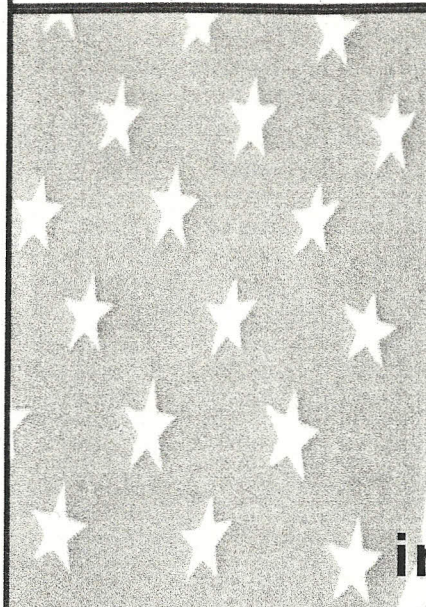
HE&M® SAW

The saw that cuts straight.



HE&M Saw
Pryor, OK
(888) 729-7787
info@hemsaw.com

Made with Pride in the USA

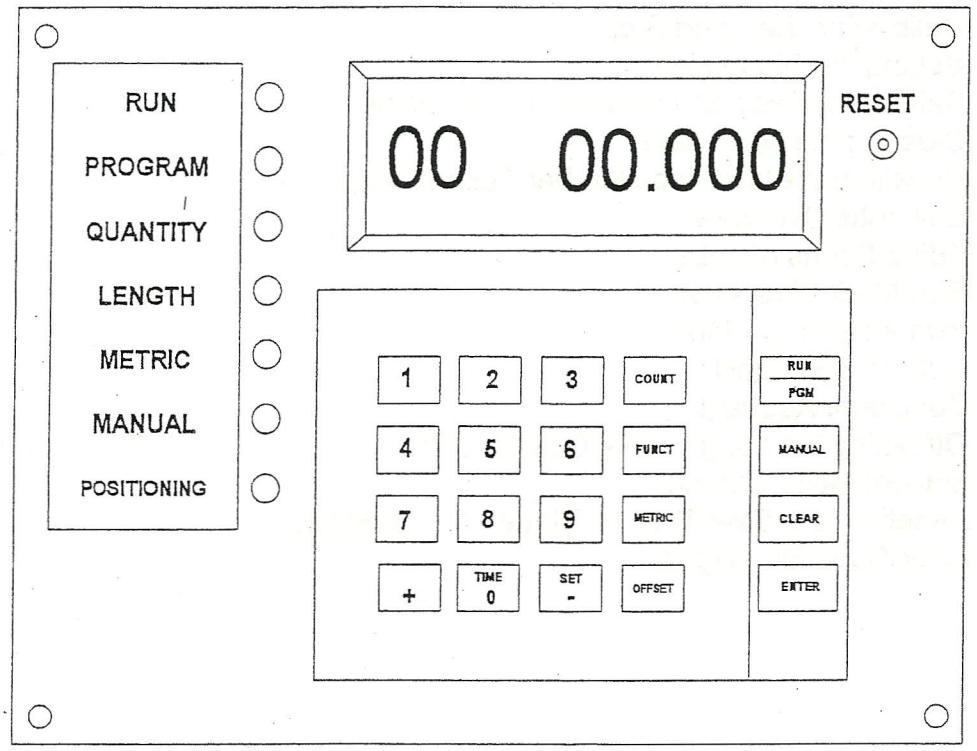
Cyclone Auto-C Computer Controlled Feed System

Visit Our Website
www.hemsaw.com
To See Tomorrow's Technology Today!

TABLE OF CONTENTS

1.	CCFB Overview	4
2.	Computer console Overview	5
3.	Program / Idle Mode Overview	7
4.	Manual Mode	8
5.	Calibrating the Feed Stop	11
6.	Setting the Blade Kerf	16
7.	Setting the Feed Stop Positioning Window	20
8.	Clearing the Job Table	25
9.	Recalling the Last Job Number / Length Ran	27
10.	Edit Jobs Overview	29
11.	Edit a Series of Jobs	30
12.	Run Mode Overview	37
13.	Run a Series of Jobs	38
14.	Cut Time Request	43
15.	Cut Count Request	44
16.	Offsetting the Length of a Current Job	45
17.	Manual Mode Cutting	49
18.	Resetting the Saw: Broken Blade / Out of Stock	53
19.	Error Code Messages	54

HE&M Inc. whose policy is one of continuous improvements, reserves the right to change specifications, price, or design at any time without notice and without incurring obligation. All rights reserved. 5/22/97 HE&M Inc.



CCFB Computer Display / Keypad

1. Computer Controlled Feed Overview:

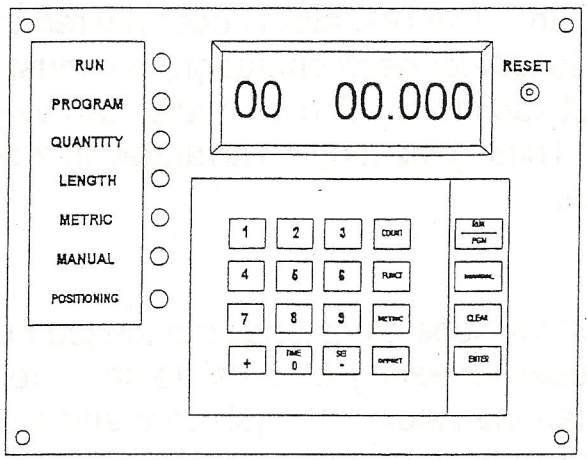
The Computer Controlled Feed will improve the operation and efficiency of the sawing system. The operator is not required to go to the feed table and set the length for each operation, nor must he set the number of pieces to be cut each time. The computer can be programmed to cut 99 different jobs. These jobs may be arranged in a series of cuts for each material size.

It is recommended that jobs cards showing the job numbers, length, and number of pieces for each job be made up. The when a job is to be run the operator can then look at the job card and enter the starting job number for series of jobs to be run.

He loads the saw with the material to be cut and sets the switches for automatic operation and then pushes the auto-start button. The saw then takes over and cuts the entire series of jobs.

This saves time and reduces the possibility of an operator making an error in setting the machine each time. This translates into less rework, less waste, and higher productivity.

2. Computer Console Overview:



Display Information:

The computer will display:

1. The job number that is being cut, programmed, or editied.

2. The quantity of parts to be cut and the number of pieces that have been cut (if a job is running).

3. The Length of the part that is or will be cut when the job runs.

4. The time in the current cut.

5. The position of the feed stop.

Numeric Formats:

The computer will accept:

1. Job numbers in a range from 1 to 99.

2. Quantities in a range from 0 to 999. A quantity of zero (0) will stop program execution when the computer runs that job.

3. Lengths in a range from 0 to 999.999 in either inches or centimeters. All lengths must be entered to the third decimal point. For instance, a 1.0 inch part must be entered as 1.000. Press the 1 key once and the 0 key three times.

Keyboard Functions:

The function keys are:

1. Count Key: If the computer is cutting, a push of this key will display the number of that have been cut.

2. Run / Program Key: This key is used to switch between run and program modes.

3. Function Key: This key is used with other keys to access special functions.

4. Manual Key: This key is used to select manual mode.

5. Metric Key: This key is used to switch between inch and centimeter lengths when programming a job.

6. Clear Key: This key will erase displayed information during data entry. If the computer is cutting, a push of this key will cause the cutting cycle will abort and reinitialize.

7. Enter Key: This key is used to accept the displayed information.

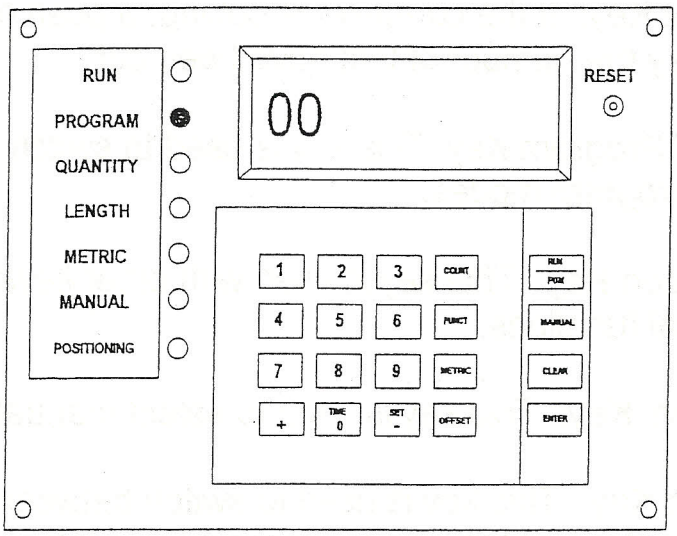
8. Offset Key: This key is used to change the part length for a job that is currently running.

9. Set Key: This key is used in conjunction with the Function key to re-calibrate the feed.

10. Time Key: This key will display the current time in the cut while held.

11. +/- Keys: These keys are used in conjunction with the Manual and Offset Key to change feed stop position.

3. Program / Idle Mode:



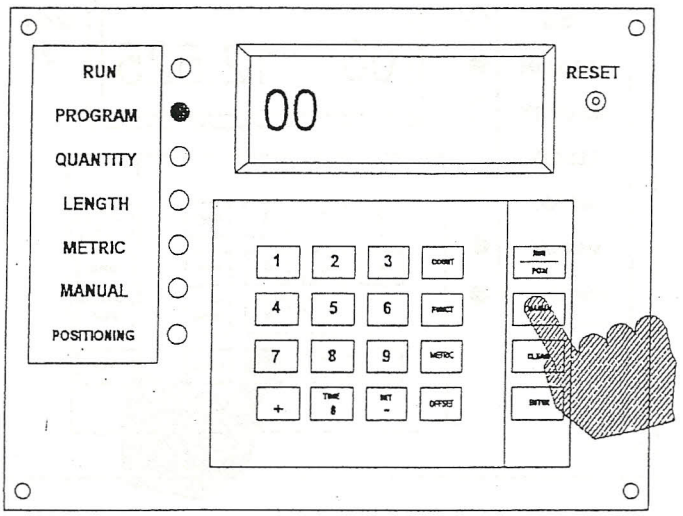
After power is applied and the CCFB computer is done initializing, the program light will be on and a pair of flashing zeros will be placed on the left side of the display. The CCFB computer is now in program / idle mode.

The operator can:

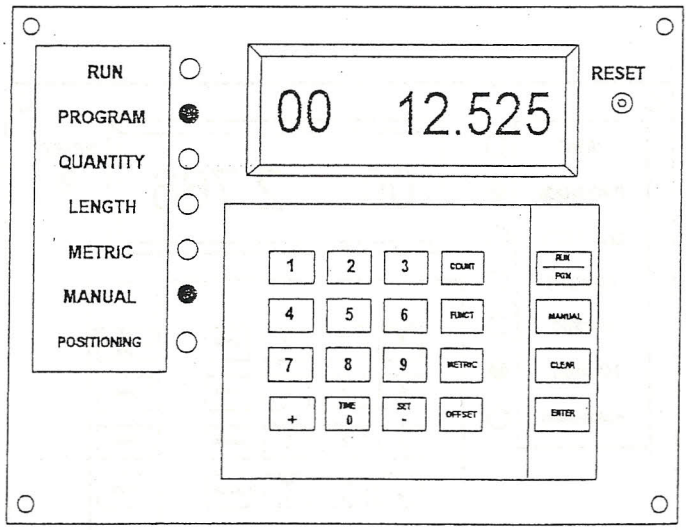
1. Program or Edit jobs.
2. Enter manual mode.
3. Run a program or series of jobs.
4. Calibrate the feed or check feed stop position.
5. Adjust the blade kerf.
6. Adjust the feed positioning window.
7. Clear the Job Table.
8. Recall the length of the last job ran.

4. Manual Mode:

Manual Mode allows the operator to check the feed stop's position or to move the feed stop.

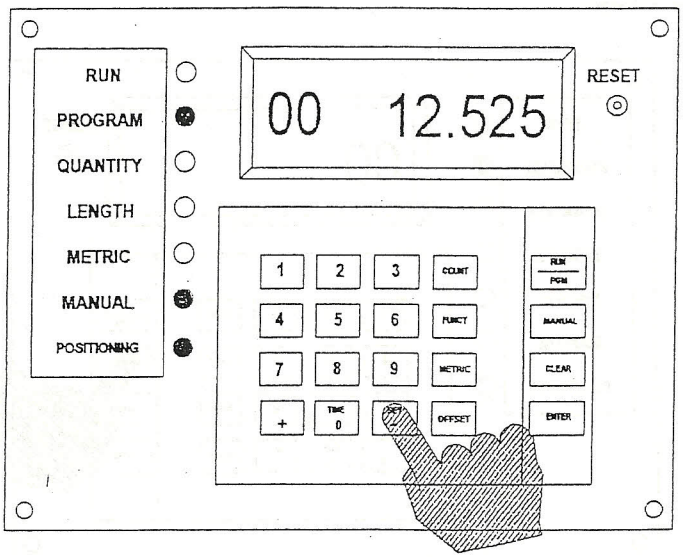


Select Manual Mode: From the Program / Idle mode the operator will press the Manual Key to enter into Manual Mode.

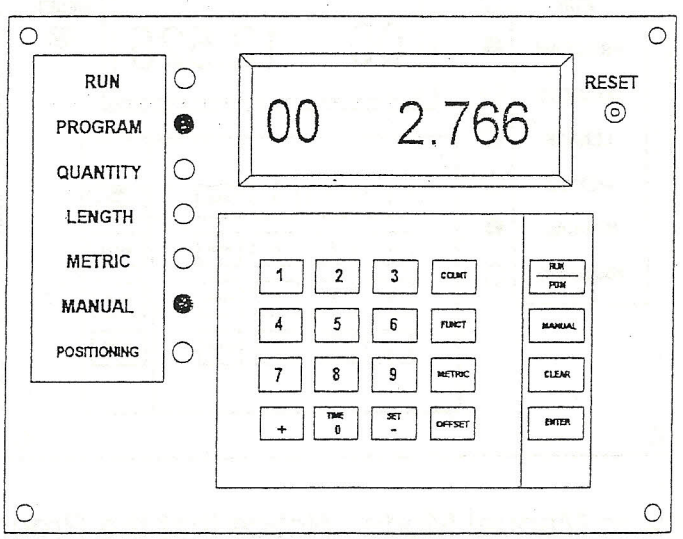


The CCFB is now in Manual Mode. Notice that the Program Light and the Manual Light is on. The pair of zero's on the left side of the display are not flashing and the current feed stop position is displayed on the right side of the display.

