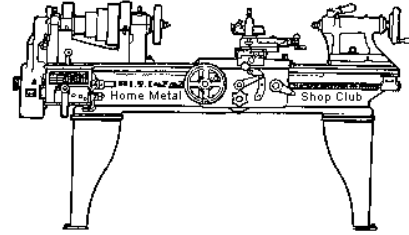




April 2010
Newsletter

Volume 15 - Number 4



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

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

Our members' interests include Model Engineering, Casting, Blacksmithing, Gunsmithing, Sheet Metal Fabrication, Robotics, CNC, Welding, Metal Art, and others. Members always like to talk 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 a presentation with Q&A, followed by **show and tell** where the members can share their work and experiences.

President <i>Vance Burns</i>	Vice President <i>John Hoff</i>	Treasurer <i>Emmett Carstens</i>	Secretary <i>Dick Kostelnicek</i>	Librarian <i>Dan Harper</i>
Webmaster <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>

About the Upcoming May 8 Meeting

The May general meeting will be held on the second Saturday of the month, at a new location, and at the regular time; Parker Williams County Library 10851 Scarsdale Boulevard Houston, TX 77089 - 1:00 p.m. This library has WIFI access. A business meeting will be held on the same day at 11:30 p.m. at DENO'S Restaurant 12041 Beamer Road. Visit the web link <http://www.homemetalshopclub.org/events.html> for up-to-the-minute details.

Dick Kostelnicek will give a presentation on using **Google SketchUp** in CAD, computer-aided design. You can download the SketchUp program (Windows or Mac) for free at the web link: <http://sketchup.google.com/download/gsu.html>. Video tutorials can be viewed at: <http://sketchup.google.com/training/videos.html>.

Recap of the April 10 Regular Meeting



Forty-two members and four guests attended the 2:00 p.m. meeting held at the Freed-Montrose Library's clubroom. President Vance Burns presided. Guests included Carl Schuler, Ed Ellingsworth, Louis Alvarez, and John Mundy.

Kelly Sumrall made a plea for getting the club more involved in community affairs.

Rich Pichler brought *Dennis Cranston's* mini-lathe to demonstrate thread cutting to novices.

Presentation



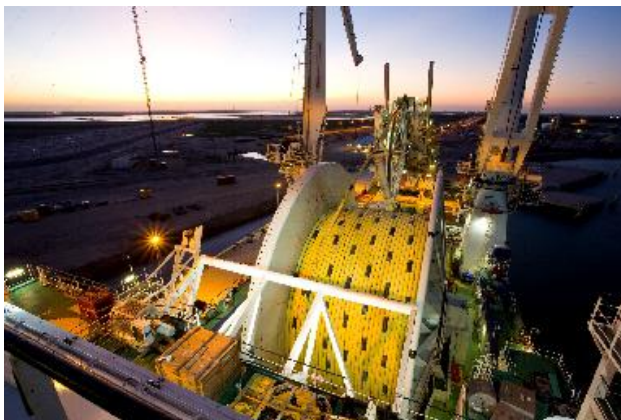
Martin Kennedy gave a presentation of his work for a major U.S. Oil company in designing and laying a sub sea crude oil pipeline in the Gulf of Mexico. The pipeline and a control cable connect an offshore production platform to another offshore production-gathering platform.



Martin showed a video on how the seamless 8.6-inch diameter pipe was pierced from 300 mm diameter red-hot solid steel billets and expanded and shaped to size. The pipe joints were fabricated in



Germany but welded into continuous strings with a thick polymer coat at a Texas Gulf Cost facility.



Each long string of pipe was spooled onto a 40-foot diameter hub on a reel barge and laid out onto the Gulf's sea floor. The barge spool has a capacity of 12 miles of pipe. As a sub sea pipe can't easily be accessed for repairs, all welds were subjected to multi-probe ultra sonic inspection as the individual joints were fused together.

The pipeline contains numerous sacrificial anodes to prevent external corrosion and is expected to be in use for 20+ years with minimal service.

