

ACUSTOMER calls and says that he wants to buy a three-hole punch, but I tell him that he really does not. To avoid the risk of falling into an Abbott-and-Costello routine, I explain to him that a drill uses rotating drill bits to drill through paper and a punch uses reciprocating male and female dies to push through paper. A solid punch pin pushes paper through a female hole and the waste exits below. A drill cuts the paper while spinning and the waste is ejected up through its hollow shaft and exits through the top.

What's the difference? Speed, accuracy, versatility and cost.

Let's start with speed. The most common misconception in this end of our industry is that an automatic punch is faster than a drill. It most certainly is not. In fact, the slowest three-hole drill is faster than the fastest automatic punch. The slowest three-hole drill can drill through a 2" lift every stroke.

How many strokes can you do in a minute? The fastest punch can only punch 7" of stock per minute. If you can drill four lifts of stock per minute you are already ahead of the game. A good operator can drill six or seven lifts per minute. Since many drills can drill through 2" or 3" lifts, it becomes even more apparent that drilling is faster.

Talking Stock

The only stock that is clearly better to punch than drill is plastic and vinyl. While both can be drilled (with quick strokes and slow spindle speeds), ideally, they should be punched. Heat and friction tends to melt these stocks and causes a mess within the drill bit. If the plastic hardens within the drill bit, you might as well throw it away. Some operators prefer to punch heavily varnished stock, rather than to drill it.

This is a toss up. It also depends on how sharp your bits or dies are. Drill bits should be sharpened every three to four hours of use. Punching dies need only be sharpened two or three times per year.

Many customers ask: "How many sheets of

Holes And How We Make Them

BY DAVID SPIEL

paper can it punch at a time?" This is not a very good question. If you always punch the maximum amount of paper that the punch will allow, the more likely it is that the center sheets will have ragged holes and you will be replacing your dies often. Dies are not cheap. A die in a heavy-duty automatic punch should last more than 10 years. A better question to ask:

"How many strokes a minute can it punch?" A fast punch can punch over 100 strokes per minute. If you average 10 to 15 sheets per stroke (this will not beat up your die), that's 75,000 sheets per hour. Of course, a good operator will be able to even better these numbers.

If accuracy, however, is your aim, then punching ought to be your game. The only reason to punch three, five or seven round hole patterns is if the job has to be dead-on accurate. Drilling always has that human error factor built in. Was the lift jogged perfectly up against the side guide? The back gauge? Was it jogged at all? Good automatic punches have four-sided registration and take the worry away as long as the machine is set up properly.

Manual punches are either tabletop or floor-model designs. Floor-model punches are generally used by those who have automatic punches, but cannot punch a particular job automatically. It is either too big, too small, too thick, too thin, a strange shape or too small a run to set up on an automatic punch. Tabletop punches are mostly used by those who have small runs.

There are in-line punching machines for

punching in-line with saddle binders, folders or bookletmakers. These are not to be confused with the attachments that fit into three-knife trimmers, which can take a long time to set up and can only punch very thin booklets. In-line punches can roll up to any compatible machine, set up quickly and be fed with an on-demand basis. Some of these machines can punch booklets up to 1/4" thick.

Variety of Options

Automatic punching machines vary greatly in cost and versatility. Feeding is of primary importance. Many newer punches merely use gravity as a feeder. A small picker separates a number of sheets from a lift. They then fall straight into the punch head, some on edge, some flat. They are then jogged and punched. Static, curl and wave can, and will, cause a multitude of problems with this method of feeding. Solving static problems is not easy and a strand of tinsel will not fit the bill. The best method of feeding is a stabber/gripper system.

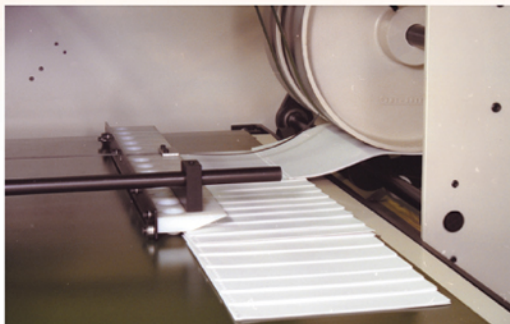
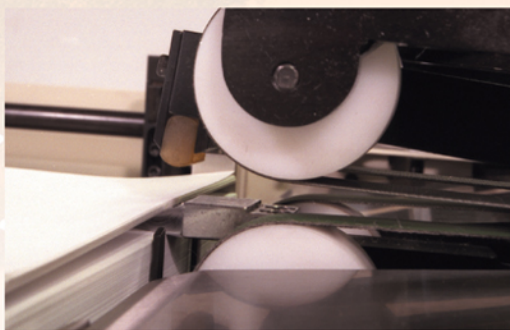
The stabber stabs into a lift of paper, then grips the smaller lift and pulls it into the transport belts. This system is not affected anywhere near as much by static or curl. Some machines offer an air feeder that allows users to feed one piece at a time. This is especially important when feeding chip board or signatures.

Registration is important for accuracy, but even more so for speed. A machine that jogs on all four sides is ideal. Centering your sheet is an absolute necessity. This means setting your side guide accurately, then setting your other side guide. Sometimes you will have to run back and forth, from one side of the machine to the other, a few times. There are machines that have a micrometer, which actually moves the die back and forth to save this step.

Some machines can only punch near the spine; some can punch anywhere on the sheet. This comes in handy when punching windows, slots, wraparound covers, etc. There is more to punching than double-loop wire and plastic coil patterns. Make sure that your machine has jam-up detectors or that it can reverse if you have a horrific jam-up to save time and stock.

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Punching holes may be a more productive, and cost-effective, method than traditional paper drilling. While automatic punching machines vary greatly in cost and versatility, feeding is of primary importance.



Punching vs. Drilling

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Delivery is another consideration. There are three main systems: A hopper or jogger, a receding stacker or a conveyor. A hopper or jogger is fine, but remember that if you are punching 6" or 7" of paper per minute, that hopper or jogger is going to fill up every 20 to 30 seconds. Most operators run their punches slower because they cannot offload quickly enough or they have to use two operators. Neither of these options makes the boss happy. Receding stackers have a much bigger lift height, but the

machine must be stopped, the stacker offloaded, reset and rolled back into the machine before an operator is back in production.

A conveyor, on the other hand, buys the operator time. He can control the speed of the conveyor so that he can offload it to meet his own speed, irrespective of the machine's strokes per minute speed. Furthermore, the operator can inspect the work after it is punched or, if he chooses to, go into a jogger—after the conveyor. Either way, he has a choice, which results in better versatility.

When looking to buy an automatic punch ask the following questions:

- ▶ What is the unit's maximum and minimum sheet size?
- ▶ What is its speed?
- ▶ Does its delivery allow for the use of one operator?
- ▶ How does the feeder work?
- ▶ Can the machine feed signatures, booklets or board?
- ▶ How much paper waste can be expected?
- ▶ Are parts available for the machine locally?

Drilling more than 10 round holes in a sheet is counter-productive. At that point, it pays to begin punching your holes. Multiple passes on drills can lead

to errors. The more passes, potentially the more mistakes.

Drilling holes for 4:1 plastic coil patterns is a fool's errand. Punches, naturally, are more versatile since they can punch any hole shape. Drill prices range from \$5,000 to \$20,000. Punches range from \$8,000 to \$50,000.

So, if you get away with drilling, keep drilling. One day you may hit oil. ■■

About the Author

David Spiel is co-owner of Spiel Associates, a leading U.S. source for bindery equipment based in Long Island City, NY.