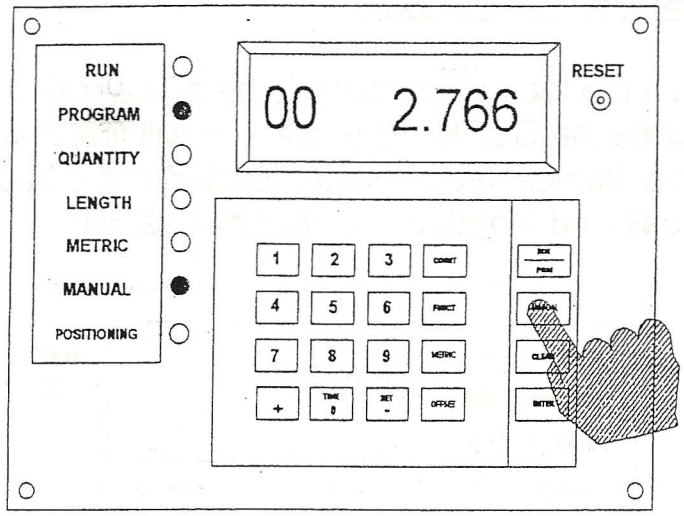
The operator may use the + key to retract the feed stop (increase part length) or the - key to jog the feed stop forward (decrease part length). In this example we are going to bring the feed stop forward.



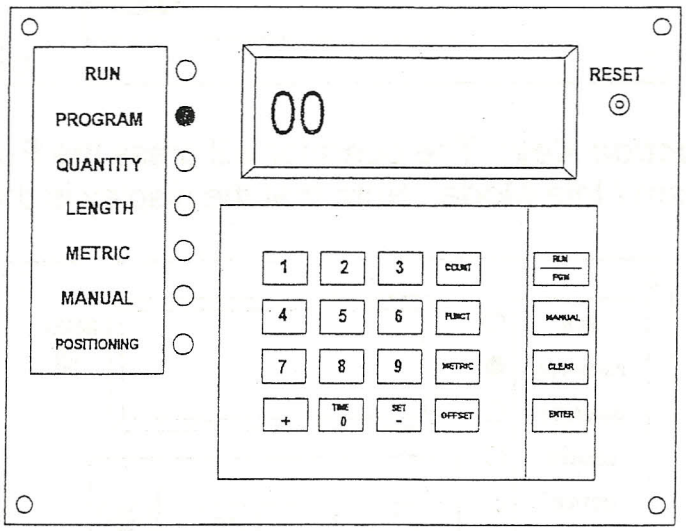
Press the - key: The operator will press and hold the - Key. The feed vise will now come forward. Then the positioning light will come on. The feed stop will now come forward until the operator releases the - Key.



Release the - key: The operator will release the - key when the desired position is reached. Notice that the positioning light goes out but the feed vise is held forward to assist jogging the feed stop with the +/- keys until the desired position is reached.



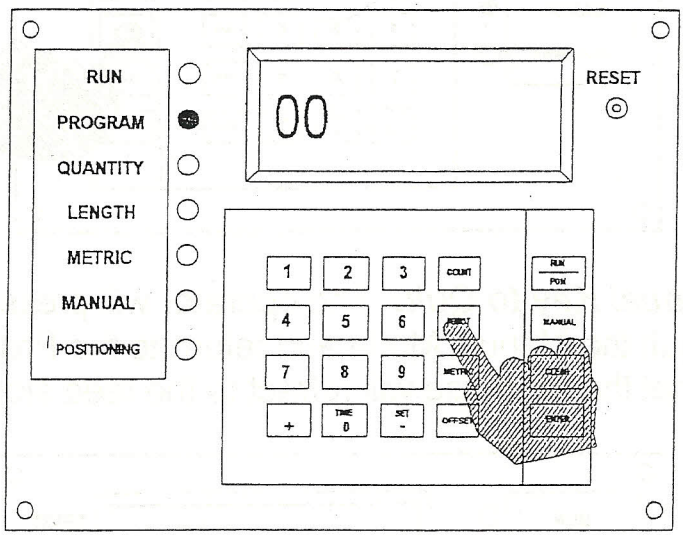
Press the Manual Key to Quit: The operator will press the Manual Key again to quit the Manual Mode and return to the Program / Idle mode. Note that the feed vise will retract to the feed stop.



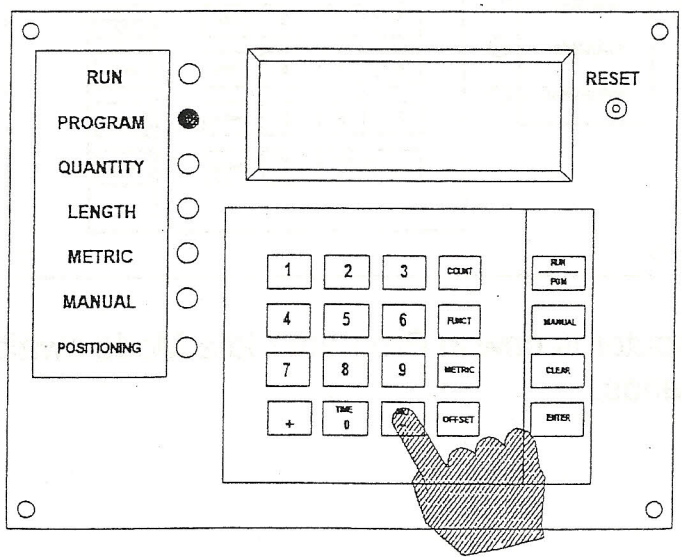
The CCFB computer is now in Program / Idle Mode awaiting new operator commands.

5. Calibrate the Feed Stop:

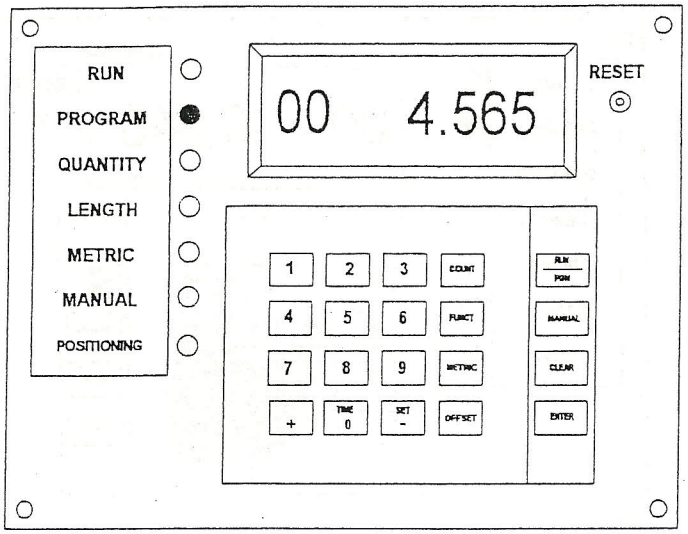
If for any reason the feed stop needs to be re-calibrated it is a simple matter to calibrate the CCFB. The operator will first need to read the length of the mechanical feed counter located at the back of the feed table or the measured length of the material last cut.



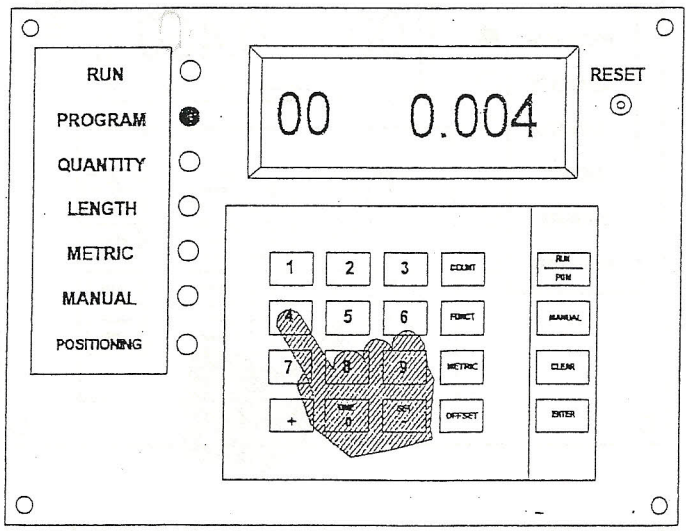
Press the Function Key: The operator will press the Function Key from the Program / Idle Mode. Note that the display is then blank.



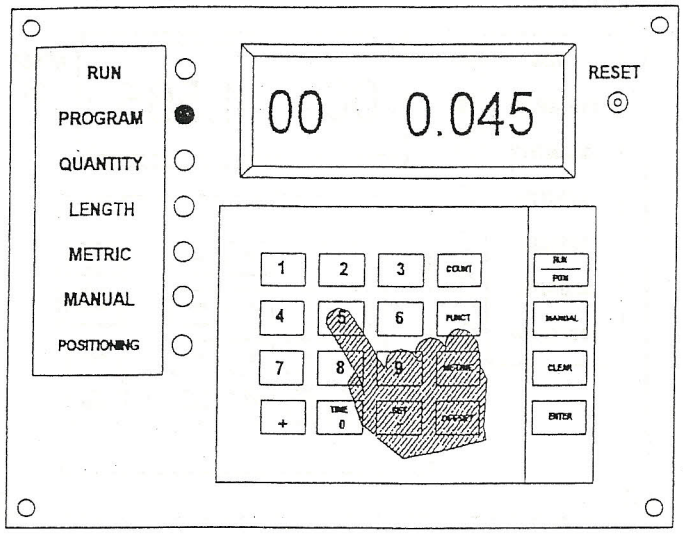
Press the Set Key: The operator will now press the Set key to display the current CCFB length.



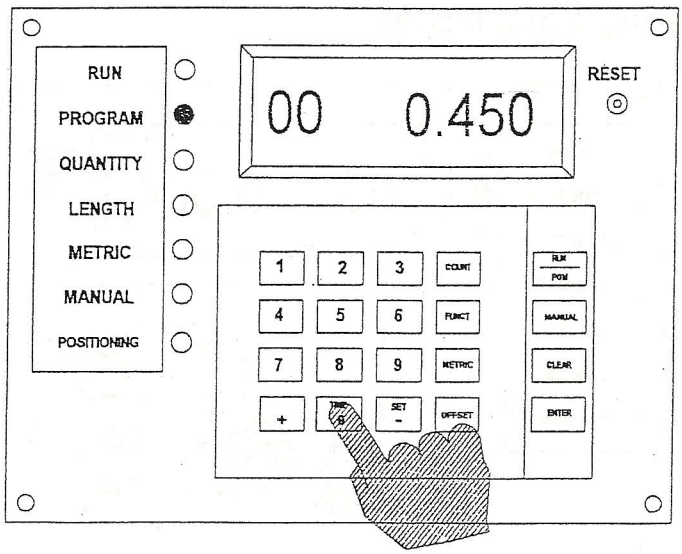
If the length displayed by the CCFB computer is correct, the operator may return to the Program / Idle Mode by pressing the Enter key now. However, in this example the measured length is 4.500 inches while the CCFB is displaying 4.565 inches.



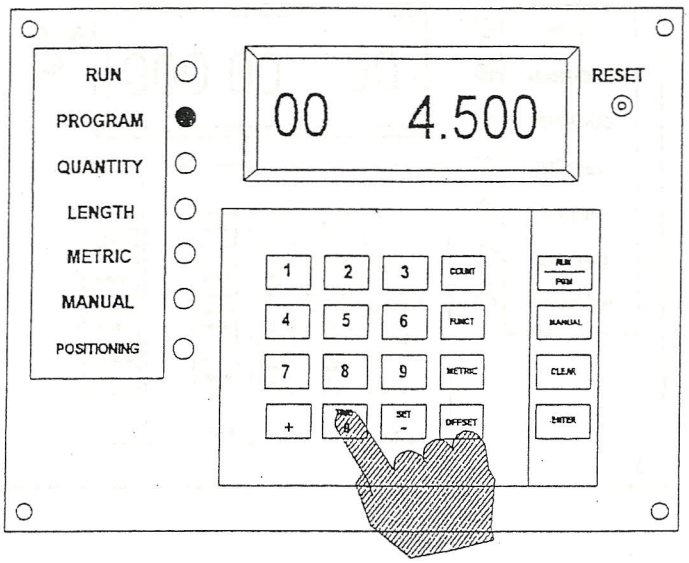
Press the 4 Key: The operator will press the # 4 key to place a 4 on the display.



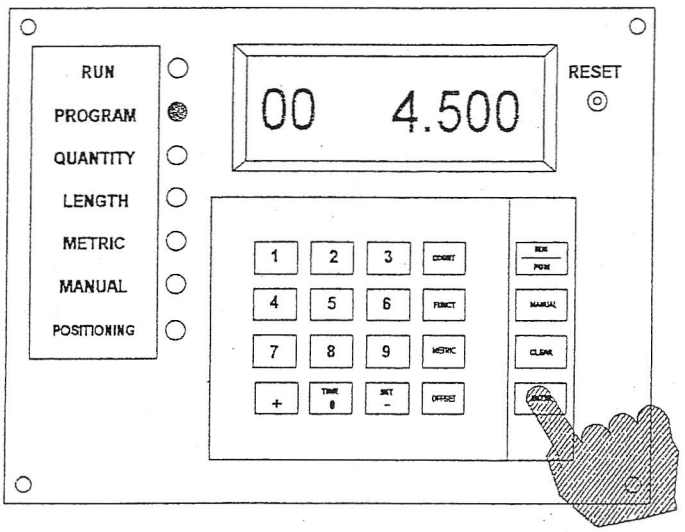
Press the # 5 Key: The operator will press the #5 key to place a 5 on the display. Note that the number 4 is shifted left one place.



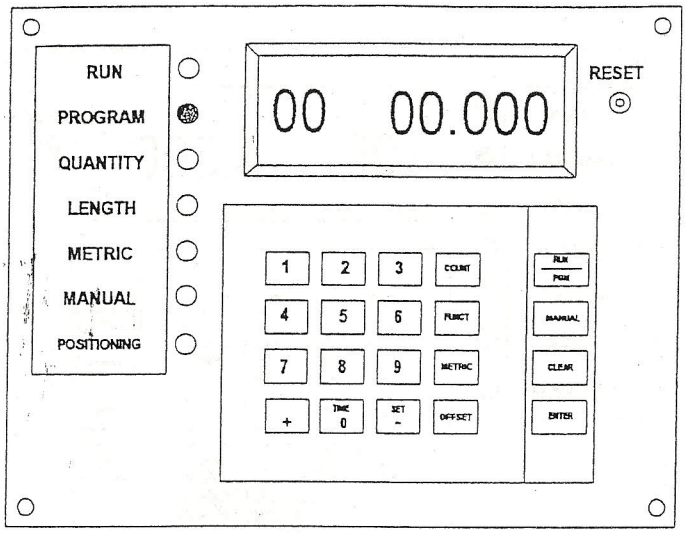
Press the # 0 Key: The operator will press the # 0 key to place a zero on the display.



