



Loss Control Insight

Pneumatic Tools Safety

Air powered tools present many of the same hazards as their electrically powered counterparts, plus hazards you may not have considered. Here are things to remember when using air tools:

Air pressure: Electrical tools are powered from a source that provides a well-regulated standard current. However, with air powered tools, air may be delivered at varying pressures and flows. If the pressure/flow exceeds the manufacturer's rating, the tool itself could over-speed, delivering too much torque or other excessive force. This is hazardous due to the increased possibility of tool or workpiece breakage. Inadequate pressure or flow could also result in an under performing tool. This may prompt you to apply excessive force in your work, possibly causing tool breakage and injury. Adjust your air pressure to the manufacturer's rating. Make sure hoses are of the correct inside diameter and are not kinked or crushed. Your compressor and receiver must have enough capacity to deliver air in an amount sufficient to properly operate all attached tools.

Noise Levels: Pneumatic tools discharge exhaust air at the tool itself or nearby. Frequently, this air is not muffled and therefore pneumatic tools can be much noisier than electric tools. As prolonged exposure to loud noise can damage your hearing, precautions should be taken. Either effective mufflers can be installed on the exhaust, or hearing protection should be worn.

Oil & Air Quality: The discharge of air can cause other concerns too. The air feeding the tool may contain oil or antifreeze, discharging contaminated air into the environment around you. Special precautions may be needed in confined or poorly ventilated spaces. If oil-contaminated air discharges near where you grip the tool, your hands may become oily, resulting in a dangerous loss of grip. It helps to frequently wipe both your hands and the tool and to be sure you are not over oiling the tool. To eliminate the hazard, find a replacement tool with a better design.

Air Temperature: If the air discharges on your hand, you can feel that it is cold. Under certain conditions, the temperature could be low enough to cause frostbite, stiffen your fingers, or even make you more susceptible to certain types of cumulative trauma injuries. Again, this may indicate poor tool design. Gloves may help if they can be worn without creating the additional hazard of becoming caught up in any rotating or reciprocating parts.

Shock Potential: Air powered tools are not grounded or double insulated so if you contact a live wire while working with a pneumatic tool, you can be shocked. Make certain all electric power in the immediate work area is isolated.

Whipping Hose Danger: If an electric cord were to break, there is generally not much danger unless you come in contact with the conductors. However, a severed air hose can whip around violently until the air is shut off. You may be injured by the whipping hose or while scrambling to get out of its way. Protect the hose from physical damage. When using quick disconnect type fittings, install the male end on the tool.

Eye Protection: Finally, don't forget to protect your eyes. Compressed air or particles may fly from equipment such as chipping hammers, rock drills, rotary drills or sanders, and cause pain or injury. Don't take chances with your precious eyesight!

One final note—you and your employees must be familiar with and follow all manufacturers' safety requirements for your pneumatic power tools.

HYDRAULIC HOSES AND THE DANGER OF LEAKS

You may find it hard to believe, but hydraulic hose assemblies are not *designed* to leak--though they do. And when they do, something is wrong. Leaks from high-pressure hydraulic lines are not just messy, they are dangerous. Leaks create slip and fall hazards, fire danger, and they contaminate the environment. Leaks can cause skin burns and, under high pressure, can penetrate the skin. The most common causes of leaking hoses are abrasions and improper assembly. If you work with hydraulic hoses, you should become skilled at anticipating problems, preventing them and fixing them.

Preventing Problems: Prevent abrasion by using hoses of the correct length and diameter. Run the hose in the manner specified by the machine manufacturer, making sure it is supported and restrained by all provided hangers and/or brackets. If chaffing guards were originally installed but missing, they must be replaced. Do not ignore a damaged outer jacket. This allows moisture to attack the exposed hose reinforcement, leading to rust. Corrosion could lead to hose failure.

The *Wrong* Way To Find and Fix Leaks: What do you do when you find a leaking fitting? Find a wrench and give the fitting another turn? That extra turn could cause a greater leak or cause the fitting to fail entirely. Do not use your hand to find the leak. Use a piece of cardboard or wood instead. Hydraulic fluid is hot and can burn the skin. A pinhole leak, under pressure, could actually inject fluid under your skin, causing poisoning, infection, and threaten life and limb. It can and has happened.

Test For Tightness: But before doing this, shut the machine off and bleed hydraulic pressure from the line. If the fitting threads were to strip or a connection were to fail under pressure, injury or fire could result from the sudden release of hot oil. The usual cause of a leak at a fitting is improper assembly or damage. Make sure that:

- (1) Both ends are clean inside and out, and that no physical damage has occurred;
- (2) New seals are used and they have been cleaned and lubricated before installation;
- (3) Fittings are not over-tightened--which can distort seals and ferrules, causing metal fatigue or cracking flared ends;
- (4) Fittings are compatible. There are many different thread ends, and some may almost go together properly, but not quite.

Proper Assembly Of Hose Ends Is Important. Hoses that come apart under pressure can whip back with great force and release a lot of hot oil. If the failure occurs at a fitting, the usual reason is improper crimping, an incorrectly cut hose, or a stem that was not inserted into the hose all the way. If you assemble your own hoses, check your crimping dies for wear. On some types of crimping machines, if the dies become worn, the crimp is looser than it should be. Screw type hose clamps are not to be used on pressurized hydraulic hoses.

People who work with any type of fluid piping system know it takes clean, careful workmanship to prevent dangerous leaks. If you see a leak, report it. If your job requires you to fix leaks, do it properly and safely.