PASSFIRE.COM

Log Out

| Home | Archives | Formulas | Reference | Market | Forum | ShowSim | Help |

Tool Tip...   **Page 1**

Adding a Torque Wrench to an Arbor Press

Figure 1: Torque wrench mounted to left side of arbor press shaft.

Figure 2: Remove the holding collar on the arbor press shaft.

Figure 3: Drill out the shaft to accept a 1/2" tap. In this case, a 27/64" drill was used after a pilot shaft was made with a 1/4" drill.

An inexpensive way to get consistency in drivers and rocket motors.

Arbor presses are relatively cheap ($50 or less when on sale) and can be a great tool in the Pyro workshop. Pressing a driver or rocket motor with an arbor press can be faster and easier than with hydraulic presses and, while the arbor press has limitations, it can be used effectively for most smaller items. Their biggest drawback is that they depend on 'power by Armstrong' and getting consistency of pressings can be somewhat tedious. An easy way to solve the problem is to modify the press so that a cheap torque wrench can be used to gain consistent grains of fuel in smaller devices.

The first step to modifying the press is to evaluate the best way to install an adaptor (a bolt) so that a torque wrench will fit. Usually, one side of the press has a collar that releases a shaft and allows the arbor press to be disassembled. In the one pictured here, the shaft is easily drilled out and threaded to accept a bolt which can be grabbed by the torque wrench.

A hand tap is used to thread the drilled out arbor press shaft. For most cases, a 1/2" thread (either NF or NC) should be used. The torque rating on a 1/2" NC Grade 8 bolt is about 110 pounds and that should be sufficient for most needs. Smaller bolts could be used if you are careful not to exceed the torque ratings when using the adaptor.

To drill out the shaft, you do not need a lathe as seen in the picture. You can secure the shaft in a vice and drill a 1/4" hole as the pilot hole with a good electric hand drill. Then redrill the hole with the proper size drill for your tap. A 1/2" NC tap takes a 27/64 drill. Make the hole about 1 1/2" deep and use about 1" of it for threads. Use a 1/2" NC Grade 8 bolt that is about 1" long.

If you already have a torque wrench then you are almost done. If not, then buy one from a discount tool house. You should be able to get one for about $20 or so. A 3/8" drive should allow a torque range from about 10 to about 100 foot pounds of torque and would be sufficient for our purposes. Do not use the beam type wrench since it is almost as bad as using none for our purposes. A beam torque wrench has a pointer that moves along a face plate and indicates torque. Probably the best wrench to use is a 'click' type - also known as a micrometer torque wrench. Set the wrench each time you use it and set it back to zero when you are done. The pictures on the left

Figure 4: Use a hand tap and carefully cut the threads. If you've never tapped something before, the secrets are to use lubricant, keep things aligned, and go slowly. Cut a quarter turn and back the tap out and repeat. WD-40 will work for a tap lubricant.

Figure 5: The top torque wrench is the 'beam' type and the bottom wrench is a cheaper micrometer type. The bottom wrench is the most suitable for our project.

show both a beam and 'click' type wrench.

Arbor presses vary in the ratio of movement of the press bar to movement of the ram that is used to press the composition. The one I have is a 20:1. This ratio is a guideline and a 20 pound force on the handle does not necessarily mean 400 pounds will be reflected on the ram. However, the aim here is consistency rather than precision measurement and we can use the ratio as a general guideline and have good success.

Once your bolt is attached to the press shaft and the press is reassembled, you can calibrate the press (if you wish) and start pressing up consistent rockets. I usually use a 40 foot pound rating for a 1/2" motor and get great results in whistles and BP rockets. Keep the size of your motors to 5/8" or less and you should have good success. 🔥

Mail Passfire.com