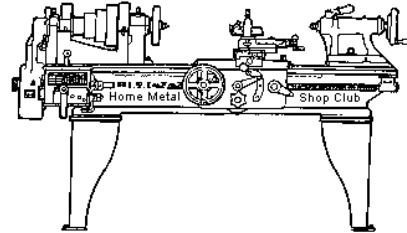




**October 2014**  
Newsletter

Volume 19 - Number 10



<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>Vance Burns</i>	Vice President <i>Norm Berls</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>Dennis Cranston</i>	Casting SIG <i>Tom Moore</i>	Novice SIG <i>Unfilled</i>

This newsletter is available as an electronic subscription from the front page of our [website](#). We currently have over 456 subscribers located all over the world.

## About the Upcoming 08 November Meeting

The next general meeting will be held on 08 November at noon at the Galena Park Branch Library, located at 1500 Keene St, Galena Park, Texas 77547 – click here for a [Map](#). John Hoff will give a presentation about 'Conversational CNC Mill Programming'.

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

## General Announcements

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

The annual HMSC SWAP Meet is scheduled for Saturday, 15 November 2014, from 9:00 AM until whenever at 3119 Jensen Drive. Details will be available after the 8 Nov. general meeting

The HMSC has a large library of metal shop related books and videos available for members to check out at each meeting. The library is maintained by the [Club Librarian Ray Thompson](#). These books can be quite expensive, 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](#).

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 'ugh ohs' along the way? If so, others would like to read about it. In the September 2012 HMSC board meeting, the board elected to waive membership fees during the next membership renewal cycle for those providing newsletter articles.

Ideas for programs at our monthly meeting are always welcome. If you have an idea for a meeting topic, or if you know someone who could make a presentation, please contact [Vice President Norm Berls](#).

As a reminder for those members who may have forgotten, renewal of annual club dues of \$15 was due in September. Dues of \$15 for the next fiscal year are now overdue and should be paid to the treasurer [Treasurer Emmett Carstens](#). He will accept cash or a check made payable to him.

## Recap of the 11 October 2014 General Meeting

By Joe Sybille, with photos by Jan Rowland

Twenty-two members attended the noon meeting at the Spring Branch Memorial Library, 930 Carbondale, Houston, TX 77024. President *Vance Burns* led the meeting.

We have been moving the location of the meeting each month to a different library. If you have a suggestion for a more permanent location for the HMSC monthly general meeting, please email [President Vance Burns](#).



## Presentation

Club members Martin Kennedy and Joe Williams gave a presentation on Ten Cheap and Useful things for the Shop. Utility and convenience served as the motivation for Joe and Martin's presentation today. Between the two of them, there is metal working experience of over thirty plus years. Along the way, some things and techniques have stood out from others to make Joe's and Martin's shop tasks easier. They shared their experiences by describing the item, then explaining the usefulness of it in the shop. View [presentation slides at this link](#).



Items presented included a **Tap and Drill Chart**. This unassuming gem saved time by providing in one location screw thread sizes, tap drill sizes, and number drill sizes. This chart is available on-line, at machine supply stores, and are often given away at trade shows. **Non Spill Cup**. This reservoir is useful for cutting oil, mineral spirits and the like. If handmade, ensure the design incorporates an anti-spill feature. That way, if tipped over accidentally, no clean-up is required. Otherwise, fill the reservoir with an amount small enough to be wiped up with a small rag. **Flashlight and Magnifying Glass**. These two items are useful for finding items inadvertently dropped on the floor. Stamp and coin collector stores are good sources for the magnifying glasses. **Chip Brush**. This indispensable tool is excellent for clearing swarf from the lathe or mill. Use a brush with natural bristles, for nylon or polyester bristles will melt when sweeping hot swarf. Using compressed air to clear swarf is unwise, for doing so sends swarf into areas of the lathe or mill that are likely to damage the machine.

