BREN Inc

World Class Marking Systems

Operators Manual

Electronic Cutter 600 Pro Series

(Models 626,646 and 656)

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Chapter 1
General Descriptions

1.1 Introduction

This manual explains how to use the BREN 600 Series Electronic Cutter including the 626, 646 and 656 Models. Drawings, illustrations and tables are provided to enable you to effectively setup and begin using your BREN Cutter.

1.2 Installation

Notes on Installation

- If possible, avoid direct non-UV protected sunlight exposure for long periods..
- Cover the Cutter, when not in use, if used in locations that are extremely dusty or humid.
- Prior to cutting, ensure that no obstacles are placed in the vicinity of the carriage or material. Impeded movement of the carriage or material may prevent accurate cutting.
- Sensors on the Cutter detect infrared, in some indoor lighting conditions, the sensors may malfunction due to external infrared. Moving the Cutter or changing bulbs may be required.

Caution

- Lubrication of the mechanisms is NOT required and will result in cutter malfunctions.
- To avoid scratching the cutting strip, ensure that the Blade is properly extended.
- While the cutter is operating, do not touch the moving parts.
- When manually moving the carriage to load material, be sure to do so slowly.

1.3 Maintenance

Daily Maintenance

During the course of daily cutter operation, be sure to observe the following precautions

- Never lubricate the mechanisms of the cutter.
- If the cutter's casing becomes dirty, wipe the soiled areas using a dry cloth or a cloth that has been moistened in a neutral detergent diluted with water.
- Never use acetone, benzine, toluene, or similar solvents; they can damage the finish.
- Use dry air, non-lubricated, or vacuum to remove heavy dust or grit build-up.
- Clean the Pinch Rollers with Mineral Spirits to remove adhesive residue. Use denatured alcohol to remove any silicone residue.
- Inspect and replace when necessary the cutting Blade and the Cutting Strip.
- Clean the Grit Area with a stiff brush, either plastic or brass. Remove strips of material which have attached to the Grit Area surface.

STAND ASSEMBLY Instructions for all 600 Series Model Cutters.

The BREN Stand consists of two (2) Legs, a Front Panel, and two (2) Rollers to hold material rolls. Assembly is a simple matter of joining the two legs by putting screws (¼-20 x 1½" Truss Head Machine Screws) through pre-drilled holes in each leg and through matching holes in the front panel, then securing each screw with a lockwasher and a hex nut. One Roller is provided without a Brake System (no spring), this roller installs into pre-drilled holes in the rear "wings" which protrude from the rear of each leg. (See Diagram). The rear-most roller is provided with a Brake System on one side which can be engaged or dis-engaged by simply locating the Brake on the left or right of the cart, (flipping the roller over and dropping it into the provided slot).

1. Select one of the legs and note the marking on the upper mounting plate (either LEFT or RIGHT). The marking indicates on which side of the stand to put the leg, (either Left Side or Right Side as you face the short bottom arm of the leg). NOTE: The "Wing" which protrudes toward the rear of each leg is always mounted on the "Outside" of the leg, (i.e. the left leg has the wing on the left side).

2. From the package of fasteners, select one of the ¼-20 x 1½" machine screws and insert it through one hole in the side of the leg and through the matching hole (top or bottom) in the front panel. The front panel mounts between the two legs and is attached by four long screws running through pre-drilled holes in the legs. (See Layout) The label on the inside of the panel faces the rear of the stand and is not visible from the front side of the cart after assembly. Flanges on the front panel face to the rear. Insert each of the four (4) long screws and install a lockwasher and hex nut on each (inside the front panel) DO NOT TIGHTEN THE SCREWS AT THIS TIME! It is necessary for the leg-to-panel joints to be loose so that you can insert the Front Roller through the pre-drilled holes in the wings, which protrude from the rear of each leg.

3. The Front Roller has a threaded shaft protruding from each end. (See Diagram). Each end of the Front Roller is inserted through one of the holes in the leg wings, one on each side, then the roller is secured by threading a "Cap Nut" (see parts diagram) onto each threaded shaft and snugging it against the side of the leg wing. Once the Front Roller is installed through the leg wings, you may place the legs in an upright position on a flat surface (either floor or table) and tighten the four (4) long screws which secure the front panel to the legs.

4. Check that the casters are snuggly threaded into the legs, note that the front casters have brakes to secure the stand in place. Install the Rear Roller with brake into the slots on the rear of each wing, simply lower the roller into the slots with the brake located on the Right Side to engage the brake or on the Left Side to release the break.

5. The Brake should be Engaged if you Suspend a material roll from the single rear roller, this will prevent the free unrolling of material due to the natural tendency of a roll of material to "unwind". BREN Stencil Material is commonly suspended from a single roll to prevent having to bend the material backward to achieve a "feed loop".

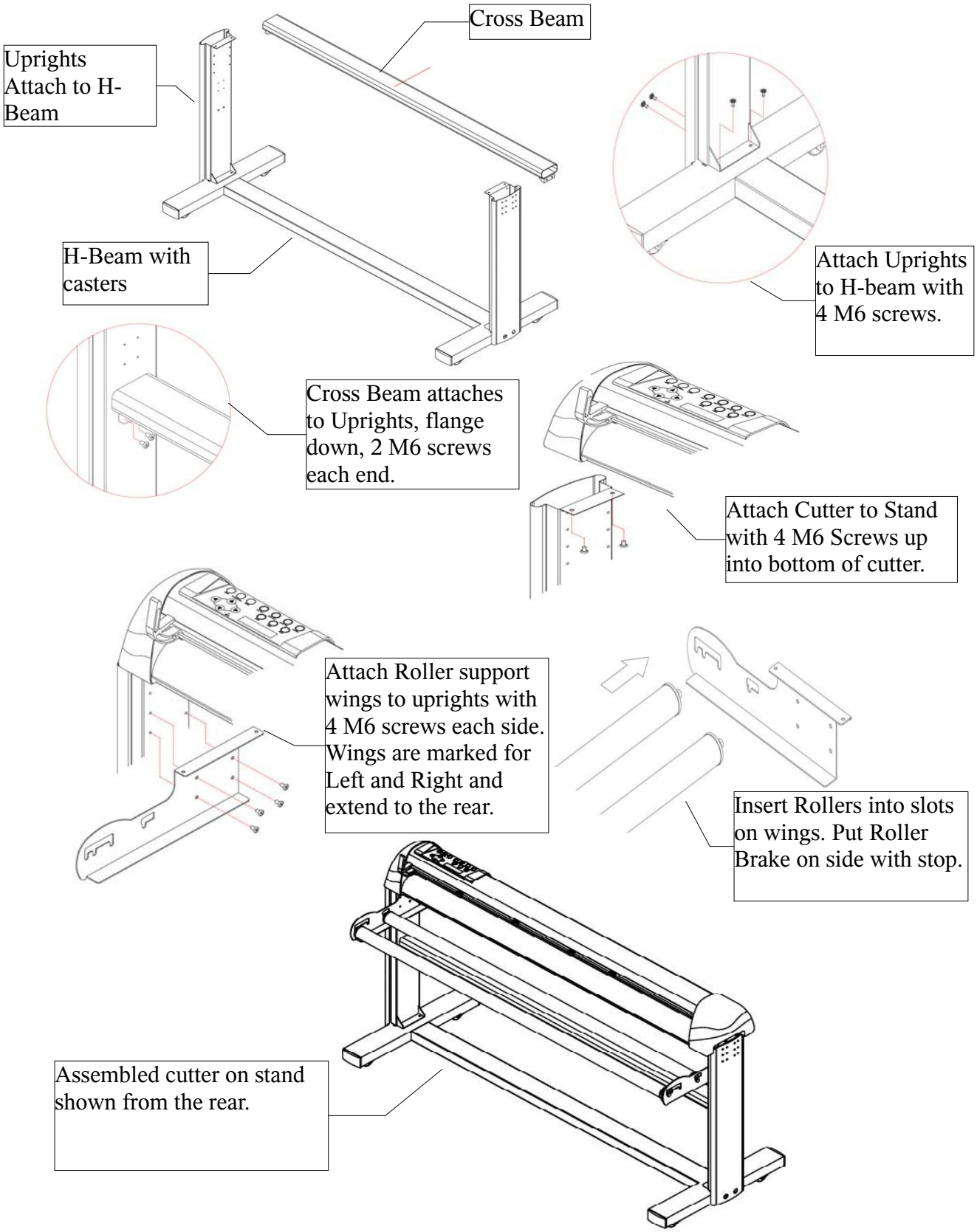
6. When running most thin Vinyl and Masking Materials, it is usually not necessary to suspend the rolls but rather to "Cradle" the rolls by placing them on top of the two rollers so that the roll is supported or cradled by both rollers. When material is cradled you will usually not require the Brake and will simply flip the rear roller over so that the brake is located on the Left side of the stand. (Left side as you face the front of the Stand)

7. Mount the cutter on the stand by locating the cutter on the mounting plates so that the slotted holes in the mounting plates align with threaded holes in the bottom of the cutter. Using the four 6mm x 12mm pan head screws, attach the cutter to the plates by running a screw up through the slot in the plate and into a threaded hole in the cutter. Use all four screws as this will ensure that the cutter is properly aligned with the rollers and is secure to the stand.

8. USE CAUTION WHEN ROLLING THE STAND TO PREVENT IT FROM TIPPING OVER.

9. Load material rolls so that the material feeds from the top of the roll and directly into the back of the cutter, (see diagram). Material rolls can be loaded to ride on both rollers in a cradle or can be suspended from the single rear roller by inserting the rear roller through the core of the roll and allowing the material to hang on and be suspended by the single rear roller. The rear roller is designed to easily lift up and drop into the two slots located on the rear of the wings. This allows for easy removal and replacement of the rear roller.

Stand Assembly Models Diagrams for 600 Series BREN Cutters.



Stand Assembly Instructions for BREN Model 600 Series Cutters.

