



## **AUTO STAND SUPPLEMENT**

**ADSI**  
**56 KENDALL POND ROAD**  
**DERRY, NH 03038**  
**603-216-6344**  
**[WWW.ALLENDATAGRAPH.COM](http://WWW.ALLENDATAGRAPH.COM)**

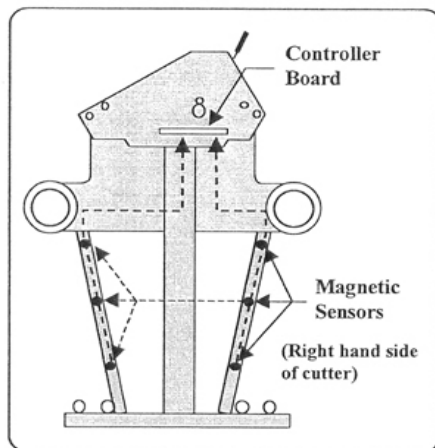
## OPERATION

### Overview

The Allen Datagraph 1000 Series Vinyl Cutters can handle material in several different modes. This is made possible by the "Reel-to-Reel" hardware and new software. The "Reel-to-Reel" hardware is especially useful for cutting longer pieces of vinyl (e.g. greater than six feet). Two sets of rollers on the base of the frame allow the operator to work easily from large rolls of material installed in the front or the rear of the machine. Front panel commands allow the measuring of lengths of material accurately in feet or meters. The different modes of operation are achieved by combining the features of the "Reel-to-Reel" hardware, the rollers and the measuring function. Four modes of operation are described below.

### The "Reel-to-Reel" Mechanism

The Allen Datagraph 1000 Series Vinyl Cutters introduce a unique material handling capability. Once the material has been loaded, the 1000 Series Cutter can be left unattended to complete a physically long cutting job or a series of smaller cutting jobs. Long stripes up to 150 feet (46 m) can be cut *without* the material dragging on the floor. Multiple "Step and Repeat" jobs can be cut unattended without the material picking up dirt from the



floor. This is accomplished by using an automatic motorized "Feed" and "Take-Up" system that determines the size of the service loops by monitoring the vertical position of each of the Dancer Bars. Both of the Dancer Bars have a magnet installed in one end, under the end cap. **THE END WITH THE BLACK VINYL HAS THE MAGNET AND MUST ALWAYS BE INSTALLED ON THE RIGHT HAND SIDE OF THE CUTTER.** There are magnetic sensors located on the back side of each of the two aluminum channels on the **right hand side** of the machine (see the figure). As the cutter operates, it moves material in and out causing the two service loops to grow or shrink and the two Bars to "dance" up and down. When the rear "Feed" Dancer Bar sinks to the location of the lower sensor, the magnet triggers the sensor sending a signal to the "Reel-to-Reel" controller board. The Controller applies power to the "Feed" drive motor in the correct polarity to "spool in" the material. This action causes the Dancer Bar to rise. When the magnet rises to a point slightly above the mid point of the channel, the middle sensor is triggered and the Controller turns the motor off and applies a braking action to bring

the roll to a stop. If the Cutter moves the material in the direction that raises the Dancer Bar to the location of the upper sensor, the Controller will turn the motor on in the direction that will "spool out" material and the Bar will sink. Again, the Bar will come to rest approximately in the center of the channel. The front "Take-Up" drive motor and control system are the mirror image of the "Feed" system. Note that the front and rear systems are totally independent of each other, although they can be active at the same time. Both drive systems have a spring-loaded (return-to-center) switch labeled "REV - FWD". This switch allows the operator to "spool in" or "spool out" material manually, independent of the controller.

## OPERATION (continued)

### "RESET" and "TIME-OUT" of the Reel-to-Reel Controller Board

When the dancer Bars are installed, the magnets could be moved close enough to the upper sensors to trigger them. This is why the two ON/OFF switches (right hand side of the cutter) **must** be initially set to **OFF**. If the operator does trigger the upper sensor during the Bar installation, the Controller will try to turn the roll to "spool out" material. If the switch for that motor is **ON**, the motor will "spool" material out onto the floor. Because the operator is holding the Bar, the magnet can not trigger the center sensor and signal the Controller to turn the motor off. However, with the switch set to **OFF**, the circuit to the motor is open and the roll does not turn.

