Cold-Weather Tool Care

by Jim Glover

Keep moisture from freezing in pneumatic tools and use cords and hoses that remain flexible at low temperatures

Tim McNamara

Here in my part of the country, on the Missouri River in South Dakota, winters can be brutal on tools and equipment. Within a matter of days, conditions can swing from cool and foggy to frigid and dry. Over the years — more or less by necessity — I've come up with ways to protect my gear from the subzero temperatures and extreme changes in humidity. In this story I'll share my tool-care tips; most require little more than taking the extra time to store and prepare equipment properly.

Acclimating Tools

A house under construction harbors a lot of moisture; if you bring a very cold tool inside, moisture will condense (or even freeze) on the tool just as it will on eyeglasses. If the tool is electric and the switch or armature gets wet, it could short out when you turn it on. And with guns, the internal parts tend to stick if the housing frosts over. To prevent these problems, try not to use a tool until it's had time to warm up and dry. It'll be dry in 20 minutes to an hour if you put

it near a fan or a heater (**see Figure 1**). I keep an electric hot-air gun in my trailer for just this purpose.

When I'm working in a warm place, I try to leave my tools there until the job is done so that the tools and the environment are the same temperature. The reverse is also true: If I'm working in the cold I try to leave my tools in the cold. If you take a nail gun from a warm, moist building out into very cold weather, the moisture inside the gun will condense and freeze. The tool could then become clogged with frost, and the O-rings could freeze to the sides of the cylinder and be damaged when you fire a nail. I once took a gun apart and found half an O-ring still frozen to the cylinder wall; it reminded me of what happens when it's below zero and a kid puts his tongue on a frosty piece of metal.

We store guns, hoses, and compressors in an unheated tool trailer. That way, all the parts are the same temperature and the tools stay dry because humidity is low when it's really cold.

Warm to cold. Things get trickier when the weather changes, or when you go from working where it's warm to working in the cold.

Early this winter, while trimming the interior of a new house, I kept the compressor indoors. At the end of the job, I put the compressor in my trailer and took it to a framing site. The following morning, temperatures were in the low 20s; after shooting a few nails I went off to do something else. When I got back, the regulator was frozen — even though I drain the compressor every day. Clearly, there had been some humidity in the tank from when I used it indoors.

To thaw the regulator, I put the compressor in a warm garage for about 30 minutes. I got the moisture out by blowing air through the hose with a blow gun for about a minute. Over the following days I used the compressor outside and stored it overnight in the trailer. It worked fine, even though temperatures were in the teens when I got to work.

Never run an air hose from a compressor in a warm interior area to a nail gun being used outside in below-freezing temperatures. The hose or gun could become clogged with frost.

Preventing Freeze-ups

Many years back, I heard about some carpenters who put a couple of cups of automotive antifreeze in the tanks of their compressors, thinking it would prevent freeze-ups. I don't know how it affected

Figure 1. A homemade grille keeps tools far enough above the heater to ensure that they won't be overheated while they're being defrosted.

Figure 2. The author puts Kilfrost, a synthetic de-icer and lubricant, into an oiler at the end of a hose that will connect to a gun.

the compressors, but within a matter of weeks the seals in their guns were ruined.

De-icers. Most pneumatic-tool companies sell winter-grade lubricants. Some contain de-icers, while others are simply lightweight winter-grade oil.

When temperatures dip below 20°F, I lubricate my nail guns with Kilfrost 400 (www.kilfrost.com), a synthetic lubricant and de-icer designed specifically for pneumatic tools (**Figure 2, page 2**). Kilfrost 400 melts any ice in the gun and prevents refreezing. I've also had good results with a similar product called Coilhose ATLW (732/390-8480, www.coilhose.com).

These products are not additives, so they should not be mixed with other lubricants. Moreover, you should use them only in the cold, because they do a poor job lubricating nail guns in temperatures above 30°F or 40°F.

Clogged hoses. Air hoses usually freeze at the fittings, so if a hose frosts up we put a few drops of Kilfrost into the fittings and that usually opens things up. Then we blow out the hose to prevent water and excess lubricant from going into the gun.

