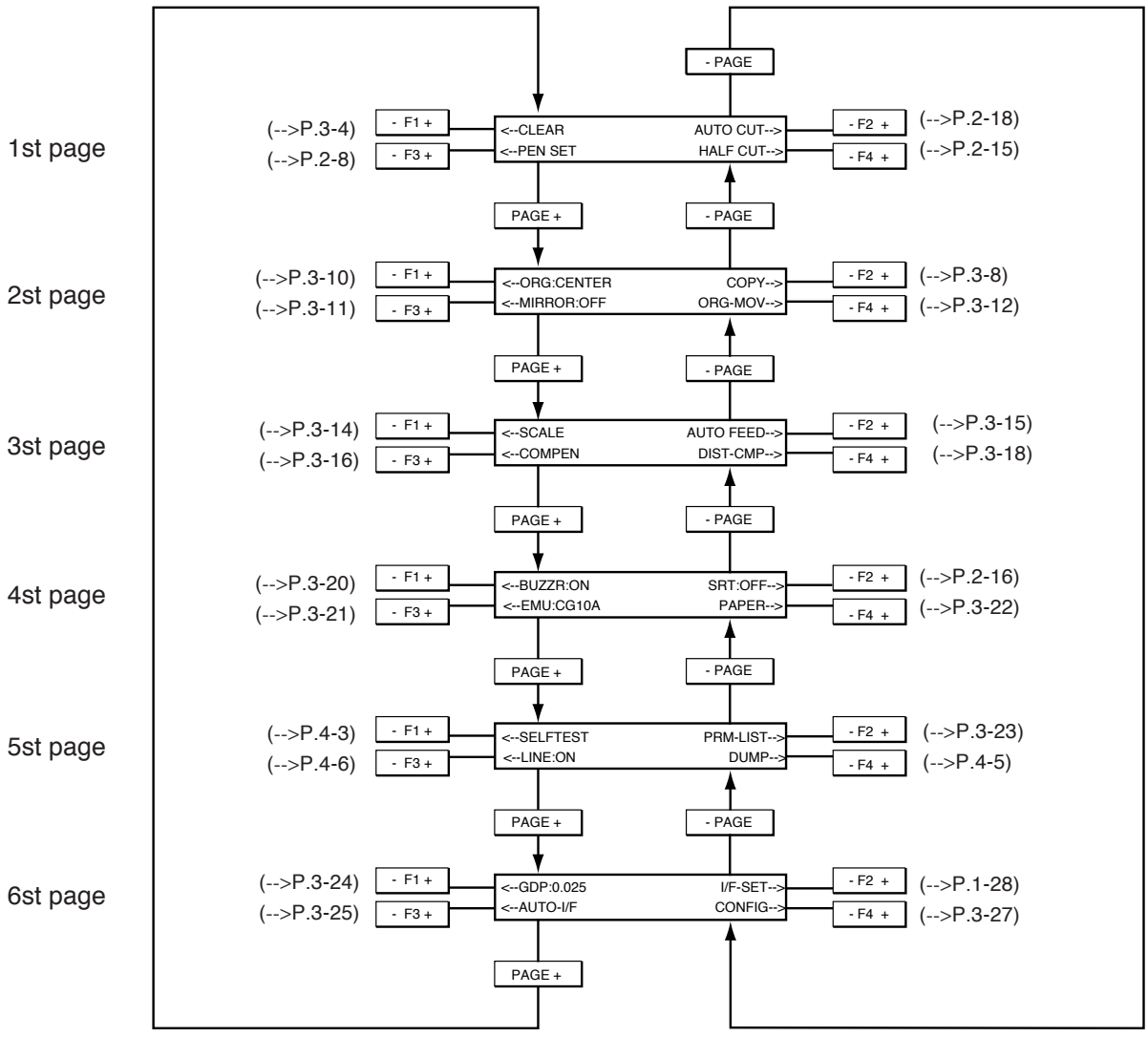
PAUSE mode

A plot out operation is temporarily stopped.



Menu List of Off-line Mode

There are menu consisting of six pages in the OFFLINE mode. The pages can be changed by - PAGE + key as shown below. There are four setting items in one page, and pressing the function key causes setting each item or entering into the sub menu.



See "Chapter 6 Appendix" for the tree structure of the menus. (See page 6-4.)

SETTING OF SET-UP FUNCTIONS

General Discription

The set-up function means a setting function to properly plot out the data received from the host computer. These are to be set once at purchasing the UNIT or changing the host computer. The set-up function involves the following four settings, however some of them may be omitted depending on the CAD and/or interface adopted by the users. Therefore, the applicable item(s) shall be taken after confirming the necessity.

Item	Description
Communication conditions	The 6th communication condition of RS-232C shall be set in compliance with the host computer specification. (refer to P.1-29)
Type of machine	An applicable type of machine shall be selected from the related five types so as to responed to the requirements for the machine code transmitted from the CAD. When you use an apparel CAD, normal plot outs are often obtainable even though no accurate response is accompanied therewith, and this setting may be omitted in most cases. Therefore, read the instruction manual for the CAD closely so as to only carry out the setting to be required. (Sea page 3-21.)
Resolution (GDP)	The minimum travelling distance assigned by the program shall be selected from the related three choices. If this selection is improperly accomplished, the pattern media will be plotted out apart from the specified size. If the CAD is in compliance with the HP-GL command, this setting may be omitted in most cases. Therefore, closely read the instruction manual for the CAD so as to only carry out the setting to be required. (Sea page 3-24.)
Origin	The position of origin of the plotter coordinates shall be established. The selection from the two choices shall be compatible with the type of command coordinates of the CAD. If the CAD is in compliance with the HP-GL command, this setting may be omitted in most cases. Therefore, read the instruction manual for the CAD closely so as to only carry out the setting to be required. (Sea page 3-10.)

SETTING OF C0MMUNICATION CONDITIONS

General Discription

The communication conditions of the RS-232C connector shall be established so as to properly plot out the data received from the host computer. When the parallel connector (option) is used, this setting may be omitted.

LCD Display	Description
SPEED	Setting of the data transfer speed
DATA	Setting of the data bit length
STOP	Setting of the stop bit length
PARITY	Setting of the parity check
HAND SHAKE	Setting of the hand shake
SIGNAL LINE	Management of RS-232C signal line
FILE CONTROL	*Setting of the EOF command and close timer

* This is not a communication condition in general, however, this is involved in the communication condition for the UNIT.

There are three types of the setting method of communication conditions.

1 Utilization of Existing Communication Conditions

The following communication conditions of three patterns are stored in the UNIT. If any pattern(s) be compatible with your CAD system, the communication conditions may be set only by changing over the registration number. Refer to "Change-over of Registration Number of Communication Conditions" (See page 1-32.) for the setting.

Regist. No.	# 1	# 2	# 3
Name			
Transfer speed	9600	9600	19200
Data length	8 bit	8 bit	8 bit
Stop bit	1 bit	1 bit	1 bit
Parity check	N	EVEN	N
Hand shake	Hard wire	Hard wire	Xon/Yoff
EOF command	*1	*1	*1
Close timer	OFF	OFF	OFF

*1) SP; OFF, AF; OFF, PG; OFF, ESC.); OFF, ZT0; ON, NR; ON, !PG; ON

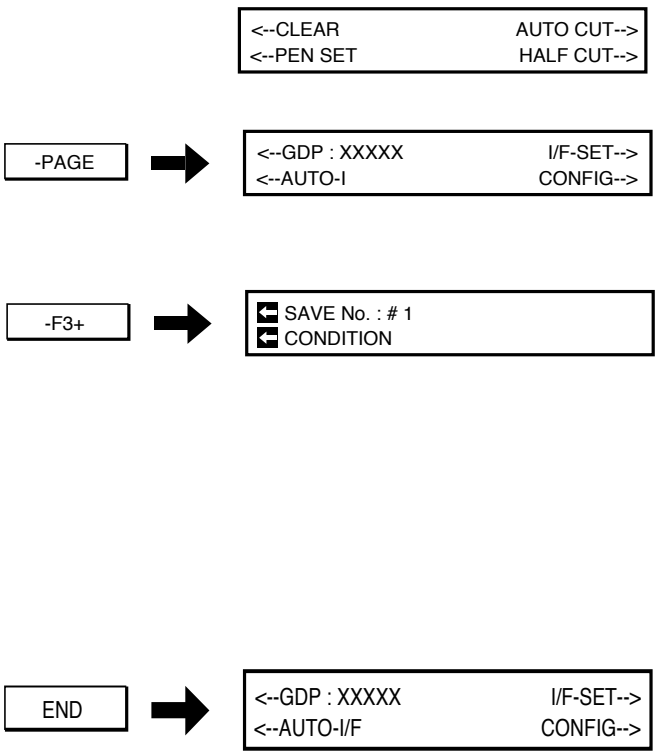
2 Modification of Existing Communication Conditions

In the case that the desired communication conditions are involved in these three patterns, the set values may be changed by each item. Since all of #1, #2 and #3 are changeable, select the nearest one and only modify the items of which values are different from the set value. Refer to "Change of Communication Conditions" (the next page) for the changing method of the Communication Conditions.

3 Setting by Automatic Interpretation (When the Communication Condition is Unknown.)

In the case that the communication conditions of the CAD are unknown, the setting can be accomplished as receiving data from the host computer. Since this method requires somewhat elapse time, if the conditions are known, it is recommended to set by means of the method #1 or #2. Refer to "AUTOMATIC INTERPRETATION OF COMMUNICATION CONDITIONS" (See page 3-25.) for the setting method.

Change-over of Registration Number of Communication Conditions



1 Be sure to be the OFFLINE mode.

2 Invoke the 6th page of the menu on the display.

3 Select the [I/F-SET] , and the following display will be appeared.

4 Change the [SAVE No]. The numbers will be changed whenever the key is pressed. Display the objected value.

-F1+ : #1, #2, #3

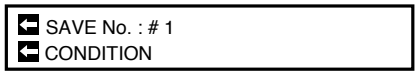
5 Enter the registration No.

Change of Communication Conditions

The communication conditions of seven types shall be explained upon classifying into the following four blocks. Refer to the explanation for each applicable block including items to be modified.

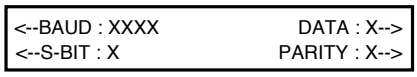
Block	Description	Refer. page
Block 1	Setting of the transfer speed, data bit length, stop bit length and parity check	1-30
Block 2	Setting of the hand shake	1-31
Block 3	Setting of the signal line	1-32
Block 4	Setting of the file management (EOF command, close timer)	1-33

Block 1: Setting of the transfer Speed, data bit length, stop bit length and parity check



1 Carry out the Steps 1 to 3 of "Change of Registration No.", select the No. to be changed.

-F3+ →



2 Select the [CONDITION], and the following display will be appeared.

3 Select the values of [BAUD], [DATA], [S-BIT] and [PARITY].

The numbers will be changed whenever the key is pressed. Display the objected value.

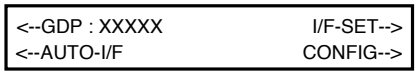
Change of the transfer speed [-F1+] : 19200, 9600, 4800, 2400, 1200, 600, 300 , EXTRN

Change of the data bit length [-F2+] : 7, 8

Change of the stop bit length [-F3+] : 1,. 2

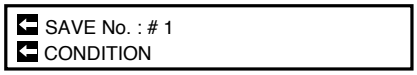
Change of the parity check [-F4+] : N (NON), E (EVEN), O (ODD)

END →

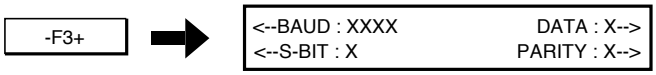


4 Enter the input values, and returned to the 6th page of the menu.

Block 2: Hand Shake Setting



1 Carry out the Steps 1 to 3 of "Change-over of Registration Number of of Communication Conditions" (See page 1-30.), then select the No. to be changed.



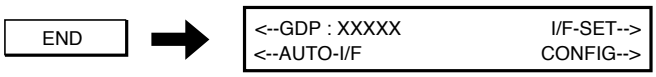
2 Select the [CONDITION], and the following display will be appeared.

3 Invoke the next page on the display.

4 Change the [HANDSHAKE] method. The method will be changed whenever th key is pressed. Display the objected method.

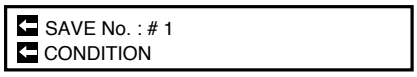
-F1+ : XON/XOFF, ENQ/ACK, software, hardware

Should a setting a signal line be continued, proceed with the Step 4 of the "Block 3" (in the next page).

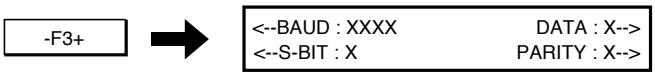


5 Enter the input values, and returned to the 6th page of the menu.

Block 3: Signal Line Setting

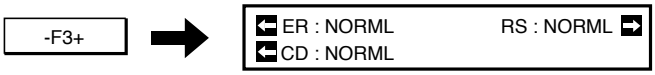


1 Carry out the Steps 1 to 3 of "Change-over of Registration Number of of Communication Conditions" (See page 1-30.), then select the No. to be changed.



2 Select the [CONDITION].

3 Invoke the 2nd page of setting the conditions.



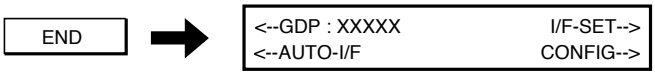
4 Select the [CONTROL], and the following display will be appeared.

5 Change over the values of [CONTROL].
The values will be changed whenever the key is pressed. Display the objected value.

Change of the value of ER [-F1+]: Normal, Control

Change of the value of RS [-F2+]: Normal, Control

Change of the value of CD [-F3+]: Normal, Check

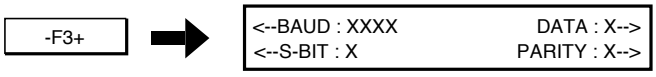


6 Enter the changed values, and returned to the 6th page of the menu. Should a setting the EOF command and close timer, proceed with the Step 3 of the "Block 4" (in the next page).

Block 4: EOF Command and Close Time Setting

This function works to transmit the timing of AUTOCUT of sheets from the host computer to the plotter. This setting is not necessary when the auto-cut capability is in the OFF state, or when a leaf of paper is used.

1 Carry out the Steps 1 to 3 of "Change-over of Registration Number of of Communication Conditions" (See page 1-30.), then select the No. to be changed.



2 Select the [CONDITION].

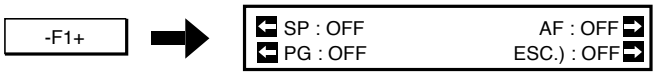
3 Invoke the 2nd page of setting the conditions.

4 Select the [FILE-CNTL], and the following display will be appeared.

5 Change the values of [CLOSE TIME]. The values will be changed whenever the key is pressed. Display the objected value.

-F3+ : 10sec, 30sec, 1min, 3min, OFF

•If the [EOF-COMMAND] is set first, further steps of procedures will be increased. Therefore the [CLOSE TIMER] should be changed first.



6 Select the [FOF-COMMAND], and the following display will be appeared.

SETTING OF C0MMUNICATION CONDITIONS

7 Change over ON/OFF of the [SP], [AF], [PG] and [ESC.)]. The ON/OFF will be changed over whenever the key is pressed. Display either one.

Change of the value of SP [-F1+] : OFF, ON

Change of the value of AF [-F2+] : OFF, ON

Change of the value of PG [-F3+] : OFF, ON

Change of the value of ESC.) [-F4+] : OFF, ON

[PAGE+] →

8 Proceed with the next page.

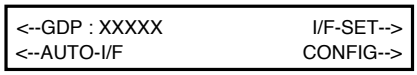
9 Change over ON/OFF of the [ZT 0], [NR] and [!PG]. The ON/OFF will be changed over whenever the key is pressed. Display either one.

Change of the value of ZT 0 [-F1+] : OFF, ON

Change of the value of NR [-F2+] : OFF, ON

Change of the value of !PG [-F3+] : OFF, ON

[END] →



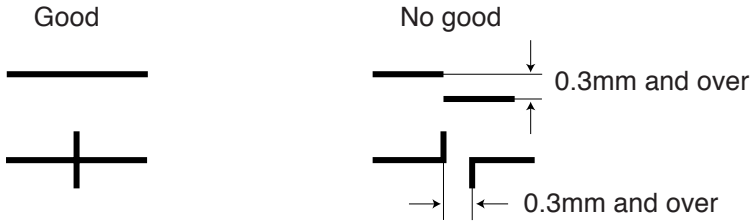
10 Enter the changed values, and returned to the 6th page of the menu. Now, changes of the communication conditions have been completed.

FEATURE INFORMATION OF THE TOOLS

Merits of the tools

CAUTION

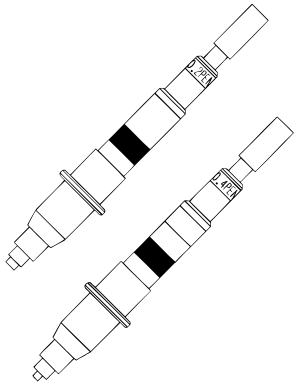
- **When a pen other than the attached accessories, care shall be taken for the following points. When the demonstration pattern #1 is plotted out and check the matching, if the deviation is larger than the specified value, it is considered to be no good. Replace with another pen.**



The merits and maximum values in the tools conditions of the tools (excluding the viewer) to be used in this plotter shall be explained hereafter. The setting shall be at the maximum value and below.

Sharp pen

It is suitable for high speed plotting.
Places to be corrected may be easily erased with a eraser.
The operations such as detecting with or without lead, lead feeding and supplying or exhausting lead are automatically accomplished.
The surface condition of the media relates to the adhering quality, by which the plotting quality will be affected.



Lead diameter (mm)	Max pressure (g)	Max speed (cm/s)	Max acceleration (G)
0.5	450	120	5.7
0.3	350	120	5.7
0.4	400	120	5.7
0.2	200	120	5.7

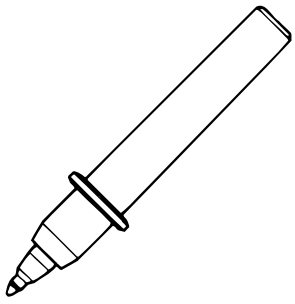
Plastic pen(Option)

Handling is the easiest.
Since the ink jet condition is good, it is suitable for relatively high speed plotting.
Coloring condition is also good, it is suitable for process color printing and illustration. However, since plastic tip is used for the pen point, when a plotting continues for a long time, the pen point will be worn out and the line width becomes larger. There are two types of ink, i.e. water color ink and oil based ink.

Lead diameter (mm)	Max pressure (g)	Max speed (cm/s)	Max acceleration (G)
0.3	30	30	2

Water ball point pen

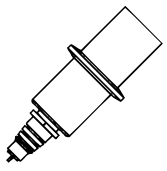
This is for fine-pointed pen and suitable for relatively high speed plotting. The handling is easy, however, if the pen point is beated, dropped or rubbed with hard and rough surface, the line becomes narrower and wider. When the plotting speed is extremely slow, the ink jet may well be worse. In addition, a ball is used for the tip, the line becomes blurred at start writing.



Lead diameter (mm)	Max pressure (g)	Max speed (cm/s)	Max acceleration (G)
0.3	60	60	3

Ceramic ball point pen (Option)

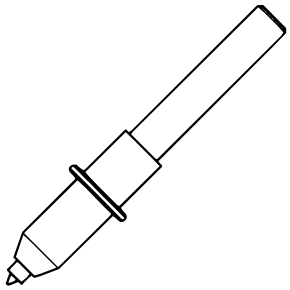
Since the pen point is protected with ceramic, a uniform line width can be maintained from the start writing to end of the ink jet.
The pen point is so narrow and delicate that care must be taken to prevent striking and dropping of the pen point.



Lead diameter (mm)	Max pressure (g)	Max speed (cm/s)	Max acceleration (G)
0.7	20	30	2
0.5	20	30	2
0.35	20	30	2
0.25	20	30	2

Pressurized oil based ball point pen (Option)

Because of a pressurized type, it is superior in high speed follow-up, and is suitable for plotting at the highest speed. Furthermore, this type can plot on film type materials. The handling is as easy as the water ball pen, however care must be taken to avoid striking and dropping the pen point. In addition, a ball is used for the tip, the line becomes blurred at start writing.



Lead diameter (mm)	Max pressure (g)	Max speed (cm/s)	Max acceleration (G)
0.25	200	85	4

When a roll of paper is used, the maximum speed will be 60 cm/s.

Cutter

The cutter shall be used after attaching the cutter blade onto the holder. Since the cutting blade edge is deviated from the center of the holder, a value of offset shall be established for the compensation.
Use for a long period may result in worn out of the blade edge with degraded cutting quality, accordingly the pressure offset value shall be adjusted each time.

Media	Pressure	Max speed (cm/s)	Max acceleration (G)	Offset
Base of 70Kg	100	120	2.0	0.30
Base of 90Kg	130	120	2.0	0.30
Base of 110Kg	160	120	2.0	0.30

When a roll of paper is used, the maximum speed will be 60 cm/s.

HANDLING OF VIEWER (OPTION)

Handling of viewer (option)

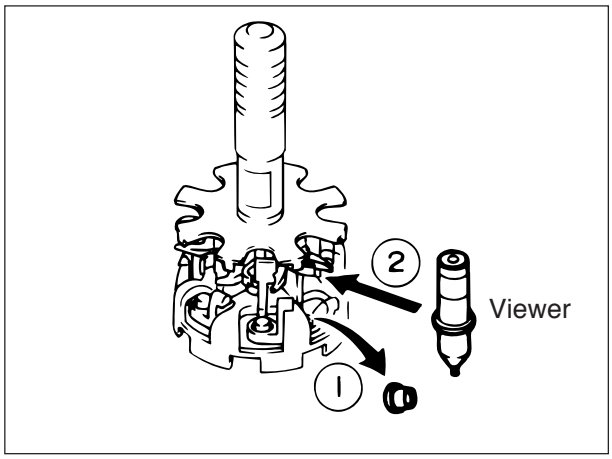
CAUTION

- Since the viewer tip is broken easily, extreme care shall be taken for the handling. Do not drop or apply excessive force, or resulting in occurrence of a failure. For the storage, the appropriate case must be used.
- Do not directly install the viewer onto the carriage.

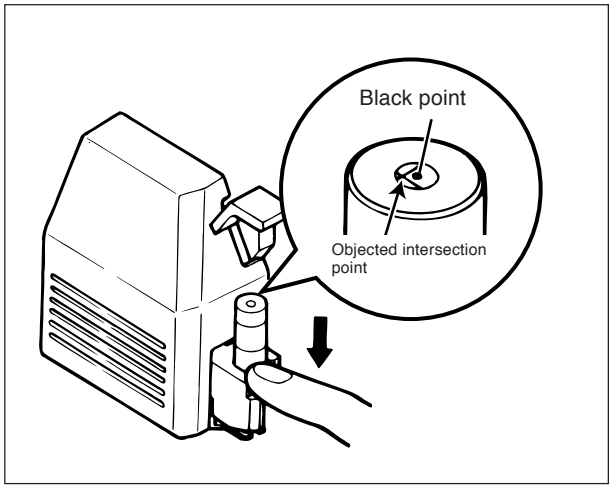
The viewer is a tool to accurately align the tool tip with the objected position. (The viewer can not plot or cut.)
The viewer is set onto the magazine when the following functions are executed, the plotter will use it.

•MOVEMENT OF ORIGIN ---> P.3-12
•3 POINT AXES COMPENSATION ---> P.3-16

How to install Viewer



Remove the pen cap rubber of the autocap, or the viewer tip will be contaminated
by the ink depositted on the pen cap rubber, resulting in suffering from insufficient performance of the viewer.



When the viewer is taken out, align the viewer type with the objected position on
the media by opening the front cover and using the JOG key.
When the viewer is pressed down by hand, the plot out on the media comes up on the top of the viewer.
Align the black point (to show the center of tool) with the objected point or the intersection point.

THE TOOLS

Discliminant of Types of the Tools

The following tools are usable for the UNIT. The name and properties of the tools are as follows.

Tool Name	Principal Propertie
Water ball pen	Easy handling Suitable for operations under intermediate plotting speed. (60cm/s) Sticking of ink is sometimes not fast at beginning.
Mechanical pencil	correction High speed plotting is possible (top speed operation) Deposit efficiency of the lead is different depending on media to be used.
Water plastic pen Oil based plastic pen	Easy handling Suitable for operations under intermediate plotting speed (40cm/s) Coloring condition is good. Suitable for process color plinting and illustration
Pressurized oil based ball pen	Easy correction High speed plotting is possible (100cm/s) Sticking of ink is sometimes not fast at beginning.
Ceramic ball pen	Since the pen point is ceramic, a uniform line width can be maintained until end of the ink jet. Water based ink Suitable for low speed plotting
Δ Specialized pentype cutter	Cutter blade specialized for CG-100AP The blade angle is specialized to fit the cutting on the synchro-roller.
Viewer	Unusable for plotting This enables the pen point to accurately align with the targeted position. (To be used for such as three points axes compensation)

Δ mark shows attachment part.

The identification seals are stuck on each tool except the ball pen, plastic pen and ceramic pen so that the types of tools set in the magazine can be automatically identified by the plotter.

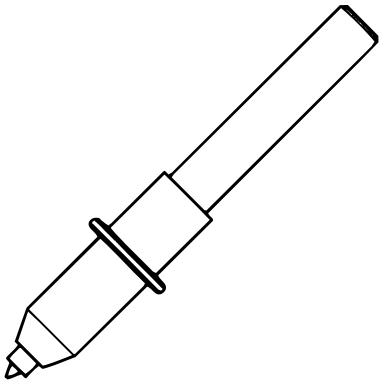
• **Refer to the “MERITS OF THE TOOLS” contained in this chapter for detailed explanation of the tools. (See page 1-36.)**

Types of Pens (Ball Pen, Plastic Pen, Ceramic Pen)

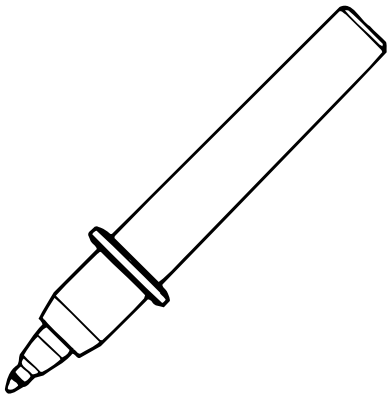
CAUTION

- **Do not leave without putting the pen cap for a long time, or the ink will be dried out and sometime disables the pen to write.**
- **Do not drop the pen or apply a strong impact thereto. Especiallyin the case of the ceramic pen, the pen point is sometime bent and writing can not be achieved.**

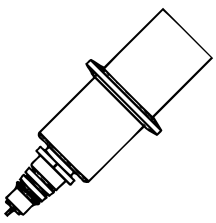
No identification seal is stuck on the pens. Accordingly the plotter can not interprete the type of pen. When the automode is selected for the tool mode, because only one type of tools conditions can be set, if a pen of which plotting condition is different is used, the plot out will not be pretty enough in some cases. When several different types of pens are to be used, apply the manual mode for the tool operation mode, and set the tools conditions by every pen.



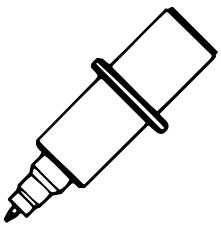
Pressurized oil based ball pen



Water ball pen



Ceramic pen



Plastic pen

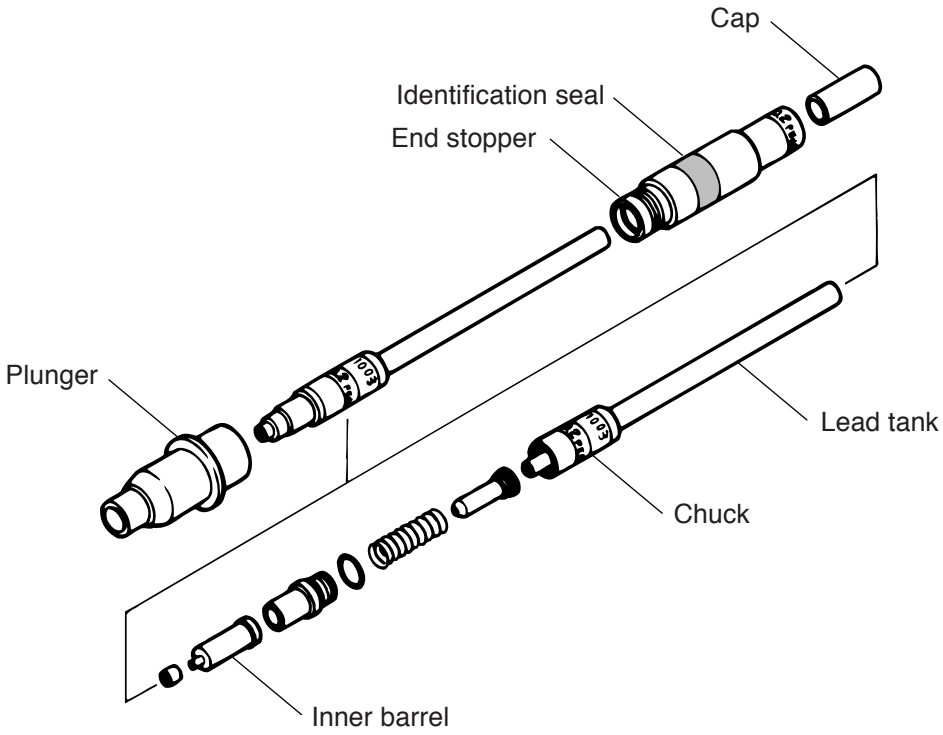
Details of Mechanical pencil

Structure of Mechanical pencil

CAUTION

- **Do not drop the pen or apply a strong impact thereto. It may cause damages.**
- **Do not remove or contaminate the identification seal. It will be resulted in default to identify for with or without the pen or type of the pen. If contaminated, wipe off with soft and clean cloth.**
- **Use the lead specified by MIMAKI ENGINEERING CO., LTD. for the Mechanical pencil.**

The Mechanical pencil consists of the following part.



Plotting Function of Mechanical pencil

Grouping function

Whenever the tool operation mode is selected to the automode, the Mechanical pencils having the same lead diameter deems as a group. When any pen No. in the group is assigned, from the Mechanical pencil in the lowest magazine No. will be started using earlier. Therefore even if a command to replace the the magazine No. with another magazine No. in the group is received, the replacement would not be executed. The control system allows to continuously use the same Mechanical pencil until all read will be all useed.

