



SCHSM

Southern California Home Shop Machinists

March 2, 2019

OFFICERS

President	Charlie Angelis
Vice President	Michael Vulpilat
Secretary	Ron Gerlach
Treasurer	Jim Endsley

COMING EVENTS

April Meeting
Sat, April 6, 2019, 2:00 p.m.
El Camino College

May Meeting
Sat, May 4, 2019, 2:00 p.m.
El Camino College

PREFACE -

The March meeting of the Southern California Home Shop Machinists was called to order at 2:00 p.m. on Saturday, March 2, 2019. We met in classroom AJ115 on the first floor of the Industry and Technology Building at El Camino College in Torrance, California. There were only 28 members in attendance due to an ongoing heavy rainstorm. There were no visitors.

CLUB BUSINESS –

Charlie called the meeting to order and checked for new members. We had one visitor and possibly a new member. He is a friend and neighbor of Lewis Sullivan and his name is Will Dejong. Charlie reiterated that the date for the picnic is June 8th, which is the second Saturday of June. He also mentioned the Edlebrock Car Show which was May 3-4 (this appears to have been cancelled).

Larry McDavid – Larry is in regular contact with one of our illustrious members, Bernie Wasinger. He moved to Kingman Az some years ago. He asked Larry to pass on a Hello to everyone and to let every one know he is doing fine and loving life.

PRESENTATIONS –

Norm Wells Chuck Repairs

Norm prepared a discussion about the characteristics and maintenance of the two most common chucks that are seen in industry and home shops. These are Jacobs and Albrecht. Their end result is the same but how they accomplish this is different between the two manufacturers.



Low Cost Jacobs Chuck

Jacobs The common Jacobs chucks, in various sizes, are found on a wide variety of tools. The small ones, like the one on the left, are generally found on hand drills are attached with a left-hand screw. These relatively low cost chucks are not serviceable. When they break or wear out you have to just junk them. The left hand screw is accessible through the open jaws.

The bigger sizes are better made and are repairable. The outer ring, which has straight sides, needs to be pressed off to access the inner parts. All that is needed is



Larger and Better Quality Key-Type Jacobs Chuck

a metal tube or pipe with the right dimensions to apply pressure on the shell while allowing the body of the chuck to pass through its center. The outer ring can then be pressed off with a vise, arbor press or hydraulic press. It does not require a significant amount of force to press this ring off. Once off there is easy access to the jaws and scroll.

Norm explained how he tried to repair a less expensive Asian built chuck and was unable to press the outer ring off. His only recourse was to cut the chuck apart with a cut-off blade. This was obviously not recoverable but he did it for the show and tell so the club members could see the internal construction.



Low Cost Chinese Chuck after Cutting Ring Off

Ball Bearing style chucks are more precise, at least this holds true for Jacobs. Their runout is significantly lower than the non-ball bearing types. These ball bearing chucks are distinguishable by the rounded shape of the outer ring unlike the straight sided cylindrical shape of the non-ball bearing types.



High Quality Jacobs Ball Bearing Chuck

Norm discovered at one point in the past that the non-ball bearing Jacobs chucks do not have inherently low runout, with .005" not an uncommon occurrence. When he replaced a set of jaws on a chuck he examined the new jaws and found that they were not all identical, at least as far as the center facing contact surfaces.

The next chuck to be discussed was the Albrecht keyless chuck. These are not at all common on low end tools but are quite common in machine shops where they used on mills, lathes and drill presses. They have much lower run-out than the common Jacobs key chucks. They also have a unique design that grips the drill harder as clockwise drill torque increases. Thus, these chucks rarely suffer from drill



Keyless Albrecht Chuck

bits spinning inside the jaws of the chuck. The image below clearly shows length wise impressions in the softer drill shank from a keyless chuck jaws. It has grabbed the drill hard enough to make these marks.



Used Drill Bit Showing the Chuck Jaw Marks from a Keyless Chuck

There is an internal shear pin in these chucks which will give under very high torque conditions. Rhom makes a similar chuck but it is not as highly regarded as the Albrecht product.