Press the # 0 Key again: The operator will press the # 0 key again. Note that the displayed value now equals the measured or read value.



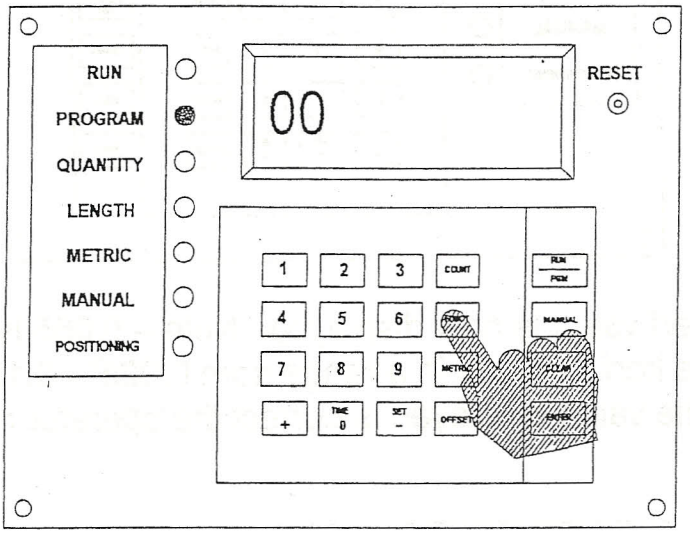
Press the Enter Key: The operator will finally press the Enter key to accept the display value of 4.500 inches. This value is written to the CCFB memory. Note that the display automatically returns to the Program / Idle mode



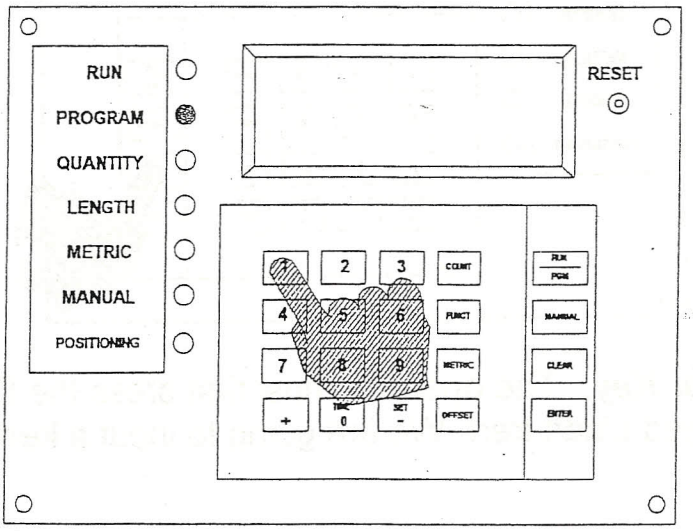
The CCFB computer is now back in the Program / Idle mode awaiting operator programming or commands.

6. Set the Blade Kerf:

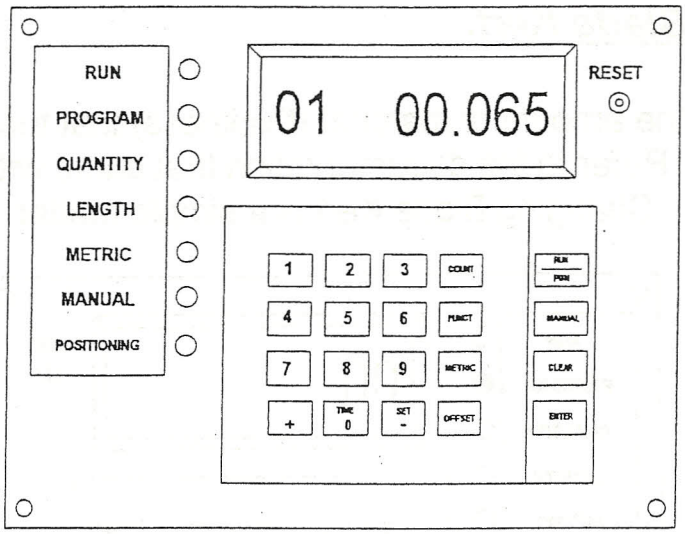
Blade Kerf is the amount of material (thickness) that the blade removes when cutting. Refer to the documentation that came with your blade for the kerf value. Changing Blade Kerf is a simple matter.



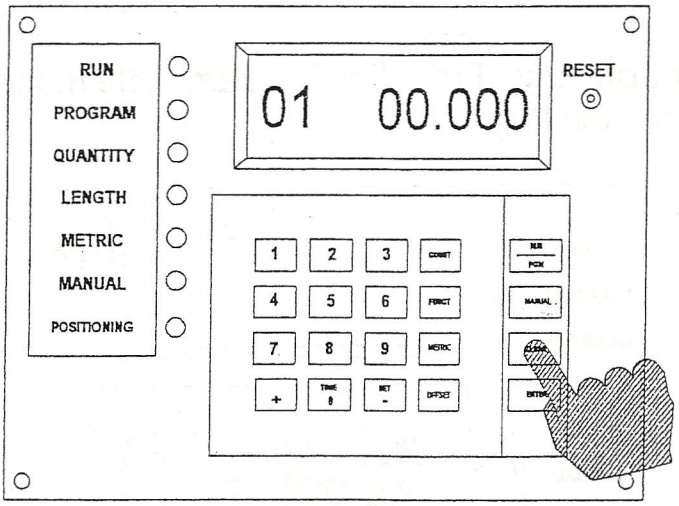
Press the Function Key: From the Program / Idle mode the operator will press the Function Key.



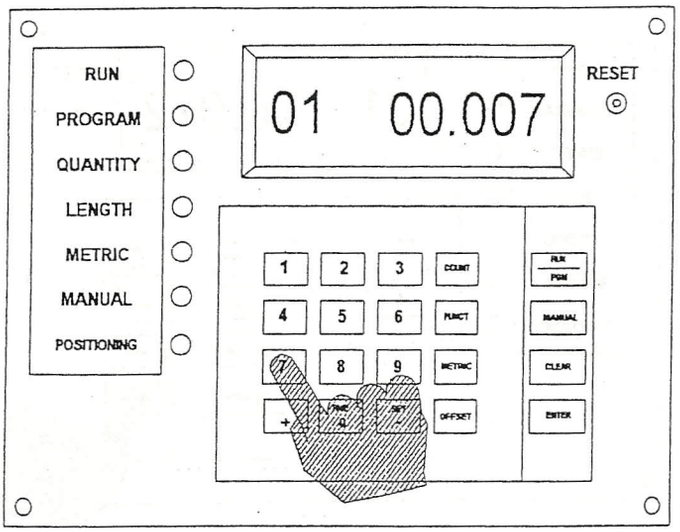
Press the # 1 Key: The operator will now press the # 1 key to enter into the Set Blade Kerf Mode.



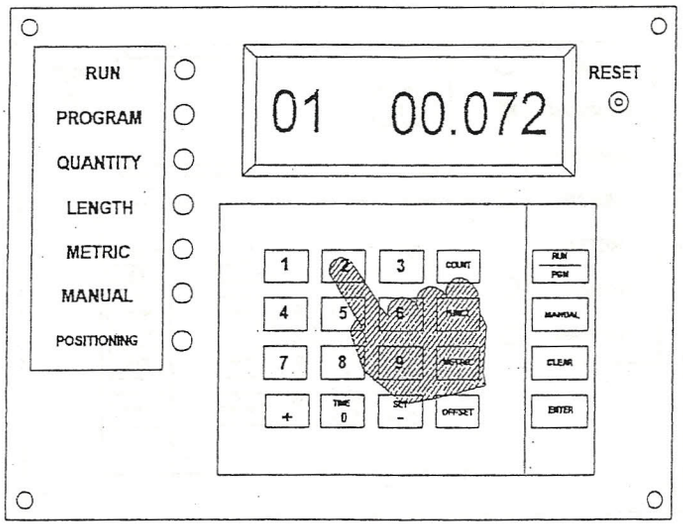
The current Kerf value is now displayed. Note – 0.065 is the default value for blade kerf. Values in a range from 0.025" - 0.150" will be accepted. If the value displayed is correct the operator need only press the Enter key.



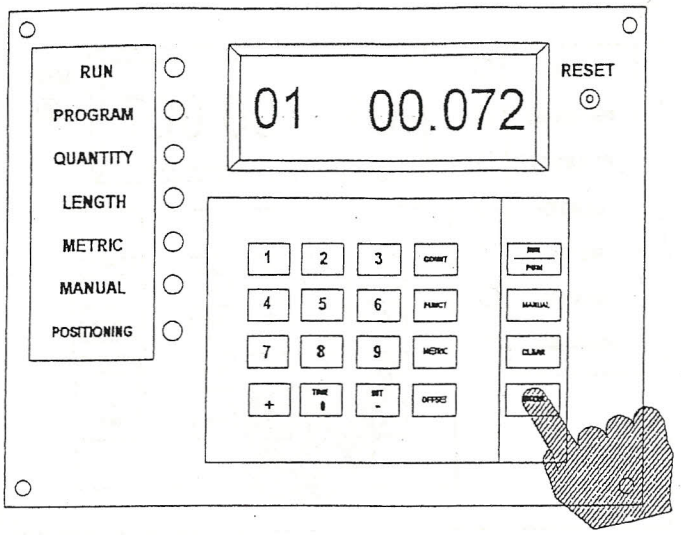
Press the Clear Key: The operator must first press the Clear key to zero the displayed blade kerf. We are going to input a kerf of 0.072".



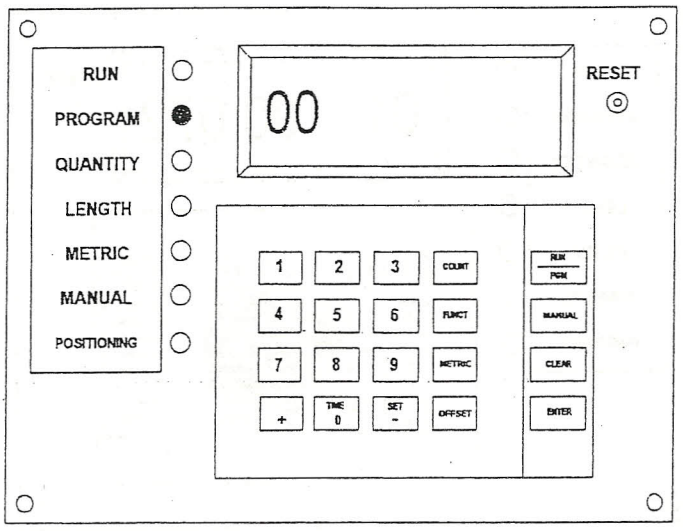
Press the # 7 Key: The operator will press the #7 key to place a 7 on the display.



Press the # 2 Key: The operator will now press the #2 Key to place a 2 on the display. Notice that the #7 has been shifted one place left. Notice also that the kerf value that we desire is displayed.



Press the Enter Key: The operator will press the Enter Key to accept the displayed value of 0.072" for blade kerf.

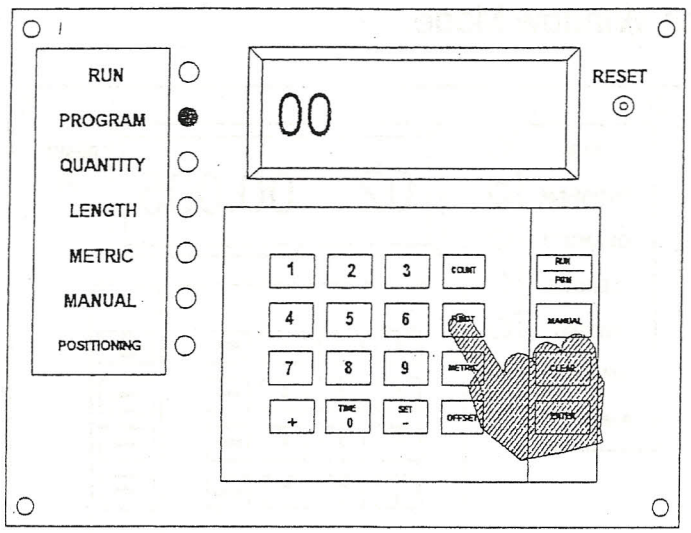


The CCFB automatically returns to the Program / Idle mode upon successful blade kerf entry. The CCFB is now awaiting operator programming or commands.

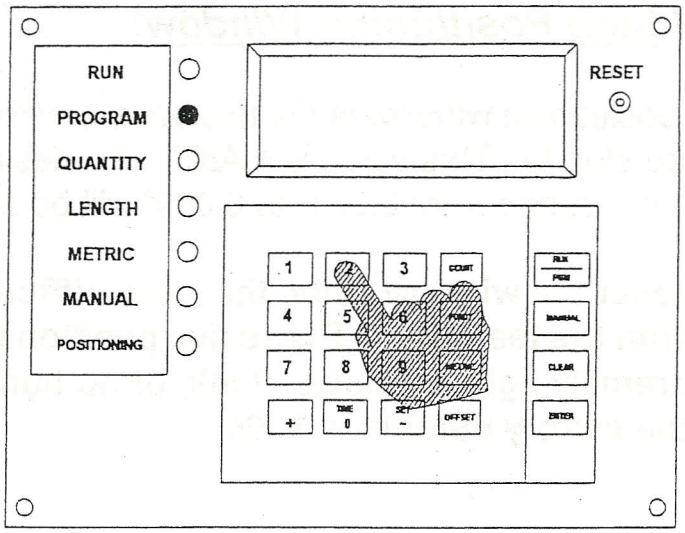
7. Set Feed Stop Positioning Window:

The feed stop positioning window is the tolerance that the CCFB will position the feed stop to. This value is + AND - the desired target length. Values in a range from 0.001" to 0.099" will be accepted.

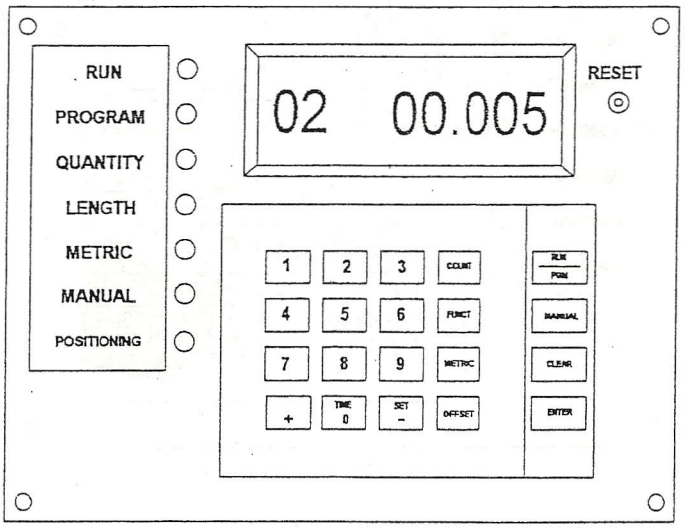
NOTE- the smaller the window value the more difficult it is for the CCFB to position the feed stop. Excessive position hunting may occur with extremely tight windows. Little or no hunting should be present with the factory default of 0.005".