Detecting Function for Existence of Lead

The residual lead is monitored all the time, and the lead is extended by knocking during plotting operation. When the monitor detects the end of lead extension after a knocking or during plotting, the wasted lead is exhausted and new lead is supplied by the lead feeding system. If the lead feeding operation can not supply the lead, the Mechanical pencil will be returned to the magazine. Under the automode, another Mechanical pencil filled with the same lead diameter, if any in the magazine, is automatically takes the place, and the plotting can be continued. When all leads have been used (under the automode) or the lead in the assigned Mechanical pencil has been used (under the manual mode), the message indicating to require supply of the lead will be appeared on the display panel.

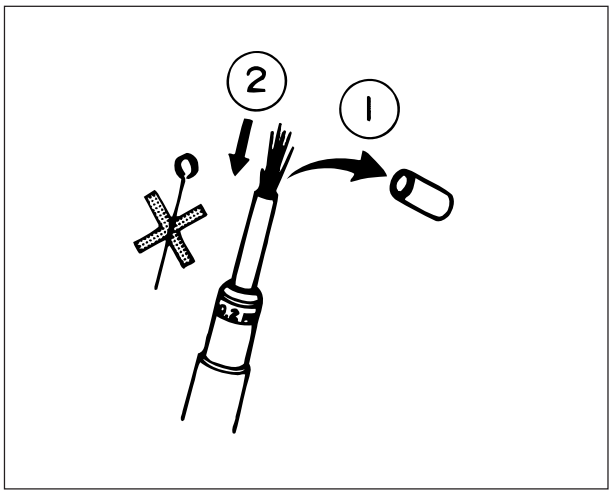
Under the automode

Under the manual mode

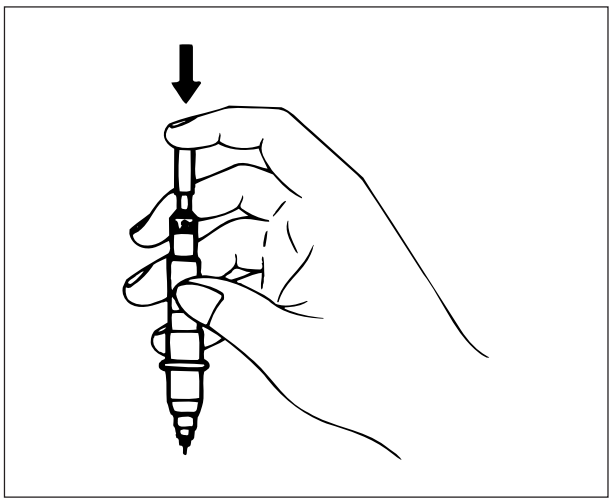
The Mechanical pencil(s) filled with new leads shall be set in the magazine and returned to the plotter. The plotter interpretes the applicable pen, and restores to start plotting again.

To perform plotting with the speed, acceleration and pressure established on the host computer, set the tool operation mode to the manual mode. If the auto operation mode is selected, the plotter will ignore the settings transmitted from the host computer.

How to load Lead into the Mechanical pencil

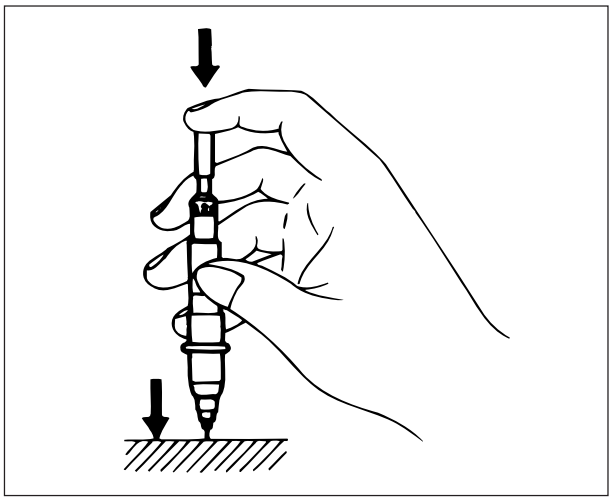


1 Remove the cap of sgarp pen, and service the leads into the lead tank. Be sure to eliminate mixing short leads, the cleaning needle (stored in the attached spare leeds case) or leas of different diameter.



2 Replace the removed cap, hold the Mechanical pencil vertically. Knock the cap so as to extend the lead a little from the pen point.

- **The maximum quantities of leads filled in one time are as follows.**
  0.2mm:120 leads
  0.3mm:70 leads
  0.4mm:45 leads
  0.5mm:30 leads



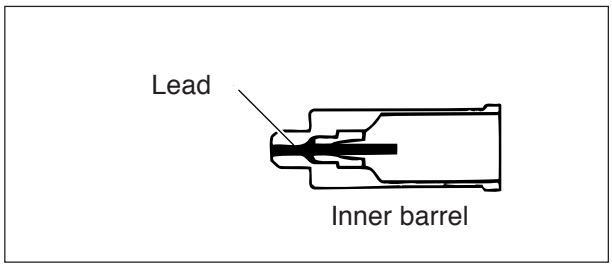
3 After confirming the coming out the lead from the pen point, lightly press on the table at the vertical position as knocking the cap so as to retract the extended lead back to the inner barrel.

Restore from Clogged Lead

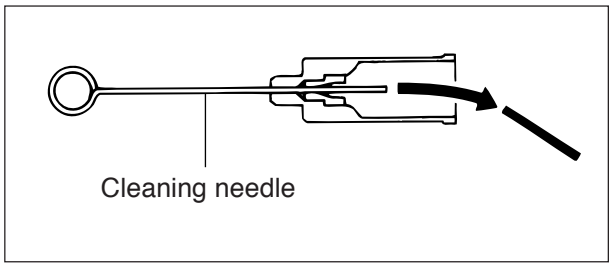
CAUTION

- **When a lead is clogged, be sure to use the cleaning needle having the same diameter.**
- **Do not use bent needles or broken needles, or damage the rubber part in the inner barrel.**

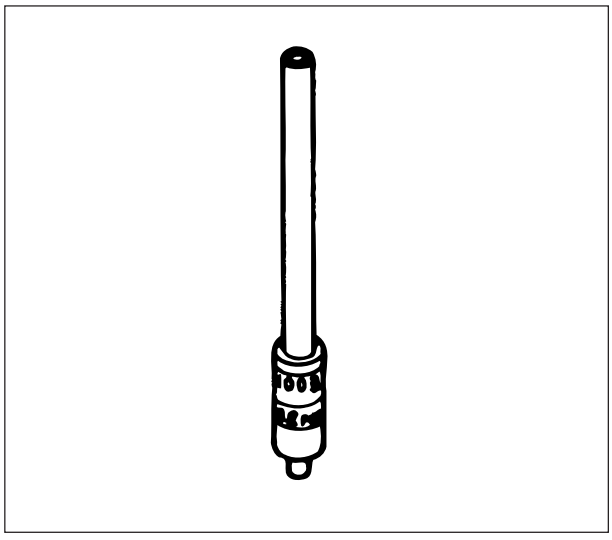
If the lead is clogged, discrepancies such as malfunction of the inner barrel, malfunction in lead extending by knocking and fail in lead charging/discharging function are happened. Remove the clogged lead in accordance with the following procedures.



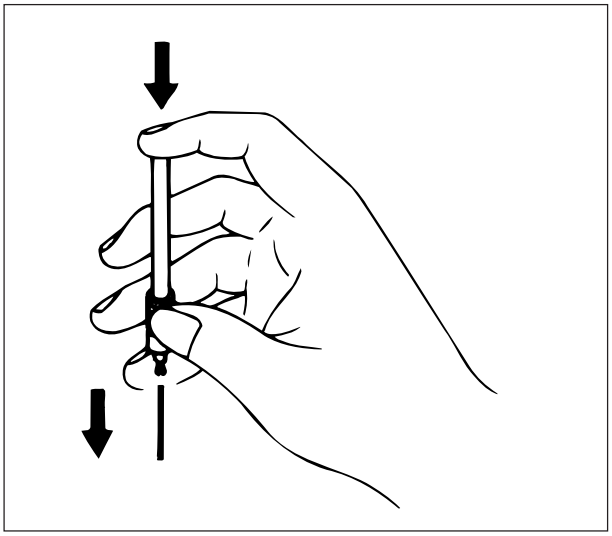
1 Disassemble the Mechanical pencil and remove the inner barrel.



2 Insert the cleaning needle from the tip of the inner barrel, and remove the lead.



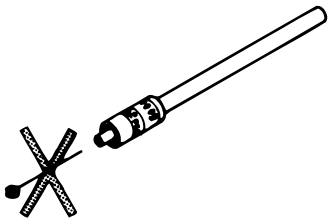
3 Remove the lead tank.



4 Press the lead tank by fingers, then take out the lead.

CAUTION

- **Do not enter the cleaning needle into the chuck, or it causes damage of the chuck portion.**



Service Life of Mechanical pencil

It is considered that the following phenomena indicated that the service life of the chuck portion or inner barrel expires.

- **Number of knocking during plotting increases, and the lead is broken at the tip of Mechanical pencil.**
- **The Mechanical pencil is returned to the magazine, and the message [PENCIL ABNORMAL] is displayed.**

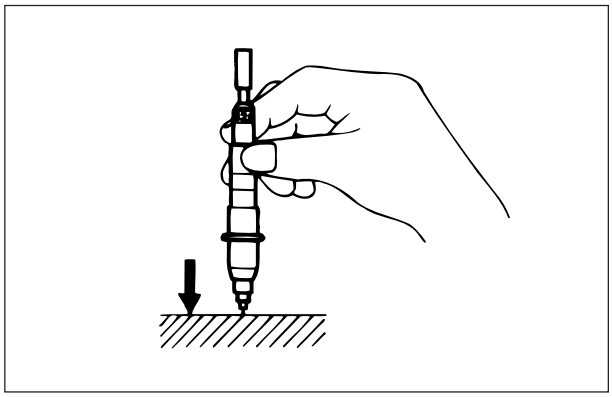
See page Check of service life of the Chuck

- **Number of knocking during plotting increases, and the lead charging/discharging operation is frequently repeated.**
- **Waste leads of 15mm long are exhausted into the waste lead case.**
- **The Mechanical pencil is returned to the magazine, and the message [NO LEAD] is displayed, then the operation stops.**

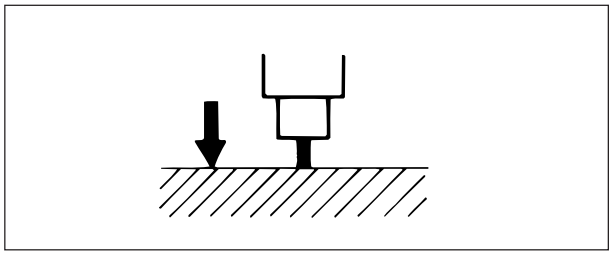
See page Service life of the inner barrel

Since the service life is not suddenly expired, check the chuck and inner barrel, and purchase new pens for the replacement if necessary.

Check of service life of the Chuck

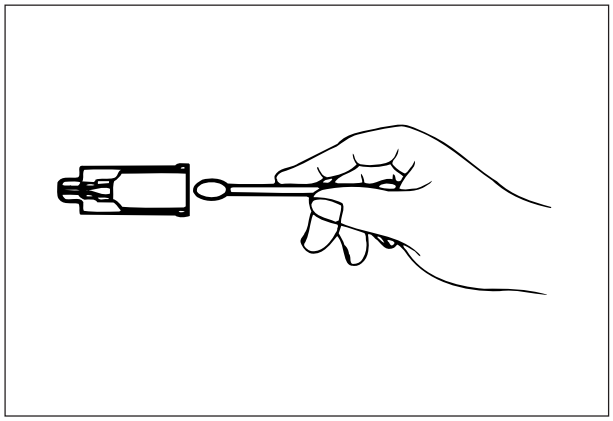


1 Extend the lead as much as one knocking, then lightly push the pen point on a table perpendicularly.

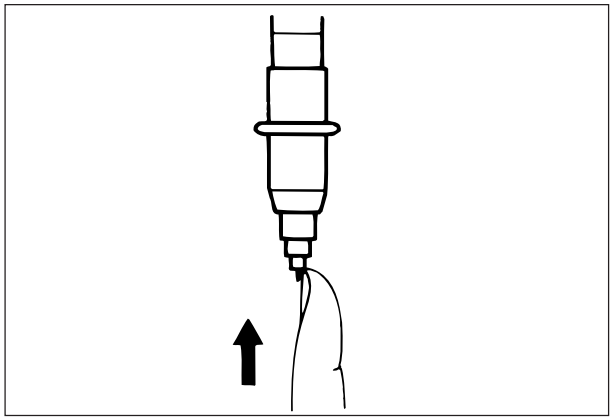


2 If the lead is moved into the Mechanical pencil, it shows that the service life expires.

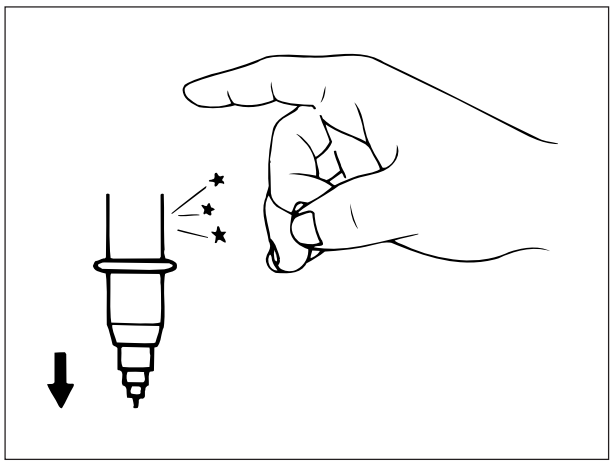
Check of service life of the Rubber Part of Inner Barrel



1 Disassemble the Mechanical pencil and check the inner barrel for contamination in the barrel. If deteriorated, wipe off lead dust with an applicator.



2 Install the cleaned inner barrel on the Mechanical pencil, and extend the lead as much as one knocking. Push the inner barrel by finger so as to enter into the plunger as shown in the illustration.



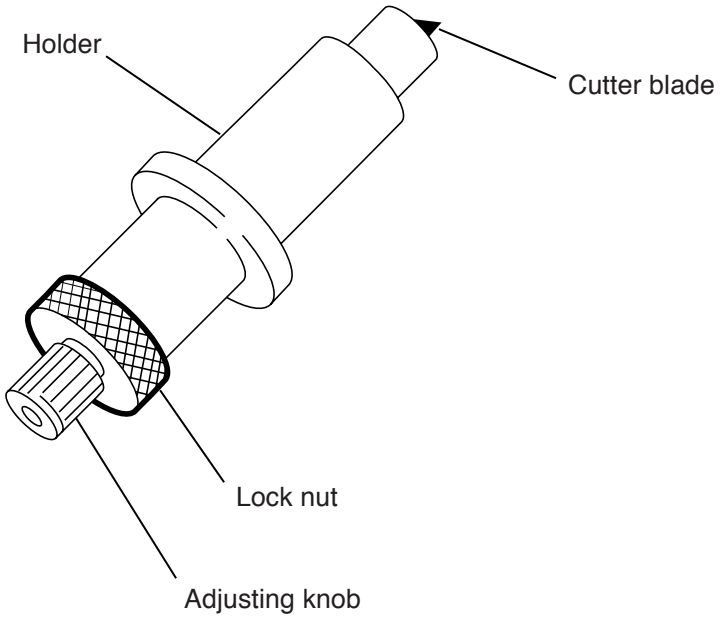
3 Lightly tap the Mechanical pencil body. If the inner barrel comes down, it shows the service life expires.

Cutter

CAUTION

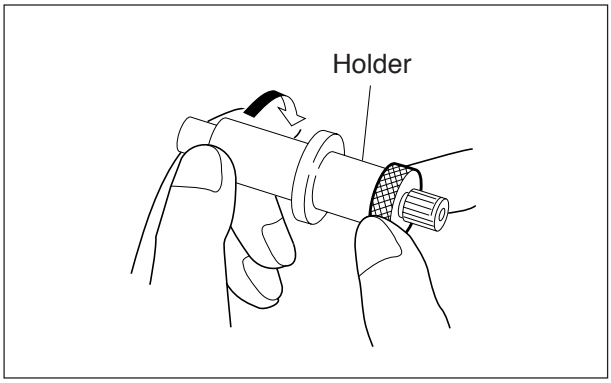
- **Do not drop the cutter or apply strong impact to the cutter, or it may cause damage of the cutter.**
- **Do not remove or contaminate the identification seal stuck on the cutter, or identification for existence of the cutter or type of the cutter. If contaminated, wipe off the dirty part with soft and clean cloth.**
- **Do not shake the cutter. It is very dangerous because it will cause the cutter blade comes off and injures a person.**
- **The cutter blade is a consumable. If the blade has become dull, replace it with a new one.**

The cutter consists of the following component parts.

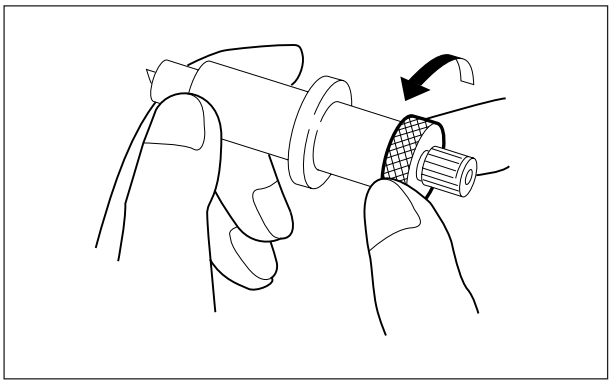


Replacement of Cutter Blade

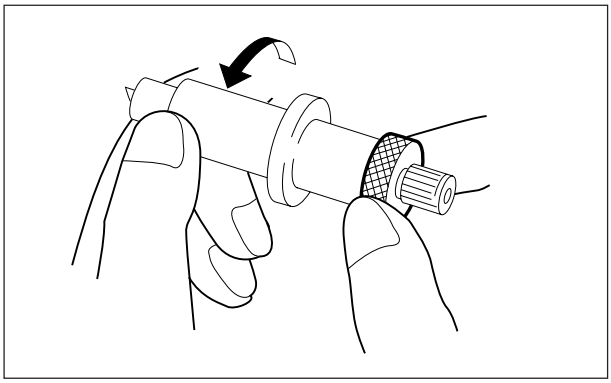
- **The proper diustance of the blade extension shall be 0.3-0.5mm.**



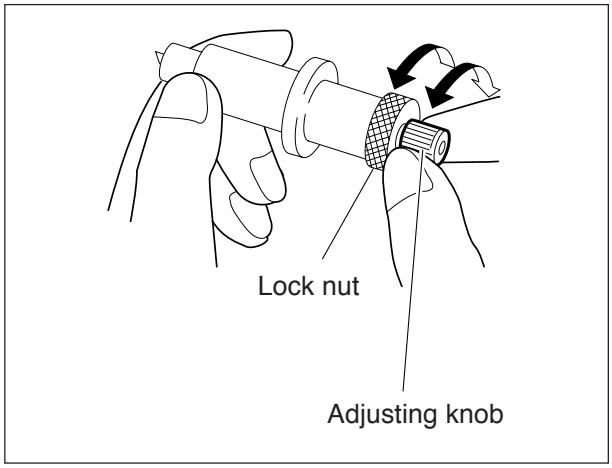
1 Remove the holder from the cutter.



2 Put the cutter blade into the nozzle with a pincette, and push until bottoming.

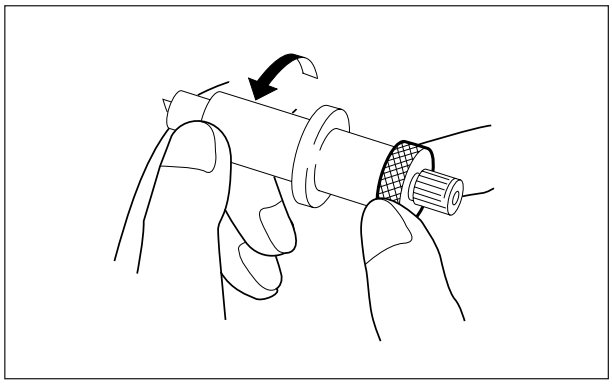


3 Remove the holder.



4 Loosen the lock nut and rotate the adjusting knob, and the extending distance of the blade can be changed. Referring to the illustration left, adjust the extent of the extension. If you use the blade adjuster (optional good), the distance can be accurately adjusted.

- **The proper diustance of the blade extension shall be 0.3-0.5mm.**



5 Tighten and secure the lock nut.

MEDIA

Types of Media

Select the suitable media in accordance with the purpose of the works and compatibility with the tools.

Type of paper	PD paper	PDW paper	Tracing Paper	Polyester film
Permiability	△	×	◎	◎
Mechanical pencil	△	×	◎	◎
Plastic pen	○	○	△	△
Water ball pen	△	○	×	×
Pressurized oil based ball pen	◎	◎	○	○
Ceramic pen	○	○	○	×

The accuracy can not be guranteed by ordinary paper. The ordinary paper referred to herein means commonly used general purpose paper made from pulp. Since there is a polarity of fiber, a high pressure plotting by using a ink pen or a Mechanical pencil will sometime cause scratching paper and the like.

There are the following two types in the ordinary paper. Select a suitable one in accordamce with the purpose of use.

- **PD paper**

Among ordinary types of paper, this is the most suitable for the plotting. A little stretch property is involved, and even if plotting speeds are variable, visible line quality can be obtained.

- **PDW paper**

This type is relatively cheap and economical. However easily bleeded and stretched. Accordingly it is not suitable for precised plotting, but it is suitable for confirmation during plotting process. This type is suitable for water based ball pen, however lines written by an ink pen or a ceramic pen will be bleeded in some cases.

Usable Media in the UNIT (in Size)

Roll paper	Width	: 920mm, 950mm, 1000-1020mm
	Thickness	: 50-110 kg basis (70-110kg basis for cutting)
	Roll Max Dia	: ø180mm and below
Leaf paper		: A3-A0 in compliance with the JIS standard

Handling of Paper

Care must be taken for the following points in handling the media.

Elasticity of media

Do not use media right after removed from the packing box. the media may stretched during plotting out depending on the ambient temperature and humidity. Put the paper near the plotter for 30 minutes and over and expose in the atmosphere.

- **The roll paper will be sometime stretched immediately after unrolled.**

Curling

Do not use extremely curled paper, or resulting in getting clogged. For paper of which curled level is low, set the paper so that the curled portion comes inside of the platen so as to prevent the paper from floating upward of the platen.

Storage of Paper

Store leaf paper on a flat place. Lay roll paper down on the flat place for the storage. If any folded set is formed during storage, do not use until the folded set is removed.

CHAPTER 2 BASIC OPERATION

This chapter covers the basic operation to plot out the pattern paper.
The instructions are prepared sequentially in accordance with the steps of the works, therefore read the instruction from the beginning.

HOW TO PLOT OUT PATTERN PAPER

Apply the following procedures for the plot out of the pattern paper.

1 Preparation of Paper and the Tools

Preparation of Paper and the Tools See page 2-3.

2 Set-up of Plotter

Power Supply to Plotter See page 2-7.
Selection of the Tools Operation Mode See page 2-8.
Setting of the Tools Condition. See page 2-10.
Tool up Speed Setting See page 2-14.
Dotted Line Cut Setting See page 2-15.
Sorting Settin See page 2-16.
Autocut Setting See page 2-18.

3 Set of Paper and the Tools onto Plotter

Installation of Magazine See page 2-20
Paper Setting
Set of roll paper See page 2-25
Set of leaf paper See page 2-29

- **Accomplish the self diagnosis function so as to confirm the tools condition, and no failure may be expected. (See page 4-2)**

4 Plot Out

Transmission of Data from Host Computer See page 2-31

5 Operation End

End the operation. See page 2-35

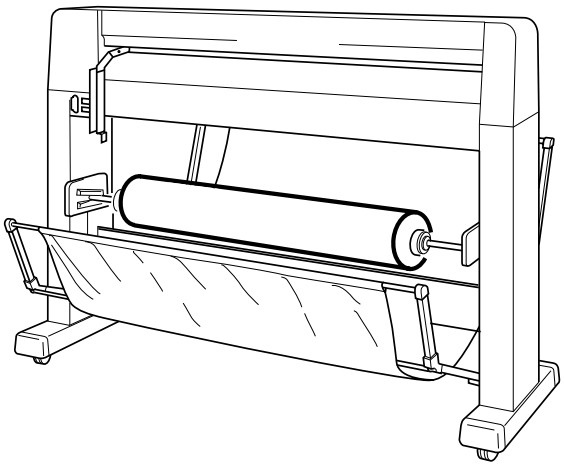
PREPARATION OF PAPER AND THE TOOLS

Prepare the paper to produce pattern paper and the tools necessary for the work. Although the installation to the UNIT shall be accomplished immediately before the plot out, confirm at this time before starting the work.

Preparation of Paper

Use of Roll Paper

Refer to "Load of Roll Paper" (See page2-4.) for the roll paper, and install on the main unit.



Use of Leaf Paper

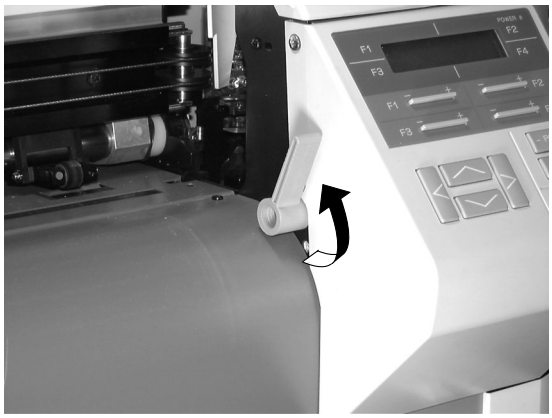
It is necessary to adapt the paper unpacked and removed from the packing box to the ambient temperature and humiditiy in the room.Put the paper on a flat table and leave in the atmosphere for 30 minutes and over.

Setting the leaf paper onto the UNIT shall be accomplished immediately before starting the plot out work.

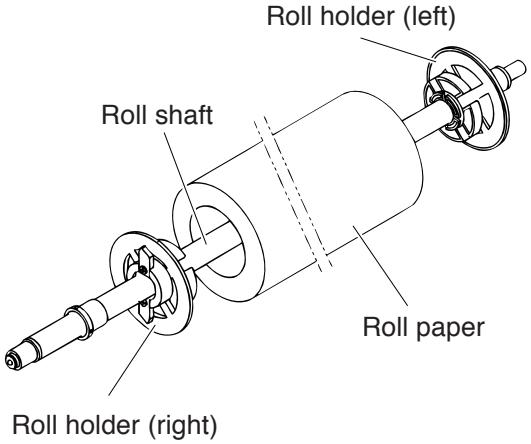
Load of Roll Paper

Set roll paper on the roll shaft assembly.

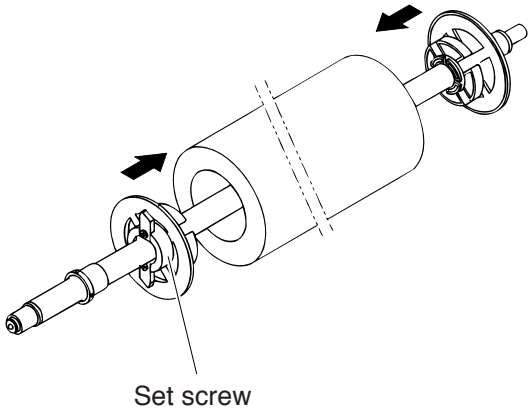
1 Shut the paper bascket at the rear side.



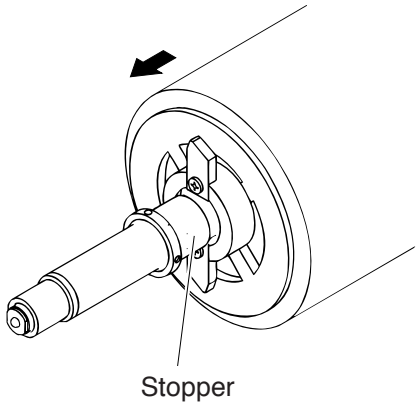
2 Make sure that the paper set lever is at the UP position.



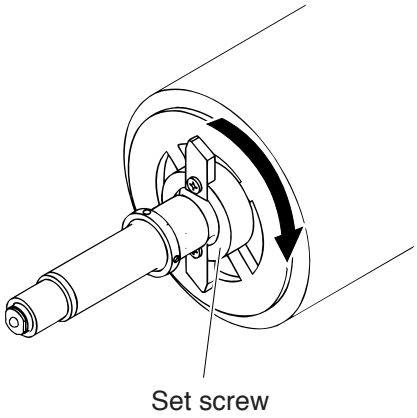
3 Sequentially load the roll holder (right), roll paper and roll holder (left) in order onto the roll shaft.



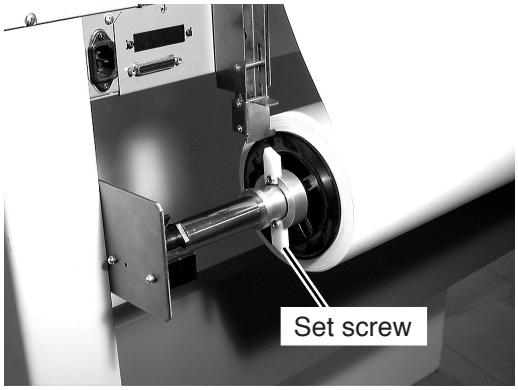
4 the roll paper, and temporarily tighten the both left and right set screws of the roll holders.



5 Knock the roll holder against the stopper of roll shaft.



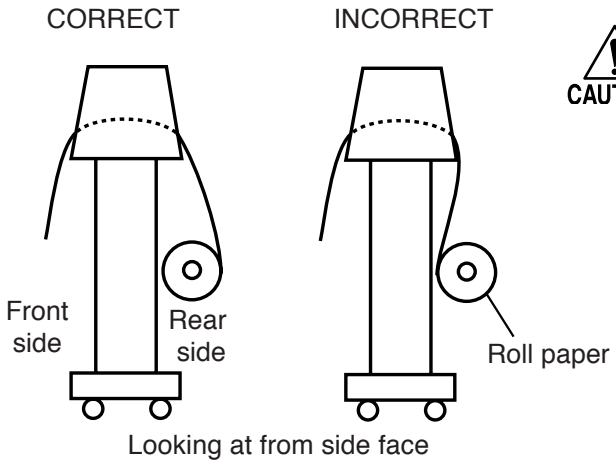
6 Tighten fast the both left and right set screws of the roll holders.



