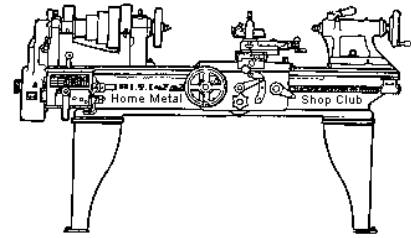




June 2018
Newsletter

Volume 23 - Number 06



<http://www.homemetalshopclub.org/>

The Home Metal Shop Club has brought together metal workers from all over the Southeast Texas area since its founding by John Korman in 1996.

Our members' interests include Model Engineering, Casting, Blacksmithing, Gunsmithing, Sheet Metal Fabrication, Robotics, CNC, Welding, Metal Art, and others. Members enjoy getting together and talking about their craft and shops. Shops range from full machine shops to those limited to a bench vise and hacksaw.

If you like to make things, run metal working machines, or just talk about tools, this is your place. Meetings generally consist of **general announcements**, an **extended presentation** with Q&A, a **safety moment, show and tell** where attendees share their work and experiences, and **problems and solutions** where attendees can get answers to their questions or describe how they approached a problem. The meeting ends with **free discussion** and a **novice group** activity, where metal working techniques are demonstrated on a small lathe, grinders, and other metal shop equipment.

President <i>Brian Alley</i>	Vice President <i>Ray Thompson</i>	Secretary <i>Joe Sybille</i>	Treasurer <i>Emmett Carstens</i>	Librarian <i>Ray Thompson</i>
Webmaster/Editor <i>Dick Kostelnicek</i>	Photographer <i>Jan Rowland</i>	CNC SIG <i>Martin Kennedy</i>	Casting SIG <i>Tom Moore</i>	Novice SIG <i>John Cooper</i>

This newsletter is available as an electronic subscription from the front page of our [website](#). We currently have over 1166 subscribers located all over the world.

About the Upcoming 14 July 2018 Meeting

The next general meeting will be held on 14 July at 12:00 P.M. at the [South Houston Branch](#) Library located at 607 Avenue A, South Houston, TX 77587. Rich Pichler will give a presentation on "Weighing Systems / With Exhibits."

Visit our [website](#) for up-to-the-minute details, date, location maps, and presentation topic for the next meeting.

General Announcements

[Videos of recent meetings](#) can be viewed on the HMSC website.

The HMSC has a large library of metal shop related books and videos available for members to check out at each meeting. These books can be quite costly and are not usually available at local public libraries. Access to the library is one of the many benefits of club membership. The club has funds to purchase new books for the library. If you have suggestions, contact the [Librarian Ray Thompson](#).

We need more articles for the monthly newsletter! If you would like to write an article, or would like to discuss writing an article, please contact the [Webmaster Dick Kostelnicek](#). Think about your last project. Was it a success, with perhaps a few 'uh ohs' along the way? If so, others would like to read about it. And, as a reward for providing an article, you'll receive a free year's membership the next renewal cycle!

Ideas for programs at our monthly meeting are always welcomed. If you have an idea for a meeting topic, or if you know someone that could make a presentation, please contact [Vice-President Ray Thompson](#).

Recap of the 9 June 2018 General Meeting

Photos and comments by *Dick Kostelnicek*

Twenty-six members attended the 12:00 p.m. meeting at the South Houston Branch library, 607 Avenue A South Houston, TX 77587. There was one visitor, Beverly Moore. The club has 32 members in good standing. President Brian Alley (standing right photo) led the meeting.

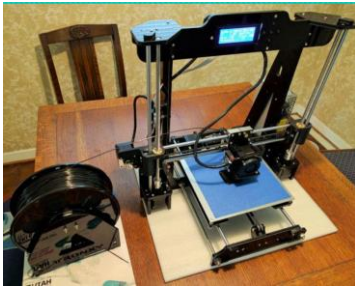
The library staff has asked that our club members park on the side of the library under the Hi-Voltage electric power transmission lines in order to accommodate the in-and-out traffic of normal library patrons.



