Summagraphics

SUMMAGRAPHICS D1000
USER'S MANUAL

IMPORTANT

Before you begin...

Please complete the attached Warranty Registration Card and return it to Summagraphics today. (Users outside Europe, Africa and the Middle East should check the address on the back of the Warranty Registration Card.)

Failure to return the duly completed Warranty Registration Card might delay response to your warranty and service enquiries.

Houston Instrument is a brand name of Summagraphics Corporation.

NOTE

When selecting software drivers: If the Summagraphics name is not mentioned in the list of available software drivers, use Houston Instrument drivers.

Manual Number **: MI9941 rev 001 English**

Notice

FCC NOTICE

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

Caution !

Changes or modifications, not expressly approved by Summagraphics, who is responsible for FCC compliance, could void the users authority to operate this equipment.

DOC NOTICE

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

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NOTICE

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Summagraphics NV
Product Marketing Dept.
Rochesterlaan 6
8470 GISTEL
BELGIUM

Phone: 32-(0)59-270 011
Fax: 32-(0)59-270 062

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SECTION 1

GENERAL INFORMATION

1.1. INTRODUCTION

The Summagraphics D1000 cutter has been designed to produce computer-generated graphic designs on cut sheet or roll vinyl media. By replacing the knife with a fiber tip pen, the cutter can also be used to produce inexpensive previews of new graphic designs on paper.

1.1.1. PRODUCT FEATURES

The following are the main features of the Summagraphics D1000 cutter.

- Variable media widths from 100 mm to 1016 mm (4” to 40").
- User-selectable DM/PL™, HP-GL™ and HP-GL/2 ™ software protocols.
- Interchangeable pen for producing preview plots of sign designs on paper.
- Knife pressure and other knife features controlled by microprocessor.
- Communication with host computer via standard serial RS-232-C or Centronics parallel interface.
- 12-key control panel.
- Metric or English units.
- User-addressable resolution : 0.1 mm, 0.025 mm, 0.001" or 0.005".
- Menu mode for selection of the cutter's power-up operating configuration.
- Convenient operator control via a 2-line 16-character liquid crystal display.
- Extensive internal test routines.
- Wide variety of axial cutting speeds (in metric or English units).
- Up to four separate user configurations stored in the non-volatile memory.
- Media support system for automatic loading of media with optional “shuffling” to guarantee tracking of longer signs.
- Automatic media pull from roll.

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- Simple origin adjustment to any location.
- Concatenation and curve smoothing to obtain better cut quality.
- Re-cut of last file.
- Knife depth and offset test.
- Overcut for easy weeding.
- Stand equipped with media support system.

1.1.2. SUMMAGRAPHICS D1000 USER'S MANUAL

The Summagraphics D1000 user's manual provides the following information :

- Full technical specifications for the Summagraphics D1000 and the media to be cut.
- A complete description of the Summagraphics D1000 main components.
- Step-by-step instructions for knife and pen installation and media loading.
- Instructions for online and local mode operations.
- Instructions for USER CONFIGURATION and INTERNAL TESTS operations.
- Maintenance and cleaning instructions.
- Information about the RS-232-C and Centronic interface cables used to inter-connect the cutter and IBM, IBM-compatible, Apple and Apple-compatible host computers.

1.2. SPECIFICATIONS

1.2.1. CUTTER

Height		
Height, without stand	305 mm	12.00"
Height, stand included	1210 mm	47.60"

Width		
Width, without stand	1510 mm	59.50"
Width, stand included	1510 mm	59.50"

Depth		
Depth, without stand	290 mm	11.40"

Depth, stand included	870 mm	34.30”

Weight		
Weight, without stand	37 kg	81 lbs
Weight, stand with media support system	62 kg	137 lbs

TABLE 1-1 :
SUMMAGRAPHICS D1000 CUTTER SPECIFICATIONS

1.2.2. MEDIA

Media width	100 to 1016 mm	4” to 40”
	Sheets of up to 1030 mm (40,5”) wide can be accommodated	

Media tracking performance		
	4 m maximum within guaranteed specifications *	13 feet maximum within guaranteed specifications *

* Media lengths greater than 4 m (13 feet) can be handled, but compliance with specifications is not guaranteed (will be dependent on media type, media size and other parameters not mentioned here).

Media thickness		
	0.05 to 0.80 mm	0.002 to 0.030”.

TABLE 1-2 :
SUMMAGRAPHICS D1000 MEDIA SPECIFICATIONS

Maximum cutting and plotting area		
Max. width	978 mm	38.5"

Minimum edge margin*		
Unperforated media	25 mm	1.0"
Perforated media	55 mm	2.2"

Front margin	25 mm	1.0"
Rear margin	30 mm	1.2"

* for positioning of the pinch rollers (see section 1.9.)

TABLE 1-3 :
SUMMAGRAPHICS D1000 MEDIA SPECIFICATIONS (CONT'D)

Vinyl Types

A wide range of vinyl types has been evaluated and tested on the Summagraphics D1000. When using duly certified media, operation in accordance with the functional specifications of the Summagraphics D1000 is warranted. Other media should be certified by Summagraphics before use to ensure performance in compliance with specifications.

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For a full list of all duly certified media suitable for friction drive operation, see Appendix A.

Plotting Paper

Bond paper (120 g/m^2 recommended)

1.2.3. KNIFE AND PEN

The Summagraphics D1000 is supplied with two standard knife blades (for vinyl media) and a black fibre tip pen.

Knife	*Medium*	*Quantity*
Standard knife	standard, reflective & fluorescent vinyls	2 off
Sandblast knife	sandblast & thick material	optional

Pen	*Colour*	*Quantity*
Fibre tip pen	black	1 off
Roller ball pen	black	optional

TABLE 1-4:
SUMMAGRAPHICS D1000 KNIVES AND PENS

To order replacement knives and/or pens, contact your local dealer, quoting the part numbers listed in table 1-10 (see page 1-8).

The Summagraphics D1000 cutter will only perform according to specifications if a genuine Summagraphics knife or pen is installed. Do not replace the standard knife or pen with products from other manufacturers.

1.2.4. INTERFACE

Communication	asynchronous RS-232-C and Centronics parallel interface

Serial : I/O Port connector	DB-9P
Mating connector	DB-9S
Byte format	8 data bits, 2 stop bits, no parity
Baud rate	38400, 19200, 9600, 4800, 2400 bps
Parallel : I/O Port connector	Centronics female
Mating connector	Centronics male

TABLE 1-5:
SUMMAGRAPHICS D1000 INTERFACE SPECIFICATIONS

1.2.5. FIRMWARE

Language	DM/PL, HP-GL (758x emulation), HP-GL/2
Supported character sets	Standard ASCII
Supported fonts	Sans serif (single stroke & medium)
ROM-based plots	Confidence plot, DIN plot

TABLE 1-6:
SUMMAGRAPHICS D1000 FIRMWARE

1.2.6. PERFORMANCE

(Cutting specifications on 0.05 mm (0.002") wax backed vinyl, total media thickness not greater than 0.25 mm (0.010")

Axial speed	50 to 600 mm/s	2 to 24 ips
Default speed	500 mm/s	20 ips
Acceleration	up to 2 G	up to 2 G
Addressable resolution	0.025 mm, 0.1 mm	0.001", 0.005"
Default resolution	0.025 mm	0.001"
Mechanical resolution	0.0127 mm	0.0005"
Accuracy	0.2% of move or 0.25 mm, whichever is greater*	0.2% of move or 0.010", whichever is greater*
Knife pressure	0 to 400 gr.	0 to 400 gr.
Pen pressure	0 to 400 gr	0 to 400 gr.

*Excludes differences due to media expansion, stretching, etc.

TABLE 1-7:
SUMMAGRAPHICS D1000 PERFORMANCES

1.2.7. CERTIFICATIONS

FCC Class A
EN50022 (pending)

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IEC 950
UL
CSA

1.2.8. ENVIRONMENTAL

(cutter without media)

Operating Temperature	15 to 35° C	59 to 95° F
Storage temperature	-30 to 70° C	-22 to 158° F
Relative humidity	35 - 85 %, non con-densing	35 - 85 %, non con-densing

TABLE 1-8:
SUMMAGRAPHICS D1000 ENVIRONMENTAL SPECIFICATIONS

IMPORTANT HINT

The use of dimensionally stable media is an essential pre-requisite to obtaining high cut quality. Additionally, media expansion or contraction may occur as a result of temperature variations.
To improve the dimensional stability of media, let it stabilize to the current environmental conditions before usage for a minimum period of 24 hours.

1.2.9. ELECTRICAL

Mains supply : 48-62 Hz, single phase.

Nominal line	Min./Max. line	Fuse
100 V AC	89 - 108 V AC	1.25 A, Slo-Blo
120 V AC	108 - 130 V AC	1.25 A, Slo-Blo
220 V AC	197 - 238 V AC	0.6 A, Slo-Blo
240 V AC	216 - 260 V AC	0.6 A, Slo-Blo

TABLE 1-9:
SUMMAGRAPHICS D1000 ELECTRICAL SPECIFICATIONS

1.3. CUTTER ACCESSORIES AND CONSUMABLES

The following accessories and consumables are available for your Summagraphics D1000 cutter :

PART NUMBER	DESCRIPTION	QUANTITY
DOCUMENTATION		
MI9975	DM/PL Cutter Commands Summary	1 off
MI9941	Summagraphics D1000 User's Manual	1 off
OPTION		
390-920	Cutter Stand	1 off
CABLES		
market-specific	Power Supply Cable	1 off
423-155	Serial Interface Kit, consisting of : - 9 pin to 9 pin cable (AT-type) - 9 pin to 25 pin adaptor (PC type) - 9 pin to 8 pin DIN connector (MAC type)	1 off
ACCESSORIES		
391-360	Standard knife for standard, reflective and fluorescent vinyls	5 off
391-358	Sandblast knife for sandblasting and thick materials up to 0.8 mm	5 off
391-510	Set of two roll media flanges	1 off
MEMORY EXPANSION KITS		
EB-2	Memory Expansion to 2.5 MB	
EB-4	Memory Expansion to 4 MB	

TABLE 1-10:
SUMMAGRAPHICS D1000 ACCESSORIES AND CONSUMABLES

1.4. BOTTOM PANEL COMPONENTS

In order to get acquainted with your Summagraphics D1000 cutter, read the following description of the bottom panel components. Figure 1-1 shows the location of the main components.