Norm showed and discussed the tapered wedges used for removing a chuck and its morse taper adapter from the morse taper socket commonly found on many machines such as drill presses.



Chuck Removal Wedges

SHOW and TELL –

Dan Snyder – Dan brought in a variety of small projects that he had completed recently that he thought would be of interest. The first was a round bar of stress-proof steel onto which he had single point cut a length of 5/8-11 threads. This was done as an exercise and the results looked very good.



5/8-11 Single Point Threading

Next up he showed how he clamped a sheet of aluminum horizontal to the mill table so he could clean up a saw cut edge.

His third item was a shop made boring head similar to the old square Criterion boring heads. It was a simple yet well made tool. Again as an exercise he carefully measured all the dimensions of the various parts and created a 3D model in Onshape.



Shop Built Boring Head

His next topic of discussion was the aftermath of an attempted power tapping exercise. The immediate problem that had to be addressed was the broken off tap. This can be difficult due to the very hard nature of taps. His solution was a diamond tipped cutting tool which he used to cut up the body of the



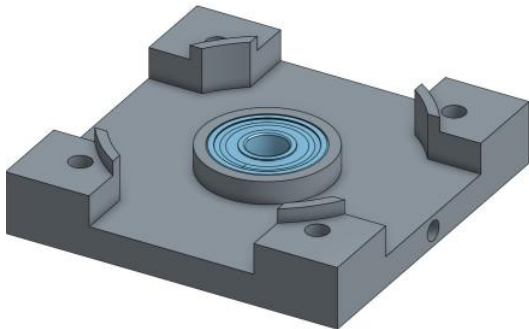
tap to allow it to be removed. The cutter he used was a diamond encrusted, hollow tool

Dan had been looking for a good high speed brush style motor for a project he may or may not take a stab at in the future. In his search he came across a Harbor Freight angle grinder that sells for only \$14.95. He bought one and was impressed by its performance but it was obviously mounted to an angle grinder body.

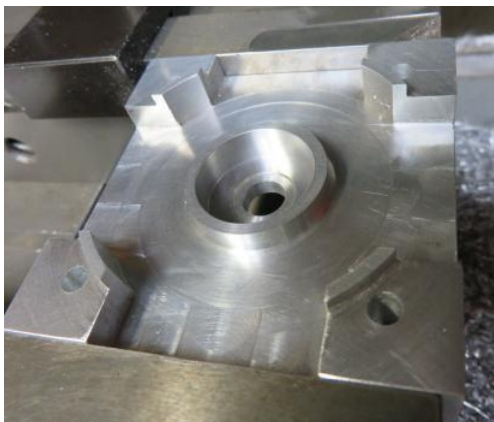


Harbor Freight (#60625) Angle Grinder

He disassembled the unit and found that the motor, except the drive end bearing mount was very generic and could be quite useful. So he measured all the pertinent parameters of the section that interfaces to the motor body and set out to design himself a general purpose end plate and bearing mount. He first designed and captured it in a 3D model with Onshape and then built one out of aluminum. He described and illustrated the various stages of



3D Model of End Plate and Bearing Mount in Onshapene



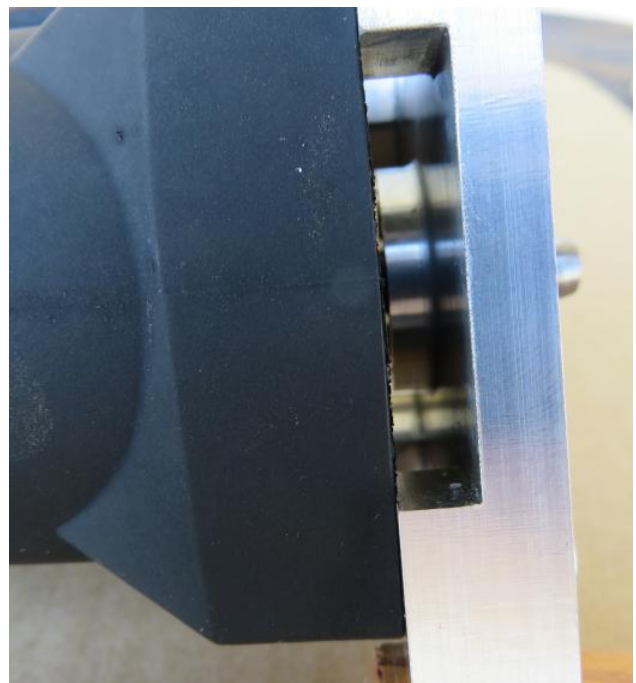
Finished End Plate Fabricated in Aluminum

