



Guillotine Control System

User's Guide

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Health and Safety



Warning! Dangerous voltages are present when mains supply is connected.



Warning! Even when the motor is stopped there are dangerous voltages present at Power Circuit terminals.

1. The user should ensure that safe working practices are adhered to and that correct Personal Protective Equipment (PPE) is used at all times relevant to the nature of work undertaken and the type of machinery being operated.
2. Before powering up or using PROCUT, the user should ensure that the machine being operated is clean, debris free and is being operated in a safe manner as required by the Laws, Rules, Regulations and Best Working Practices in force for the Country in which the equipment is being operated and that all safety devices are in undamaged and correct operating order.
3. This software (PROCUT) should not be used by personnel that have not been trained in the use of such software or the machinery it is used on.
4. TRM cannot be held liable for the miss-operation or incorrect programming of the system be it operating program or setup parameters.
5. Training and operation of machinery is solely the user's/owners responsibility and appropriate Risk Assessment records should be kept at all times.

Introduction

PROCUT is a Precision Guillotine Control System designed for use on paper guillotines. It can control the backgauge position and supply signals to the cut control to indicate when the gauge is in position. It takes advantage of the high level of technology in TRM's motion controllers, making all the movements as accurate as possible.

Accuracy is dependant on various parameters of the machine:

- Motor Quality
- Encoder resolution (ppr)
- Machine wear
- Stiction

are a few. TRM supplies good quality motors and 1000ppr encoders with it's DC systems to ensure a high level of precision is achieved. Software and the correct setting of the available parameters can alleviate some of the machine wear issues however machine maintenance will play a large role in removing stiction from the system, this is normally done by using good quality bearings, grease and oil in the transmission system.

The AC systems that we supply operate with much higher encoder PPR however we reduce this to 3000ppr to avoid cable routing issues as higher PPR counts make cable type and routing much more critical.

Following the above principles will achieve a precise and repeatable position control.

This manual assumes that the system has been installed by a professional, has been tested and is safe for use. The operator should however take note of the recommendations in the Health and Safety section before proceeding.

Welcome Menu

When the controller is turned ON it will display Welcome menu shown below:



On the bottom of the screen there are four icons, the user will have access to the icons just by pressing the controllers 'F' key directly below it.

Edit/Create

From this menu the operator will be able to create a program, modify a program, open a program and execute a program.

Technical Menu

This is a engineering menu protected with a password, here is where the engineer has to setup the controller for the first time, setting different values like maximum and minimum cuts, maximum speed, etc. Refer to the installation manual for more information.

Language selection

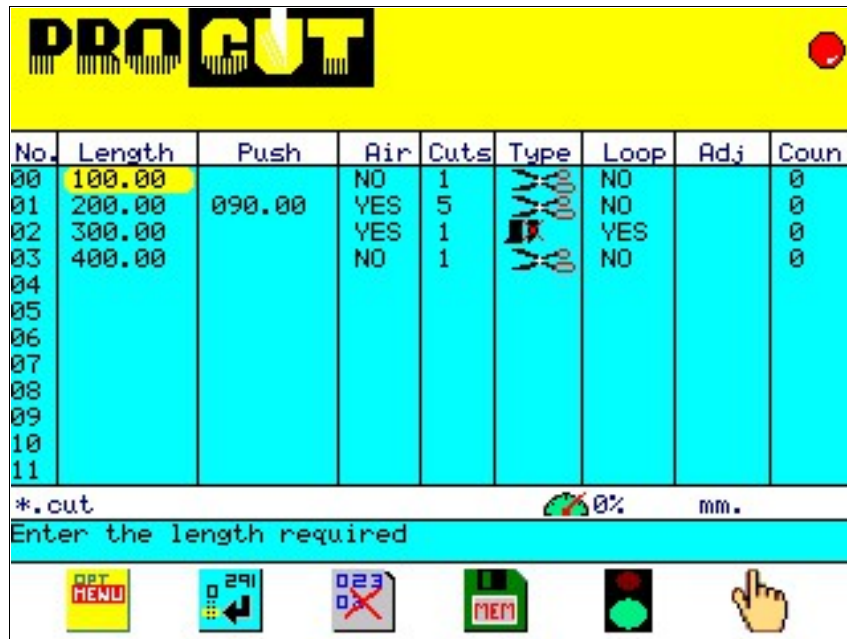
Using this option the user can select between languages. Use the up and down arrow keys to select the required language then press ENTER. Press MENU to exit without change.

Help



The help icon will display a help screen to the operator describing the opening screen functions. Further help can be found in the other menus by pressing the F1 key, this will pop up a window describing the available features.

The Edit/Create menu



No.	Length	Push	Air	Cuts	Type	Loop	Adj	Coun
00	100.00		NO	1		NO		0
01	200.00	090.00	YES	5		NO		0
02	300.00		YES	1		YES		0
03	400.00		NO	1		NO		0
04								
05								
06								
07								
08								
09								
10								
11								

*.cut 0% mm.

Enter the length required

Entering data

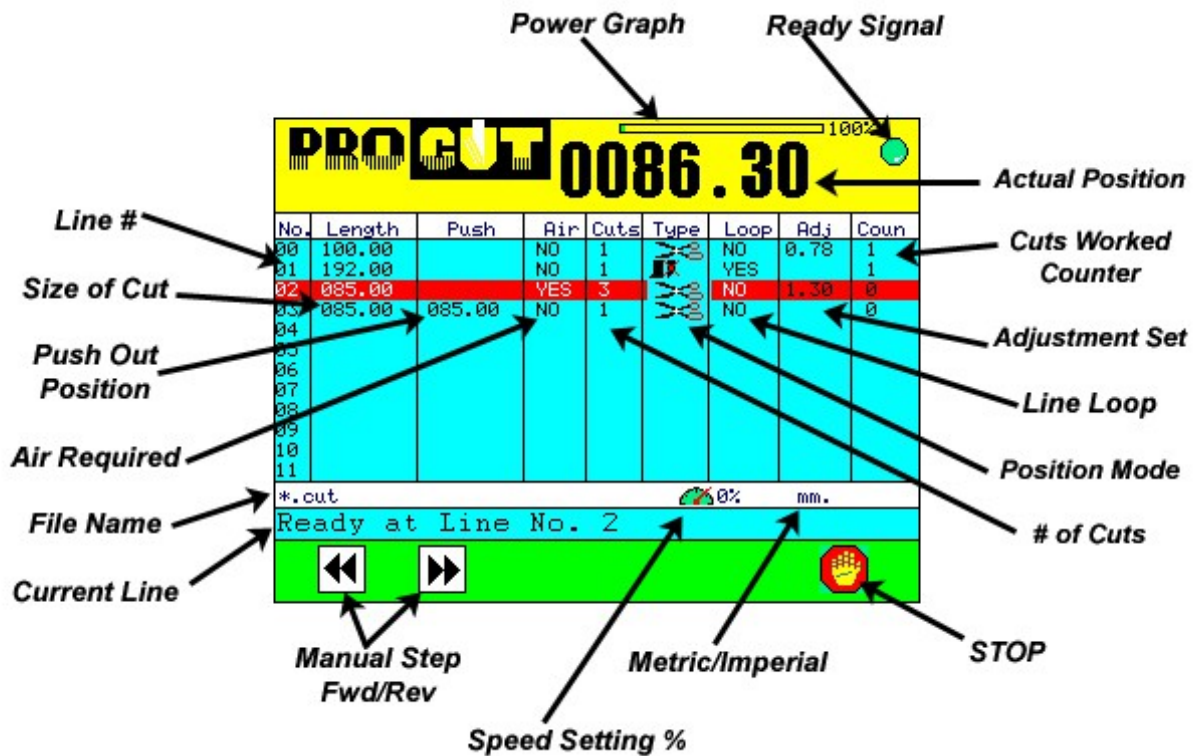
The desired column is selected by moving the cursor with the arrow keys on the keypad. Once on the desired column press the number keys to enter the data followed by the ENTER key.