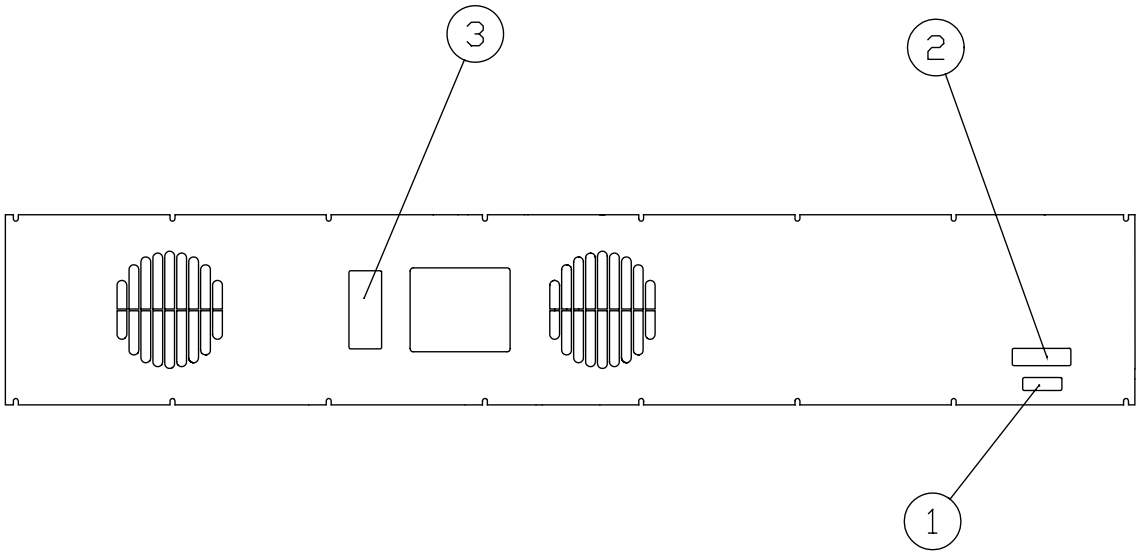

FIGURE 1-1 :
D1000 CUTTER, BOTTOM VIEW

1. *RS-232-C Port.-* This DB-9P connector provides the communication link between the cutter and a host computer. It allows bidirectional communication between the host computer and the plotter.

2. *Parallel Port .-* This 36-pin Centronics connector provides a unidirectional communication link between the cutter and a host computer. The cutter can receive but not transmit data via this port.

   Note : only one interface can be active at any one time.
   The first port that receives data will be the active interface until the cutter is reset.

3. *Power Entry Module.-* The fuse box, the voltage select board and the AC power cord receptacle are located in the power entry module.
   The power-up procedure is explained in detail in Section 1.7.
   For information about the conversion of the cutter's operating voltage, see Section 3.2.

1.5. REAR PANEL COMPONENTS

In order to get acquainted with your Summagraphics D1000 cutter, read the following description of the rear panel components. Figure 1-2 shows the location of the main components.

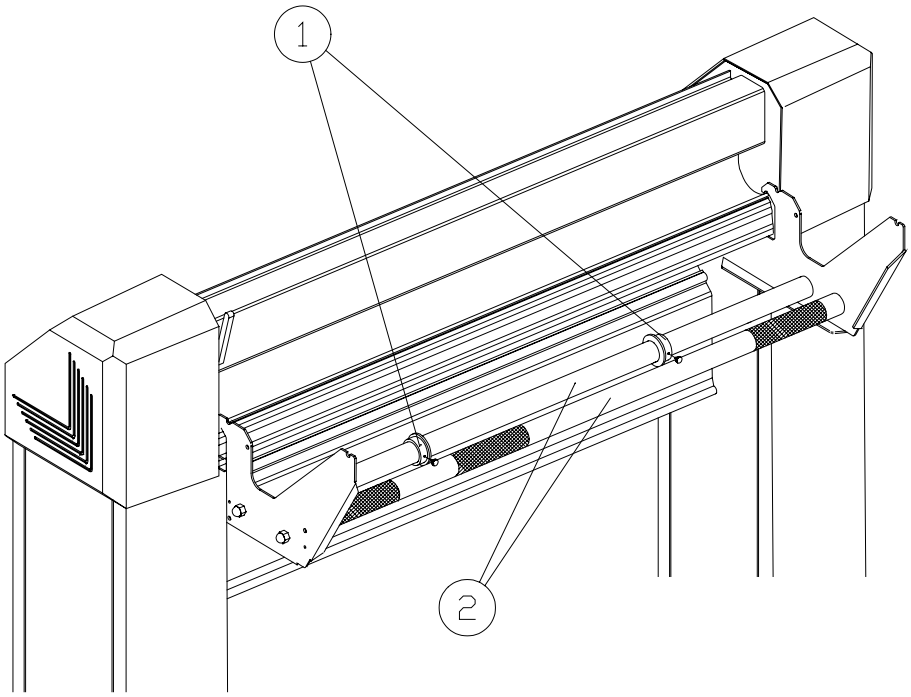

FIGURE 1-2:
SUMMAGRAPHICS D1000 REAR VIEW

1. *Roll Media Guide Bushes* .- The two guide bushes serve to keep the media roll in place when media is pulled from the roll.

2. *Media Support Rollers.* - Rotating support rollers for the media roll.

1.6. FRONT PANEL CONTROLS

In order to get acquainted with your Summagraphics D1000 cutter, read the following description of the front panel controls and components.

Figure 1-3 shows the location of the main components.

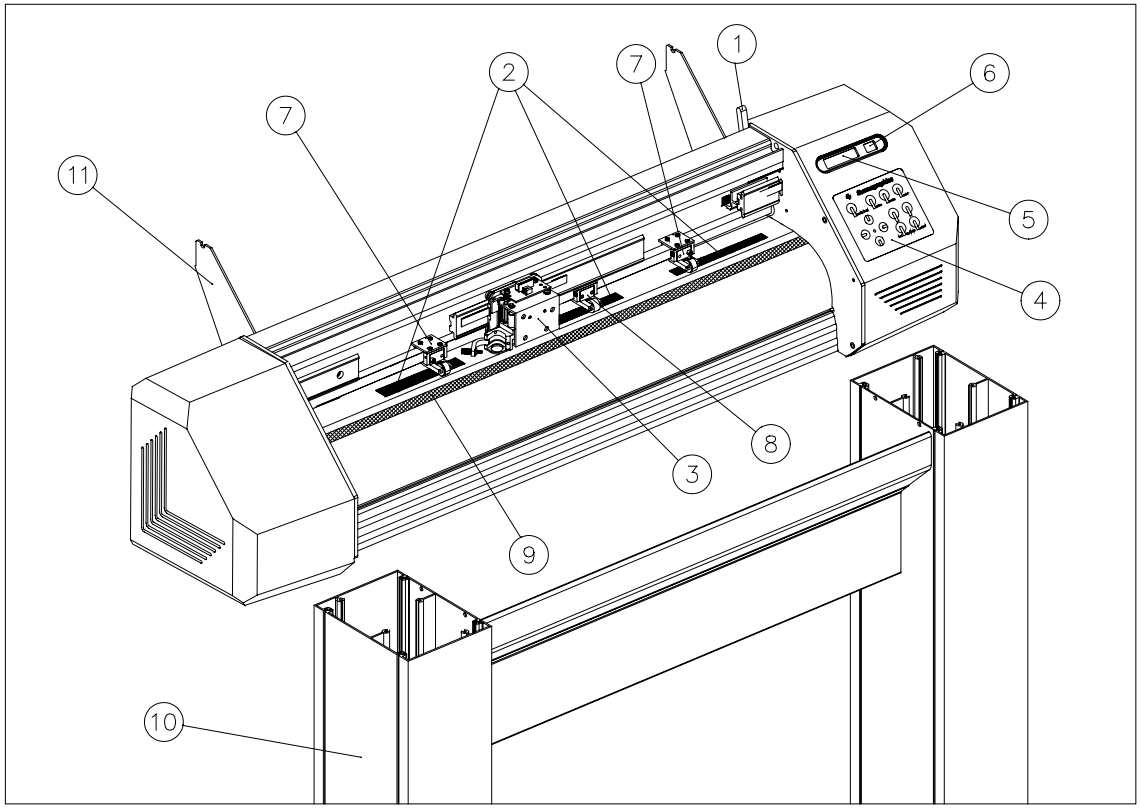

FIGURE 1-3:
SUMMAGRAPHICS D1000 CUTTER, FRONT VIEW

1. *Pinch roller lever arm*.- This lever is used to raise and lower the pinch rollers during media loading (Media loading is discussed in Section 1.8)

2. *Media Drive Sleeves*.- The media drive sleeves move the media only when the pinch rollers are in the 'down' position.

3. *Tool Carriage.* - The tool carriage is the mount for the knife holder and the pen .

4. *Control Panel.* - The control panel contains 12 keys. All cutter activity can be initiated from the control panel. This includes initiating remote mode for computer control, local mode for manual operation and menu mode. Each control panel function is explained in Section 2.1.

5. *Display.* - The 2x16 character display informs the user about the current status of the cutting process or actions which need to be taken.

6. *Power ON/OFF switch*.- This rocker switch sets the cutter's power to ON or OFF. To switch the power ON, press the "I" side of the rocker switch. To switch the power OFF, press the "O" side of the rocker switch.

7. Edge p*inch rollers*.- The edge pinch rollers hold the media clamped between the rubber rollers and the media drive sleeves.

8. *Low-pressure roller*.- The low-pressure roller is utilized to keep the vinyl media flat.

9. *Cutting strip*.- Soft strip to avoid any damage to the knife tip in case no media has been loaded. Since cutting is done on the cutting strip it is essential to keep the cutting strip intact.

10. *Stand*.- The stand comes standard with the D1000 unit.

11. *The media support system*.- The media support system comes standard with the D1000 unit.