Step 1. Examine parts;

24 ea. M6 Allen Head Screws
4 ea. Hole plugs
1 ea. M6 Allen wrench
1 ea. M5 Allen wrench
1 ea. H Stand base with 4 ea. casters attached
2 ea. Uprights
1 ea. Cross Beam
2 ea. Roller Support Wings
2 ea. Rollers (Material support rollers, one with a resistance type Brake attached).

Assembly;

Remove H Stand Base from packing and place on floor. Attach Uprights, one on each end with 4 (per Upright) M6 Allen head screws. Attach Cross Beam to Uprights. Bracket with holes on each end of the cross beam face down and align with the threaded holes. Two (2) M6 screws at each end of the cross beam.

At this time remove the cutter from packing and attach to the stand. With two (2) people lift the cutter up and place it on the Uprights. Two M6 screws at each end attach the cutter to the Uprights going up through the bracket on the Upright and threading into the holes in the bottom of the cutter.

At this time attach the black Roller Support Wings, one on each Upright extending out the rear and attached by four (4) each M6 screws tightened into matching holes on Upright. Wings can be mounted in either of two locations on the Uprights, but both wings must be at the same height when finished.

Insert the Material Support Rollers into the slots in the Roller Support Wings. Put the roller with the Brake band in the rear most slot of each wing. The Brake stop is pre-attached to the left side wing as you face the the rear of the stand. Place the Brake Band end of the roller on the left to engage the brake and on the right to disengage the brake. Tightening the thumb screw on the Brake Band INCREASES Brake tension and Loosening the thumb screw releases brake tension. Use the brake when running material suspended from the single rear roller.

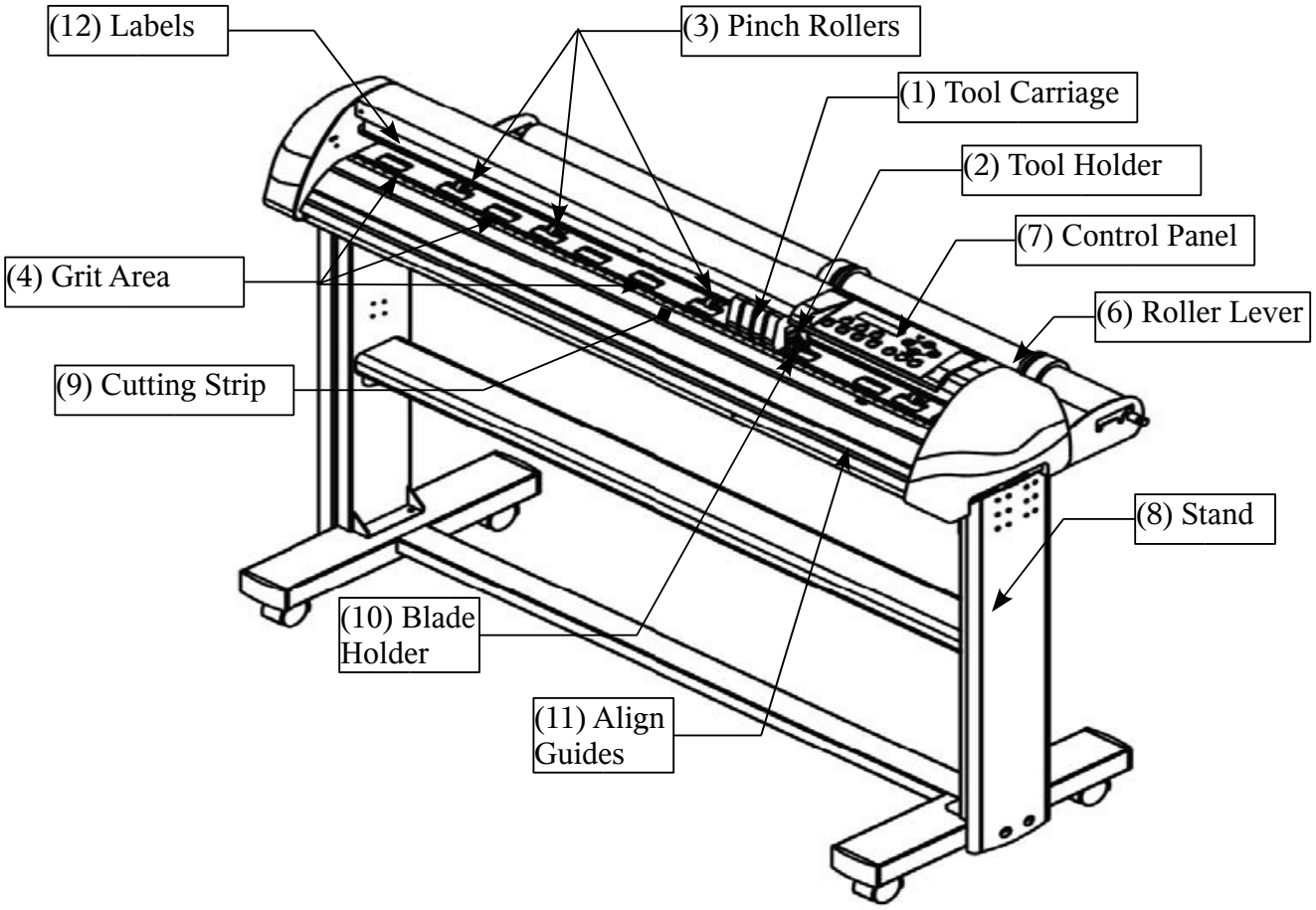
Chapter 2

Descriptions of parts and functions

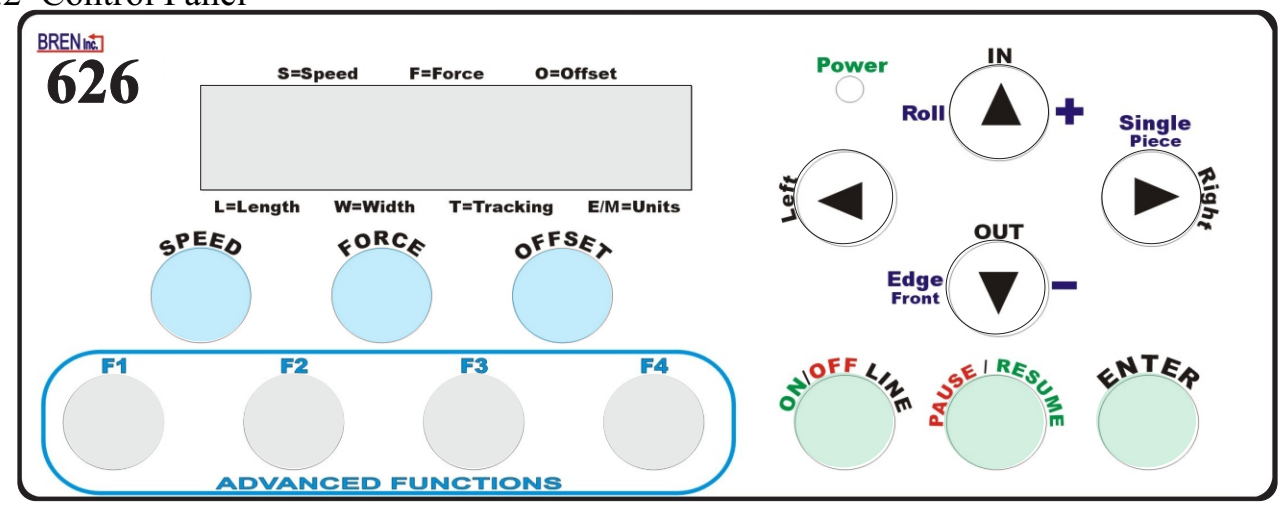
2.1 Nomenclature
2.2 Control panel
2.3 Selection of Functional Menu

2.1 Nomenclature

(1) Tool carriage : Mechanism which moves Left and Right during cutting or plotting
(2) Tool holder : Holds the Blade Holder or Plotter Pen on the Tool carriage
(3) Pinch rollers : Hold the material down against the grit rolls for motion.
(4) Grit Areas : Feed the material forward or reverse during cutting or plotting.
(5) Platen bar : Rotating shaft runs through middle of machine, has several grit positions.
(6) Roller lever : Raises or lowers the pinch rollers to enable the material to be loaded.
(7) Control panel : Keyboard, used to set and use the machine's various functions.
(8) Stand : Holds the machine and material rolls while cutting.
(9) Cutting Strip : Protective strip over which the Blade moves for back-up while cutting.
(10) Blade holder : Adjustable housing into which the Blade is inserted for cutting.
(11) Align Guides: Ruler marking along housing to aid in material alignment.
(12) Labels: Mark the location for the Pinch Rollers to be correctly placed.



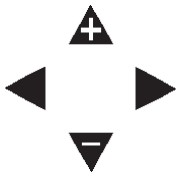
2.2 Control Panel



Switch colors may vary..... BREN 600 Series Cutters

Direction keys

Position



Use 4 keys ◀ ▶ , ±, to move the tool carriage to the desired location

- ± keys move the material forward (OUT) or backward (IN).
- ◀ ▶ keys move the carriage to the Left or to the Right.
- For quick movement of the carriage, press and hold a direction key.
- ± keys are used to increase or decrease values on the menu.

Function Keys

ON/OFF LINE Press this key to switch between "ON LINE" (data from computer) or OFF LINE. Data from the keyboard. Display indicates when cutter is OFF LINE

PAUSE/RESUME Press this key to PAUSE (Stop) or RESUME (Restart) operation of the cutter..

ENTER After setting a new value, press ENTER to register the same in memory.

SPEED Sets the movement speed of the tool while cutting. See Chart

FORCE Adjusts the amount of cutting or "down force" applied by the tool. See Chart

OFFSET Sets the distance from center the cutting angle of the blade requires. See Chart

Roll Selects to use material on a roll and measures the width based on Pinch Roller position.

