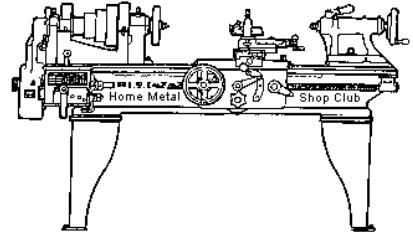




Home Metal Shop Club

December 2014
Newsletter
Volume 19 - Number 12



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 759 subscribers located all over the world.

About the Upcoming 10 January 2015 Meeting

The next general meeting will be held on 10, January at 12:00 p.m. (noon) in the Harris County Public Library Branch [Cy-Fair College Library](#), located on the Houston TX Lone Star College campus. See our [web site Map](#) of location details. Vance Burns will speak on the subject of "Blacksmithing Epistemology for Dummies".

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 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 welcomed. If you have an idea for a meeting topic, or if you know someone that could make a presentation, please contact [Vice President Norm Berls](#).

Recap of the 13 December 2014 General Meeting

By Joe Sybille, with photos by Jan Rowland

Twenty-four members, including two new members, Hank Hilmer and Norman Gouger, attended the noon meeting at the Spring Branch Memorial Library, 930 Corbindale Street, Houston, Texas 77024. Welcome to the club Hank and Norman. Four visitors attended today, Tim Glanzman, Joe Mixon, Walter Potter, and Michelle Koester. There are 47 members in good standing with the club.



President *Vance Burns* led the meeting.

Presentation

Three presentations were given today. Member John Hoff gave the main presentation on Conversational CNC Mill Programming. Member Martin Kennedy gave two short presentations, one on Coating Steel by



Parkerizing and the other on the making of a tool-holder using a turret lathe.

Member John Hoff gave a presentation titled 'Conversational CNC Mill Programming'. Contrary to the title, this presentation was no demonstration of one using verbal commands to program the CNC mill for milling tasks. Instead, John spoke of the challenges to fetch the 5000 pound mill, getting it installed in his shop, and of learning how to program the now twenty plus year old Taiwanese made mill. He then described the making of a simple bag clamp using his new CNC mill.

Fortunately for John, DynaPath, the company that wrote the control software for the mill still exists. After acquiring the manuals, for a hefty fee, of course, he set out to discover the joys of programming his mill.

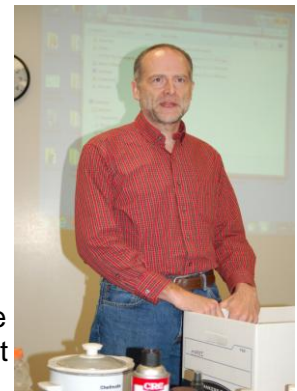
DynaPath uses the term 'Conversational Graphics' to program the DynaPath Control, hence the use of 'Conversational' in the title of the presentation. Identifying an 'Event Type' prompts the software to display the information required to create the control program. Event types include, among others, Linear mill, Arc mill, Frame mill, Circle mill, and Bolt circle. After the 'event type' is identified, a detailed graphics of the dimensions needed to complete the program is presented to the user. Once the dimensions are entered, the program is ready to execute the tool paths. Graphical representations and directions simplify programming tool paths for the mill.

John then showed a video of his making a part. Dry runs, that is – the making of sample parts to ensure the program is executing the required tasks, are still important to sort out any errors in programming. [Click here](#) to see John's presentation slides.



The second presentation, given by Martin Kennedy, is a short review of Parkerizing. Also, see the [article on Parkerizing](#) by Martin Kennedy and Dick Kostelnicek in the February 2011 newsletter.

Parkerizing is a process used to coat and to protect carbon steel parts. It is not used on non-ferrous metal or or stainless steel. Parker Rust-Proof Phosphating Company perfected the process in the early 1900's, although the process had been developed in the late 1800's.



To get started with Parkerizing in the home shop, one requires a crock-pot (no longer useful for food preparation), iron wire to retrieve item from Parkerizing solution, iron or stainless steel wire basket, stainless steel strainer, and a thermometer. Of course, the Parkerizing solution is required, and it is available in kit form for about fifty dollars on-line.

As with any coating process, surface preparation is the key to a good end result. Parts must free of any grease. A good degreaser is brake cleaner. Wear rubber gloves and use tongs when degreasing and handling the newly degreased part. To protect areas of a

part from the Parkerizing process, coat the area with Dykem or similar layout fluid. When dry, the layout coating will remain intact in the Parkerizing solution. It can be removed with acetone later.