1.7. POWERING UP THE CUTTER

1.7.1. EARTHING

SAFETY WARNING

An insulated earth conductor must be installed as part of the branch circuit which supplies power to the wall outlet to which the cutter is connected. The earth conductor must have the same size, insulation material and thickness as the earthed and unearthed branch-circuit supply conductors, but the insulating sheath should be green, or green with yellow striping.

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The earth conductor described above must be earthed at the electrical distribution board, or, if power is supplied by a separate system, at the power supply transformer motor / generator set.

The wall sockets into which the cutter is plugged must be of the earthed type. The earth conductors serving said wall sockets must be properly connected to earth.

CAUTION

Before plugging in the cutter's power cord to a power source, make sure the cutter is set to the correct operating voltage (100 V, 120 V, 220 V, or 240 V AC). See section 3.2.

See Table 1-9 for the minimum and maximum operating voltage for the different voltage ratings.

To check the operating voltage setting, locate the power entry module (shown in Figure 1-1) on the cutter's bottom panel. The power entry module shows four possible voltage settings (100 V, 120 V, 220 V and 240 V). A pin next to one of the voltage settings indicates the voltage setting currently selected for the cutter. If this setting does not match the voltage supplied to your site, you will have to change the voltage setting prior to powering up the cutter.

For information about the conversion of the cutter's operating voltage and the exact fuse ratings, see Section 3.2.

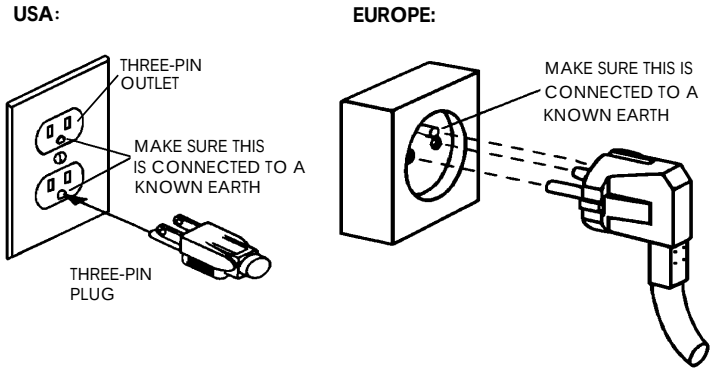

FIGURE 1-4:

EARTH CONNECTION

IMPORTANT OPERATIONAL TIP

This cutter must only be used with a power outlet that is properly grounded to earth. Use of an ungrounded outlet exposes the operator to risk of electric shock and will also lead to malfunctioning of the cutter.

1.7.2. POWER-UP PROCEDURE

➔ To power up the cutter, proceed as follows:

1. Make sure the cutter is securely attached to the cutter stand.
2. Plug one end of the AC power cord into the AC power cord receptacle on the cutter's bottom panel.
3. Plug the other end of the AC power cord into the wall socket.
4. Press the "I" side of the ON/OFF rocker switch on the control panel to switch the cutter ON.
5. The cutter will perform a minimal loading procedure consisting of a media width measurement and a 45° test.

1.8. INSTALLATION OF A KNIFE OR PEN

1.8.1. KNIFE INSTALLATION

SAFETY WARNING

Your cutter uses razor-sharp knives. The knife blades may cause serious personal injuries if handled without proper care. Use extreme care when operating the cutter and when installing, removing or handling the knife!

➔ To set up your cutter for knife operation, proceed as follows.

1. As shown in Figure 1-5, insert the knife blade into the knife holder.

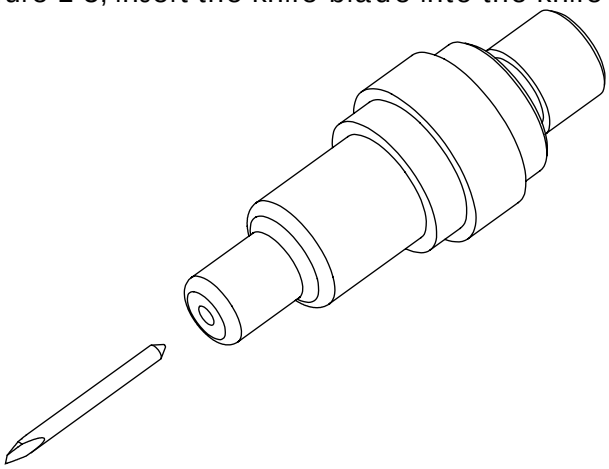

FIGURE 1-5
BLADE INSERTION

2. Set the knife blade length to zero by aligning the blade tip with the tip of the holder. An easy way of performing this is by holding the knife holder against ones fingertip and gradually increasing the blade length by turning the adjustment knob until you feel the knife tip touching your fingertip.

3. Extend the tip of the blade by the distance required for the desired cutting media (**t**), as shown in Figure 1-6. The blade should only extend beyond the knife holder sufficiently far to completely cut through the film layer yet avoid penetrating through the backing, which would risk cutting into and damaging the cutting strip.

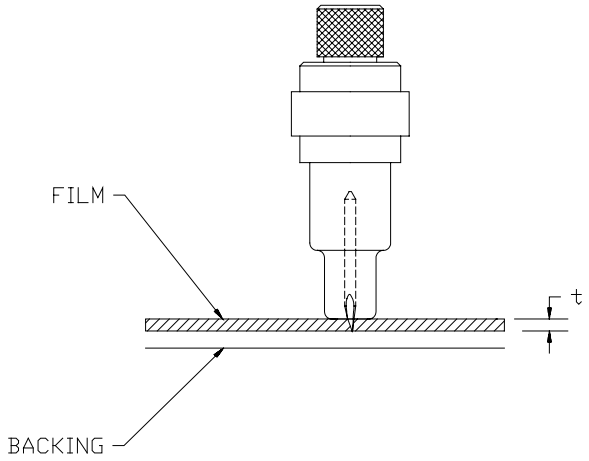

FIGURE 1-6
BLADE LENGTH ADJUSTMENT

4. Turn the cutting depth adjustment screw clockwise to increase the cutting depth. Turning the cutting adjustment screw anticlockwise will decrease the cutting depth.

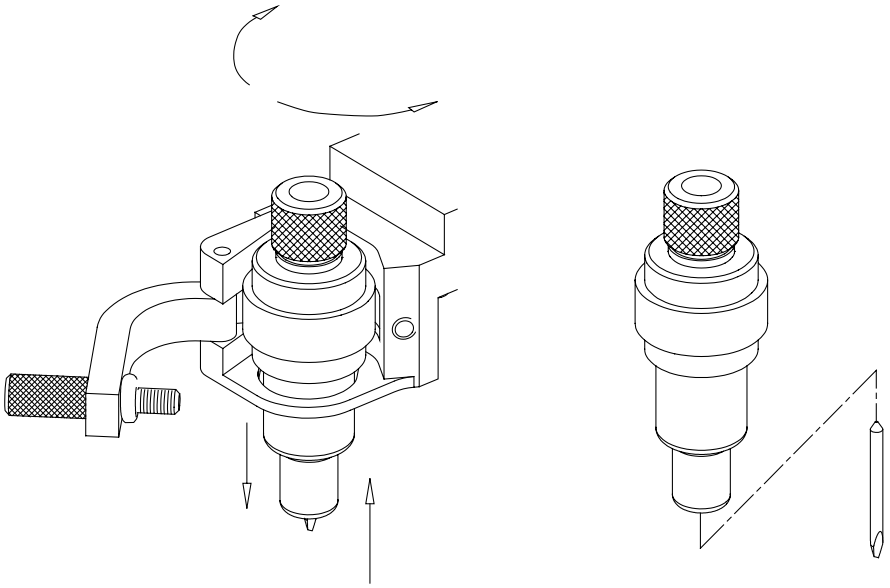

FIGURE 1-7 :
SETTING KNIFE DEPTH

5. To install the knife into the tool carriage :
   - loosen the clamping screw, swing clamp arm back and load the knife
   - close the clamp arm and tighten the clamping screw

6. Set the knife pressure as follows :

   Press the **MENU** key until the message 'USER CONFIG 1' is displayed on the display.

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↓ USER CONFIG 1	K
←	→

Press the **DOWN** jogging key until the message 'KNIFE PRESS." is displayed.

↑↓ KNIFE PRESS	K
← * 120 g → 1= TEST	

Press the **LEFT** or **RIGHT** arrow key to modify the knife pressure.

Press the **ENTER** key to confirm the selection.

Press the **1** key to perform a knife depth test as illustrated in figure 1-8.

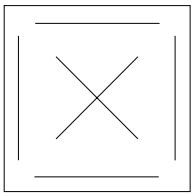


FIGURE 1-8 :
KNIFE DEPTH TEST PATTERN

The knife depth is correctly set when the test pattern is visible on the front side of the media backing, but not on the rear side of the media backing.

In general, you should increase the knife depth and knife pressure when using thicker types of vinyl.

NOTE

As the ideal knife pressure setting depends upon the thickness and the type of media to be cut, adjusting the knife pressure will require some practice. In general terms, you should increase the pressure when cutting thicker types of vinyl . For thinner types of vinyl, you will normally have to reduce the knife pressure.

CAUTION

After setting the cutting depth and/or the knife pressure, perform a thorough visual check of the knife blade, which can be seen protruding from the knife holder, and test cutting results on a scrap of vinyl media.
DO NOT OPERATE THE CUTTER if the knife blade cuts through the media backing, as this will seriously damage the cutter's rubber cutting strip and the knife.

CAUTION

For most vinyl cutting operations, the knife blade tip will be barely visible at the bottom of the knife tool. If you can clearly see the knife blade tip, you will probably need to readjust the cutting depth.

To prevent damage to the cutter, check the depth of the knife blade tip and the quality of the cut each time you load a different type of vinyl into the cutter.

1.8.2. PEN INSTALLATION

The Summagraphics D1000 cutter can also be operated with a pen. After replacing the knife with a pen, the cutter can be used as a plotter to draw draft plots of new or existing designs on paper.