In order to return to the welcome Menu press MENU the key. This will exit the menu and store any data programmed. Accessing the edit/create screen again will display the last used data. However if the the modifications to the file are not saved and the user opens a different program then the data will be lost.

If a value is entered that exceeds the system maximum or minimum a message box will be shown, this will prompt the user with the maximum/minimum values, when the user acknowledges the error the system will enter the maximum/minimum value in the program. The user should then correct the value to within range.

If a typing error is made, the left hand ARROW key can be used to delete the last character typed. When the controller is new there will be no data loaded into the menu as shown above.

An explanation of the Edit/Create menu is shown below



Program Columns

The data required for each column is entered using the number keys on the keypad and use the arrow keys for moving the cursor between the columns.

No.

Represents the line number of the program and cannot be edited. There is a maximum of 1000 lines.

Length

In this column the user has to enter the cut position. Please note that the machine has a Maximum and a Minimum cut therefore the program will tell the user with an error message if a cut outside the limits has been typed. When the error message is acknowledged the program will enter maximum or minimum limit in that position whatever is the closest.

Push

Is a push out position which will be effective after the cut of the same line has been

executed. If 0 is entered it means there is no push out, and the position will be left blank. If “450” is entered as a position and “200” is entered as the push position the backgauge will move to 200 following the cut at 450. The system will then move to the next cut position.

Air




The user can select between 'ON' or 'OFF' in this column. The air table will then be turned on or off while moving the paper between cuts. This can be set by using the + and - keys.

Cuts

Number of cuts for that position, by default it will be 1 cut.

Type

Using the '+' and '-' Keys the user can select among three options: Cut , Just clamp, and load position which is represented as no clamp and no knife.

	Cut (always with clamp)
	Clamp no Cut
	Load Position

Loop

This column is mainly used when using the label optimisation feature and the controller will automatically enter program. This will be YES or NO. When not using the label optimisation feature we recommend not to edit this column.

Adj

This Adjustment feature will allow the user to temporary modify the program without changing its original values. It is intended for when minor corrections are needed, for example when the humidity is too high and the paper expands a little bit. This value is temporary and will never be saved into the program, then when the program is opened again values will be cleared in this column. In order to use this feature the electronic Jog Wheel has to be installed.

Count

This column displays the number of executed cuts, it cannot be edited. The controller will automatically update the number of cuts worked. The operator can reset this column to 0 by using the "clear cuts worked" option on the options menu explained below.

Status Bar

The status bar is located just below the data section, it shows file information, an icon showing if the file has been modified, forward speed and unit measurement.

Message Section

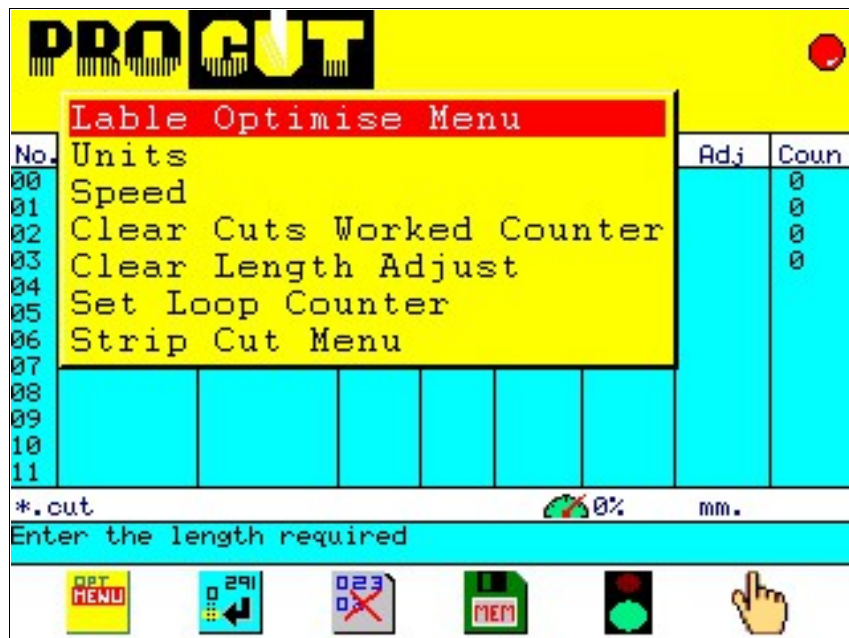
Please note in the figure below that the Edit/Create menu has a message section, in this section the controller displays messages to the operator that will assist with data entry.



On the bottom of the Edit/Create menu screen there are 6 icons which allow the user access the different functions used to edit or run the program. To access each icon the user has to press the 'F' key below it. A description of the icons functions follows:

Options Menu

By selecting this icon the screen will display a pull down menu. Use the arrow keys to scroll between the options and press ENTER to select one of them.

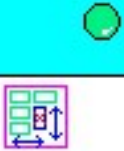


Label optimisation

It is intended to help users to create programs with repetitive cuts such as labels. By using this function it will give the user two options for reducing scrap paper and save the user of typing a long program therefore saving time and money.

There are just a few parameters to enter and remember that the controller's calculations involve the minimum and maximum cut limits in the machine.