The Controller has been designed with a "Time-Out" feature to prevent runaway conditions. In normal operation, the Feed and Take-Up drive motors will continually start and stop as the cutter moves material in and out. A motor will normally be on for a maximum of about two to three seconds. The **Time-Out Circuit** monitors the time that each motor is **on**. If a fault condition occurs and a motor is **on** continuously for more than approximately eight (8) seconds, the **Time-Out Circuit** is triggered and the motor is turned off. This prevents the motor from burning out under jam conditions or from spooling an entire roll of material onto the floor.

The circuit that senses the position of the Dancer Bars is fast, but it is possible for a rare combination of events to move a Dancer Bar past a sensor so fast that it can't react in time. The worst case is when, by chance, the cutter "spools" material out at the same time one of the motors also starts to "spool out". This combination will move the Dancer Bar at the greatest speed. By default, the 1000 Series cutters have a vinyl speed of **30 to 40 centimeters per second** (12 to 16 inches/sec.). If the cutter is set to a speed greater than this while in the Reel-to-reel mode, the possibility of a Dancer Bar getting past a sensor exists. **When in the Reel-to-Reel mode, do not set the speed above 40 centimeters per second (16 inches/sec.).**

If a **Time-Out** should occur, attempt to determine what caused it. Several conditions could trigger a **Time-Out**. If the cutter pulls the end of the material off the roll, the Bar would fall to the floor and the motor would turn without moving the magnet to the area of the center sensor. If a Bar becomes stuck in the channel, the motor would continue to turn.

If a **Time-Out** condition does occur, there are two ways to reset the controller. The **Feed** circuit is independent of the **Take-Up** circuit. A **Time-Out** in the **Take-Up** circuit will have no effect on the **Feed** circuit. Turn the roll of material, if necessary, to return the Dancer Bar to the center of the channel. Momentarily press and release the **REV/FWD** switch in either direction. This action will turn the roll slightly and will also reset that portion of the controller that timed out. Turning the cutters main power switch off and then on will reset the controller board.

## **OPERATION (continued)**

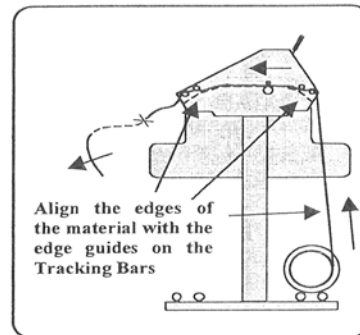
### **"Reel-to-Reel" Operation**

The Allen Datagraph 1000 Series Vinyl Cutters have two "On"/"Off" switches located on the pods on the right hand side of the machine. When you are **not using** the "Reel-to-Reel" feature or when you are **just beginning** to set up to use this feature, always turn both switches "**Off**". This will prevent either motor from operating unexpectedly, such as when the Dancer Bars are installed. To use the Reel-to-Reel feature, refer to pages [10 and 11] and read the section that describes the mode of operation you plan to use. Follow the instructions on "**Loading Material**" (page 15) and install either one or both Dancer Bars as needed. **Note: The Dancer Bars MUST be installed with the black vinyl strip on the right hand side of the cutter!** Switch the cutter off and turn both the Feed and Take-Up rolls by hand until the Dancer Bars are approximately in the middle of the channels. Switch the cutter on and then move both of the On/Off switches to **On**. One or both of the rolls may turn momentarily. To test the Reel-to-Reel function, use the joystick to move material slowly out of the cutter towards you. Observe the front Dancer Bar as it nears the bottom of the channel. It should reach a point that activates the Take-Up motor to "spool in" material, pulling the Bar up to the middle of the channel. Continue moving material towards you and observe that the rear Dancer Bar cycles in a similar fashion except that the Feed roll will "spool out" material to return the Bar to its center position. Continue feeding material towards you to observe several cycles. Then reverse the joystick to move material slowly from the front roll to the back roll. Observe that both rolls always turn to feed or take-up material as needed. Be careful not to go so far that material is pulled off of the front roll. Move the material so that the starting point is under the cutting head. Start your cut program, and observe that the Reel-to-Reel function is working before leaving the cutter unattended.