7 Set on the roll shaft holder of the main unit.

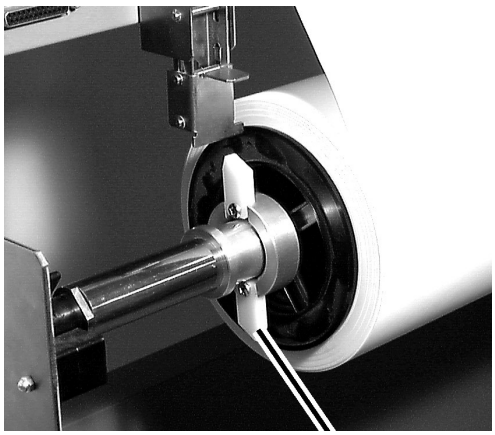
CAUTION

- **Place the roll shaft holder on the main unit so that the side in which a wing setscrew is mounted is positioned near the keyboard.**



CAUTION

- **Make sure the direction of the roll paper. Load the roll paper as the "CORRECT" side of the illustration as shown left.**

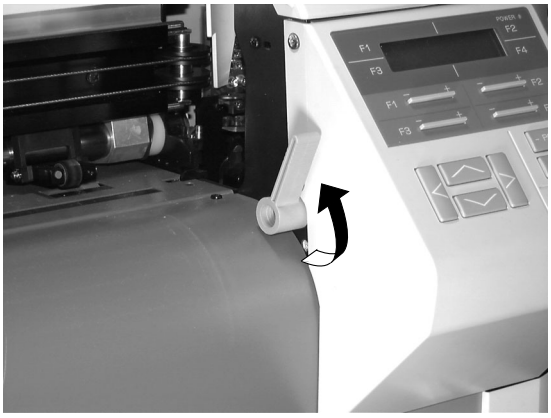


Wing set screw

8 Secure the roll paper with the sheet set lever raised. At this time, check to be sure that the wing of the wing setscrew will not turn any more once it comes in contact with the stopper.

POWER SUPPLY TO PLOTTER

Turn the power ON. Before setting the paper, the power shall be turned ON.



1 Make sure that the paper set lever is at the UP position.

```
System  Version          X-XX
448KB
```

```
System  Version          X-XX
448KB + 1MB
```

2 Turn ON the power switch on the front side of the main unit.
The power lamp is lighted ON and the display as the left will be appeared.

- **In the case of application of the optional receiving buffer (1MB), the display as the left will be appeared.**

3 The carriage moves to the right end.

```
 CHANGE  CUTTER BLADE?
◄YES                  NO►
```

4 When a magazine is loaded on the plotter, the message shown in the illustration given at the left will appear on the display panel.
If you have replaced the cutter with a new one before turning the power ON, press the [-F3+] key.
In any case other than the above, press the [-F4+] key.
If no magazine is loaded on the plotter, proceed to Step 6.

```
MAGAZINE  INITIAL
```

5 Initialize the magazine.

```
<--CLEAR              AUTO CUT-->
<--PEN SET            HALF CUT-->
```

6 When the plotter stops, the display as the left will be appeared.

Operation Mode of the Tools

Tool operation modes

The tools shall not be set on the carriage, but on the magazine. The tools in the magazine are automatically shifted to the carriage for the plot out. There are the automode and manual mode as the operation of tools, which shall be selected in accordance with the purpose of work.

CAUTION

- **The mode change-over affects the tools other than the cutter. The operating conditions of the cutter are not affected by the mode. The cutter always operates under the operating conditions established on the operation panel. This means that speed-, acceleration- and pressure-commands transmitted from the host computer are ignored. It should be noted, however, that the pressure command will be effective in the case where the "DOTTED LINE CUT" is set to the OFF state and ZF command exists.**

Automode: This mode is practicable for the Mechanical pencil plot for a long time.

- The type of tools set on the magazine are automatically interpreted, and the tools conditions for the set tools are assigned for the plot out. The types to be interpreted are the following six kinds.

  Mechanical pencil 0.5mm
  Mechanical pencil 0.4mm (0ption)
  Mechanical pencil 0.3mm
  Mechanical pencil 0.2mm (0ption)
  Viewer (0ption)
  Cutter
  Others (pens other than Mechanical pencils and cutter)

  The tools other than the Mechanical pencils and cutter are all identified as "Others". If an ink pen and ball pen are set, the plotting will be achieved by the same "Other" condition. Therefore, in this mode, pens of which tools conditions are different can not be used together.
- "Grouping the tools" (See page 1-43.) enables the plotting to continue when a lead of a Mechanical pencil is used by replacing with another Mechanical pencil of which the lead diameter is the same.
- The operation is controlled by the tools conditions (speed, accelertion, pen pressure and etc.) established in the plotter side, and the command value from the host computer will not be accepted.

Manual mode: This mode is practicable to properly use various types of pens.

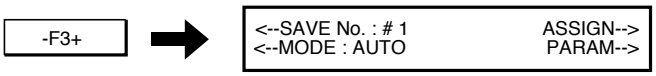
- Automatic interpretation of tools is not executed.
- Mechanical pencils of the same lead diameter can plot by different tools conditions.

Operation Mode of the Tools

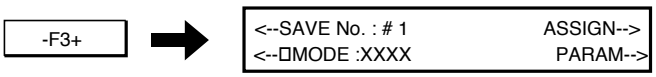
- The rools condition can be set to the magazine No. in the magazine. Eight types of tools can be simultaneously used.
- The operation can be achieved in accordance with the tools condition (speed. acceleration, pen pressure and etc.) from the host computer.

- **In the case of plotting and/or cutting in accordance with the tools conditions receiving from the host computer, use the condition with the manual mode.**

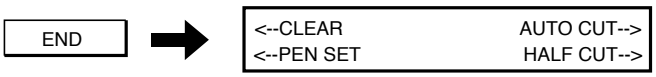
1 The first page of the menu is displayed.



2 Select [PEN SET], and the following display will be appeared.



3 Select [MODE], and the mode will be changed over whenever depressing the [AUTO/MANUAL] key. Select the applicable mode.



4 Regifter the mode, and the display will be returned to the first page of the menu.

ESTABLISHMENT OF THE TOOLS CONDITIONS

CAUTION

- **Establish the values compatible to the selected tools and paper for the tools conditions.**
- **When a cutter is used, excessively increased force of pressing may cause to influence to the cutting quality and/or cutting service life. Apply the suitable value.**

Set the tools conditions. There are four types as shown below for the tools conditions.

Command	Description
Speed	The relative speed of the tools and paper when a line is drawn along with the direction of 45° is shown. The larger rate hear the shorter time of the plot out.
Press	The tool force of the pen and cutting force are shown. Establish the suitable value according to the type and thickness of the paper to be used. Increase this value if uncut paper is remained with use of a cutter, or a ball pen do not draw clearly.
Offset	Since the blade edge is shift from the center of the holder, a compensation to cover the shift shall be provided for cutting works. The value compensating this disposition shall be called as the offset. An incorrec offset value causes a discrepancy such as an error in size between the data produced with the CAD and the data ploted out, rounded corners or the like. * This condition cannot be specified for any tool other than the cutter.
Acceleration	The relative speed of the pen and paper under drawing a line along with the direction of 45° is shown. The larger acceleration value the shorter duration to arraive at the preset speed with shorter plotting time. Especially, in plotting data involving a number of short lines, the working time is significantly saved.

The tools conditions can be established in three different methods according to the tool operation mode and the type of tool.For the setting method, there are two ways as shown below depending on the tools operating modes. Find the setting method from the established mode.

1 Auto mode "Setting Method under Auto Mode" (See page 2-11.)

2 Manual mode "Setting Method under Manual Mode" (See page P.2-11.)

3 CUTTER PARAMETER “Cutter parameter setting method” (See page P. 2-13)

Setting Method under Auto Mode

When the auto mode is selected, the loaded tool is automatically recognized and the plot out is achieved in accordance with the existing tools conditionsIn the UNIT, the following three patterns of tools conditions are registered. Three different patterns of tool conditions can be registered for this machine.

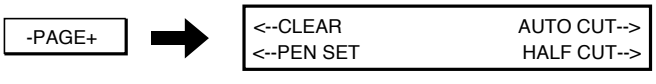
Initial settings of pen (pencil) parameters (common to three patterns)

	Press [g]	Speed [cm/s]	Acceleration [G]
Pencil 0.5	350	120	5.7
Pencil 0.4	300	120	5.7
Pencil 0.3	260	120	5.7
Pencil 0.2	170	120	5.7
Others	20	20	2.0

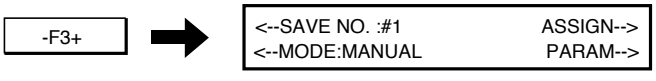
- **The plotting conditions can be changed. Select the registration No, then change the conditions upon referring to Chapter 3 "CHANGE OF THE TOOLS CONDITIONS" (See page 3-6.).**
- **When a roll paper is used, the speed upper limit becomes 60cm/s.**
- **When a cutter is used, and the travelling distance in the X-axis direction is larger than 50% of the travelling distance in Y-axis direction. the established value of the cutter press becomes 80%.**

Setting Method under Manual Mode

Under the manual mode, the conditions shall be set for each tool loaded on the magazine. It is recommended that the setting is achieved with entering the values into the "TOOL CONDITION LIST /MANUAL MODE" (Chapter 6, P.6-11) so as to prevent lost of memory of the established value or mistake arisen during setting.



1 The first page of the menu will be displayed.



2. Select [PEN SET], and the following display will be appeared.

- **Under the AUTO mode: Press the -F3+ key to change over the mode to the MANUAL mode.**

-F4+ →

CUTTER PARAMETER
PEN PARAMETER

3 Select [PARAM], and the following display will be appeared.

-F3+ →

ALL-DAT ACC:2.0
SPD: 20 FORCE: 20

4 Select [PEN PARAMETER], and the following display will be appeared.

5 Select the pen No. to be established. The No. is changed whenever the key is depressed. Display the applicable pen No.

-F1 : All data, and from Data No.1 to No.8.

If it is required to unify all of the tools conditions in the magazine, select the all data. If it is established by each pen, display the applicable No.

6 Change the values of [ACC], [SPD] and [FORCE]. The value is changed whenever the key is depressed. Display the objected value.

-F2+ (ACCELERATION) : 0.3, 1.0, 2.0, 3.0, 4.0, 5.7

-F3+ (SPEED) : 2, 5 - 85 (5 step), 120cm/s

(The maximum speed is 60 cm/s when a roll paper is used.)

-F4+ (FORCE) : 15, 20 - 450g (10 step)

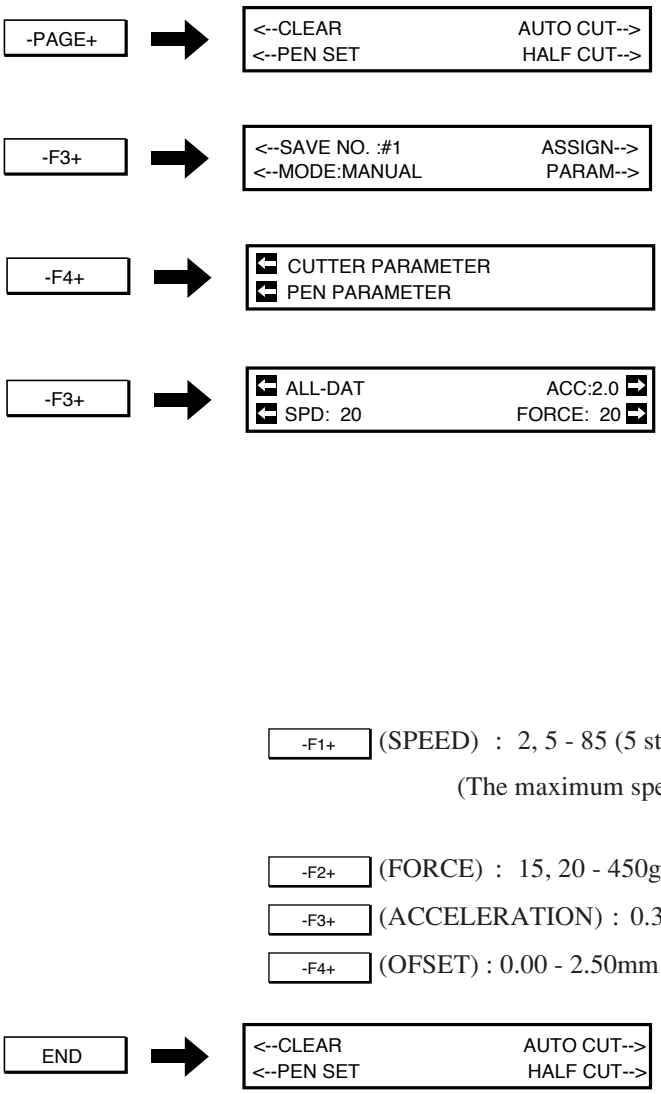
When other pen No. is to be continuously established, return to the Step 5 above, then repeat the operation thereafter.

END →

<--CLEAR AUTO CUT-->
<--PEN SET HALF CUT-->

7 When all establishments have completed, accomplish the registration. The display returns to the first page of the menu.

Setting the cutter parameters



1 The first page of the menu will be displayed.

2. Select [PEN SET], and the following display will be appeared.

3 Select [PARAM], and the following display will be appeared.

4 Select [CUTTER PARAMETER], and the following display will be appeared.

5 Change the values of [SPD], [FORCE] , [ACC] and [OFSET]. The value is changed whenever the key is depressed. Display the objected value.

-F1+ (SPEED) : 2, 5 - 85 (5 step), 120cm/s
(The maximum speed is 60 cm/s when a roll paper is used.)

-F2+ (FORCE) : 15, 20 - 450g (10 step)

-F3+ (ACCELERATION) : 0.3, 1.0, 2.0, 3.0, 4.0, 5.7G

-F4+ (OFSET) : 0.00 - 2.50mm (0.05 step)

6 When all establishments have completed, accomplish the registration. The display returns to the first page of the menu.

TOOL UP SPEED SETTING

The moving speeds of the carriage and paper at tool up are establisyed.

Command	Description
PANEL	Movement at the speed set according to the tools conditions (constant speed mode)
FAST *1	Movement at 85cm/s for speed in axial direction (high speed mode) Movement at 120cm/s in the direction of 45
CONST	Movement at the specified speed. The speed and acceleration are specified.

*1 : When "THIN PAPER" is selected in according to Chapter 3 "ESTABLISHMENT OF TYPE OF PAPER" (See page 3-22.), the up speed becomes the speed established by the tools conditions.
Selection of the high speed is neglected.
When the plotting speed is 60cm/s and below. the upspeed becomes 60cm/s.

-PAGE+ →

<--CLEAR AUTO CUT-->
<--PEN SET HALF CUT-->

1 The first page of the menu will be displayed.

-F3+ →

<--SAVE No. : # 1 ASSIGN-->
<--MODE : AUTO PARAM-->

2 Select [PEN SET], and the following display will be apperared.

PAGE+ →

<--UP MOVE SPEED : XXXXX
<--SPD : XXX ACCEL : XXX-->

3 The second page will be displayed.

4 Select the up speed. The display will be changed whenever the key is depressed. Display the objected mode.

-F1+ : PANEL, FAST, CONST

When the FAST and CONST are selected, proceed with the Step 6.

5 Establish the speed and acceleration of the specified value. The display will be changed whenever the key is depressed. Display the objected mode.

-F3+ (UP SPEED):2.5 - 85 (5 step), 120cm/s

-F4+ (ACCELERATION): 0.3, 1.0, 2.0, 3.0, 4.0, 5.7 G

END →

<--CLEAR AUTO CUT-->
<--PEN SET HALF CUT-->

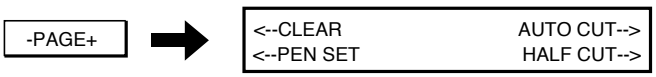
6 Accomplish the registration. The display will be returned to the firs page of the menu.

DOTTED LINE CUT SETTING

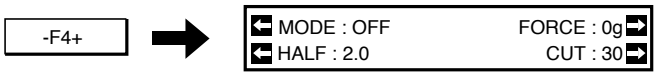
The establishment covers to determine whether a dotted line is taken as the cutting line, and if so details for the dotted line.

Command	Description
MODE	The establishment to determine whether a dotted line is taken or not. If the processing of the dotted line cutting is executed at the CAD side, this establishment will be turned OFF.
FORCE	The press force to cut with residual paper.
HALF	The length of perforated paper
CUT	The length to cut off

When the "DOTTED LINE CUT" is set to the ON state, a pressure command (ZF) transmitted from the host computer will be ignored.
Establish adequate settings in consideration of the CAD software specifications, use environment, type of paper, data and tool conditions.



1 The first page of the menu will be displayed under the off line mode.



2 Select [HALF CUT], and the following display will be apperared.

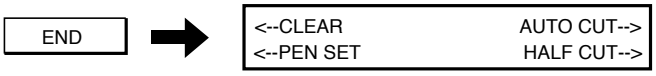
3 Change the items to be established.

-F1+ (MODE) : ON, OFF

-F2+ (FORCE) : 0, 15, 20 - 80 g (10g step)

-F3+ (HALF) : 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0 mm

-F4+ (CUT) : 10 - 150 mm (10 mm step)



4 Accomplish the registration. The display will be returned to the first page of the menu.

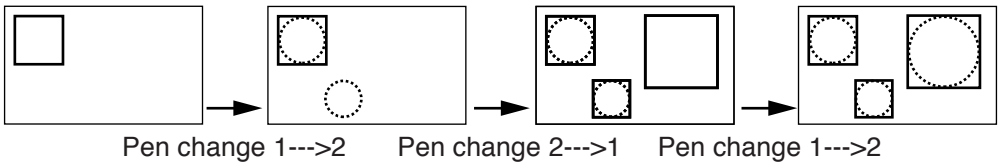
SORTING SET

The plotter usually plots data in rotation as received, however many unnecessary motions are involved, and long plotting time is resulted in. However, if the sorting is set, the plotting time may be reduced by analyzing received data, changing order to plot line segments and reducing frequency of the pen change. In the UNIT, the following two types of sorting are incorporated.

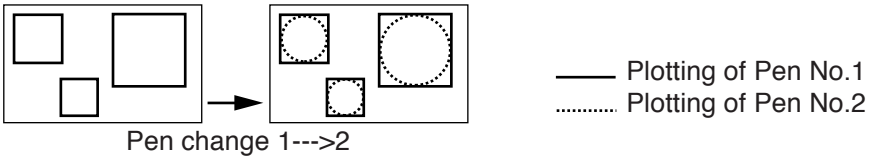
Pen Sorting

The received data are grouped by the pen No. The plotting is achieved from low pen No. in order.

Without setting of pen sorting



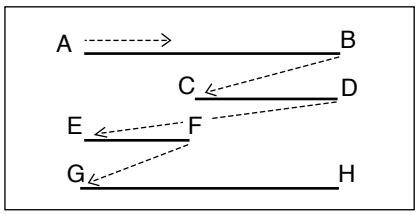
With setting of pen sorting



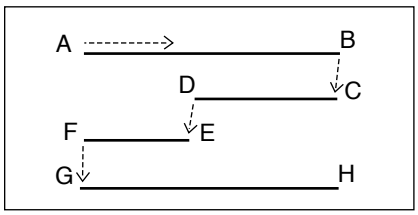
Vector Sorting

A plotting is continued upon moving from the plotted line segment to the nearest line segment.

Without setting of vector sorting



With setting of vector sorting



SORTING SET

There are five types of commands for the sorting as shown below.

Command	Description
OFF	Sorting is not applied.
VS	Vector sorting (small) is used.
VL	Vector sorting (large) is used.
P	Pen sorting is used.
P&VS	Both pen sorting and vector sorting are commonly used.

- **When the CAD side furnishes the sorting function, if the sorting is selected herein, the speed may be lowered. Therefore, when the CAD furnishes sorting set, this setting shall be turned OFF.**
- **VL can process maximum 3 times larger than VS in data quantity. When data processing time is long due to slow tool speed, sufficiently long line segment and so on, the plotting efficiency becomes optimum state. However, in a case of high speed plotting to manage fine line segments in bulk, an intermittent operation may be resulted in.**

CAUTION

- **To output data on cutting and plotting, specify the OFF, VS or VL. If the P or P&VS is specified, plotting will be performed on the part that is cut. This will cause the pen tip to catch the cut part resulting in paper jamming.**

-PAGE+ →

<--BUZZR : OFF SRT : OFF -->
<--EMU : CG-10A PAPER-->

1 Display the fourth page of the menu.

2 Change the [SRT]. The display is changed whenever the key is depressed. Select the applicable value. The value will be automatically registered

-F2+ : OFF, VS, VL, P, P&VS

AUTOCUT SETTING

CAUTION

- **Do not excessively increase the autocut pressure (press), or it may cause abnormal damage of the synchroroller, shorter cutter blade service life and the like.**

The autocut means a function to automatically cut off paper at the end of a plot out for one data under roll paper mode. In this paragraph, the autocut ON/OFF and cutter pressure at the autocut are established.

Command	Description
CUT -> WAIT	After autocut execution, the offline is selected.
CUT -> PLOT	After autocut execution, the online is selected wity awaiting status.
OFF	Autocut will not be executed.

- **The autocut is executed when the EOF condition is satisfied and the NR command is under execution. (Under the EOF command execution and time out)**

```
! AUTO CUT
  END IN FAILURE
```

In the case where the machine has failed to conduct auto-cut, it will re-try auto-cut as many as three times while increasing the cut pressure in increments of 10 g.
If the machine cannot complete auto-cut in the re-tries, it will enter the online mode after giving an appropriate error message on the display.

At this time, the pressure setting for the auto-cut and the pressure established by a cutter parameter will automatically increase by 10 g that will be stored in the plotter. It should be noted, however, the cutter parameter pressure will be determined by the setting established on the CAD in the case where the "DOTTED LINE CUT" is set to the OFF state and the cutting pressure command will be provided by the CAD.

```
PLEASE CHANGE CUTTER
```

If the machine finally cannot cut off the paper with a 450-g pressure, it will give a message to prompt for cutter replacement. In this case, be sure to replace the cutter blade with a new one.

```
CHANGE CUTTER BLADE?
← YES                    NO →
```

When a magazine is loaded on the machine, the machine will give a message asking whether the cutter blade has been replaced. If "YES" meaning that the cutter blade has been replaced with a new one is selected, the cutter pressure will be restored to the default value.

AUTOCUT SETTING

-PAGE+ →

<--CLEAR	AUTO CUT-->
<--PEN SET	HALF CUT-->

1 Display the first page of the menu.

-F2+ →

<--CUT MODE : XXXXXXXX	
<--FORCE : XXXg	CUT OFF-->

2 Select [AUTOCUT], and the following display appeares.

- **Refer to Chapter 3 "PAPER CUTTING" (P.3-5) for the [TO CUT] in this display.**

3 Select [CUT MODE]. The display will be changed whenever the key is depressed. When OFF is selected herein, proceed with the Step 5.

-F1+ (CUT MODE) : CUT -> WAIT, CUT -> PLOT, OFF

4 Change the value of [FORCE]. The value will be changed whenever the key is depressed. Display the applicable value.

-F3+ (FORCE) : 50 - 450g

END →

<--CLEAR	AUTO CUT-->
<--PEN SET	HALF CUT-->

5 Accomplish the registration. The display will be returned to the first page of the menu.

INSTALLATION OF MAGAZINE

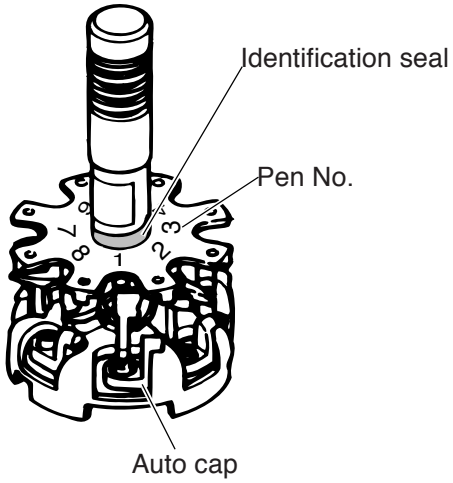
Structure of Magazine

CAUTION

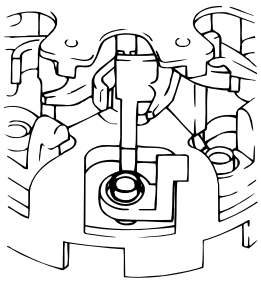
•Do not remove or contaminate the identification seal, or existence of the pen can not be interpreted.

•Do not use any magazine except the proper magazine attached as the accessory, or it will cause a failure or misidentification of the tools.

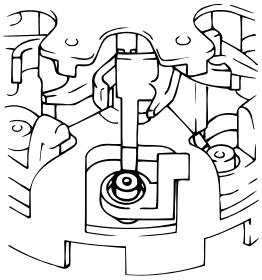
The magazine is to attach the tools on the main unit. Eight tools can be loaded on the magazine.



The specialized pen cap rubber to prevent the pen point from dry off is provided in the magazine auto cap. There are each four caps for ink pens and ball pens respectively.
Be sure to use the pen cap for ink pens for the ink pens and ceramic pens. For other tools, both types pen caps are usable. These pen cap rubber can be removed and installed.



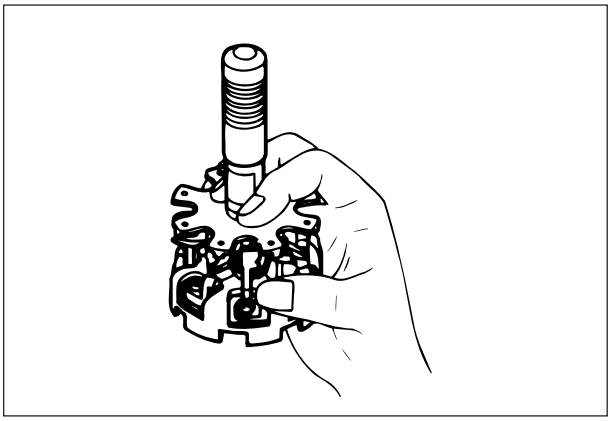
For ink pens
(Magazine Nos. 1-4)



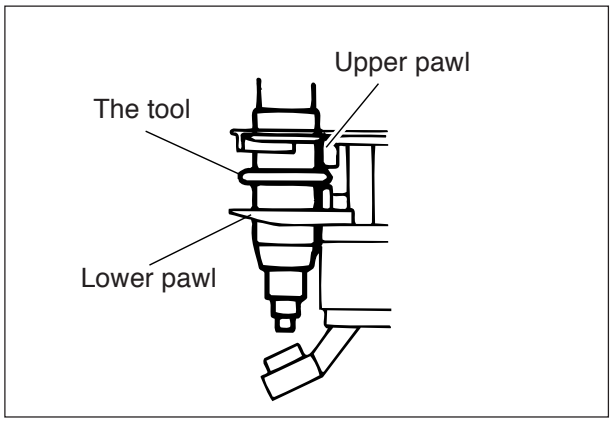
For ball pens
(Magazine Nos. 5-8)

Preparation of the Tools

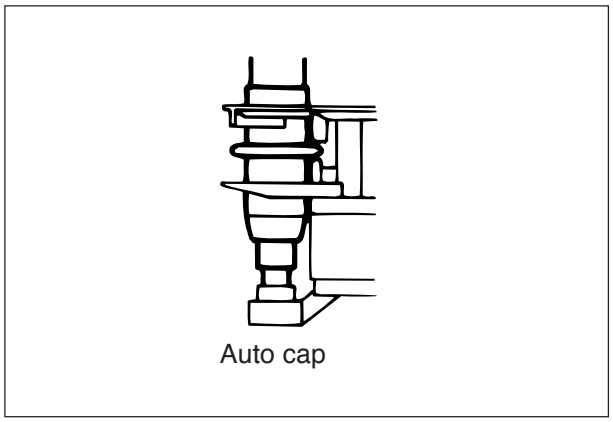
Although the tools to be used would be set into a magazine in advance and allowed to be installed onto the UNIT as it is, the explanation shall be prepared herein with the procedure to install after applying the power to the UNIT.



1 Hold the magazine by your right hand so that the pen No. of the tool to be installed comes to the front.



2 Hold the pen by your left hand, install the collar of the tool horizontally between the upper and lower pawls of th magazine.



3 When the thumb of your right hand is released, the pen point gets into the auto cap. For the pen cap rubber, there are two types, i.e. for the ink pen and ball pen. Select and replace, if necessary, the proper rubber depending on the installed pen. (See page "Structure of "Magazine" P.2-20.)

4 Put the magazine on a flat table. Set the magazine on the UNIT with turning ON the power.

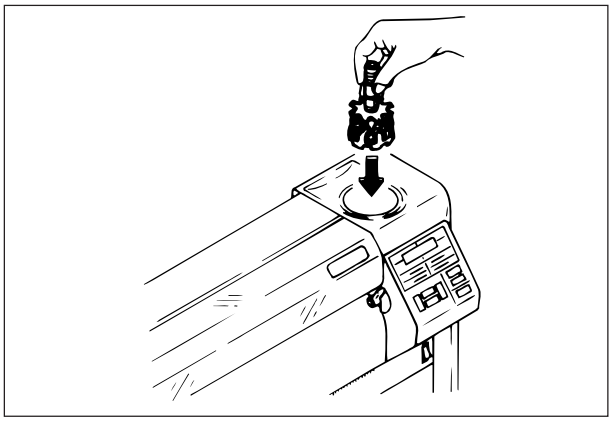
INSTALLATION OF MAGAZINE

Installation of magazine

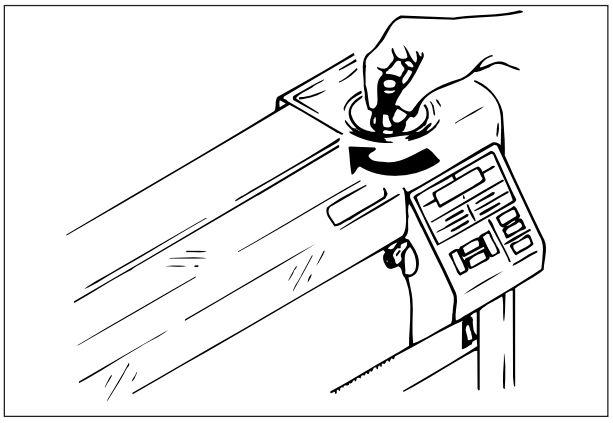
CAUTION

- **Do not directly load the tools onto the carriage, or the carriage may be damaged.**
- **Do not mount the magazine when the UNIT operates any action.**
- **Do not put your hand into the hole of the magazine holder during the UNIT operation because it is dangerous.**

The magazine installation is possible with either the power ON or OFF.
he explanation herein shall be given in the case of the power ON.