Optimise Label Cutting Menu	
Paper X Dimension	1150.0
Paper Y Dimension	0700.0
Label X Dimension	049.0
Label Y Dimension	055.0
X Space	005.0
Y Space	005.0
Edge Trim Cut X	005.0
Edge Trim Cut Y	005.0
Quantity	100




The parameters to be entered are explained as follows:

1. Paper X dimension: This is the longer side of the ream of paper to be cut, for controller calculations "X length" will always be bigger than "Y length" so if you type an "X length" smaller than "Y length" the controller automatically will swap the 2 values over.
2. Paper Y dimension: This is the shortest side of the ream of paper to be cut.
3. Label X dimension: This is the X dimension of the label to be cut.
4. Label Y dimension: This is the Y dimension of the label to be cut.
5. X space: This is the amount of space between the end of one label and the beginning of the next label on the X side.
6. Y space: This is the amount of space between the end of one label and the beginning of the next label on the Y side.

7. X trim: This is the dimension for trimming the paper on the ream's X side. If the cuts involve the whole paper the calculations also involve trimming both ends of the paper.
8. Y trim: This is the dimension for trimming the paper on the ream's Y side. If the cuts involve the whole paper the calculations also involve trimming both ends of the paper.
9. Quantity: This is the amount of labels you want to cut, if the quantity is small then there would be a bigger wastage but the optimisation is trying to give you minimal scrap therefore more cuts will be created.
10. If the quantity is bigger than the maximum possible the controller will ignore it and will just make the maximum possible labels for that ream of paper.



When all parameters are entered, press the 'F' key below the  icon, 2 options will appear on screen X<>X and X<>Y.

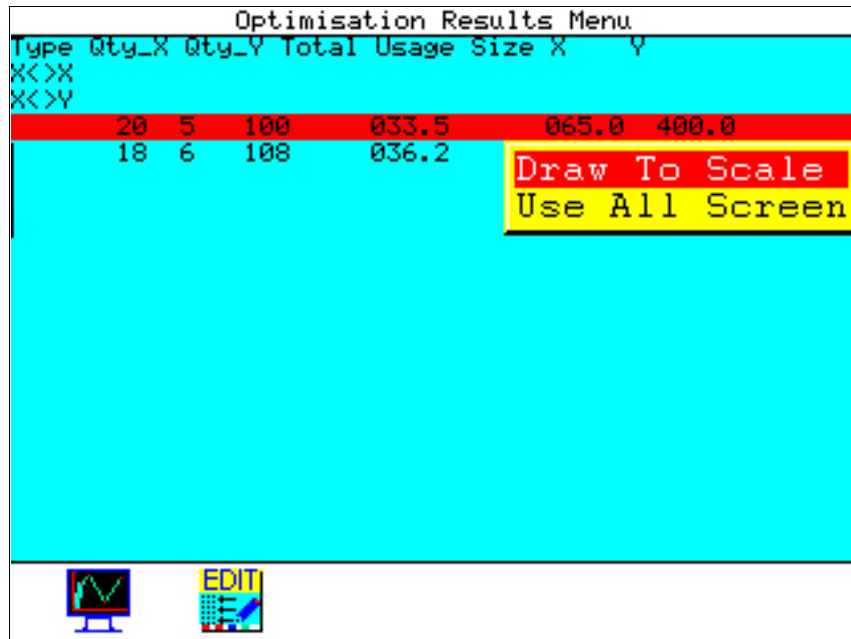
Optimisation Results Menu						
Type	Qty_X	Qty_Y	Total	Usage	Size X	Y
X<>X						
X<>Y						
	20	5	100	033.5	065.0	400.0
	18	6	108	036.2	065.0	376.0

X<>X means that the X label dimension is in the same direction of the X side of the ream of paper to be cut.

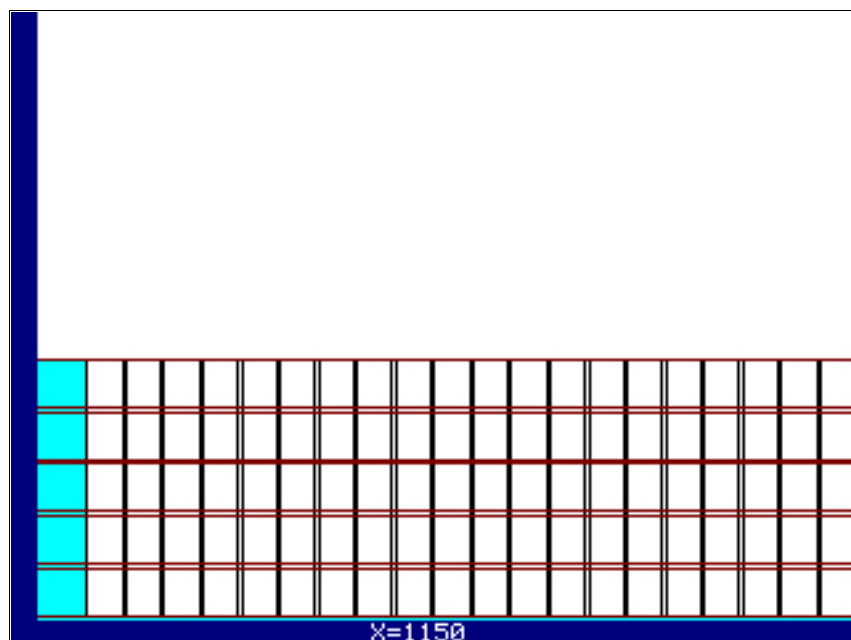
X<>Y means that the Y label dimension is in the direction of the X side of the ream of paper to be cut. Please remember that by choosing this option the other 2 parameters on the Y side (Y Trim, Y space) will remain for the Y side of the ream of

paper.


By pressing the 'F' key below the graph icon the screen will show a pop up menu.













The options are: "Draw to scale" or "Use all screen". Use the arrow keys to scroll down and press ENTER to select an option. A graph of the cuts to be made will display on screen as shown below:








Press menu to return to the previous screen then using the arrow keys and pressing

the F key below the Edit Icon  select one of the two optimisation results and the program created by the controller will load automatically into the Edit/Create menu.

PRO CUT 0505.65								
No.	Length	Push	Air	Cuts	Type	Loop	Adj	Coun
00	695.00		NO	1		NO		0
01	640.00		NO	1		NO		0
02	635.00		NO	1		NO		0
03	580.00		NO	1		NO		0
04	575.00		NO	1		NO		0
05	520.00		NO	1		NO		0
06	515.00		NO	1		NO		0
07	460.00		NO	1		NO		0
08	455.00		NO	1		NO		0
09	400.00	200.00	YES	1		NO		0
10	1145.00		NO	5		YES		0
11	1096.00		NO	5		YES		0

*.cut  0% mm.