Show & Tell



Dan Harper showed the polymer foam floor mats that he uses in his shop. They are available at a children's toy store



Kelly Sumrall demonstrated his elliptical course mechanism fashioned from cross T-slots. The difference between the major and

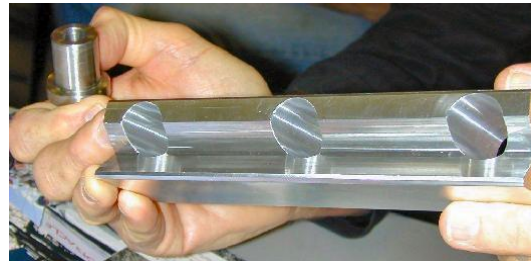
minor diameters of the generated ellipse is twice the distance between the T-nut pivots.



Joe Williams showed his multi-articulated mill stop that is used in conjunction with milling machine vice. The stop is fastened to a T-slot and an adjustable finger locates the lateral position of the work piece while being clamped in the vice. The work piece can be removed and re-clamped in the previous location when aligned with the stop's finger.

Lee Morin brought a drill jig and some bushings

that he will use to align and drill holes in the bed castings of an old lathe that he is converting to CNC operation.



Dick Kostelnicek showed his lathe mounted ball turner and a sample turned ball. The construction drawings and explanation of how to use it are presented in an article in this newsletter. There is also a video showing the operation of the [Vertical-Plane Ball Turner](#) on the HMSC video web page.

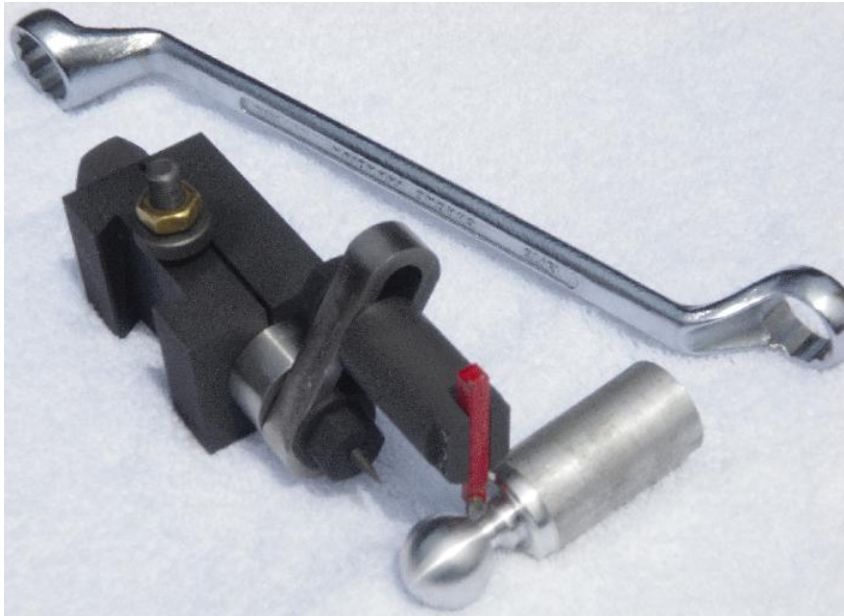
Dean Henning related a CNC Mach3 problem, called push-off, where a symmetric part is more heavily machined on one side than the other.

Rich Pichler showed two newly acquired center punch assisting devices. One is an optical locator with punch that uses a clear plastic view rod. The other mounts in a mill or drill press chuck and has a view scope to center the work. Rich asked for experienced help in using these devices, as they will be the subjects of the next novice group meeting.

