

## Blacksmithing with Air Tools

by Glenn Horr and Phil Travis



Hand held air tools can greatly speed up and expand your blacksmithing techniques. Using air tools does not replace basic blacksmithing skills, but can certainly supplement them to your advantage. Typically when you are using hand held sculpting tools you can achieve only a few well placed blows before you have lost your heat. Use of air driven sculpting tools means you can perform many more blows in the same heat.



The air (pneumatic) tool is a hand held air driven impact driver. The air tool driver is not your typical "garage mechanic" type air gun as

those are designed to go from off to full speed with a trigger pull. The preferred drivers are labeled as "aircraft" style that can be started very slowly and then speed up as you pull the trigger tighter sometimes called teasing trigger. This feature is key to controlling the driven tool bit into your work: slower speed to set your tool in place followed by harder and faster blows to move the metal.

The hand held air tool comes in several forms, some of which are partly defined by grip: pistol grip ( like a common hand held electric drill ), goose neck ( puts your grip more in line with the barrel ) and "D" grip (like a sawzall). Each have pros and cons to the way they handle. The other defining feature is "barrel" length as longer barrels usually create harder blows.

Some, but not all manufacturers designate the different models by #x. The larger the number means a longer barrel and slower blows. Glenn says: A #3 or #4 is hammer good. A #2 hammer will be faster but will not hit as hard. The 2X guns typically hit around 2,500 to 2,600 blows per minute. The 3X guns typically hit around 2,100 to 2,200 blows per minute. As with many tools your final choice comes down to personal preference. It is advisable before you buy, to read up on the documentation that is available and do your research.

Some of the models Glenn has found that work for him are: Sioux Tool 270 A (pistol grip in picture), Ingersoll Rand AVC-12 (goose grip in picture) Chicago Pneumatic 714 (not shown) and Cleco ( also not shown). Check on eBay, Yard Store, Aircraft Tool Supply and <http://airtoolservice.com> and as they many times have new and used guns for sale.

Some of the advantages to buying a name brand tool is that they often provide repair parts and service. Many of the better brands can be factory rebuilt. As with all tools, parts wear and gaskets eventually start to leak. You of course, can prolong use by making sure your air supply has a proper drier and oiler to supply your tool.

Air driven tools are similar to the tools you would hand hold and drive with a hammer. The same assortment of round nose punches, eyeball punches, and chisels are still required to sculpt in steel using air tools. The difference is that the driven end that inserts in a socket of the air tool must be hardened. If the struck end is not hardened it will gradually upset and rivet itself into the socket of the tool. This is decidedly not good as you have to dismantle the air tool and cut out the offending tool bit.

Glenn's tool of choice is the #401 size although there are other industry standard sizes available. Be aware that the socket of the air tool must match the tool bit. The 401 type end is round, .401 inches in diameter and approximately 1 1/4" long and has a small collar above this to work in conjunction with a tool retainer. Most air tools have a spring or similar attachment



Above: Bottle opener made with air hammer Below: Socket must match the tool bit!



on the end of the tool to help retain the tool bit. In blacksmithing this is dispensed with for sake of quick tool change. That being said, the tool bit is usually held in a gloved hand and held firmly against the work to keep it from being shot across your shop! Safety is imperative when using these tools!

Making tools can be accomplished in many ways. You can buy cheap 401 tools from auto supply and cut off and replace by welding on a new working end. You can buy blanks and forge to shape and harden just as you would a typical hand held tool. You can also swage or lathe turn tool steel down to the 401 shank size.

Glenn suggests welding with the 312 ss rod, as the tools are alloy steel, but he recalls only welding one of his tools. He thinks it is best to get longer tools and avoid welding. As for the steel alloy used for the tools, over the years Glenn has been told 4140 or 9260 KEEP the shank end cool when you are reforging, you don't want to take the temper out. With the 12" tools, most of the time you are OK with the shank not getting too hot. If he does heat treat, he uses vegetable oil to quench, or just use oil on any of the tools you find.

Making your own tools opens up the opportunity to make some custom sizes and shapes not readily available. One of these is an inverted cone shape on the end. This tool bit allows you to upset the end of a bar very quickly. The bar is heated and clamped horizontally in a vise and the inverted cone is driven onto the end upsetting the mass back into itself. Because the air tool strikes so many blows per minute, the stock moves rapidly before it has a chance to cool. Again, if you make your own tools bits be sure to harden both ends so you do not upset the end in your air tool. Glenn uses coil spring stock for making tools.

Of course, to use any of this you need an air source. Basic information you need to know is the CFM (cubic feet per minute) your tool requires and at least 90 PSI (pounds per square inch) which is typically what this type of tool uses. Your air compressor must have enough capacity to supply this or you will be standing around waiting for it to catch up.

Also, use a whip hose on the hammer to your air coupler, the hammer action will destroy a coupler if it is right on the tool. And don't get a cheap hose, get an industrial type hose. Glenn knows this from experience by burning holes in the hose. Don't use a small 1/4" hose it will restrict your air flow for long runs. But also, don't use a hose any longer than you really need. You will get air PSI drop on long runs. 3/8 hose is a good size. You should really have a FRL, (Filter, Regular, Lube). And don't forget to use oil for Pneumatic tools.



*A few examples of Glenn's work created primarily using air tools.*