The next step is to submerge the part into a bath of solution heated to around 180 degrees Fahrenheit. Fully submerge the part for 10 to 15 minutes. Submerging the part for more than 30 minutes will not result in a darker finish. Very long submergence (>1 hour) will erode the surface, and result in a rougher finish. After removal from the hot solution, use an air compressor to blow off excess water. Do this quickly, as hot wet metal develops surface rust almost instantly. Coat the part with light oil, such as gun oil. Some people have reported success with wax. The oil will soak into the pores of the porous Parkerized surface. Allow the oil to soak the surface for an hour or so. Wipe away the excess oil and use acetone to remove any applied layout coating. The process is now complete. [Click here](#) to view Martin's presentation slides.



The third presentation, given by Martin Kennedy, was a brief summary of his use of a CNC turret lathe to make a tool-holder. After programming the control software to shape a part, Martin made the tool-holder part between 8 minutes and 12 minutes, down from between two hours and three hours using manual methods. The utility of the CNC lathe became apparent while watching a video of the making of the tool-holder.

Safety Moment

Vance Burns shared his method of knowing when what he is doing is the wrong way. When he has either cut himself three times or when his blood appears on the ceiling. These two occurrences are his cue to stop work.

Norm Berls explained how some noise cancelling headphones protect one's hearing. These earphones only cancel noise when the noise reaches a certain level of intensity. This has added value on two counts when the phones are not in full cancel mode:

- You can still hear noise coming from a machine and thus know something additional about how well the machine is performing or about any problems it may be having.
- You can still hear someone talking to you. This makes it possible for someone to get my attention without startling me (e.g. a tap on the shoulder) when I have my hands on or near a power tool.

Rich Pichler reminded members to exercise care when using a knife to cut things. Rich admits to failing to follow that sage advice from time to time. He also reminded those present to wear closed toe shoes when working with metal.

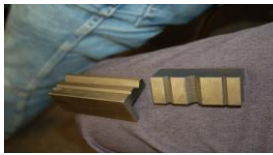
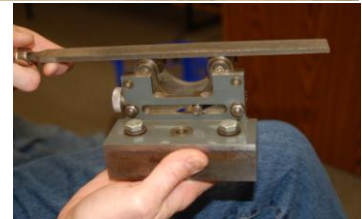
Emmett Carstens cautioned members to always think of eye protection when working in the shop. From his personal experience, an eye injury is not worth the trouble.

Show and Tell

Dick Kostelnicek showed pictures of a heavy duty metal workbench that he designed and built with the assistance of fellow member Gene Rowan. As seen from the picture at right, the bench has two pull-out drawers, a lower shelf for storage of seldom used tools, and a sturdy top to support a Wilton vise and a bending brake with adjustable finger platens for making sheet metal boxes. (See photo at right.)



Tom Moore displayed a filing guide for mounting on the cross slide of his lathe. (See photo at right.)



Randy Jacobs displayed vise fixtures to hold securely small diameter rods. Also, he showed an offset boring head sold by ENCO. (See photos at left.)

Dan Harper exhibited a percussion shotgun made circa 1858 – 1862. The shotgun is owned by visitor Michelle Koester who described the gun as a family heirloom, and she wanted to know if one could obtain more information about the gun from its distinctive markings.



Problems and Solutions - Ask the Blacksmith

A member shared with others the usefulness of neodymium magnets. He has used these magnets with superior holding power to hold parts of equipment in place and to attach tools to metal strips.



Another member has a Rockwell sander with a few broken parts made from zinc. Since the parts are no longer available, he requested suggestions on the best way to make the parts. One suggestion was to try to use the broken parts to make a mold for a casting and then finish the casting as appropriate.

Another member requested help with the arrangement of his shop in a two car garage. One member recommended vertical storage of lathe tools and accessories within easy reach of the lathe operator. (See photo at right.) Another suggested the installation of a dehumidifier to minimize rusting of tools.



Articles:

LATHE BENCH

By *Martin Kennedy*

Recently, I wrote about how I made [Duckboards](#) from some scrap wood I got from pallets. After I finished three duckboards, I still had quite a bit of wood left over in a pile on my garage floor. I kept looking at it thinking that there was probably something I could make from it.

My lathe is located in a corner of the garage. To the right of it, I had a 12-inch deep shelf that I used as a table to set things on while using the lathe. On the floor under the shelf was a pile of lathe chucks and other items. I had been thinking about building a cabinet to organize the mess for about a year.

The leftover wood was about 6-inches wide. One day while looking at it, I realized that I could put two pieces side by side to make it 12-inches wide and build the bench from the wood!

