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FINISHMASTER 100

REFERENCE MANUAL

Version 9902

1.0 General Operation

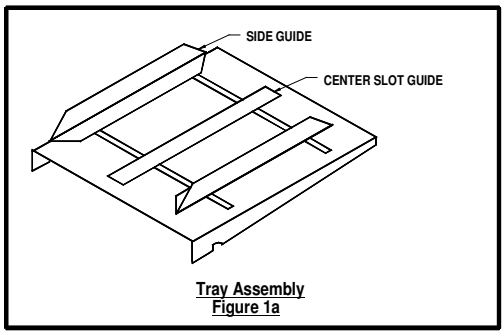
The FinishMaster 100 can perforate, score or slit single sheets (13# bond to 12 point card or 45 to 250 gsm paper) or multi-part carbonless forms (up to 10 parts) With proper setup, thousands of sheets per hour can be quickly and identically processed. The unique friction feeder sends through one set at a time, even from the unglued side of a padded set. Perforations are done between the feed and main rollers producing a straight perforation, slit or score, 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. Finished stock is then delivered to a traditional chute exit tray. All this in a compact, bench top design.

2.0 Machine Assembly

Remove and unpack all machine parts from the shipping carton.

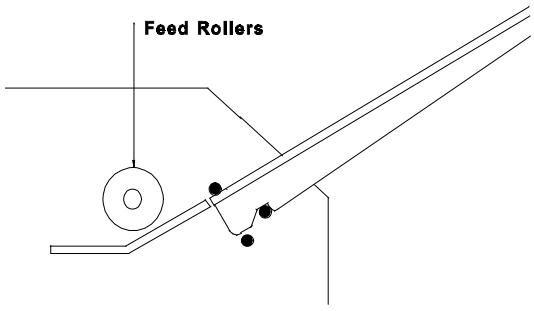
2.1 Feed and Exit Trays

The *feed tray* is comprised of four components each: the *tray*, two *tray side guides* and a *centre slot cover* (see *Figure 1a*). The *exit tray* is comprised of the *tray* and two *tray side guides*.

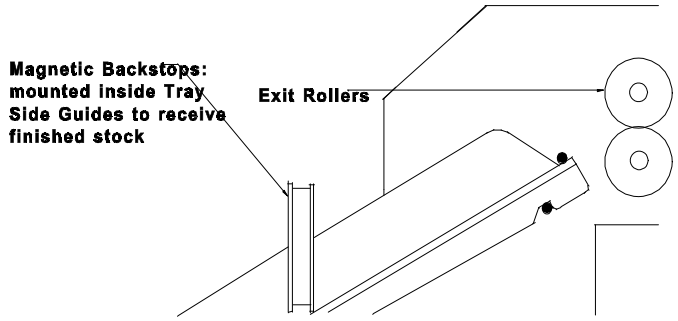


Tray Assembly
Figure 1a

The *trays* sit in the machine on mounting pins inside the machine's side frames as shown in *Figure 1b and 1c*. The *trays* can be easily removed and stored elsewhere when not in use.



Feed Tray Mounting
Figure 1b



Exit Tray Mounting
Figure 1c

For the *feed tray*, place the *tray side guides*, bottom flange towards the center and *center slot cover* on the *tray* as shown in *Figure 1a* and screw on the nylon wing nuts to secure

the pieces on the *tray*. For the *exit tray*, place the *tray side guides*, bottom flange towards the center. The magnetic strips on the bottom of the *tray side guides*, will secure them to the *exit tray.* The *operator side tray guide* of both the *feed* and *exit tray* should be pulled all the way over to the operator side.

> ***Note:*** It is critical that the *operator side tray guide* of the *feed tray* be moved all the way over to the operator side of the machine to ensure that the stock being processed through the machine registers through the *register board* properly.

Place a pile of the stock to be processed in the *feed tray* and use it to align the *non-operator side tray guide* to the pile. Allow a fraction of an inch so that the pile flows freely up and down the *tray* if released from the top. Set the *exit tray* in a similar manner , although the accuracy of the *non-operator side guide* position is not critical.

2.2 Additional Switches and Controls

The main *on/off switch module* is located on the back of the operator side frame below the feed tray. It also houses the main fuses for the machine.