1 Make sure that the UNIT stop operating. Holding the magazine shaft, steadily insert into the magazine holder of the plotter.

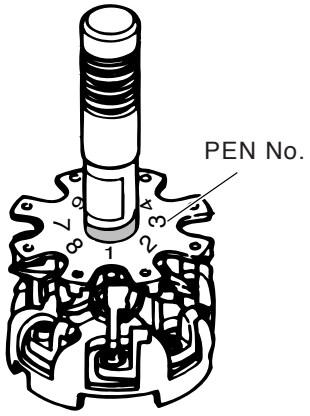


2 Lightly turn the magazine until bottoming. A click of a latch comes out, and the magazine is rotated.
When a magazine is loaded on the machine, the message "CHANGE CUTTER BLADE?" will appear on the display. Select "YES" or "NO."
YES: The pressures for the auto-cut and pattern cut will change to the default values
NO: The pressures will remain the latest updated values.

3 When the rotation is finished, the magazine stops at the home position, and the display returns to the status before the magazine installation.

Setting the pen number

Allocate the pen numbers (DATA Nos.) contained in data entered on the host computer to the numbers of pens installed in the No. 1 to No. 8 positions of the magazine. Once the pen numbers are designated, you can plot with multiple pens contained in data with one pen installed in the magazine.
In addition, when a magazine pen number is allocated to two or more data numbers, you can establish pressures that differ with data number. This will allow you to use one mechanical pencil with different pressures to discriminate between bold lines and lightly shaded parts



CAUTION

- **If you have specified a pen number in which no pen is installed, the machine will not fetch the pen. Instead, the machine will continue plotting using the pen that is currently installed in the carriage.**

Indication of pen numbers

```
DATA No   : A 1 2 3 4 5 6 7 8
 PEN No   : - 1 1 2 4 5 5 7 8
```
<--- Pen number in data
<--- Pen number of magazine

The pen number contained in data shown above corresponds to the magazine pen numbers as shown in the table below.

Pen number in data	1	2	3	4	5	6	7	8
Pen number of magazine	1	2	3	4	5	6	7	8

Select one from A through 8 of “Data No.” with the [<] or [>] key. The selected number will be shown in reverse video.When the “A (all data)” is selected, all data numbers will be allocated to one magazine.
To change the pen number corresponding to the data number shown in reverse video to one from 1 through 8, operate the [^] or [v] key.

Operating procedure

[Establish an initial value.]

When the PEN No. of DATA No. A is set to "0," the PEN Nos. of respective DATA Nos. will represent initial values.

[Set all data numbers to one magazine number.]

When the PEN No. of DATA No. A is set to any value other than "0" or "-," all DATA Nos. will be set to one PEN No.

[Establish magazine numbers on a data number basis.]

Magazine numbers are established on a data number basis excluding data number A.

-PAGE+ →

```
<--CLEAR                AUTO CUT-->
<--PEN SET              HALF CUT-->
```

1 Display the first page of the menu.

-F3+ →

```
<--SAVE NO. :#1         ASSIGN-->
<--MODE:MANUAL          PARAM-->
```

2 Select [PEN SET], and the following display appeares.

Check to be sure that the mode is set to the "MANUAL." If the "AUTO" mode is selected, press the [-F3+] key to change over the mode to the "MANUAL."

-F2+ →

```
DATA No  : A 1 2 3 4 5 6 7 8
PEN No   : - 1 2 3 4 5 6 7 8
```

3 Select [DATA No.], and the following display appeares.

Select the "DATA No." using the [<] or [>] key. The selected number will be shown in reverse video.
Using the [^] or [v] key, establish the PEN No. corresponding to the DATA No. that is shown in reverse video.

END →

```
<--CLEAR                AUTO CUT-->
<--PEN SET              HALF CUT-->
```

4 Register the "PEN No."

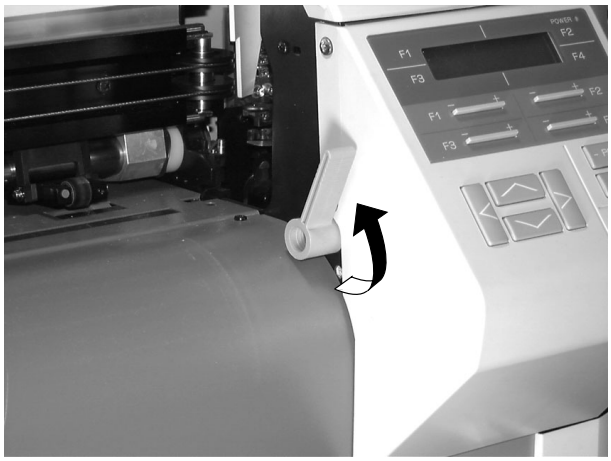
PAPER SETTING

CAUTION

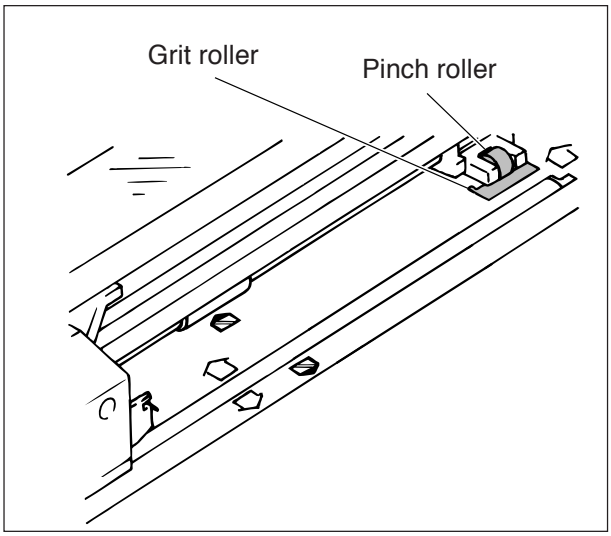
- **Do not use paper with hard curling or crease**
- **If paper is extremely thin, the paper may be torn at the portion contacting with the gdit roller under plotting for a long time.**

Load the paper after all settings have been accomplished. Both roll paper and leaf paper are usable in the UNIT.

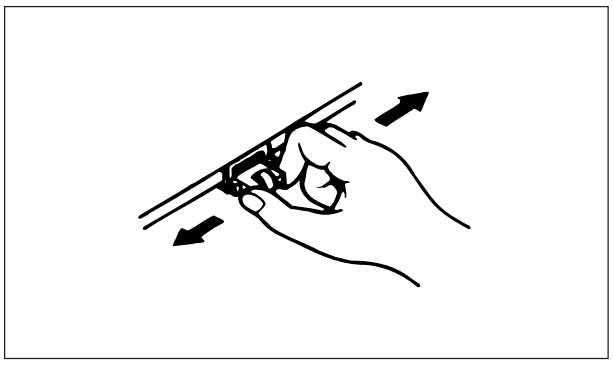
Roll Paper Setting



1 Make sure that the paper set lever is at the UP position.

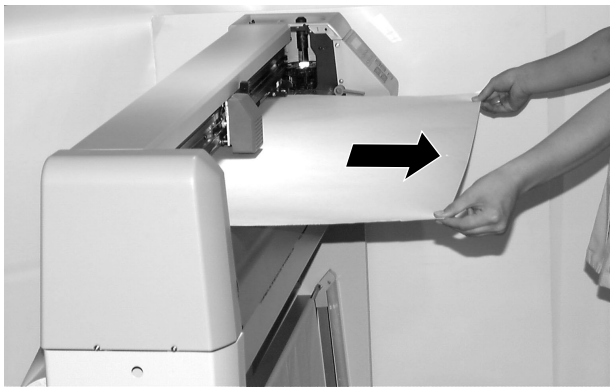


2 Load the paper between the pinch roller and grit roller at the back of the main unit.



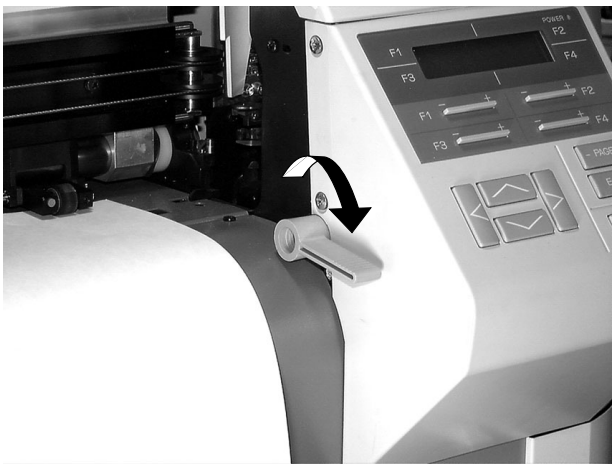
3. Pinch the pinch roller, and slide to a place with clicked feeling at a position where is about 10mm inward from the paper edge. Apply to both left and right sides.

- **The right pinch roller shall be positioned at the clicked point where is leftward from the right gdit roller.**



4 Stand in front of the main unit, and pull out and stretch the paper from the roll by both hands.

- **When the extent of pull out of the media is too short, pull out the media by lifting the roll paper stopper upward.**



5 Make sure that the paper adsorbs without deflection, then lower the paper set lever at DOWN position as holding down the roll paper in place by hand.

CUT - THICK CUT - THIN
ROLL

6 The display as shown left will be appeared.

- **The display would not be appeared in some cases by "PAPER TYPE SETTING" (P.3-22). If so, move on the Step 9.**

7. Select [ROLL].
   Depress the applicable key.

   - **The initial value of paper drawing length for the paper detection operation is 3 m.**
   - **To change the paper drawing length, refer to the "AUTO FEED SETTING." (See page 3-15.)**

-F3+ (ROLL)

```
PAPER LOADING
                (ROLL)
```

The display show left is appeared. The plotter starts detecting the media.

```
READY)
                X sec!
```

8. When the movement stops, the display as shown left will be appeared. The *** part will be changed from 5 to 1.

   - **Depressing ONLINE/OFFLINE during displaying this picture causes to move into the offline mode.**

```
ONLINE)
```

9. All movements stop and the mode becomes under the online mode.

- **When the paper is set, the UNIT automatically becomes under the online mode. If you want to change the tools conditions, communication condition and etc. after setting the paper, select the offline mode or pause mode.**
- **If you want to move the origin, refer to Chapter 3 "MOVEMENT OF ORIGIN" (P.3-12).**
- **When the online mode is selected, in some cases, the plotter may start moving. In such case, follow the instruction of this chapter "Pause of Plot Out" (P.2-33). Thereafter, start over to set paper again.**
- **To prevent the paper from moving out of position before receiving data, the machine performs longitudinal feeding approximately once a minute after paper loading.**

Finely adjusting the roller stay position

CAUTION

Be sure to properly position the end of roll paper tube and the end of roll paper after the completion of paper detection.

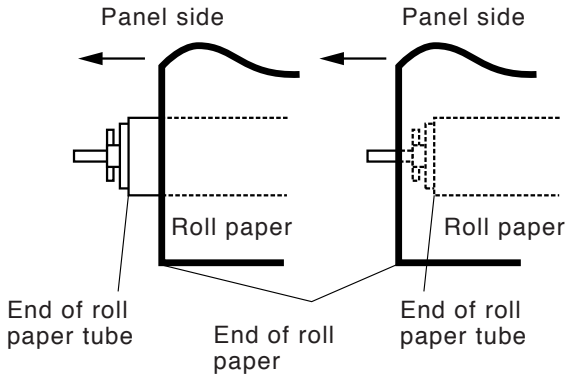


Fig. A **Fig. B**

1 After the completion of paper detection, stand behind the plotter.

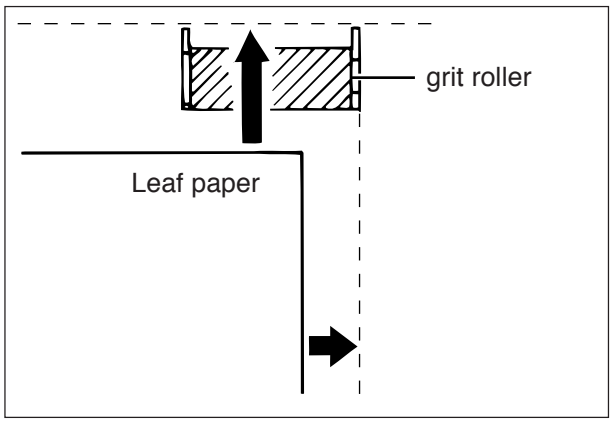
2 For the case illustrated in Fig. A, shift the roll stay located near the operation panel toward the back of plotter (or shift the roll stay assy. located on the opposite side toward the front of plotter, or respectively shift both roll stays to the aforementioned directions.)

3 For the case illustrated in Fig. B, shift the roll stay located near the operation panel toward the front of plotter (or shift the roll stay assy. located on the opposite side toward the back of plotter, or respectively shift both roll stays to the aforementioned directions.

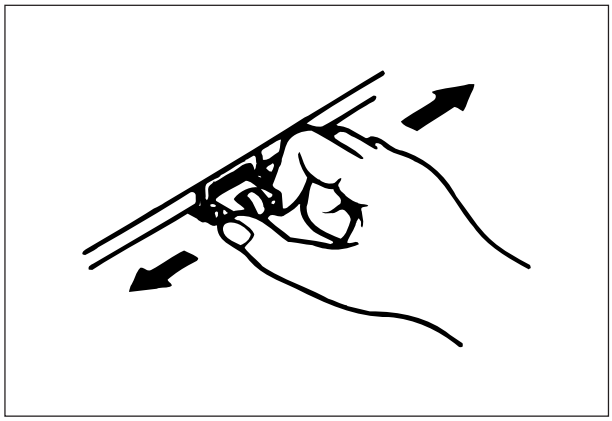
CAUTION

- **If the paper type of default in Chapter 3 "PAPER TYPE SETTING" (P.3-22) is set to [ROLL PAPER], an abnormal operation will be resulted in when leaf paper is set. Select [LEAF PAPER] for the paper type of default, or select [EVERY TIME AT SET] to select paper type at the paper setting.**

Leaf Paper Setting



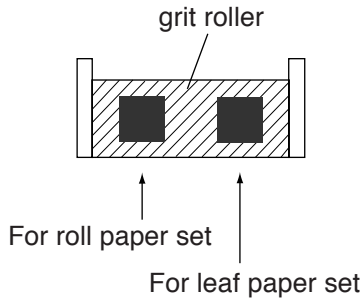
1 From the front side, put the leaf paper between the pinch roller and grit roller. Set the leaf paper by aligning with the inner end of the right gdit roller on the platen.

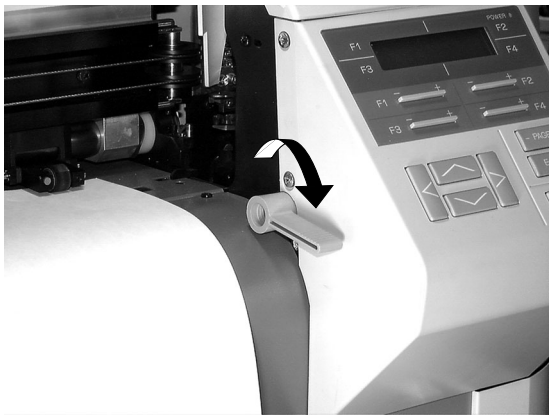


2 Move the right pinch roller to the clicked point at the right end.

- **The right pinch roller shall be positioned at the clicked point where is rightward from the right gdit roller.**

- **Position of right side pinch roller.**





3 Lower the paper set lever at DOWN position.

⬅CUT - THICK CUT - THIN➡ ⬅ROLL

4 The display shown left will be appeared.

- **The display would not be appeared in some cases depend on "PAPER TYPE SETTING" (P.3-22). If so, move on the step 5.**

5 Select [CUT-THICK] or [CUT-THIN]. Depress the applicable key.

-F1+ (CUT-THICK) : 90g/m^2 and over

-F2+ (CUT-THIN) : Less than 90g/m^2

PAPER LOADING (XXX LEAF)

The display as shown left will be appeared, the carriage moves left and right and the paper moves back and forth.

READY) X sec!

6 When the movement stops, the display as shown left will be appeared. The * part will be changed from 5 to 1.

- **Depressing ONLINE/OFFLINE during displaying this picture causes to move into the offline mode.**

ONLINE)

7 The mode becomes under the online mode.

TRANSMISSION OF DATA FROM COMPUTER

Before Data Transmission

Confirm the following six items before transmitting data. If there is any discrepancy, return to the applicable page for the corrective action.

1 Is the interface cable properly connected ?
See page "CONNECTION OF CABLES" (P.1-18)

2 Are the pens set onto the magazine ?
See page "Preparation of the Tools" (P.2-21)

3 Is the magazine properly set ?
See page "MAGAZINE SETTING" (P.2-22)

4 Is the paper properly set ?
See page "PAPER SETTING" (P.2-25)

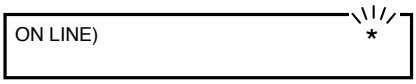
5 Is the area where the paper moves free from any obstacle ?
See page "PRECAUTION IN INSTALLATION" (P.viii)

6. Is the plotter under the online mode ?
The UNIT will become the online mode whenever the paper is set. When the offline mode is selected after setting the paper, depress the ONLINE OFFLINE so as to obtain the online mode.

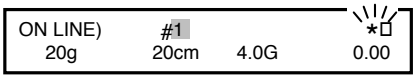
- **Before practically plotting out...**
  A self diagnosis functions are incorporated so as to confirm that the established tools conditions and up speed value are adequate and the communication condition is compatible. It is recommendable to diagnose before a practical plot out in order to prevent occurrence of troubles.
  Refer to Chapter 4 "Outline of diagnostics" (P.4-2).

Data Transmission

1 The host computer transmits data.



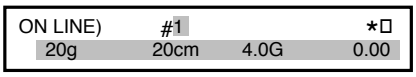
2 The plotter receives the data.
When the data are received, * mark flickers.



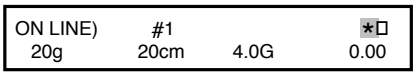
3 The pen is taken out of the magazine, and the plot out starts.
The tool No. is displayed after the #.

LCD displays during plotting out are as follows.

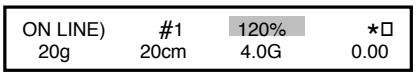
The No. and tools conditions of currently used tools are displayed. For the tools conditions, press, speed, acceleration and offset are displayed from the left to right.



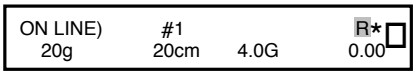
The flickering of the * mark represents the status of the data receiving.



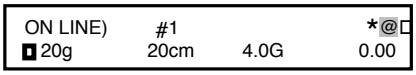
When a plotting factor (scale) has been set.
the scale is displayed here. If the scale is 100%, there is no display. Refer to "PLOTTING SCALE SETTING" (P.3-14).



While the mirror setting is [ON], [R] is displayed here. If it is [OFF], there is no display. Refer to "MIRROR SETTING" (P.3-11).



When data exceed the operating range, [@] is displayed here. There is no display in general. When this display is appeared, the data out of the plotting range can not be plotted out.



4 After completing the plot out, the plotter ends in accordance with the command of the autocut. Refer to this chapter "AUTOCUT SETTING" (P.2-18).

Pause of Plot Out

Execute the following procedures to pause the plot out. Refer to the next page for discontinuation of the plot out.

ONLINE/OFFLINE →

```
ON LINE)      #1
    * Just a moment please *
```

1 Depress the key so as to display the following display. While the display is appeared, movement of the plotter does not stop.

```
<-- [CLEAR]                AUTO CUT-->
<-- PEN SET                HALF CUT-->
```

2 The pause mode is obtained, and movement of the plotter stops.

- **The tools conditions may be changed (only parameter change) during the pause mode. The method is differed from tool mode. Refer to the applicable page, and change the condition.**
- Under automode : Chapter 3 "CHANGE OF THE TOOLS CONDITIONS" Step 2 on in (P.3-6)
- Under manual mode: this chapter "Setting Method under Manual Mode" Step 2 on in (P.2-11)

ONLINE/OFFLINE →

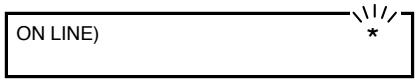
```
ON LINE)    #1                    *
 20g        20cm      4.0G      0.00
```

3 Depress the ONLINE/OFFLINE key again for restart of the plot out.

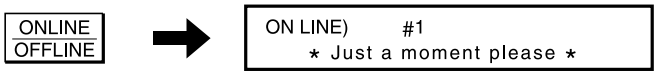
Plot Out Termination

The plot out is to be discontinued due to some reason, follow the following procedures.

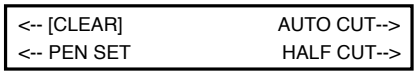
1 Stop the data transmission of the host computer.



2 Wait until the data receiving with the plotter ends.
The * mark flickering indicates receiving the data.

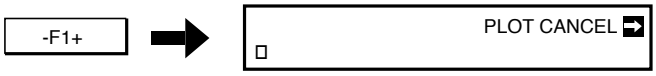


3 When the data receiving is ended, depress the key. The following display will be appeared. Whenever this display is appearted, the plotter operation would not be stopped.



4 After a little while, the display will be changed to as follow.

- **There is a few times lapse till complete stop of the plotter. The length of the time lapse is differed depending on the data.**

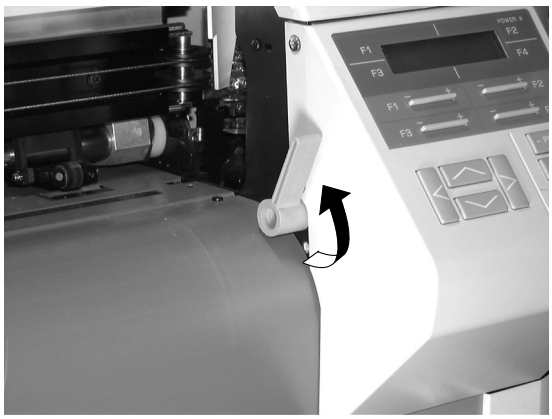


5 When the plotter completely stops, the [CLEAR] function can be executed to clear the data. Depress the key, and the following display will be appeared.

6 The [CLEAR] is executed.
For the cancellation of [CLEAR], depress END instead of -F2+.

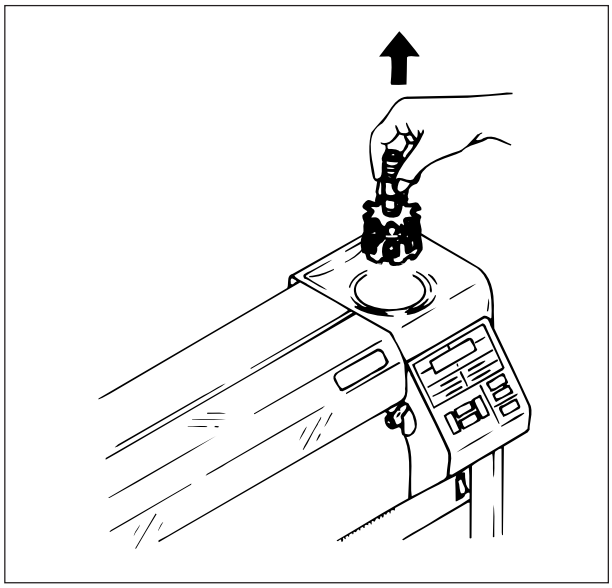
OPERATION END

The operation after completion to produce the pattern paper shall be achieved as follows.



1 Remove the paper from the UNIT.
When a daily operation is completed, remove the paper from the UNIT, and lift the paper set lever at the UP position without fail.

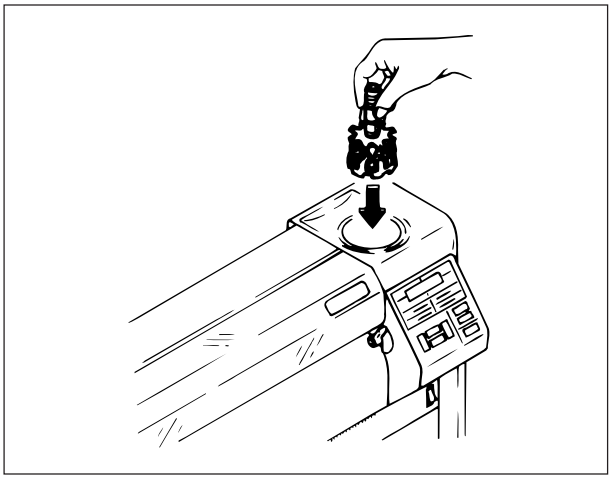
- **The roll paper just leave on the roll holder for next operation.**



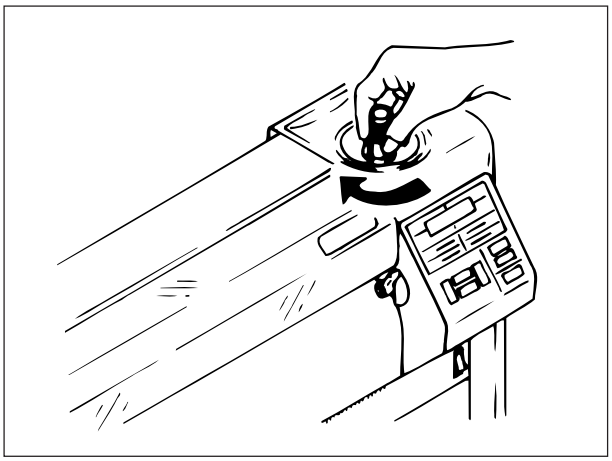
2 Remove the magazine from the UNIT.
Hold the magazine shaft, and steadily lift up.

3 Remove the tools from the removed magazine.
If the pen is left in the magazine, it may well be dried off and become impossible to write. Therefore, firmly put a cap and store it in such as accessory box.

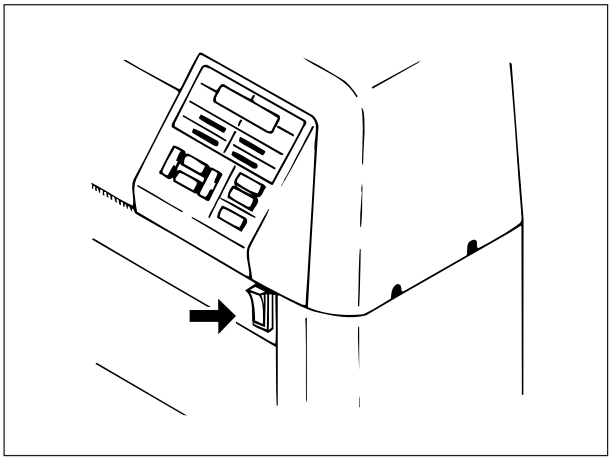
- **The mechanical pen and cutter can be left on the magazine.**



4 Install the magazine from which the tools have been removed to the UNIT. Hold the magazine shaft, and steadily insert it into the magazine holder.



5 Turn the magazine around 90˚ and leave your hand. The magazine rotates after clicked, and stops at the home position. The magazine may be removed from the UNIT, however it is recommended to install on the main unit so as to prevent damage by such as dropping on the floor.



6 Turn the power of the plotter OFF. Bring the power switch under the control panel down toward the "O" side.

OPERATION END

7 Shut the paper basket.

Now, all works have completed.

CHAPTER 3 APPLIED FUNCTIONS

This chapter covers the applied functions which make you much convenient operation.

APPLIED FUNCTIONS

The UNIT provides the following functions as the applied functions. Utilize them as necessary.

Application for Plot Out

Data Clear ---> P.3-4

A plot out will be interrupted. Use this function to interrup a plot out due to paper clogging, to restore to the offline mode after paper setting and so forth.

Plotting Scale Setting ---> P.3-14

Received data will be scaled down or scaled up for the plotting.

Performance of Copying ---> P.3-8

esidual receiving data in the buffer will be plotted out again.
Once received data can be repeatedly plotted out.

Mirror Setting ---> P.3-11

his is a function to plot out received data by reverting the X-axial center line on the axis.

Application Setting

Change of the Tools Conditions ---> P.3-6

The tools conditions in the registration Nos. #1, #2 and #3 will be changed. If there is no suitable tool condition in the three patterns of the initial values, the change will be achieved here.

Change of Origin ---> P.3-10

An origin of coordinates assigned by a command will be changed over. The origin may be set in accordance with the CAD used by you.

Auto Feed Setting ---> P.3-15

Under paper loading, a paper feed length will be established.

3 Point Axes Compensation ---> P.3-16

When a reference line plotted on the paper is not a right angle, the plotting coordinates can be aligned to the reference line.

Applied Setting

Compensation of Plotting Distance ---> P.3-18

Comparing the length of lines to be plotted in the CAD data and length of lines actually plotted, the error will be compensated.

Buzzer Setting ---> P.3-20

The setting the buzzer whether Buzzed or not under an erroneous state will be accomplished.

Equipment Name Setting ---> P.3-21

The respondable equipment name will be set in accordance with the CAD to be used by the user.

Paper Type Setting ---> P.3-22

At a paper setting, the mode either selecting the paper type by every time or selecting default paper type will be changed over.

Resolution Setting ---> P.3-24

The resolution of the plotter will be set.

Plotting List to be set-up conditions---> P.3-23

The data of all settings of the UNIT will be plotted.

Automatic Interpretation of Communication Conditions ---> P.3-25

A function to set communication conditions as transmitting data from the CAD to be used by the user when the communication conditions of the CAD are unknown.

System Setting ---> P.3-27

There are items necessary to set by the CAD commands and other convenient application settings.

Miscellaneous

Paper Cutting ---> P.3-5

A page of plotting data on a roll paper can cut at an arbitrary position.

Movement of Origin ---> P.3-12

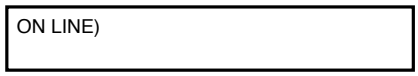
A command origin can move to an arbitrary position.