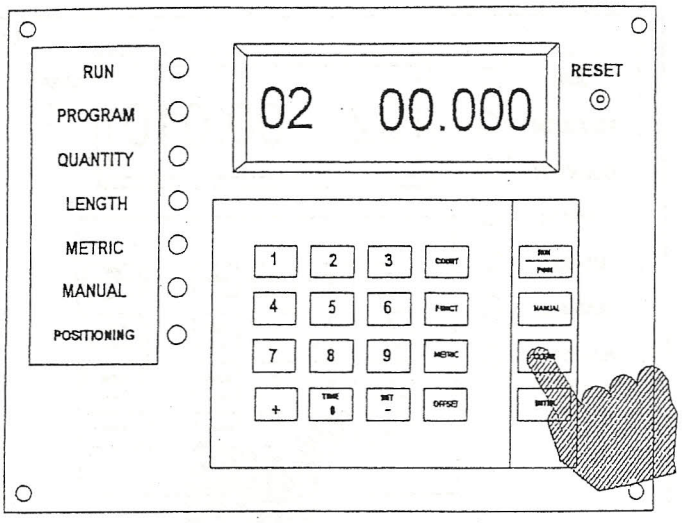
Press the Function Key: From the Program / Idle mode the operator will press the Function Key.



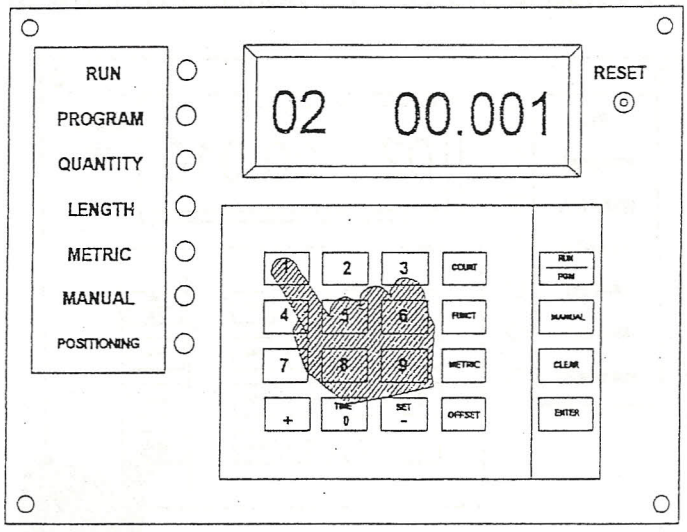
Press the # 2 Key: The operator will now press the # 2 key to enter into Set Position Window Mode.



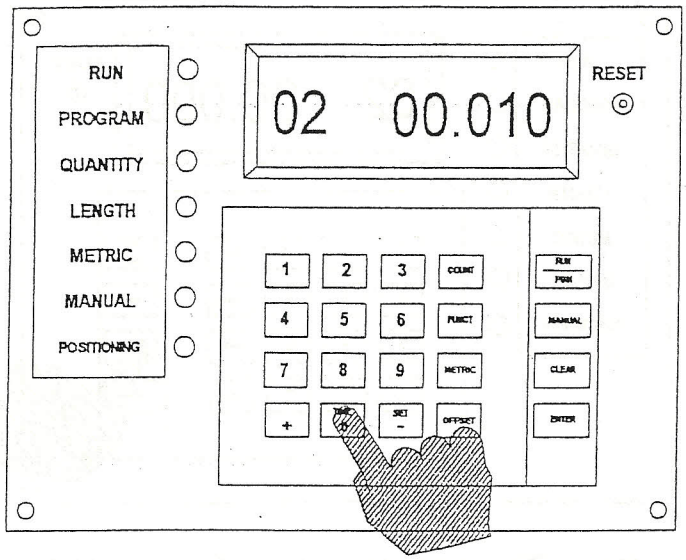
The current positioning window is now displayed. If this value is correct the operator may press the Enter Key now. However, for this example we are going to enter a new positioning window of 0.010".



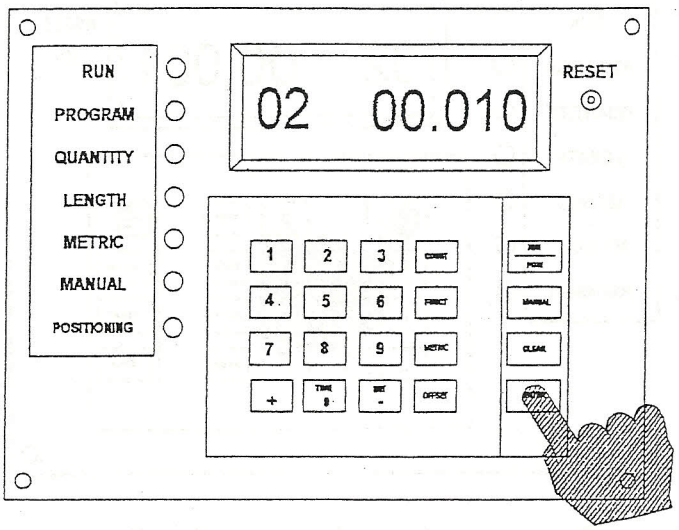
Press the Clear Key: The operator must first press the Clear Key to zero the displayed positioning window.



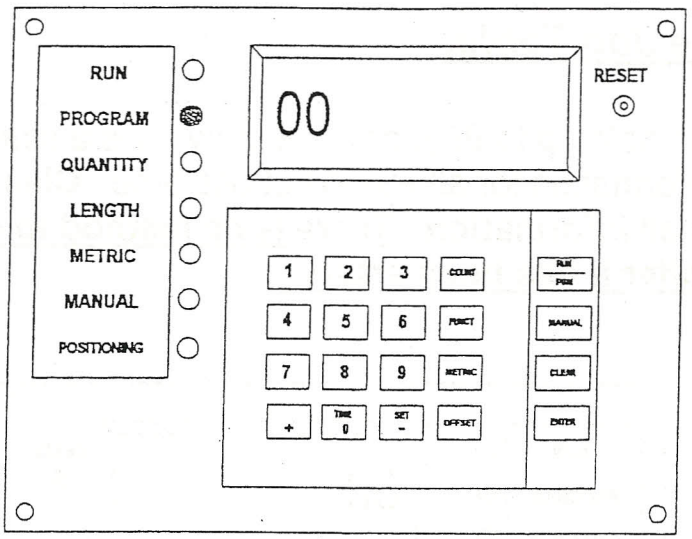
Press the # 1 Key: The operator will press the # 1 key to place the number 1 on the display.



Press the # 0 Key: The operator will now press the #0 Key. Notice that the displayed value is the desired position window of 0.010".



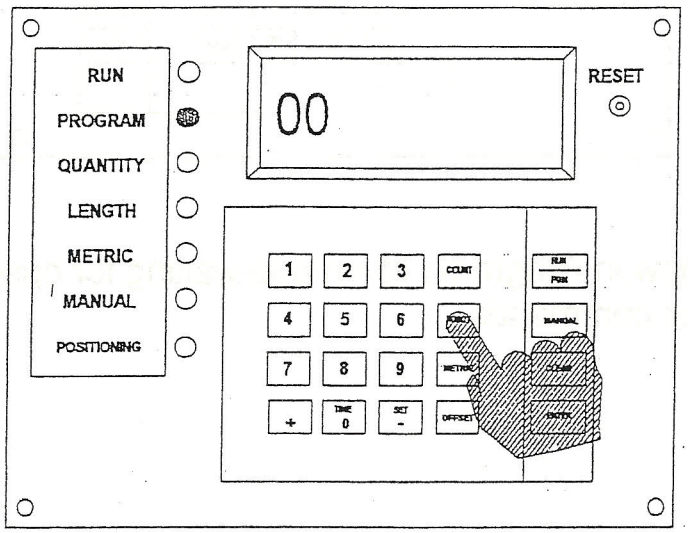
Press the Enter Key: The operator will now press the Enter key to accept the display positioning window of 0.010". Notice that the CCFB returns to the Program / Idle mode.



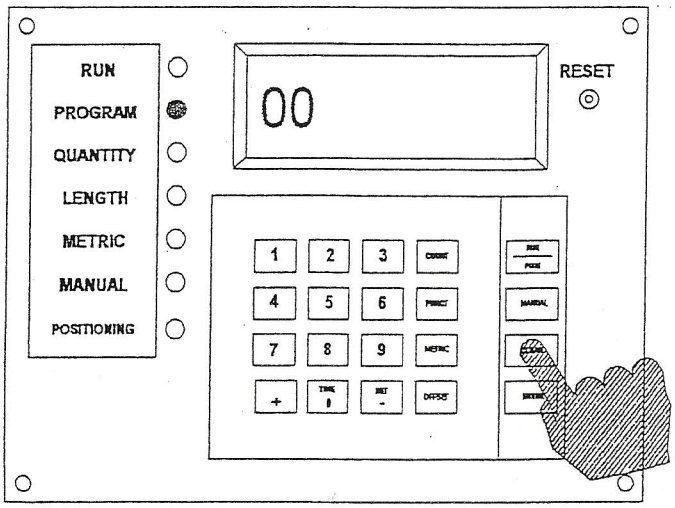
The CCFB is now in Program / Idle mode waiting for operator programming or commands.

8. Clear the Job Table:

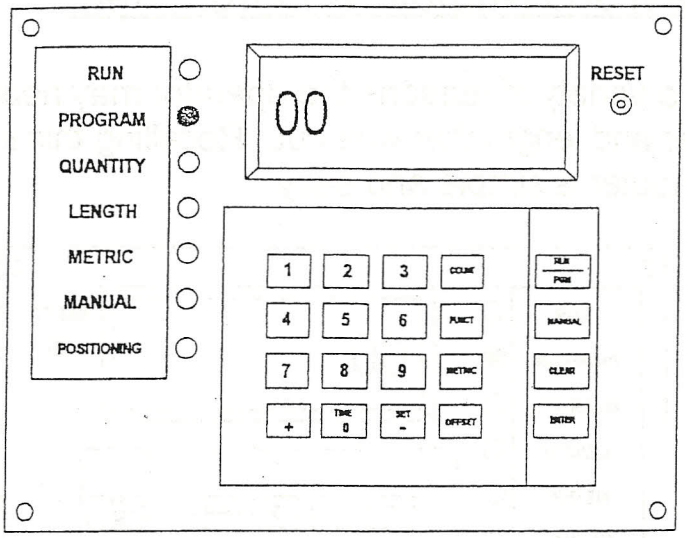
The CCFB can hold up to 99 jobs in memory. It is a simple matter to clear all the information for all 99 jobs at one time. **Clearing the Job Table erases all information. There is no method to retrieve any information after it has been erased.**



Press the Function Key: The operator will press the function key from the Program / Idle mode.



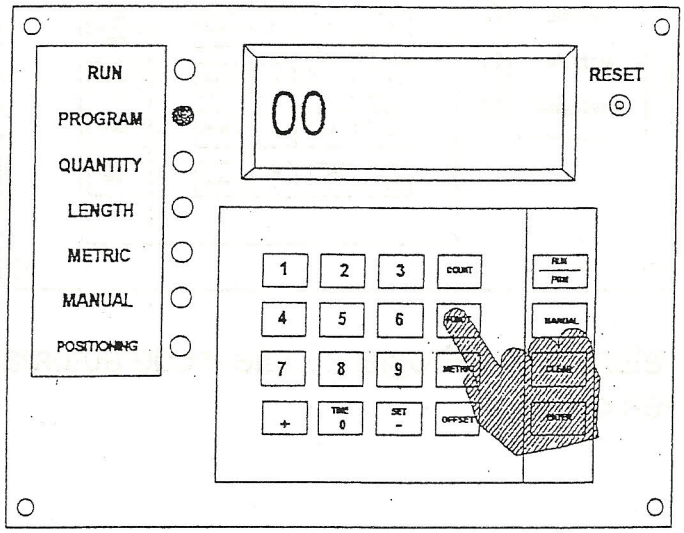
Press the Clear Key: The operator will press the Clear Key to erase all job information contained in the job table.



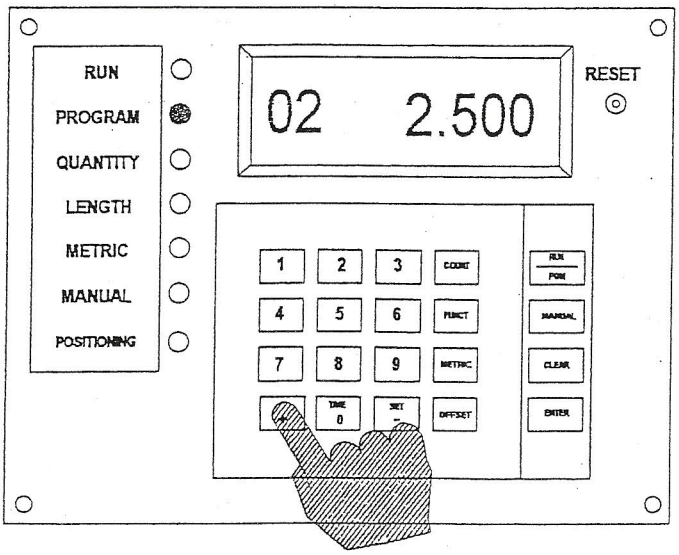
The CCFB will return to the Program / Idle mode automatically after the job table has been cleared.

9. Recall Last Job Number & Length Ran:

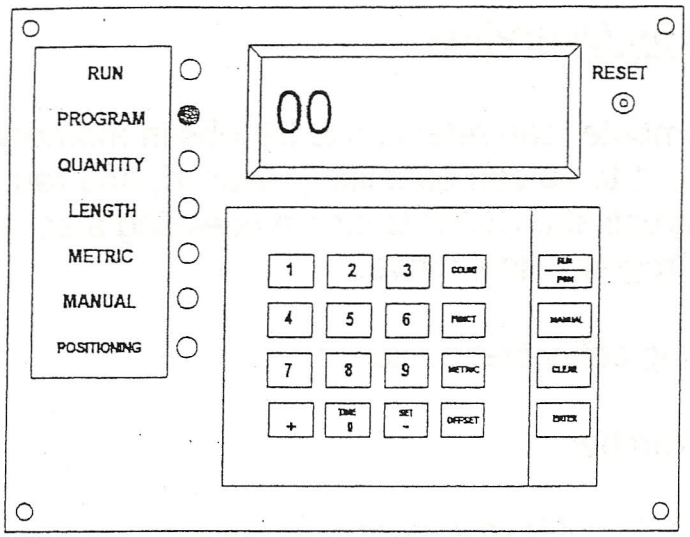
There may be a variety of reasons the operator may need to recall the last job number and length that was cut. Recalling this information with the CCFB computer is simple and easy.