drilling, boring and trepanning to get the final shape. With that completed, he mounted the motor guts onto his end plate and fired it up. It worked exactly as planned and turned an impressive 34,182 RPM. Not bad for a \$14.95 motor. The above image shows the new end plate with



Finished End Plate Mounted to Motor Body

bearing mounted to the motor body. The image below shows a side view where the motor cooling fan blades are visible. The next item was admired by all. It was an



Side View Showing Cooling Fins

indicator holder for the knee of his mill that used a couple of neodymium magnets to hold it in position. These magnets hold well enough to keep the holder stationary during normal operation of the indicator yet can still be moved by hand. He made the body out of aluminum and bored two



Finished Indicator Holder for Mill

holes to hold the magnets. He also added a steel shunt to tie the fields from the two magnets together but this seemed to have marginal effect on the holding power. The images below show the body from different angles and with the indicator removed.

The last project in Dan's presentation was another



Two Views of Aluminum Body of Indicator

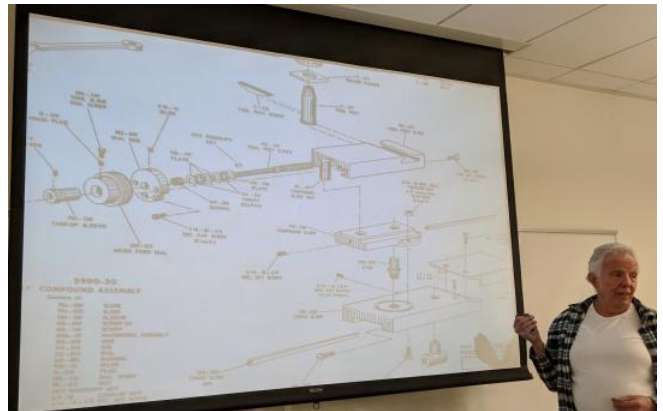
accessory for his Tree mill. The power tapper requires a fixed, vertical bar for the arm that keeps the tapper body from spinning. He found two holes in the head structure of the mill that worked out well for a custom bracket that secures the vertical bar. It is easily removed when not needed.

Lewis Sullivan and Lewis were armed with information



Vertical Bar Mounted on the Mill

on his Clousing lathe cross slide. He brought this in at the request of Don. Unfortunately, Don had to leave early and was long gone by the time Lewis got his chance to get up and talk. After this brief discussion he described a sine bar threading fixture



Lewis Showing Exploded View of his Clousing Lathe Cross Slide

he is building for his lathe that will allow him to cut any possible thread pitch on the lathe whether Imperial or Metric. The article behind this project was Home Shop machinist (November/December 2017 and January/February 2018). This was a rather novel idea that moves a special slide mounted on top of the crossslide at a different rate than the carriage. This rate is set by a rather complex series of levers that are part of a sine bar arrangement. Once a desired thread pitch is known, a calculation is done to determine a setting for the levers that will deliver this exact pitch. Lewis also made the threading tool holder described in the (July/August 2017) edition of Home Shop Machinist. One feature of this holder is that it incorporates the 29 degree tool angle needed for single point threading. This was very nicely made piece. With this tool holder and the sine bar threading attachment he will be armed and ready to tackle any threading jobs that come along. More details about the threading accessory will be provided at the next meeting.