DATA CLEAR

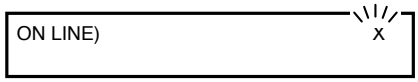
The data clear is executed in the following cases

- When the mode is shifted from the online mode to offline mode.
- When the plotting is paused.

1 Confirm that no datum is received under the online mode.

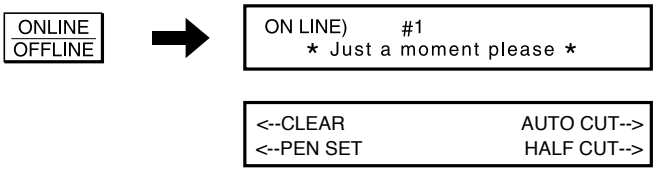


Display when no datum is received.



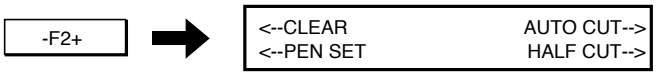
Display under receiving data

Display under receiving data and executing the plotting



2 Select from the online mode to pause mode.
After a little while, the following display is appeared.

3 Select [CLEAR]



4 The data clear will be executed. The display returns to the first page of the menu.

- **Execute the data clear after the plotter movement completely stops. If the data clear is executed during movement, the data remains in the buffer. This status may well cause a malfunction or erroneous operation when the next online mode is selected. If the plotter side is unavoidably stopped in advance, execute the following procedures.**
  1. **Stop the data transmittion at the host computer side.**
  2. **After confirming that the data transmission completely stops, execute the [CLEAR] again.**

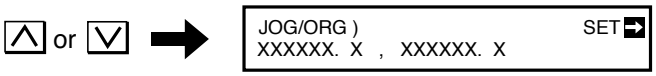
PAPER CUTTING

Cut off the roll paper at an arbitrary position. When the paper end is misaligned, cut off so as to obtain the straight edge.

Cutting after paper Load

1 Set the roll paper.
Refer to Chapter 2 "Roll Paper setting" (P.2-25)

2 Select the offline mode.
Execute the procedure of this chapter "DATA CLEAR" (the previous page).



3 Move the head to the position to be cut off by using the JOG key.

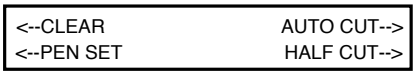
4 Wait for two seconds, or press the END key.

5 Select [AUTOCUT].

6 Select [CUT OFF]. Execute the paper cut off.

7 When the paper cut off has been ended, the page will be returned to the first page of the offline mode.

Cutting before Paper Load



1 Pull out the head of the roll paper on the platen so as to locate the position to be cut off on the synchro roller.

2 Select [AUTOCUT]. (With holding the cramp lever at risen position)

3 Follow the display on the panel hereafter.

4 When the paper cut off has been ended, execute the paper load, then the page will be returned to the first page of the offline mode.

CHANGE OF THE TOOLS CONDITIONS

Establish operating conditions for plotter pens of REGISTER Nos. #1, #2 and #3 according to the type of paper and tool to be used.

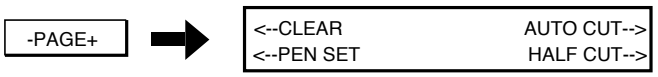
The contents and values of the setting are as follows.

Refer to Chapter 1 [MERITS OF THE TOOLS] (P.1-36) for the tools conditions compatible with the tools and/or paper.

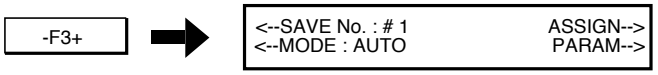
This setting is stored even if the power is turned OFF.

Type of Tool	Command	Setting Value
PENCIL 0.5	Force	15, 20 - 450g (10g step)
	Speed	2, 5 - 85cm/s (5cm/s step), 120cm/s
	Acceleration	0.3, 1 - 4G (1G step), 5.7G
PENCIL 0.4	Force	15, 20 - 400g (10g step)
	Speed	2, 5 - 85cm/s (5cm/s step), 120cm/s
	Acceleration	0.3, 1 - 4G (1G step), 5.7G
PENCIL 0.3	Force	15, 20 - 350g (10g step)
	Speed	2, 5 - 85cm/s (5cm/s step), 120cm/s
	Acceleration	0.3, 1 - 4G (1G step), 5.7G
PENCIL 0.2	Force	15, 20 - 200g (10g step)
	Speed	2, 5 - 85cm/s (5cm/s step), 120cm/s
	Acceleration	0.3, 1 - 4G (1G step), 5.7G
ANOTHER	Force	15, 20 - 450g (10g step)
	Speed	2, 5 - 85cm/s (5cm/s step), 120cm/s
	Acceleration	0.3, 1 - 4G (1G step), 5.7G

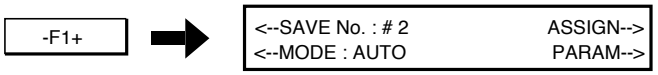
The maximum speed is 60 cm/s when a roll paper is used.



1 Under the offline mode, the first page of the menu will be displayed.



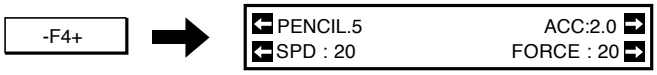
2 Select [PEN SET], and the following display will be appeared.



3 Select [SAVE No]. The No. will be changed whenever the key is de-pressed. Display the applicable No.

4 Select [PARAM], and the following display will be appeared.

CHANGE OF THE TOOLS CONDITIONS



5 Select [PARAM], and the following display will be appeared.

- **Under the manual mode, the above display is not appeared. Refer to Chapter 2 "OPERATION MODE of the Tools" (P.2-8), change over to the auto mode.**

6 Select the tool to be changed. The tools will be changed whenever the key is depressed. Display the tool to be set.

-F1+ : PENCIL 0.5, PENCIL 0.4, PENCIL 0.3, PENCIL 0.2, ANOTHER

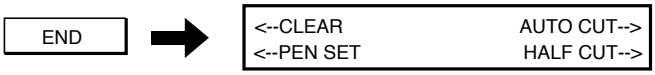
7 Change the values of [ACC], [SPD] and [FORCE]. The value will be changed whenever the key is depressed. Display the applicable vslue.

-F2+ (ACCELERATION): Refer to the condition list in the previous page.

-F3+ (SPEED): Refer to the condition list in the previous page.

-F4+ (FORCE): Refer to the condition list in the previous page.

Return to Step 5 and repeat the operation to continue to change the other tools.



8 When all settings have been completed, accomplish the registration. The display returns to the first page of the menu.

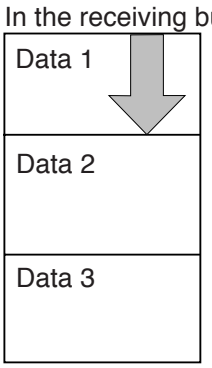
PERFORMANCE OF COPYING

CAUTION

- **The copying is unachievable under the pause mode.**
  •When no data exist in the receiving buffer (such that no data have been received after turning the system ON), the copying is unachievable.
- **The copying of data beyond the capacity of the receiving buffer in size is unachievable.**

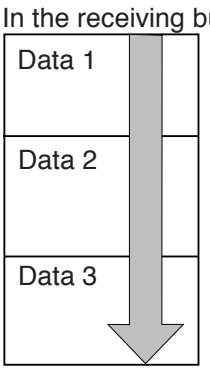
Plot out the residual data in the receiving buffer once again. As far as data exist in the receiving buffer, the copying can be repeated. The plot out of the copy differs depending on the EOF command in the "Block: 4". Refer to Chapter 1 "Change of Communication Conditions" (P.1-30). For the explanation, examples for receiving of Data 1, Data 2 and Data 3 in order shall be given.

EOF command ON



Data 3 that is firstly received will be the object to be copied. Data 2 and 3 can not be copied. Send the data once again for the copy. Along with EOF command for each page or send data one by one page for copying without EOF command.

EOF command OFF



Since there is no pause in the receiving buffer, all data in the receiving buffer will be copied on the same paper. When the command of the "CUT" in the submenu of the copy is turned ON, the paper cut off by every copying.

1 Plot out the data. Refer to Chapter 2 for the operation. The operation after plotting out will be differed in accordance with type of the set paper.

- In the case of roll paper; After plot out, the offline mode proceeds with Step 4 and the online mode proceeds with Step 3.
- In the case of leaf paper; Remove the paper and proceed with Step 2.

2 Set new leaf paper. Refer to Chapter2 "PAPER SETTING" (P.2-25).

3 Select the offline mode. Execute the "DATA CLEAR" instructed in this chapter(P.3-4).

-PAGE+ →

```
<--ORG : CENTER          COPY-->
<--MIRROR : OFF          ORG-MOV-->
```

4 The offline mode displays the second page of the menu.

-F2+ →

```
                         COPY START
NUMB : 1                 CUT : 1
```

5 Select [COPY], and the following display will be appeared.

6. Set [NUMB]. Change quantity of the paper to be copied.

-F3+ : 1 - 99 sheets

- **When leaf paper is set, this command becomes ineffective.**

7 Select [CUT]. Every depressing the key causes the change over. If it is desired to cut at the pause of the data, turn ON.

-F4+ : ON, OFF

- **When leaf paper is set, this command becomes ineffective.**

-F2+ →

```
COPY)    # X
XXXg     XXXcm     X. XG     X. XX
```

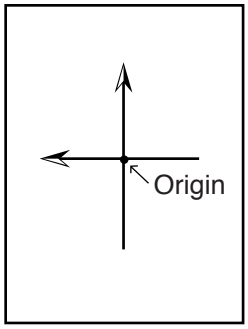
8 Execute the copy.

If discontinuation of the copy is desired, depress ONLINE/OFFLINE so as to obtain the pause mode, then execute the "DATA CLEAR" (P.3-4) instructed in this chapter.

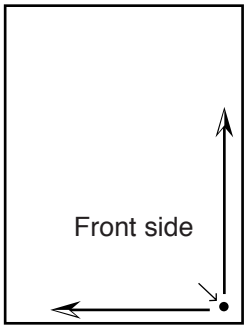
CHANGE OVER OF ORIGIN

The origin of the plotter (at center or lower right corner) assigned by the command shall be changed over. Select either one depending on the type of the CAD. The origin established herein is stored in the memory even though the power is turned OFF.

Origin: at the center



Origin: at corner



-PAGE+

<--ORG : CENTER	COPY-->
<--MIRROR : OFF	ORG-MOV-->

1 Display the second page of the menu under the offline mode.

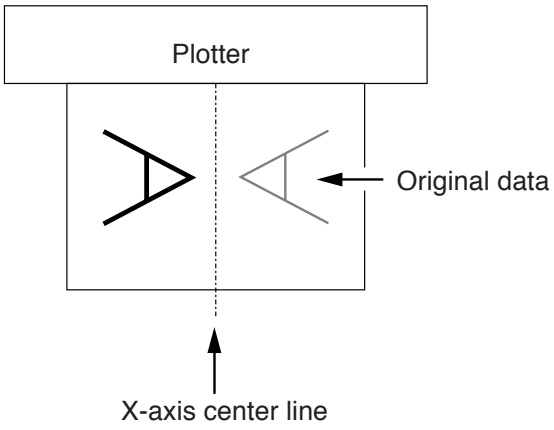
2 Select [ORG]. [CENTER] and [CORNER] are changed over by depressing the key. Select the applicable origin.

<--ORG : CORNER	COPY-->
<--MIRROR : OFF	ORG-MOV-->

3 The origin will be automatically registered.

MIRROR SETTING

The mirror is a function to plot out the received data upon turning over the data on the center line of X-axis. Change over the ON/OFF of the mirror. This command will be stored in the memory even though the power is turned OFF.



1 The offline mode will cause to display the second page of the menu.

2 Select ON/OFF of the mirror. The display will be changed whenever the key is depressed, and the selection will be automatically registered.

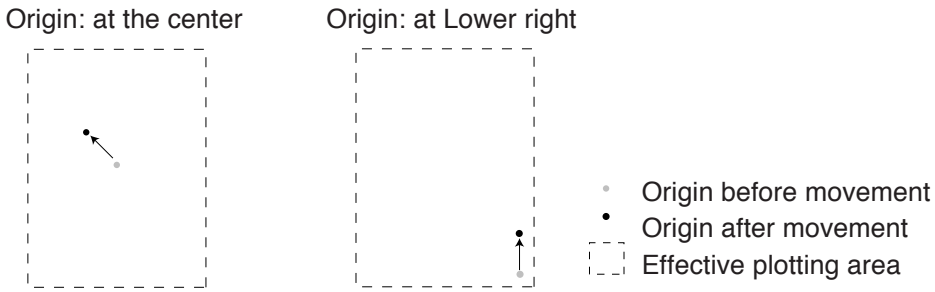
-F3+ : ON, OFF

MOVEMENT OF ORIGIN

The position of origin defined by the command after setting the sheet shall be moved to an arbitrary place. There are two setting methods shown as follows

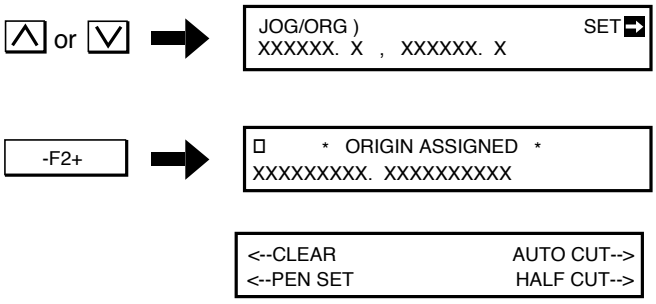
- Setting a provisional origin inside the effective plotting area
- Setting an origin outside the effective plotting area

Movement or the Origin within Effective Plotting Zone



1 Set the paper
Refer to Chapter 2 "PAPER SETTING " (P.2-25).

2 Select the offline mode.
Execute "DATA CLEAR" (P.3-4) in this chapter.

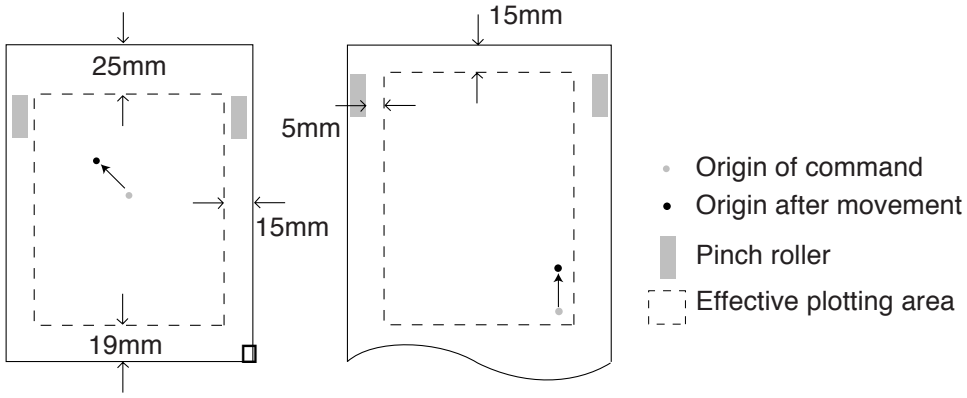


3 Move the head to the applicable position of origin by using JOG key.

4 Set the origin.
After a little while, page of the offline will be displayed.

- **The origin set as this method will be initialized when a paper load is executed.**

Setting an origin inside/outside the effective plotting area



1 Set the pen on the magazine.
Refer to Chapter 2 "Preparation of the Tools" (P.2-21)

2 The second page of the menu will be displayed under the offline mode.

-PAGE+ →

<--ORG : CENTER	COPY-->
<--MIRROR : OFF	ORG-MOV-->

3 Select [ORG-MOV], and the following display will be appeared.

-F4+ →

← INITIAL	SPEED : ? →
XXXXX. X, XXXXX. X	SAV →

4 Move the carriage to the applicable position of origin by using JOG key.

[<] [>] : Move along with Y-axis

[∧] [∨] Move along with X-axis

- **The move speed at this time may be changed. Every depressing -F2+ causes changes of speeds. There are three types of speeds as follows**
  L (slow), M (intermediate), H (fast)

4 Set the origin.

-F4+ →

<--ORG:CENTER	COPY-->
<--MIRROR:OFF	ORG-MOV-->

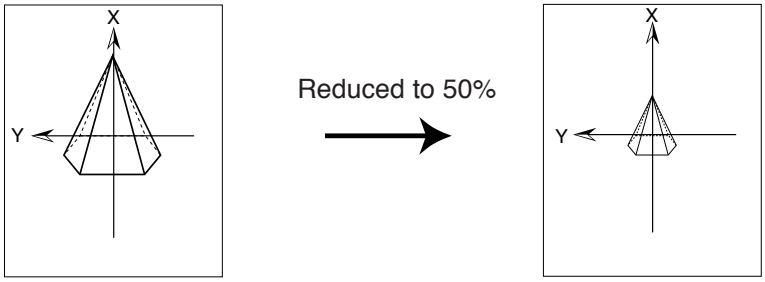
5 When moved to the destination, store in the memory by depressing the key.

- **The origin set as this method will be effective even after a paper loading or turning the power ON/OFF. For the initialization. Execute [ORIGIN INITIALIZE].**

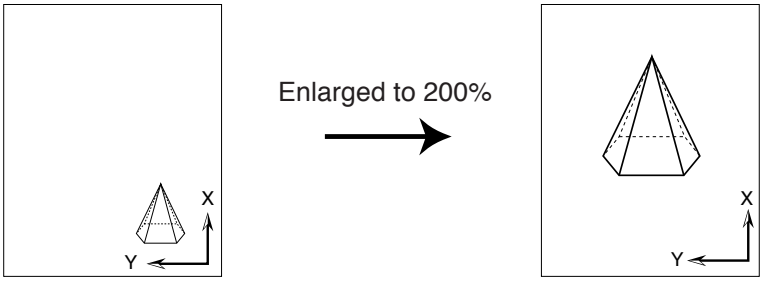
PLOTTING SCALE SETTING

The scale referred to herein is a function to reduce or enlarge the received data for the plot out. The origin is taken as the basis for the reduction and enlargement. This setting returns to 100% (scale factor) whenever the power is turned OFF. Refer to Chapter 6 "TABLE OF SCALES" (P.6-12) for the scale factor of the reduction and enlargement.

Origin: At [CENTER]



Origin: At [RH LOWER]



-PAGE+ →

<--SCALE	AUTO FEED-->
<--COMPEN	DIST-CMP-->

1 The third page of the menu will be displayed under the offline mode.

-F1+ →

← INITIAL	RATE : 100%
← REDUCTION	ENLARGE →

2 Select [SCALE].

3 Change the [RATE].

-F1+ : To be 100%

-F3+ : To reduce down to 10%

-F4+ : To enlarge up to 1000%

END →

<--SCALE	AUTO FEED-->
<--COMPEN	DIST-CMP-->

4 Register the scale.

AUTO FEED SETTING

Establish a length and timing of feeding a roll paper at the time of paper loading.
This operation enables a weaved roll feeding to be detected in advance. Establish the condition in accordance with the data length.
This setting shall be stored in memory regardless turning the power ON or OFF.

CAUTION

- **Select a setting that is larger than the paper length contained in data to be output.**

-PAGE+ →

```
<--SCALE                AUTO FEED-->
<--COMPEN               DIST-CMP-->
```

1 The third page of the menu will be displayed under the offline mode.

-F2+ →

```
FEED  LNG : X. Xm
FEED   : AT PAPER LOAD
```

2 Select [AUTO FEED].

3 Change the [FEED LNG] and[FEED].

-F1 : 3.0 ---> 0.0m (0.5 step)

F1+ : 3.0 ---> 9.5m (0.5 step)

-F3+ : AT PAPER LOAD, AT PLOT START

END →

```
<--SCALE                AUTO FEED-->
<--COMPEN               DIST-CMP-->
```

4 Register the auto feed.

- **There is a function to detect a slippage before the paper is slipped off from the pinch roller. Input the value of [SKEW] in the process of "SYSTEM SETTING" (P.3-27) in this chapter. The slippage over (5 - 15mm) at the right end of the paper between the first paper load and the second paper load causes an error.**

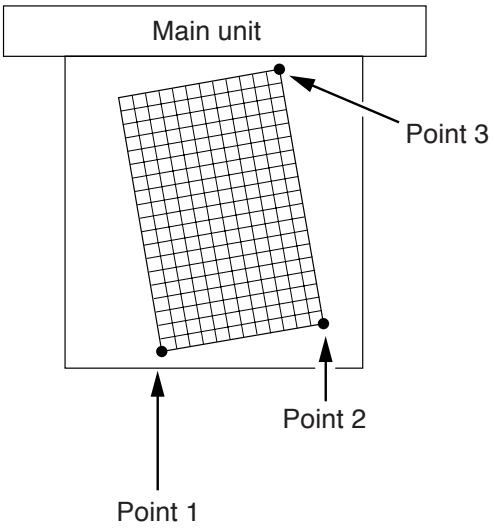
3 POINTS AXES COMPENSATION

CAUTION

- **This setting releases the setting of the "Distance Compensation" until the next paper loading.**
- **A pen of smaller No. in the pen magazine shall be used for this setting so as to accurately accomplish the points alignment. When a viewer is set, use the viewer.**
- **Before starting this setting, set the origin at the Point 2 in the illustration below. ("CHANGE OVER OF ORIGIN" P.3-10)**
- **To accurately align data with cells, use the point axes compensation function with the origin setting function. (See page 3-12.)**

The 3 points axes compensation is a function to align data to a measure when a plot out is made on a paper on which a measure such as a section paper is printed. Putting the origin at the center, set the compensated values for the lean of the paper, distance and perpendicularity. This setting shall be accomplished after the paper setting. When the next paper is set, this setting will be released.

Setting Procedure



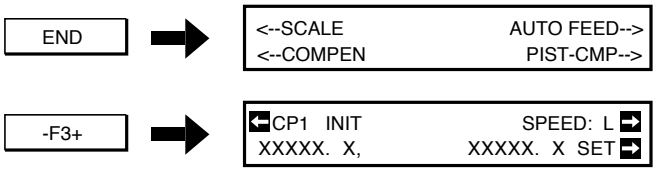
a Set the Points 1, 2 and 3 in the left illustration by the JOG key.

b Input the X-axis (Point 2-Point 3) and Y-axis (Point 1-Point 2) in length which have been actully measured.

1 Set the pen or viewer on the magazine.
Refer to Chapter 2 "Preparation of Tools" (P.2-21).

2 Set the paper
Refer to Chapter 2 "Leaf Paper Setting" (P.2-29).

3 Select the offline mode.
Execute "DATA CLEAR" in this chapter (P.3-4).



4 The third page of the menu will be displayed under the offline mode.

5 Select [COMPEN], and the following display will be appeared.

6 Move the carriage to the Point 1 by the JOG key.

[<] [>] : Move to Plotter Y-axis direction

[^] [v] : Move to Plotter X-axis direction

- **The move speed at this time can be changed. By every depressing [-F2+], the speed will be changed. There are 3 types of speeds as shown below. (slow). M (intermediate), H (fast)**

[-F4+] →

←CP2 INIT	SPEED: L →
XXXXX. X,	XXXXX. X SET →

7 Register the Point 1, and the following display will be appeared, and the carriage moves to the right lower corner of the paper.

8 Move the carriage to the Point 2 by the JOG key.

[-F4+] →

←CP3 INIT	SPEED. L →
XXXXX. X,	XXXXX. X SET →

9 Register the Point 2, and the following display will be appeared, and the carriage moves to the right lower corner of the paper.

10 Move the carriage to the Point 3 by the JOG key.

[-F4+] →

←X AXIS : XXXX. X	[mm]
←Y AXIS : XXXX. X	[mm]

11 Register the Point 3, and the following display will be appeared, and the carriage moves to the right lower corner of the paper.

The distances of the Point 2 - Point 3 and Point 1- Point 2 measured by the plotter will be displayed respectivly on the [X AXIS] and [Y AXIS].

[END] →

<--SCALE	AUTO FEED-->
<--COMPEN	PIST-CMP-->

12. Change the values of [X AXIS] and [Y AXIS] to the values actually measured.

[-F1+] : The value of the X-axis will be changed by the unit of 0.1mm.

[-F3+] : The value of the Y-axis will be changed by the unit of 0.1mm.

13 Register the settings

- **The setting will be initialized when a paper load starts gain. Measure each axis length in advance.**

COMPENSATION OF PLOTTING DISTANCE

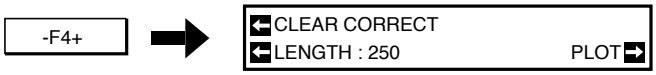
There are some cases where an error is occurred between the length recognized by the plotter (move distance and plotting of the plotter, cutting length and etc.) and actual length (the length actually measured with a ruler) depending on the paper thickness. In order to plot out as accurate as possible, the compensated values shall be registered here. The settings will be stored even if the power is turned OFF.

1 Set the pen on the magazine No.1. Refer to Chapter 2 "Preparation of Tools" (P.2-21).
More accurate compensation will be enabled by using a separately-available viewer.

2 Set the paper
Refer to Chapter 2 "PAPER SETTING" (P.2-25).

3 Select the offline mode.
Execute "DATA CLEAR" in this chapter (P.3-4).

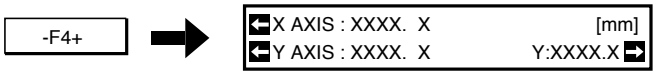
4 The third page of the menu will be displayed under the offline mode.



5 Select [LENGTH], and the following display will be appeared.

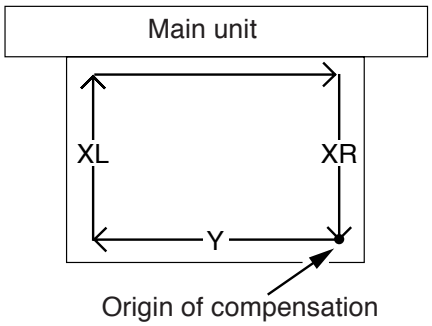
6 Set the size of plotting frame (rectangular) of the X-axis. Assign the size corresponding to the set paper. The value will be changed whenever the key is depressed. Select the applicable value.

-F3+ : 250 - 5000mm (every 250mm step)



7 Select [PLOT]. Plot the frame to actually measure the length, and the following display will be appeared. Remove the paper and actually measure the values of [XR], [XL] and [Y].

COMPENSATION OF PLOTTING DISTANCE



- **In the case of a roll paper, and a cutter is set on the magazine, the paper will be unconditionally cut.**
- **The frame used for plotting for compensation's sake will be excluded from the objects to be compensated. Check the compensation under the online mode.**

8 Input the length actually measured.

-F1+ : Change of value of XR

-F3+ : Change of value of XL

-F4+ : Change of value of Y

END

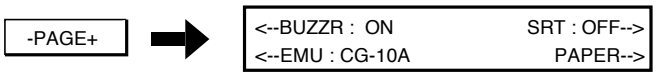
<--SCALE AUTO FEED-->
<--COMPEN PIST-CMP-->

9 Accomplish the registration. The display will be returned to the third page of the menu.

BUZZER SETTING

The setting is related to use the buzzer or not for occurrence of an error or a malfunction. There are the following buzzers in the UNIT. This setting will be stored regardless the power ON/OFF.

Sound of Buzzer	Description
Momentary peep (about 0.2 sec)	At start of the plotter operation. This buzzer can not be stopped.
Short peep (about 0.5 sec)	In the case that the plotter can solve an error. Release the error, and continue the operation.
Long peep (about 2 sec)	In the case that the plotter can not solve errors. The plotter stops the operation.



1 The fourth page of the menu will be displayed.

2 Change over the [BUZZER] ON/OFF. Every depressing the key causes the change over, and the status will be automatically changed over.

-F1+ : ON (to buzz). OFF (not to buzz)

EQUIPMENT NAME SETTING

The values corresponding to request for response of equipment code from CAD shall be established. The following 5 types of equipment are subjected to the selection. This setting will be stored regardless the power ON/OFF.

Unit code	Equipment
7596	In conformity to Plotter made by USA Hewlett Packard
7586B	In conformity to Plotter made by USA Hewlett Packard
CG10A	The UNIT (CG-100AP)
CG90R	CG-90APR made by this COMPANY
CG90A	CG-90AP made by this COMPANY

1 The fourth page of the menu will be displayed.

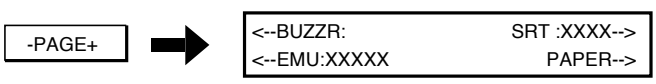
2. Select the applicable equipment. Every depressing the key causes the change of equipment type and automatic registration.

-F3+ : CG10A, CG90R, CG90A, 7596A, 7586B

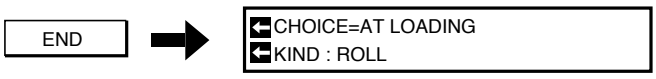
PAPER TYPE SETTING

When the paper is set, it shall be determined whether the paper type (roll paper or leaf paper) is selected each time or the paper type is fixed. When the paper type is fixed, the details of the paper shall be also set. This setting is stored regardless the power ON/OFF.

Command	Description
CHOICE	At paper type setting, it is determined whether the paper type is selected each time or fixed.
KIND	When the paper type is fixed. the paper kind (roll paper or leaf paper) is selected.



1 The fourth page of the menu will be displayed.



2 Select [PAPER], and the following display will be appeared.

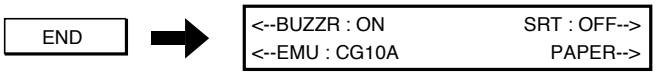
3 Select [CHOICE] and [KIND].

-F1+ : AT LOADING, BY DEFAULT

-F3+ : ROLL, LEAF-THICK, LEAF-THIN

LEAF-THICK: 90-kg base or more

LEAF-THIN: Smaller than 90-kg base



4 Register, and the display returns to the fourth page of the menu.

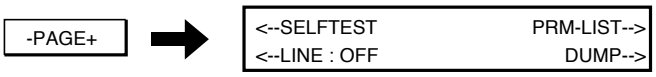
PLOTTING LIST TO BE SET-UP CONDITIONS

The all data set in the UNIT are plotted. This function is effective to confirm the tools conditions and communication condition. There is no difference either the roll paper or leaf paper. The plot out is accomplished in A4 size at the right lower part of the paper.

