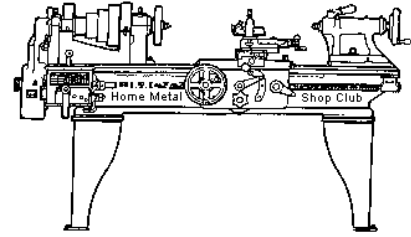




April 2013
Newsletter

Volume 18 - Number 4



<http://www.homemetalsshopclub.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>John Hoff</i>	Secretary <i>Martin Kennedy</i>	Treasurer <i>Emmett Carstens</i>	Librarian <i>Dan Harper</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>Rich Pichler</i>

This newsletter is available as an electronic subscription from the front page of our [website](#). We currently have over 385 subscribers located all over the world.

About the Upcoming May 11 Meeting

General meetings are usually held on the second Saturday of each month at 12:00 noon. The May 2013 meeting is scheduled at the Jungman Neighborhood Library located at 5830 Westheimer Rd. Houston, Texas 77057. Visit our [website](#) for up-to-the-minute details, time, location, and for the main presentation topic.

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. The library is maintained by the club librarian, [Dan Harper](#). 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.

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](#). In the September 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 that could make a presentation, please contact [John Hoff](#).

Recap of the April 13 General Meeting

By Shannon DeWolfe, with photos by Vance Burns and Ron Eickelman



21 members and 3 guests – Trevor Rice, Ron Eickelman, and Ron's son, today's speaker, Dennis Eickelman, attended the 12:00 noon meeting at the TX/RX facility.

President Vance Burns called the meeting to order at 12:10 after a bit of trouble with the audio/video equipment.

The membership voted to hold the next meeting here at the TX/RX facility.

Today's Presentation: Building a Jeep CJ7 Built From Scratch



Ron Eickelman is a process engineer by occupation and has been a Jeep fanatic from boyhood. He had long missed his first CJ, sold in a moment of weakness. When he came across a CJ5 “too cheap to pass up”, he had to have it. Click here [for presentation slides](#).



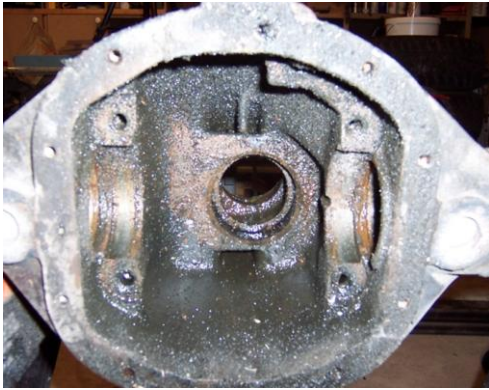
The old axiom, “If it seems too good to be true, it is”, was proven true once more. As Ron says, it was apparent immediately that it would have to be

completely rebuilt. Rust, neglect, and some downright dubious “fixes” were hidden by the shiny paint. The deeper he got into the tear down, the more obvious it became that this Jeep was beyond a “rebuild”.



Rather than cutting his losses, Ron forged ahead. He decided to build a new frame. He would lengthen the frame from CJ5 to CJ7 specs (seven inches added behind the door openings). No drawings for any CJ frame could be found. So, Ron drew it up in a CAD program to make full size templates. He used measurements taken from the original frame, dimensions gleaned from research, and measurements from CJ7s he had encountered. He built the frame utilizing 2x4 RHS steel. Jigs built specifically for the job assured alignment. He reinforced the frame with

generous use of 3/8 in. steel plates. The frame weighs over 100 lbs more than an original Jeep CJ7 frame.



The original engine, transmission, and axles at both ends were beyond economical repair. The transfer case was blown. The entire running gear had to be replaced. Body panels bought from various sources proved to be “almost” correct. Ron says there was not a single panel that met flush with another. By the end of the project, all panel gaps were uniform at 1/8 inch.

In the end, the only pieces on his hand built custom that came from the CJ5 were the grill and the hood. All other pieces were either fabricated or fitted.

How long did it take? After five years, including a 2 year break to allow his bank account to recharge, he called it done. In the final iteration it sports racing buckets with five point harnesses, a GM 383 crate engine, a New Process 5 speed with a fully rebuilt transfer case, new reinforced axle housings with stronger axles at each end, and paint that does not hide a single problem.

How much did it cost? He could have had two brand new Jeep CJ7s for what he has put into it.

Would he do it again? Not this project. But, a nice Saturn Sky body on a Subaru chassis sounds intriguing.



Show and Tell

Dick Kostelnicek brought in a metal stamp holder that featured small, powerful niobium button magnets to securely hold the stamp. The stamp holder affords a more secure grip and allows more accurate placement and alignment (cf. THE Metal Stamp Holder article below).

