

# **GRAPHIC WHIZARD<sup>INC.</sup>**

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# **CREASEMASTER PLUS**

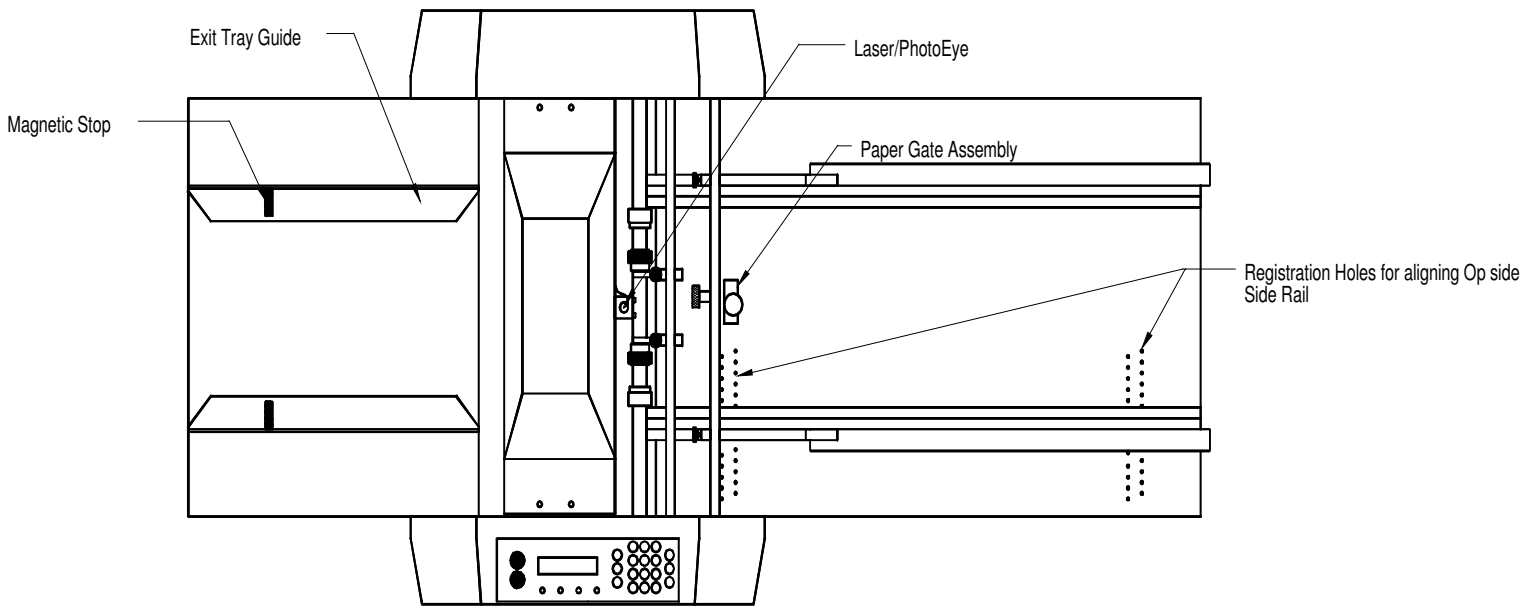
## **Reference Manual**

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Version 03-01

# CM+ - Reference Manual

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## CM+ Layout

### 1.0 General Operation

The CreaseMaster + is an impact die score machine that effectively eliminates substrate cracking experienced with rotary scoring. The CM+ is microprocessor controlled, making it easy to set up and program. It has the programmability to hold a maximum of 99 jobs with 10 hits and 1 job with 100 hits. Inverted and regular scoring can be accomplished in one pass. These jobs can all be stored and recalled for future use. Perforations are done between the air feed table and main rollers, producing a straight perforation, avoiding tail whip. Perforating wheels are offered in a wide range of teeth configurations and can be quickly changed using the retaining ring pliers supplied. A photocell recognises the lead edge of the sheet and the microprocessor stops the sheet at the specific location(s) where scores are required. Pneumatics allows for non-stop, tireless operation. Finished stock is then delivered to an exit tray.

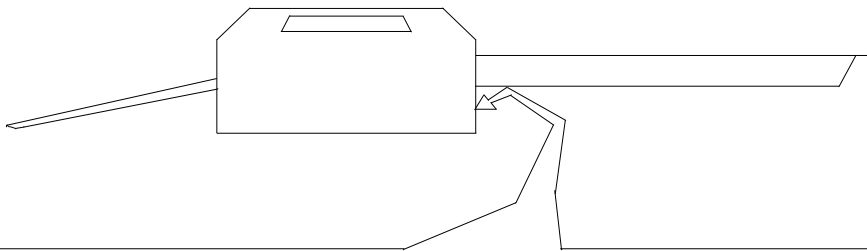
## 2.0 Machine Assembly

Remove and unpack all machine parts from the shipping carton.

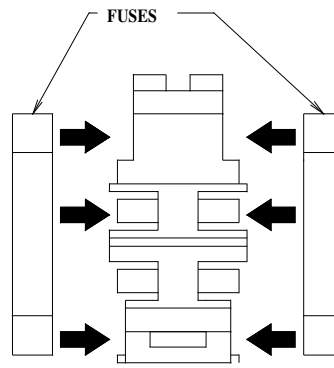
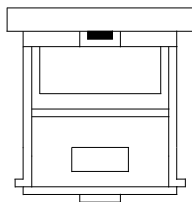
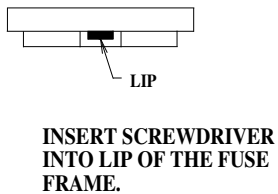
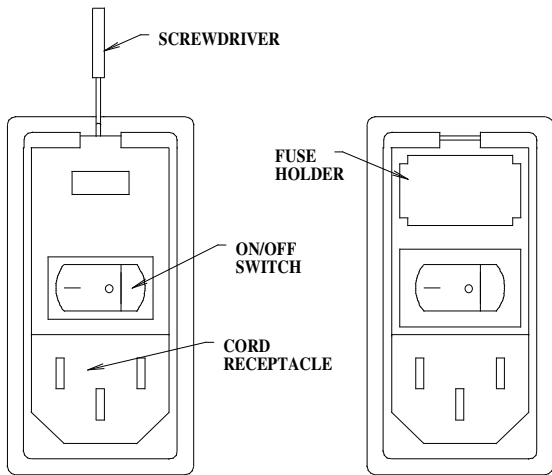
### 2.1 Power Supply Instructions

Before connecting the power cord to a wall receptacle, make certain the supply voltage is what the machine has been set up for. The voltage is marked on the sticker containing the serial number of the machine. If there is any discrepancies, please call your dealer first before plugging in the machine.