Press the Function Key: The operator will press the Function Key from the Program / Idle mode.



Press and Hold the + Key: The operator will press the + key. While the + key is held, the last job number and length will be displayed.



Release the + Key: When the operator releases the + key the CCFB returns to the Program / Idle mode. The CCFB is now awaiting new operator programming or commands.

10. Edit Jobs Overview:

The CCFB computer can retain up to 99 jobs in memory. Job numbers in a range from 1 to 99 can be edited, recalled, and ran. A job number of zero (0) instructs the CCFB to stop processing a series of jobs and return to the Program / Idle mode.

A job is a cutting entity that contains:

1. Job Number.
2. Length to cut in inches or centimeters.
3. Quantity or number of pieces to cut.

It is recommended that jobs cards show the job numbers, length and number of pieces for each job be created if a series of jobs is to be repeated often. This enables the CCFB to produce several "kits" which can be recalled from the CCFB memory.

For example, if 4 parts of different lengths are required, the operator may program job numbers 10, 11, 12, and 13 to cut the required parts. Job number 14 must contain 0 length and quantity to signify the end of the series. This series of jobs are then stored in the CCFB and can be ran whenever the need arises.

The operator need only to start or run job 10 and the CCFB will process jobs sequentially until a zero length and quantity is found. In this case, jobs 10, 11, 12, and 13 will be cut, while job 14 will signify the end of the series.

Editing a Series of Jobs:

In this example we are going to edit a series of jobs to produce the following parts and then stop when completed.

3 pieces cut 12 inches in length from 3" round.

5 pieces cut 25.5 centimeters in length from 3 " round.

2 pieces cut 6.750 inches in length from 3" round.

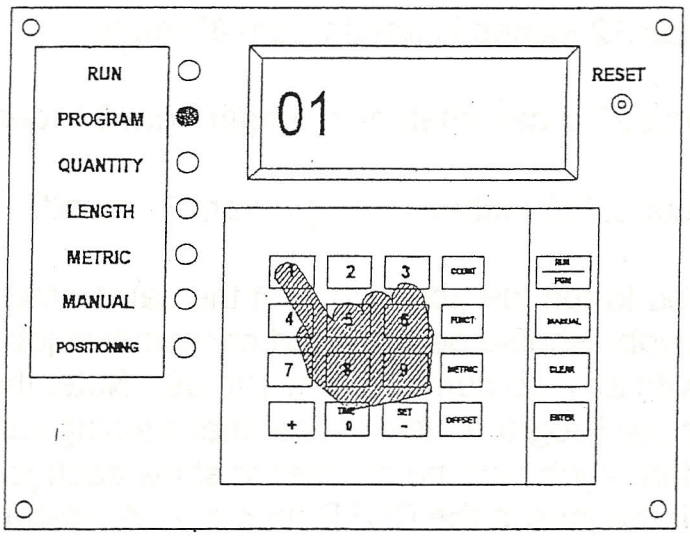
Since it is desired to run the above jobs at the same time and from the same stock, the jobs should be assigned consecutive job numbers. You may start with any job number from 1 to 99. Note, the CCFB will always return to the Program / Idle mode after running job #99. It is recommended that a job card be created to show each job set before you begin to edit the jobs in the CCFB memory. A typical job card would show the following:

JOB #	QUANTITY	LENGTH	STOCK
10	3	12.000 in.	3 inch round
11	5	25.500 cm.	3 inch round
12	2	6.750 in.	3 inch round
13	0	0.000	**

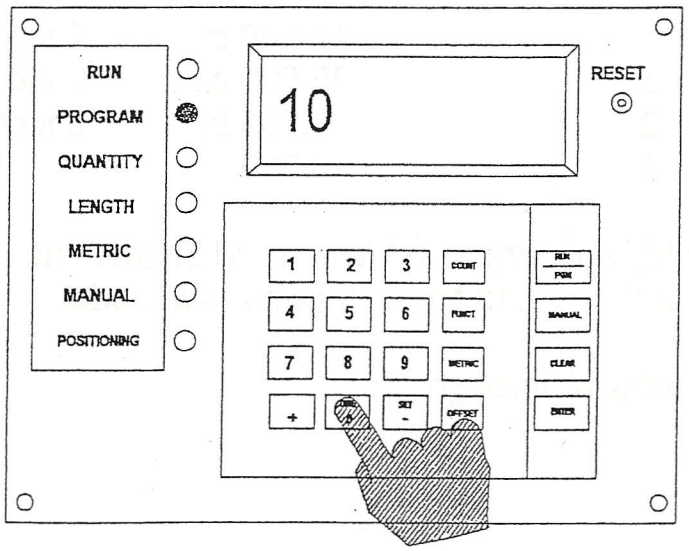
** The zero quantity and length in job #13 will instruct the CCFB to stop processing jobs and return to the Program / Idle mode.

Now we will edit jobs 10 through 13.

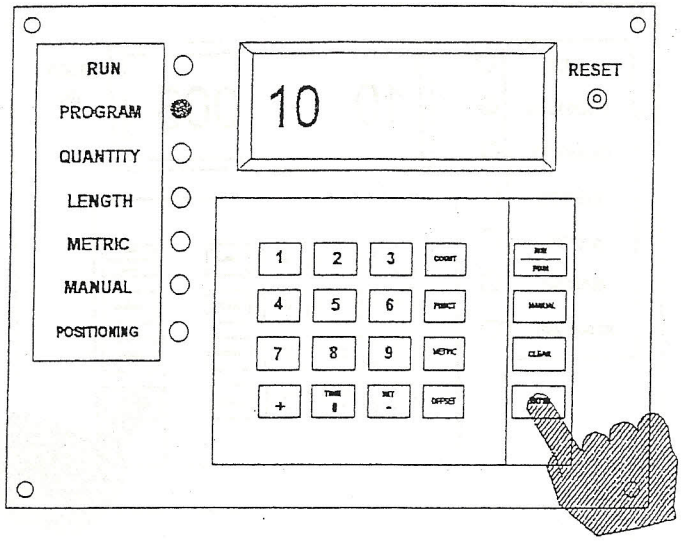
The operator must first determine if the CCFB is in the Program / Idle mode. There should be two flashing zeros on the left side of the display and the program light should be on. If the run light is on the operator need only press the run/prg button.



Press the #1 Key: From the Program / Idle mode the operator will press the #1 key to place the numeral 1 in the job number display.

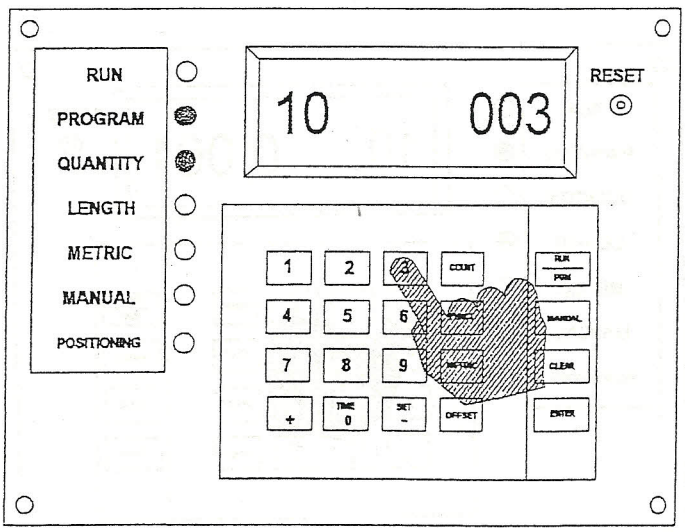


Press the #0 Key: The operator will press the #0 key to shift the 1 left and place the zero on the display. Note that the desired job number is now displayed.



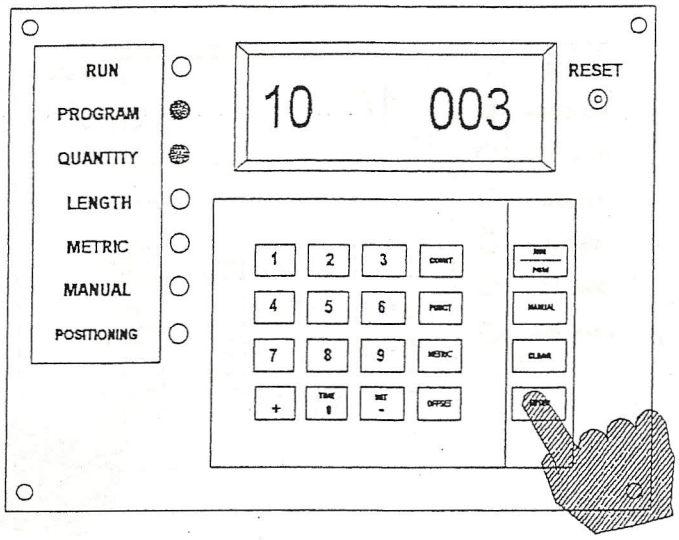
Press the Enter Key: The operator will press the Enter Key to accept the displayed job number of 10.

Notice that the quantity light comes on and that the current quantity for job #10 is displayed.



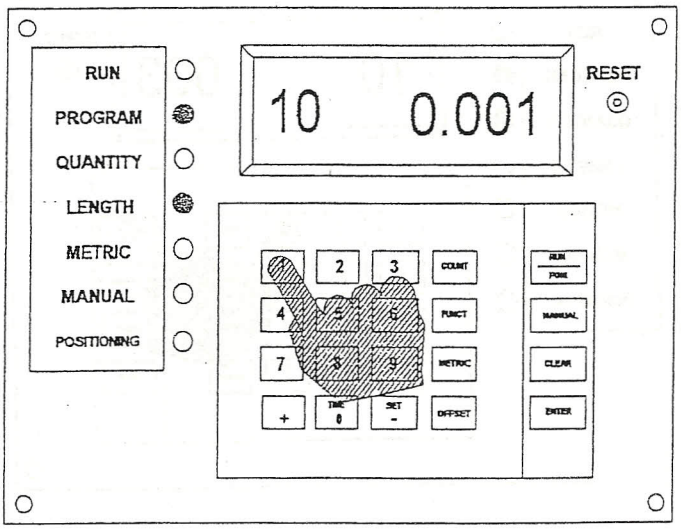
Press the #3 Key: The operator will press the #3 key to place the numeral 3 in the quantity display.

Notice that the stored value is cleared to zero automatically. Now the desired quantity for job #10 is displayed.

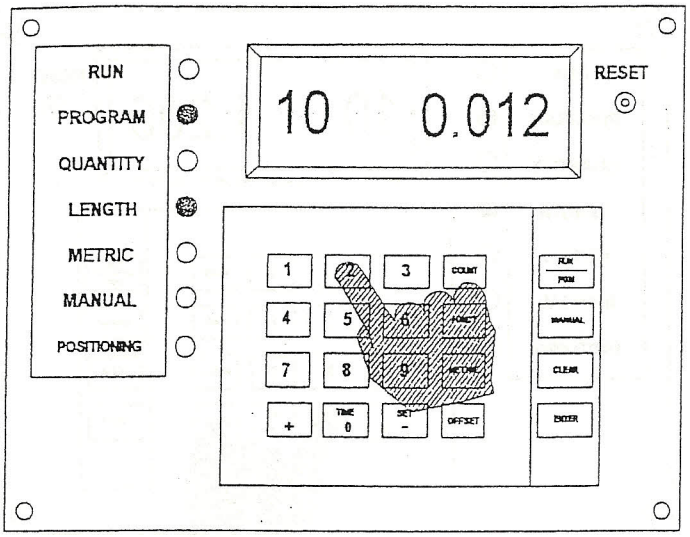


Press the Enter Key: The operator will press the enter key to accept the displayed quantity value of 3.

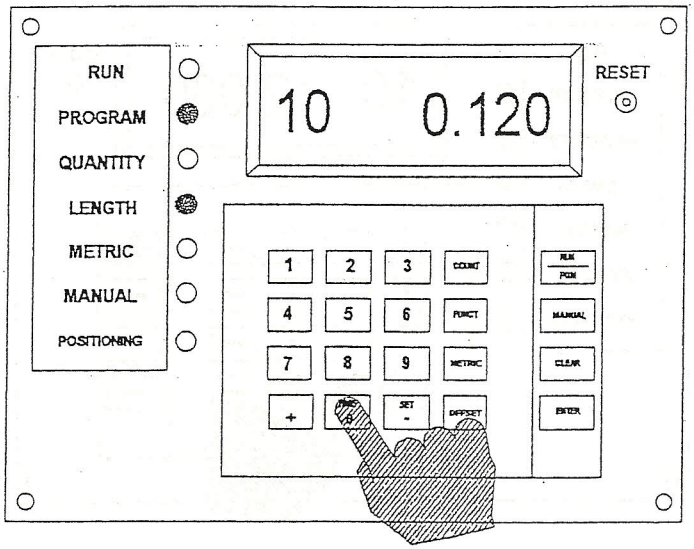
Notice that the quantity light goes out and the length light comes on. In addition the current length stored for job #10 is now displayed. If the stored length is metric, the metric light will be on.



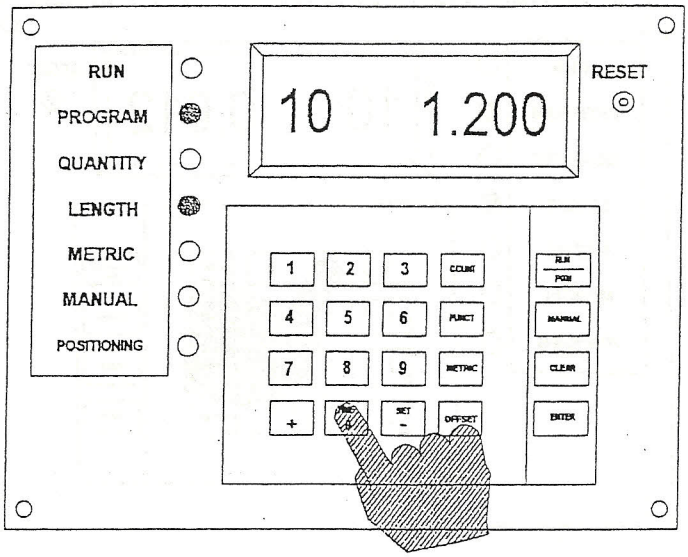
Press the #1 Key: The operator will press the #1 key to place the numeral 1 on the length display. Notice that the previous value is cleared to zero automatically.