Articles

Vertical-Plane Ball Turner

By Dick Kostelnicek

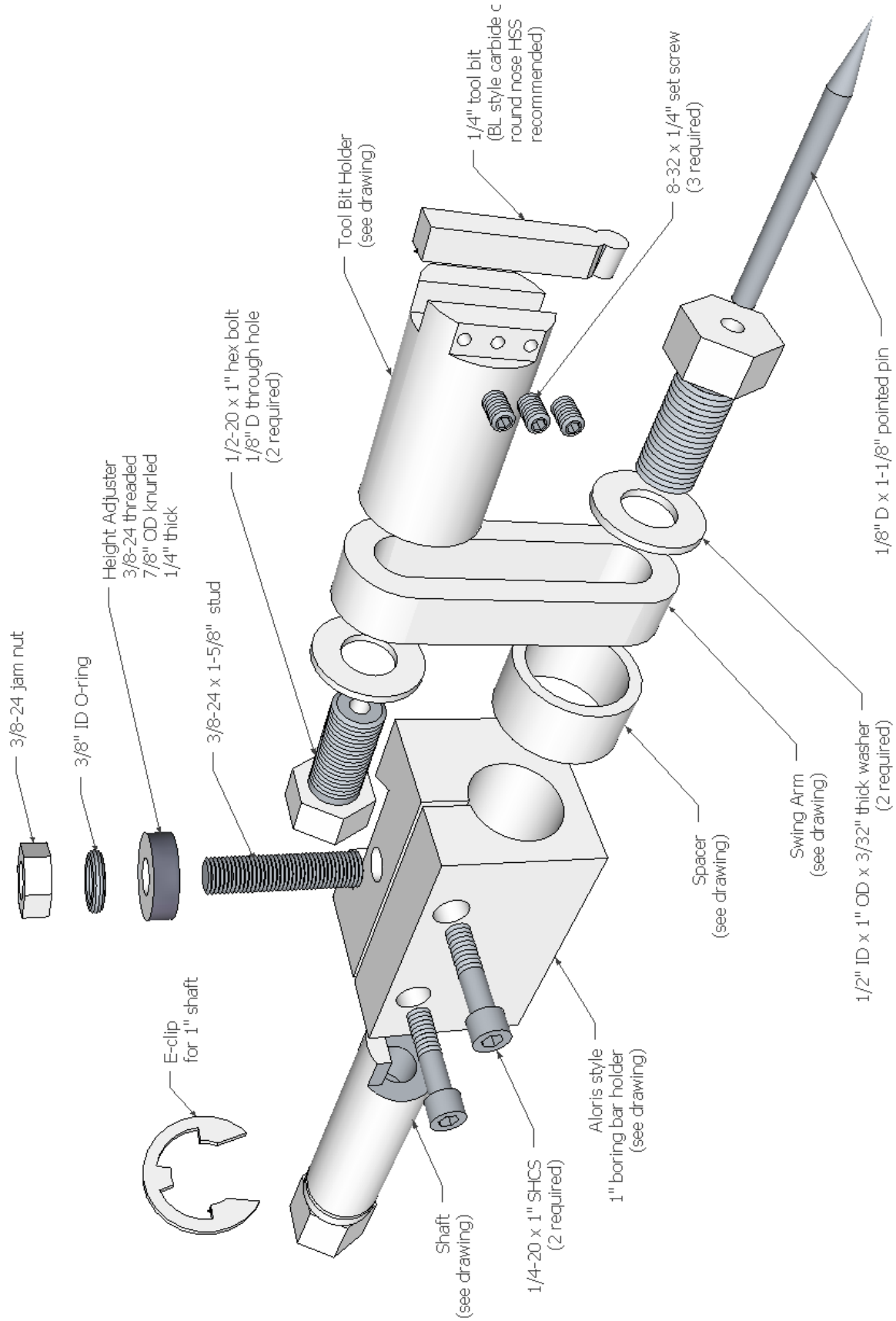


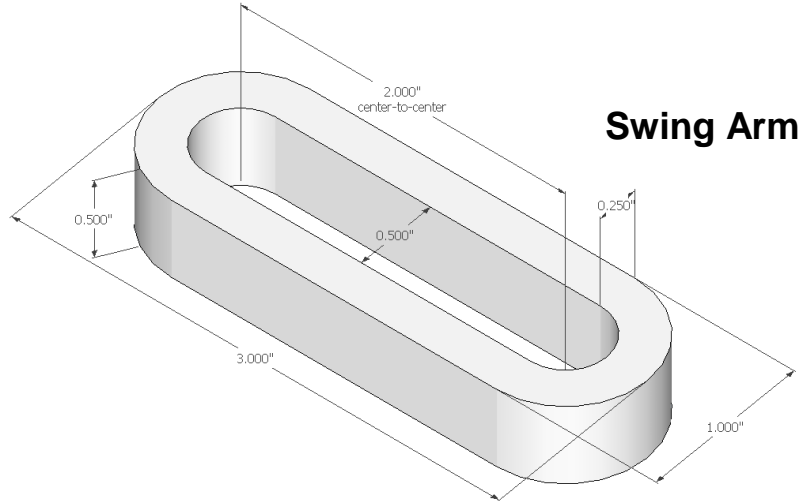
Here are the construction details and operating procedures for a lathe attachment that turns spherical balls from round bar stock. This Ball Turner swings a tool bit along an arc that lies in the vertical-plane that is parallel to the lathe's axis. As the lathe's cross slide advances, the manually swung bit cuts chips from the rotating bar stock. A finished ball supported by a short nub results when the tool bit's arc is directly above the lathe's axis.