Edge Selects to use material on a roll and the cutter will locate the front edge to start.

Single Selects to use a Single Piece of material, cutter will look for front and back edge.

F1, F2, F3, F4 The Advanced Function Keys. See Key Function Chart.

Chapter 3

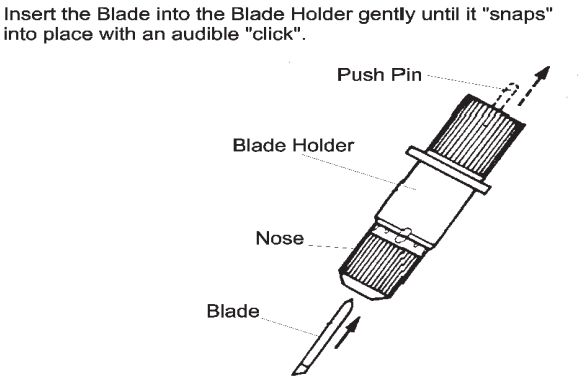
TOOLS: BLADES, HOLDERS AND PENS

3.1 The Cutter Blades Types and Uses
3.2 Installing a Blade, Adjusting the Blade Extension
3.3 Attaching the Cutting Tool (also applies to Plotting Pen)

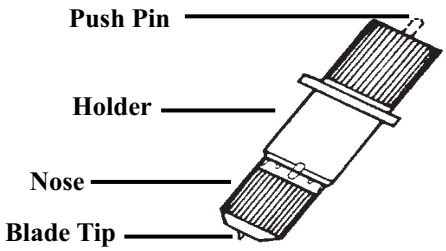
3.1 Cutter Blade Types **Warning**: To avoid injury, handle the cutter blades carefully.

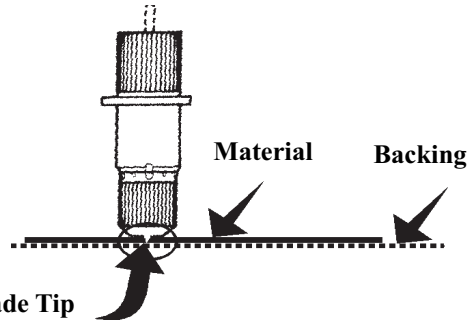
PURPOSE	BLADE NO	OFFSET	HOLDER NO	REMARKS
General Purpose	45DBN	0.25mm	"J" or "CC"	For most Stencil and Decal materials
Hard Materials	55DBJ	0.30mm	"J" or "CC"	For tough polyester/mylar type materials
Small Character	45MSC	0.30mm	"M"	Use Small Diameter Blade for fine cuts.
Thick Material	60DBN	0.50mm	"J" or "CC"	For Thick sandblast and rubber material

3.2 Installing a Blade, Adjusting the Blade Extension



(1) To REDUCE the blade extension, screw the Nose counter-clockwise (out away from the holder).
(2) To INCREASE the blade extension, screw the Nose clockwise (in toward the holder).



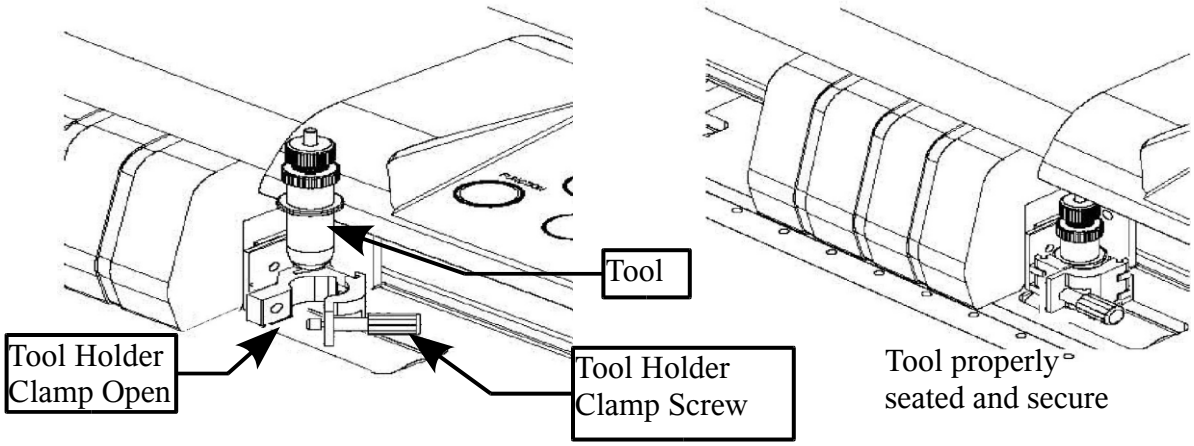


If the material thickness cannot be accurately determined, adjust the blade extension by gradually rotating the nose of the holder clockwise (screw in) until only traces of the blade appear on the backing sheet when a cutting test is executed. For more information about the cutting test, see "Cutting Test."

Caution : Make sure to adjust the blade extension correctly. If the blade protrudes out too much, you may cut through the face stock and backing sheet and damage the cutting strip or Blade.

3.3 Attaching the Tool Holder with Blade Installed

Warning! The tip of the cutter blade is sharp. When handling the cutting tool be careful.



Unscrew the Tool Holder Clamp Screw and open the Tool Holder. Place the Tool in the open clamp so that the flange on the tool rests on the top left surface of the Clamp and fits into the slot on the moving side of the holder. Properly installed the Tool will be locked into place by the Clamp, not able to move up or down. When the tool is fully seated, tighten the holding screw. Snug the screw finger tight only.

NOTICE: Some machines are shipped with a clear plastic cap over the blade end of the tool holder. This cap is to protect the Blade during shipment. REMOVE THIS CAP BEFORE CUTTING!

Chapter 4

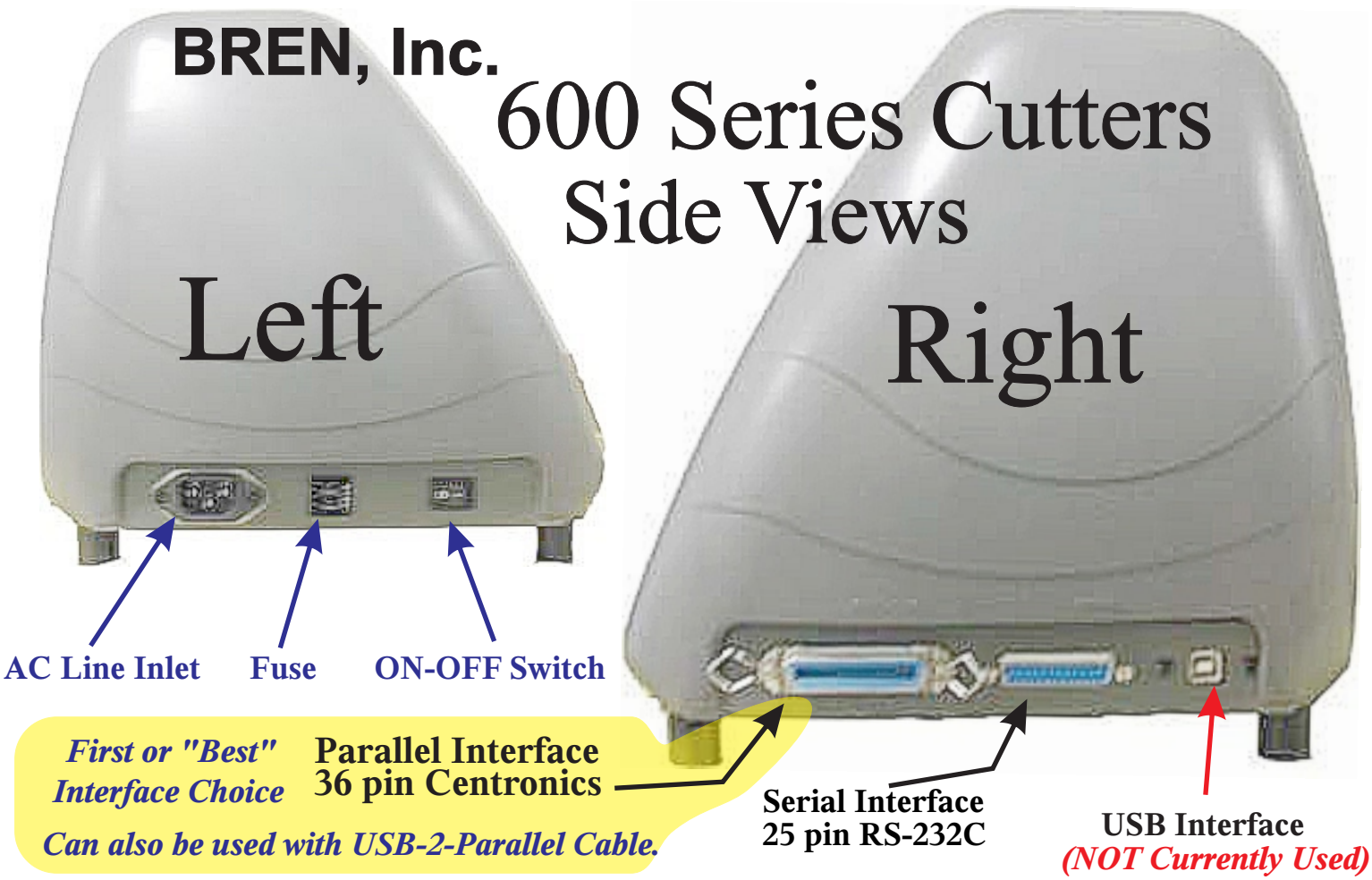
USING THE CUTTER

4.1 Turning On the Cutter

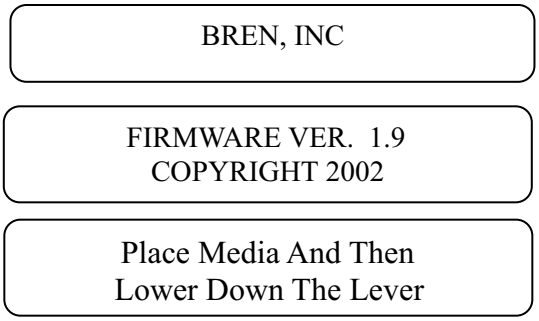
Connecting the Cutter to a Power Supply

Make sure that the cutter is turned off.