The switch module is located behind the main operator side panel, directly underneath the infeed. It also houses the main fuse.

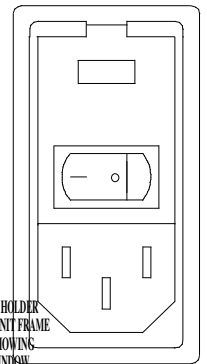


#### CHANGING THE FUSE IN THE SWITCH MODULE



INSERT TWO SLOW BLOW FUSES RATED 250V 5A FOR A SUPPLY VOLTAGE OF 120V. THESE FUSES ARE 1/4 INCH WIDE BY 1 1/4 INCHES LONG.

INSERT THE FUSE HOLDER BACK INTO THE UNIT FRAME WITH THE LIP SHOWING THROUGH THE WINDOW.

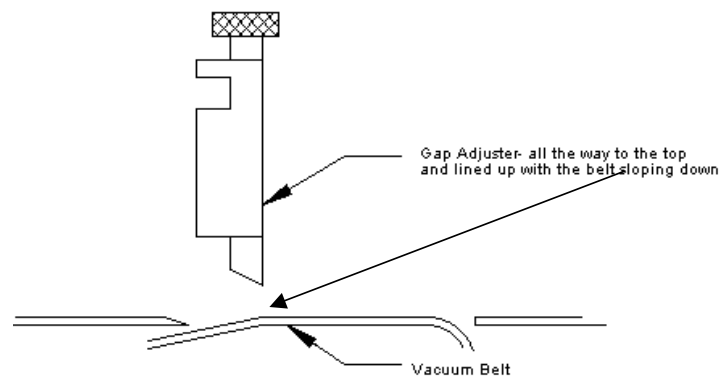




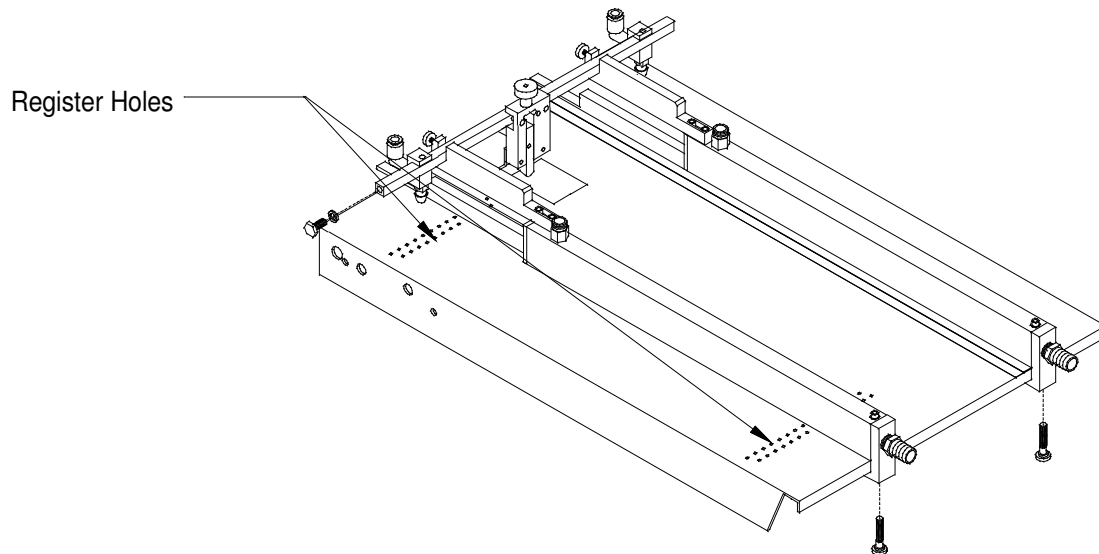
With the CM+, the *score dies* are pneumatically driven. The air pressure is regulated from the air source (whether shop air or a stand-alone compressor) on the machine at the *regulator/gauge/manifold assembly*. The optimum pressure setting at the *regulator* is 100-120 psi. If scoring a job with many scores, you may need to increase the *Impression Control* to maintain a consistent impression.

## 2.2 Initial Operation

- Ensure that the feed adjuster is all the way up and in the proper position. Refer to diagram below



### Infeed Assembly



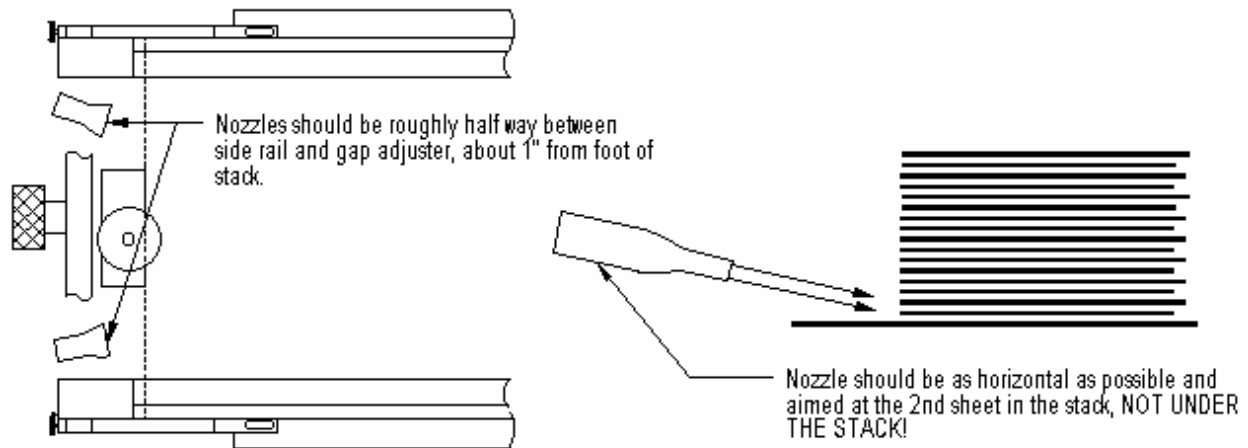
### Side Guide set-up

- Mark a sheet in the center of leading edge
- Position the center of the sheet at the center of the vacuum feed belt
- Move the operator-side guide up to the edge of the paper
- Remove the sheet and, using the register holes in the feed table, align the operator-side guide (inside edge) to the nearest holes for square and secure it on both ends
- Slide a single sheet up to the front of the side guide