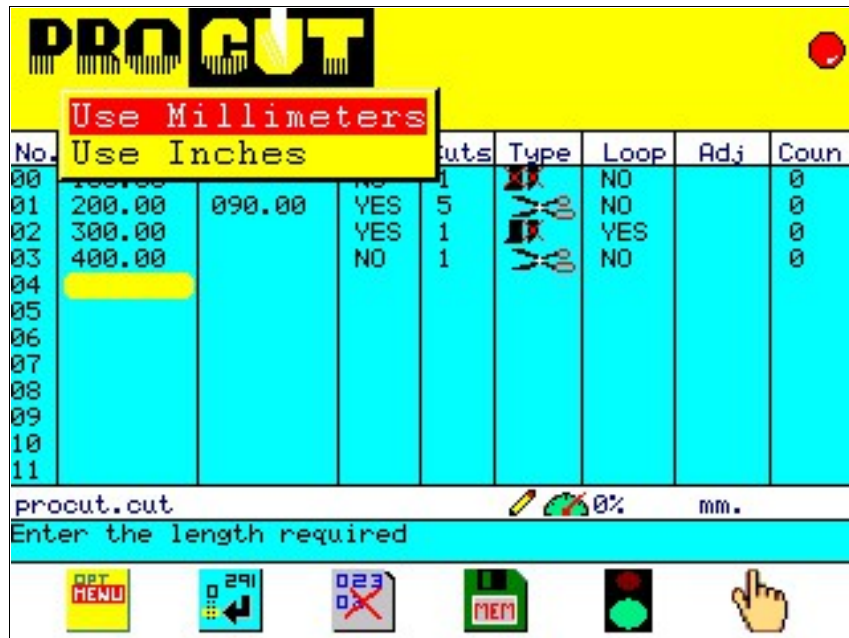
Enter the length required

This label optimisation function is intended to help users in the creation of a program but in some cases adding few lines manually to the program will be required. For example when a cut can not be made because of the "minimum cut" allowed on the machine, often it is possible to rotate the paper 180 degrees and then make the cut(s), in that case the user will have to enter the values manually.

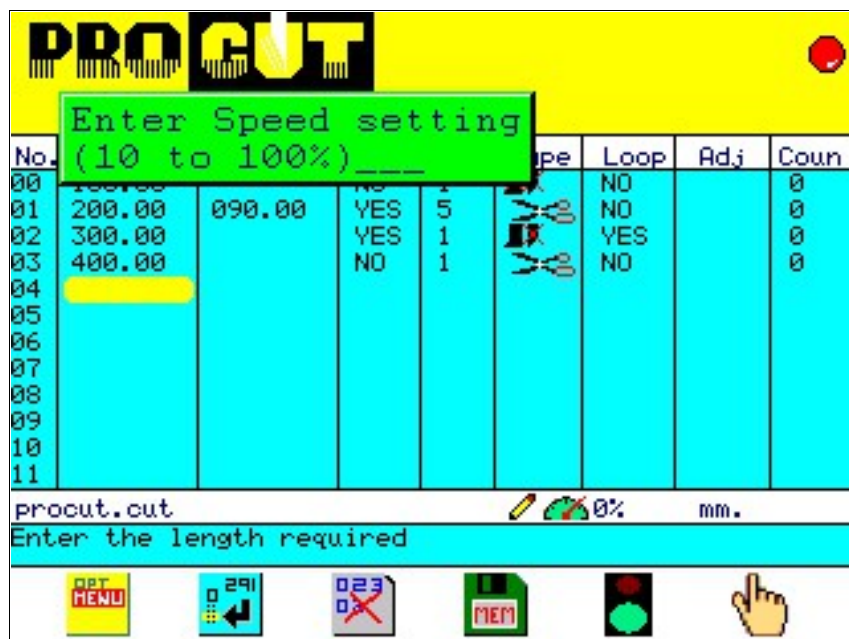
Units

This function allows the user to select between Millimetres and Inches. By selecting this option the values will change automatically and the screen will display the units selected.



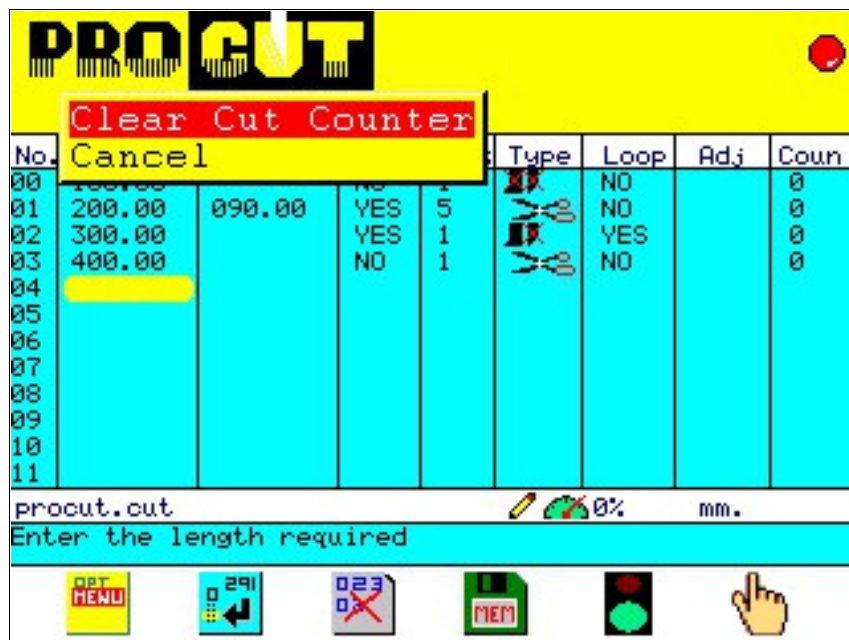
Speed

Using this setting the user will be able to change the forward speed in a percentage of the maximum speed, once selected the speed will be displayed on the screen next to the file name.



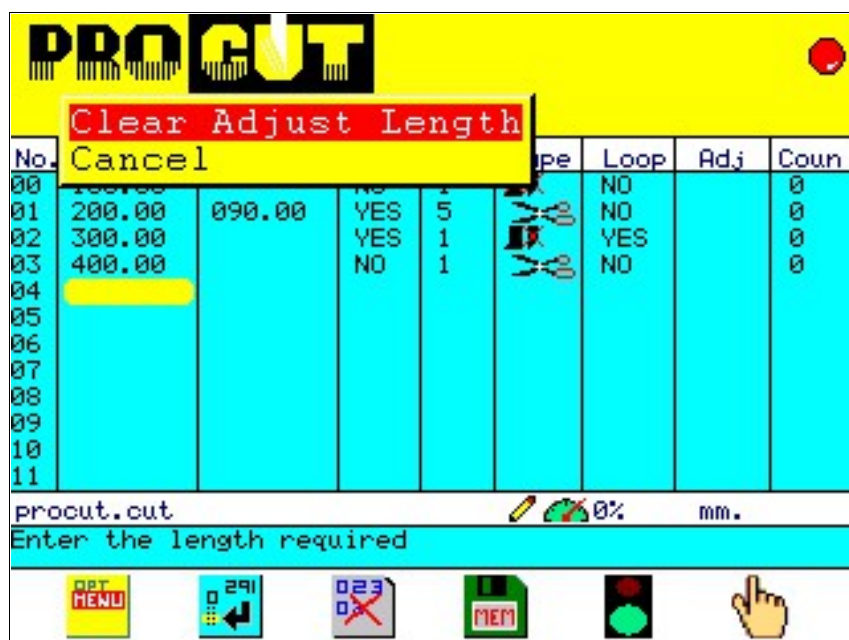
Clear Cuts Worked Counter

By selecting this option the number of cuts in the column "Cuts Worked" will be cleared.