1 Setting the pen in the magazine No. 1, then install the magazine on the UNIT.
Refer to Chapter 2 "Preparation of the Tools" (P.2-21).

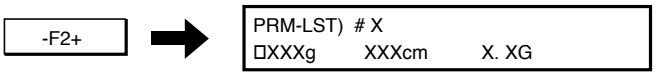
2 Set the paper.
Refer to Chapter 2 "PAPER SETTING" (P.2-25).

3 Select the offline mode.
Execute Chapter 3 "DATA CLEAR" (P.3-4).

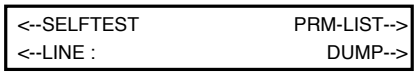


4 Display the fifth page of the menu.

5 Select [PRM-LIST], and the following display is appeared.



6 Select [PLOT START], and the following display is appeared, and the plotting will be started.



7 The plotting ends and returned to the fifth page of the menu.

RESOLUTION SETTING

The resolution is a minimum move distance assigned by the program. Select from three types according to the CAD. This setting is stored regardless the power ON/OFF. If this setting is incorrect, the data will be enlarged or reduced when plotted out.

1 Display the sixth page of the menu.

2 Change the value of [GDP]. The value will be changed whenever the key is depressed, and automatically registered.

-F1+ : 0.025, 0.05, 0.01

AUTOMATIC INTERPRETATION OF COMMUNICATION CONDITIONS

CAUTION

In the following cases, the automatic interpretation may not be achieved in some cases.

- **In the case that there is an output command at the head of the data, and queues the response from the plotter.**
- **In the case that an interface cable other than the assigned is used.**
- **In the case of ENG/ACK hand shake.**

In the following cases, the interpretation may be failed in some cases.

- **In the case of data for test which continuously transmit a single character, parity checks may be failed in some cases.**
- **There are some cases where accurate interpretation for hand shakes can not be obtained because it is to interpretate the possibility of hard wiring.**

When the communication conditions of the RS-232C of your CAD are unknown, the conditions may be automatically interpreted as receiving the data and registered into the assigned Nos. (#1, #2 and #3). However since the received data would not be plotted, it is not necessary to load the paper.

1 Connect the UNIT and host computer with the RS-232C cable.
Refer to Chapter 1 "CONNECTION OF CABLES" (P.1-18).

2 Turn the power ON.
Refer to Chapter 1 "POWER ON/ OFF" (P.1-23)

-PAGE+ →

<--GDP : 0.025 AUTO FEED-->
<--AUTO-I/F CONFIG-->

3 Display the sixth page of the menu.

-F3+ →

JUDGMENT START ➡

4 Select [AUTO I/F].

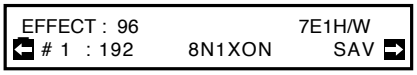
-F2+ →

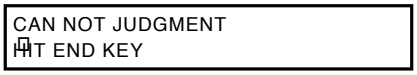
CANSEL ➡

5 Select the interpretation, and the following display will be appeared.

Depress -F2+ to terminate the interpretation.

6 Data will be transmitted from the CAD. (300 byte and over shall be required for the data space.)





7 When the interpretation has been properly ended, the following display will be appeared.
(The display will change with interpretation result.)

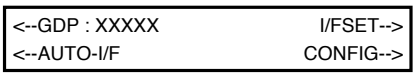
- **When the following display appears, the automatic interpretation can not execute.**

Stop transmitting the data from the host computer. When the data receiving at the plotter side ends, depress [END], and the display will be returned to the sixth page of the menu.
Inquire the manufacturer of the CAD the communication condition of the CAD, and set in accordance with Chapter 1 "SETTING OF THE COMMUNICATION CONDITIONS" (P.1-29).

8 When the interpretation has been properly ended, select the No. to which the interpretation result (communication conditions) is registered. The number will be changed whenever the key is depressed. Select the applicable No.

[-F3+] : #1, #2, #3

[-F4+]



9 Register the interpretation result into the No. assigned in Step 8 above. The display will be returned to the sixth page of the menu.

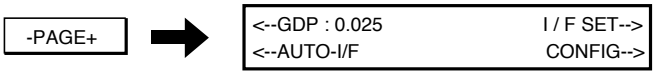
Depress [END] instead of [-F4+] to cancel the interpretation result.

SYSTEM SETTING

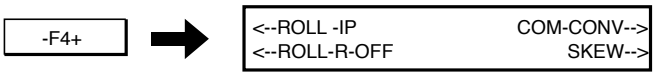
The following settings are available in the system setting.

Command	Setting Value	Description
ROLL IP INIT LG	FULL, Yx 1.4, 1.0 - 3.0-5.0m (1 per step)	According to CAD SPEC
NR TO !PG	YES, NO	According to CAD SPEC
ROLL BE MARG	0 - 25 - 125mm (1 per step)	Cutting position of autocut is set.
SKEW CHECK	OFF, 5 - 15mm (5 per step)	Slippage of roll is detected.
IN CMD ---> PEN INIT	YES, NO	When the tool setting mode is "MANUAL," select "NO." If "YES" is selected, tool parameters (speed, pressure, etc.) will be initialize when MGL-II command "IN" is received.
VIBRATION	0 - 5 times	Number of times to try cut again when autocut is not executed is assigned.
JOG-SPD	0 - 85cm/s	Speed at JOG key move is assigned.
SL-CUT	0, 2, 5, 10	Slant cutting amount setting for auto-cut.
shift-JIS	ENABLE, DISABLE	Shift JIS setting

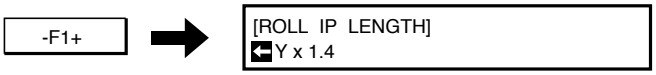
The underlined values are factory-designated settings at the time of delivery.



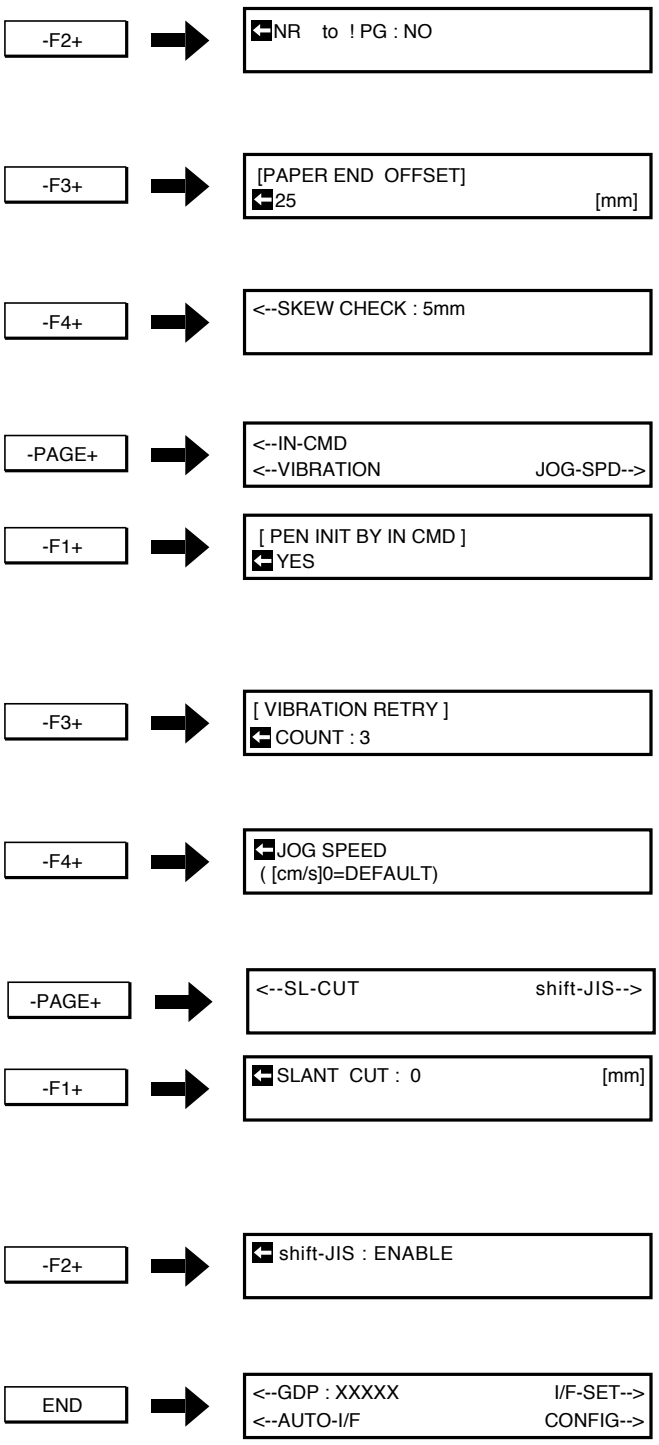
1 Display the sixth page of the menu.



2 Select [CONFIG].



3 Set the items in the first page. Select by -F3+ , register by END .



Select by -F1+ , register by END .

Select by -F3+ , register by END .

Select by -F1+ , register by END .

4 Move to the second page.

5 Select the items in the second page.
Select by -F3+ , register by END .

Select by -F3+ , register by END .

Select by -F1+ , register by END .

6 Move to the third page.

7 Select the items in the third page.
Select by -F1+ , register by END .

Select by -F1+ , register by END .

8 End the system setting. The display will be returned to the sixth page of the menu.

CHAPTER 4 SELF DIAGNOSIS FUNCTION

This chapter covers the functions to plot various setting of the plotter as well as to investigate abnormal states of the plotter.

Outline of diagnostics

Abnormal operations and degraded outputs of the UNIT are investigated for the causes by means of the self diagnosis functions. The following five items are involved in the self diagnosis functions.

Sample Cut ---> P.4-3

A pattern is cut so as to verify the cutting quality.

Square Cut ---> P.4-4

A pattern is cut square so as to verify the cutter tooling condition.

Dump Test ---> P.4-5

Received data are plotted with the ASCII data.

Status Display of Signal Conductor ---> P.4-6

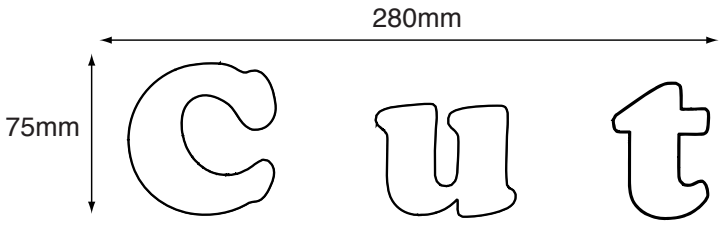
The status of the RS-232C signal conductor is changed over so as to display on the display panel.

Plotting of Demonstration Pattern ---> P.4-7

A pattern is plotted so as to verify the plotting quality and plotting function as well as evaluation of the plotting performance.

SAMPLE CUT

Cut the sample (shown below) so as to verify the quality of the cut.



1 Set the cutter
Refer to Chapter 2 "Preparation of the Tools" (P.2-21).

2 Set the paper.
Refer to Chapter 2 "PAPER SETTING" (P.2-25).

3. Execute the data clear, then select the offline mode.
Refer to Chapter 3 "DATA CLEAR" (P.3-4).

- **When sample cut is executed, the paper is cut at the lower right position.When you want to change the cutting position, move the position of origin.**
  Execute Chapter 3 "MOVEMENT OF ORIGIN" (P.3-12).

-PAGE+ →

<--SELFTEST	PRM-LIST-->
<--LINE : OFF	DUMP-->

4 Display the fifth page of the menu.

-F1+ →

◄PLOT # 1	PLOT # 2 ►
◄SMPL-CUT	SQR-CUT ►

5 Select [SELF TEST], and the following display will be appeared.

-□F3+ →

SMPL)	# X		
XXXg	XXXcm	X. XG	X. XX

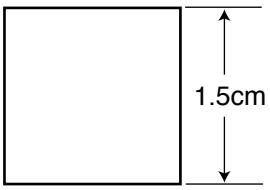
6 Select [SMPL-CUT], and the following display will be appeared and the cut will be started.

<--CLEAR	AUTO CUT-->
<--PEN SET	HALF CUT-->

7 The cut is ended and returned to the first page of the menu.

SQUARE CUT

A square pattern is cut so as to verify the cutter tooling condition and set of the half cut. Set the cutter on the magazine and set the paper for the verification.



1 Set the cutter
Refer to Chapter 2 "Preparation of the Tools" (P.2-21).

2 Set the paper. The online mode will be selected.
Refer to Chapter 2 "PAPER SETTING" (P.2-25).

3 Select the offline mode.
Execute Chapter 3 "DATA CLEAR" (P.3-4).

- **When square cut is executed, the paper is cut at the lower right position.**
  When you want to change the cutting position, execute "MOVEMENT OF ORIGIN" (P.3-12), and move the position of origin.

-PAGE+ →

<--SELFTEST	PRM-LIST-->
<--LINE : OFF	DUMP-->

4 Display the fifth page of the menu.

-F1+ →

←PLOT # 1	PLOT # 2→
←SMPL-CUT	SQR-CUT→

5 Select [SELF TEST], and the following display will be appeared.

-F4+ →

SQUR) # X			
XXXg	XXXcm	X. XG	X. XX

6 Select [SQR-CUT], and the following display will be appeared and the cut will be started.

<--CLEAR	AUTO CUT-->
<--PEN SET	HALF CUT-->

7 The cut is ended and returned to the first page of the menu.

DUMP TEST

CAUTION

- **The dump test can not be achieved under the pause mode.**
- **When the dump test is discontinued, "data clear" (P.3-4) must be accomplished.**

Plot the receiving data with ASCII data, then verify the data for an abnormal state. The character shall be about 5mm square in size.
The control code plots with two hexadecimal character in the 5mm suare.
The characters differ in size in accordance with the scale setting.
The test shall be achieved by setting the pen and leaf paper or roll paper of A2 and over.

1 Set the pen in the magazine No.1, then install onto the main unit.
Refer to Chapter 2 "Preparation of the Tools" (P.2-21).

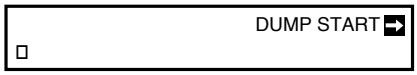
2 Set the paper.
Refer to Chapter 2 "PAPER SETTING" (P.2-25).

3 Select the offline mode.
Execute Chapter 3 "DATA CLEAR" (P.3-4).

-PAGE+ →

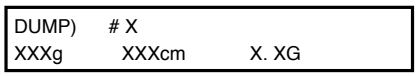
4 Display the fifth page of the menu.

-F4+ →

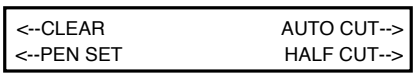


5 Select [DUMP], and the following display will be appeared.

-□F2+ →



6 Transmit the data from the host computer.
Plot the receiving data with ASCII data. The following display will be appeared during the plotting.



7 The dump test is ended and returned to the first page of the menu.

STATUS DISPLAY OF SIGNAL LINES

The function to execute a real time display of the signal lines under the online plot out, dump and loop back shall be turned ON/OFF.

- •CD (DCD)
- •ER (DTR)
- •RS (RTS)
- •CS (CTS)
- •DR (DSR)

ON/OFF of ER and RS is not monitor of the host computer signal, but the signal to notice from the plotter to the host computer.
This setting will remain effective until the power is turned OFF.

• **Under the line monitor mode, when an error is detected, the error message will not be displayed. However, if the buzzer is turned ON, the buzzer alarms the error. Chapter 3 "BUZZER SETTING" (P.3-20).**

-PAGE+

```
<--SELFTEST                PRM-LIST-->
<--LINE : OFF              DUMP-->
```

1 Under the offline mode, the fifth page of the menu will be displayed.

2 Select ON/OFF of [LINE MONITOR]. The ON/OFF will be changed over whenever the key is pressed.

-F3+ : ON, OFF

```
LINE)          CD : XXX     ER : XXX
RS : XXX       CS : XXX     DR : XXX
```

3 Execute the online plot out, dump, loop back and so forth.
The display under the line monitor ON shall be as follow

DEMONSTRATION PATTERN (#1, #2)

Plot a demonstration pattern so as to verify the operation and evaluate the performnce. There are two patterns as follows.
The plot out shall be accomplished by setting leaf paper or roll paper of which size is A2 or over.

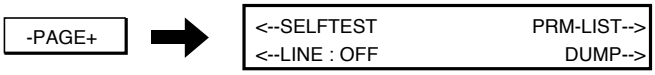
Demo-pattern #1 ..... This is a pattern to verify the plotting quality and function. The plot corresponds to the set paper in size. When you execute this pattern, set pens or mechanical pencils in the magazine Nos. 1 to 8.
If the cutter is installed, it will be ignored.
The sample of the patterns areshown in P.4-9.

Demo-pattern #2 ..... This is a pattern to evaluate the performance. When you execute this pattern, set pens or mechanical pencils in the magazine Nos. 1 to 4. The sample of the patterns are shown in P.4-10.

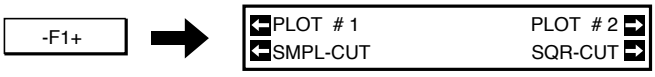
1 Set the pen in the magazine, then install onto the main unit.
Refer to Chapter 2 "Preparation of the Tools" (P.2-21).

2 Set the paper.
Refer to Chapter 2 "PAPER SETTING" (P.2-25).

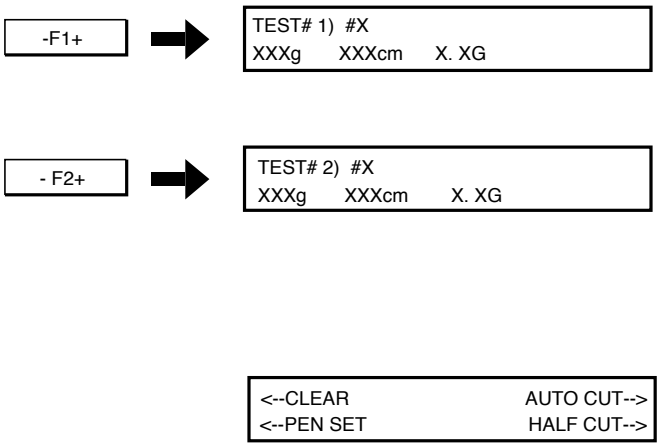
3 Select the offline mode.
Execute Chapter 3 "DATA CLEAR" (P.3-4).



4 Display the fifth page of the menu.



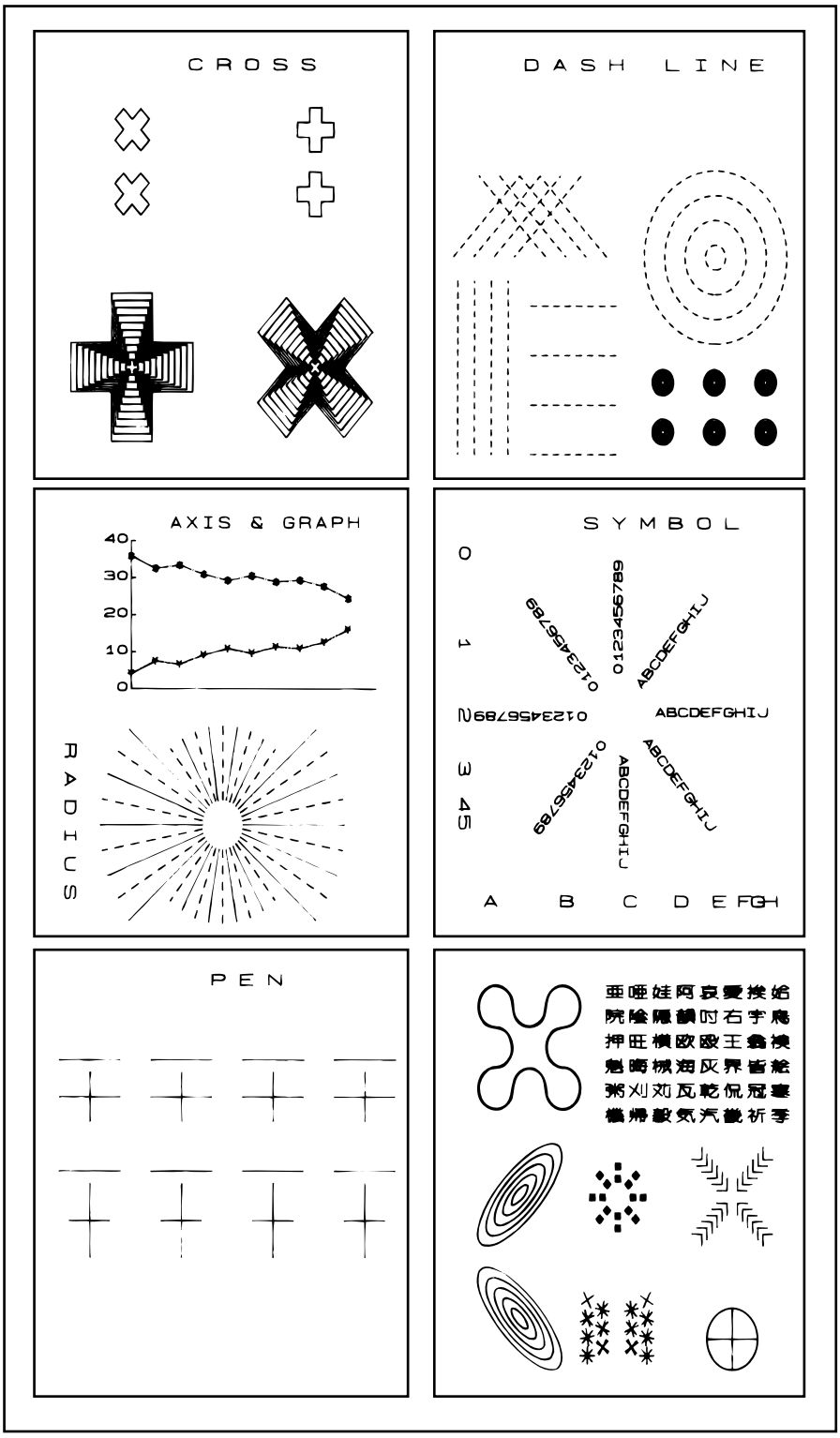
5 Select [SELF TEST], and the following display will be appeared.



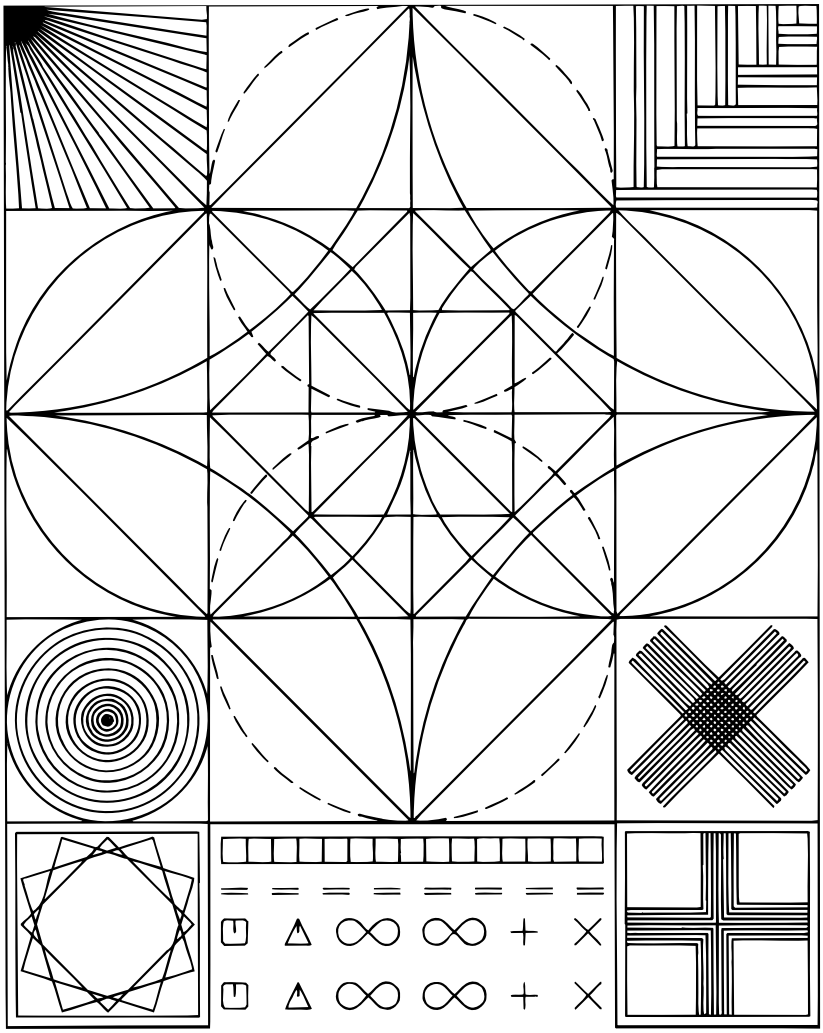
6 When the Demo-pattern No.1 is plotted, select #1, and the following display will be appeared, and the plotting will be started.
When the Demo-pattern No.2 is plotted, select #2, and the following display will be appeared, and the plotting will be started.

7 The plotting is ended, and returned to the first page of the menu.

Demonstration Pattern #1



Demonstration Pattern #2



ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0 1 2 3 4 5 6 7 8 9

描画ツール		濃度	
製造型式		相対濃度	
作画メディア			
作画		作画手	
作画加速度		プロッタ製造者	
作画時間	作画年月日	作画	式

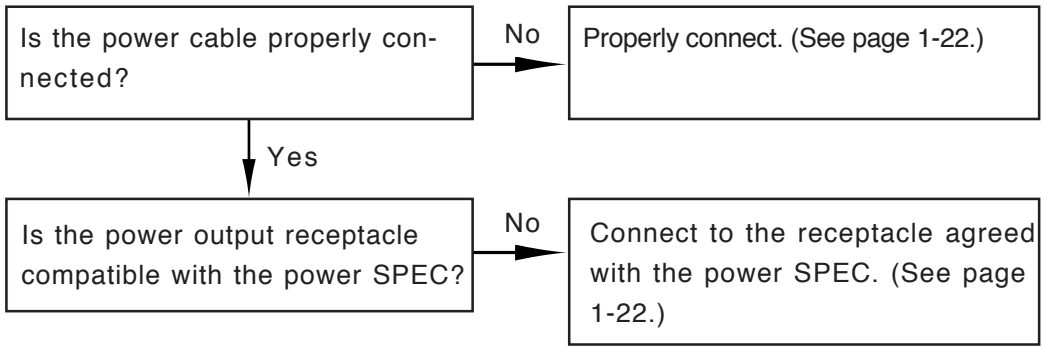
CHAPTER 5 TROUBLE SHOOTING AND POSSIBLE REMEDY

This chapter covers the methods to solve troubles.

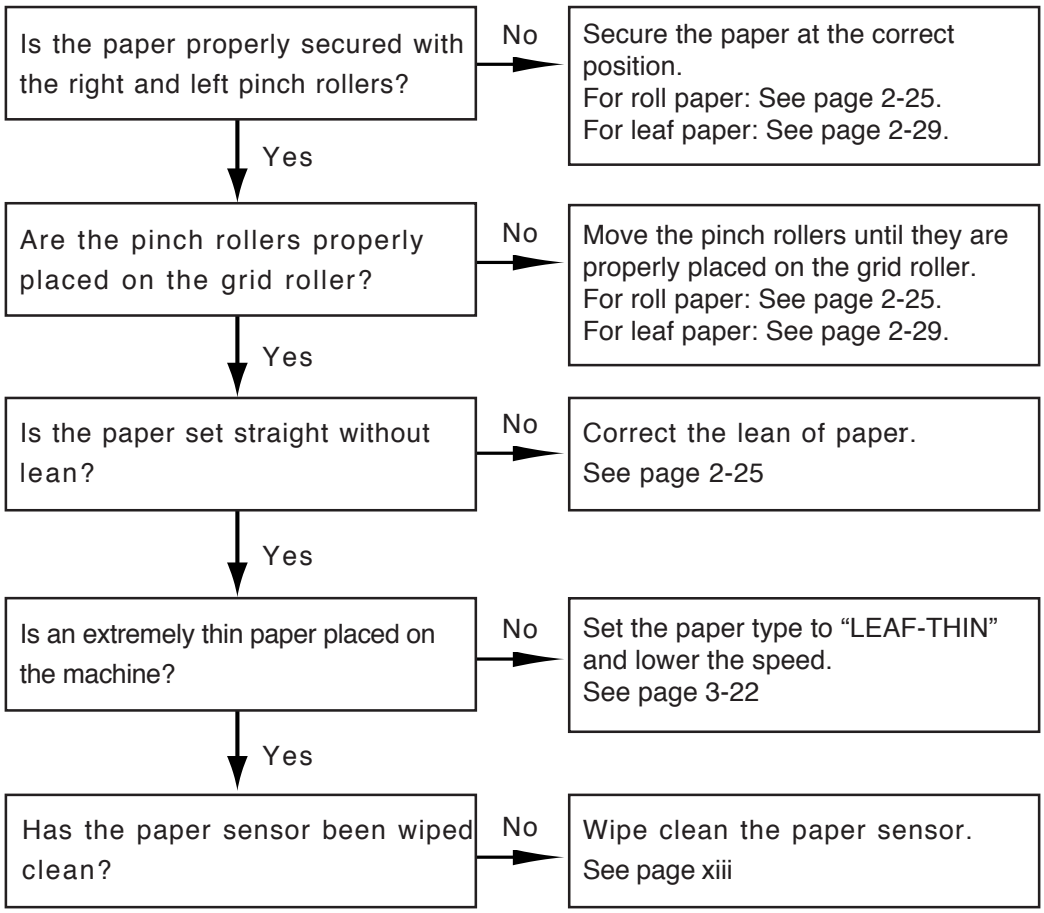
INDICATIONS OF FAILURE

Methods to solve troubles not displayed on the display panel shall be explained herein. Before concluding a failure, confirm in accordance with the following flow chart. If the situation does not change by the confirmation, contact with the nearest MIMAKI Distributor upon entering necessary informations in the "INQUIRY SHEET" (P.6-18)

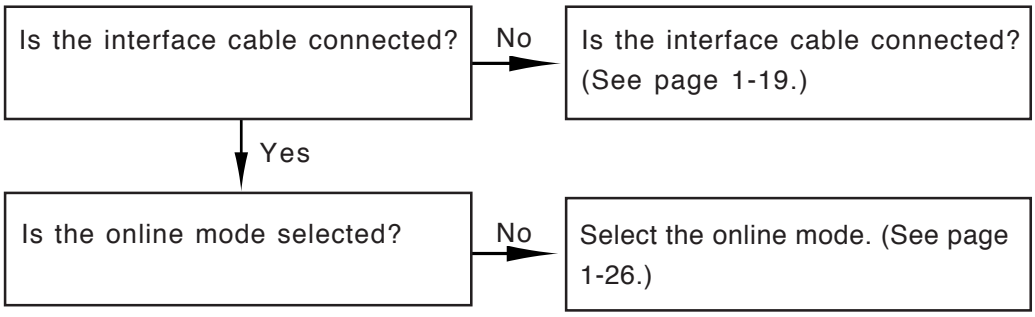
The power can not be applied.