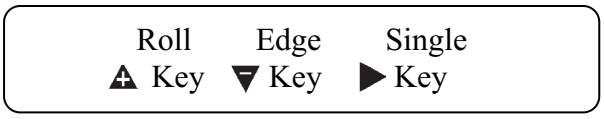
(1) Connect one end of the power cord provided to an electrical outlet of the rated supply voltage, connect the other end to the cutter's AC line inlet, (located on the left side).
(2) Turn on the cutter with the power switch located on the left side near the front.



(1) When power is applied, the cutter is initialized.
(2) With the material already loaded, the material selection menu appears. If no material is loaded, the user is prompted to do so. The material selection menu appears as soon as the pinch roller lever is lowered to secure the loaded material.
(3) Initializing is as follows



When the Lever is put Down, the Media Selection Window appears.



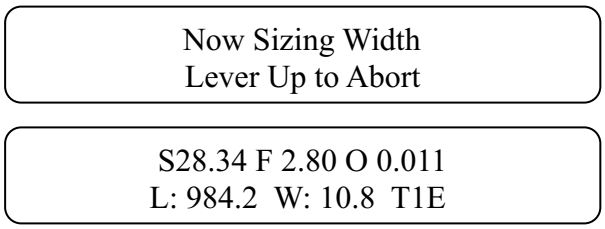
(4) At the media selection menu, select the media type as described below.

ROLL : The machine will check the material width and pinch roller position, setting-up on the right side of the material without advancing or retracting the material.

EDGE : The leading edge of material is detected and the coordinate origin is initialized with respect to the material's leading edge.

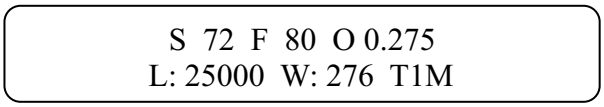
SINGLE : Select SINGLE for single pieces, detects width and length of the material. The leading and trailing edges of cut material are detected to the maximum length 1,301mm, and the upward position on the right is the starting point

The Display will show;



S= Speed (shown as 28.34 inches per second) F=Force (2.80 oz) O=Offset (0.011 inch)
L:= Length (of 984.2 inches) W:=Width (of 10.8 inches) T1= Template 1 E=English units.

Above example is shown with Units set to E for English. If the Units selected are set for M Metric the display will look like this;

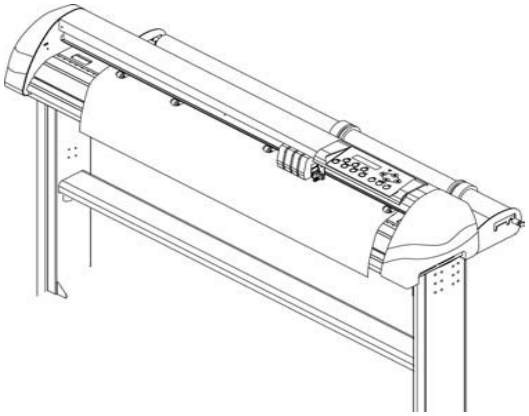


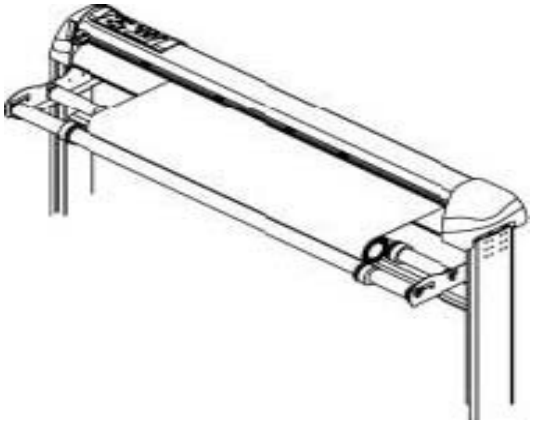
S=Speed (shown as 72 cm per second) F=Force (80 grams) O=Offset (0.275 mm)
L:=Length (of 25000mm) W:=Width (of 276mm) T1=Template 1 M=Metric units.

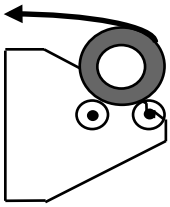
When Media Type is selected (Roll or Edge or Single) the cutter will measure the available cut width based on the Pinch Roller Positions. At least two (2) Pinch Rollers must be DOWN, ENGAGED and located in a marked GRIT AREA. Three (3) rollers can be used to better handle the media. The cutter will sense the outermost rollers (Left and Right) which are DOWN and ENGAGED. If only two (2) Pinch Rollers are used, the LEFT or MIDDLE Pinch Roller may be DIS-ENGAGED by pressing down on the back of the Pinch Roller until it "clicks" This will indicate that this roller is locked in an UP position and will not be sensed by the cutter.

4.2 Loading the Material

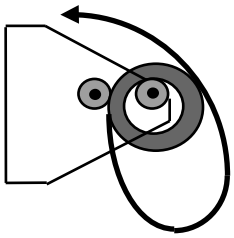
This section describes the steps for loading film or paper in the cutter. Note that the material can be loaded either before or after turning on the cutter.







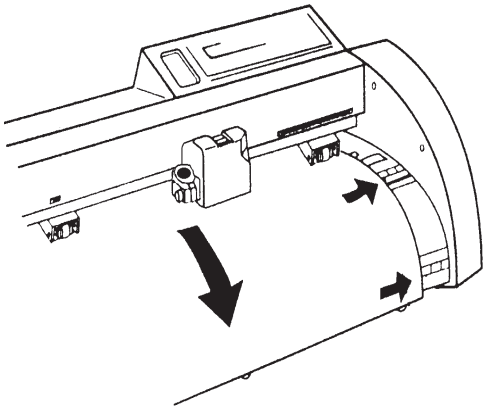
Cradle style supports material rolls on top of the two (2) Rollers. When using cradle support, put the brake on the rear roller on the Left side to disengage the brake for free roll movement.

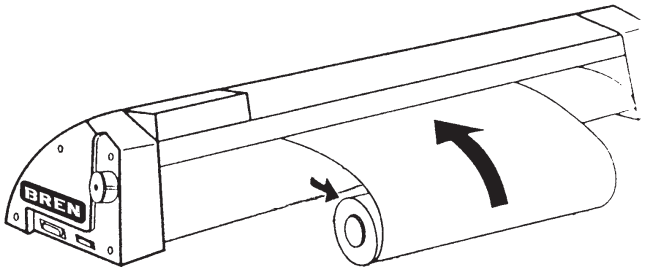


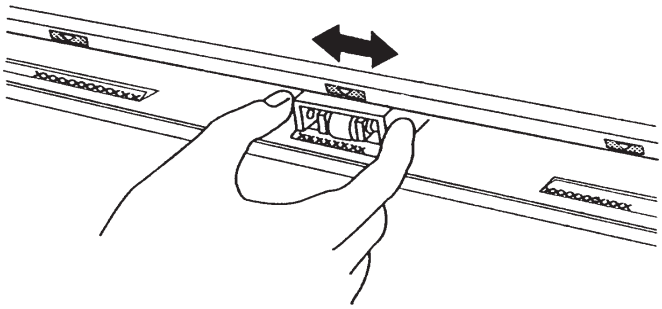
Suspended style supports material rolls by inserting the rear roller through the material core. When suspending a roll use the Brake by locating the brake side of the roller on the right (as you face the front of the stand). Suspend all stencil materials

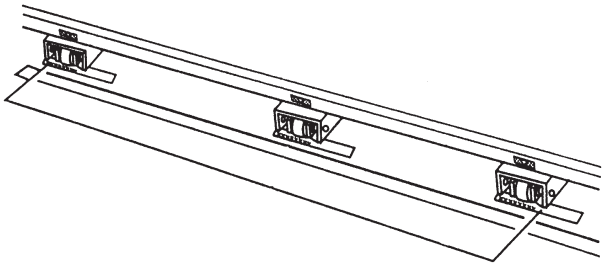
1. Place a roll of material onto the Stand. ***Suspend Stencil material from the single rear roller.*** You may place sign vinyl on top of the two rolls so that it is "cradled".
2. Pull forward on the pinch lever handle to raise the pinch rollers. Feed the material from the TOP of the roll, forward through the opening at the back of the cutter until the material's leading edge is fully out of the cutter and align with the scale.

Note : At this time, ensure that the material passes over the paper sensors (front and rear) and that it runs straight through the machine. Use alignment guides on right side to help position the material. Tracking will be straight if the material is loaded straight.









Adjust the Pinch Rollers to a position in a GRIT AREA. GRIT AREAS are marked by labels along the track above the Pinch Rollers. Locate the pinch rollers about ½" (12.5mm) each from the left and right sides of the loaded material. The position of the Left most and Right most Pinch Rollers that are DOWN and ENGAGED will determine the Maximum Width available for cutting. DO NOT position Pinch Rollers outside or OFF the Material as this can damage the Blade and Cutting Strip.

Turn on the cutter by pressing the power switch on the left side. Initialization is then performed when loading the film is completed.

Warning : If the pinch rollers are NOT in the correct Location in a GRIT AREA, the material will not move forward and back at that location. A Pinch Roller Down and Engaged but not in a GRIT AREA will cause the material to "Bunch-UP" as soon as it begins to move. The cutter cannot sense if a Pinch Roller is outside a GRIT AREA. It is up to the operator to ensure that the Pinch Rollers are positioned correctly.