An Aloris style boring bar holder secures the Ball Turner to the lathe's tool post and serves as a bearing for its rotation. A standard box end hex wrench is used as a lever arm to rotate the Ball Turner mechanism. Many of the parts are made from off-the-shelf hardware such as nuts, bolts, washers, threaded rod, setscrews, an E-clip, and an O-ring. If you already have a 1" Aloris style boring bar holder, you need only make 4 parts: Shaft, Spacer, Swing Arm, and Tool Bit Holder. Details for machining those parts are shown in the drawings below.

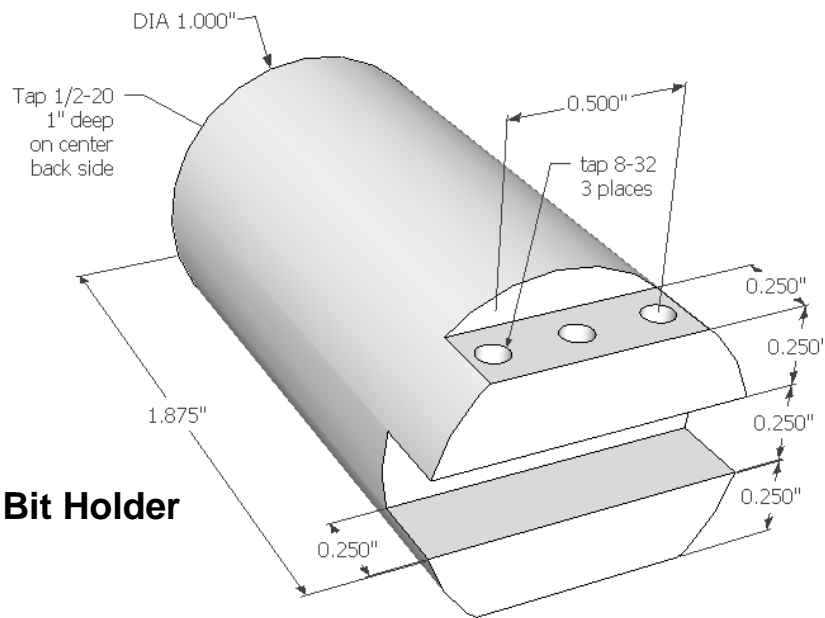
Here's how to set up and operate the Vertical-Plane Ball Turner, Refer to the above photo and exploded parts diagram on the next page. The drawings were made in GOOGLE SketchUP.

1. Adjust the Tool Bit Holder's orientation and the Swing Arm's length so that the shank of the tool bit is vertical at the left most rotation of the tool bit (see photo above). This is where the finished ball's nub attaches to the bar stock.
2. Extend the Pointed Pin that's located on the turner's axis of rotation.
3. Slide the cutter in the Tool Bit Holder until the distance between the cutter's edge and the Pin's point equals the ball radius. A slightly larger radius setting will allow for a final clean up pass.
4. Set the height of the Boring Bar Holder so the Pin just "kisses" the point on a tail stock dead center.
5. Move the lathe's carriage toward the headstock till the Pin's point advances past the end of the chucked bar stock a bit more than the radius of the ball. Alternatively, use the bit's tip to gage the end of the bar stock.
6. Lock the lathe carriage to the bed and tighten down the compound-slide gib.
7. Swing the Ball Turner Shaft in half circle arcs while advancing the cross slide into the spinning bar stock.
8. When the ball is fully developed, lock the Shaft's rotation at the left most swing position with the SHCS pinch bolts in the Aloris style boring bar holder. Move the carriage toward the headstock to generate a nub shaft on the ball. An outboard carriage stop (right of the saddle) will allow you to accurately reposition the Ball Turner back on center.