**Calculator**. A convenient device to double check calculations done mentally. Glue a magnet to the calculator back for mounting to a nearby metal surface. An ideal calculator for the shop will have a large digital display, trigonometric function keys, and does not shut off automatically. **Bolt and Nut Gauge**. For fast identification of bolts and nuts, nothing beats a bolt and nut gauge. One of the best gauges feature a string of short single shafts of different sizes, each with a threaded end and a corresponding nut on the other end. **Vise Jaw Protector**. To avoid marring the surface of stock, place angled pieces of copper over each jaw of the vice. The copper may be held in place by contact cement. Alternative jaw protectors include leather, lead, index cards, or friction tape (the cloth type with adhesive backing).

**Drill Press Chuck Key Holder**. How many times have you, the reader, had to look for more than a few seconds for the drill press chuck key? What a waste of time. A chuck key holder resolves the issue of looking for the chuck key. Mount the holder where it is convenient, can be seen, and where it will likely be used. **Tap Holder**. For those with an assortment of T-handle tap wrenches with common tap sizes ranging from 4-40 to 3/8-16, a block of wood drilled to hold the wrenches with various taps installed and mounted near the work bench can save valuable time. **Band Saw Vise Alignment Screw**. This device is used to allow secure parallel clamping of small parts for safe cutting in a band saw. **Bifocal Safety Glasses**. These glasses aid metal workers with lettering, punch marks, and lines that do not appear as large and as distinct as they used to. **Magnetic Part Tray**. This item comes in different sizes and holds metal parts securely. Harbor Freight is a good local source of these trays. **Denim Apron**. This is a great accessory to keep oil and swarf off one's clothes. Pockets are convenient for holding pencils, calipers, and the like.

## Safety Moment

*Vance Burns* showed a video of unsafe work practices and reminded those present that one can never be too careful working in or out of the shop. Also, Vance cautioned that stock held firmly in 'soft' jaws sometimes has a tendency to slip out of the vise.

*Norm Berls* cautioned members about the hazards associated with the storage of liquid products. Any liquids stored should be clearly labeled to avoid unsafe accidental mixing.

## Show and Tell

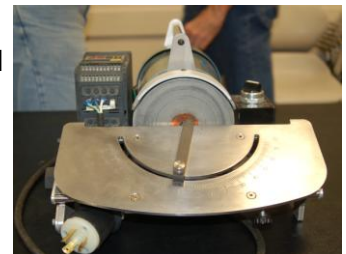
*Joe Scott* fashioned an offset screw driver to gain access to screws in difficult to reach places. Also, he modified a square so that the handle fits into the T-slots to facilitate squaring work on his mill. (See photo at right.)



*Vance Burns* showed two examples of quick turn toolposts. He auctioned off the one he wasn't going to use and donated the funds to the club treasury (See photo at left.)



*Martin Kennedy* exhibited a diamond wheel tool sharpening grinder that he designed and built from his scrap bin. It uses a three phase motor driven by a variable frequency drive. This arrangement allows him to use single phase power for the grinder and electronically alter the speed and direction. Here are [slides that Martin presented](#). (See photo at right.) Also an article with measured plans are shown at the end of this newsletter.



*Joe Williams* displayed the *Cadillac* of all slide or side hammers having bronze bushings. (See photo at left.)

*Gene Rowan* demonstrated an assortment of lathe accessories he and *Dick Kostelnicek* made. Included were chuck stops, ratcheting tap wrench holder, rapid in-out tailstock drill chuck, parting tool stop, and a live tail stock chuck. (See photo at right.)



*Joe Scott* showed and discussed a magazine article on making sanding belts.