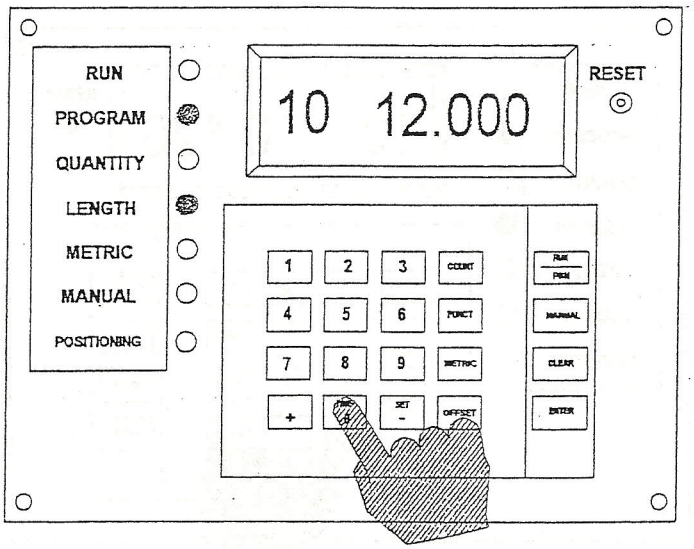
Press the #2 Key: The operator will press the #2 key to place the numeral 2 on the display.



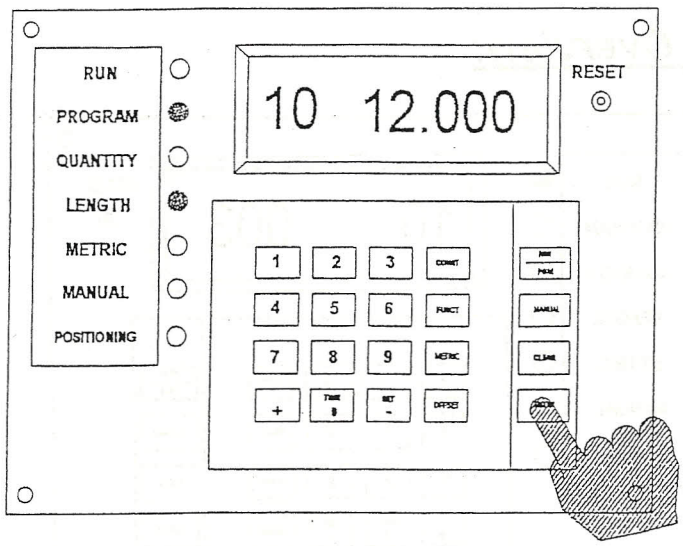
Press the #0 Key: The operator will now press the # 0 key.



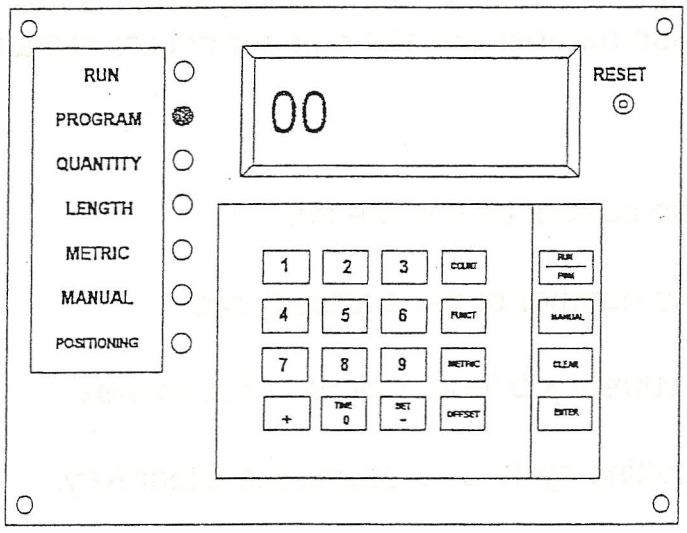
Press the #0 Key: The operator will now press the # 0 key.



Press the #0 Key: The operator will now press the # 0 key. Notice that the desired length of 12.000 inches is now displayed. If a mistake is made during data entry, the operator need only press the Clear Key to zero the value and start over. In addition, the operator may press the Metric Key to switch between inches and centimeters.

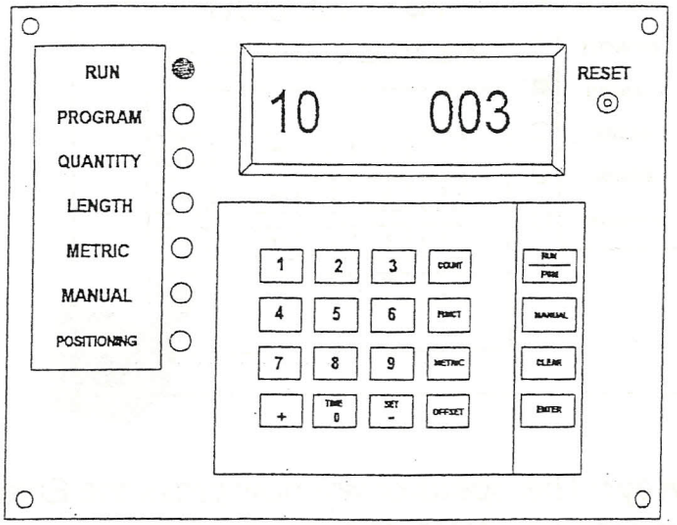


Press the Enter Key: The operator will now press the Enter key to accept the displayed length. Note, the standard of measurement is also stored at this time. If the metric light is on then the displayed length is in centimeters, while if the metric light is off, the displayed length is in inches.



The CCFB returns to the Program / Idle mode after editing a job. Now the operator will need to repeat the this procedure for jobs 11, 12, and 13. Note that job 13 signifies the end of the series and the quantity and length must be zero.

12. Run Mode Overview:



After calling up a job or series of jobs and the operator presses the auto-start switch to start saw operations, the CCFB is in Run Mode. During feed stop positioning the CCFB will display the current job number and the length. During cutting / feed operations the CCFB will display the current job number and the number of cuts remaining.

The operator can:

1. Request the current time in the cut.
2. Request the number of parts already cut.
3. Offset the current job length by +/- 0.500 inches.
4. Abort the cutting cycle by pressing the Clear Key.

13. Run a Series of Jobs:

First the operator will turn on the band motor and check the blade speed. The operator will reset / adjust the blade speed as required for the material being cut. The operator will then turn off the band motor.

To run a job or series of jobs the operator must set the console switches in auto mode. Please refer to the controls section of your saw manual.

Then the operator must place the CCFB computer in the run mode. The operator must press the RUN / PGM Key to switch between the Program / Idle mode and the Run mode. Notice that the Program Light and the Run Light switch with the key press of the Run / Pgm Key indicating the mode switch.

The CCFB is now waiting for a job number to be entered. The operator will press the number keys to select the correct job number to run. The job number is the 2 digit number on the left side of the display. The operator will then press the Enter Key to accept the beginning job number.

The Feed will come forward and the feed stop will position. **The operator MUST wait for the feed to go all the way back to the feed stop BEFORE the auto-start switch will become active.** When the feed is back, the operator will press the auto-start to the start position and the CCFB will begin to process the job that you have entered. When that job is complete, the CCFB will read the information for the next consecutive job number. If the information is not zero, the CCFB will process that job.

This cycled will repeat until a job number that contains a zero quantity and length is found or an "out of stock" condition is detected. (refer to Section 18: Resetting the saw – Out of Stock).

Now we will run the series of jobs that we previously edited.

Job #10
length of 12.000 inches, 3 parts

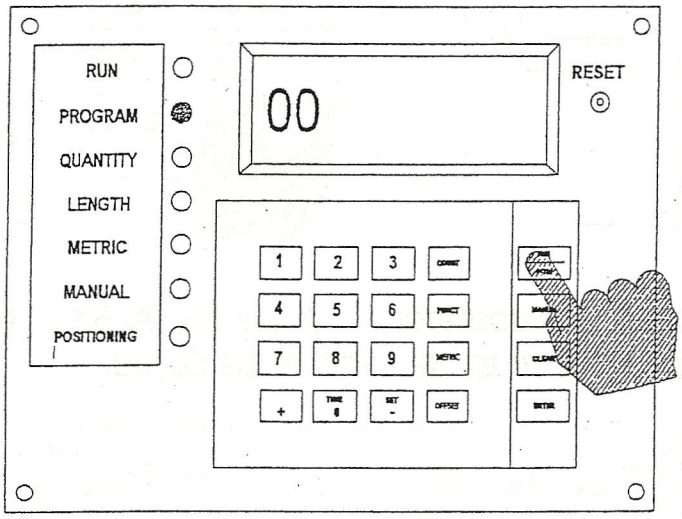
Job #11
length of 25.500 centimeters, 5 parts

Job #12
length of 6.750 inches, 2 parts

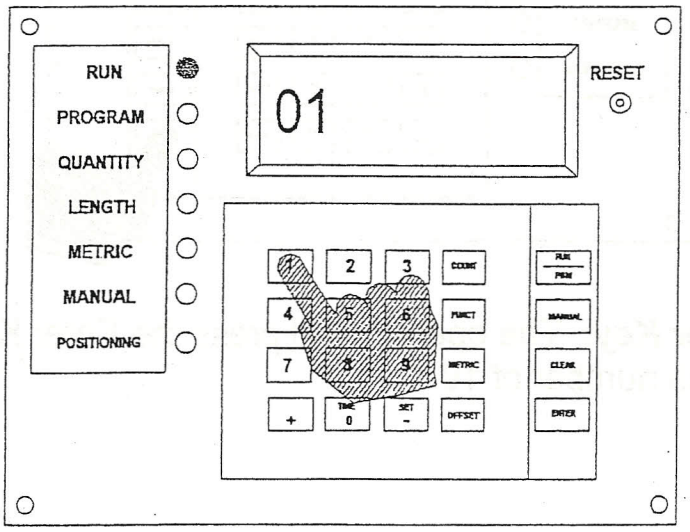
Job #13
length of 0.000 , 0 parts **

** The quantity and Length of zero signifies the end of a edited job series.

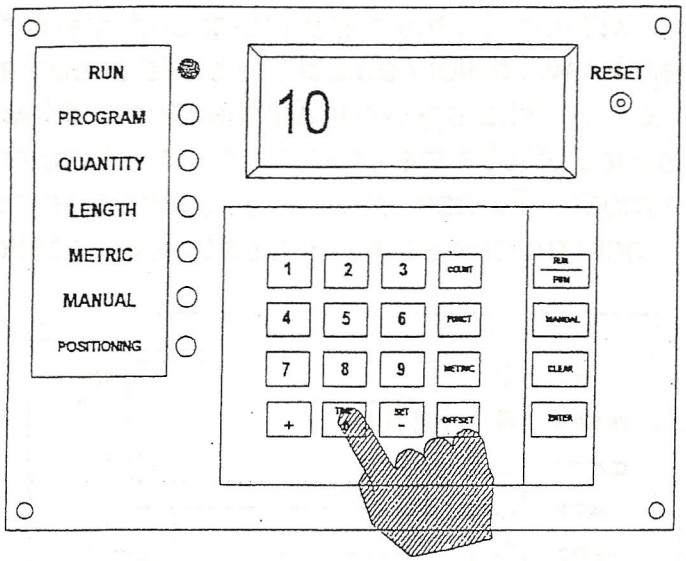
First the operator will turn on the band motor and check the blade speed. The operator will reset / adjust the blade speed as required for the material being cut. The operator will then turn off the band motor. To run a job or series of jobs the operator must set the console switches in auto mode. Please refer to the controls section of your saw manual. We will now run the series of jobs that we edited in Section 11.



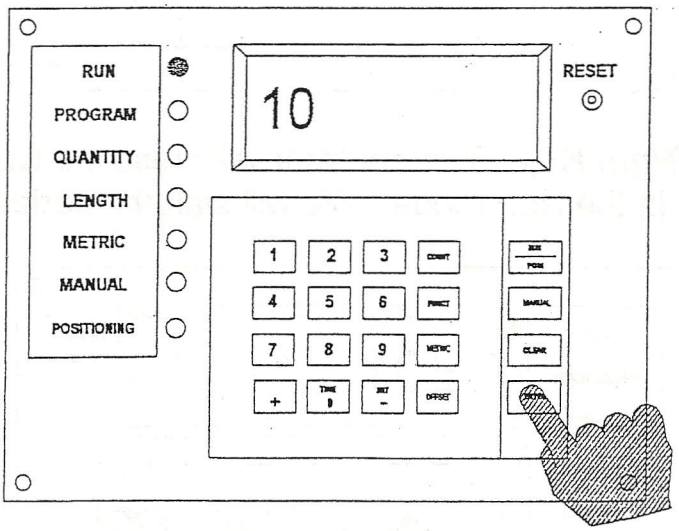
Press the Run/Pgm Key: The operator will press the Run/Pgm Key to place the CCFB in the Run mode. We will start the series with Job #10.



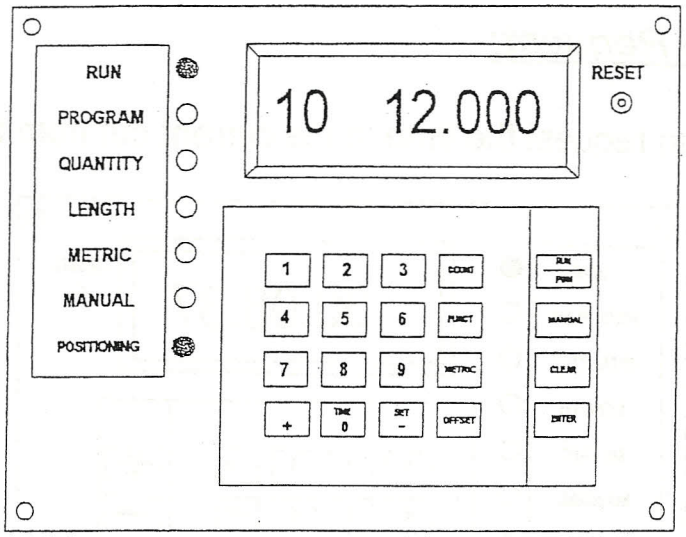
Press the #1 Key: The operator will press the #1 key.