- Bring the non- operator side guide snug up to the single sheet and secure the front of the guide
- Place a 1-inch lift of paper in the rear of the feeder and snug the non-operator side guide to the lift and secure on rear end. Double check that the single sheet slides back and forth easily, but not side to side
- Remove the single and slide the lift up to the feed adjuster
- Position the back stop at the rear of, and under the lift of paper

### 2.3 Nozzle Positioning

- The nozzles should be positioned according to the following diagram



- Note: Very wide stock will require the nozzles to be closer to the Paper Gate than the siderails.

### 2.4 Vacuum/Blower Adjustments

- Switch the pump on by turning on the switch located on the STAND (below feed table on top of stand)
- Turn the vacuum all the way down ( CCW )
- While turning the hand wheel, slowly increase the vacuum till a sheet(s) moves out from under the stack approximately ½"
- If more than one sheet has started to move, adjust front nozzles till the extra sheets float back into the stack.
- The feeder should now be ready to run

## 2.5 Paper Gate Adjustments

- With light to medium stock, the Paper Gate should not be adjusted down, as the front nozzles will hold the stack in position. Heavier and/or wider stock may require the feed adjuster to be lowered to the point that it will hold back the second sheet but allow the first sheet to pass

## 2.6 Optional Conveyor Outfeed Plate

The *conveyor outfeed plate* sits in the machine in the same fashion as the *exit tray*. Make sure that the spur gears mesh and do not force the *conveyor outfeed plate* into position. The *pile tray* is mounted on the end of the *conveyor outfeed plate*, with two Phillips screws and acts as a backstop for the finished stock.

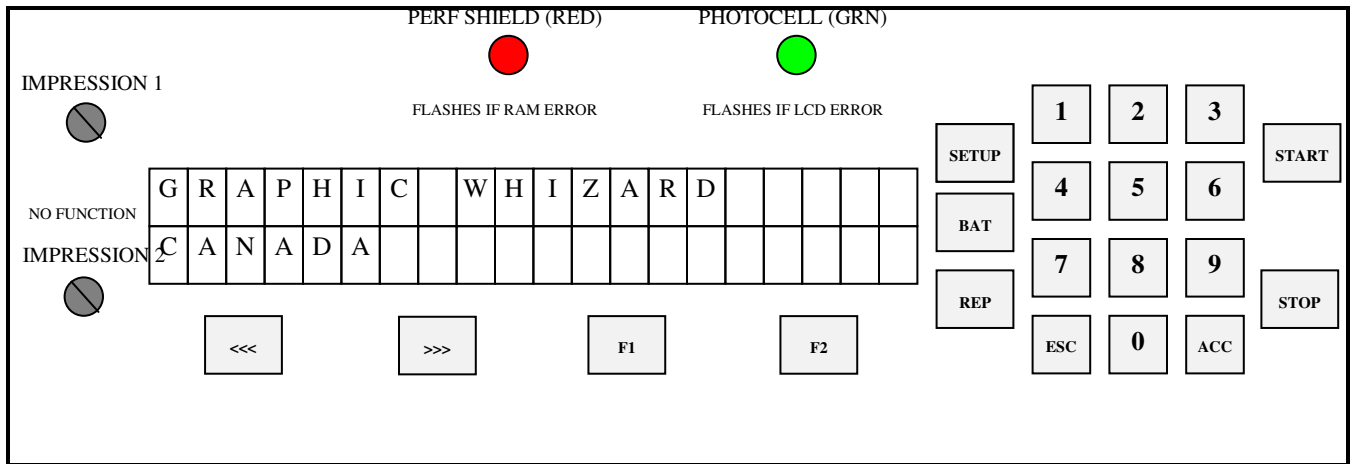
## 2.7 Additional Switches and Controls

The main *on/off switch* is located under the *air feed* beside the *main fuseholder* and *power cord*.

The Pump switch is located on the top of the stand under the air feed table.

On the left-hand side of the *operating keyboard*, there are two potentiometer knobs that control the crash strength of the *score dies*, known as *Impression Controls* and can be adjusted to best suit the requirements of the job. For example, you may require stronger impressions for card stock than for 80lbs(399g/m<sup>2</sup>) stock. This adjustment can be done while the machine is stopped or running.

## 3.0 Operating Keyboard



The *operating keyboard* is comprised of a *two line LCD display*, various buttons and two *Impression Controls* which consist of two potentiometer knobs that control the crash strength of the *score dies*, and can be adjusted to best suit the requirements of the job.