I used almost all of the wood. I had some parts from a scrapped cabinet, and I used them to make the drawers. Construction was done using glue and screws. Here's a picture of what I built:

The bench has several useful features:

- There's a large top where I can put stock, plans, tool holders and measurement devices while using the lathe. The top includes a back stop to prevent things from rolling behind the bench.
- The top extends past the base on the left end. I drilled holes to store tools for the tailstock, like drill chucks and live centers.
- My tool box was originally located on the top shelf, but it took up about half of the useable space. I moved it to the center of the cabinet and put it on a rollout tray.
- There are cubbyholes sized to hold my chucks.
- There are some spaces at the bottom to hold stock
- The bench includes two drawers. One has an insert to hold all of my collets. The other holds most of my tool holders.
- The bench was made entirely of scrap. The only things that I bought were full extension ball bearing drawer slides.



The only problem I had building it is that the pallet wood is about 6-inches wide and about $\frac{3}{4}$ -inch thick, but only 'about'. I had to trim all the pieces to a standard width.



Metal Shop Lubricants - A Novice's View

By Norm Berls



I'm a novice working out of a two-car garage and do metal working as a hobby. This article resulted from an effort to clean up and organize my shop a little better. I took an old open top tool caddy and gathered most of my lubricants into it. It seemed that not only had I accomplished the clean up, but had established an information data base.

The lightest lubricant in the caddy comes from Starrett Corp., which they call *Tool and Instrument Oil*. It was recommended for lubricating things like micrometers. Just a drop, once or twice a year, the instructions said.

Of course the caddy contains the usual suspects like *3-In-One Motor Oil*, *3-In-One Multi-Purpose Oil*, and the ubiquitous *WD-40*. I suspect that the two 3-In-One oils are the same but with different labels. There also is a small squeeze bottle of *SAE 4W-20 motor oil* from Pennzoil Corp. This oil contains detergent and is meant for lubricating internal combustion engines. I have used it as a blade lubricant while cutting steel. At the time I didn't know whether to be pleased or appalled at the results. Subsequent experiences have revealed that there are much better alternatives for metal cutting.

I really like the little squeeze bottles (see right photo). They come from [Micro-Mark](#) and are actually intended to hold glue. Neither my lathe nor mill has a coolant system. These little bottles let me apply enough



lubricant-coolant and still have some control over the amount of mess. They also help to keep my fingers away from the sharp moving parts. Combined with a chip brush, they constitute my best solution to date.

For cutting steel, dark colored [Thread Cutting Oil from Mike-O-Thread](#) is the closest thing to magic I've ever seen. End mills and lathe tools cut faster, easier, and leave a nicer finish with it than anything else I know. This oil looks dirty and it stinks, especially when it gets hot and smokes. It contains sulfur and lard: time tested and proved cutting compounds that have been in use since the beginning of precision machining. Despite the appearance and smell of the oil, I can't do without it.

For cutting aluminum I go with *A-9 Aluminum Cutting Fluid* from Relton. The books say that kerosene will work as well, but *A-9* has a blue color, so presumably there are other beneficial compounds in it. All I know for sure is that it works well on aluminum. Again, I put this material in a squeeze bottle.

At one point I had a lot of trouble snapping off small taps. A counter man at Rex Tool Corp. put me on to *Mike-O-Cut No.87 Cutting Fluid* from Ashburn. It surely works better than the 4W-20 motor oil I was using. It is a clean, thick, viscous lubricant and looks like glycerin. I can say that it works well for tapping in steel. However, I use *A9* if I'm tapping aluminum.

I have a small, quiet air compressor for airbrush painting. Air compressors need a special lubricant that has no detergent in it. I use *Silentaire Compressor Oil* from Silentaire.

For lubricating lathe beds, milling machine ways, other dovetails and lead screws I use *Way Oil* from South Bend. This may be overkill, but I don't think I can go wrong following a recommendation from the lathe manufacturer.

I use a reciprocating saw, as in demolition work, to cut mild steel. The blade gets hot, and the hotter it gets the harder it is to push through thick pieces. I found an interesting wax lubricant in the Rex Tool Corp. catalog. It's called *Iloform Stick Wax* from Castrol. I smear it on the saw blade with my finger or sometimes simply plunge the hot blade into the wax cylinder. It's a thick gummy kind of wax that will flow and stick to your finger if you press it. It melts easily on a hot blade and really eases up the work the reciprocating saw is doing.

The gears in my metal lathe need grease. I use *Coastal Moly EP Grease* from the Warren Oil Co. I got this stuff at an auto parts store, and it is really made for lubricating bearings. It seems to work well on lathe gears. It's a dark, dirty-looking grease that is not very thick. The label says it contains molybdenum disulfide, lithium, and polyethylene in a basic hydrocarbon grease.