Dick also passed around a female *universal quick connect* air coupling that mates with three types of connectors. The three connectors, in order of numbers in use, are Industrial, Automotive, and ARO. All three employ a valve to shut-off air on the supply side, exhausting the tool side when disconnected. The Industrial air coupler was developed and refined during WWII. Through sheer numbers in use, it became the standard used in production shops. The Automotive type was developed by Tru-Flate Corporation during the '50s. Their entire product line was devoted to mounting and repairing truck and car tires. Tru-Flate was acquired by Parker Hannifin during the '60s. Production of the Tru-Flate has continued unchanged ever since. The Industrail quick connect is the type most home shop guys will encounter. The ARO type quick connect is a direct descendent of the original pneumatic disconnect patented and developed by Paul Hansen in 1917. The current design was developed during the '50s in answer to the easier to use (and patented) industrial connector.

All three of the most common quick disconnects are similar, but their differences are significant enough that a male of one design will not couple to a female from another manufacturer. For cross sectional views of these couplers, see the article about [Quick-Connect Pneumatic Couplers](#). The first Universal Quick Coupler is attributed to Hansen (now a division of Eaton), the Auto-Flo 23 which will connect to

all three of the most common designs. It was designed from the start with the consumer market in mind.

While Hansen undoubtedly designed the first universal coupler, the history of the very inexpensive version marketed by AES Tools (and many Chinese brands) is a bit murky. They are different enough to keep the patent lawyers at bay but they function the same, adapting to any of the three standards.

Safety Moment

Our Safety Moment today was montage video of some of the most dangerous practices ever caught by camera. It was humorous to watch, but the consequences could have been deadly.

Problems and Solutions / Ask the Blacksmith

A member requested help with boring two different diameters on the same center line of a rifle bolt he is modifying. Suggestions included making bushings to fit and bore or ream it on centers in the lathe. For guidance, it was suggested he watch [Keith Fenner's TurnWright Machine Works videos](#).

Our resident blacksmith, Vance Burns, showed an instructional video about EDM machining that is provided on the internet by Reliable EDM, here in Houston. Reliable is one of the largest EDM machine shops in the world, serving the energy, heavy equipment, and trucking industries. The owner, Carl Sommer, literally "wrote the book" on EDM machining processes. His EDM Handbook is available free of charge from [Reliable EDM](#).

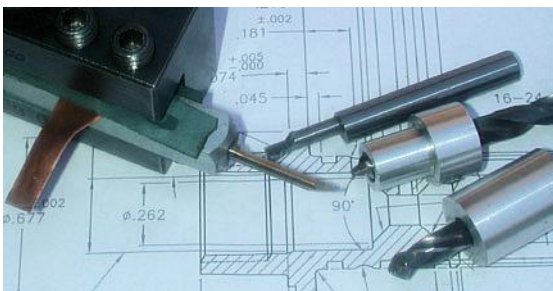
Novice SIG Activities

[Rich Pichler](#) is out of town; there was no Novice SIG activity today. If you would like to suggest a topic, technique, or practice activity that you would be interested in learning or understanding better, contact Rich.

Articles

Small Boring Bar

By *J. R. Williams*



A recent project involved the machining of a small bore in a shuttle valve cartridge with a stepped bore. After making the part, I found I needed to open the bore by a little over 0.001-inch. A small solid carbide boring bar is flexible and it is almost impossible to tell when the tip is touching the part, and the bore is a section that is not visible from the outside. The bar is ¾-inch long and approximately 1/8-inch in diameter. The problem was solved by insulating the boring bar (electrically) with thin fiber insulation stock. By

connecting an Ohm meter to the tool and the work, I could tell when the tip was touching the bore. Backing off the tool and making small advancing cuts I finally removed a little over 0.001" from the bore. Now the piston fits. A good magnifier helped when grinding the tool. The photo shows the insulated bar with a copper strip for connection and few other special tools for the job.

Rick Sparber of The Valley Metal Club has a [series of articles](#) on building a unit to work with very low resistance values to determine tool contact.

Magnetic Stamp Holder

By Dick Kostelnicek



This magnetic holder, for steel marking stamps, positions the stamp vertically and prevents it from flying out of hand when struck askew by a hammer. It was designed to hold steel stamps that have a 1/4 inch square shank. The heights of the characters on these stamps are 1/16, 3/32, or, 1/8 inch. Stamps with bigger characters have larger shanks, and therefore, require a holder with a wider slot.



A method of magnetically containing a stamp in a holder was disclosed in a previous HMSC article [Engraving, Stamping, and Indexing](#). Two circular rare earth niobium button magnets were placed inside an aluminum holder. They were obtained via [Ebay](#) at a cost of \$9 for 20 magnets. The magnets are arranged in a magnetic N-S series circuit that employs a steel keeper (see drawing below). The buttons were a press fit into the aluminum holder, but if loose, epoxy or Loctite® would have served well here. The grip of these magnets makes it all but impossible to knock the steel stamp out of the holder. To remove the stamp, slide it along the holder's groove.

Two quarter-circle openings are located at the base of the holder. They allow you to visualize what has already been imprinted, and thereby, facilitate character kerning. The depth of each opening is 1/8 inch. This depth is at mid-character height, and therefore, allows easy in-line character alignment.