## OPERATION (continued)

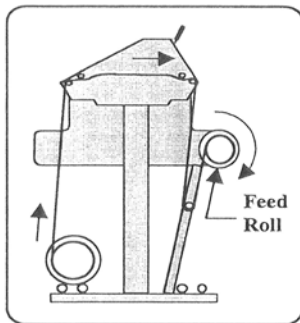
### Quick Change - Short Job From a Super Log

A roll of raw material is placed on the rear set of rollers, oriented so that the material peels off of the roll from the rear as shown in the figure. Feed the material through the rear tracking bars and on through the machine by following the section on **Loading Material** on page 15. Using the Joystick, **slowly** advance a sufficient amount of material for the job from the roll. Note that the cutter would **not** be able to pull material off of a heavy roll properly **during** actual cutting conditions. Use the Joy Stick to move the material back into the machine to the starting point. Re-align material as necessary before running the job. This will create a service loop hanging down on the rear of the machine. Run the job and cut off the finished goods. Repeat the procedure as required for each job.



### Metering From a Super Log

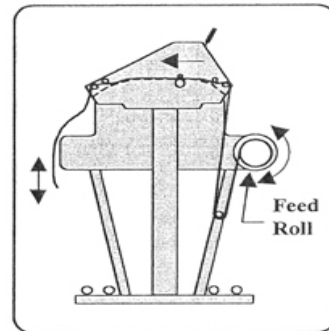
Read the section on **Loading the Spacer Rolls Onto the Support Bars**, that begins on page 12, and follow it to prepare the rear "Feed" support bar. Place the roll of raw material on the front set of rollers, oriented so that the material peels off of the roll in the front as shown in the figure. Feed the material through the front tracking bars, over the grit wheel and through the rear set of tracking bars as described in the section on "**Loading Material**" on page 15. Also read the section "**Metering Material**" on page 17. Momentarily press and release the "**Feed Control**" switch in the to move the Dancer Bar until it is approximately in the center of the channel. Use the joy stick to advance approximately three feet of material out the rear of the machine. Use a suitable tape to adhere the material to the roll, noting that the material **MUST** wrap onto the roll as shown in the figure to the left. Manually turn the rear "Feed" roll until there is at least one complete turn of material on the roll. Use the Joystick to advance the material until the service loop is approximately equal to that shown in the figure to the left. Locate one of the Dancer Bars and insert the end without the black vinyl into the aluminum channel on the **left** side of the machine. Carefully lower the right hand end of the Bar (**the end with the vinyl**) down onto the material, while guiding this end of the Bar into the **right hand** channel. Read the instructions on operating the "**Reel-to Reel**" mechanism which are on page 9. Turn the **Feed** motor switch **on**. Momentarily press and release the "**Feed Control**" switch as needed to move the Dancer Bar until it is approximately in the center of the channel. Use the front panel metering command to advance the material, while watching the display for the desired amount. Cut the material as needed and proceed with the job.