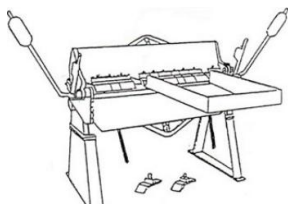
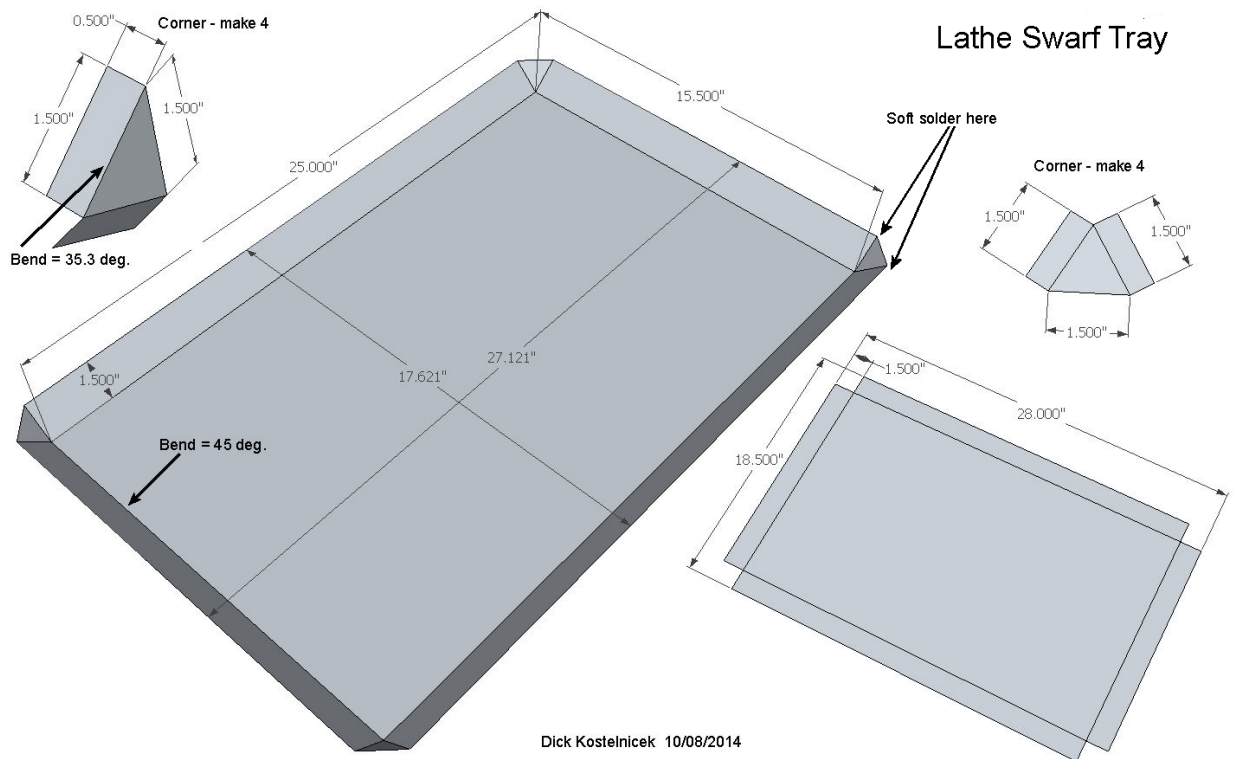
I have a live center for my lathe tailstock that came lubricated with some sort of red grease. I found what appears to be the same stuff in an auto parts store. It's called *Multi-Purpose Grease* from Valvoline. The label says it is a #2 Grade Lithium Complex EP Grease, whatever that means.

You Tube has a lot of videos dealing with machine tools and their use. I notice that some guys use some sort of spray lubricant for drilling, milling, and tapping. It works on You Tube, but I have never tried it. I purchased a can of *TD Foamy Cutting Fluid* from Ashburn. Someday I'll try it out. There is a fantastic array of lubricants available in the tool catalogs. I hope this article helps you make choices of your own.

Lathe Swarf Tray

By Dick Kostelnicek

When I began using carbide insert tooling, I discontinued the use of flood coolant on my lathe. However, a problem resulted from the *blue hot* swarf or chips and metal curls that were produced. Those chips melted holes in the plastic chip tray under my lathe's bed that catches the cuttings. So, I made a new tray from 18 gage galvanized sheet steel. A measured drawing is shown below, but the dimensions really depend on your own particular need.



Box and Pan Brake

What's important here is that I didn't need a box and pan break (left illustration) to bend up the four sides. A box and pan brake has moveable slits in the top platen so that an already bent side, perpendicular to the one being bent, has a place to go without being crushed. My cornice brake (right photo) has no such slits and can only bend an angle along the entire length of a metal sheet.



Cornice Brake

By bending the sides only to 45 rather than 90 degrees, there is no interference with an adjacent previously bent side. Hence, my cornice break did the job. Additionally, I made four triangular shaped formed sheet metal corners as shown in the above drawing. These corners were soft soldered on to the outside to enclose the tray to make it liquid tight.