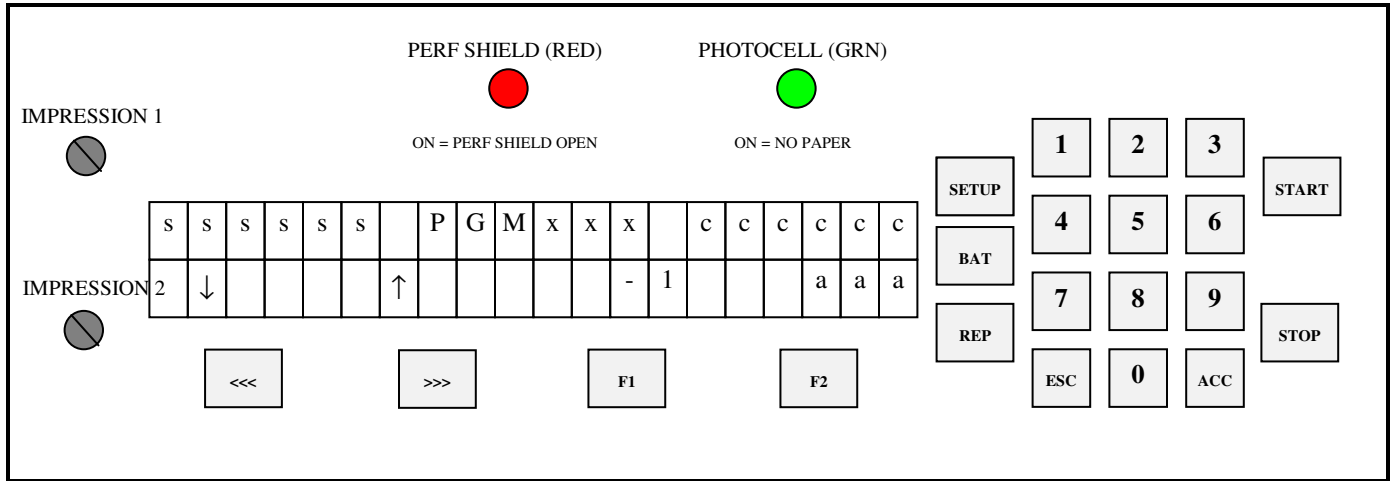
The four buttons under the *LCD display* will perform whatever function is shown directly above them on the bottom line of the *LCD display*. They may not always be active (this is the case for the other buttons as well). Three specific function buttons (**SET UP**, **BAT**, **REP**) are situated beside the display. A numeric keypad, an 'ESC' (escape), 'ACC' (accept), 'START' and 'STOP' button rounds out the rest of the keyboard. The 'ESC' button can be used at almost any time (except during actual running) in order to return to the previously viewed menu. The functions of the rest of the buttons will be discussed later in this section.

Once you have plugged the machine in, turn the *on/off switch* to the 'on' position. The microprocessor does an internal system check and the above will flash on the screen.

### 3.1 Running a Job

The Idle Mode is displayed below. From this menu, you can change the motor speed, modify your paper count and select your program. In this menu you can also enter the Batch size (see 3.5)

#### DISPLAY:



#### DISPLAY FUNCTIONS:

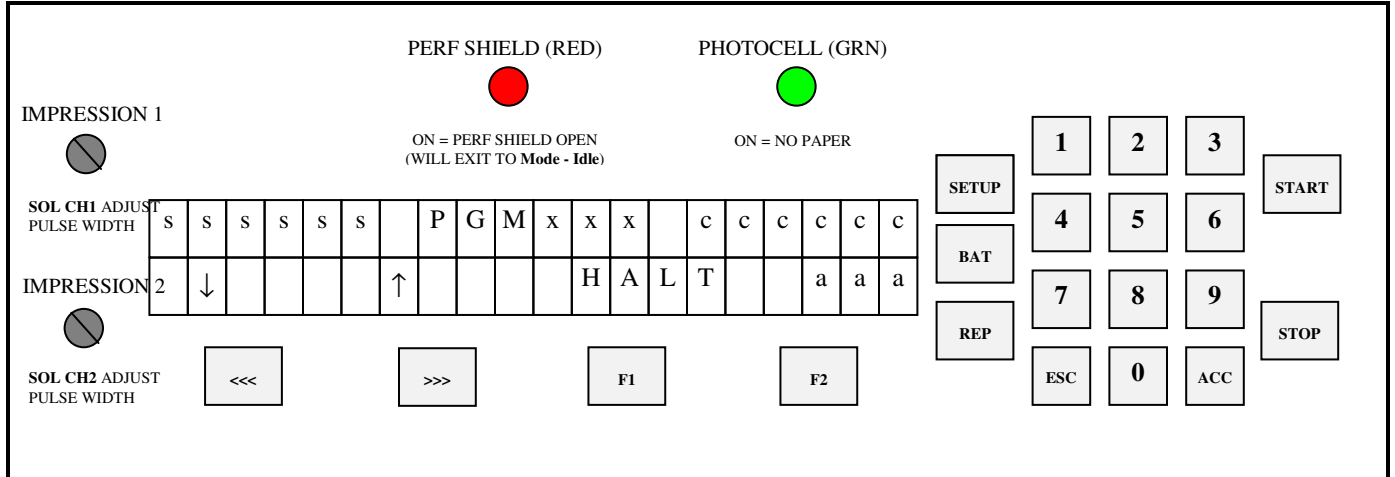
DISPLAY
<p>sssss = motor speed bar graph            PGMxxx = solenoid program in RAM            cccccc = paper count            ↓ = decrement motor speed            ↑ = increment motor speed            -1 = decrement paper count            aaa = CLR -&gt; clear paper count normally; aaa = BAT -&gt; Enter Mode - Set Batch Size when batch mode is enabled</p>

The <<</>>> will adjust the motor speed, **F1** will decrement the paper count, **F2** will clear the paper count but if it is already at **0** it will send you to the Batch mode (Section 3.5). **SETUP** will select a program (Section 3.3) and **START** will begin the job. You will now be in the Run Mode.

When the machine is first turned on, it defaults to Program 01 (PGM001), which is shown on the menu. Pressing the 'START' button will automatically begin Program 01. The *main operating menu* will change as the machine is running.

The Run Mode menu looks like this:

**DISPLAY:**



**DISPLAY FUNCTIONS:**

DISPLAY
sssss = motor speed bar graph PGMxxx = solenoid program in RAM cccccc = paper count ↓ = decrement motor speed ↑ = increment motor speed HALT = motor emergency stop, exit to <b>Mode - Idle</b> aaa = CLR -> clear paper count normally; aaa = BAT -> Display current batch size when batch mode is enabled

**KEYPAD FUNCTIONS:**

<<<	>>>	F1	F2	STOP	START
DECREMENT MOTOR SPEED	INCREMENT MOTOR SPEED	MOTOR EMERGENCY STOP Exit to <b>Mode - Idle</b>	IF BATCH SIZE IS ZERO <b>CLEAR PAPER COUNT</b> ELSE: <b>DISPLAY BATCH SIZE</b>	Complete numbering Eject current sheet Stop motor Exit to <b>Mode - Idle</b>	

ACC	ESC	SETUP	BAT	REP	
MOTOR EMERGENCY STOP Exit to <b>Mode - Idle</b>	MOTOR EMERGENCY STOP Exit to <b>Mode - Idle</b>	MOTOR EMERGENCY STOP Exit to <b>Mode - Idle</b>	IF BATCH SIZE IS ZERO <b>MOTOR EMERGENCY STOP</b> Exit to <b>Mode - Idle</b> ELSE: <b>DISPLAY BATCH SIZE</b>	MOTOR EMERGENCY STOP Exit to <b>Mode - Idle</b>	

DIG 0-9
MOTOR EMERGENCY STOP Exit to <b>Mode - Idle</b>

### 3.2 Stopping a Job

Here are methods of stopping the machine.