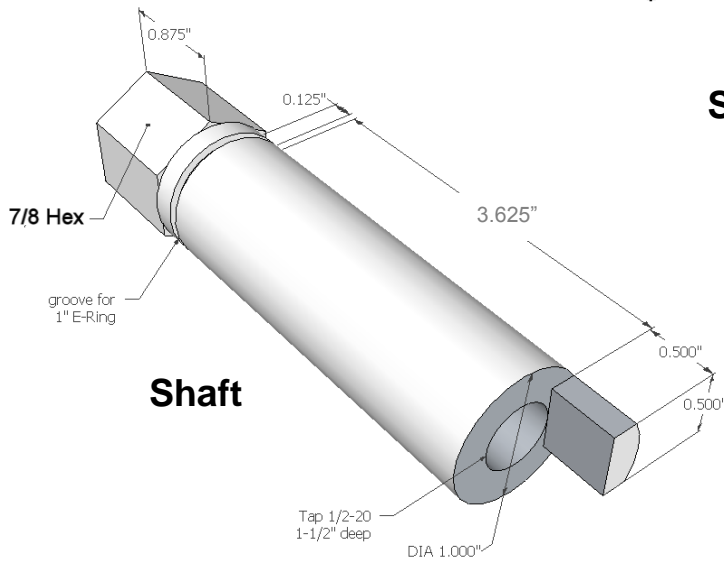




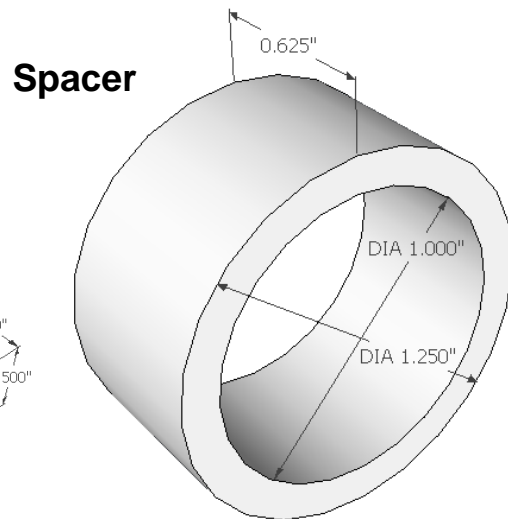
Swing Arm



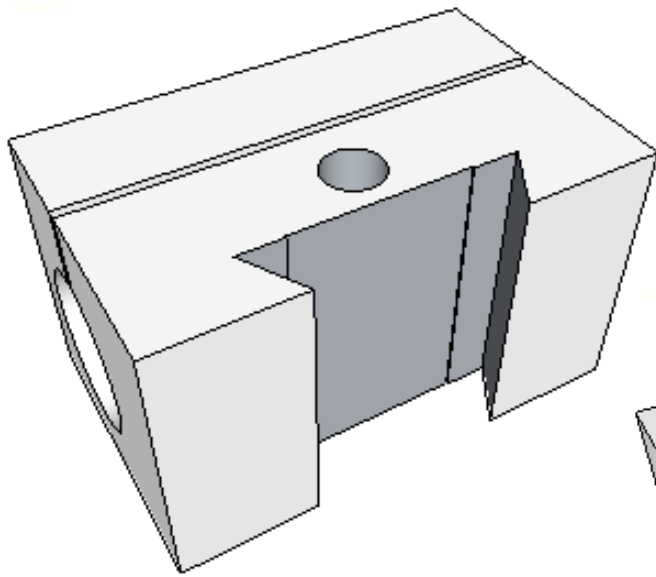