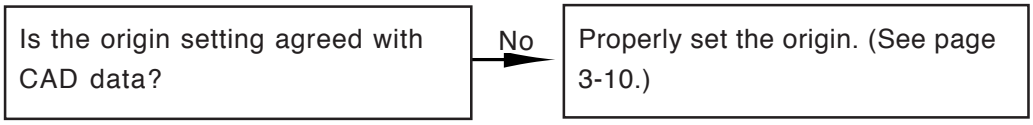
The paper cannot be fed normally at the time of paper loading.



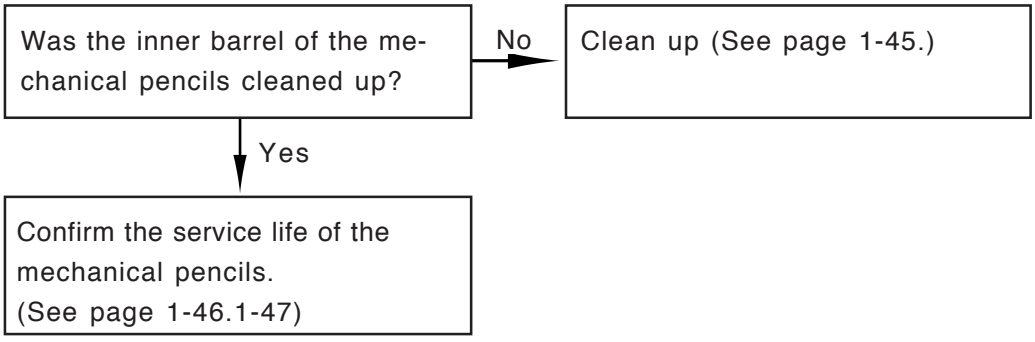
Host computer transmit data, but the UNIT does not operate.



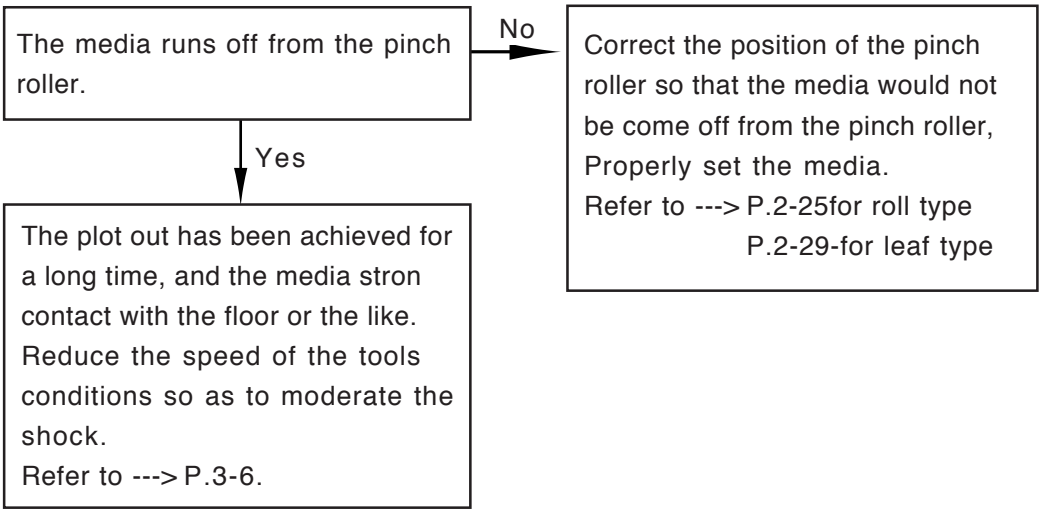
Plotting position is improper



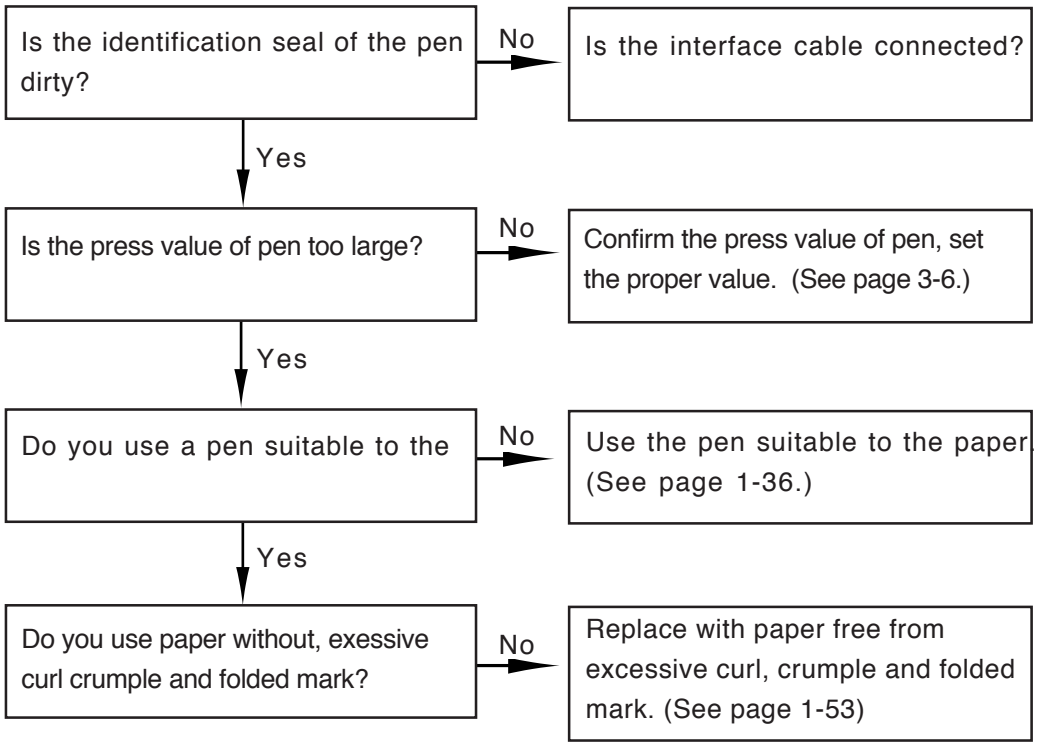
Under mechanical pencils plotting, knocking happens frequently



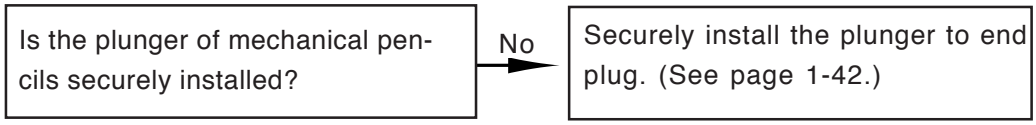
A cut (plot) is slipped off.



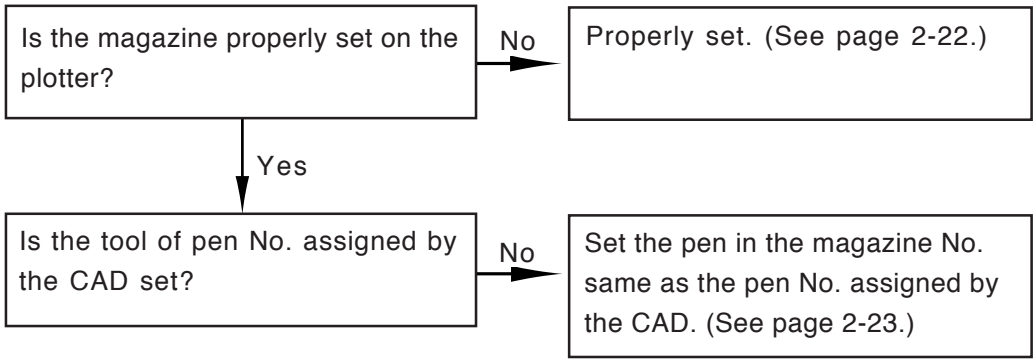
Pen point breaks paper



Drag of pen occurs



Pen is not picked up (or pen with different number is used for plotting).



Although "Data Clear" is executed, plot out is still continued.

Has the transmit data been ended? — No → Execute "Data Clear" after CAD data transmit ends. P.3-4

Yes ↓

When a spool function is set and used by the CAD, end the CAD. Confirm the end of transmit data, execute "Data Clear". P.3-4

- **Spool function**
  The function to once transmit data to high speed memory so as to eliminate inoperative state during transmit data of the CAD.

Plot out interrupts for a while.

Is the spool function set at the CAD side? — No → If there's no [*] mark on the LCD, the data from CAD is discontinued. Interrupt the plot out according to P.2-34.

Yes ↓

When the spool function is set at the CAD side, data received by the plotter may be discontinued. It's the normal state, and no problem

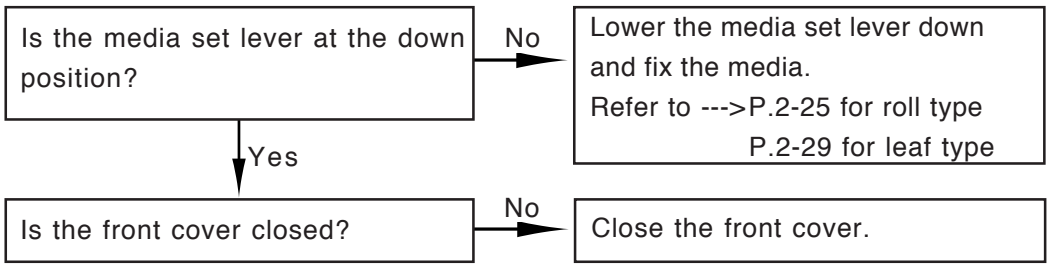
Error in tools identification.

Is the magazine that Mimaki supplies use? — No → Clean the pen identification sensor. Refer to P.xiii

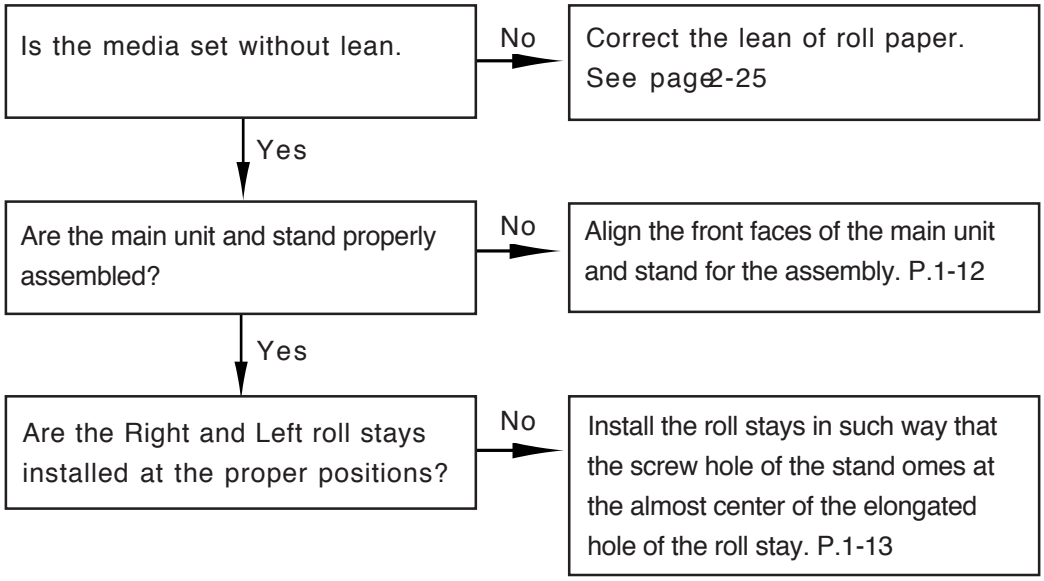
No operation starts by the tools conditions from the host computer.

Is the tool operation mode the manual mode? — No → Select the tool operation mode to the Manual mode. Refer to P.2-11
If cutter has been selected, tool conditions transmitted from the host computer are ineffective. Establish tool conditions on the operation panel. Refer to P.2-13

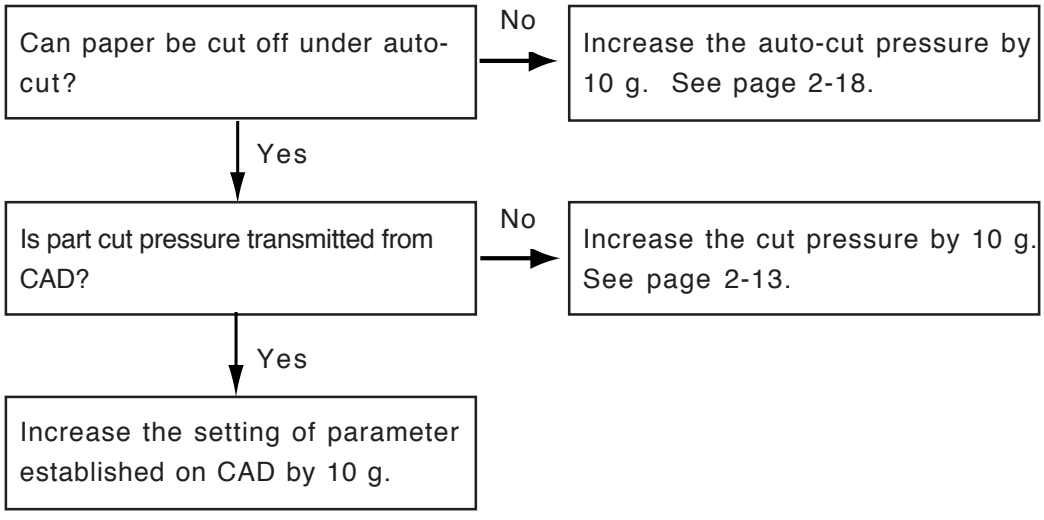
Although a media is set, the operation does not start.



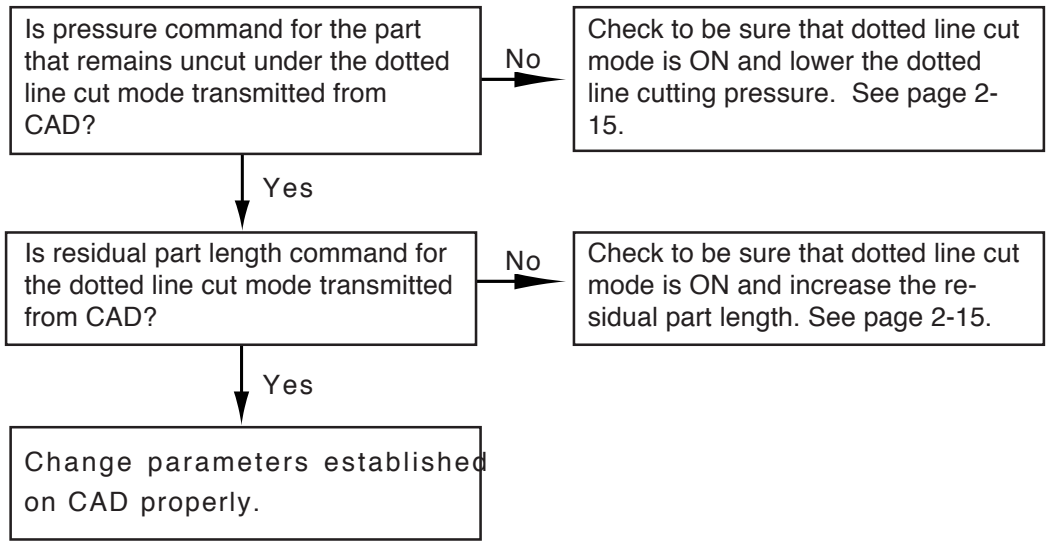
When a media is loaded, the media can not be properly fed.



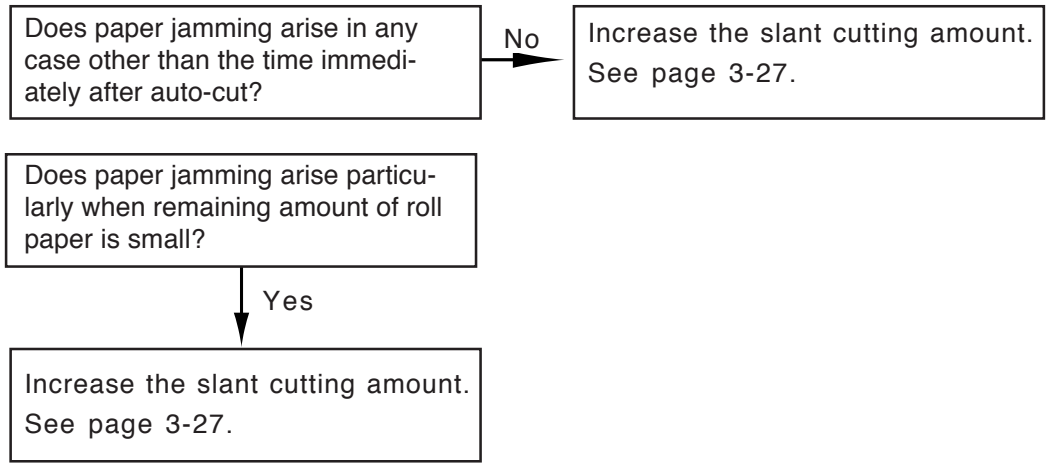
Cutter has become dull.



Paper is caught at the part cut portion, resulting in paper jamming.



Paper is caught at the auto cut portion, resulting in paper jamming.



Abnormal Plotting Out Operation

Plotter is inoperative

- The interface cable is not connected. If there is no [*] (under data receiving) display at right upper part in the LCD, refer to Chapter 1 "CONNECTION OF CABLES" (P.1-19), and confirm the connection.
- The offline mode is selected.
  Refer to Chapter 1 "OPERATION MODES" (P.1-26), and select the online mode.

Frequent Occurrence of Error

- Erroneous communication conditions
  Refer to Chapter 1 "SETTING OF COMMUNICATION CONDITIONS" (P.1-29), and properly set the conditions.

Miss Sizing of Pattern Paper

- Error in resolution setting
  Refer to Chapter 3 "RESOLUTION SETTING" (P.3-24), and set the proper value.

Extrusion of Pattern Paper from the Paper

- Error in positioning of origin
  Refer to Chapter 3 "CHANGE OVER OF ORIGIN" (P.3-10), select the proper position of origin.
- Error in scaling
  Refer to Chapter 3 "PLOTTING SCALE SETTING" (P.3-14), and change the scale value.

Autocut disables the Paper to cut

- Low cutting pressure
  Refer to "AUTOCUT SETTING" (P.2-18), and set the proper value of press force.

- **Increase the auto-cut pressure in increments of 10 g to establish a proper value.**

Autocut does not cut the Paper

- Data received from host computer exclude the necessary EOF command, or the EOF command at the plotter side is turned OFF (close time is not set).
  Refer to Chapter 1 "EOF Command and Close Time Setting" (P.1-34), and properly set the autocut.
  Modify to output the necessary EOF command from the host computer.

- **The plotter shakes the paper so as to completely cut the roll paper after cutting with the cutter. The more frequency of the shakes the easier cutting.**
  Increase frequency of the [SHAKING SET] in Chapter 3 "SYSTEM SETTING" (P.3-27).

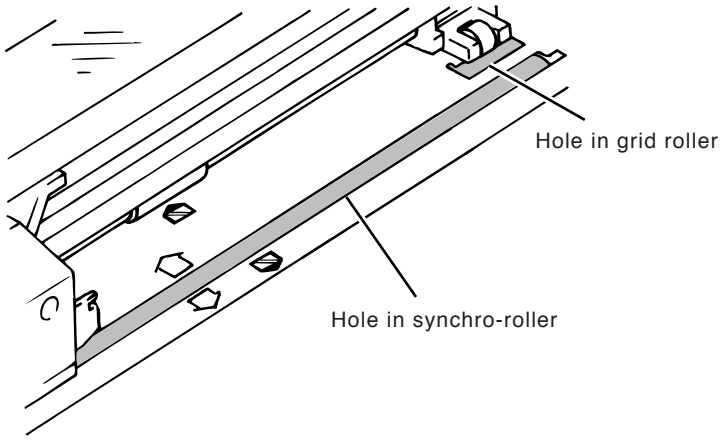
When paper jamming arises

CAUTION

If paper jamming has occurred, do not move the carriage forcibly. Since the carriage is mounted with sensors, forcibly moving it can damage them.

When paper jamming has arisen, restore the normal state to the machine following the steps of procedure described below.

1) Turn OFF the power switch.
2) Raise the sheet set lever.
3) If the carriage can be moved by hand, move it to the right or left from the paper-jammed portion.
   If the carriage cannot be moved with ease, first remove the paper jammed from the machine.
4) Remove the paper jammed from the machine.
   If a piece of paper has entered the hole in grid roller or in synchro-roller, also remove it.



5) Turn ON the power switch. Check to be sure that the machine normally conducts initialization.
6) Re-load the paper.
   For a roll paper, the top end of the paper may have bent or crooked. Correct the paper following the steps of procedure described below.
   a) Draw the paper until a straight part appears on the synchro-roller.
   b) Select “AUTO-CUT” with the sheet set lever raised.
   c) Then, follow the messages that appear on the operation panel.
   The top end of paper is cut straight and the first page under the offline mode appears on the operation panel.

DISPLAY OF ERROR MESSAGE

Methods to cope with trouble when an error message is displayed on the LCD.
There are two types of troubles as shown below.

- A trouble that the plotter operation stops.
- A trouble that the operation can be continued.

Troubles with Stoppage of Plotter Operation

When the following error messages are displayed, operation of the plotter will be stopped. Turn the power OFF, wait for 30 seconds and over, then turn the power ON. If the display would not be disappeared, turn the power OFF. Send facsimile transmission of the "INQUIRY SHEET" (P.6-18) to the MIMAKI distributor listed in the table at the end of this instruction manual upon entering the required information.

Error Message	Error Message
VER X-XX FONT ROM ERROR XXXXX	VER X-XX RAM ERROR XXXXXX
VER X-XX SERVO RAM ERROR XXXXX	VER X-XX ROM CHECK ERROR
VER X-XX SERVO RAM ERROR XXXXX	VER X-XX X-MTR OVER-CUR ERROR
VER X-XX MOTOR VOLTAGE ERROR	VER X-XX X-MTR OVERLOAD ERROR
VER X-XX DPRAM ERROR XX/XX	VER X-XX Y ORIGIN SENS ERROR
VER 1-00 EEPROM ERROR XXXXXX	VER X-XX Y-MTR OVER-CUR ERROR
VER X-XX EEPROM HUSH ERROR	VER X-XX Y-MTR OVERLOAD ERROR

DISPLAY OF ERROR MESSAGE

Troubles Enabling Plotter to Continue Operation

When the following error messages are displayed, find the error message from the following table, then remove the probable cause in accordance with the corrective measure. It is unnecessary to turn the power 0FF and ON again.

If the error message would be still displayed after removing the cause, send facsimile transmission of the "INQUIRY SHEET" (P.6-18) to the MIMAKI distributor listed in the table at the end of this instruction manual upon entering the required information.

Error Message	Probable Cause	Corrective Measure
INVALID PARAMETER	There is an error in the data transmitted from CAD.	Make sure the CAD data. (P.4-5)
	Conductive noise entraps in the communication line.	Use a shorter interface cable.
	The interface cable specified by MIMAKI is not used.	Use the interface cable specified by MIMAKI.
OVERRUN ERROR	There is an error in setting of communication conditions.	Execute auto interprete of communication conditions, and set proper communication conditions. (P.3-25)
SAME PEN NOTHING 0.★	After supplying lead, there is no applicable mechanical pencil. (Under auto mode)	Set the same lead diameter mechanical pencil on the magazine.
SAME PEN NOTHING #★	After supplying lead, a mechanical pencil was attached on the magazine of different No. (Under manual mode)	Set the mechanical pencil of which pen No. is the same as that of the mechanical pencil which have been used.
PLEASE CLOSE COVER	The front cover does not open.	Close the front cover.
P-EDGE SENSOR ERROR	Synchro-roller and platen cover have been soiled on the surface.	Clean up the surfaces of synchro-roller and platen.(P.xii)
ILLEGAL POINT SET. REDO FROM START.	θ1 or θ2 exceeds 45° and above.	Set wirhin 45°. (P.3-16)
	Either 2 points and above among Points 1, 2 and 3 are set at the same point.	Separately Set on the coordinates respectively. (P.3-16)
PM-BUFFER OVER-FLOW	Polygonal plotting (hatching) can not be achieved. (Short of memory)	Change the setting established on CAD. Then, Ensure the buffer space with the GM command.

Error Message	Probable Cause	Corrective Measure
NO DATA	A copy was achieved without data in the buffer.	After plot out of data with he online mode, then achieve the copy.(P.3-8)
DATA TOO LARGE	Data beyond the buffer space were received.	Transmit data smaller than the buffer space.
COMM. HANDSHAKE ERROR	Since the hand shake setting was incorrect, the buffer was overflowed.	Properly set the hand shake.(P.1-32)
PARITY ERROR	Setting of the communication conditions is incorrect.	Execute self interpretation of the communication conditions, set the correct communication conditions.(P.3-25)
FRAMING ERROR	Setting of the communication conditions is incorrect.	Execute self interpretation of the communication conditions, set the correct communication conditions.(P.3-25)
PEN POSTN SENS ERROR	The pen position sensor could not achieve the self adjustment.	Contact to the MIMAKI distributor.
PEN CHANGE ERROR #*	Replacement of the pen of the displayed magazine No. could not be properly accomplished.	a. Install the magazine attaching the pen. b. Turn the power OFF, then turn ON again.
PEN-CHANGE BLOCK ERR ↓ PEN-CHANGE BLOCK ERR TAKE OUT MAGAZINE ↓ PEN-CHANGE BLOCK ERR RECOVERING ↓ SET MAGAZINE	The block of magazine holder occurred an error.	The pen is automatically returned to the magazine, then recovery operation will be carried out. Operate in accordance with the instruction in the LCD. Provided that, terminate the operation by pressing [END] if the plotter disables the pen to return. a. Pull out the magazine if the LH display appeares. b. Set the magazine if the LH display appears.

DISPLAY OF ERROR MESSAGE

Error Message	Probable Cause	Corrective Measure
PENCIL ERROR #*	The mechanical pencil on the displayed magazine No. did an abnormal operation.	a. Cleanup the inner barrel of the mechanical pencil. (P.1-45) b. Replace with a new mechanical pencil.
CAN'T STORE PEN	8 pens are attached in the magazine, the pen on the carriage can't be returned.	Remove a pen in the magazine.
□AN NOT EXECUTION IN PAUSE. DO [CANCEL]	The key inoperable unde the, pause mode was pressed.	Carry out the data clear. put the mode into offline, then start the operation. (P.3-4)
NO PEN MAGAZINE	No magazine is set on the Plotter.	Set the magazine loading the tools.
	The magazine is not securely set	Securely set the magazine. (P.2-22)
MAGAZINE SET ERROR	A magazine other than the attachment was set.	Set the proper magazine from the attachment. (P.2-22)
NO PEN	There is no tool in the set magazine.	Put the tools into the magazine, then set on the plotter.
INVALID CODE	An improper GL command was established.	Properly establish the GL command.
	A command unacceptable for the plotter was received.	Do not use unacceptable commands.
	A noise conducts into the communication circuit.	Use the interface cable specified by this MIMAKI.
PAPER SKEW ERROR	The rolled media was skewed.	Properly set the rolled media. (P.2-25)
PAPER NOT LOADED	The function was executed without setting the media.	Set the media, then start the operation.
PAPER TOO SHORT	The media length is 180mm and below.	Set the media of which length is 181mm and over.
CTS TIME OVER ERROR	Since the CTS line does not turn ON, data receiving can not be carried out.	Make sure that a CTS line is incorporated in the interface cable. (to be continued to the next page)

Error Message	Probable Cause	Corrective Measure
CTS TIME OVER ERROR	The CTS line does not , turn ON, data receiving can not be carried out.	Confirm the specification of the host computer.
DCD TIME OVER ERROR	Since the DCD line does not turn ON, data receiving can not be carried out.	Make sure that a DCD line is incorporated in the interface cable.
		Confirm the specification of the host computer.
ESC COMMAND ERROR	An undefined ESC command is used, or the parameter of ESC command is incorrect.	Execute dumping, then confirm the data. (P4-5)
0. ★mm PENCIL NO LEAD	There is no lead of mechanical pencil of the displayed lead diameter (under auto mode).	a. Refill the lead. b. When the lead remains, disassemble the mechanical pencil and clean up the sliding portions of the inner barrel and mouth ring. (P.1-45)
PENCIL ERROR #★	A lead of mechanical pencil clogs.	Remove the lead. (P.1-45)
PEN★ NO LEAD	There is no mechanical pencil of the displayed magazine No (under auto manual mode)	a. Refill the lead. b. When the lead remains, disassemble the mechanical pencil and clean up the sliding portions of the inner barrel and mouth ring. (P.1-45)
DO NOT SET CUTTERS MORE THAN 2 AT ONCE	Two or more cutters are loaded on the magazine.	Load only one cutter on the magazine.
PEN CHANGE ERROR! CLEAN PEN-MAG SENS!	The contamination of causes PEN CHANGE ERROR.	Clean the pen identification sensor.

CHAPTER 6 APPENDIX

This chapter covers the explanations for the merit of the pens to be used, maintenance of the UNIT, specification of the UNIT and so forth.
In addition, appropriate forms (Inquiry Sheet and Optional Purchase Order Sheet, and etc) are involved.

LIST OF FUNCTIONS IN OFFLINE MOME

The following table summarizes the functions available under the offline mode.