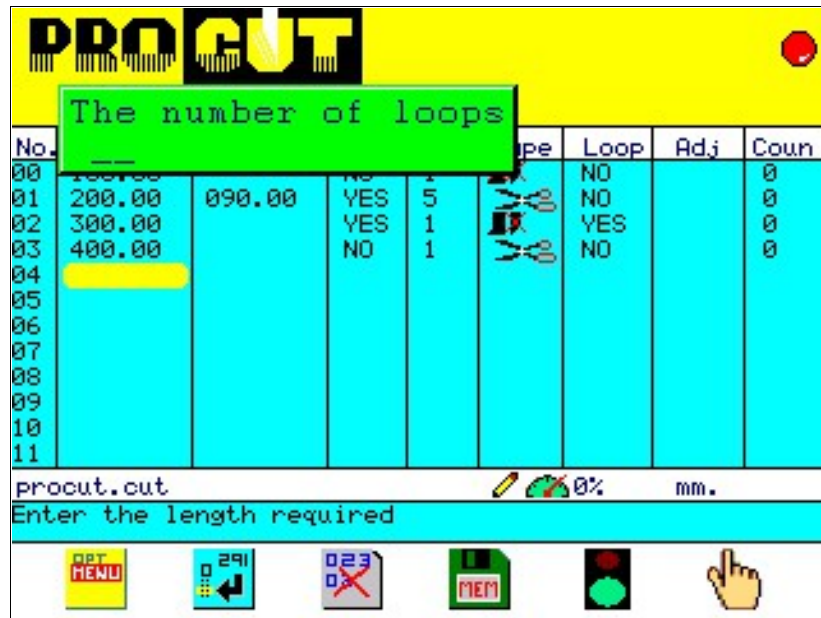
Clear Length Adjust

This option will clear all data in the 'Adj' column.



Set Loop Counter


The controller has a loop counter which stops the controller when the counter reaches zero. If the counter is set to zero then the machine will operate until the operator stops the controller by pressing any key on the keypad or the stop button. By selecting this option the user is asked to enter the number of they wish to complete.



Strip Cut Menu


The Strip cut menu is intended as a simplified version of the Label menu enabling the operator to create strips of paper with edge trim if needed. There are only 4 parameters to enter which avoids complex paper rotating calculations.

Strip Cutting Menu	
Paper Length Dimension	0750.0
Strip Height Dimension	0025.0
Edge Trim Cut	0005.0
Quantity per Sheet	020



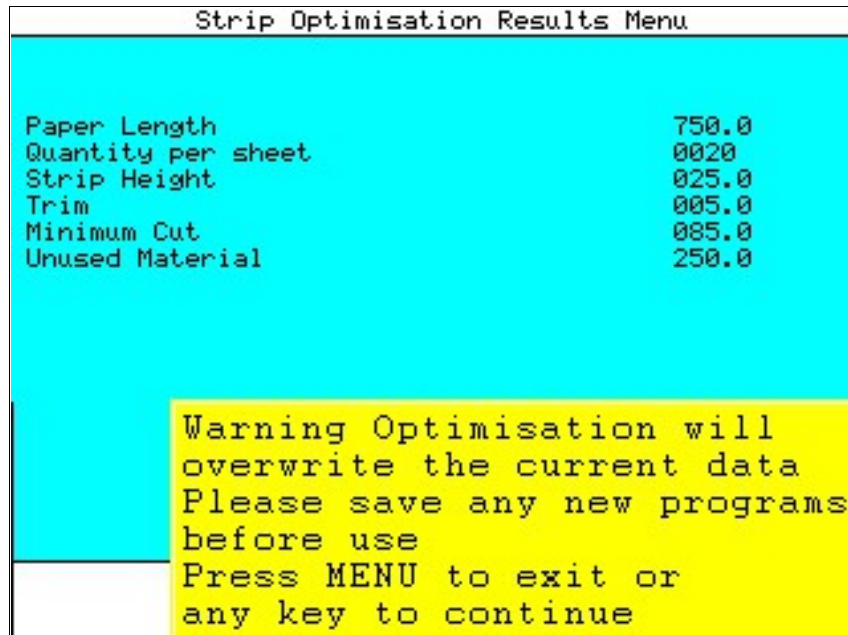
Once the data is entered press F8 to calculate and verify there is sufficient paper for the sizes programmed.

Strip Optimisation Results Menu	
Paper Length	750.0
Quantity per sheet	0020
Strip Height	025.0
Trim	005.0
Minimum Cut	085.0
Unused Material	250.0

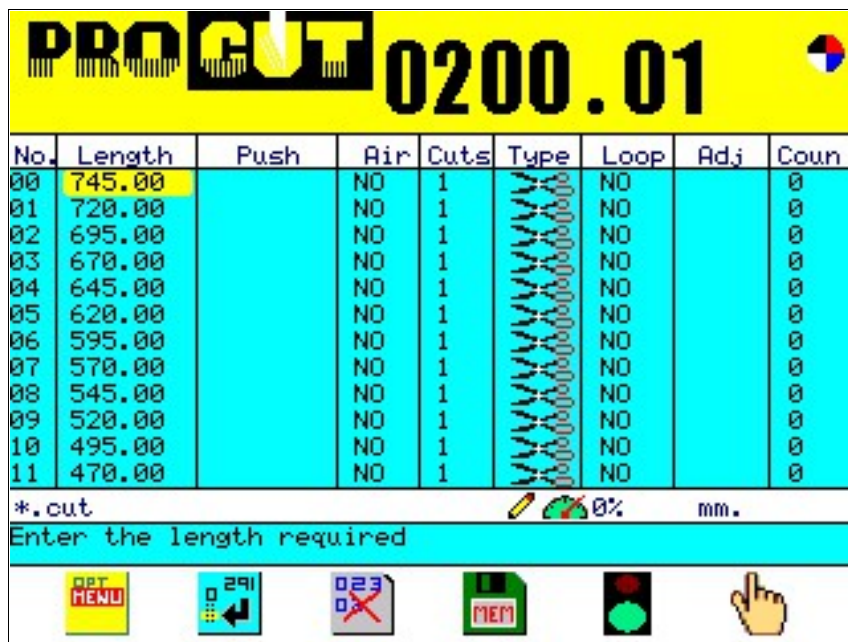



If everything looks OK press F4 to populate the Edit screen with the cuts needed. There



is a warning message shown before the data is populated to ensure a program is not overwritten:









Press any key apart from menu to populate the Edit screen as shown below in the following 2 images:



PRO CUT 0200.01 								
No.	Length	Push	Air	Cuts	Type	Loop	Adj	Coun
12	445.00		NO	1	W	NO		0
13	420.00		NO	1	W	NO		0
14	395.00		NO	1	W	NO		0
15	370.00		NO	1	W	NO		0
16	345.00		NO	1	W	NO		0
17	320.00		NO	1	W	NO		0
18	295.00		NO	1	W	NO		0
19	270.00		NO	1	W	NO		0
20	245.00		NO	1	W	NO		0
21	245.00	085.00	YES	0	W	NO		0
22								
23								

*.cut   0% mm.

Enter the length required

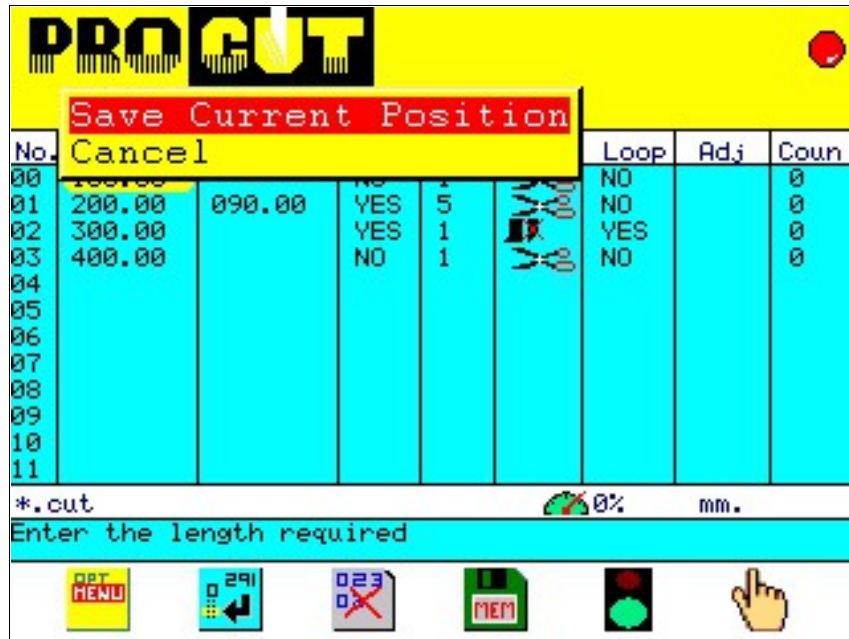
As you can see the last line has been added automatically and is a pushout command with air.

Once the user is used to using this feature it can be used as the start for many programs and then modified as needed for paper rotation and trimming.

Save Position



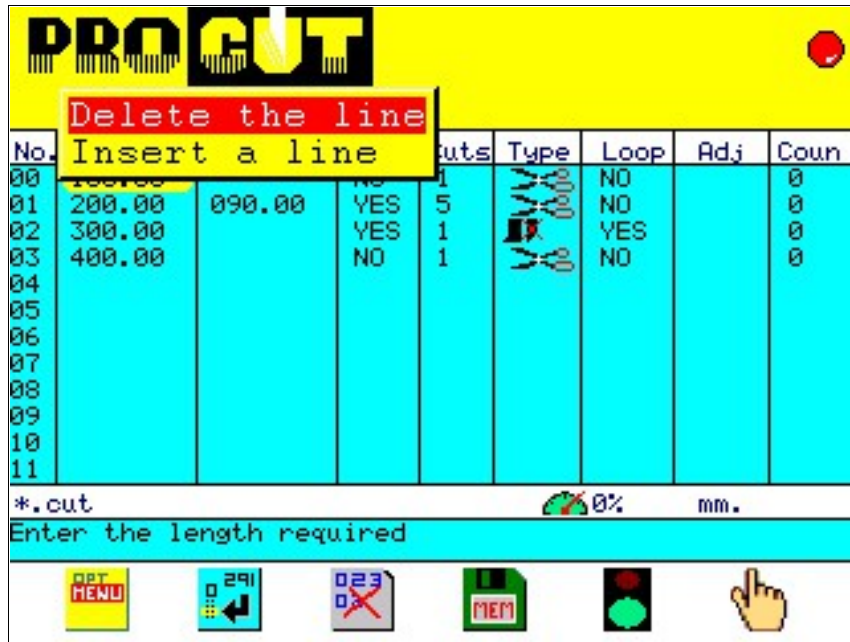
This function will allow the user to save the current position showing on screen in to the length where the cursor is located at the time. This allow the user to make small corrections to the program using the hand wheel or manual mode.



Delete Line/Insert line



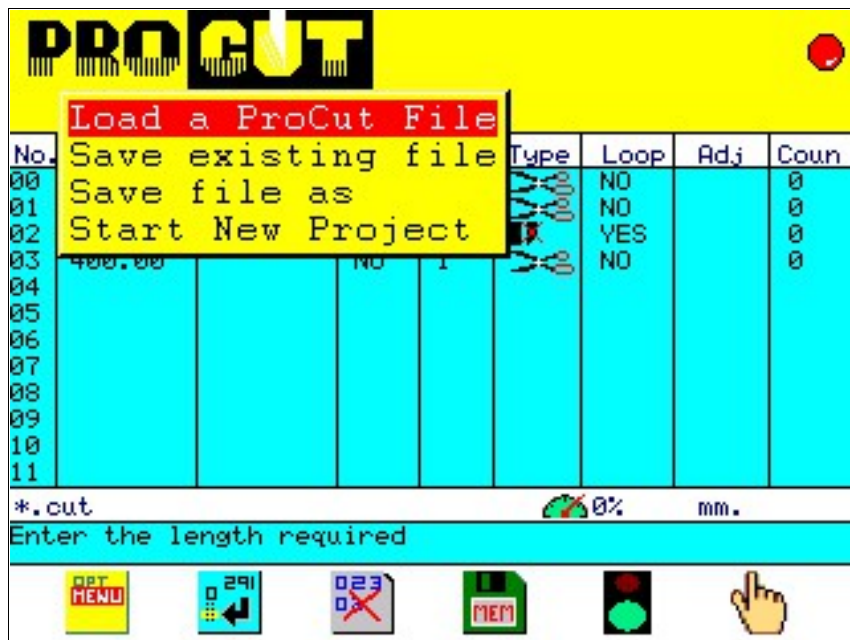
By selecting this option, a pop up menu will appear showing 2 options: Delete a line or Insert a line. Select the option required by using the arrow keys and pressing enter.