➔ To install the pen, proceed as follows:

1. Remove the knife by loosening the clamping screw and swinging the clamp arm back (refer to Fig. 1-6).

2. Install the pen, close the clamp arm and tighten the screw.

3. To configure the cutter for pen operation, press the **TOOL SELECT** key.
   For pen operation choose the **2** key.

   Selecting pen operation disables the knife offset correction, and changes the tool force from knife pressure to pen pressure. A small P (for "Pen") will be displayed in the upper right corner of the LCD.

1.9. LOADING MEDIA

1.9.1. POSITIONING THE PINCH ROLLERS

When working with cut sheet or roll media, the traction resulting from the contact between the pinch rollers and the drive sleeves moves the media in the X axis (forward/backward).

Proper movement of the media will only occur if the media is driven by the pinch rollers correctly located over two drive sleeves.

The Summagraphics D1000 cutter accommodates variable media widths, from a minimum width of 100 mm (4") up to a maximum width of 1016 mm (40"). The maximum useful cutting width is 978 mm (38.5").

The pinch rollers are lowered or raised simultaneously by means of the pinch roller lever arm located on the right hand side of the cutter, next to the control panel. The rollers must be lifted to facilitate vinyl loading during which the media is fed from the rear of the cutter to the front.

When in the up position, the pinch rollers can be moved manually to the left or the right along the pinch roller shaft, so that they can be easily positioned in a detent (click position) where they are to be lowered to ensure optimum traction on the media.

When the pinch rollers are in the up position, the message "LOWER PINCH ROLLERS" is displayed on the LCD.

CAUTION

Always make sure that the pinch rollers are in the fully raised position before sliding them to the left or right.

The pinch rollers MUST be positioned correctly and lowered onto the media before an automatic load sequence is initiated. Make sure that the two edge pinch rollers are positioned above the drive sleeves. The drive drum will move the media only when the pinch rollers are lowered onto the sleeves.

Before lowering the pinch rollers, carefully check the position of the edge rollers in relation to the drive sleeves. When the pinch rollers are DOWN, the two edge rollers must run over the sleeves in order to ensure proper media traction.

Depending on the width of the media, two or three of the sleeves may be partly or fully covered. To ensure precise and correct positioning of the pinch rollers, special reference marks have been provided on the head guide. It is very important that both media edges always rest on the sleeves in such a way that the two edge pinch rollers, which are positioned 10 to 15 mm (0.4" to 0.6") from the media edge, will run over the sleeves when lowered to the drive drum.
The central low-pressure roller is used to enhance media routing and keep the vinyl flat. Ideally, this roller should be positioned halfway between the two edge rollers and above one of the drive sleeves.
For widths smaller than 600 mm, the central low-pressure roller can be positioned in the UP position.

1.9.2. FEEDING AND POSITIONING MEDIA

The loading procedure described below has been found to give excellent repeatability. When loading media, adhere to these step-by-step instructions strictly.

➔ To load media, proceed as follows:

1. Raise the pinch rollers by means of the pinch roller lever arm located on the right-hand side of the cutter, next to the control panel.

2. When working with roll media, place the roll of media on the feed rollers at the rear of the machine.

3. Standing BEHIND the machine, loosen the locking screws of the end flanges on the rear feed roller and position the roll of material so that the edges of the media will run over the sleeves of the drive drum. To facilitate proper positioning of the roll, reference marks have been provided on the rear feed rollers to indicate the position of the drive sleeves. Make sure that both edges of the media run over the drive sleeves. If this is not the case, loosen the end flange locking screws and reposition the roll of material. Retighten the locking screws.

4. When the roll is positioned correctly, slide the two end flanges towards the roll until they press tightly against it. Tighten the end flange locking screws.

Figure 1-9 shows the correct routing of the media.

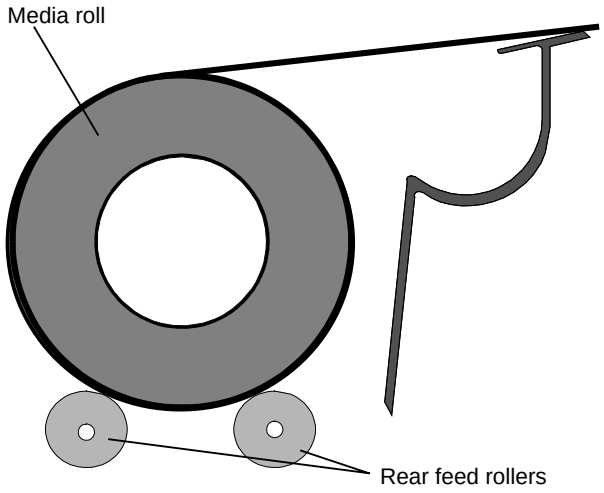


FIGURE 1-9:
MEDIA ROUTING

5. GO BACK TO THE FRONT SIDE OF THE CUTTER. Make sure that the media follows a straight path from the roll of material.

6. Position the edge pinch rollers above the media, 10 to 15 mm (0.4" to 0.6") from the media's outer edge. Check the position of the media and the rollers, making sure that both media edges run over the drive sleeves and that the rollers are positioned above the sleeves.

7. Slide the low-pressure roller into position. Ideally, it should be half-way between the two edge rollers and above a drive sleeve. However, this may be impossible when processing narrower types of media.

   If the central low-pressure roller does not run over one of the drive sleeves, you may have to press down the small lever on the back of the low-pressure roller to disable the roller.

8. Lower the pinch roller lever to press the media firmly against the drive sleeves. After one second the tool carriage automatically moves from the right to the left to sense the usable width.

NOTE

It is not necessary to unroll the media manually from the roll. The cutter will unroll the media automatically at reduced speed during the load sequence.

9. The positioning and routing of sheet material is identical to that of roll media.

10. The cutter is now ready for the actual load procedure, which may be controlled from the control panel.
    However, most jobs can be done without the extended load procedure described in section 1.10.

1.10. MEDIA LOAD PROCEDURE

SAFE OPERATION

Do not place any objects in front of, or behind the cutter that could interfere with cutter operation. Make sure the media is free to move back and forth. Keep hands, hair, clothing and jewelry away from moving parts.

Turn the power on and the following message will appear on the LCD screen :

```
      PLEASE WAIT          K
       LOADING...
```

The cutter will automatically start executing a minimal loading procedure consisting of : - a media width measurement

- a 45° test
- media is unwound over a length equal to the width measured between the edge pinch rollers

When the next display appears, the cutter is ready to receive a file :

```
500mm/s   120 g              K
.45mm    ONLINE              1
```

When sending a cut file , the cutter will automatically pull the required media from the roll. The pulling is done in steps such that for each step the length pulled off the roll is identical to the width measured between the pinch rollers.

IMPORTANT

Tracking of longer signs is only guaranteed when you perform the **full load procedure** !

Proceed as follows to complete the full load procedure :

Press the **RESET/LOAD** key and the following message will appear on the LCD screen :

```
        SET ORIGIN           K
X=0   Y=YYYY                 🕘
```

Press the **RESET/LOAD** key again and the following message will appear on the LCD screen :

```
          LOAD               K
    1= ROLL  2= SHEET
```

Press the **1** key if you want to load media from **a roll**. Press the **2** key if you want to load **media in sheet form**.

The next display will appear on the LCD :

```
      SET ORIGIN          K
X=0  Y=YYYY               🕘
```

Using the **LEFT, RIGHT, UP, DOWN** jogging keys, you can position the knife (i.e. the origin) at any location. Press the **ENTER** key to confirm the selected point of origin.

```
     MEDIA WINDOW         K
↑↓                        🕘
```

In case you press **ENTER** at this stage the default window will appear (explained later).

In case you use the **UP, DOWN** jogging keys, you can enter the length of the media you need for your job.

```
     MEDIA WINDOW         K
XXXX  YYYY                🕘
```

The XXXX-value is the media length you define with the **UP, DOWN** jogging keys.
The YYYY-value is the cutting width of the media measured by the cutter.
Note : when the media length is zero (0), the default media length will be used.
Press **ENTER** key to confirm the length and the cutter will start shuffling the vinyl in order to establish a track on the vinyl.

In case you pressed **ENTER** and the default window screen appeared, than you can change the default value by pressing the **UP** (+10), **DOWN**(-10), **LEFT**(-100), **RIGHT** (+100) jogging keys.

```
   DEFAULT WINDOW         K
↓↑   XXXX mm              🕘
```

Press **ENTER** key to confirm the length and the cutter will start 'shuffling' the vinyl in order to set a track on the vinyl.

```
500mm/s  120 g            K
.45 mm   ONLINE           1
```

The cutter is now ready to receive a file.

```
500mm/s  120 g            K
.45 mm  *ONLINE           1
```

The cutter has been selected by the computer.

CAUTION

When you accept the loaded area in sheet mode, the cutter will clip the sign to be cut in case of insufficient media. Compare the area loaded with the area needed for the sign !

SECTION 2

OPERATION

2.1. THE CONTROL PANEL

Figure 2-1 shows the control panel of the Summagraphics D1000 cutter. The main functions of the liquid crystal display (LCD) and the control panel keys are explained in the following paragraphs.

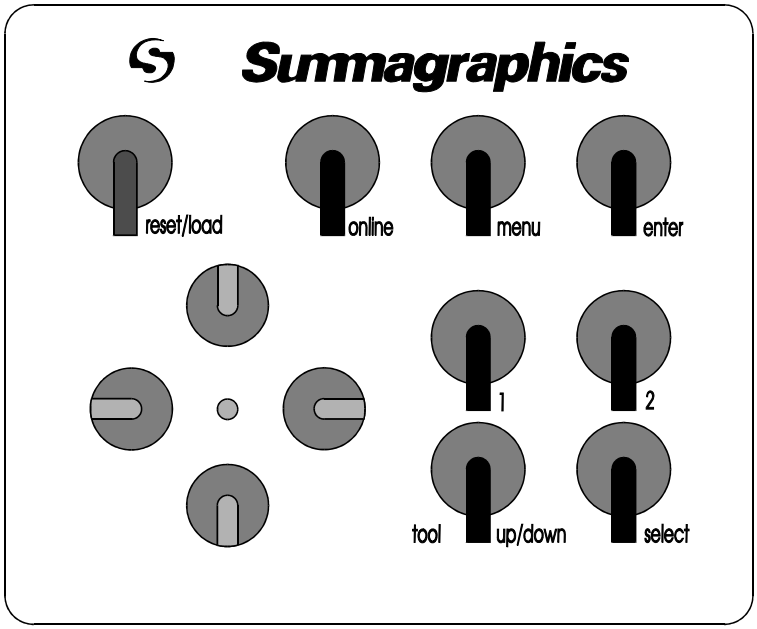


FIGURE 2-1:
SUMMAGRAPHICS D1000 CUTTER, CONTROL PANEL

2.1.1. THE LIQUID CRYSTAL DISPLAY

The 32-character liquid crystal display (LCD) contains two lines of 16 characters each. The LCD provides cutter status information during operations and displays menu options for the configuration of the cutter.