1. Once the program is running, there are several built in safety emergency stops. Pressing the **STOP** button, **any of the digits 0-9**, **F1**, **STOP**, **ACC**, **ESC**, **REP**, and if the Batch size is 0, **BAT** will cause the machine to finish the stock it is currently working on, move the next stock into the starting position and then stop the motor. This automatically sends you into Idle Mode.
2. If you want to stop the machine while stock is still left in it, simply turn off the Pump. After about one second, the machine will automatically stop (since it is no longer seeing any new sheets). This is how it also stops when all of the stock in the *feed table* is gone.

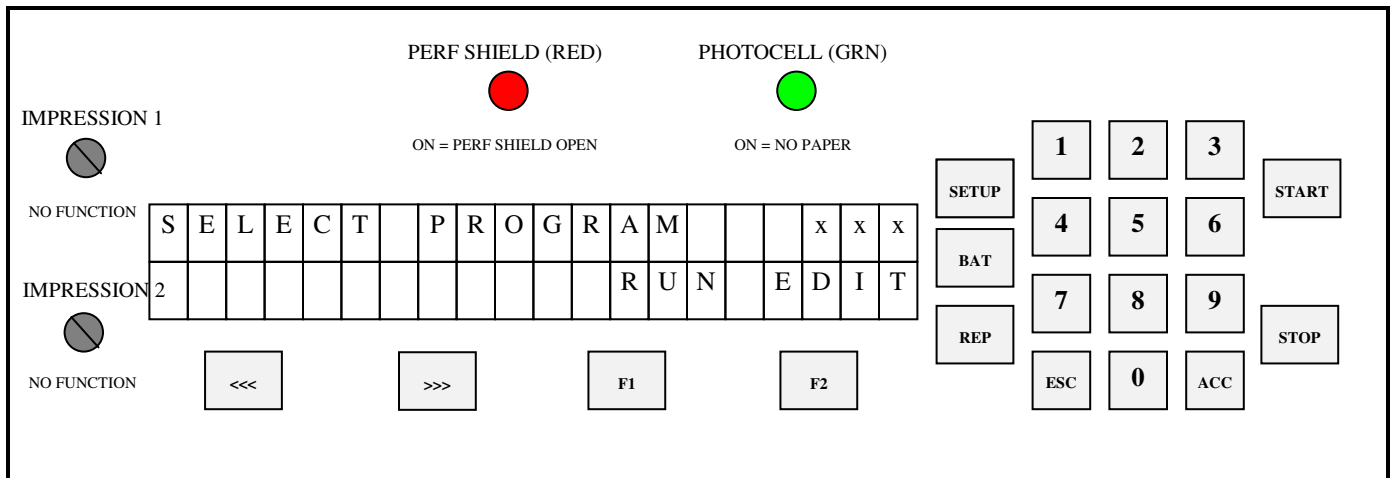
### 3.3 Changing Programs

The CM+ allows you several choices in programming:

- PROGRAM 00 = Perf, automatically turns the score dies off.  
 PROGRAM 01 – 99 = Allows for a maximum of 10 hits per die.  
 PROGRAM 100 = Allows for a maximum of 100 hits per die.

Whenever you wish to change programs, the *LCD display* must be in Idle Mode (Section 3.1) press the '**SET UP**' button. The following screen will appear:

DISPLAY:



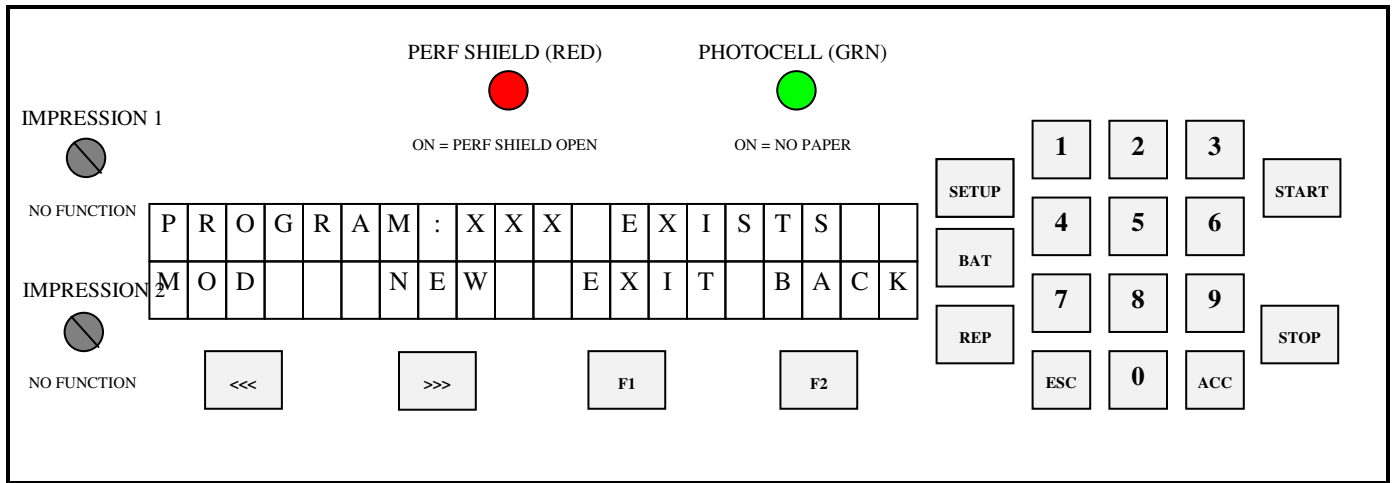
Once you select the program number desired, you may either '**RUN**' the existing program or '**EDIT**' it by pressing the corresponding function key (**F1** to RUN & **F2** to EDIT).

If **RUN** is selected, the machine will exit to Idle Mode where you press **START**. The **ESC** key will also return to Idle Mode in case you wish to change the counter before beginning a job.