4.3 Setting the Cutting Conditions

The quality of cutting operations is determined by the settings of the variables below. Adjust the blade length according to the thickness of the material.

Cutting Speed
Cutting Force
Cutting Offset

Set these conditions according to the combination of material and cutter blade you are using (see the table below).

MATERIAL	BLADE	SPEED		FORCE		OFFSET	
ULTRA-CUT II	45DBN	10-90cm	3-36inch	120-220g	4-8oz	0.25mm	0.010inch
SSB	55DBJ	10-80cm	3-32inch	350-450g	12-16oz	0.30mm	0.012inch
POLY-CUT	45DBN	10-35cm	3-14inch	190-260g	6-9oz	0.25mm	0.010inch
POLY-CUT SC	45MSC	10-25cm	3-10inch	190-220g	6-8oz	0.30mm	0.012inch
POLY-HT	45MSC	10-25cm	3-10inch	80-160g	2-6oz	0.30mm	0.012inch
CLEAR-CUT 5	55DBJ	5-15cm	2-6inch	250-350g	8-12oz	0.30mm	0.012inch
CLEAR-CUT 7	55DBJ	5-15cm	2-6inch	350-600g	12-21oz	0.30mm	0.012inch
V-MASK	45DBN	15-70cm	6-28inch	90-140g	3-5oz	0.25mm	0.010inch
SIGN VINYL	45DBN	5-80cm	2-32inch	80-140g	3-5oz	0.25mm	0.010inch
REFLECTIVE	60DBN	5-15cm	2-6inch	150-230g	5-8oz	0.75mm	0.030inch
MAGNETIC	60DBN	5-15cm	2-6inch	560-600g	20-21oz	0.55mm	0.022inch

This chart shows the average settings, using a new blade w/ the proper blade adjustment

NOTE: MSC-style blades are used in the SMALL-CHARACTER "M" style blade holder.

Note : These selected conditions greatly affect the finished quality of cutting or plotting.

- Raising the SPEED results in lower precision but reduces the overall cutting time. This is useful when testing runs.
- Lowering the SPEED results in higher precision but increases the overall cutting time.

Procedure for setting;

SPEED : Press the ON/OFF LINE Key. When the display says Offline for System Setup, Press the SPEED key. Use the ▲▼ Keys to increase or decrease the Speed value. Press ENTER to set.

```
Offline for
System Setup
```

Press the SPEED Key to see

```
Speed:        28.34  ips  ▲▼
Select: ◀ ▶          OK: Enter
```

Use the ▲ and ▼ Keys to Increase or Decrease the Speed value.
Press ENTER to complete Speed setting.

```
Offline for
System Setup
```

Press ON/OFF LINE to return to Ready-to-Cut Template

```
S28.34 F 2.80 O 0.011
L: 984.2  W: 10.8  T1E
```

FORCE

Set the FORCE down to be applied by the blade or pen tip against the material. When the blade extension is adjusted properly for the material, the force applied by the cutting tool has a wide range. If too much blade is exposed, cutting force is very critical.

FORCE : Press the ON/OFF LINE Key. When the display says Offline for System Setup, Press the FORCE key. Use the ▲▼ Keys to increase or decrease the Force value. Press ENTER to set.

Offline for System Setup

Press the FORCE Key to see

Force:	2.64 oz ▲ OK: Enter ▼

Use the ▲ and ▼ Keys to Increase or Decrease the Force value.
Press ENTER to complete Force setting.

Offline for System Setup

Press ON/OFF LINE to return to Ready-to-Cut Template

S28.34 F 2.80 O 0.011 L: 984.2 W: 10.8 T1E

OFFSET

Set the OFFSET to compensate for the angle of the Blade used. Each Blade type has a specific Offset, this value is used by the cutter to compensate for the "offset" from center.

OFFSET: Press the ON/OFF LINE Key. When the display says Offline for System Setup, Press the OFFSET key. Use the ▲▼ Keys to increase or decrease the Offset value. Press ENTER to set.

Offline for System Setup

Press the OFFSET Key to see

OFFSET:	0.011" ▲ OK: Enter ▼

Use the ▲ and ▼ Keys to Increase or Decrease the Offset value.
Press ENTER to complete Offset setting.

Offline for System Setup

Press ON/OFF LINE to return to Ready-to-Cut Template

S28.34 F 2.80 O 0.011 L: 984.2 W: 10.8 T1E

4.4 Allowable Range Table

The table below describes the specifiable range of each condition.

SPEED	3 to 153 cm per second	1.18 to 60.23 inches per second
OFFSET	0.00 to 1.00 mm	0.00 to 1.00 inches
FORCE	5 to 600 grams	0.17 to 21.16 ounces

4.5 The Cutting Test

The CUT TEST function allows the user to check the suitability of the condition settings. If the test results are not satisfactory, adjust the settings of Speed, Force and Offset. See Chart. Warning : The cutter carriage starts moving as soon as a cutting test is selected. To avoid injury to yourself and damage to the cutter, load the material before pressing the TEST mode and then keep your hands, and other obstacles out of the vicinity of the moving carriage.

Procedure: Load material and select Roll, Single or Edge. Wait for machine to set-up.

Press the OFF LINE key to set the machine in keyboard command mode.

```
Offline for
System Setup
```

TEST : Press the F4 key. The display will show

```
Square Cut
Select: ◄►          OK: Enter
```

Press ENTER to select the standard test pattern “Square Cut”

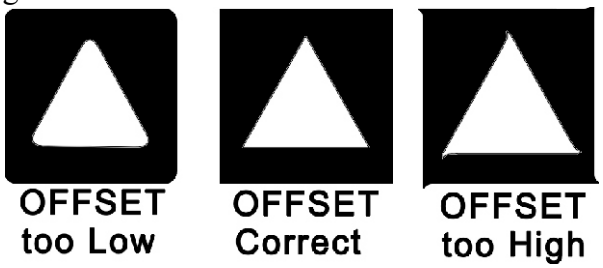
```
▲▼◄► move cut test
X:                  Y:
```

If the Tool is positioned where you want the test cut, Press the ENTER Key to start test cut.
At this time you may move the starting position for the test cut. If you wish to position the test cut at a location, use the arrow keys to move the tool to the desired location. Press ENTER

The machine will cut a Square Box inside a Circle with an Arrow inside the Box. The material will be advanced to the front so you can see the cut. Check that the cut parts remove cleanly leaving a faint score or scratch mark on the backing material. This will indicate that the Blade tip extends out far enough to go through the face material and does not extend so far out that it cuts into the backing.

```
Continous Square Cut
N:Offline    OK:ENTER
```

If the test results are satisfactory, press the ON/OFF LINE key to exit Cut Test.
If results are not satisfactory, make changes to FORCE or OFFSET values. Re-Test.



4.6 Selecting the Unit of Measure

This function allows the user to set the display values in Metric (M) or English (E) units.

PROCEDURE: Press ON/OFF LINE Key

```
Offline for
System setup
```

Press the F1 key

```
Auto Unrolled media
Select: ◄►     OK: ENTER
```

Press the ►key until the display shows

```
Select Units
Select: ◄►          OK:ENTER
```

Press ENTER then use the ▲▼ Keys to change between English (inch/oz) or Metric (cm/s)

```
Metric  (cm/s)
Change: ▲▼    OK:ENTER
```

Press ENTER key to set the desired value.

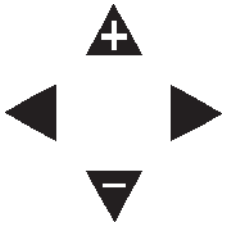
```
Offline for
System setup
```

Press ON/OFF LINE to return to Cut Display

4.7 Setting the Origin

This function allows the user to move the starting point of cutting to the desired position.

PROCEDURE



Using the direction keys, you can move the carriage to your desired starting (origin) position.

Press the ON/OFF LINE key to take the cutter Offline.

```
Offline for
System setup
```

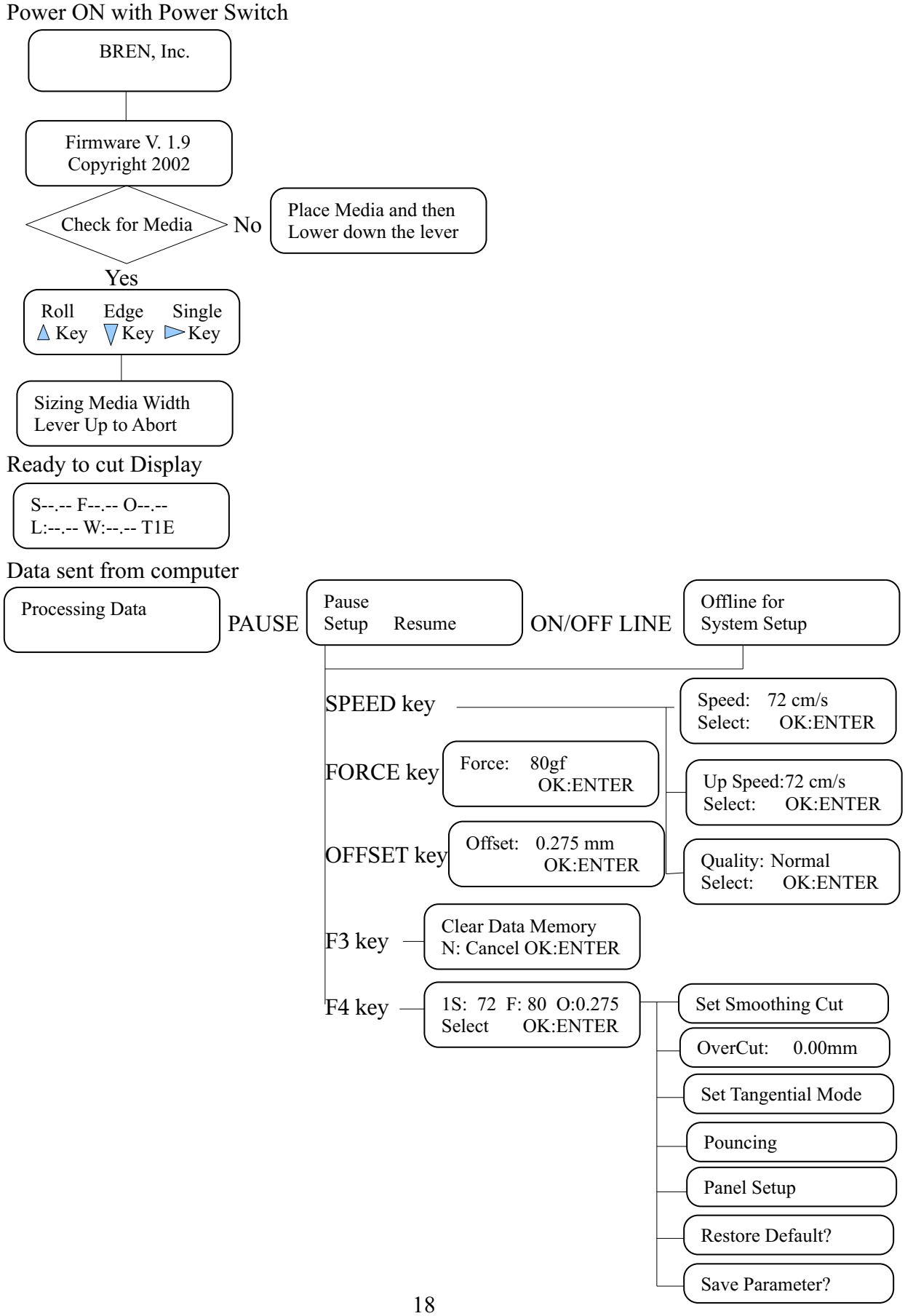
Press one of the ARROW keys to access the move display. Using the ARROW Keys put the Tool over the position you want for a new Origin and press ENTER to set. Display will say:

```
New Origin set at
X --.--          Y --.--
```