Desiccant systems. If you're having serious trouble with moisture — perhaps because you work in cold and humid conditions — you may want to invest in a desiccant drying system. I had one on my old compressor. It resembles an inline air filter and contains silicon crystals that absorb moisture. Desiccant systems do a good job keeping moisture out of hoses and guns, but they require periodic maintenance: Every so often the crystals must be removed and dried or replaced.

Cleaning and Lubrication

Materials change properties when they're cold. Take, for instance, the products you use to clean your tools. A common way to clean the outside of a gun is to spray it with a lubricant like WD-40 or Liquid Wrench and then wipe it down with a rag. These products loosen grime and displace moisture — but they also leave a residue that gets gummy when temperatures sink below 20°F.

When it's that cold, a non-petroleum spray lubricant such as silicone or Tri-Flow (800/777-2966, www.triflowlubricants.com) is more effective. If you have to use a petroleum product, use compressed air to blow the excess off parts you can't get to with a rag.

Compressors. My big 220-volt compressor has little trouble starting in the cold — even at zero degrees. I have a harder time getting my smaller, 110-volt model to start, so I give it some help by putting a magnetic oil-pan heater on the oil reservoir (**Figure 3**). After about a half hour of heating, the compressor usually starts. I can then run it the rest of the day without the heater on. All my compressors

Figure 3. A magnetic oil-pan heater prevents the oil in a compressor from becoming so viscous the machine can't start.

Figure 4. The author uses 1/2-inch rubber hose for main runs and branches off to individual tools with 3/8-inch polyurethane lines. He avoids using 1/4-inch hose because it's easily clogged by frost.

Figure 5. The Qwik-Lok fitting on the female end of this extension cord connects to the male end of the tool plug, eliminating the need to knot cords together.

run on synthetic oil; it makes them easier to start and lubricates well in all kinds of weather.

Hoses and Cords

Because it takes very little frost to plug a 1/4-inch hose, I stick to larger sizes. I use 1/2-inch air lines for the main run from the compressor and 3/8-inch hose out to the tools (**Figure 4, page 3**).

It's normal for some moisture to collect in hoses and compressors. I drain my compressors daily, and about once a month I take my hoses to a warm, dry place (not a new basement) and hang them up to drain and dry.

Vinyl air hoses are stiff and break easily in the cold. Rubber hoses stay more flexible but are heavy to drag around. For cold-weather use, I prefer polyurethane hoses because they're light and stay flexible to well below zero. My only complaint is that their flexibility makes them easier to tangle than other hoses. A number of companies make polyurethane hoses; I've had good luck with the Flexeel brand.

Vinyl electrical cords are a poor choice in cold weather; they aren't very flexible and they tend to crack. I use heavy rubber cords for the main runs and branch off to the tools with lighter cords. Two of my favorites are Supreme Green and Yellow Jacket cords, both made by Woods. They won't crack or break and they handle the same at 20°F as they do at 70°F. I wish power-tool cords were sheathed with the same kind of rubber; I end up replacing a couple each winter when the insulation cracks.

No knots. On my jobs, knotting electrical cords together is a big no-no because it stresses and cracks the insulation — especially in cold weather. Instead, we connect cords with locking plugs (**Figure 5**). A number of them are available; I prefer the ones made by Qwik-Lok (866/794-5565, www.qwiklok.com).

Cordless Tools

Batteries, unfortunately, don't work very well in cold weather. Be sure to read the instructions for cold-weather use. Most manufacturers say not to charge in temperatures below 40 degrees. I charge my batteries in a heated room whenever possible.

Gas-powered nailers can fail to operate if the gas cylinder gets too cold. You can get around this by keeping a spare cylinder and battery in an inside pocket or somewhere else warm.

Some caulks and adhesives can be used in subfreezing temperatures, but they still have to be warm enough to flow out of the tube. We store tubes in a box heated by a light bulb (**Figure 6**). It's made from an old metal cooler and contains a wire rack to keep the tubes off the bulb.

Figure 6. When the weather is cold, the author stores caulks and sealants in an old metal cooler heated by a light bulb. A rack keeps the tubes off the bulb.

***Jim Glover** is a building contractor in Pierre, S.D.*