Pneumatic Finish Nailing

A production finish carpenter explains how to use and maintain these indispensable tools

BY JIM BRITTON

hree decades of pneumatic finish nailing have come and gone. Little that's fundamental has changed in the mechanics (drawing facing page), use and care of these tools. The greatest change is that carpenters will never return to handnailing. Hand-nailing is too time-consuming, particularly for trim carpenters who also must set the nails. Pneumatic nailing is cleaner. The marring of finished surfaces is almost nil.

Every finish carpenter I know now has at least one pneumatic nailer. In a typical day, I use two or three nailers for tasks that range from hanging doors (photo this page) to nailing base quickly to tacking on small molding returns.

Pneumatic nailers deserve the same respect as firearms

Pneumatic nailers will fire a nail 2 in. into a piece of wood—or into your body—and return to the ready position in 125 milliseconds. They rate the same respect that you would give a gun.

Never point the nailer at others. Always assume that the tool is loaded and ready to shoot. Safety glasses are clearly a priority, not just to deflect an errant nail but also to protect your eyes from the airborne dust and de-





bris kicked up by the discharge of air from the exhaust port of the tool. Corrective eyeglasses also can serve as safety glasses, as long as they are either tempered glass or polycarbonate. Better safety glasses, though, have side shields to protect your eyes from projectiles coming from the side (photo right).

As a safety feature, almost all the nailers on the market have a contact element at the discharge point. This contact element must be depressed at the time you pull the trigger to fire the nailer. I have seen some carpenters disable this contact element, presumably to speed up nailing or perhaps to reduce the slight marring of the wood that an unpadded contact element can produce. No matter what the reason, disabling the contact element is just too dangerous. Without a contact element, triggers on pneumatic nailers are unguarded, and an errant touch can shoot a nail unexpectedly.

Clean, dry air and regular lubrication are key

These nailers will last nearly forever if properly cared for. Pneumatics like clean air. Dust in the airstream is abrasive, and it speeds up the normal wear and tear of a nailer's moving parts. I clean my compressor's air-intake filter regularly, following the compressor manufacturer's procedures. I tend to do it more often in dusty environments.

Pneumatics also like dry compressed air, although the latter phrase is a bit of a misnomer. Limiting moisture buildup is the real goal. As incoming air is compressed, moisture is literally squeezed out and condenses. Most of this water collects in the compres-



Protect your eyes. Pneumatic nailing is practically a necessity to be competitive. The dangers, however, particularly to the eyes, are real. Shatterproof glasses, preferably with side shields, are a necessity.

sor's tank, but enough can make it into the hose to cause nailer trouble.

Limiting moisture buildup is mainly a matter of draining the compressor of condensed water daily. I do this chore by running the compressor with its tank drain open for a few minutes every morning. This task is especially critical when the weather turns cold because water in the lines or nailers can turn to ice and block the flow of air.

If you must use your pneumatics in arctic weather, a Paslode spokesman recommends a tablespoon or so of automotive antifreeze be added to the compressor tank. Antifreeze mixes with any water vapor in the compressed air, preventing the tool from freezing up. I'm careful with antifreeze; it is toxic. And I'm sure not to use an antifreeze that contains antileak compounds. They can clog small ports in the nailer.

Even if you keep water, and therefore ice, out of your nailers, cold weather can make the rubber O-rings that seal nailers less flexible. To avoid damaging the O-rings and to ensure trouble-free operation, I warm my nailers before work. Bringing them inside overnight is a good idea, as is keeping them near the truck's heater for the ride to work. I warm the nailers during lunch, too.

I keep an air nozzle at hand and use it to dust my nailers daily. Owning nailers with both steel and plastic magazines, I think the plastic type needs more cleaning.

Air leaks anywhere in the system reduce nailer performance and run the compressor more, increasing wear and tear. I'm sure to

JOB-SITE MAINTENANCE AND REPAIRS



Three drops of oil a day is usually enough. Use too much, and you'll notice an oil buildup at the exhaust port. Use too little, and you may smell the rubber O-rings wearing out. Proper lubrication takes a little practice.