### 3.4 Programming a Job

If you wish to program a job, EDIT an existing program, press **F2**. After selecting EDIT, if the program already exists, the machine will ask whether you would like to erase it, start new ('NEW') or modify it ('MOD').

#### DISPLAY:

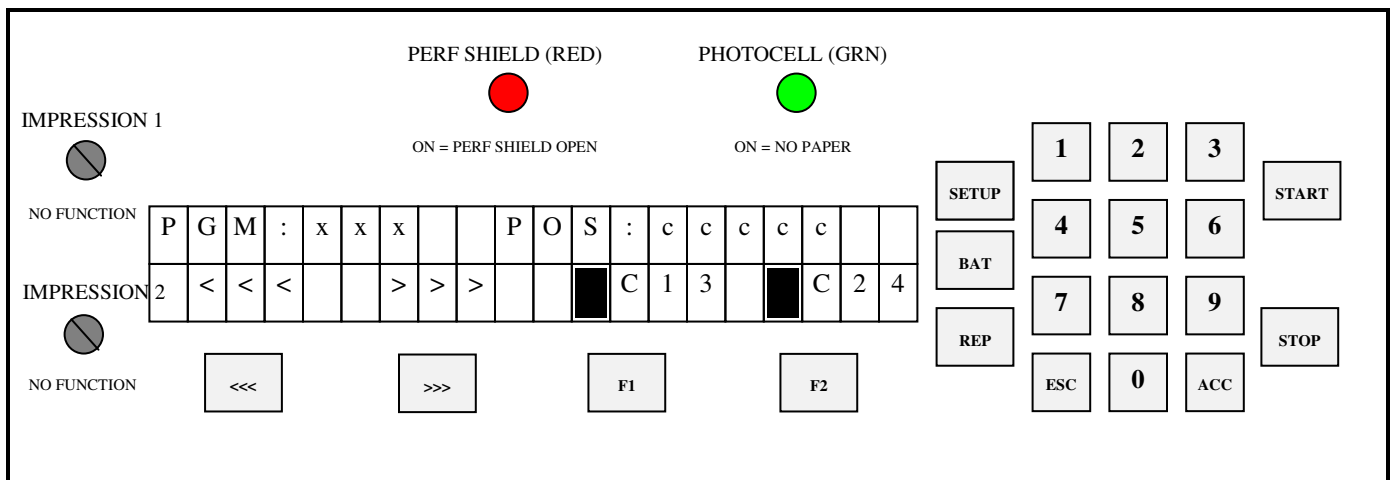


This selection is done with the corresponding function key (<<< and >>> respectively).

When modifying a program, previously programmed scores can be removed from the program while additional scores may be added.

Once you make your selection, the machine will instruct you to 'INSERT PAPER/ PRESS START'. The *LCD display* will then show the following:

#### DISPLAY:



**DISPLAY FUNCTIONS:**

DISPLAY
xxx = solenoid program number
cccc = current paper position in motor steps from paper lead edge
<<< = motor moves in forward direction
>>> = motor moves in backward direction
■ = full block character displayed when hit programmed
C1 = solenoid channel 1 head 1
3 = solenoid channel 1 head 2 = SOL3
C2 = solenoid channel 2 head 1
4 = solenoid channel 2 head 2 = SOL4

The sheet you inserted is automatically moved to position '5' under the laser. Position '0' is the lead edge of the sheet passing the photocell/laser. Position '5' is the first location that a score will imprint on the paper. (*Note: Each step represents approximately  $1/50$ th of an inch.*)

The first two function keys step the paper either forward or backward (*Note: you cannot back the sheet back further than position '5'*). The other two function keys fire either die #1(C1=male on top) or die #2(C2=male on bottom). Once a die fire button has been pressed, the *score die* will fire when the stock has advanced under the chosen die and the *LCD display* will light up with one solid bar around the corresponding die fired (eg. ■C1).

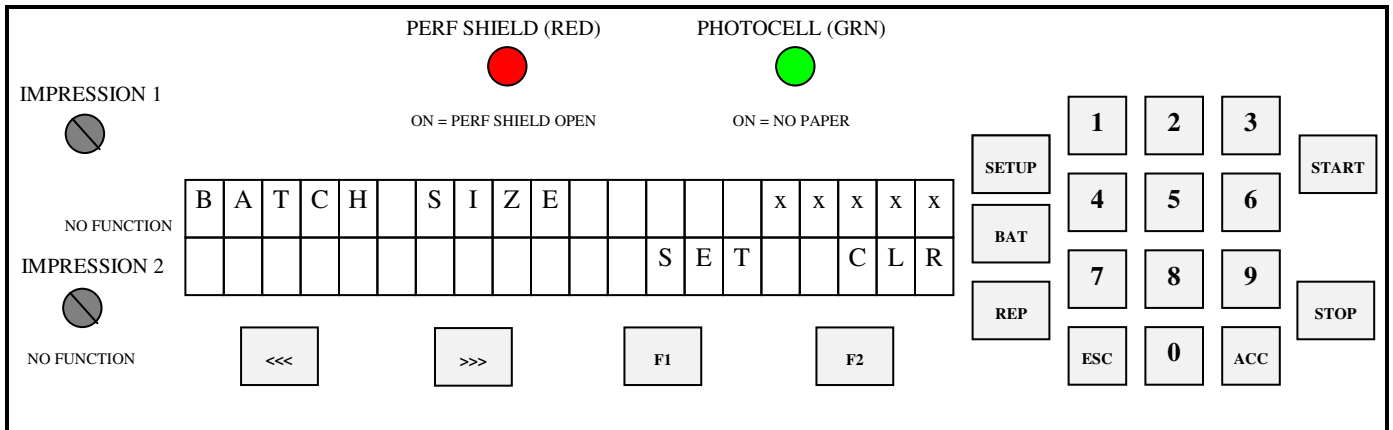
Once all scores desired have been programmed, step the sheet through until all scores have occurred, press the 'ACC' button and the sheet will be discharged from the machine. The next sheet will be forwarded to step '5' (if there is another sheet already in the *feed tray*) or you will be instructed to 'INSERT PAPER/PRESS START'. The *LCD display* will return to Idle Mode and you are set to run the job. Simply press the 'START' button to begin.