The contrast of the LCD can be adjusted from the control panel in order to ensure optimum readability under varying lighting conditions.
Instructions for adjusting the LCD contrast are given in Section 2.6.12.

The various menu and submenu items are always presented in a loop, which means that, when the last menu or submenu item is displayed, pressing the appropriate key will automatically take you back to the first item of the same menu or submenu.

Next to the status messages and/or menu options displayed on the LCD, arrow symbols representing the **UP, DOWN, LEFT** and **RIGHT** jogging keys or **ENTER** key will tell you what keys to press to go to the next menu item (top line of the display) or to the next value for a given submenu item (bottom line of the display).

2.1.2. THE RESET/LOAD KEY

The **RESET/LOAD** key is used to move the origin, to initiate a load sequence, to reset the cutter, to abort the cut in progress or to recut the last file. When the **RESET/LOAD** key is pressed, the cutter goes offline, suspends all operations in progress and displays the RESET/LOAD menu. Press the **RESET/LOAD** key until SET ORIGIN, LOAD, RESET, ABORT or RECUT is displayed. To confirm RESET, ABORT or RECUT press the ENTER key. To execute the SET ORIGIN instruction move the knife origin using the **UP, DOWN, LEFT** and **RIGHT** jogging keys and press the **ENTER** key to confirm the new origin position. To initiate the LOAD instruction press the **1** or **2** key to initiate a load sequence for a ROLL or SHEET respectively. Upon termination of any of these instructions, the cutter goes online again.

The SET ORIGIN instruction is used to move the knife origin.
The LOAD instruction is used to initiate a load sequence.
The RESET instruction performs a complete reset of the cutter.
The ABORT instruction simply cancels the cut in progress. Aborting a cut will not reset the cutter parameters: the parameters which had been selected for the cut remain in effect.
The RECUT instruction recuts the last file sent to the cutter (provided that it fitted into the buffer).

2.1.3. THE ONLINE KEY

The **ONLINE** key toggles between online and offline operation. When the **ONLINE** key is pressed, the selected mode (ONLINE or OFFLINE) is displayed on the LCD.

Selecting OFFLINE will suspend all operations in progress. Pressing the **ONLINE** key while the cutter is offline will make the cutter go online again, resuming the suspended operation.

While the cutter is offline, the following operations can be performed:

Notice

- Press the **LEFT** or **RIGHT** jogging key to move the tool carriage to the left or right.
- Press the **UP** or **DOWN** jogging key to make the media move forward (towards you) or backward (away from you). Moving the media forward will prove to be very practical when you require to cut the finished sign off manually.
- Press the **TOOL UP/DOWN** key to lower or raise the active tool. If the tool is not moved for approximately eight seconds, it is raised automatically.

2.1.4. THE MENU KEY

The **MENU** key is used to select one of the menus. Pressing the **MENU** key will make the cutter go offline and suspend all operations in progress. Pressing the **MENU** key repeatedly will display the different menus one by one. As the menu options are on a loop, pressing the **MENU** key when the last option is displayed will automatically return you to the first option.

The different menus are illustrated in Figure 2-2.

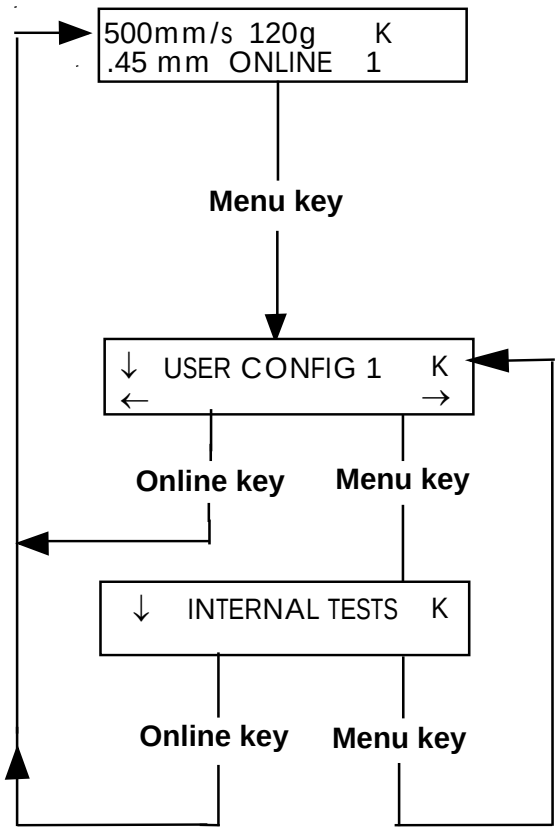


FIGURE 2-2 :
SUMMAGRAPHICS D1000 CONFIGURATION SUBMENUS

To select a menu by scrolling through the different options, press the **DOWN** jogging key .
To exit from the menus and resume the previous online operation, press the **ONLINE** key .

Under normal conditions, the cutter is online; it may then be selected by the host computer for a cutting or plotting operation or deselected by the host computer. Pressing the **RESET/LOAD**, **ONLINE** or **MENU** key will make the cutter go offline, in order to initiate another operation.

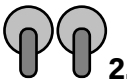
The contents of the different menus are summarised in Table 2-1 on the next page.

MENU	**DESCRIPTION**
USER CONFIG 1 (->4)	Selects a given active cutter configuration from one of the four sets of configuration parameters stored in the unit's memory
INTERNAL TEST	Activates one of the resident cutting plots provided for informational purposes.

TABLE 2-1:
CONTENTS OF THE SUMMAGRAPHICS D1000 MENUS

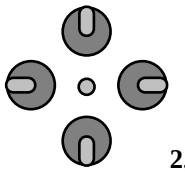
2.1.5. THE ENTER KEY

The **ENTER** key is used to select the item currently displayed on the LCD.



2.1.6. THE 1 AND 2 KEYS

The use of the **1** and **2** keys varies according to the operation in progress, their use is displayed on the LCD as appropriate.



2.1.7. THE JOGGING KEYS

The use of the jogging keys varies according to the operation in progress.

For example, when working in the USER CONFIG menu, the **LEFT** or **RIGHT** jogging key is used to select the new user number and the **UP** or **DOWN** jogging key is used to go to the previous or next menu item.

2.1.8. THE TOOL UP/DOWN KEY

The **TOOL UP/DOWN** key is used while the cutter is offline to raise or lower the tool. Pressing the **TOOL UP/DOWN** key once will lower the tool onto the media. Pressing the **TOOL UP/DOWN** key again will raise the tool.

If the tool is not moved for approximately eight seconds, it is raised automatically.

2.1.9. THE TOOL SELECT KEY

The **TOOL SELECT** key is used to select knife or pen operation. To temporarily change the tool press the **TOOL SELECT** key, then press **1** for KNIFE or **2** for PEN. When the cutter is powered on the next time, the default tool will be selected. For setting up the default tool see Section 2.4.5.

2.2. NORMAL OPERATION

The term "normal operation" covers online operation, offline operation and local operation, i.e. the three types of operation for actual cutting or plotting. They are explained in further detail in the following paragraphs.

2.2.1. ONLINE AND OFFLINE

Online and offline are two important concepts when using the Summagraphics D1000 cutter. The cutter is online only when the following message is displayed on the LCD :

```
500mm/s  120 g                K
.45mm   ONLINE              1
```

This display message should be read as follows :

500 mm/s	=	velocity
120 g	=	knife pressure
K	=	knife operation (K) or pen operation (P) indicator
.45 mm	=	knife offset
ONLINE	=	cutter is ready to receive data
1	=	user number

In all other cases, the cutter is offline.

When online, the cutter can be addressed by the host computer, which means that the cutter will execute cutting or plotting instructions issued by the host computer's application software. The host computer will first issue a SELECT sequence to the online cutter, and the message "*ONLINE" will be displayed on the LCD. The asterisk indicates that the host is in communication with the cutter : i.e. the cutter is now “selected” by the computer.
When the cutter is online and ready to receive instructions from the host computer, it will remain deselected until actual instructions from the computer are received. When the cutter is online, but has not been selected by the host computer, the message "ONLINE" is displayed on the LCD, without the asterisk.

For normal cutting operations, the cutter **MUST** be online, so that it can receive instructions from the host computer and the cutting/plotting software.

When the cutter is online, but has not been selected by the host computer, the following conditions must be met:

- The cutter must be powered ON.
- Media must be loaded. For detailed media loading instructions, see Section 1.9.
- The proper tool must be installed.
- The cutter must be connected to the host computer via a RS-232-C link or a parallel interface.
- The cutter must be configured for the scheduled operation.

To put the cutter offline, press the **RESET/LOAD**, **ONLINE** or **MENU** key. Pressing any of these keys will suspend the current cutting/plotting operation until the cutter is put online again.

2.2.2. LOCAL OPERATION

Local operation is only possible while the cutter is offline. Local operation means that the cutter is operated directly by the operator via instructions entered on the control panel.

➔ To work in local operation mode, proceed as follows:

1. If the cutter is still online, press the **ONLINE** key once to select offline.
2. To move the carriage to the left or right, press the **LEFT** or **RIGHT** jogging key.
3. To make the media move forwards (towards you) or backwards (away from you), press the **UP** or **DOWN** jogging key.
4. To move the tool head up or down, press the **TOOL UP/DOWN** key.
5. To end local mode and put the cutter online again, press the **ONLINE** key.