The Operator Panel contains the motor Start/Stop Switch and a Speed Control Dial. Turning the *Speed Control* Dial completely counter-clockwise will reduce the machines speed to 0 rpm. Turning the *Speed Control* completely clockwise will bring the machine to full speed, allowing you to process approximately 10,000 11x82" (A4) sheets or sets per hour.

Facing the operator is a H*andwheel* that allows you to turnover the rollers. This can assist you in machine set-up.

The *Accessory Holders* which mount the perf/score/slit wheels has a safety cover which is switched. If the cover is open, the machine is will not operate until the cover has been closed.

3.0 Setting Up a Job

To set up the machine for a specific job, a few items must be adjusted depending on the specific stock being run and the number of perforations, slits or scores required. In order to keep it simple, adjustments required will be discussed from the feed end of the machine to the exit.

3.1 Aligning the Feed Tray Guides

As previously mentioned, the *operator side tray guide* should be seated all the way to the operator side. This will ensure that the stock passes directly into the *register board*. With a pile of the stock placed in the tray, align the *non-operator side tray guide* with the pile. Allow a fraction of an inch so that the pile flows freely down the tray if released from the top.

Move the *center slot cover* so that it is in the middle of the two *side tray guides* and tighten the wing nuts.

3.2 Setting Feed Tire Pressure

The friction feed system used in automatic Graphic Whizard machines is unique. It utilizes three top *feed tires* to feed sheets through with a consistent pull along the full lead edge of the sheet, and a continuous width *sheet retarder* (the strip of fine sandpaper on the *feed platen*) to separate sheets and prevent double feeding.

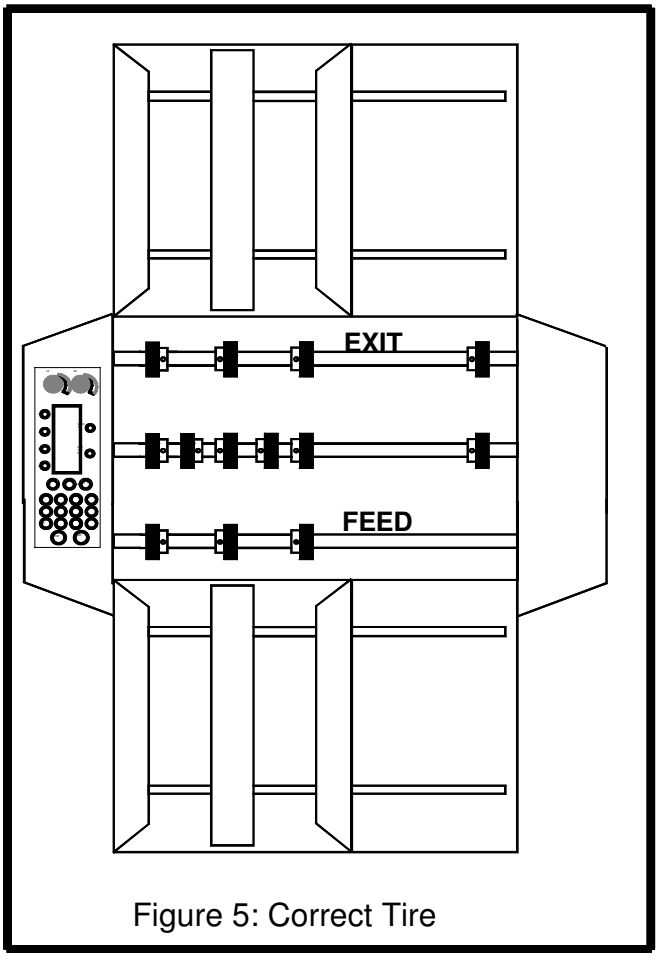


Figure 5: Correct Tire

Once the *feed tray* and *side tray guides* have been assembled according to the sheet width required, you may locate the *feed tires* along the *feed shaft*. For proper sheet feeding, the position of the three *feed tires* along the width of the sheet is also important. Loosen the set screws of the *feed tire hubs* using the small hexdriver provided in the accessory kit. Slide the *feed tire hubs* along the *feed shaft*, setting the two outer tires at about 1 1/2" in from the outside edges of the stock. The third, middle *feed tire* is simply centred. Keep the three setscrews of the *feed tire hubs* in line on the *feed shaft*. Tighten all setscrews. (see *Figure 5*)

If a *feed tire* is set too close to the edge of the sheet, its feeding efficiency will be affected by variances in the stock such as sheet curl and inconsistent glue thickness on multiple padded forms. Improper setting of the *feed tires* can cause random skewing problems.