Nail jams are the most common glitch. Caused frequently by nailing into hidden metal, jams are easily cleared from most nailers by pulling back the nail follower, unhooking the air and removing the nosepiece.



If you can pull out the driver, it's broken. The fix for this problem requires the nailer to be taken apart. Most nailers are simple enough that stripping and reassembling can be done on the job.



There is no AAA for nailers, so you've got to carry spare parts. O-ring kits are available from most manufacturers. Keeping one in your trunk enables job-site repairs that can save hours of downtime.

keep all caps and screws tight on my nailers. Audible leaks are almost certainly reducing nailer performance, so I fix them promptly.

For light use—when, for example, I'm cutting trim and nailing it up as I go—I lubricate nailers daily with three drops of pneumatic oil through the air intake (photo top left). On a heavy-use day, when I'm constantly nailing precut trim, I lube my nailer again after lunch. Overlubrication will yield an oily exhaust port. Too little oil, and you may smell the O-rings overheating and wearing out. With experience, you should be able to dial in the correct amount of oil.

Automatic oilers that install on the nailer are available. However, they are automatic only if they have oil in them. They usually hold enough oil to supply one nailer for several weeks. I think that daily oiling is an easier habit to get into than is, say, biweekly oiling. Automatic oilers carry with them a real risk of complacency.

Some manufacturers make oilless nailers that have permanently lubricated seals and guides. Never add oil to them because oil can dissolve the nailer's seals.

Even correctly maintained, nailers occasionally break

The simplest breakdown is a jam. Jamming is usually caused by nailing into a drywall screw, framing clip or some other hidden fastener. The nail curls inside the tip of the nailer, stopping the driver from cycling and the other nails from advancing. To remove a jam safely, I first disconnect the air supply. Most nailers have a clip that opens the front of the tool (photo top right). With this clip open, I remove the jam, close the tool and reconnect the air hose.

Sometimes nails stop advancing in the magazine. This problem usually means the magazine is dirty, and the fix is cleaning it with WD-40. If the magazine is clean and nails still don't advance, the problem is probably a worn magazine or nail follower, or you're using the wrong nails.

Nailer breakdowns that require disassembling the tool for repair are usually one of two types: The driver breaks (photo bottom left), or a seal breaks, causing massive air leakage. Either problem can usually be fixed on the job if the parts are available. Every carpenter ought to carry an O-ring kit (photo bottom right) and spare driver for each nailer. These kits can cost between \$20 and \$100, depending on the manufacturer. Still, they're cheap insurance compared with driving around, shopping for parts instead of working. If your nailer's not leaking and won't fire,

the piston may be stuck at the bottom of its

THE NAIL YOU NEED DETERMINES THE NAILER YOU NEED

From pins that secure tiny returns without splitting them to 15-ga. nails that hold a frame for a solid-core door in place, nails and dedicated nailers are available for almost any application. Tool junkies may be able to justify one of each, while a minimalist trimmer can probably get by with just a 16-ga. nailer. —J. B.



Use the correct nail length. For most trim applications, the author uses nails that penetrate $\frac{3}{4}$ in. into the framing. Less won't hold, and more is hard on the nailer.



Like their namesake, chisel-point nails driven parallel to the grain split wood. The solution is to orient the nailer to drive these nails perpendicular to the grain direction.

PIN NAILERS (18 GA.)

Headless pinners are great when fastening tiny trim pieces. With no head, the pin is virtually invisible. Puttying nail holes is unnecessary. There is little resistance to pull through. Use for wood-to-wood connections; pin lengths are from $\frac{1}{2}$ in. to $\frac{3}{4}$ in.

SLIGHT-HEAD PINNERS (18 GA.)