2.3. THE USER CONFIG MENU

The USER CONFIG(uration) menu gives access to different submenus which allow you to configure the cutter's operating parameters. It should be taken into account that access to some of the submenus will be determined by the plotting language you are using.

Notice

Four different user configurations can be saved. The selected configuration number is displayed on the LCD next to the USER CONFIG message. These four USER CONFIG 1(->4) menus are maintained independently.

➔ To select another **configuration number**, proceed as follows:

1. Power on the cutter.

2. Press the **MENU** key until USER CONFIG 1(->4) is displayed.

3. Press the **LEFT** or **RIGHT** jogging key until the desired configuration number is displayed next to USER CONFIG.

> **NOTE**
>
> Before altering any of the items in the USER CONFIG menu, make sure that you have previously selected the right configuration number in the USER CONFIG 1(->4) menu.

Figure 2-3 shows the USER CONFIG submenus.

➔ To select and alter a configuration parameter, proceed as follows:

1. Power on the cutter.

2. Press the **MENU** key until USER CONFIG 1(->4) is displayed.

3. Press the **DOWN** or **UP** jogging key until the desired submenu is displayed on the first line of the LCD.

4. Press the **LEFT** or **RIGHT** jogging key until the desired value is displayed on the second line.

5. Press the **ENTER** key to confirm the selection, an * will be displayed next to the selected setting. (An * is always displayed next to the active value.)

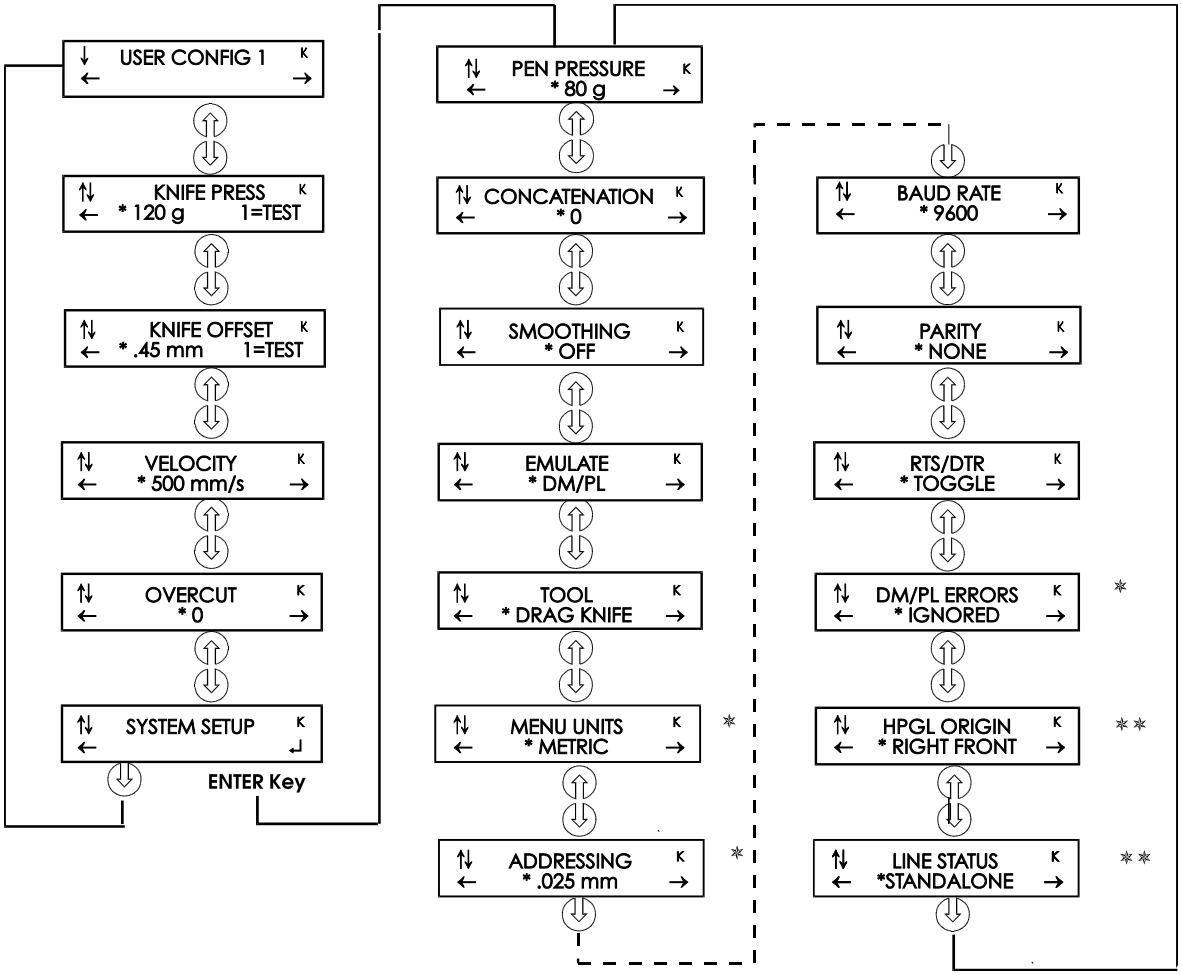


FIGURE 2-3 :
FLOWCHART SHOWING FACTORY PRESET MENU SETTINGS

* in DM/PL only
** in HP-GL only

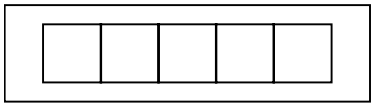
2.3.1. KNIFE PRESSURE

The KNIFE PRESSURE submenu is used to set or modify the cutting pressure of the knife.

The default knife pressure value is 120 grams.
The knife pressure can be set between 0 and 400 grams.
The knife pressure value is set in 5 gram increments.
On the LCD, the active knife pressure value is marked with an *.
Knife pressure setup is explained in detail in section 1.8.1.

2.3.2. KNIFE OFFSET

The KNIFE OFFSET submenu is used to set or modify the distance between the knife blade tip and the center axis.
The default knife offset value is .45 mm.
The value can be set between 0 and 1 mm.
Make sure that the selected knife offset value matches that of the knife. Some
fine tuning may be necessary because of the mechanical tolerances on the knife. To verify the knife offset, a test can be cut by pressing the **1** key.
If the offset value is set too low, the rectangles will not close.
When the offset value is set too high, the rectangles will be distorted.
The offset test is illustrated below.



2.3.3. VELOCITY

The VELOCITY submenu is used to set or modify the velocity of the tool.
The default velocity is 500 mm/s (20 ips).
The velocity can be set between 50 mm/s (2 ips) and 600 mm/s (24 ips).

2.3.4. OVERCUT

The OVERCUT submenu enables you to generate an overcut in order to simplify weeding the cut.

The default overcut is set to 0.
The overcut setting can be disabled(=0) or set to any value between 0(=off) and 10. One unit is about 0.1 mm or 0.004 ".
On the LCD, the active value is marked with an *.

2.3.5. SYSTEM SETUP

The SYSTEM SETUP submenu covers the menu items you normally only need when establishing the initial setup e.g. when you install the cutter in combination with the software you use.
Press the **ENTER** key to access the different submenu items, which are explained in section 2.4.

2.4 SYSTEM SET UP

Refer to Figure 2-3 on page 2-9.

2.4.1. PEN PRESSURE

The PEN PRESSURE submenu is used to set or modify the pressure on the pen tip.
The default pen pressure value is 80 grams.
The pen pressure can be set between 0 and 400 grams in 5 gram increments.

On the LCD, the active pen pressure value is marked with an *.

2.4.2. CONCATENATION

The CONCATENATION feature increases the speed and quality with which cut data having a very high resolution is cut. However when changing over to normal characters again, deactivate concatenation by setting this parameter to 0.
On the LCD, the active concatenation value is marked with an *.

2.4.3. SMOOTHING

The SMOOTHING feature helps to cut smoother curves when curve data with many short vectors is received from the computer.
The default setting is OFF.

2.4.4. EMULATE

The EMULATE submenu is used to select the active cutting/plotting language for the cutter.
The Summagraphics D1000 supports DM/PL , HP-GL and HP-GL/2.
On the LCD, the active plotting language setting is marked with an *.

NOTE

The active cutting/plotting language MUST match the cutting software. Always select a language which is supported by the host computer's cutting software.

Whenever possible select the DM/PL menu option to set the active cutting/plotting language to Houston Instrument Digital Microprocessor/Plotting Language (DM/PL). This selection will allow the cutter to operate with DM/PL-based cutting / plotting software.
This language, having special command extensions for cutting, normally gives superior cutting performance.
Select the HP-GL menu option to set the active cutting/plotting language to HP-GL. The cutter will emulate an HP model 758xB plotter (with selectable origin, see 2.4.12).

2.4.5. TOOL

The TOOL submenu is used to select the default tool at power up.
To configure the cutter for plotting operations, select PEN.
To configure the cutter for cutting operations, select the DRAG KNIFE option.
To select a tool other than the default one temporarily, see section 2.1.9.

2.4.6. MENU UNITS

The MENU UNITS submenu allows you to select English or metric menu units for DM/PL. In HP-GL & HP-GL/2 the menu units are always in metric.

For models sold in the US, English units are the default setting.
For models sold in Europe, metric units are the default setting.
On the LCD, the active menu units setting is marked with an *.

2.4.7. ADDRESSING

The ADDRESSING submenu is used to select the cutter's default DM/PL user-addressable resolution. In HP-GL & HP-GL/2 the addressing is fixed at 0.025 mm.

The default addressing resolution is 0.025 mm (Europe) or 0.001" (US).
The user-addressable resolution can be set to 0.025 mm or 0.001" or 0.1 mm or 0.005".
On the LCD, the active resolution value is marked with an *

2.4.8. BAUD RATE

The BAUD RATE submenu is used to set or modify the operating baud rate for RS-232-C serial communications between your cutter and the host computer.

The default baud rate is 9600 bps.
The baud rate can be set to any of the following values: 2400 bps, 4800 bps, 9600 bps, 19200 and 38400 bps.
On the LCD, the active baud rate value is marked with an *.

NOTE

The baud rate setting of your cutter MUST match the host computer's baud rate setting.

2.4.9. PARITY

The PARITY submenu is used to set or modify the byte format and parity type for RS-232-C serial communications between your cutter and the host computer.