Inserting a line will duplicate the line where the cursor is, then the operator will have to edit it to the desired position.

Memory Menu

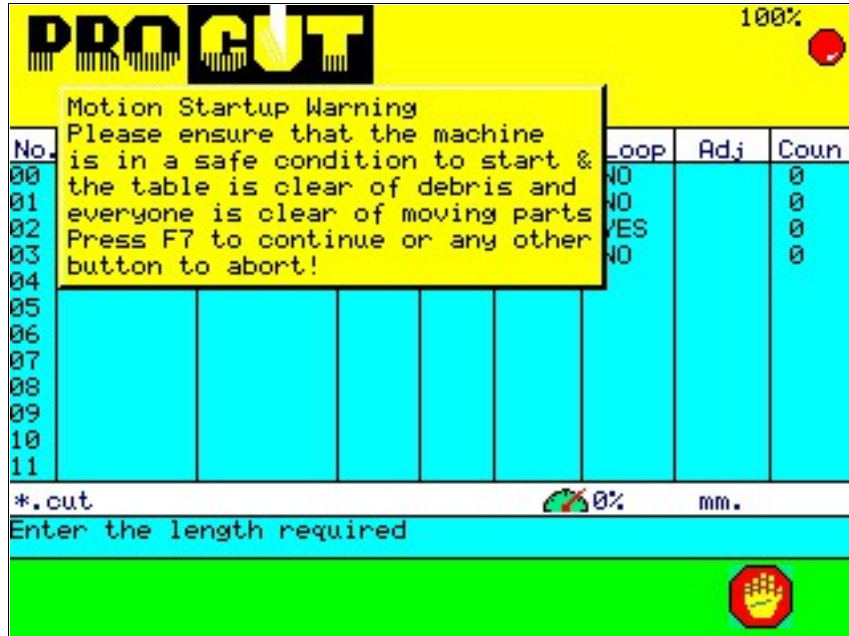
By selecting this option the user goes to the memory menu. From the memory menu the user can save files, retrieve files, and delete files. Please refer to page 26 for more information.



Run



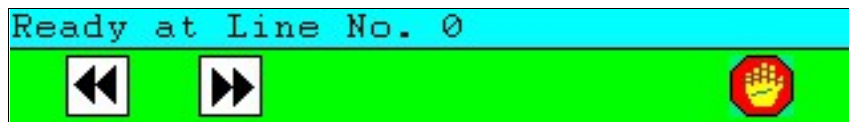
Pressing Run (automatic mode) will start execution of the program. A Warning prompt will be shown which avoids unintentional start up, press F7 to continue.



To stop the machine press the MENU key or the stop button



When the program starts executing, the following running controls are shown on the icons section:



Previous Cut



This control allows the operator to move the backgauge to the Previous cut location in order to repeat a cut or cuts.

Next Cut



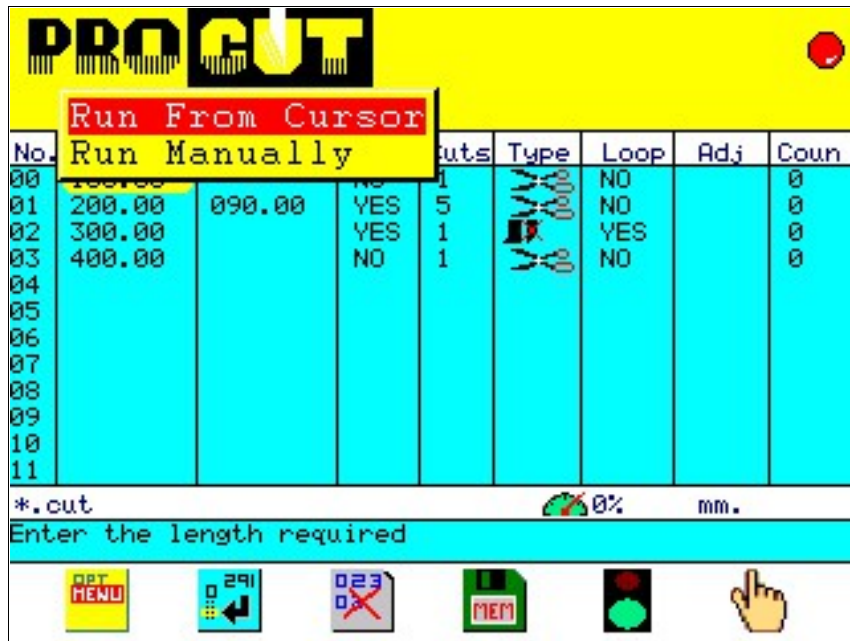
This option allows the operator to move the backgauge to the Next cut location in order to skip one or more cuts.

Stop

This option will stop the execution of the program.

Manual Mode

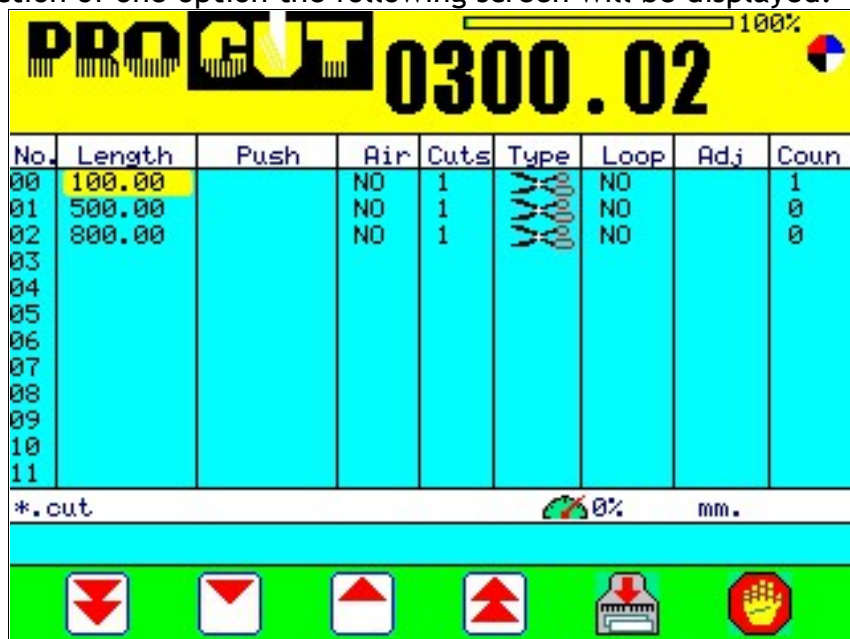
A pull down menu will appear when selecting this function with the two options shown below, scroll using the arrow keys and press ENTER



The screenshot shows the PRO CUT software interface. At the top, the title 'PRO CUT' is displayed in a stylized font. Below it, a pull-down menu is open, showing two options: 'Run From Cursor' (highlighted in red) and 'Run Manually' (highlighted in yellow). The main screen displays a table with columns: No., Length, Push, Air, Cuts, Type, Loop, Adj, and Coun. The table contains data for rows 00 through 11. Below the table, there is a status bar showing '*.cut' and '0%' progress. At the bottom, there is a prompt 'Enter the length required' and a row of icons including 'OPT MENU', '291', '223', 'MEM', a green light, and a hand cursor.