## Problems and Solutions - Ask the Blacksmith



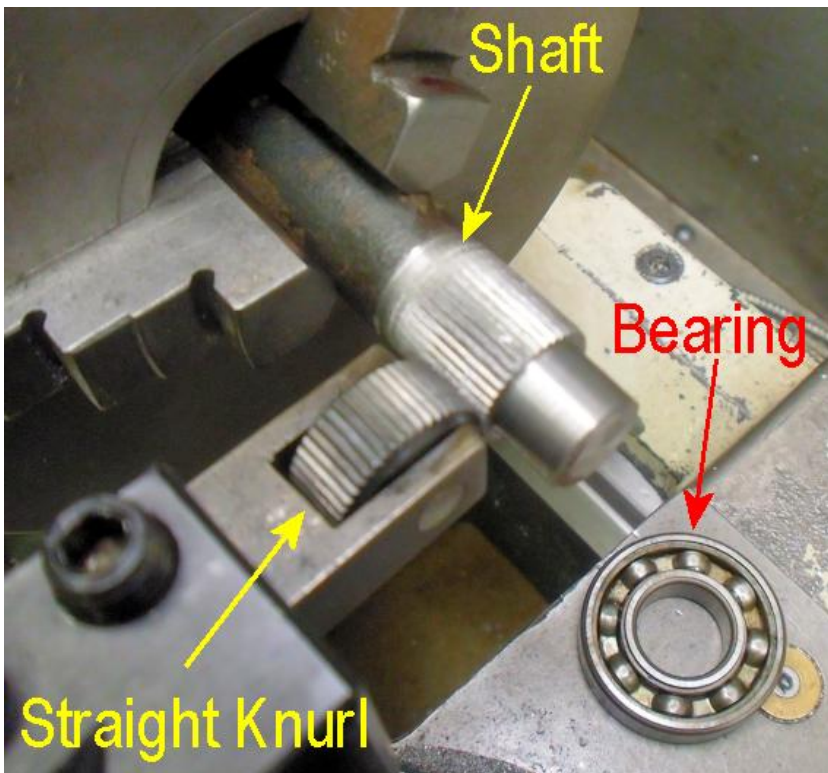
A member has trouble with matching a microphone with an audio amplifier. He requested suggestions on the best approach to do so. Suggestions ranged from buying another public address system to taking the audio amplifier to an electronics store to get a compatible microphone.

A member is re-decking his boat and asked for the best way to drill hundreds of 5/16" diameter holes in ¼ inch thick angle iron to secure the wooden decking. Suggestions included using machine drill bits, a plasma cutter, air carbon arc cutting, or a beam punch.

## Articles

### Fitting a Shaft to a Bearing

By Dick Kostelnicek



Fitting a round shaft to a bearing's inner race can be challenging. When you turn down a shaft or if it is already sized from stock, it may turn out to be too loose. The fit should be a slight interference fit that is removable by hand or just a tap of a rawhide mallet. You want the shaft and inner bearing race to revolve together and not allow the shaft to freely turn inside the race.

When you turn a shaft in the lathe, it is time consuming and often difficult to achieve exactly the right size by making the final cuts of 1-thousandth of an inch or less.

So, do your best and if the shaft ends up a bit undersize, here's a rescue tip. Use a straight bump knurl to bring it back to a slight press fit (see photo at left). The knurl displaces metal as it is pressed against the shaft. As the knurl's ridges indented the shaft, an equal volume of metal is forced above the surface. Hence, the shaft's

effective contact diameter will increase and you can provide just the degree of snugness that you desire.

Now, watch out for temperature effects. The shaft and bearing race fit up will remain constant as both parts rise in temperature during service, since both shaft and race expand at similar rates. All steels have similar temperature coefficients of expansion: 7.3 micro inches per inch diameter per degree F. But, suppose you're turning a 1-inch shaft at high speed with carbide tooling and the temperature of the shaft goes up by 150 degrees F. The shaft's diameter will be 1-thousandth of an inch undersize when it cools to room temperature, assuming that you sized it hot. That's one additional reason you might not get a snug fit.

However, a bump straight knurl can come to your rescue!

## Adjustable Tool Grinder

by Martin Kennedy  
July 7, 2014



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SIZE <b>A</b>	FILE NAME <b>Tool Grinder Drawings</b>	REV. <b>A</b>
SCALE 1:3	Cover	SHEET 1 OF 21

Because of the large number of drawings, complete plans are not reproduced here but are available at the following web link:

[http://www.homemetalshopclub.org/news/14/tool\\_grinder\\_plans.pdf](http://www.homemetalshopclub.org/news/14/tool_grinder_plans.pdf)