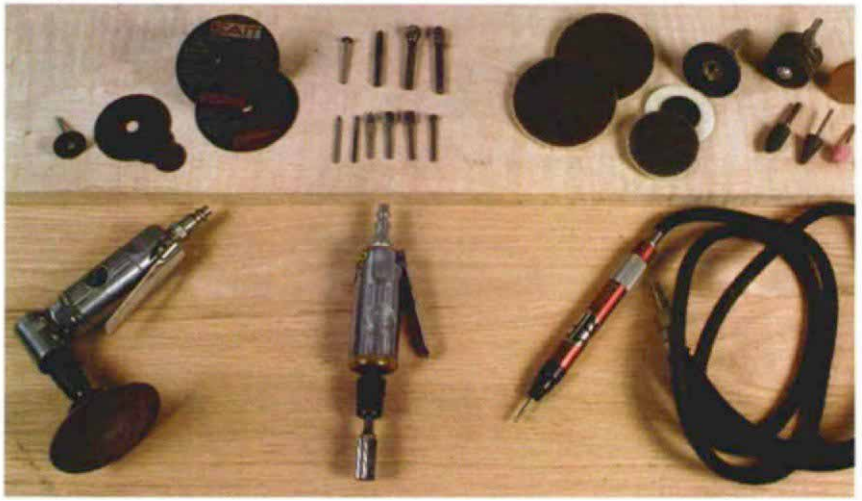
Pneumatic Die Grinders in the Woodshop

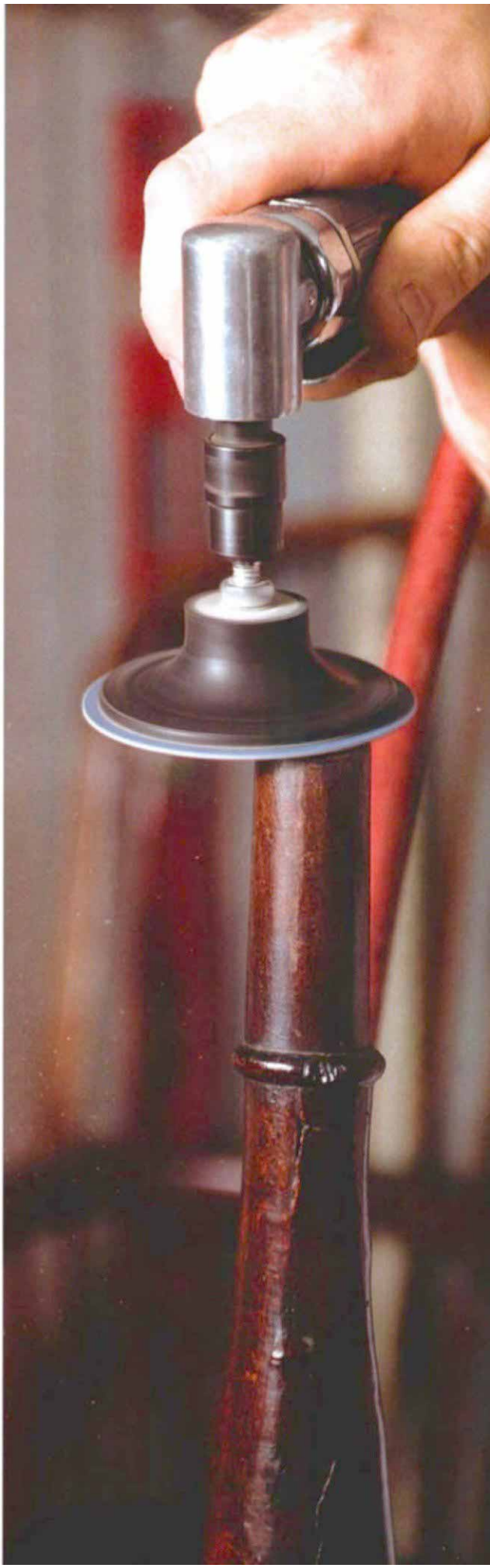
These versatile tools solve a host of small shop cutting, grinding and sanding problems

by Greg Scholl

I first saw a pneumatic die grinder in action on one of those Saturday morning, television shows for backyard mechanics. The host was removing metal from an engine block with incredible speed and control. His knuckles weren't white. He wasn't cursing. I'm a professional woodworker, not a mechanic, but I knew I had to have one of these tools. And I've never regretted buying my first pneumatic die grinder—or the second, or the third or even the fourth. I now have a good selection of straight grinders, angle grinders and even microgrinders (see the photo below). They have proven their great usefulness in my woodshop on countless occasions. I rarely put in a day's work without using one of them.