Press ON/OFF LINE to return to a ready-to-cut display.

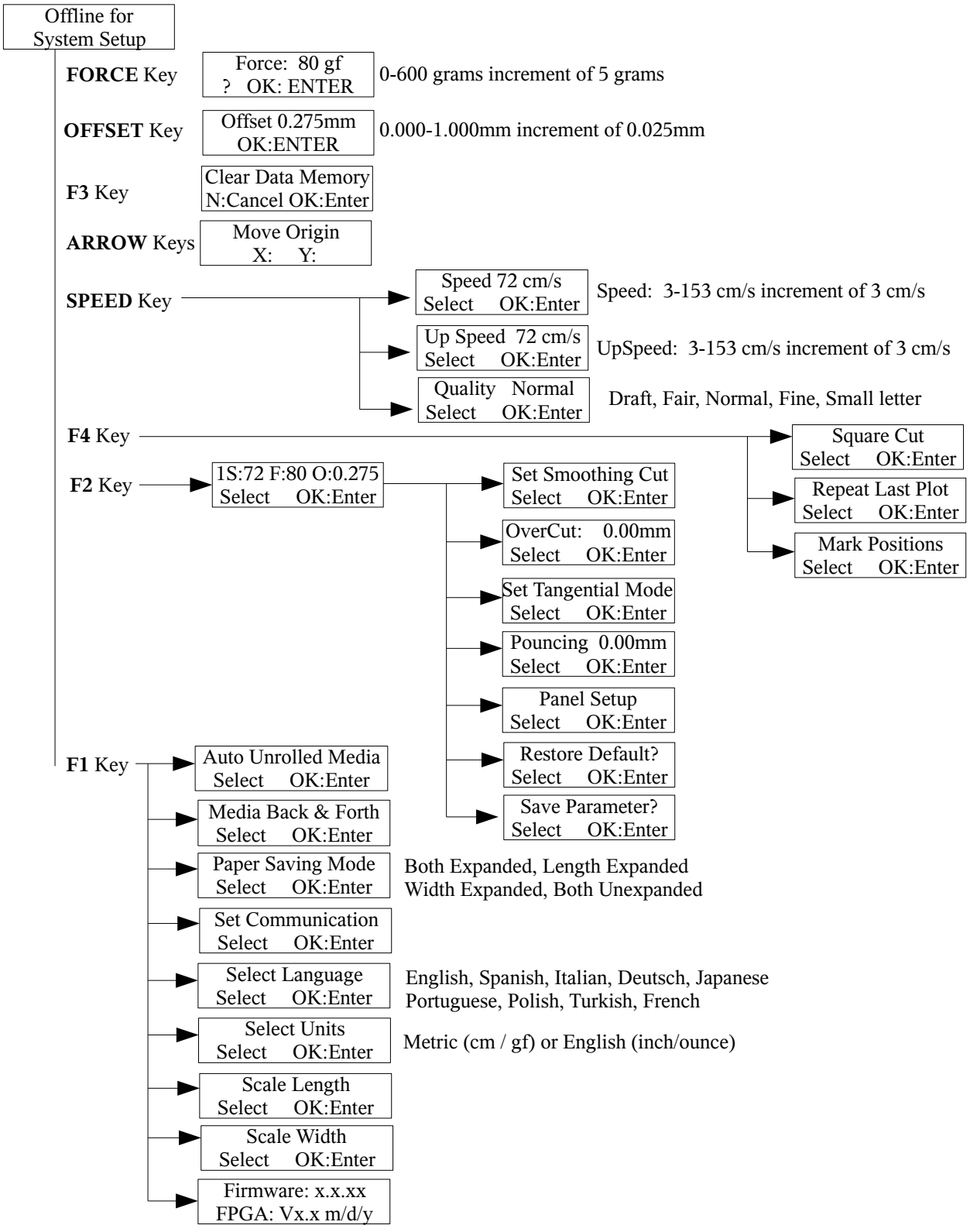
Chapter 5

5.1 Functional Flowchart for Control Panel Keys in ON LINE Mode



5.2 Functional Flowchart for Control Panel Keys in OFF LINE Mode

Press ON/OFF LINE Key to set Data from Keyboard Mode



Chapter 6 Description of Key Functions;

Media Sizing	Roll	Sizes the Media Width based on Pinch Roller Locations		
	Edge:	Sizes Media Width and retracts media to find Front Edge		
	Single:	Sizes Media Width then looks for a Front and Rear edge.		
SPEED Key	Speed:	Sets the Travel speed of the Tool when DOWN	3-153cm/s	72cm
	Up Speed:	Sets the Travel speed of the Tool when UP	3-153cm/s	72cm
	Cut Quality	Sets speed vs appearance. Draft, Fair, Normal, Fine, Small Letter		
FORCE Key		Sets the Force applied DOWN to cut	0-600gram	80gram
OFFSET Key		Sets Blade "Offset from center" value	0.000-1.000	0.275m
ARROW Keys		1.Moves the carriage along X and Y axis 2.Chooses Functions and changes values of settings		
ENTER Key		1. Saves displayed parameters, saved automatically when ENTER is pressed. 2. Sets a new Origin position at the present tool location.		
PAUSE/RESUME Key		Temporarily Stops operation of the Cutter. Pressing again Resumes operation.		
ON/OFF LINE Key		ON Line receives instructions from the computer. OFF Line takes instruction from the Keyboard. Pressing ON/OFF LINE while cutting Aborts the operation. Also Escapes from function settings without changing.		
F3 Key		Clears all data from memory if selected. Take cutter OFF Line, then press F3		
F1 Key	Auto Unroll	When Enabled, causes material to be slowly advanced off the roll for at least 50cm (2") then returned before cutting starts. This function assures that enough material is available and free of obstruction before cutting. Disable this function if not required for the Media. Selecting Single Piece will disable this function.		
	Back & Forth	This function reduces the number of "TOOL UP" moves made to complete a design. Not necessary for most normal stencil and sign use.		
	Select Width	There are two (2) width modes; Expanded and Unexpanded. In Expanded mode the the cutting area will increase by 20mm (0.78") over Unexpanded.		
	Set Comm.	Sets serial (RS-232) parameters for communication via serial port with computer. Baud rate=9600 or 19200, Parity= None, Odd or Even, Data bits=7 or 8, Stop Bit=1		
	Firmware Ver.	Displays the Version Number of the Fimware and FPGA code.		
	Paper Saving	Allows maximum use of the Media via four (4) settings. 1. Length Expanded, 2. Width Expanded, 3. Both Expanded, 4. Both Unexpanded.		
	Language Set	Provides for Display in different languages. English, Spanish, Italian, Deutsch, Japanese, Portuguese, Polish, Turkish and French.		
	Select Units	Provides Two (2) Units of measure for display. Metric (cm/grams), English (inch/oz)		
	Scale Length & Width	Scalling allows adjustment to the error in Length and Width which may be caused by the Media Thickness. Measured distance actually cut vs Expected distance in drawing.		
F2 Key	Smoothing	Enable this feature to make curves smoother. Works best on large curves.		
	Tangential	Provides a simulated Tangential cut which increases corner lines in Thick Media		
	Pouncing	When used with the optional "Pouncing Tool" this punches small holes in the Media.		
	Panel Setup	"Accept Setup Command" causes the cutter to accept commands received from the Software while OFF Line. "Control Panel Only" causes the cutter to take commands only from the Keyboard Control Panel.		
	Save Parameter	Can save Four (4) different cutting patterns for later use, Save 1 to 4, default is Pattern 1		
	Over Cut	Cuts an increased length to the first and last line segments. 0.00mm-1.00mm 0.05/step		
	Restore Default	Returns the setting values of all functions to the shipped default settings.		
F4 Key	Square Cut	Performs the Cut Test. See "Cutting Test"		
	Recut/Copy	Recut "recuts over the last job". Copy makes copies of the last job with 1mm between.		
	Mark Position	Allows cutting after printing using "Crop Marks" 2-point or 3-point registration.		