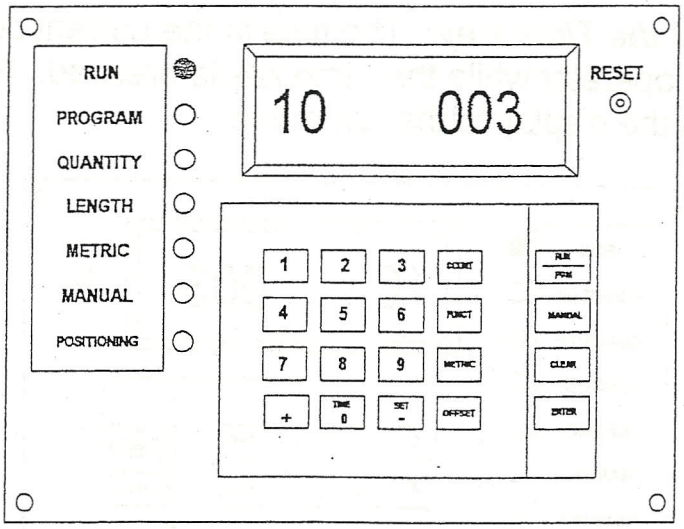
Press the #0 Key: The operator will press the #0 Key. Notice that the job number that we desire to start with is displayed.



Press the Enter Key: The operator will press the Enter Key to accept the displayed job number of 10.



The feed will now come forward. After the feed is forward, the feed stop will position. Notice that the current job number and length is displayed during positioning of the feed stop. Note – The positioning light is on whenever the feed stop is in motion.

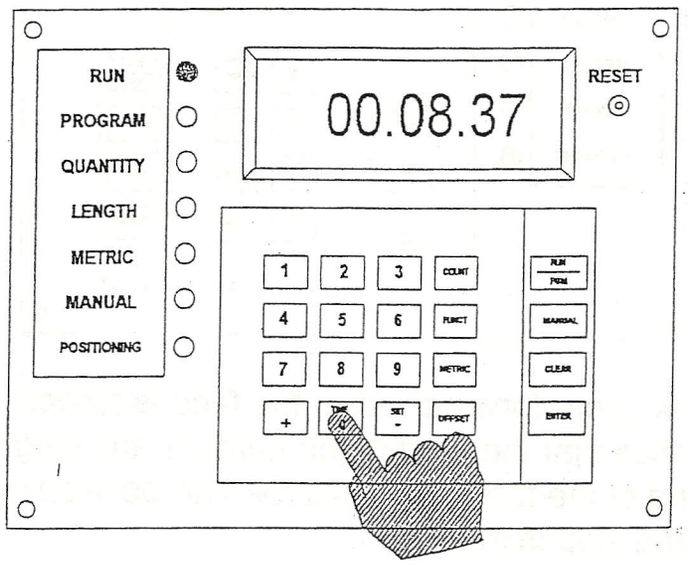


After the feed stop has positioned and the feed has retracted to the feed stop the operator will press the auto-start switch to the start position. Notice that the job number and the number of pieces to cut is displayed.

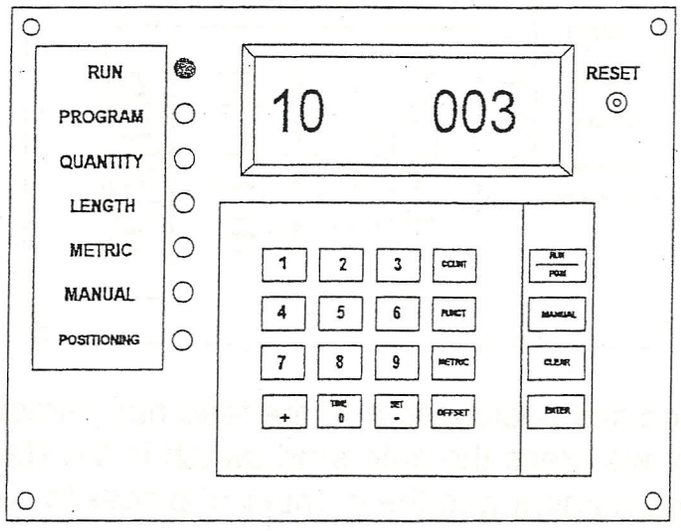
The CCFB will now process job 10 until the quantity reaches zero. Then the CCFB will reposition the feed stop, and process the next job. This cycle will repeat until the zero quantity and length of job 13 is found or until an out of stock condition occurs.

14. Cut Time Request:

The operator can request the time in the current cut from the CCFB.



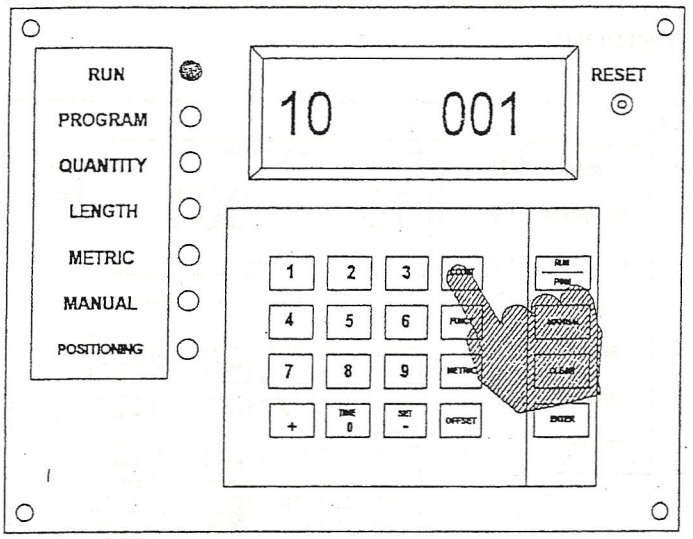
Press and Hold the Time Key: The time in the current cut will be displayed to the operator while the Time key is pressed. Releasing the time key returns the display to the run mode.



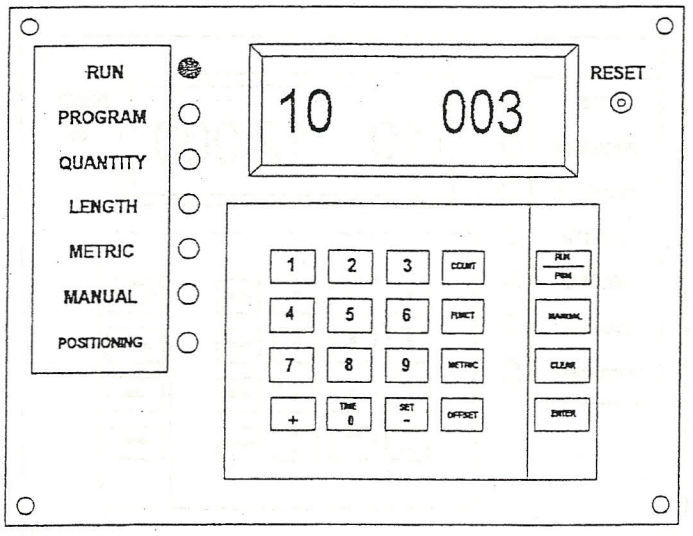
The Run Mode display during the cut will always show the current job number and the number of cuts remaining.

15. Cut Count Request:

The operator can request to display the number of cuts already made.



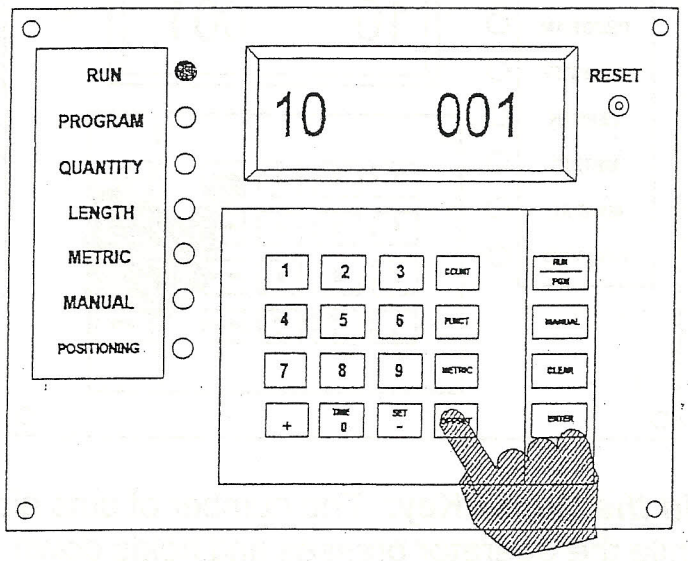
Press and Hold the Count Key: The number of cuts already made will be displayed while the operator presses and holds down the Count Key. When the operator released the Count Key the CCFB will return to the Run Mode display.



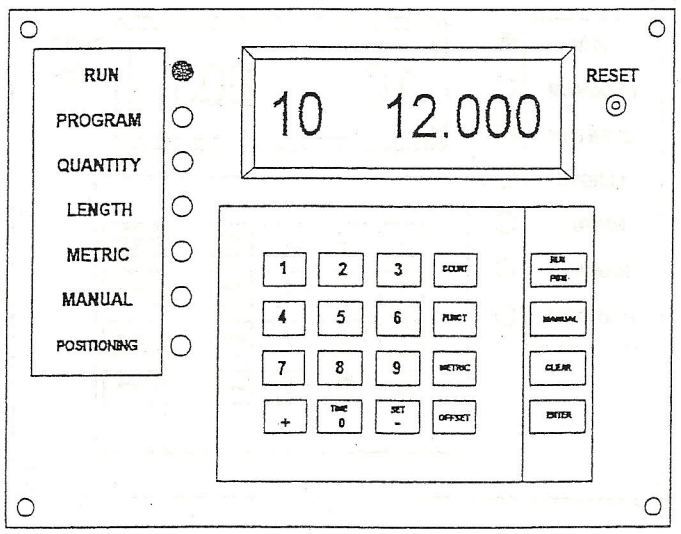
The Run Mode display during the cut will always show the current job number and the number of cuts remaining.

16. Offset Current Job Length:

The operator can offset the current job's length by +/- 0.500". This offset will only affect the length of the current job, and will not be stored in the CCFB's memory.

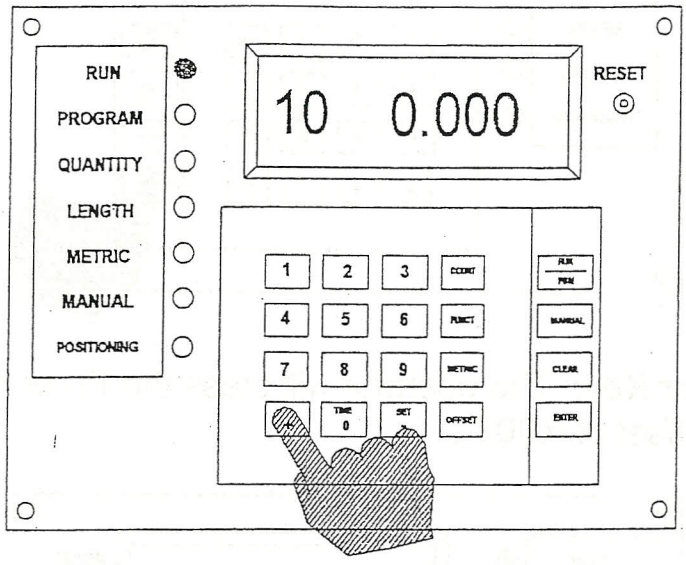


Press the Offset Key: The operator will press the Offset key to enter into the offset function.

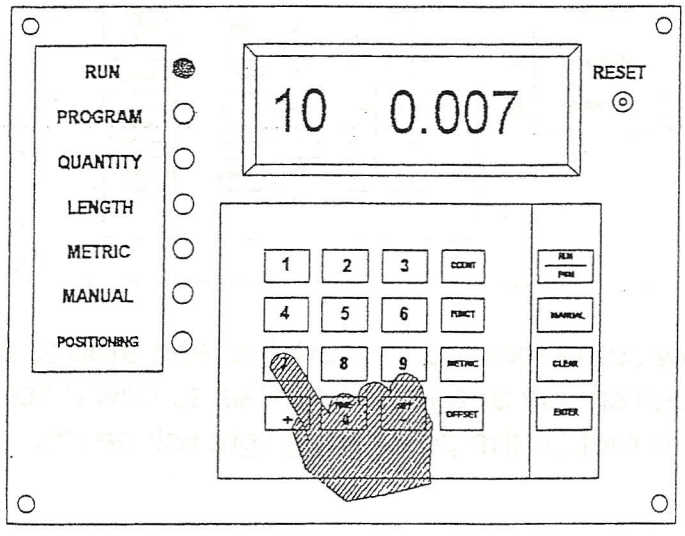


The current job number and length is now displayed.

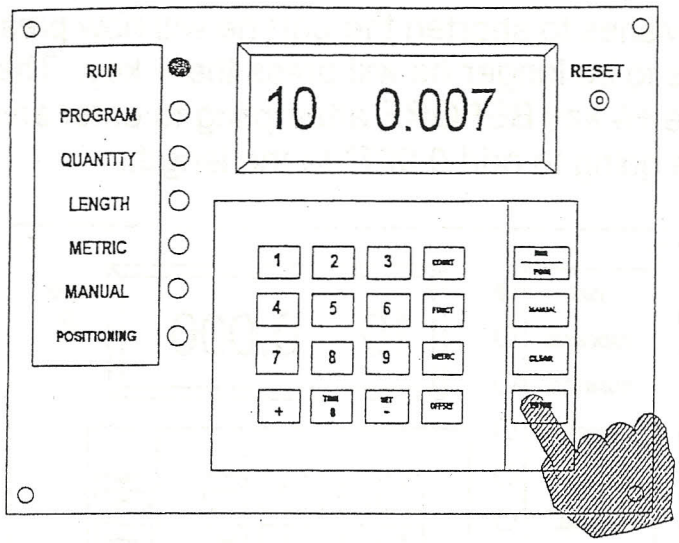
If the operator wishes to shorten the part he will now press the - key, or if the part needs to be longer he will press the + key. The operator MUST press the +/- key BEFORE attempting to enter an offset. In this example we are going to add 0.007" to the length.



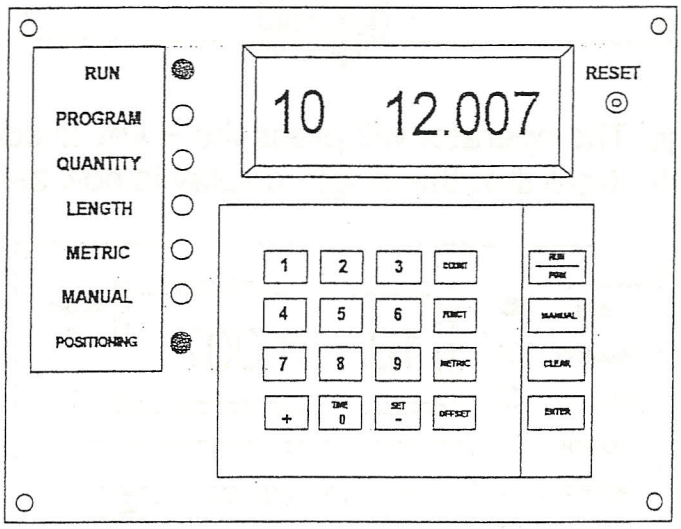
Press the + Key: The operator will press the + key to add an offset to the current length. Note that the length display is now zero.