## OPERATION (continued)

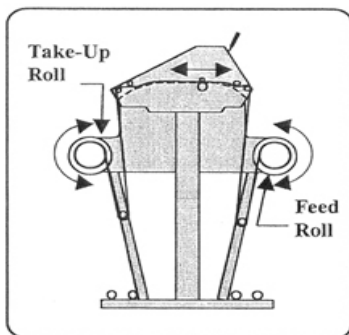
### Short Jobs Directly From log

Read the section on **Loading the Spacer Rolls Onto the Support Bars**, that begins on page 12, and follow it to prepare the rear "Feed" support bar. Note that the roll **MUST** be oriented so that the material will peel off the roll on the inside edge as shown in the figure to the right. Feed the material through the rear tracking bars and on through the machine by following the section on **Loading Material** on page 14. Turn the roll by hand until the service loop is within about eighteen inches of the floor. Turn the "Feed Control" On/Off switch to Off. Locate one of the Dancer Bars and insert the end without the black vinyl into the aluminum channel on the **left** side of the machine. Carefully lower the right hand end of the Bar (**the end with the vinyl**) down onto the material, while guiding this end of the Bar into the **right hand** channel. Read the instructions on operating the "Reel-to Reel" mechanism, which are on page 9. Turn the On/Off switch to On and momentarily press and release the "Feed Control" switch as needed to move the Dancer Bar until it is approximately in the center of the channel.



### Long Jobs or "Step and Repeat"

Refer to page 12 and install the roll of material on the rear "Feed" drive mechanism. Note that the roll **MUST** be oriented so that the material will peel off the roll on the inside edge as shown in the figure to the left. Feed the material through the rear tracking bars and on through the machine by following the section on loading material on page 15. Install a blank cardboard roll on the front "Take-Up" drive mechanism. Use a suitable tape to adhere the material to the roll, noting that the material **MUST** wrap onto the "Take-Up" roll as shown in the figure to the left. Turn both the "Take-Up" and "Feed" rolls by hand until the service loops are within about eighteen inches of the floor. Turn both the Take-Up and Feed control switches to Off. Locate one of the Dancer Bars and insert the end without the black vinyl into the aluminum channel on the **left** side of the machine. Carefully lower the right hand end of the Bar (**the end with the vinyl**) down onto the material, while guiding this end of the Bar into the **right hand** channel. Install the rear Dancer Bar in the same manner. Read the instructions on operating the "Reel-to Reel" mechanism on page 9. Momentarily press and release the "Feed Control" (FWD/REV) switch as needed to move the rear Dancer Bar until it is approximately in the center of the channel. Momentarily press and release the "Take-Up" (FWD/REV) switch to move the front Dancer Bar until it is approximately in the center of the channel.