Slight-head pins resist pull through better than headless pins. The head is so small that putty is seldom used. I like my slight pinner for staingrade toe-kick and end-panel veneers during cabinet installation. Use for wood-to-wood connections; pin lengths are from ⁵/₈ in. to 1 in.





BRAD NAILERS (18 GA.)

The brad nailer's headed nails make it more versatile than either pin nailer. The drawback is the larger puncture to be filled. These nailers can shoot through drywall into framing. However, I recommend these small nails only for low-stress trim boards. Brad lengths are from $\frac{5}{6}$ in. to $\frac{19}{16}$ in.



16-GA. NAILERS

The 16-ga. nailers are great for the one-nailer carpenter. These tools will perform nearly all interior-trim tasks. Because their rectangular cross section increases the contact area, I believe 16-ga. nails equal the holding power (but not the shear strength) of round 15-ga. nails. Nail lengths are from 1 in. to $2^{1}/_{2}$ in.



15-GA. NAILERS

The 15-ga. nailers are the most common finish nailer on the job site. Most are the angled type because this shape allows these bulky nailers into tight spots. Their largegauge nails offer excellent structural integrity, making these nailers my first choice for solid-core door and closet-cleat installation. They can be used for most interior trim. Nail lengths are from $1^{1}/_{4}$ in. to $2^{1}/_{2}$ in. stroke. First, try re-cycling the piston by letting the compressor run up to full pressure with the air hose disconnected from the tool. Next, hold the nailer on a nailing surface with the contact element depressed and the trigger pulled, and reconnect the air. This step will send a strong surge of air to the underside of the piston, returning a stuck piston to its normal position.

If the nailer stops setting nails yet the nails in the magazine seem to move, the driver might be broken. Air will not be leaking, and you may see the tip of the driver sticking out. If you see the tip of the driver and recycling doesn't retract it, disconnect the air and grab the tip with pliers. If the tip comes out, it's new-driver time.

If the nailer isn't setting nails fully, that could indicate that the nails are too long, the air pressure is too low or the driver is worn and needs replacement.

Large air leaks reduce pressure over the piston and yield poor performance. These leaks can happen anywhere, and you can often hear where the air is leaking. Leaks at the trigger are fairly common. Fixing a leak from the cap of the tool can be as simple as tightening the cap screws, but cap gaskets can fail and require replacement. When you have an idea where the leak is, take the tool apart and inspect for worn or torn O-rings. I always lube replacement O-rings with Lubriplate GR132 grease (available at Paslode dealers) as they're installed.

Choosing the right nails

Inherent in the smooth operation of pneumatic tools is proper nail or staple selection. There is an ideal fastener for every applica-

NAIL FAST, BUT PUT THEM IN RIGHT



Nails at stress points add strength where it's most needed. Here, the author nails in a spot that will be hidden by hardware, saving the painter some effort. Near hinges is another spot that requires nailing.



Follow the path to faster nailing. When nailing moldings such as this casing, the author runs his nailer along a linear detail to locate nails quickly and accurately.



Find one stud that's on layout, and you can rock and roll. By placing the end of his tape in line with one stud, the author need only align his nailer with the tape's layout marks to know the nails are hitting studs and securely anchoring the base.



tion. The simplest consideration is choosing a nail that's just long enough for the job (photo top left, p. 61). I generally use nails long enough to penetrate the trim and drywall, then extend ³/₄ in. into the underlying framing. Unnecessary nail penetration uses more air and more steel. You pay for both.

Generally speaking, the harder the wood, the shorter the nail should be. For example, 1/2-in. penetration into hardwood substrate is usually adequate. Harder woods hold nails better, so there is less need for deep penetration. The only exception to this rule occurs



Pull the work together, then nail it. Pneumatic nailers don't pull pieces together; in fact, they're likely to push them apart. With pneumatic nailing, it is useful to hold the workpieces together with clamps or to back up the assembly with a weighty object such as a hammer as the pieces are being nailed.



when nailing a hardwood to a softwood. Also, driving too long a nail into hardwood is difficult, and the nailer might not have enough power to set a nail in such material.