The default parity setting is bit 8 = 0 (8 data bits, no parity, the 8th bit being a low bit). The parity can be set to any of the following values:

LCD information	Parity setting	Remarks
BIT 8 = 0	8 data bits, no parity	bit 8 = low (0)
BIT 8 = 1	8 data bits, no parity	bit 8 = high (1)
EVEN	7 data bits, 1 parity bit	parity bit = even
ODD	7 data bits, 1 parity bit	parity bit = odd

On the LCD, the active parity setting is marked with an *.

NOTE

The parity setting of your cutter MUST match the host computer's parity setting.

2.4.10. RTS/DTR

The RTS/DTR submenu controls the Request To Send (RTS) and Data Terminal Ready (DTR) signals of the cutter's RS-232-C serial communications interface for hardware handshaking.

The RTS/DTR default value is TOGGLE.
RTS/DTR can be set to TOGGLE (hardware handshaking) or HIGH (software handshaking).
On the LCD, the active handshaking setting is marked with an *.

2.4.11. DM/PL ERRORS

The DM/PL ERRORS submenu is used to determine whether or not different DM/PL errors, such as illegal plot commands, invalid parameter ranges or communication errors, will be displayed on the LCD. This menu will only be displayed if PLOT LANGUAGE is set to DM/PL.

The DM/PL ERRORS submenu can be set to REPORTED or IGNORED.
On the LCD, the active setting is marked with an *.
The feature is activated by selecting REPORTED. It is normally used only when attempting to debug a communication link between the cutter and the host computer.
After the communication link has been debugged, select IGNORED to disable the feature.

2.4.12. HP-GL ORIGIN

The HP-GL ORIGIN submenu will only be displayed if the PLOT LANGUAGE is set to HP-GL. (See Paragraph 2.4.4.) The HP-GL ORIGIN submenu is used to set the origin in the center (see HP-GL 758x) or the bottom-right corner (see HP-GL 7475) of the loaded media.

The HP-GL ORIGIN option can be set to RIGHT_FRONT or CENTER.
On the LCD, the active setting is marked with an *.
If the cut is found to be incomplete, and is wholly located in the upper left corner of the media, then modify the HP-GL ORIGIN setting to RIGHT_FRONT. If the cut is found to be incomplete, and is wholly located in the lower right corner of the media, then modify the HP-GL ORIGIN setting to CENTER.

2.4.13. LINE STATUS

The LINE STATUS submenu simulates the STANDALONE/EAVESDROP switch on HP model 758X plotters. This switch determines the way in which the cutter is selected by the host computer.
The line status can be set to EAVESDROP or STANDALONE.
On the LCD, the active line status is marked with an *.

STANDALONE means that the cutter is always programmed-on at power up, whereas EAVESDROP means that the cutter is in a programmed-off condition at power up. In the latter case, the plotting software will have to explicitly select the cutter by means of a programmed-on command.

NOTE

The cutter's line status setting MUST match the setting of the plotting software.

2.5 INTERNAL TEST MENU

➔ To access an internal cut, proceed as follows:

1. Power the cutter on.
2. Load cutting or plotting media.
3. Install a knife or a pen.
4. Press the **MENU** key until INTERNAL TEST is displayed and press the **DOWN** jogging key.
5. Press the **DOWN** or **UP** jogging key until the desired internal plot is displayed.
6. To perform the plot, press the **ENTER** key.

To exit from this menu and go to another menu, press the **MENU** key until the desired menu is displayed.To exit from the menus and put the cutter online again, press the **ONLINE** key.

Figure 2-4 shows the different INTERNAL TEST submenus.

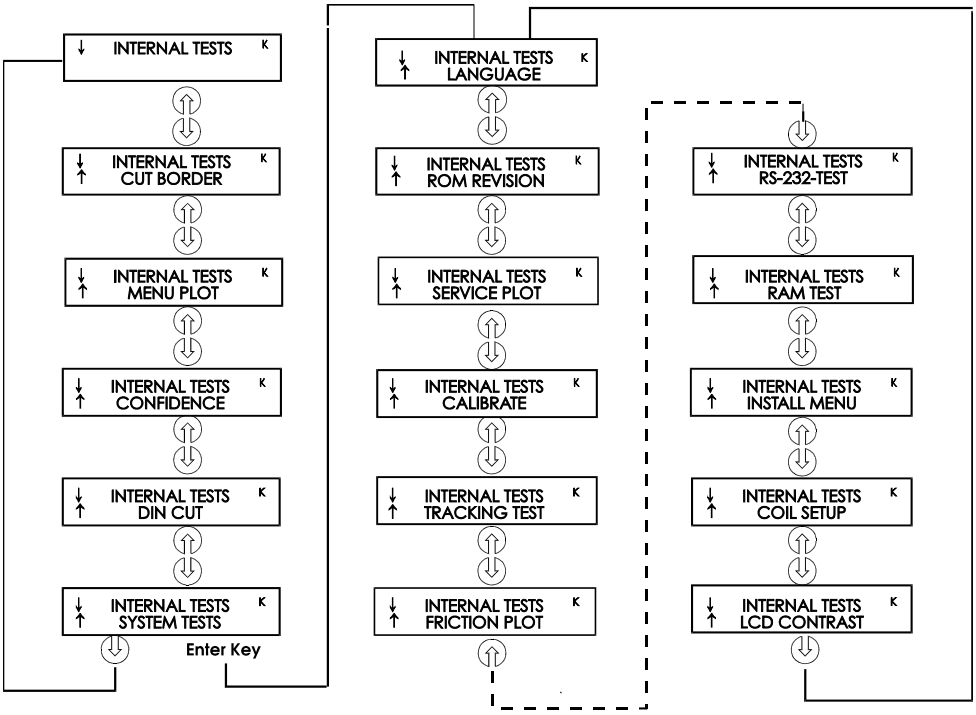


FIGURE 2-4 :
INTERNAL TESTS SUBMENUS

2.5.1. CUT BORDER

The CUT BORDER submenu is used to cut the border of the media area which was defined during the load sequence. This function is particularly useful if you want to verify the exact cutting area.

2.5.2. MENU PLOT

The MENU PLOT is a hard copy of the present cutter configuration, i.e. the items selected in the USER CONFIG submenus described in Section 2.3. The plot is organised by menu categories to show the current values for the various USER CONFIG 1(->4) configurations. To run this plot, load a sheet of plotting paper and install a pen.

NOTE
It is strongly recommended to produce a MENU PLOT hard copy each time you alter the cutter configuration. The resulting plot should be kept with the cutter documentation in order to provide other users with details of the actual configurations of the unit.

2.5.3. CONFIDENCE CUT

The CONFIDENCE cut performs an electrical and mechanical test of the cutter to make sure that the cutter is fully operational. A media sheet of at least A3/A- size should to be used for this plot.

2.5.4. DIN CUT

The DIN CUT also performs an electrical and mechanical test of the cutter, in order to check the cut quality, but also provides the user with feedback on knife setting, knife pressure, knife offset and cutting depth.

This cut is always run as a DIN A4 portrait/A-size image, regardless of the actual size of the media loaded. If the media loaded is smaller than DIN A4/A-size, part of the outer box will be clipped (not cut). This cut is always executed in the sequence prescribed by the ISO DIN standard.

2.5.5. SYSTEM TESTS

The SYSTEM TESTS submenu covers the menu items you only occasionally need to adjust the cutter configuration.

Press the **ENTER** key to access the different submenu items which are explained in section 2.6 below.

2.6. SYSTEM TESTS

The SYSTEM TESTS menu is a special set of procedures which are not required for normal cutter operation. Field service personnel, however, will use the SYSTEM TESTS menu occasionally. When in SYSTEM TESTS, the cutter is fully operational and performs as described in this manual.

2.6.1. LANGUAGE

The MENU LANGUAGE submenu is used to set or modify the dialogue language on the LCD. Press the **UP** or **DOWN** jogging key until the desired language is displayed on the LCD and press **ENTER** to confirm.
The information on the LCD can be displayed in English, French, German Spanish or Italian.

2.6.2. ROM REVISION

Selecting the ROM REVISION option, by pressing the **ENTER** key will furnish the details on the cutter's ROM revision. This information is often helpful to technicians when diagnosing problems over the telephone.

2.6.3. SERVICE PLOT

The SERVICE PLOT provides information about the cutter, which is helpful when requesting service for your cutter. The SERVICE PLOT is always plotted at the same size and should be performed with a pen on paper.

The plot shows the cutter model number, the revision numbers of the installed ROM (Read Only Memory) circuits, the selected baud rate, the resolution and buffer (memory) size.

CAUTION

The following test routines are normally restricted to Summagraphics Field Service Personnel.

2.6.4. CALIBRATION

Calibration allows the length of the lines cut to be adjusted to within the specifications.
For instance, if a cut line should measure 100 mm exactly, the cutter can be adjusted for any discrepancy.

2.6.5. TRACKING TEST

This test allows the tracking quality of the machine to be verified.

2.6.6. FRICTION PLOT

This test routine must be performed with a pen and is used to detect problems with the cutter. The FRICTION PLOT is automatically scaled to fit the presently installed paper size. This test should only be performed by qualified service personnel.

2.6.7. RS232 TEST

The RS232 TEST routine verifies the cutter's RS-232-C serial communications (transmit data, receive data, and hardware handshaking) circuits. This test does not require pen, knife or media to be loaded.

➔ To run the RS-232-C test, proceed as follows :

1. Unplug the RS-232-C data cable from the rear panel of the cutter.
2. Use a loopback test cable to connect pin 2 of the cutter's data connector to pin 3 and pin 7 to pin 8.
3. With RS232 TEST displayed, press the **ENTER** key. The cutter will start transmitting and receiving data at all available baud rates and parity settings. The length of the transmissions will vary because of the different baud rates used. The unit then checks the hardware handshake lines.
4. Upon completion of the test, remove the loopback test cable from the cutter rear panel RS-232-C connector.
5. Plug the RS-232-C data cable into the connector.

2.6.8. RAM TEST

This test completely checks the RAM bit for bit.
When running this test the cutter will not respond. After this test, power the cutter off, then on .