Tool Bit Holder



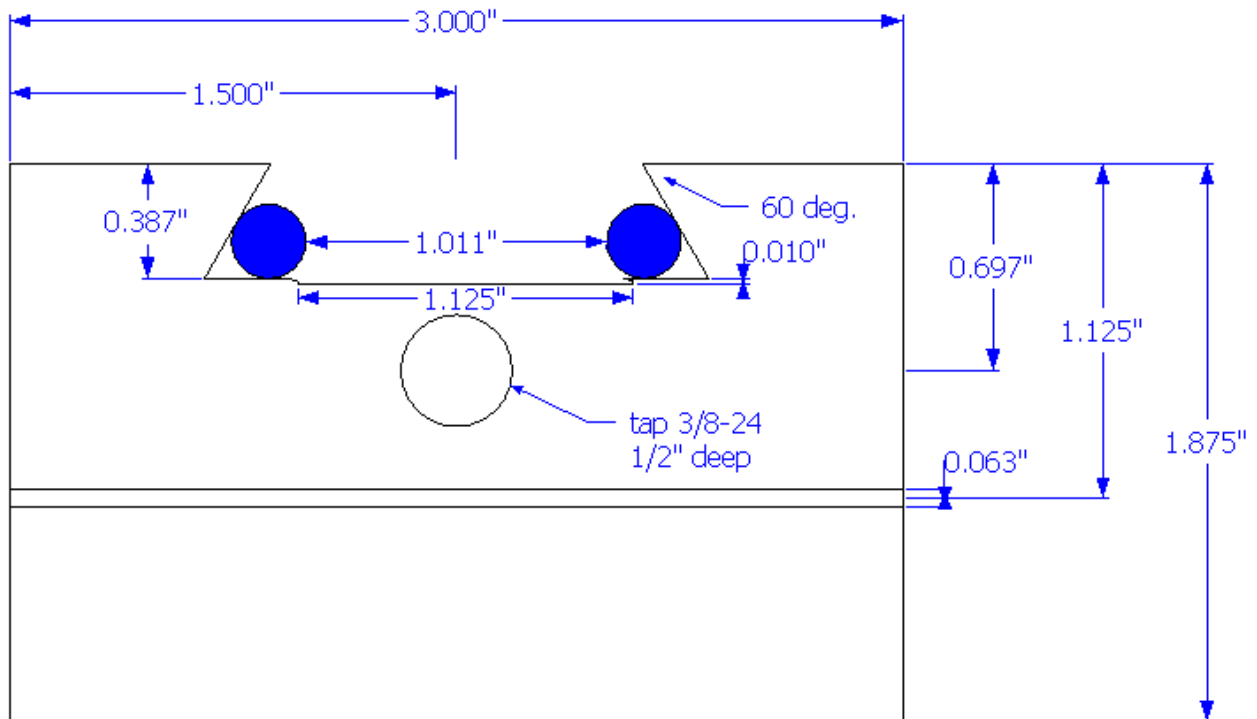
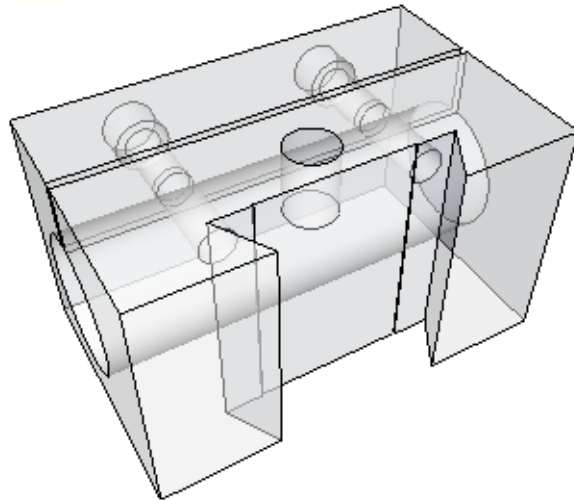
Shaft