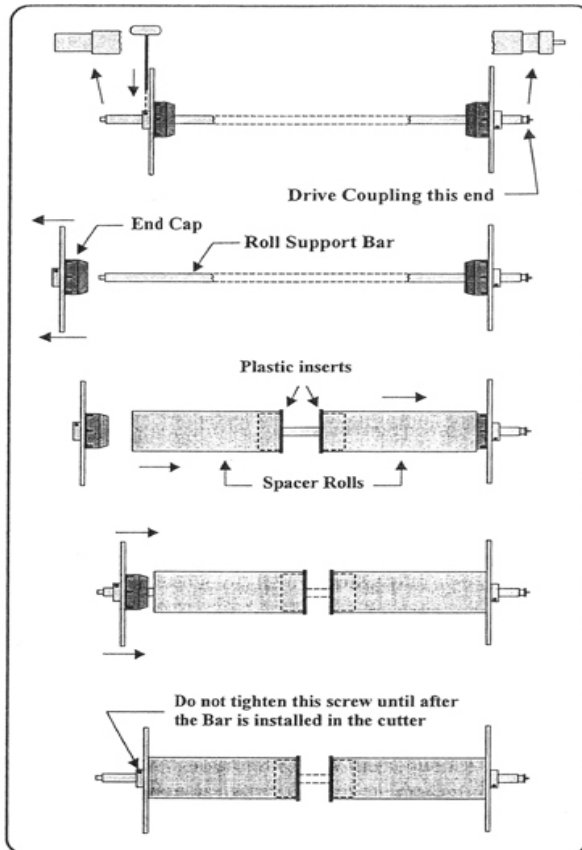


## OPERATION (continued)

### LOADING REEL-TO-REEL ROLLS

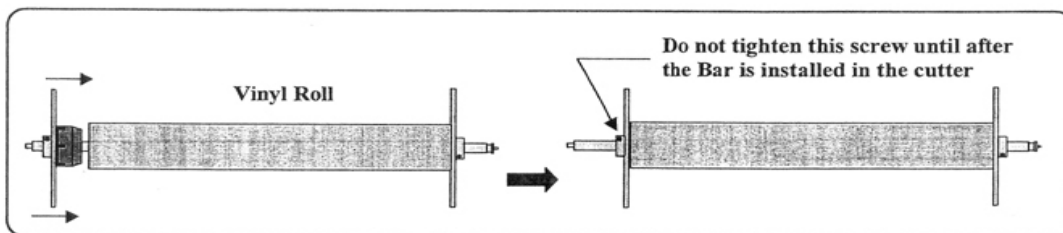
#### Loading the Spacer Rolls Onto the Roll Support Bars

Remove the Roll Support Bar from the cutter and place it on a work surface. Refer to the figures and determine which end of the bar has the drive coupling. Orient the Bar on the work surface with the drive coupling on your right to match the figures. Locate the tool kit supplied with your cutter and find the 3/16 inch "T"-handle hex wrench that fits the socket head screw in each of the end caps on the Roll Support Bars. Loosen the screw on the Cap on the Bar end that is round (left end) and remove that End Cap. Slide the two rolls over the shaft as shown. Note the orientation, the plastic inserts must be on the **inside**. Slide the loose End Cap back onto the shaft in the orientation indicated. Do not tighten the screw at this time. Once this Bar has been installed in the cutter, the final position of the left End Cap will be determined by the way the material meets the Bar. Refer to the figures on the next page, showing a smaller than maximum roll of material. Note how the four material guides on each side of the roll must be lined up at the edge of the material.



#### Loading a Roll of Vinyl Onto the Roll Support Bars

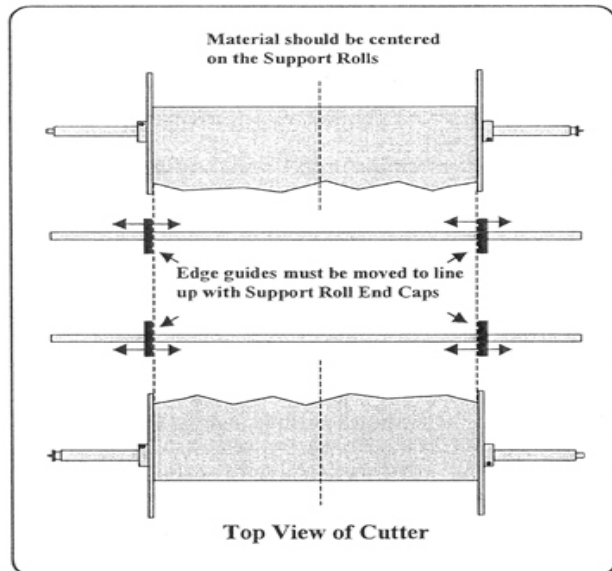
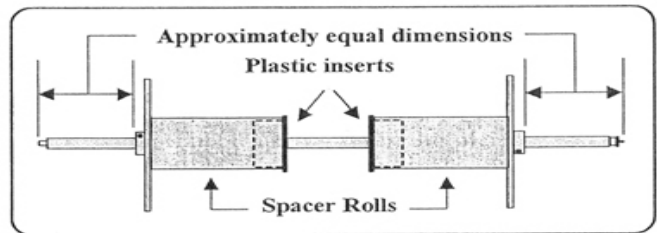
A roll of vinyl is loaded onto the Support Bars in the same manner as the Spacer Rolls. Refer to the figure below and follow the sequence shown. If the vinyl is narrower than the maximum that the cutter can handle and you will be using the Reel-To-Reel feature, refer to the figures and description on the next page, "Assembly When Using Smaller Rolls of Material".



## OPERATION (continued)

### Assembly When Using Smaller Rolls of Material

The Allen 1000 Series cutters are supplied with three sets of Spacer Rolls. The largest of the three sets will be used when the material being used is the largest that the machine can handle. The other two sets are smaller and allow the operator to use narrower rolls of material. The figure to the right shows a typical Roll Support Bar configured for a less-than-maximum roll of material. When narrow rolls of material are used, both the Feed and Take-Up Support Bars must be changed to accommodate them. Remove both Bars from the cutter and move them to a work area. Locate the T-handle hex wrench described on the previous page and loosen the screw in each of the end caps (a total of four screws). Move both Caps (and the material) to the center of the Feed Bar. Move both Caps and the Spacer Rolls of the Take-Up Bar to the center.