### 3.5 The Batch Function

Pressing the 'BAT' key before running a program will enter the batch menu.

#### FUNCTION:

1. Allows user to set or clear the batch size, max. batch size = 999999
2. Sets a new batch size by pressing <ACC>. The paper count and batch quantity are reset to 0.



#### DISPLAY:

#### DISPLAY FUNCTIONS:

DISPLAY
xxxxx = batch size
SET = sets the batch size
CLR = sets the batch size to zero

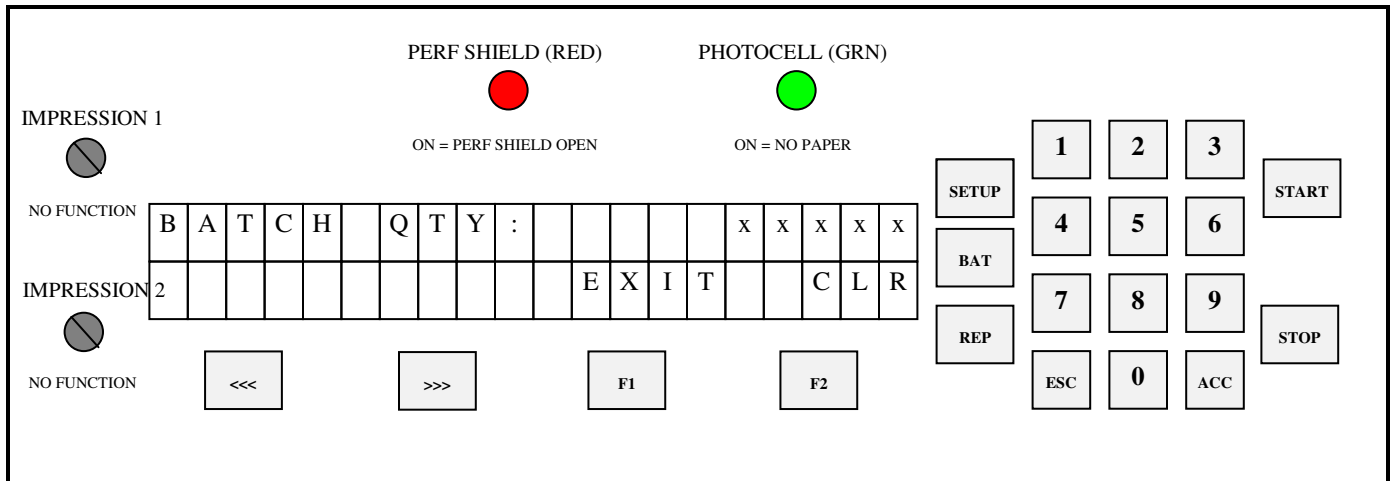
At this point you may select the size of the batch desired by entering the desired batch size through the *keypad*. Press the 'ACC' key when the quantity desired has been chosen. Press the 'F2' key (CLR) if you wish to clear a quantity entered to disengage the batch function. Once again, the 'ESC' key will return you back to the *main operating menu* without activating the batch function. Pressing "F1" will reset the paper count and batch quantity.

When running a job with the batch function, the machine will stop after the last sheet has been processed, leaving the sheet partially in the *exit rollers*, allowing you to insert a slipsheet. The *LCD display* will then show the number of batches completed.

**FUNCTION:**

- 1. Displays the number of batches that have been completed of Batch Size

**DISPLAY:**



**DISPLAY FUNCTIONS:**

DISPLAY	
xxxxx = batch quantity	
EXIT = exit to <b>Mode - Idle</b>	
CLR = clear batch quantity	

This screen will show you how many batches you have completed. Multiply the 'BATCH QTY' by the 'BATCH SIZE', and you have the total quantity of your run. When the machine stops after each batch has been completed, you may insert a slip sheet in the *exit tray* and simply press the 'START' button to continue with the next set.

**3.6 The Repeat Function**

The repeat function key (REP) is a future feature.

**3.7 Motor Speed Control**

The motor speed can be changed while the machine is running or idle. This function is performed by using the first two function keys under the *LCD display* screen (marked << and >>) when you are in the *main operating menu*.

The bottom line of the *LCD display* shows a down arrow to slow down the motor and an up arrow to speed it up.

## 4.0 Setting Up a Job

### 4.1 Aligning the Air Feed Side Rails

Refer to section 2 'Initial Operation'.

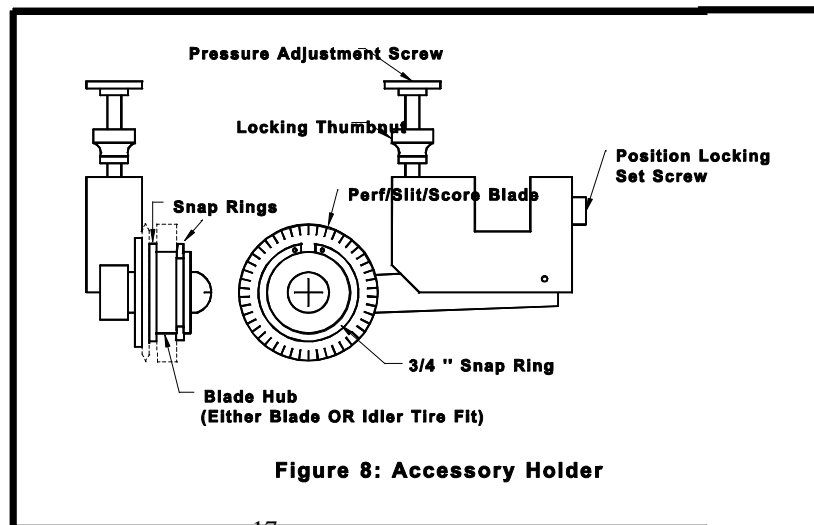
### 4.2 Setting Idler Tire Pressure

Unlike other GW equipment, the idler tires are wide and ride on a mating rubber tire on the boss shaft. These tires must be tight to each other for proper score location. Because the vacuum belt travels slower than the rest of the shafts (for sheet separation), it is imperative that these tires have a firm grip on the stock to counter the drag from the vacuum belt.

**Warning:** all feed and exit tires and *perf/ boss wheels* use setscrews to secure their positions. When tightening setscrews, do not over-tighten them. This may scar the metal shafts and inhibit the free sliding movement of the *feed tire hubs* or *perf/score/slit boss wheels*.