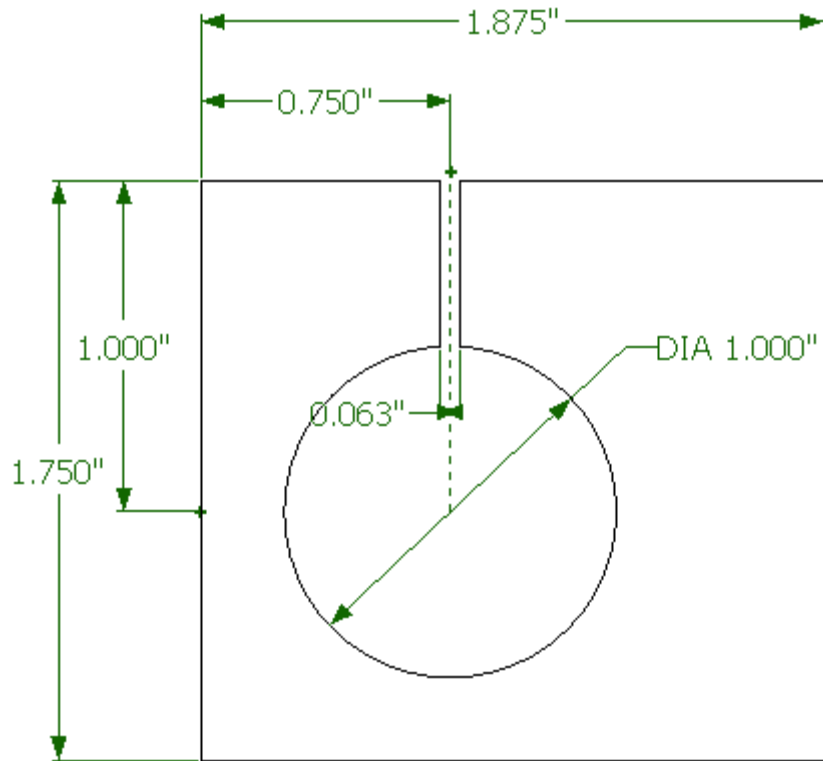
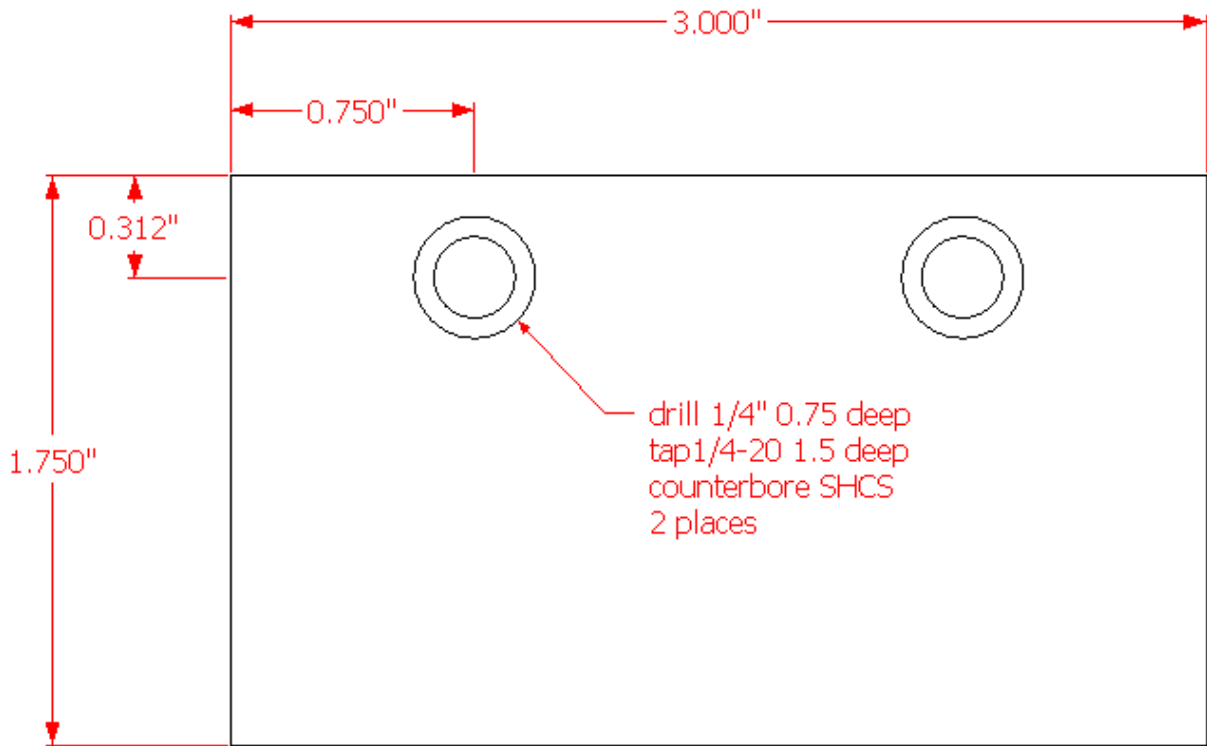
Spacer



An Aloris Style 1" Boring Bar Holder acts as a base of rotation for the Vertical-Plane Ball Turner.



Two 1/4-inch dowel pins provide a means of gauging the dovetail width.