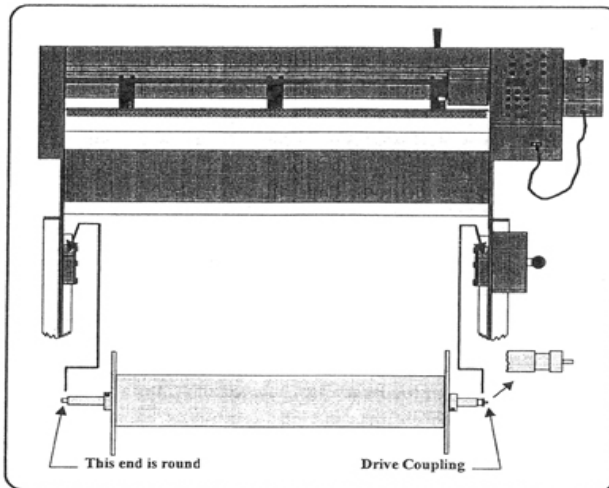


(see the figure to the left) Place the two Support Bars side by side on the work surface to make it easy to get them to match. Install both Bars in the cutter and feed material through the tracking bars to the Take-Up Bar. (refer to page 15, **Loading Material**) Tape the material to the Spacer Rolls. Locate the appropriate hex wrench from the accessory kit, and loosen the screws in the two right hand edge guides on the tracking bars. Side them to the left until they just touch the right hand edge of the material. Move the left hand edge guides by hand until they just touch the left hand side edge of the material. It is important to the operation of the Reel-To-Reel feature that all the material guides on each side line up with each other.

**OPERATION (continued)**

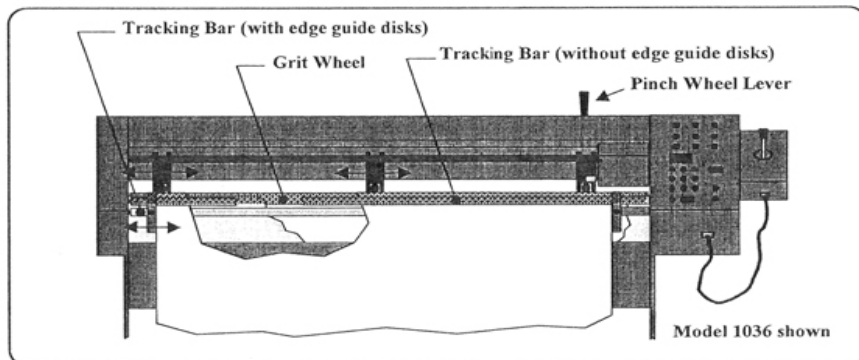
**Loading a Roll Support Bar Onto the Cutter**

Refer to the figure and note the orientation of the assembled roll, relative to the Cutter. The drive coupling end of the Bar is installed on the right hand end of the Cutter in both the Feed and Take-Up positions. Note the slots in the drive shafts in the Feed and Take-up pods. Turn the black knob on each pod until the slot is vertical. This will make it easy to install the Bars. The tab of the coupling drive on the Bars will slide down into the slot. Carefully lift the assembled roll and position it over the rollers in the appropriate position (Feed or Take-Up). Lower the round (left hand) end of the Bar down onto the rollers. Slowly lower the drive coupling end (flat tab), guiding the tab into the slot in the drive shaft. Check to see that the shaft is seated on the rollers and that it is free to turn.