Warning: All *feed* and *exit tires*, and *perf/score/slit 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*.

To ensure consistent, trouble-free feeding, the *feed tire* pressures must be set as loose as possible. **The *feed tires* should never contact the *retarder strip*!** The gap between the *feed tires* and the *feed platen* should be just less than the thickness of the stock being used. Remember that we are retarding the full lead edge of the next sheet or set. When setting the *feed tire* pressures, you should have the sense that the *feed tires* are just touching the paper. It is better to set the *feed tire* pressure too loose, in which case you will start to have double feeds. The remedy is to turn down the *feed tire pressure adjusting screw* a 1/8 th turn. If the *feed tire* pressure is too much, you will possibly mark or pull apart forms.

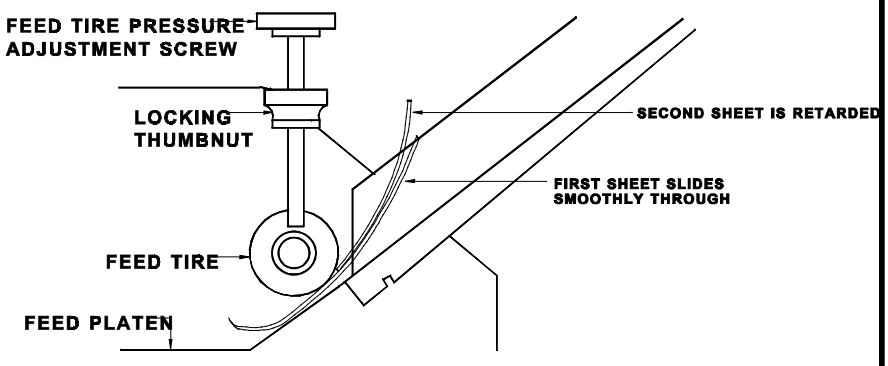


Figure 6: Feed Pressure Adjustment

Adjustments for *feed tire* pressure are made with the *feed tire pressure adjusting screws* (see *Figure 6*). It is recommended to place two sheets of the stock in the *feed tray* with the *feed tire* pressure set loosely. Hold the two sheets in your hand with one sheet

ahead of the other. Place the leading edge of the first sheet under the feed tires. Slowly tighten the *feed tire pressure adjusting screws* while jiggling the pages back and forth. The correct setting is achieved when the second page is no longer able to run under the *feed tires*.

All three *feed tires* should be adjusted to the same pressure setting to minimize skewing. A tighter *feed tire* pressure on one side of the sheet, will cause faster feeding of that side of the sheet (the sheet will skew or twist towards the *feed tire* with tighter pressure). To correct this skewing, reduce pressure on the tighter side with a counter-clockwise, χth of the *feed tire pressure adjusting screws* and increase pressure on the other side by a clockwise, χth of that *feed tire pressure adjusting screws*. These adjustments should cause a change in the overall balance of pressure from the three *feed tires* without affecting the total *feed tire* pressure.

When you have the *feed tire* pressure set properly, you can then tighten down the white nylon thumbnuts to ensure the setting will be maintained.

Note: The only time the feed is too loose is if double feeding occurs. If the feed is too tight, the *feed tires* will try to pull only the top sheet off a set. If this occurs, loosen the *feed tire* pressure a little on both *feed tire pressure adjusting screws* evenly until this no longer happens.

With the Model A, carbonless sets feed best from a non-glued edge! Glue thickens the set and can cause waves on the edge, while the unglued edges tend to be more consistently flat.

Advisory: It may require several attempts to get used to this sheet-feed technique, and it is recommended that you practice a few jobs with scrap paper. However, some initial trial and error experimentation will allow you to develop long-term benefits in efficiency.

3.3 Perforating/Slitting

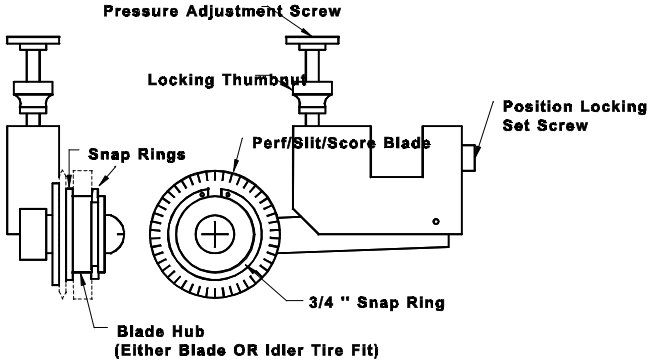


Figure 7: Accessory Holder

Perforating, slitting and/or scoring can be performed quickly and easily. 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 7*) 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.