2.6.9. INSTALL MENU

The INSTALL MENU routine restores the factory-defined menu settings in all four USER CONFIG menus. This test routine can be performed without a tool and without media.

2.6.10. SETUP COIL

This test is used to calibrate knife and pen pressure and to set the knife and pen 'landing'.
After adjustment the value is saved in the system's non-volatile RAM.
For executing this test a tension gauge of ± 100 gr and ± 500 gr are utilised.
In the upper line of the display the desired pressure appears and in the bottom line of the display the value that has to be sent to the head to reach this pressure (this value is between 0 and 127).

2.6.11. LCD CONTRAST

The LCD CONTRAST submenu is used to adjust the contrast (or intensity) of the liquid crystal display on the control panel.
Press the **UP** or **DOWN** jogging key to increase or reduce the contrast and press **ENTER** to confirm.

SECTION 3

GENERAL INFORMATION

3.1. MAINTENANCE & CLEANING

The Summagraphics D1000 cutter has a number of sliding surfaces made of smooth metals and plastics. They are virtually friction-free and require no lubrication. They will, however, collect dust and lint which may affect the performance of the cutter. Keep the cutter as clean as possible by using a dust cover. When necessary, clean the unit with a soft cloth dampened with isopropyl alcohol or mild detergent. Do not use abrasives.

3.1.1. CLEANING THE DRIVE SYSTEM

After a time, the sleeves of the drive drum may become clogged with accumulated residue from the media. This situation may affect traction as the media will tend to slip between the pinch rollers and the drive sleeves.

➔ To clean the drive sleeves, proceed as follows:

1. Place the cutter in local operation. (See Section 2.2.2.) Local operation will allow you to use the control panel jogging keys, even when no media is loaded.

2. Remove the backing from a piece of vinyl. Place the vinyl with the tacky side down between one of the pinch rollers and a drive sleeve. Lower the pinch roller arm.

3. Use the **UP** and **DOWN** jogging keys to move the piece of vinyl backward and forward several times, until all residue is removed from the drive sleeves.

4. Raise the pinch roller arm and remove the piece of vinyl media.

5. Repeat steps 2 through 4 for the other drive sleeves.

6. Set the cutter's power switch to OFF.

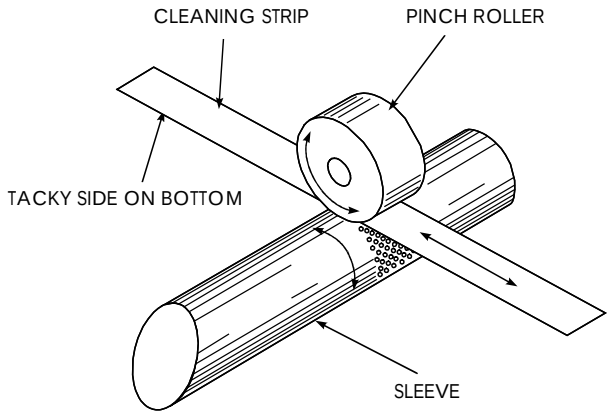


FIGURE 3-1:
CLEANING OF THE FRICTION DRIVE SYSTEM

3.2. OPERATING VOLTAGE CONVERSION

The power entry module cover shows four possible AC voltage settings (100 V, 120 V, 220 V and 240 V). The pin in one of the holes indicates the cutter's active voltage setting. If this setting does not match the voltage supplied to your site, you must change the voltage ***before*** powering on the cutter.

When changing the voltage setting, you will also have to change the fuses as appropriate to the voltage.

To change the fuse(s), remove the fuse(s) from the fuse box behind the cover plate of the power entry module.

For 100 or 120 V AC operation, use only 1.25 A Slo-Blo fuses.
For 220 or 240 V AC operation, use only 0.6 A Slo-Blo fuses.

NOTE

Always make sure that you are using the correct fuses for your voltage selection.

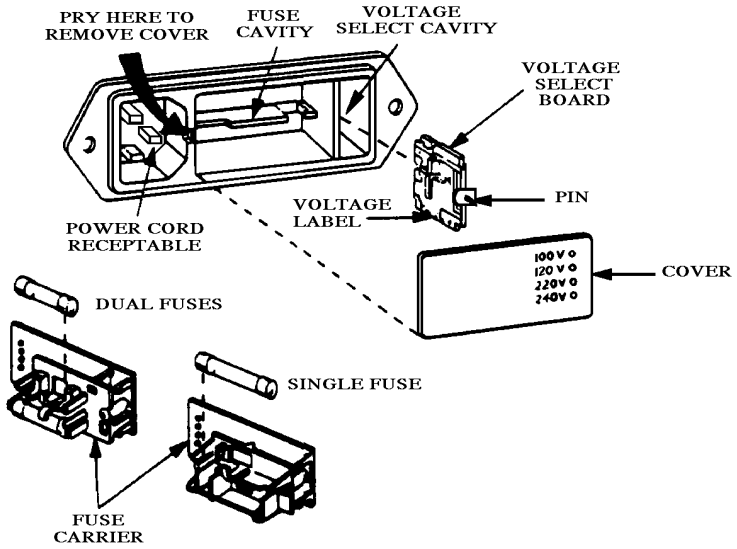


FIGURE 3-2
POWER ENTRY MODULE

Trademark Acknowledgements

SECTION 4
INTERFACE

4.1. INTRODUCTION

This section describes the signal connections for RS-232-C serial communication between the D1000 cutter and the host computer. When connecting the cutter to the host computer, always proceed as follows:

1. Refer to the cutting/plotting application software documentation and check the recommended cabling specifications.

   If the Summagraphics D1000 cutter is not specifically listed, use the cabling specified for the Houston Instrument DMP-60C cutters.

2. If the documentation of the cutting/plotting software does not contain specific cabling instructions, use the Houston Instrument cable specifications recommended for your computer.

4.2. INTERFACE NOTES

4.2.1. SYSTEM SETUP

> **NOTE**
>
> The setup information in this section assumes that you are using the MS-DOS or PC-DOS operating system.

➔ To set up your system, proceed as follows:

1. Boot up the operating system.

2. To configure serial port #1, enter the following command at the system prompt: MODE COM1:9600,N,8,2,P.

3. To configure serial port #2, enter the following command at the system prompt: MODE COM2:9600,N,8,2,P.

4. To redirect the output to serial port #1, enter the following command at the system prompt: MODE LPT1:=COM1:.
5. To redirect the output to serial port #2, enter the following command at the system prompt: MODE LPT1:=COM2:.

6. The computer end of the cable must be plugged into the serial port defined as COM1 (or COM2). The cutter's baud rate must be set to 9600, with parity NONE and RTS/DTR mode set to TOGGLE.

4.2.2. SERIAL INTERFACE CONNECTOR ON CUTTER

RS-232C Serial Interface Connector		
Pin n°	*Signal*	*Description*
1	NC	Not Connected
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal ground
6	NC	Not connected
7	RTS	Request To Send
8	CTS	Clear To Send
9	NC	Not Connected

4.2.3. PARALLEL INTERFACE CONNECTOR ON CUTTER

Parallel Interface Connector			
Pin n°	Definition	Pin n°	Definition
1	-Data Strobe	19	Ground

2	Data 1	20	Ground
3	Data 2	21	Ground
4	Data 3	22	Ground
5	Data 4	23	Ground
6	Data 5	24	Ground
7	Data 6	25	Ground
8	Data 7	26	Ground
9	Data 8	27	Ground
10	-Acknowledge	28	Ground
11	Busy	29	Ground
12	Paper End	30	Ground
13	Select	31	-Input Prime
14	Not Connected	32	-Fault
15	Not Connected	33	Not Connected
16	Logical Ground	34	Not Connected
17	Chassis Ground	35	Not Connected
18	Positive 5V	36	Not Connected
-Negative true logic			

4.3. AVAILABLE SERIAL SIGNALS

If you are making your own cable, only a few of the cutter pins will actually need to be connected to the host computer. To ensure optimum results, the cable length should not exceed 4.8 m (16 feet). It should be taken into account that your computer or cutting software may also require additional loopback connections at the host computer's end of the data cable.

- Connect the Transmit Data (TXD) pin of the computer to pin #2 of the cutter.
- Connect the Receive Data (RXD) pin of the computer to pin #3 of the cutter.
- For hardware handshaking, connect the Clear To Send (CTS) pin of the computer to pin #4 or pin #7 of the cutter. Connect the Request To Send (RTS) pin of the computer to pin #8 of the cutter.
- Connect the ground (GND) pin of the computer to pin #5 of the cutter.

APPENDIX A

MEDIA CERTIFICATION

Types of media

A wide range of vinyl types has been evaluated and extensively tested on the Summagraphics D1000 cutter. To ensure operation in compliance with the D1000's functional specifications as listed in Section 1 of the User Manual, only duly certified media should be used.

An alphabetic list of all duly certified media is included below. Before using other media, please contact your local Summagraphics representative for advice.

Manufacturer	Type
3 M	Scotchcal Series 100 Scotchcal Translucent Series 3630 Scotchcal Special Effects 210 Controltac Series 170 Controltac Series 180
APA	
ARLON	Series 2100 Series 2500
FASSON	Economy Fascal 900 High Performance Fascal 4500 Translucent Fascal 8800 Intermediate Rubyscreen
GRAFITACK	Economy 100 Series 200 - 300 Series Transparent
KAPCO	High Performance Cast Vinyl Intermediate K5000
MACTAC	MaCal 8900 MaCal 9700 MaCal 9800
MULTIFIX	Series 1000 Series 5000 Series 7000
PMF	721
TESA	Tesacal 4196
X-FILM	Economy

Trademark Acknowledgements

SUMMAGRAPHICS ADDRESSES

SUMMAGRAPHICS EUROPEAN OPERATION:

Summagraphics N.V.
Rochesterlaan 6
B-8470 Gistel, Belgium
Tel : 32-(0)59-270011
Fax : 32-(0)59-270062

SUMMAGRAPHICS NORTH AMERICAN OPERATION:

Summagraphics
8500 Cameron Road
Austin, TX 78754-3999, USA
Tel : 1-512-8350900
800-444-3425
Fax : 1-512-8351916