## OPERATION (continued)

### LOADING MATERIAL

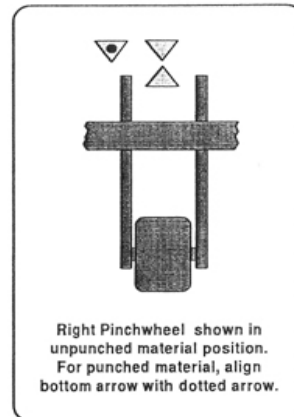


### Roll and Sheet Goods

Before loading media, turn the cutter on. The cutter will initialize, energize the vacuum fan and turn on the UNLOAD, DSR and Pen Up lights on the control panel. The display will read C41 or C31 (factory default). The cutter is now ready for media loading.

1. Place roll material on the roll supply and feed the material from the back of the machine, over the guide bar with edge guides, under the plain guide bar and then under the pinch wheels until it is inserted 1-2 feet (30-60 cm). A material path diagram follows. Position the right edge of the material against the front and rear edge guides. Also, visually align the roll of goods with the edge guides. NOTE: *Proper alignment with the guides will give the best results when making long images.*
2. Position the left pinch wheel at the left edge of the material. It may be necessary to use two hands (one in front and one in the rear) to move the pinchwheel. This pinch wheel should be positioned so that its edge is about 1/4 inch (6 mm) in from the edge of the material. Do not place the pinchwheel on a smooth section of the gritwheel. *The material must be at least 4 inches wide (10 cm).*
3. For punched materials, position the left pinch wheel further in so that the wheel does not run on the holes of the material. Move the right pinchwheel in so that it does not run over the holes of the material. Do not locate the pinchwheels over a smooth section of the gritwheel. For the 1036 and 1048, position the center pinchwheel at the material center. On the model 1060, distribute the pinch wheels evenly across the material.
4. Lower the pinch wheel lever. (4 levers in the 1060 model)
5. Use the joystick to position the tool to the desired plot start point. The user may want this point to be at the leading edge of the material or at a position that allows the leading edge to be threaded through the guide system.
6. Press the LOAD button on the control panel. The tool holder moves left and right to measure the material width (Y-axis) and then the material moves back and forth (X-axis) 2 feet (61 cm), unless a different Load Length has been set. Verify that the material is tracking straight at this time. The tool will position to the starting point of the current coordinate system. (See ORIGIN LOCATION Section of this guide.) Additional joystick positioning may be made now. The cutter should be in REMOTE to plot images sent from the computer.
7. For cutting, perform the cut test pattern FUNCTION, FORCE. Make any changes, if necessary.

*To unload material, Press VIEW and then UNLOAD. Raise the pinch wheel lever.*



## OPERATION (continued)

### Long Tracking Vinyl Guide System

The Long Tracking Guide System is designed to enable the tracking and cutting of up to full rolls of material wider than 4 inches (10 cm). Vinyl rolls without sprocket holes are best suited for use in this system. Light weight paper and material with too many holes have weak edges and do not work as well. The following points should be noted:

1. a) Right front and right rear edge guide discs are factory preset, do not alter their position unless you are using the Reel-to-Reel function with narrow material (see page 13).  
b) Left front and left rear edge guide discs are movable.  
c) All four front and rear Tracking Bars are removable. When reinstalling the Bars, be sure that the spring loaded ends are at the left hand side of the machine.
2. Place material against the right edge guide discs, front and rear.
3. Adjust the left front and left rear edge guide discs to the material edge. Both of the left edge guide discs move with moderate pressure. No tools are required. Allow approximately 1/16 inch (1 to 1.5 mm) space for material variation.
4. Lower the pinch wheel lever. (4 levers on the model 1060)
5. Press the **LOAD** button.
6. Test the tracking with the joystick as the first 2-3 feet (60 to 100 cm) of vinyl may be wider than the remainder of the roll. Material going in and out of the guide system should be aligned with the edge guide discs and must not bind. Adjust the material position and the left guide discs as necessary. The right edge guide discs do not normally require adjustment unless it is found that several rolls of unpunched vinyl do not track properly with the guide system. The right front and rear guide discs need to be an equal distance from the side plate the guide bars mount in.
7. Use the joystick to move the tool to the desired starting position.
8. Ensure that the material supply roll is square and aligned to the edge guide discs.