Chapter 7

THE INTERFACE SPECIFICATIONS

7.0 A word about interfacing the cutter and computer.

It should be noted that your BREN cutter comes with an auto-sensing interface. This means that the cutter will check and select the interface cable being used each time it is powered on. Do NOT connect more than one interface cable at a time.

Cables should be high quality, shielded and should not exceed suggested length. Be concerned that the placement of cables will not cause damage or pick up any interferrence.

Do NOT continually plug/unplug the cable from the cutter or computer and if possible, avoid using a switchbox to select the cutter. If a switchbox is used it should be a simple mechanical "A/B" type.

7.1 Connecting to the USB ports on your computer.

Due to the inconsistencies with various operating platforms and the nature of the USB interface, currently your BREN cutter does NOT make use of the direct USB-2-USB interface at this time.

However, it is possible to make use of the USB ports on your computer by using the USB-2-Parallel cable and connecting via the Parallel connector on the Cutter and the USB port on the computer.

This setup requires that you select the correct USB port in the computers Control Panel\Printers folder. Depending on the operating platform and setup of your computer you may have to "experiment" with port selection and re-boot to get the computer to locate and recognize the cable/cutter.

Chapter 7

THE INTERFACE SPECIFICATIONS

7.3 Centronics-Compatible Parallel Interface (preferred)

This eight-bit Centronics-compatible parallel interface is generally used for interfacing printers and cutters. The input data signals are grouped into the eight bits of the DATA signals(DB0 to DB7), and each group of eight DATA signals is followed by the input of an active-LOW STROBE signal. Upon receipt of the STROBE signal, the cutter activates its BUSY signal, outputs an ACK signal, then reads the input DATA signals to begin a cutting or plotting operation.

When the specified operation is completed, the cutter awaits the input of subsequent DATA signals.

Caution : The interface cable should be no longer than 2 meters (12 feet).

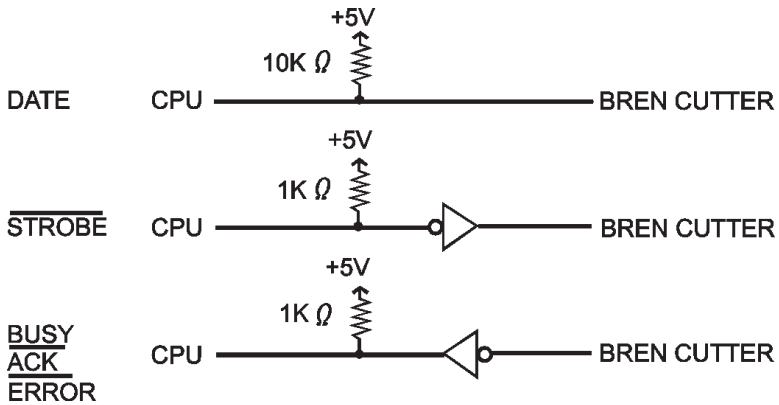
Specifications

- While the parallel interface is used, data cannot be output from the cutter.
- Synchronization method: Asynchronous transmission by handshaking based on STROBE and BUSY signals.

Electrical Characteristics

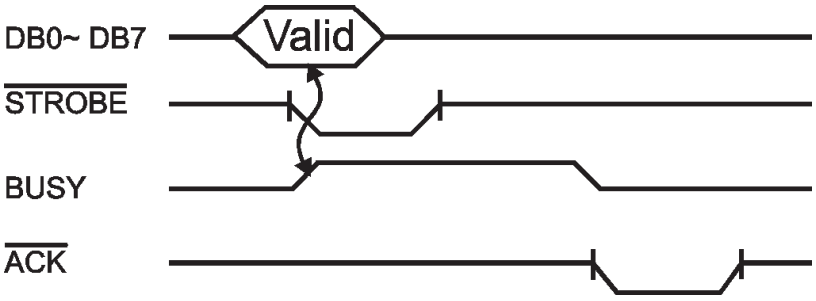
Based on TTL-level compatibility with the logic states below.

Positive logic	" +2.2V or mo " +0.8V or less	DATA,BUSY
Negative logic	" +0.8V or less " +2.2V or mo	ERROR ACK, STROBE



Input / Output Circuitry

Input / Output Timing Chart



Compatible Connector

Plotter end : FCN685J036-L/Y
Cable end : 57-30360 (DDK)

Pin Assignment of the Parallel Connector

The pin assignment of the Centronics-compatible parallel interface connector is described below.

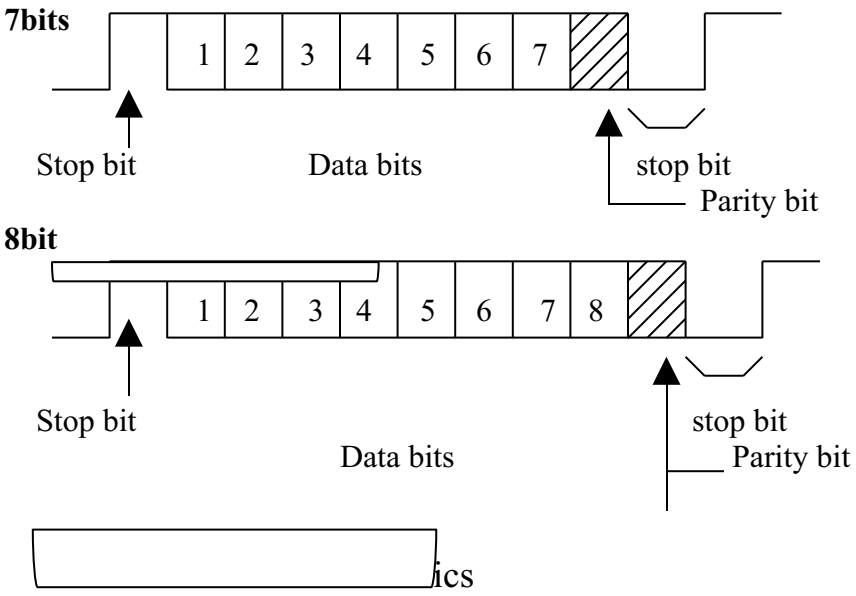
Pin No.	Signal Name	Pin No.	Signal No.
1	STROBE	19	GND
2	DB 0	20	GND
3	DB 1	21	GND
4	DB 2	22	GND
5	DB 3	23	GND
6	DB 4	24	GND
7	DB 5	25	GND
8	DB 6	26	GND
9	DB 7	27	GND
10	ACK	28	GND
11	BUSY	29	GND
12	GND	30	GND
13	SLCT	31	Not Used
14	Not Used	32	ERROR
15	Not Used	33	GND
16	GND	34	Not Used
17	Not Used	35	GND
18	+5V	36	GND

7.4 RS-232C Serial Interface

The RS-232C serial interface of your plotter conforms to the RS-232C Standard of the Electronic Industries Association (EIA).
This serial interface performs the serial transfer of digital binary data, control signals, and SYNC signals.

Specifications

Standard	CCITT V.24, EIA RS-232C
Synchronization	Asynchronous start-stop
Transfer rate	300, 600, 1200, 2400, 4800, 9600, 19200 bits/s
Stop bit	1 stop bit
Parity	Even, odd, none
Character length	7 or 8 bits



ics

	RD, SD (Negative Logic)	RS, CS, DR, ER (Positive Logic)
Input voltage level	+5V to +12V -5V to –12V	Logical “0” “ON” Logical “1” “OFF”
Output voltage level	+5V to +8V -5V to –8V	Logical “0” “ON” Logical “1” “OFF”

Compatible Connectors

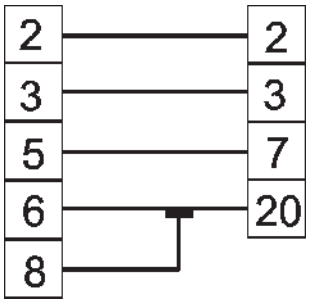
Cutter end ; DB-25S
Cable end : DB-25P
(ISO 2.6mm nuts(M2.6x0.45)should be used as the locking nuts.)

Pin Assignment of the Serial Connector

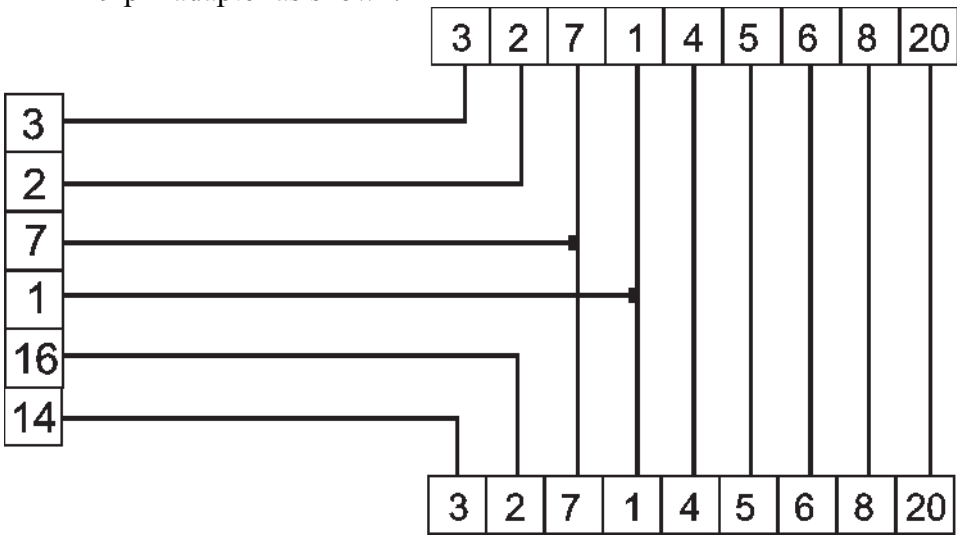
The RS-232-C connector is a DTE connector. The table that follows identifies the pin configurations.