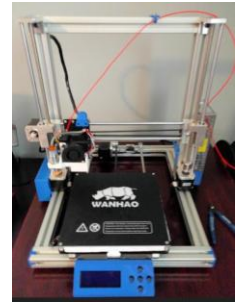
Presentation



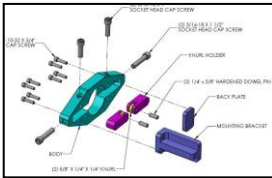
Club member Martin Kennedy bought one of the far eastern mail order Fusion Deposition Modeling 3D printers. He assembled it from parts and it worked right after completion. By taking a drawing stored in STL or stereolithography format and placing it through a slicer program, the horizontal slices of a model can be delivered directly to the printer via an SD card. Complete models in STL format that can be printed after slicing are available at web sites such as thingiverse.com. Many popular CAD programs also directly output STL file.



Martin revamped the original 3D printer (left photo) by replacing many of the supporting frame parts that were made from plastic with rigid aluminum (right photo). He also showed many of the printed objects that he has made for his home and shop ranging from electronic enclosures to parts for a latching outdoor gate. You can review these objects from his [Presentation slides](#).



Show and Tell



John Cooper told about his experience machining a two wheel pinch knurler (left drawing).

Rich Pichler showed many of the various items that he procured at a local garage sale including a thread gage and an ancient mechanical drafting erasure tool.

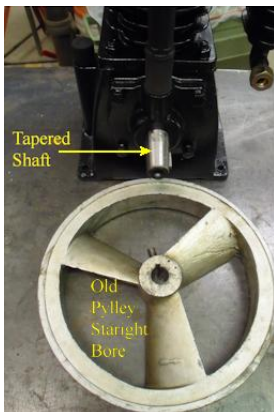
Richard Douglas showed several pictures of a saw mill, located in a national forest in North Carolina, that was run by a steam engine.



Articles

Keyway for Tapered Pulley

By *Dick Kostelnicek*



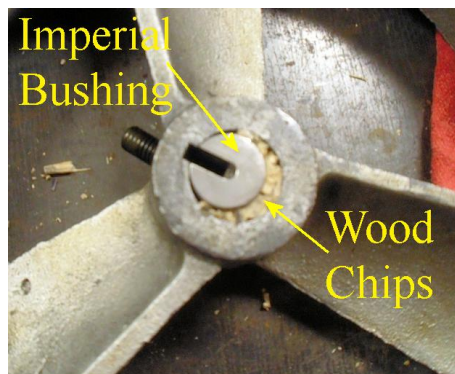
I replaced the 3 HP pump on my air compressor. I wanted to reuse the pulley from my old compressor that had a straight keyed bore (left photo). However, the shaft on the new pump is tapered and Woodruff keyed. Furthermore, the key for the new compressor's shaft is 5 mm thick and the key broaches that I have are all imperial. Seemed like a challenging task!

I suspected that the new import pump's shaft taper was metric, usually 1 in 10, but I needed to verify this before boring a tapered hole in the old pulley. I did this by moving a dial indicator along the bore of the pulley that came with the new pump. The reading was 0.023 for a travel of 0.5 inches. Double that reading and you get a measured taper of 0.046 / 0.5 = 0.092; which is close enough to 0.1, a

common metric taper.

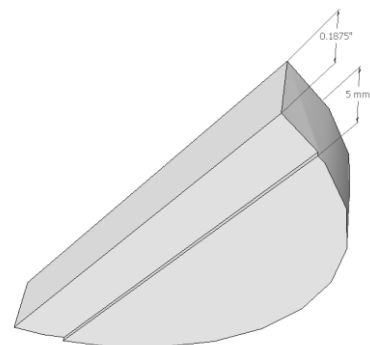


On the lathe, I bored the old pulley for the metric taper (right photo) using the specs given for a 25 mm shaft. After boring, I wanted to cut a keyway along the pulley's tapered hole.



However, all I had was straight imperial key bushings. I selected a bushing whose diameter just cleared the small end of the tapered pulley hole and had a slot for a 3/16-inch key. This key slot is 0.1875 as compared to 0.1968 for the wider 5 mm woodruff key. I forced the slotted side of the bushing against the hole's taper with hardwood chips (left photo) and broached the hole.

I milled the top edge of the 5mm Woodruff key (right photo) to fit the 3/16-inch key slot in the pulley's bore but still fully seated in the 5mm pocket on the new



pump's tapered shaft.

The new 3 HP pump is dual cylinder single stage from Harbor Freight. You'll need a separate check valve at the tank inlet. I bored and pipe tapped a hole in the pumps exhaust fitting so the pressure limit switch can unload the head pressure after pumping. The pump comes with an inlet filter-muffler that does a fine job of limiting the compressor noise.