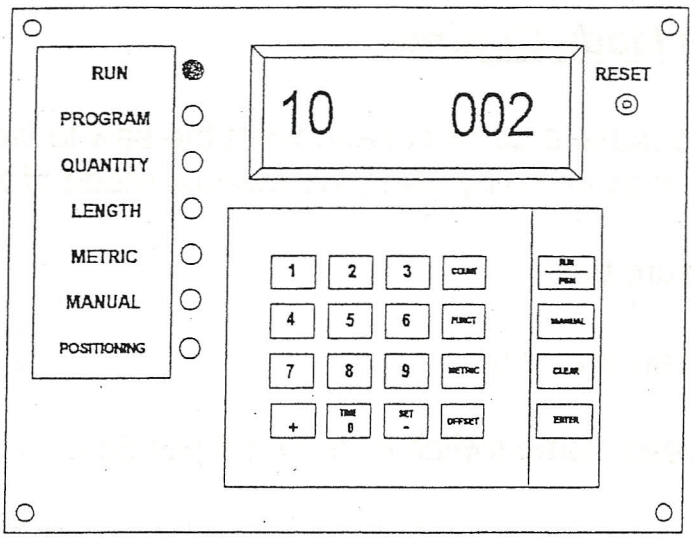
Press the #7 Key: The operator will press the #7 key to place the numeral 7 on the length display. This is the desired offset that we wish to add to the current length.



Press the Enter Key: The operator will press the Enter Key to accept the displayed offset of 0.007".



The feed will now come forward to allow the feed stop to position. Notice that the current job and length + offset is now displayed. When the feed stop is in motion the positioning light will be on.



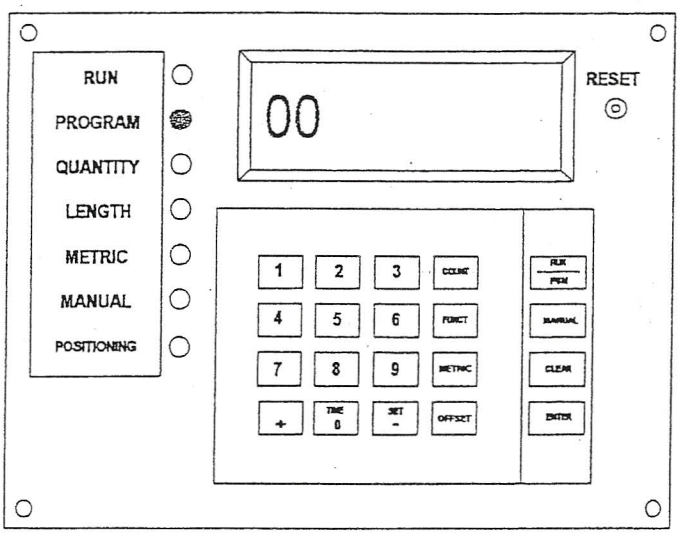
The CCFB will display the current job number and the number of cuts remaining after the feed stop has positioned.

17. Manual Mode Cutting:

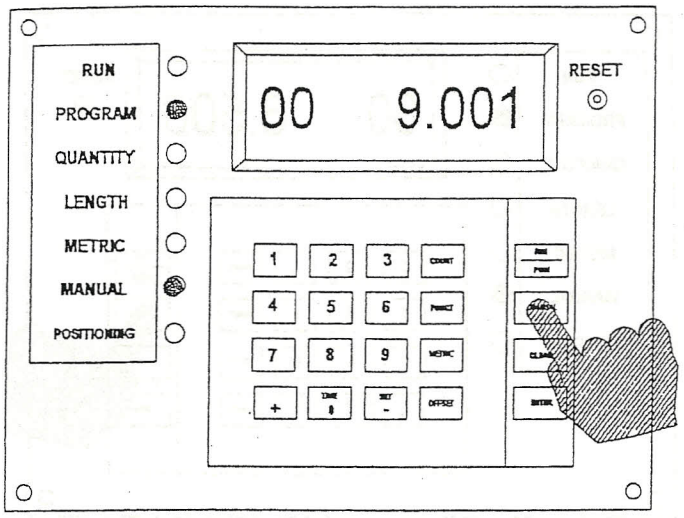
If you desire to make a quick cut and want the saw to feed and measure the piece, you may do so by using the manual mode of the CCFB.

Check and insure that:

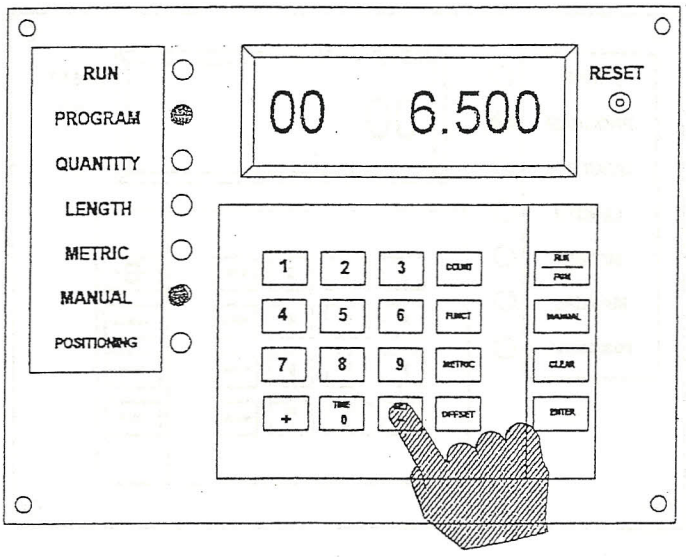
1. The saw arm is up.
2. The feed clamp switch is in the off position.
3. The material to be cut is aligned with the saw blade.
4. The saw clamp is closed.
5. The feed switch is in the on (Forward) position.
6. The blade speed and cutting pressure are correct for the material you are cutting.



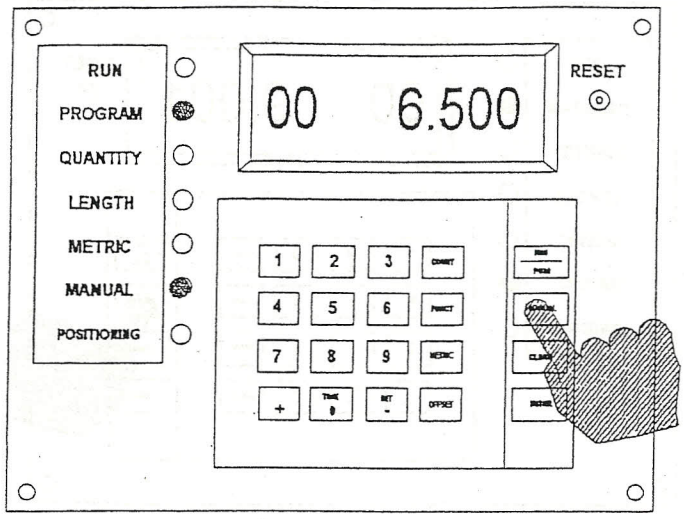
Insure that the CCFB is in Program / Idle mode. The program light will be on. If not then press the Run / Pgm key.



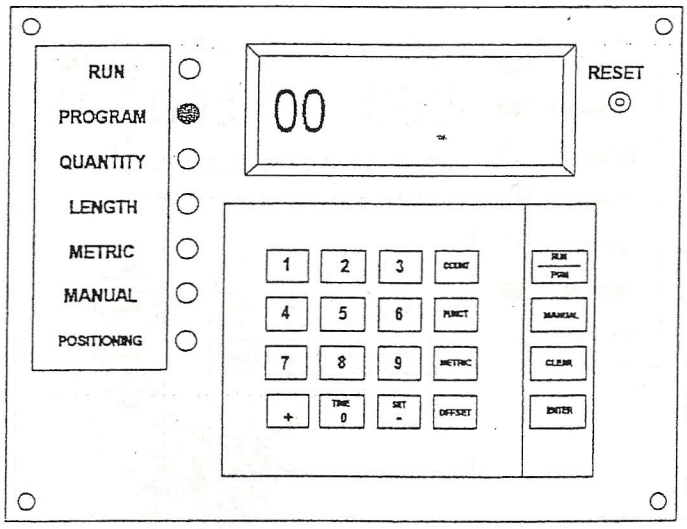
Press the Manual Key. The manual light will come on. The display will show the current feed stop position.



If the length is shorter than you wish to cut, push the + key to increase the length displayed. If the length is longer than you wish to cut, push the - key to decrease the length displayed.



Press the Manual key again to return the CCFB to the Program / Idle mode.



Now that the feed stop has been positioned to the desired length and the CCFB is in the Program / Idle mode, the operator is ready to manually run the saw.

1. First move the feed switch to the off (Retracted) position to move the feed back.

2. Now clamp the material with the feed clamp and then release the saw clamp.

3. Next bring the material forward by putting the feed switch in the on (Forward) position.

4. Now clamp the material with the saw clamp and release the feed clamp.

5. Finally put the arm switch in the cut mode to cut the piece.

Please refer to your saw manual for the location and function of the control console switches.

18. Resetting the Saw – Broken Blade / Out of Stock:

If the machine runs out of stock or breaks a blade it a simple matter to reset and continue cutting on a new piece of material as if nothing had happened.

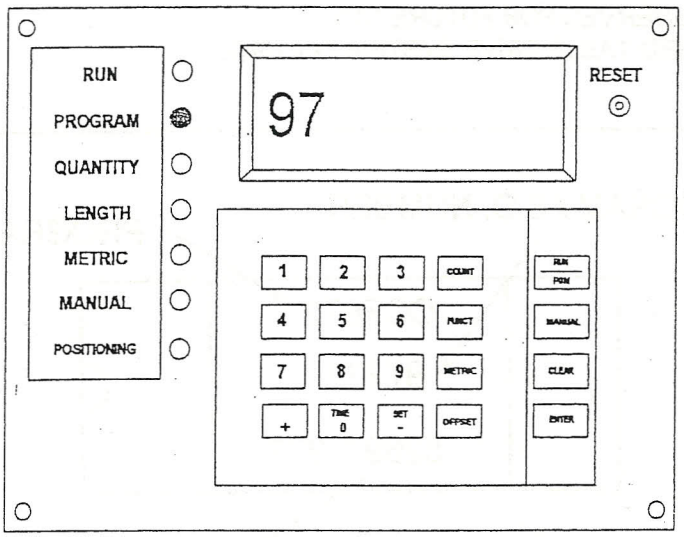
1. Remove any scrap material on the saw.
2. Load the new piece of material and align with the saw blade.
3. Move the band motor switch to the off position.
4. Turn the power start switch to the auto position.
5. Move the band motor switch to the auto position.
6. Push the auto-start switch to auto-start and the saw will continue **.

** If desired a facing cut may be made by pushing the start cut button. If a facing cut is made you MUST wait for the arm to RAISE before pressing the auto-start.

NOTE – If the feed shuttle is moved all the way forward while loading material and the saw arm is lowered as when a facing cut is made, the machine will count the facing cut as a part.

19. Error Message Overview:

The CCFB computer can detect system critical errors. When such an error is detected the CCFB computer will automatically perform and abort cycle, reinitialize, and display the error code.



The error code will flash in the job number area of the display. The operator may press the Clear Key to attempt re-initializing the CCFB. If the error code repeats authorized or factory trained personnel should be called.

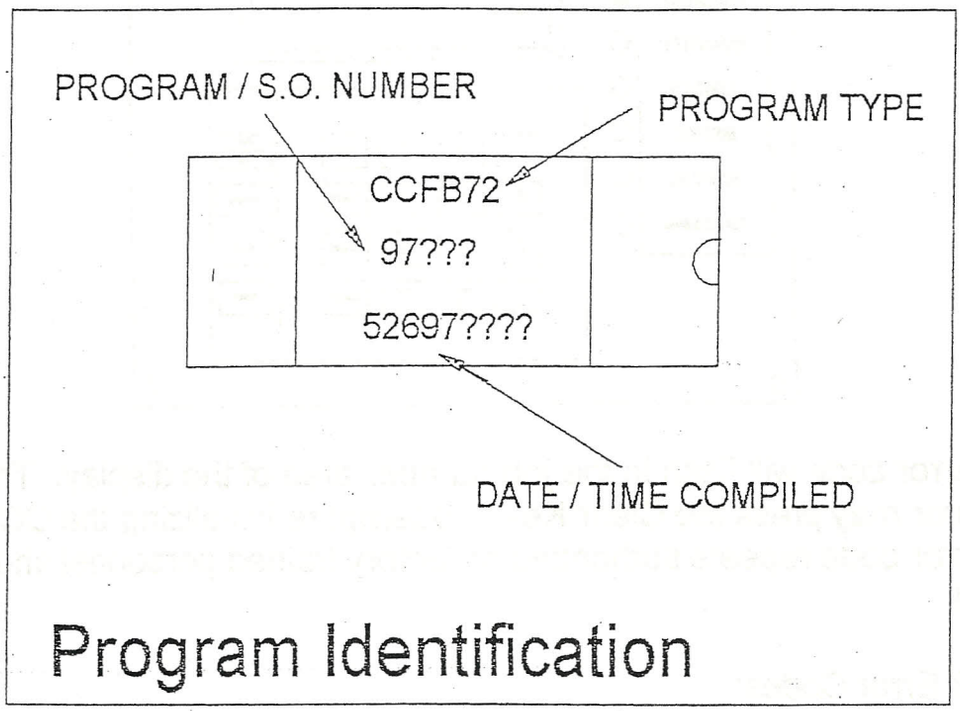
CCFB Error Codes:

1. Code 99: Error writing Speed Commands.
2. Code 98: Encoder System Reset Failure.
3. Code 97: Error writing position to Encoder System.
4. Code 96: Encoder System General Failure.
5. Code 95: Reserved for future use.
6. Code 94: Reserved for future use.
7. Code 93: Feed Stop Drive System Failure.

RTC BRUCE CCF ERROR CODES

After -- MAY 22, 1997

- CODE 99, ERROR WRITING SPEED COMMANDS TO MOTOR COM PORT HTCL-1100
- CODE 98, ENCODER SYSTEM WILL NOT RESET.
- CODE 97, ERROR WRITING ACTUAL POSITION TO HCTL-1100.
- CODE 96, ENCODER SYSTEM GENERAL FAILURE.
- CODE 95, RESERVED FOR FUTURE USE.
- CODE 94, RESERVED FOR FUTURE USE.
- CODE 93, FEED TABLE DRIVE SYSTEM FAILURE.



Programs compiled after 5/22/97 will use system setup commands described on following sheet. See illustration above for program/eeprom identification.