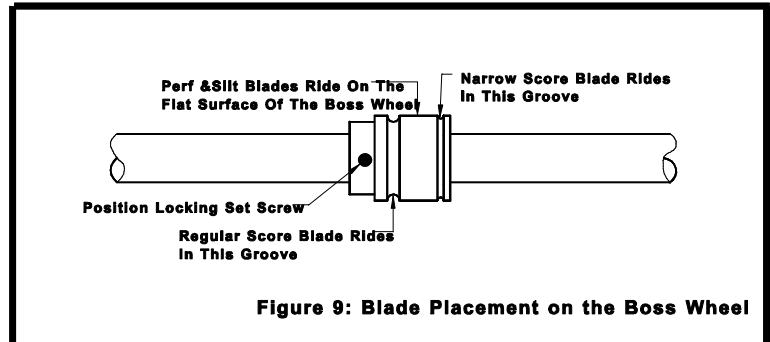
### 4.3 Perforating/Slitting

Perforating, and/or slitting can be performed with or without score. As previously mentioned, if no scoring is desired, program '00' has been set aside for this task. The perforator blades are available with 2, 4, 6, 8 and 12 teeth per inch as well as Microperf. The blades can be easily interchanged using the ring pliers supplied with the machine.



Remove the *accessory holder* (see *Figure 8*) from the machine. Simply remove the *retaining clip* from the *blade hub* and pop off the blade. Place the new blade on the *blade hub* and put the *retaining clip* back on. Ensure that the *retaining clip* sits completely in the groove in the *blade hub* in order to prevent any movement of the blade.

Using the small hexdriver, move the bottom *boss wheel* to the approximate location of the desired perforation or slit. (*Note:* Keep all of the setscrews of the boss wheels in line on the shaft.) Move the *accessory holder* to the position desired



**Figure 9: Blade Placement on the Boss Wheel**

where the perf/slit blade will ride on the flat surface of the *boss wheel* (see *Figure 9*) and tighten the *position locking set screw* into the keyway of the square shaft (using the large hexdriver). Since you can control the depth of a perf/slit, it is critical that you locate your perf/slit wheel to the flat of the *boss wheel*. Tighten the *pressure adjustment screw* located on the top of the *accessory holder* and turn the *handwheel* at the same time. When the perf/slit blade turns with the *handwheel*, test a few sheets. Continue to make adjustments until the desired perforation depth is obtained.

To ensure a straight perforation or slit, run a few sheets through the machine. Using a straight edge, check if the perforation line is straight. If not, you may have the *main tires* placed unevenly across the sheet with one tire on the non-operator side. Next, flip the first inch of the lead edge of the sheet over and check to see if the perforation lines up. If it doesn't, double check that there is no excess play in the *feed rails*. You may not be feeding the sheet into the machine squarely. To ensure that the sheet is running through the machine square, you can feed a sheet into the machine using the *handwheel* and align the lead edge of the sheet with a straight edge in the machine (such as the edge of the *bottom boss shaft*). To adjust the squareness of feed, you can move the front or back of the *operator side feed rail* on the *feed table* to make sure the sheet travels through the machine squarely. If you adjust the *operator side feed rail*, you must adjust the *non-operator side tray guide* as well. Run a few more sheets through and check the sheet again. Continue until the perforation lines up. Now, take the lead edge of the sheet and fold it over to the last inches of the sheet. Again, you are checking to see that the perforation lines up. If it does not line up, again check that the perforation itself is straight. If not, check the *main rollers* for equal distribution over the sheet and also check that the *feed tires* have equal pressure along the sheet. The *feed pressure adjustment screws* dictate the paper travel. The general rule to remember is that a perforation

runs away from a tighter tire. If the perforation runs towards the non-operator side, then loosen the operator screw by an  $\chi$ th of a turn and tighten the non-operator side by an  $\chi$ th of a turn. Vice versa for a perforation that skews towards the operator side. Make adjustment to the *exit rollers* in the same way you make adjustments to the *main rollers* if the perf starts straight and then tails off. If the perforation is straight but the perforation does not line up, you may still not be feeding the sheet through square.

#### **4.4 Main Rollers**

The *main rollers* are comprised of a bottom solid roller and 6 adjustable rollers on top. The top rollers are mounted on a spring loaded shaft, to maintain pressure down to the bottom solid roller. The adjustable top rollers must be distributed along the shaft so that there is a roller on each end of the shaft, with the remainder distributed along the shaft. To ensure proper transport, a majority of the rollers should be on the stock, but do not load all rollers to one end of the shaft where you may encounter stock skew.

#### **4.5 Setting Impression Control**

After setting up the machine and then programming a job (*Section 3.4*), test sheets will have to be run to verify you are getting the correct impression, in other words: location; crash strength; etc.

The *Impression Control Dials*, located on the *control panel* regulate the strength of the crash. Simply turn the dial clockwise if more impression is required.

## **5.0 RUNNING A JOB**

Once the job has been programmed, and the ACC button pressed, with stock in the feeder and the pump running, press START and the job will run.

## 6.0 Maintenance

The CM+ is designed to be trouble-free through years of use. Only minor maintenance operations are required to keep it running like new.

### 6.1 Machine Cleaning

After each job, or midway through a very large job, clean the *feed tires*. You can use warm water to clean off paper dust or drying powder, or blanket wash or alcohol if there is ink on the *feed tires*. Any type of rubber roller rejuvenator is also good to clean the *feed tires*; the rejuvenator will also soften the rubber. This will prevent glazing of the rubber. Brand new tires will require extra cleaning for the first job or two until the rubber beds in.

In addition, always watch that paper dust or dirt does not block the photocell sensor eyes. The “green” light on the control panel marked “PHOTOCELL” can verify correct photocell operation. If dirty, simply wipe the photocell sensor eyes but **do not use solvents**. Either use a cotton swab or blow clean with compressed air.

Ensure that the trays and guides are clean.

### 6.2 Lubrication

The CM+ utilises seven oil-impregnated bronze bushings to support all shafts except on the drive side where the lower shafts use bearings instead. An occasional drop of light machine oil these bushings will maintain their lubricating qualities. Wipe off any excess oil to avoid spoiling a job.