Shiners are nails that shoot from the finished face of the trim or board. They happen most frequently in situations when you're nailing into the edge of a board (for example, when nailing through casing into a door jamb). Sometimes they happen because you've aimed the nailer incorrectly, but that's rare with experience. Most often, they occur when hard grain deflects the nail's point. This problem is avoidable with experience.

Most nails have a chisel point (photo bottom left, p. 61). Correctly orienting the nailer to the wood grain can nearly eliminate shiners and reduce splitting. To orient a nailer correctly, examine the nails, and position the nailer so that the long axis of the nail's chisel point enters the wood perpendicular to the grain. This way, the point of the nail cuts or punches through the wood, rather than being deflected by it or splitting it.

My favorite techniques

I'm careful to make my nail pattern on one side of a door or trimmed opening mirror that of the reverse side. I think that patterned nailing holds material evenly, and because missing a nail breaks the pattern, it's easier to spot a place where I forgot to shoot a nail. I use pairs of nails on casing, base, door jambs and crown molding. Door jambs and casings are nailed near stress points, such as hinges and strike plates (photo top left, facing page).

When nailing a molding that has a pronounced crease or edge detail, such as a colonial-style casing or crown, I use the edge detail to guide my nailer (bottom photo, facing page). I depress the contact element of the nailer to firing position and slide it along while nailing, never lifting. This way, I just need to pull the trigger when the nail spacing is correct. I don't need to stop moving the nailer.

When nailing tapered casing such as ranch or colonial style, I use shorter nails, usually 1¹/₄ in., to attach casing to jamb than to attach casing to the wall. There, I use 2-in. nails.

When nailing base, I locate one stud in a wall that I'm sure is on a regular layout. I lay my tape on the floor with its end by that stud. Then I nail the base to the wall studs, now located by the layout marks on my tape (photo right, facing page).

When it's available, I always nail into a framing member. But it isn't always there. A classic situation is crown-molding installation. Few framing carpenters supply backing where it's most needed for crown: in the ceil-

Can't buy brand-specific nails locally? Try these substitutes.

Buying quality fasteners will reduce jams and misfires. The surest bet is to use those made by the manufacturer of your nailer. However, there are many manufacturers of nails, and many work well in different makes of nailer. Below are the brands that I've found can be interchanged successfully.

18-ga. pins, 0.049 in. dia.: Senco, Duo-Fast, Fasco and Stan-Tech

18-ga. brads, 0.049 in. dia.: Senco, Duo-Fast, Airy, Fasco, Stanley-Bostitch

16-ga. nails, 0.059 in. dia.: Paslode, Duo-Fast, Prebina, Hilti, Fasco, Stanley-Bostitch

15-ga., 33° angled nails, 0.069 in. to 0.072 in. dia.: Senco, Fasco, All-Specs, Porter-Cable, Airy, Interchange

14-ga. nails, 0.077 in. to 0.080 in. dia.: Senco works in most 14-ga. nailers

ing at walls parallel to ceiling joists. When this situation arises, I push the crown tight to the ceiling and shoot two nails into the drywall in opposite directions, at perhaps a 30° angle and about $\frac{1}{2}$ in. apart (drawing facing page). I take care to keep the nails from converging in the same area of drywall. The bottom of the crown will be nailed into either the wall top plates or the studs.

Clamping prior to nailing will help to align crucial joints and improves any glue bond. Pneumatic nailers aren't great at pulling together joints, but they will usually hold together one that has been clamped (top photo).

In a related situation, a mass (such as a hammer) is often helpful when nailing wood-towood connections (bottom photo). Backing up the bottom component with something heavy will keep it from jumping away from the top piece when the nail is fired.

Finally, I've discovered that as I switch among nailers, changing line pressure is not necessary. I leave the regulator set at the highest pressure I need to use that day. Even though pinners and bradders need only 70 psi to function well, they also work fine at the slightly higher pressures used for the larger nailers. \Box

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