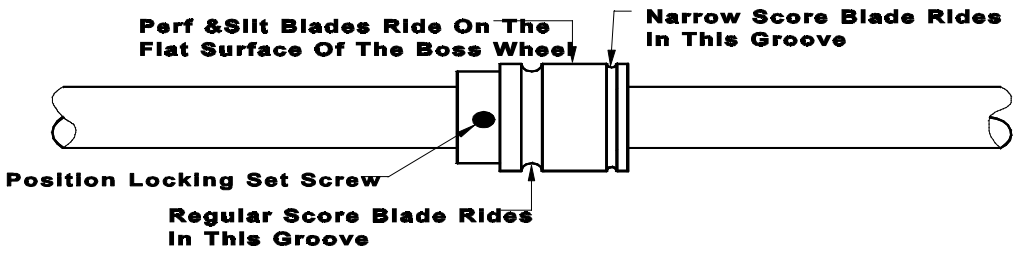


Figure 8: Blade Placement on the Boss Wheel

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 where the perf/slit blade will ride on the flat surface of the *boss wheel* (see *Figure 8*) 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, score or slit, run a few sheets through the machine. Using a straight edge, check if the perforation line is straight. If not, you may not have the *main tires* placed evenly 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 *tray side guides* and that the *operator side tray guide* of the *feed tray* is over to the operator side as much as possible. You may not be feeding the sheet into the machine, square. 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 tray guide* on the *feed tray* to make

sure the sheet travels through the machine square. If you adjust the *operator side tray guide*, 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 inch 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 χth of a turn and tighten the non-operator side by an χth 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.

Whether perforating or slitting, place one of the *strippers* close to the cut. The new cut in the sheet can often cause the sheet to curl up and cause a jam otherwise.

3.4 Scoring

Setting up a score is similar to perforating or slitting although the scoring blade will run in the groove of the bottom *boss wheel*. With a score, it is more critical to control the depth of the blade, because this controls the depth of your score. When lining up the blade and groove of the *boss wheel*, do not tighten the *boss wheel* until you have run the score blade into the groove using the *handwheel*. Once you have the blade and *boss wheel* lined up you can adjust the depth of the score and run some test sheets, adjusting the depth of the score until you are satisfied. Making adjustments for a straight score are done in the same manner as a perf/slit (as discussed in *Section 3.3*).

3.5 Idler Wheel Holders

On the same keyed shaft that the *accessory holders* are mounted on, for your perf/score/slit operation, there are two *idler wheel holders*. These holders, if possible should be mounted about 1 to 12" from the outside edges of the stock being run. As the stock leaves the *feed tires*, it will then be perfed/scored or slit. The *idler wheel holders*' purpose is to equalize the force along the stock as it passes through this section, so you do not encounter any skew, which you may encounter if you only had a perf/score/slit wheel contacting the paper before going through the *main rollers*.

3.6 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 a majority will be in contact with stock as it passes through to ensure proper transport. The adjustable top rollers must also be evenly distributed across the shaft to ensure equal pressure across the shaft, therefore avoiding stock skew.

4.0 Running the Machine

4.1 Fanning

The final feeding concern is the fanning of the stock. This procedure may also take some practice, and in particular when fanning carbonless sets across the un-glued edge. The following steps should be used in order to fan the pile:

1) hold the paper as shown in *Figure 10*;
2) lower your left hand while holding on to the pile firmly with your right;
3) hold the pile tight with your left hand and loosely with the right;
4) return the left hand to its original position
5) repeat steps 1 through 4 until adequate fanning is obtained.

Try fanning while holding the stack in a vertical, upright position, with the glued edge resting on a table. This will maintain a flat, straight edge.

When loading a fanned stack into the *feed tires*, hold the back end of the stack up high (at approximately a 30 degree angle, relative to the *feed tray*) so that the lead edge slips under the *feed tires* (see *Figure 11*). Then, gently lower the stack onto the *feed tray*. Before starting the machine, rotate the *handwheel* one half turn and watch that the first sheet of the stack advances correctly, while the second sheet beneath it should be retarded from feeding into the machine.