SIGNAL NAME	PIN #	RS-232C	CCITT V.24
Frame Ground	1	A-A	101
Transmit Data	2	B-A	103
Receive Data	3	BB	104
Request to Send	4	CA	105
Clear to Send	5	CB	106
Data Set Ready	6	CC	107
Signal Ground	7	AB	102
Data Carrier Detect	8	CF	109
Secondary TX	14	SBA	118
Secondary RX	16	SBB	119
Data Terminal Ready	20	CD	108.2

The cable available for the BREN Cutting Plotters is a 10 feet, 9 to 25 pin serial cable with a 9 to 25 pin adapter. This cable will interface with all standard serial ports.
The following figure illustrates the cable's internal wiring connections.



To connect Cutters in Eavesdrop to a 9 pin serial port, Configure the cable above and use a 25 to 9 pin adapter as shown.



Chapter 8

TROUBLE SHOOTING

PROBLEM The power switch turns on, but nothing works.
Nothing appears on the display panel.

Cause 1 : The cutter is not being supplied with power.. Power led should be ON.
Solution : Check that the power cord is securely connected to the cutter's AC line inlet and the electrical output.

Cause 2 : The cutter has a potential defect
Solution : Contact Bren for help determining the best course of action

Cause 3 : The ROM or RAM has a potential defect.
Solution : Contact Bren for help determining the source of the problem

PROBLEM The corners, after they have been cut, are either too rounded or too pointed

Cause : The OFFSET is incompatible with the blade type being used.
Solution : Adjust the OFFSET value:
* If too low, corners become rounded
* If too high, the corners are too pointed

PROBLEM The cut line starts out crooked.

Cause 1 : The blade mounted in the holder does not rotate smoothly.
Solution : Remove any foreign matter inside the Tool holder, replace if necessary.

Cause 2 : The Offset Cut Pressure is too low.
Solution : Raise the Offset Cut Pressure setting (the Offset Cut Pressure is separate from the cutting FORCE).

PROBLEM 1. The blade skips and does not completely cut lines that should be solid.
2. Solid lines are not at a constant depth

Cause 1 : The blade is extended too far.
Solution : Adjust the blade length.

Cause 2 : The cutting SPEED is too high.
Solution : Lower the SPEED setting.

PROBLEM Coarse resolution of curved lines

Cause : The Cut Quality is set wrong.
Solution: Set Smoothing ON. Set Quality to Normal or Fine

PROBLEM 1. The film curls up at the corners.
2. The film curls up when cutting small characters.

Cause 1 : The blade is extended too far.
Solution : Adjust the blade length.

Cause 2 : The OFFSET is incompatible with the blade type being used.
Solution : Adjust the OFFSET value:
* If too low, corners become rounded.
* If too high, corners are too pointed.

Cause 3 : The cutting SPEED is too high.
Solution : Lower the SPEED setting…

Cause 4 : The blade is dull.
Solution : Replace the blade.

Cause 5 : The ACCEL setting is too high.
Solution : Lower the ACCEL setting.

PROBLEM The blade is cutting into the backing sheet.

Cause 1 : The blade is extended too far.
Solution : Adjust the blade length.

Cause 2 : The cutting FORCE is too high.
Solution : Lower the FORCE setting.

PROBLEM Film can be cut, but it is difficult to weed afterwards

Cause 1 : Backing has been cut, separates and stays on the film as it is removed.
Solution : Reduce the blade length and/or lower the cutting FORCE.

PROBLEM 1. Abnormal noise generated by the cutting tool during cutting.
2. The film is discolored where the blade has passed.

Cause : Film is stuck in the tip of the cutter plunger.
Solution: Adjust the blade length and cutting FORCE setting.

PROBLEM Some parts of the film cannot be cut.

Cause 1 : The computer sent coordinate data that exceeds the *specified* effective cutting area.
Solution : Set the effective cutting area to a larger area.
Cause 2 : The computer sent coordinate data that exceeds the *maximum* effective cutting area.
Solution : Switch to larger film or change the coordinate data.

PROBLEM Material is feeding at an angle.

Cause 1 : Film has been loaded at an angle.
Solution : Correctly reload the film.
Cause 2 : The total amount of roll film to be cut was not pulled out in advance.
Solution : Pull out the required amount of film or Enable Auto Unroll.
Cause 3 : Pinch roller is incorrectly positioned.
Solution : Position pinch roller on the grit area.

PROBLEM The length of cutting results differ from the program, (a slight distance error)

Cause 1 : The film is slipping.
Solution : Lower the cutting SPEED.
Cause 2 : The distance correction requires adjustment.
Solution : Adjust the Scale.

PROBLEM Film is loaded but will not initialize

Cause 1 : Film that is nearly transparent cannot be detected by the papersensors.
Solution : Set the effective cutting area at the control panel.

Cause 2 : Strong light is preventing the paper sensors from detecting the film.
Solution : Change the position of the light source.

Cause 3 : The loaded film has not been positioned over the paper sensors.
Solution : Properly reload the film.

PROBLEM Cut characters are deformed.

Cause : The offset Value is wrong for the Blade used.
Solution : Adjust the Offset value.

PROBLEM The starting and end points of cutting do not match.

Cause :1. Drawing incorrect
2. The Offset value is wrong for the Blade.
3. The material did not properly track.
4. Blade rotation is not smooth.

Solution: 1. Check drawing to see that lines meet.
2. Change the Offset to match the Blade
3. Lower the SPEED setting to slow material movement. Enable Auto Unroll
4. Check Blade holder and replace if necessary.

Chapter 9

SPECIFICATIONS

Models 626

Mechanism	Dual Servo with Adjustable Pressure Rollers using Swivel Knife cutting with Depth adjustment
Media Types	**BREN** Stencil, Sign and Masking + Vinyl, Polyethylene, Polyester, PVC, stencilboard and Fabric
Media Width	2" to 30" (50-726mm)
Max. Cut Area	24"W x 984"L (381 x 32m)
Tools	Cutter: Carbide Swivel 35°, 45°, 55° & 60° Blades. Pens: HP style Roller Ball and Felt Markers
Speed (cutting)	Maximum 60"/sec (113 cm/sec) Adjustable from Software or keyboard
Blade Force	Adjustable from 30g to 600g via LCD display from keyboard or from software
Resolution	Mechanical=0.0002"(0.005mm)/step. Programmable=0.001-0.0005"(0.25-0.0125mm)/20step
Accuracy	Error<± 0.2% of travel or 0.1mm. Repeatability 0.1mm under 63" (1600mm)
Interface(s)	Parallel (Centronics compatible) cable provided and Serial (RS-232C) auto sensing
Buffer	4Megabyte
Instruction Set	32 bit CPU accepting **BREN** Pro-GL mode 1 and 2, HPGL™
Programmable	Four Pre-Settable User Conditions plus Pen Plotter Mode
Control Keys	ON/OFF LINE, PAUSE, ENTER, RESET, OFFSET, FORCE, SPEED, ⇐ ⇑ ⇒ ⇓
LCD Display	20 characters by 2 lines
Power Required	1A @ 117V, 0.5A @ 220-240V (90 to 260 VAC, 50/60Hz autosensing with 110 V U.S. cord set)
Acoustic Noise	Cutting = less than 30 dB (A), Standby = less than 10 dB (A) (tested to ISO 7779)
Operating Env.	Temperature: 41 to 104° F (5 to 40° C), humidity: 35% to 80% non-condensing
Dimensions	37"W x 19"D x 38"H 930mm(W) x 490mm(D) x 965mm(H)
Weight Boxed	84 Lb. (38Kg)
Accessories	Mobile Stand, Power Cord, Interface Cable, Blade Holder, 4-Blades, Plotter Pen, Manuals Software with Manuals, Cut-off Tool, Tweezers, Squeegee and starter materials kit.

WARRANTY

1. STANDARD WARRANTY

All BREN products carry a standard three (3) year Warranty that covers Manufacturing defects in Material, Circuitry and/or workmanship. The warranty begins upon date of purchase and requires that the Products covered be purchased direct from and registered with BREN Instruments, Inc. Registration filing is required on the part of the purchaser if products purchased include a Warranty Registration Card. Some products purchased direct from BREN are automatically registered and recorded upon shipment. Warranty includes all Parts, Labor and Supplies necessary to repair or replace (at BREN's option) any Materials, Circuitry and/or Parts which prove to be defective under normal use and application. Product must be returned to BREN in original or equal packing at shipper's expense. No freight collect shipments are allowed. Customer should contact BREN Service department between 8:00 a.m. and 5:00 p.m. Monday thru Friday Central Standard Time at 1-800-826-3991 for Return Authorization Number. Shipments received without prior authorization will be refused.

This warranty does not cover shipping damage or defects caused from abuse, misuse or mishandling. In addition, this warranty is void if the product has been opened or serviced in any way by other than BREN service technicians or a BREN Authorized Service Location. No other warranty, either expressed or implied, is valid.

2. PRODUCT INSURANCE PROGRAM (PIP)

The Product Insurance Program or (PIP) is an optional program that supplements the standard warranty for the first year of ownership. Designed for the customer that requires the maximum amount of protection and the minimum amount of downtime. The PIP assures the user a same or equal replacement of a BREN product within two (2) business days of notification to BREN Customer Service Department, at any time during the first year of ownership. Failed product must be packed in the replacement product box or original box and returned to BREN. BREN will pay all shipping costs for both replacement to user and failed product from user. Return shipping labels and documents will be provided by BREN with replacement. The Product Insurance Program can only be purchased within the first thirty (30) days from the time of original product shipment from BREN to the user and becomes effective when payment is received by BREN. Prices are as follows;

Product Insurance Program Charges

Product or Model #	per year.
Model 626	$150.00
Model 646	$250.00
Model 656	$300.00

Prices shown are subject to change without notice. Consult with BREN Factory for current pricing.