William Dejong – William (the first time visitor and friend of Lewis) is doing remodeling work on a 1911 Irving Gill house in South Pasadena.

One of the styling features of this home that he needs to replicate are some ceiling sconce parts. They are metal rings that secure the domed glass to the light fixture. Several ideas were thrown about such as 3D printing and soldered build up from brass stock. Armed with ideas he will keep up his quest and hopefully report back if and how he succeeded.

Larry McDavid – Larry recently had Spectrum run



One of the Metal Ring that need to be Reproduced

cable into his home so he could get their 100MBS internet service. They had to run coax under a stretch of concrete. They used a simple water borer to get from one side to the other and then ran some special orange cable thru an orange protective sleeve. This along with the standard white cable they ran up the side of this exterior



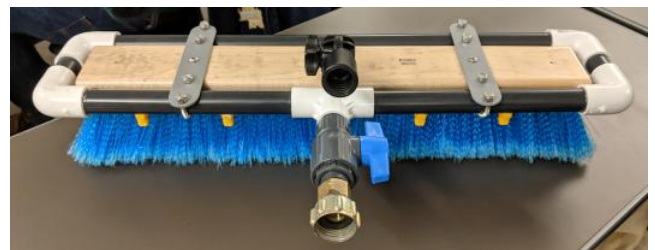
Protective Tube and Quad Shield Coax Cable

walls was a quad shield style. This has a much better shielding capability compared to the old single and double shielded coax used in the past. Apparently, the new high speed data signals, with their rich harmonic content require better shielding to satisfy the FCC radiation requirements.

Larry has solar panels on his roof and was concerned about their efficiency dropping off as they accumulated dirt and film. Prior to this rainy season it had been quite dry and thus very little rain to naturally wash them off. He was reduced to hiring a service to come and clean them. The company he hired was Solar Maid. They charged him \$100 to wash them off with deionized water and a special brush/sprayer combo. After examining their brush/sprayer, Larry was confident he could build a better "mouse trap". He did some sketching, gathered up the necessary parts from McMaster Carr hardware and produced a much more elegant looking (and presumably better working) brush/sprayer. Their deionizing filter worked quite well. He found



"Professional" Solar Panel Washing Gadget



Larry's Improved Solar Panel Washing Gadget

the same filter elements at Amazon and will make his own soon.

John Miller - John made a large tuning fork in an attempt to get a 60Hz resonance so that he could see the stroboscopic motion when viewed under fluorescent lights (which actually flicker at a 120Hz rate due to the firing cycle of the 60Hz AC line power). He made it longer than calculated with the idea of trimming off length a



One of the Large Tuning Forks In Process

little at a time to bring it right up to 60Hz. He calculated that the frequency was changing at a rate of 1.5Hz per each .2" of length change. Unfortunately, he was unable to demonstrate the effect in the room since the lights, which are relatively new, are probably LED. LED lights do not have the 120Hz flicker operation as do fluorescent bulbs. It was still an impressive looking tuning fork and seemed to work well.



The Finished Large Tuning Fork

SCHSM welcomes presentations by members or guest speakers on any subject related to metal working activities. If you have some knowledge or experience you feel may be of interest to our members, or if you know someone that may have something interesting to relate, please consider making a presentation at a meeting. Presentations may be a little longer and more detailed than a show and tell, and may be accompanied by slides, video, or physical displays. Probably every member has some experience they can share, and this is the purpose of SCHSM. Please contact President Charlie Angelis to make arrangements to give a presentation.

SCHSM meets in Classroom AJ115 on the first floor of the Industry and Technology building of El Camino College, 16007 Crenshaw Blvd. Torrance, California, at 2:00 p.m. on the first Saturday of every month. The building is near Parking Lot B. Enter the campus from Manhattan Beach Blvd.

If you would like to contribute an article to this newsletter, or make a comment, contact the editor, Fred Bertsche. He can be reached via the SCHSM Yahoo Group, or at fbschsm@yahoo.com.

Find us on the web at www.schsm.org.