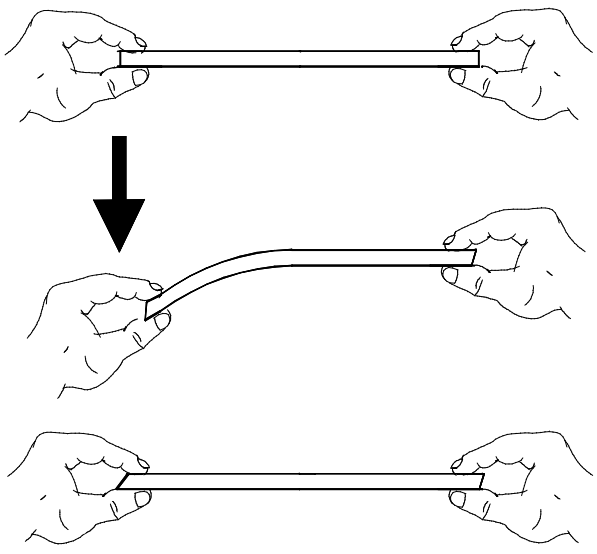


Figure 10- Fanning Stock for Feeding

The efficiency of the feeding can be improved by increasing the spacing between the sheets of your fanned stack. Begin with small stacks (10 to 20 sheets) and build up to larger stacks as you become more confident with your fanning.

Once you have mastered the art of fanning, you can progress to back-feeding to provide continuous feeding and uninterrupted operation. To feed while the unit is operating, fan a stack and, while holding it in your right hand, carefully grasp the bottom set of the feeding stack with your left hand. Raise the back edge of this bottom set, thus slightly raising the back of the feeding stack, and slide the new stack under it. Release the new stack into the *feed tray*, letting it slide down under the feeding stack. Lower and release the back edge of the bottom set so that the stacks now sit together. This back-feeding procedure should be done while there is still sufficient stock in the *feed tray* to allow for the time needed to prepare and insert the new stack.

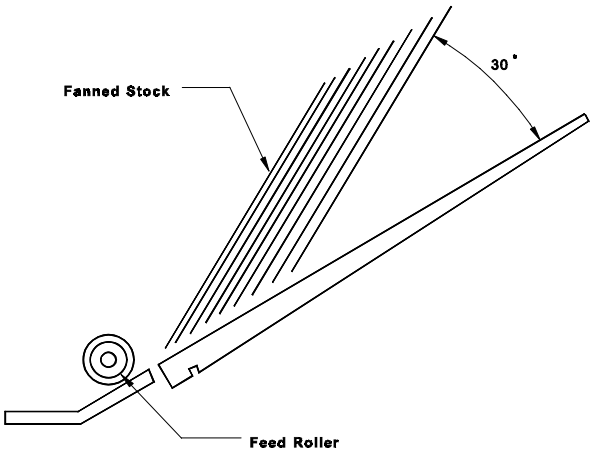


Figure 11- Feeding Stock

Warning: *Keep fingers, hair etc. away from rollers and print heads when running the machine.*

5.0 Cleaning & Maintenance

5.1 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 rejuvinator is also good to clean the *feed tires*, the rejuvinator 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.

Ensure that the trays and guides are clean.

5.2 Lubrication

The FinishMaster 100 utilizes eight oil-impregnated bronze bushings to support all shafts. An occasional drop of light machine oil will maintain their lubricating qualities. Wipe off any excess oil to avoid spoiling a job.

5.3 Friction Feed

Over time, the rubber components of the *feed tires* may wear or harden. Use a rubber roller rejuvenator occasionally to soften the rubber. Other than the *feed tires,* another important element of the friction feed system is the full lead edge *retarding strip.* The abrasive agent on the *retarding strip* prevents sheets from double feeding. As the abrasive agent wears, you will encounter more double feeds and when you see the green backing of the *retarding strip* you must replace it. To replace the *retarding strip* for the feed, adjust the *feed shaft* to its highest position. Using a scribe or sharp edge, etch into the *feed platen* where the *retarding strip* ends (you will use this scribed mark as a reference point when you apply the new *retarding strip*). Peel off the old *retarding strip*(you may need a knife or razor) and remove any old adhesive with alcohol. Replace with a new self-adhesive *retarding strip*. Make sure that there is some of the *retarding strip* surface under the *feed tires* to ensure proper operation.