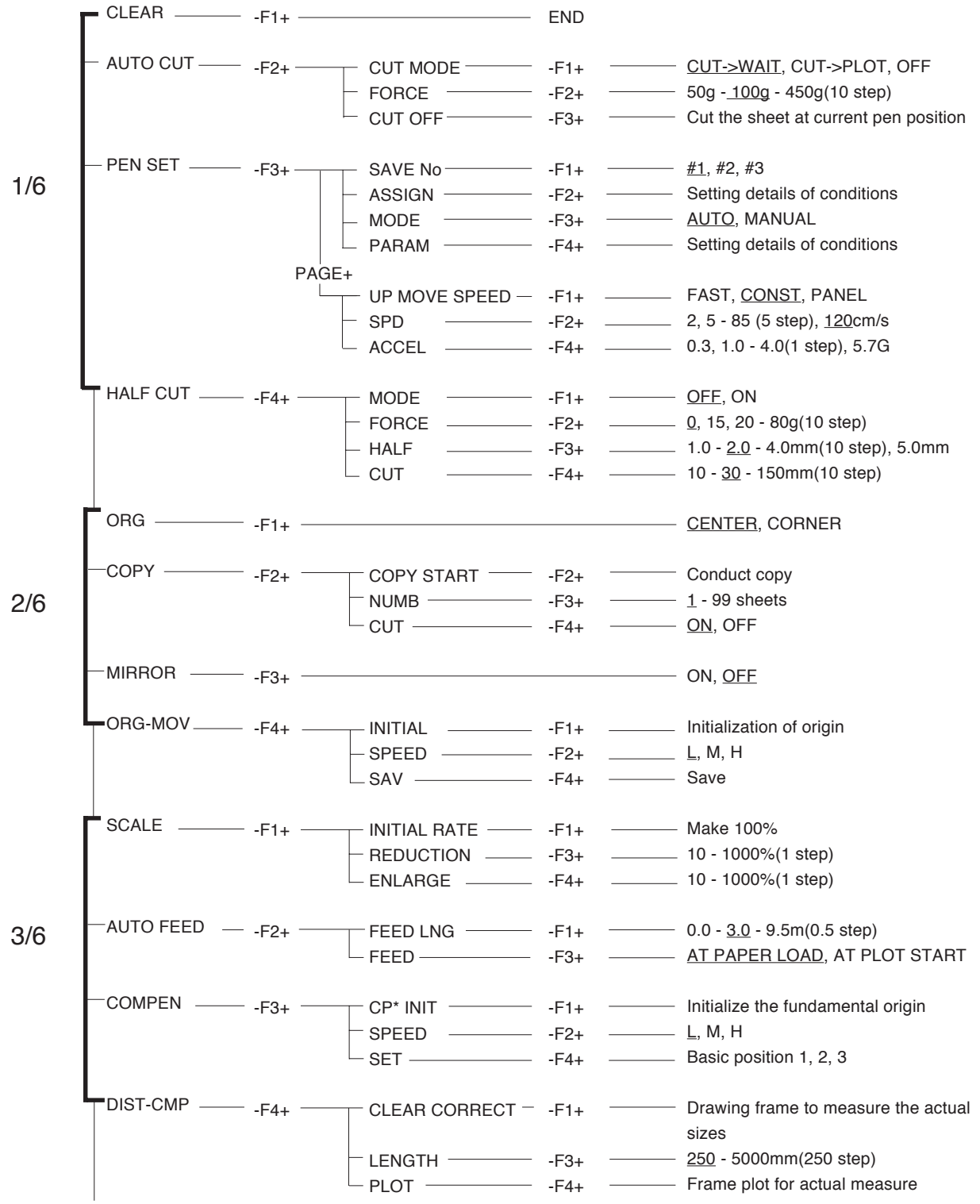
No.	Item No.	Function	Memory*1	Yes/No bfr Media Set *2
1	DATA CLEAR	A plotting is interrupted, and offline state is selected.	-	Yes
2	AUTOCUT	It is set whether autocut is done or not at at plotting end. A mode to move after cutting is set. A pressure at cutting is set. A rolled media is cut at present pen position.	O	Yes
3	CUTTER/PEN	A tool operation mode is set. A pen map under the manual mode is set. Tools conditions of each tool are set and selected. (3 types) A move speed at tool up is set. (constant/high speed/specified value)	O	Yes
4	HALFCUT	Effective or not of auto Half cut is set. A pressure at half cut section is set. A cut off length of a dotted line cut is set. A not cut off length of a Half cut is set.	O	Yes
5	ORIGIN	Origins of coordinates assigned by commands are changed over. (CENTER/RIGHT LOWER)	O	Yes
6	COPY	Received data in the buffer are copied. (Under file dividing. only currently plotting file is subjected.)	-	No
7	MIRROR	Effective or not of symmetrical plot out inversed on the X-axis center line is set.	O	No
8	MOVE ORIG	An origin is moved to an arbitrry position. (Distance apart from the referenced origin)	O	No
9	SCALE	The scale for plotting paticular to this plotter is set. (Differed from the scaling of the CAD side)	X	Yes
10	AUTO FEED	Establish length and timing of feeding at the time of paper loading.	O	Yes
11	3 PT AXES	When the existing reference line on the media is not perpendicular, the plotting coordinates shall be alingned to the reference line.	X	No
12	DISTANCE	he distance accuracy (deviation between data and plotting line in length) is compensated.	O	No
13	BUZZER	When an error occurs, ON/OFF of the buzzer is selected.	O	Yes

*1: This function shows whether the data are stored regardless the power OFF of the UNIT or not.

*2: This function shows whether the setting can be accomplished before the media loading or not.

No.	Item No.	Function	Memory*1	Yes/No bfr Media Set *2
14	SORT	Ineffective or effective of functions for the pen sorting and vector sorting are selected.	O	Yes
15	UNIT TYPE	Response value corresponding to the request for response of the type of unit from the CAD is selected from the following 5 types.	O	Yes
16	MEDIA	Size detecting method under media loading is selected. (Whether the media type is selected each time or not.) The media type is preset if not selected each time.	O	Yes
17	SELF	TEST The demonstration patterns integraded in the plotter are plotted out. Demo #1 : The pattern to verify the plotting quality and plotting function Demo #2 : The pattern to evaluate the performance Sample cut : For verification of the cutting quality Square : For verification of the tools conditions of the cutter and dotted line cutting.	-	No
18	SET LIST	The setting list is plotted out.	-	No
19	MONITOR	It is selected whether the RS-232C signal line status is displayed in real time or not.	X	Yes
20	DUMP	The received data are changed over to ASCII dump size mode.	-	No
21	GDP	A plotting resolution is changed. (0.025/0.05/ 0.01)	O	Yes
22	COMMUNICAT	The communication conditions of RS-232C is set. It shall be selected from the 3 communication conditions already stored	O	Yes
23	DETERMINE	The mode is changed over to the automatic interpretation for the communication conditions.	O	Yes
24	SYSTEM SET	Various type of system settings are established.	O	Yes

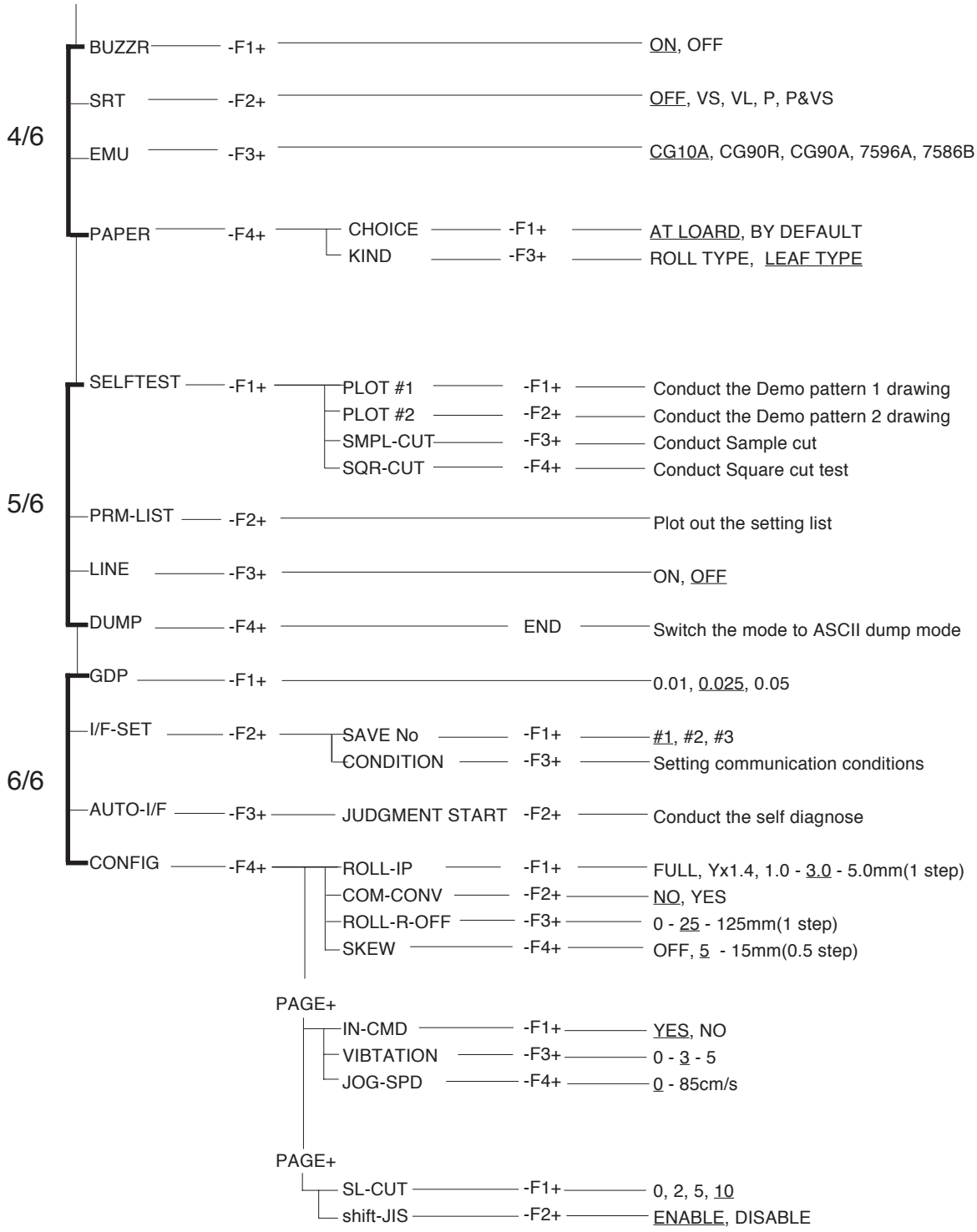
Tree structure of the menus under offline mode



to be continued to the next page

Under line shows initial value.

Tree structure of the menus under offline mode



RS-232C INTERFACE SPECIFICATION

Interface Specification

Synchronizing method	:	Asynchronous Type
Communication method	:	Full duplex/Half duplex
Number of circuit	:	Single circuit
Standard transfer rate	:	9600bps
Option	:	300, 600, 1200, 2400, 4800, 9600, 19200, and external setting
Condition for circuit connection	:	RS-232C/CCITT V.24, V.28/JIS X5101
Clock	:	Internal/external (In case of external setting)

Electrical Properties

Polarity	Voltage Polarity	Binary Notation	Control Signal	Status Display
Property A	+	0	ON	Space
Property B	-	1	OFF	Mark

Connector Pin Arrangement

Pin	Signal Name	Name	Direction of signal		
1	FG(AA)	Protective ground	The Unit	-	Host Computer or modem
2	SD(BA)	Tranmitting data		--->	
3	RD(BB)	Receiving data		<---	
4	RS(CA)	Transmit request		--->	
5	CS(CB)	Transmit enable		<---	
6	DR(CC)	Data set ready		<---	
7	SG(AB)	Signal ground		-	
8	CD(CF)	Carrier detect		<---	
15	ST2(DS)	Transmit timing 2		<---	
17	RT(DD)	Receiving timing		<---	
20	ER(CD)	Terminal ready		--->	
24	ST1(DA)	Transmit timing		--->	

CENTRONICS INTERFACE SPECIFICATION

The specification relates to 8bit parallel interface in conformity with Centronics Inc.

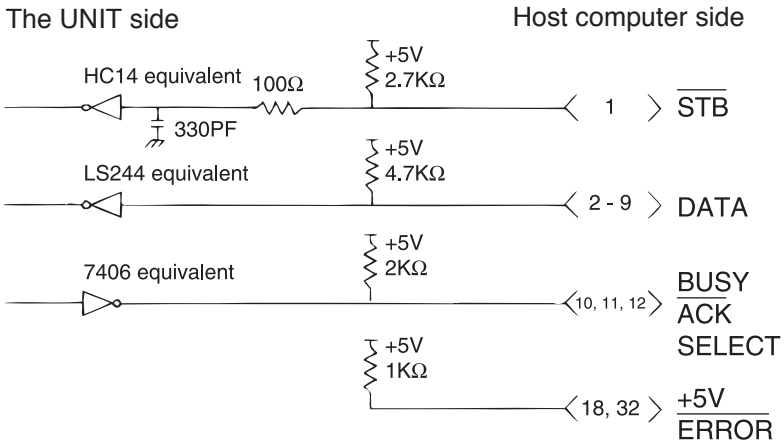
Connector

Centronics connector 36 pins

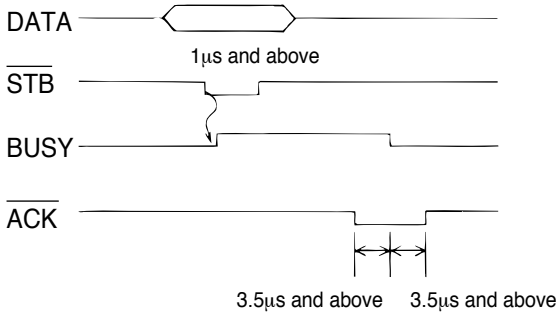
Pin Assignment

Pin No.	Signal Name	Pin No.	Signal Direction
1	STROB	9	DATA8
2	DATA1	10	$\overline{\text{ACK}}$
3	DATA2	11	BUSY
4	DATA3	12	PE (Low fix)
5	DATA4	13	SELECT (High fix)
6	DATA5	18	-5V (High fix)
7	DATA6	19-30	GND
8	DATA7	32	$\overline{\text{ERROR}}$ (High fix)

Electrical Properties



Input/output timing



SPECIFICATION FOR MAIN UNIT

Item	Specification
Media size	Roll paper: Width 1,020 - 594mm (Roll max Outter Diametr 180mm and below Leaf paper (JIS): A3, A2, A1, A0
Media thickness	55g/m2 basis - 110g/m2 basis
Max plotting area	Roll paper: Width 30mm from inside of both sides pinch rollers Length 3000mm Leaf paper: 811 x 1135mm
Accuracy in distance	0.2mm or 0.1% of specified distance, whichever larger
Perpendicularity	±0.2mm/300mm
Reproduceability	Without exchange of pen:0.15mm With exchange of pen:0.3mm
Program step	0.025mm, 0.05mm, 0.01mm
Maximum speed	120cm/s (Axial direction: 85cm/sec), When a roll of paper is used, the maximum speed will be 60 cm/s.
Maximum acceleration	5.7G (Axial direction: 4G)
Maximum pressure	15 - 450g
Maximum offset	2.50
Number of pens/cutters	tool type automatically recognized
Maximum Lead quantity per mechanical pen	0.2mm : 120ea (Option) 0.3mm : 70ea 0.4mm : 45ea(Option) 0.5mm : 30ea
Type of pen	Ink pen, plastic pen, ceramic pen, pressurized ball pen, water ball pen, dedicated sharp pen, cutter (dedicated)
Command	MGL-ll C (command in compliance with HP-GL)
Interface	Serial interface in compliance with RS-232C Parallel interface in compliance with Centronics (factory option)
Receiving buffer	448KB, 1472KB (factory option)
Outside diameter (W)x(D)x(H)	1,521mm x 1,000mm x 1,106mm (Under paper bascket open)
Weight	72.5Kg
Operation environment	Temperature: 5 - 40°C Humidity: 35 - 75% (Rh) without dew condensation
Accuracy assurance	Temperature: 15 - 25°C
environment	Humidity : 35 - 75% (Rh) without dew condensation
Power	AC100 - 20V, 50/60Hz, 1.5A and below AC200 - 240V, 50/60Hz, 0.75A and below (Either one has to be selected according to the exfactory SPEC)
Noise	70dB (A)

COMMUNICATION CONDITIONS LIST

Duplicate this page and cut to a piece, enter the communication conditions, then put the slip near the plotter for efficient operating works.

Communication condition #1 (Initial Value)	
CAD name	
Transfer rate	9600 bps
Data length	8 bit
Stop bit	1 bit
parity check	N
Handshake	Hardwire
EOF command	OFF
Close timer	OFF

Communicational condition #2 (Initial Value)	
CAD name	
Transfer rate	9600 bps
Data length	8 bit
Stop bit	1 bit
parity check	EVEN
Handshake	Hardwire
EOF command	OFF
Close timer	OFF

Communication condition #3 (Initial Value)	
CAD name	
Transfer rate	19200 bps
Data length	8 bit
Stop bit	1 bit
parity check	N
Handshake	Xon/Xoff
EOF command	OFF
Close timer	OFF

Communication condition #1 (Initial Value)	
CAD name	
Transfer rate	bps
Data length	bit
Stop bit	bit
parity check	
Handshakewire	
EOF command	
Close timer	

Communication condition #2 (Initial Value)	
CAD name	
Transfer rate	bps
Data length	bit
Stop bit	bit
parity check	
Handshakewire	
EOF command	
Close timer	

Communication condition #3 (Initial Value)	
CAD name	
Transfer rate	bps
Data length	bit
Stop bit	bit
parity check	
Handshakewire	
EOF command	
Close timer	

TOOL CONDITIONS LIST/AUTO MODE

This list is the tools conditions list when the pen operation mode is the auto mode.
Duplicate this page and cut to a piece, then put the slip near the plotter and use it.

Tool condition/Auto mode #1
(Initial Value)
Type of Media : 70Kg Base

	Press	Speed	Acceleration	Offset
Pencil 0.5	350	120	5.7	
Pencil 0.4	300	120	5.7	
Pencil 0.3	260	120	5.7	
Pencil 0.2	170	120	2.0	
Cutter	100	120	5.7	0.30
Others	20	20	2.0	

Tool condition/Auto mode #1
(Initial Value)
Type of Media : 70Kg Base

	Press	Speed	Acceleration	Offset
Pencil 0.5				
Pencil 0.4				
Pencil 0.3				
Pencil 0.2				
Cutter				
Others				

Tool condition/Auto mode #1
(Initial Value)
Type of Media : 90Kg Base

	Press	Speed	Acceleration	Offset
Pencil 0.5	350	120	5.7	
Pencil 0.4	300	120	5.7	
Pencil 0.3	260	120	5.7	
Pencil 0.2	170	120	2.0	
Cutter	130	120	5.7	0.30
Others	20	20	2.0	

Tool condition/Auto mode #1
(Initial Value)
Type of Media : 90Kg Base

	Press	Speed	Acceleration	Offset
Pencil 0.5				
Pencil 0.4				
Pencil 0.3				
Pencil 0.2				
Cutter				
Others				

Tool condition/Auto mode #1
(Initial Value)
Type of Media : 100Kg Base

	Press	Speed	Acceleration	Offset
Pencil 0.5	350	120	5.7	
Pencil 0.4	300	120	5.7	
Pencil 0.3	260	120	5.7	
Pencil 0.2	170	120	2.0	
Cutter	160	120	5.7	0.30
Others	20	20	2.0	

Tool condition/Auto mode #1
(Initial Value)
Type of Media : 100Kg Base

	Press	Speed	Acceleration	Offset
Pencil 0.5				
Pencil 0.4				
Pencil 0.3				
Pencil 0.2				
Cutter				
Others				

TOOL CONDITIONS LIST MANUAL MODE

This list is the tools conditions list when the pen operation mode is the manual mode.
Duplicate this page and cut to a piece, then put the slip near the plotter and use it.

Tool condition/Manual mode #1
(Initial Value)
Type of Media :

	Press	Speed	Acceleration
All data	20	20	2.0
Pen No. 1	20	20	2.0
Pen No. 2	20	20	2.0
Pen No. 3	20	20	2.0
Pen No. 4	20	20	2.0
Pen No. 5	20	20	2.0
Pen No. 6	20	20	2.0
Pen No. 7	20	20	2.0
Pen No. 8	20	20	2.0

Tool condition/Manual mode #1
(Initial Value)
Type of Media :

	Press	Speed	Acceleration
All data			
Pen No. 1			
Pen No. 2			
Pen No. 3			
Pen No. 4			
Pen No. 5			
Pen No. 6			
Pen No. 7			
Pen No. 8			

Tool condition/Manual mode #1
(Initial Value)
Type of Media :

	Press	Speed	Acceleration
All data	20	20	2.0
Pen No. 1	20	20	2.0
Pen No. 2	20	20	2.0
Pen No. 3	20	20	2.0
Pen No. 4	20	20	2.0
Pen No. 5	20	20	2.0
Pen No. 6	20	20	2.0
Pen No. 7	20	20	2.0
Pen No. 8	20	20	2.0

Tool condition/Manual mode #1
(Initial Value)
Type of Media :

	Press	Speed	Acceleration
All data			
Pen No. 1			
Pen No. 2			
Pen No. 3			
Pen No. 4			
Pen No. 5			
Pen No. 6			
Pen No. 7			
Pen No. 8			

Tool condition/Manual mode #1
(Initial Value)
Type of Media :

	Press	Speed	Acceleration
All data	20	20	2.0
Pen No. 1	20	20	2.0
Pen No. 2	20	20	2.0
Pen No. 3	20	20	2.0
Pen No. 4	20	20	2.0
Pen No. 5	20	20	2.0
Pen No. 6	20	20	2.0
Pen No. 7	20	20	2.0
Pen No. 8	20	20	2.0

Tool condition/Manual mode #1
(Initial Value)
Type of Media :

	Press	Speed	Acceleration
All data			
Pen No. 1			
Pen No. 2			
Pen No. 3			
Pen No. 4			
Pen No. 5			
Pen No. 6			
Pen No. 7			
Pen No. 8			

TABLE OF SCALES

This is a guidance of the scale factors established in Chapter 3 "PLOTTING SCALE SETTING" (P.3-14). Although the UNIT disables leaf paper of which sizes are A3 and below to be set thereon, for the purpose of a reference, the following table includes paper sizes from A0 to A4, as well as from B1 to B4.
It will be covenience for the practical plotter operation to stick a copy of the table near the plotter.

		Data size								[UNIT:%]
		A0		A2	A3	A4	B1	B2	B3	B4
Plotting size	A0			50	35	25	87	61	43	31
	A1	141		71	50	35	122	87	61	43
	A2	200			71	50	173	122	87	61
	A3	282		141		71	245	173	122	87
	A4	400		200	141		346	244	173	122
	B1	115		58	41	29		71	50	35
	B2	163		82	58	41	141		71	50
	B3	231		115	82	58	200	141		71
	B4	326		163	115	82	283	200	141	

Table of 82 special character codes supported

JIS CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
2D20		①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
2D30	⑯	⑰	⑱	⑲	⑳	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ	
2D40	ミリ	キロ	センチ	メートル	グラム	トン	アール	ヘクタール	リットル	ワット	カロリー	ドル	セント	パーセント	ミリバール	ページ
2D50	㎜	㎝	㎞	㎎	㎏	㏄	㎡									
2D60	〝	〃	No.	K.K.	TEL	㊤	㊥	㊦	㊧	㊨	㈱	㈲	㈹	明治	大正	昭和
2D70	≒	≡	∫	∮	Σ	√	⊥	∠	∟	⊿	∵	∩	∪			

Introduction of separately-available items

Paper

Type/manufacturer	Product number	Unit quantities per package	Size	Remark
Regular paper OSTRICH	PD-A3 to A0	50 sheets x5 packs	A3 to A0	
	PDW-A3 to A0	50 sheets x5 packs	A3 to A0	
	PDS-A3 to A0	50 sheets x5 packs	A3 to A0	
Roll paper OSTRICH	PDW950 x 100 (70)	Two pcs.	95mm x 100m	70kg base
	PDW950 x 100 (90)	Two pcs.	95mm x 100m	90kg base
Tracing paper (65g/m^2) OSTRICH	DX-65-A3 to A0	50 sheets x 5 packs	A3 to A0	
Tracing paper (60g/m^2) OSTRICH	MT60-A3 to A0	50 sheets x 5 packs	A3 to A0	
Polyester film (75μm) OSTRICH	PDFH300IL-A3 to A0	50 sheets x 5 packs	A3 to A0	

OPTIONAL PARTS LIST

Type / Manufacturer	Part No.	Color	Size(mm)	Packing Unit
Water plasticpen (Stedtler)	32HP03K-1	Yellow	0.3	5 pens 1 box
	32HP03K-2	Red	0.3	5 pens 1 box
	32HP03K-3	Blue	0.3	5 pens 1 box
	32HP03K-4	Orange	0.3	5 pens 1 box
	32HP03K-5	Green	0.3	5 pens 1 box
	32HP03K-6	Purple	0.3	5 pens 1 box
	32HP03K-9	Black	0.3	5 pens 1 box
	32HP03K-30	Light blue	0.3	5 pens 1 box
	32HP03K-51	Yellow green	0.3	5 pens 1 box
	32HP03K-76	Brown	0.3	5 pens 1 box
	32HP03K-SJ		0.3	2 pens for black, red, blue, green
	32HP03K-S1		0.3	Black, blue green, blue, green, purple
Oil based plastic pen (Stedtler)	31HP03K-1	Yellow	0.3	5 pens 1 box
	31HP03K-2	Red	0.3	5 pens 1 box
	31HP03K-3	Blue	0.3	5 pens 1 box
	31HP03K-4	Orange	0.3	5 pens 1 box
	31HP03K-5	Green	0.3	5 pens 1 box
	31HP03K-6	Purple	0.3	5 pens 1 box
	31HP03K-7	Brown	0.3	5 pens 1 box
	31HP03K-9	Black	0.3	5 pens 1 box
	31HP03K-SJ		0.3	2 pens for black, red,
				blue, green
	31HP03K-S1		0.3	Black, blue green, blue, green, purple
Water ball pen (Stedtler)	40HP06-2	Red	0.3	5 pens 1 box
	40HP06-3	Blue	0.3	5 pens 1 box
	40HP06-5	Green	0.3	5 pens 1 box
	40HP06-9	Black	0.3	5 pens 1 box
	40HP06-S		0.3	2 pens for black, red, blue, green
Pressurized oil based ball pen (Platina)	HPB-025-5S	One each for black, red, blue and green, 0.25mm holder, colormark seal		
	HPB-025-B	Black	0.25	5 pens 1 box
	HPB-025-R	Red	0.25	5 pens 1 box
	HPB-025-L	Blue	0.25	5 pens 1 box
	HPB-025-G	Green	0.25	5 pens 1 box
	HPB-025-4S	-	0.25	One each for black, red, blue, green

Type / Manufacturer	Part No.	Color	Size(mm)	Packing Unit
Pressurized oil based ball pen holder	HPB-H2	-	-	1 holder per box
Ceramic pen (Pilot)	P-HC25-B	Black4	0.25	4 pens per box
	P-HC25-SA	-	0.025	1 pen each for black, red, blue, green
	P-HC35-B	Black	0.35	4 pens per box
	P-HC35-SA	-	0.35	1 pen each for black, red, blue, green
	P-HC5-B	Black	0.5	4 pens per box
	P-HC5-SA	-	0.5	1 pen each for black, red, blue, green
	P-HC7-B	Black	0.7	4 pens per box
	P-HC7-SA	-	0.7	1 pen each for black, red, blue, green
Knock type sharp pen set (with reflecting seal) (Pilot)	OWP-XP-N200	-	0.2	2ea/spare lead (HB)
	OWP-XP-N300	-	0.3	2ea/spare lead (HB)
	OWP-XP-N400	-	0.4	2ea/spare lead (HB)
	OWP-XP-N500	-	0.5	2ea/spare lead (HB)
	OWP-XP-NS	-	1ea per 0.2/0.3/0.4/0.5/spare (HB)	
	OWP-XP-NS24	-	1ea per 0.2/0.4/spare lead (HB)	
	OWP-XP-NS35	-	1ea per 0.3/0.5/spare lead (HB)	
Spare lead (Pilot)	P-L62-H-P6	-	0.2H	30ea/case 6 cases
	P-L62-HB-P6	-	0.2HB	30ea/case 6 cases
	P-L63-H-P6	-	0.3H	30ea/case 6 cases
	P-L63-HB-P6	-	0.3HB	30ea/case 6 cases
	P-L63-HB-P6	-	0.3B	30ea/case 6 cases
	P-L64-H-P6	-	0.4H	30ea/case 6 cases
	P-L64-HB-P6	-	0.4HB	30ea/case 6 cases
	P-L65-H-P6	-	0.5H	30ea/case 6 cases
	P-L65-HB-P6	-	0.5HB	30ea/case 6 cases
	P-L65-B-P6	-	0.5B	30ea/case 6 cases

Part Name	Part No.	Quantity	Remarks
Standard spare blade	SPB-0049	3ea	Same as standard attachment (Dedicated use for 100AP)
Cutter holder	SPA-0012	1ea	Same as standard attachment
Protrusion adjuster	OPT-S1005	1set	For check of extended distance and wearing of the blade tip
Viewer	OPT-X0003	1ea	For tool alignment

OPTIONAL PARTS ORDER SHEET

Please fill the columns in the form surrounded by the thick line, then send through the facsimile communication line.
It is recommended to use a form duplicated from this page.

Date Received	
Delivered date	
Work order No.	

ORDER No.	

No.	Part Name	Part No.	Quantity	Unit Price	Amount	Remarks*
1						
2						
3						
4						
5						

Sub total		
Tax		
Total		

*Put expected delivery date.

Company Name	Issued Date
Section	Name
Address	Phone Facsimile
Signature	

INQUIRY SHEET

Please fill the INQUIRY SHEET with necessary informations regarding the failure or abnormal operation encountered by you upon duplicating this page, and send it to the MIMAKI Distributor listed in the end of this instruction manual through the facsimile communication line.

Client Name:

Prepared by:

Phone No.:

Facsimile No.:

Plotter Name:

Plotter Serial No.*1:

Your connected CAD:

Your applicable OS:

Personal computer:
used by you

Error Message

Description for trouble (your inquiry):

*1: Please enter the numerals on the SERIAL NO. column in the label attached behind the plotter main unit.

D200310MAC-2.00-09061999

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