No.	Length	Push	Air	Cuts	Type	Loop	Adj	Coun
00	100.00			1		NO		0
01	200.00	090.00	YES	5		NO		0
02	300.00		YES	1		YES		0
03	400.00		NO	1		NO		0
04								
05								
06								
07								
08								
09								
10								
11								

Following selection of one option the following screen will be displayed:



The screenshot shows the PRO CUT software interface after selecting the 'Run Manually' option. The title 'PRO CUT' is displayed at the top. Below it, a large value '0300.02' is shown. The main screen displays a table with columns: No., Length, Push, Air, Cuts, Type, Loop, Adj, and Coun. The table contains data for rows 00 through 11. Below the table, there is a status bar showing '*.cut' and '0%' progress. At the bottom, there is a row of icons including a red arrow pointing down, a red arrow pointing up, a red arrow pointing left, a red arrow pointing right, a printer icon, and a hand cursor.

No.	Length	Push	Air	Cuts	Type	Loop	Adj	Coun
00	100.00		NO	1		NO		1
01	500.00		NO	1		NO		0
02	800.00		NO	1		NO		0
03								
04								
05								
06								
07								
08								
09								
10								
11								

GoTo

This option will be activated when using the manual run option. There is no box or menu to call up, just start typing the desired length using the number keys and press the ENTER key to move to that position.

By pressing the '+' or '-' keys and then a number, the backgauge will add or subtract the number to the current position.

Forward

This control is to move the backgauge forward at the speed set up in the speed settings "Jog speed". The maximum speed is 35% of the maximum speed.

Forward slow

This control is to move the backgauge forward at a slow fixed speed.

Reverse

This control is to move the backgauge in the reverse direction at the speed set up in the speed settings "Jog speed". The maximum speed is 35% of the maximum speed.

Reverse slow

This control is to move the backgauge in the reverse direction at a slow fixed speed.

Push out

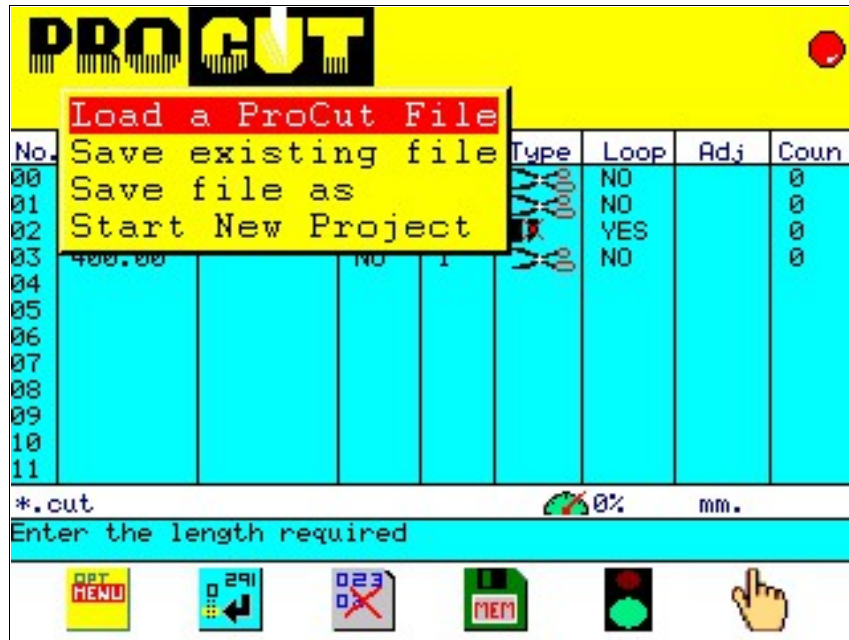
This control is to help the operator to push the paper out.

Stop

To stop manual mode at any time press the MENU key or the Stop button.

Memory Menu

The controller's memory can store up to 200 programs of up to 1000 cuts long, the memory menu is shown below:



Start new project

Using the arrow keys "Start new project" from the menu and press ENTER. The controller will respond with a prompt "Clear data?", select "OK". This will clear the Edit/Create screen. If you have not saved the program that was open, a message asking you if you want to save the program will appear.

Save existing file

Save, as the name suggests, is used to save an existing product. Normally this involves updating an existing product. If save is used when the message bar is indicating that the selected file has not been named the system will not allow you to save the file. For that you have to use the "Save new file" option.

Save file as

Save file as, is used to save a new product to the memory or to copy an existing product to a new file name. Enter the new file name then press ENTER to complete the command or to abort the save press MENU. If the name entered is already in use the system will display an error message telling the user the name is already in use. Aborting the save at this stage will leave the memory unchanged with the file not saved.

Load Procut File

This is used to open a file. File Name is the name of the file(s) that are being displayed and size is the number of lines of the file. Use the up and down arrow keys to move the cursor between the files and press ENTER to select the required file, this will be highlighted. Press MENU to return to the memory menu.

Navigating Storage Drives

The controller has drive A: and drive B: built in. Drive C: is an attachable USB PEN Drive and when the file select box is shown on screen, the drives can be switched between by using the + key. The A: drive is battery backed memory and is good for regular use. If the battery onboard was to become flat the data stored here would be lost. Drive B: is FLASH memory and data stored here will not be lost if the battery were to become flat. FLASH memory however is not good for regular write/erase cycles so only programs that will not be changed and just recalled should be stored here. All files should be backed up to PEN Drive at regular intervals and PEN drives can also be used to run the same program on multiple machines or to copy from one machine to another.

Using the Jog wheel in Run mode

The Jog wheel is an optional feature and if fitted will replace the mechanical hand wheel for manual adjustment. The jog wheel allows the user to make fine adjustments of the backgauge while the system is in run mode.

The Jog wheel is intended for small corrections therefore the maximum distance the backgauge can be moved using the jog wheel is +/- 10 mm. Once the user has moved the backgauge to the correct position and a cut is executed the program will register the difference between the value in column 'Length' and the current position into the Adj ('+/- ' for Spanish) column. That value is TEMPORARY and will remain until the program is reloaded or replaced.

If the operator wishes to keep the position permanently, the user will have to enter it manually into the 'Length' column or by using the 'Save position' option explained previously.