



085: Tools—Hydraulic and Pneumatic Tools

Pressure

Pneumatic tools operate with sufficient pressure to cause bodily harm or death. At the point of use for a distributed air system the operating pressure is typically 30 PSI—but it can be much higher at the main air header. Portable pneumatic tools typically operate at the pressure of the air tank—usually 80 PSI or higher.

Hydraulic tools operate by forcing the volume of one chamber into the much smaller volume of another chamber, thereby multiplying the pressure. The explanation for the physics of this is called Bernoulli's Law. Pressure created by hydraulic tools can be several thousand PSI, which is enough to penetrate metals. Even manually-powered pump action punch sets generate significant pressure.

Check hoses and fittings before and during use. If a hose looks cracked or chipped, replace it.

Fix any leak immediately. A hose leak can mean a hose is about ready to pop off a fitting, or it can mean it is about to burst. A pinhole leak in a hydraulic line can slice off your leg.

Never aim a powered tool at another person.

Hold pieces down with clamps, rather than with your fingers or those of a coworker. If the work surface isn't amenable to clamping, use vise grip pliers or some other tool instead of your bare hands.

Safety glasses are the bare minimum PPE when using pneumatic or hydraulic tools. Depending on the situation, you may need to wear goggles or a face shield. Wear work gloves if exposure to metal shards is a possibility.

Noise

The high-pitched whine of the spinning parts of the tool attacks your hearing at its boundaries. In fact, you may not even be able to hear noise that is destroying the cilia—those little hairs deep inside your ear. Wear hearing protection when using air-powered tools.

The noise of the compressor is usually loud enough to require hearing protection.

Oil

If a tool drips or leaks oil, wipe up the oil immediately. In addition to creating a slipping hazard, the oil may attack skin tissue or have vapors that are irritating or even harmful.

Wash your hands after using pneumatic or hydraulic tools, so you don't ingest the oil that these tools use.

Pneumatic tools usually have mineral oil or some other light oil in their working parts. The air around you will have some oil in it as you use the tool. Provide some ventilation to reduce toxicity.

Hydraulic tools use hydraulic fluid. This fluid does not have the same properties as the motor oil in your car. It is usually more toxic.

Depending on the fluid, you may need to wear rubber gloves to service the tool. If you are unsure, read the manufacturer's manual. Servicing the tool can be anything from adding hydraulic fluid to replacing a leaky seal.

Discussion leader duties for this session:

Obtain a pneumatic or hydraulic tool to demonstrate using it safely.

What this Safety Talk covers:

Safety considerations for using hydraulic and pneumatic tools.

Discussion notes :