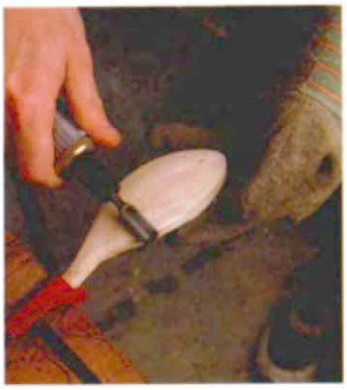


***Grinders for virtually any job**—Air-powered die grinders are an unlikely ally in the woodshop, excelling at jobs like evening up chair legs (right). The author's arsenal includes (from left) an angle grinder, straight grinder, microgrinder and a variety of abrasive discs, wheels and burrs.*



I have owned electric die grinders, but pneumatic die grinders have a number of advantages. To begin with, pneumatic machines don't carry their motors around with them, making them far smaller, lighter and easier to control. They generally spin at a higher speed and are capable of variable speeds, producing smoother cuts. They are also cheaper to buy and maintain. Where a good electric grinder can cost $100 or more, a pneumatic straight grinder should run about $40. Angle and microgrinders are about twice as much. The tooling is generally inexpensive, from less than a dollar for a cutoff wheel or $5 for a high-speed-steel burr to $20 to $30 for a carbide bit. The largest expense is a compressor. To run an average die grinder, you will need one that can generate from 3 to 8 cu. ft. of air per minute at 90 psi.

The only real drawback to pneumatic die grinders is that they require frequent oiling. A few drops of air-tool oil in the coupler end of the tool before each use will keep a good grinder running smoothly for many years. Be aware that the tool will occasionally spit some oil. It rarely happens, but keep an eye on the exhaust port for any signs of oil drool that begins to collect, and wipe it off (but not on your shirt).



A carbide burr roughs out a spoon blank in no time. *Burrs grind wood more than they cut it. This makes them easy to handle for freehand shaping. Wear gloves: If you ever touch a spinning bit, you'll know why.*

A jack-of-all-trades

Pneumatic die grinders fill a niche in a collection of more traditional woodworking tools. With a carbide burr, a die grinder shapes quickly and easily where a gouge or rasp would be slow. With an abrasive pad, angle die grinders aggressively sand places a belt sander can't. And with cutting wheels and grinding stones, they shape and cut metal better than any other hand tool.

Designed for cutting metal, carbide burrs have very short teeth. Consequently, they cut the hardest wood very rapidly and without clogging or catching, even if they take a little practice to master. I rough out spoon blanks in no time with a straight ½-in. carbide burr (see the bottom left photo). This setup works and feels like a small hand-held router. The microgrinder is fantastic for the delicate side of this kind of work. I have used it to shape new wood patched into a damaged carving. I can hold it as I would a pen and literally write away the wood.

For sanding, I prefer the angle grinder because I can get two hands on it easily. This improved control is a big help when using a Rolock mandrel, which is a small, pliable rubber pad with a threaded hole in the center that accepts resin-backed abrasive discs. The Rolock is excellent for sanding spots inappropriate for a belt sander. One of my favorite uses is for evening up chair legs. To cut down an uneven leg takes just a few touches with a sandpaper disc. For this kind of end-grain task, a belt sander would be unwieldy, an orbital sander wouldn't be aggressive enough and a block plane might chip out the edges.

Rolock mandrels also accept Scotch-Brite nylon pads. The fine grades are perfect for removing rust from old tools. A nylon pad saves me hours of handwork with a wire brush and steel wool.

Spoil the nails and spare the table. *After carefully prying up the batten on the underside of a table, the author uses a large cutting wheel to cut through rusted nails.*

Die grinders really come into their own when cutting and grinding metal. In my furniture restoration work, I often have to separate parts that have been nailed or screwed together for 100 years or more. The hard part is not leaving traces of my work. What would take hours of careful prying, coaxing and cursing takes seconds with a die grinder. Spinning a cutoff wheel at 20,000 to 30,000 rpm and slicing through old nails, screws and bolts like a hot knife through butter is an exhilarating experience (see the photo above). When I need to re-slot a corroded screw that's in a tight place, I use the microgrinder with a small, thin grinding wheel (see the bottom right photo). If this does not work, I can always grind off the entire screwhead with a burr.

Cut a new slot in an old screw. *Without marring the hinge, a microgrinder fitted with a thin grinding wheel cuts a short, deep slot.*

A word of caution

Pneumatic die grinders spin tooling at very high rpms. The straight and angle grinders spin up to 25,000 rpm, and my microgrinder tops out near 60,000 rpm, though somewhat less under load. Check the rpm rating of every bit before use. A lot of tooling that has not been designed to fly that fast will fit the pneumatic grinders' standard ¼-in. and ⅛-in. collets. I have seen small cutoff wheels fly apart. It might be tempting to chuck a wire wheel meant for a drill in a pneumatic grinder, but a stray wire sunk into your face is a painful way to learn not to. Always wear gloves and a full face shield. □

Greg Scholl makes and restores furniture in Fairfield, Conn.

Photos: Strother Purdy