Frazier Museum: "They've got all the guns"

By *Vance Burns*



The Frazier is an arms and armament museum near downtown Louisville KY, across the street from the Slugger factory. I wasn't sure what to expect as they bill themselves as an International History Museum, however I was amazed, they have what is the finest collection of armor I'd seen since London; as I discovered, the Tower Of London and Frazier put this collection together.

This is a unique effort, only to be seen in Louisville. The collection follows a time line, and there are numerous displays, life size depictions of battles, with many well-presented videos, nestled in small alcoves

off the main exhibits. The videos present back-story information on battle scenes, processes (nice video on chain mail), and related history.



The museum has many reenactments, and my favorite was the two-handed broadsword fight. This was not a dance; the reenactment staff went at it hook & tong. It was a wonder no one lost anything important in all the clanging. It was obvious; the prop weapons had taken many a beating. Later on the staff took us to the roof to review the details of two famous duels, and the reenactors (always dressed in period) discharged their black powder weapons in the mock confrontations, all to the delight of the crowd. All that was just the top floor exhibits!

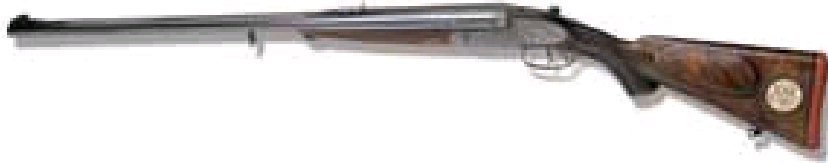
The Museum's second floor houses the Frazier's permanent collection of arms spanning centuries, most of the collection is of American origin. It is amazing, and the number of pieces reminded me of that great scene from Terminator 2:

John Connor: **We've got company.**
Sarah Connor: **Police? How many?**
John Connor: **Uh, all of them.**

Now I wouldn't call myself a "gun person" but I enjoy looking at them, so I was fascinated by the craftsmanship, especially those obvious examples of handcrafted arms, so well represented at the museum. The breadth of the exhibit is



exhaustive, but the depth is incredible. How many examples do they have, you may ask? Well, to paraphrase John Connor: **“Uh, all of them.”**



Someone more adept at firearms nuance may find an exception, but I could not. Of course their collection of one of a kind weapons is impressive, but they further divide production arms by maker, and have not only the

classic examples of the well known brands, but they also have developmental, experimental prototypes. They have exhibits on Manufacturing, Recreational Shooting (large exhibit), Revolutionary / Civil War influence, the Old West, Indian wars, and a good deal on firearms in film. If you wish to see firearms owned by famous folks, they have them: The shoulder cannons Theodore Roosevelt dragged around Africa, George Armstrong Custer's ivory-handled pistols, personal artifacts from Daniel Boone, Geronimo, Josiah Bartlett, and on and on. You can even get replicas of pieces in the gift shop.



If you find yourself in Louisville, and have even a few hours to kill, visit the Frazier. You will not regret a minute of it. Mon.-Sat.: 9:00 A.M. to 5:00 P.M. Sun.: Noon to 5:00 P.M. Located on the corner of Ninth and Main Streets in downtown Louisville Kentucky.



Snap Matchlock Target Rifle, 1580

Lathe Mounted Cut-Off Saw

By J. R. Williams



This lathe mounted cut-off saw came into being when I ran across an unknown spindle and housing in my scrap pile. The bearings were full of dirt but, after cleaning, they ran very smoothly. The bearing's ID numbers indicated that they were of high quality. I removed some unneeded parts from the cast iron housing and milled a flat surface for a motor attachment plate. The shaft required machining for a metric bearing lock nut. The saw's arbor mount was machined from 12L14 Hex steel stock. This material threads quite well and was bored out to fit over the existing shaft. The bearings are open style and two brass retainer cups were made as shields. Oiled felt seals will be added later.

I acquired a small 100-Watt three-phase drive motor with Variable Frequency Drive. The Gates ribbed drive belt and pulleys prevent stalling the saw blade under most loads. The pulleys reduce the motor's speed by a 1 to 3 ratio while the VFD provides an additional speed variation. The spindle assembly is bolted to a thick aluminum block that is mounted on a work fixture that moves on the lathe's cross slide with a dovetail mount.

The blade is 0.020 inch thick x 4 inches in diameter and was selected to cut off small parts while saving stock with its thin cut.