

<http://www.portlandmodelengineers.org>

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For The Beginner #34 by Wes Ramsey

FITS, Part II

Let's go on with last month's unit on tolerances and fits.

Next month we will once again meet at Grant Carson's shop on Saturday, November 11th, 1:00pm at:

A & G Products
7360 SW Bonita Road, Unit C
Tigard, OR 97224

Remember to bring a metal-related project -- complete or not -- we'd like to see it. Bring it in and share a few words on the subject.



PRESS FIT ALLOWANCES

Press fit allowances depend on a number of factors including length of engagements, diameter, material, particular components being pressed, and need for later disassembly of parts. Soft materials such as aluminum can be pressed very successfully. However, soft materials may experience considerable deformation and these parts may not stand up to repeated pressings. Like metal parts pressed without the benefits of lubrication may gall, making them very difficult if not impossible to press apart. Very thin parts such as tubing may bend or deform to such a degree that the press retention is not sufficient to hold the parts together under design loads. Generally, pressing tolerances range from a few tenths to a few thousandths of an inch depending on the diameter of the parts and the other factors previously discussed.

PRESS FIT AND SURFACE FINISH

The surface finish (texture) of parts being press fitted can also play an important part. Smooth finished parts will press fit more readily than rough finished parts. If the roughness height of the surface texture is large (1/64 of an inch and higher) more friction forces will be generated in the pressing operation and the chances for misalignment, galling, and seizing will be increased, especially if no lubrication is used. Lubrication will improve this situation to some extent. However, lubrication can be detrimental to press fit retention in some cases. A few molecules of lubricant between fit surfaces, especially if they are quite smooth, can result in the parts slipping apart when subjected to certain pull or push forces.

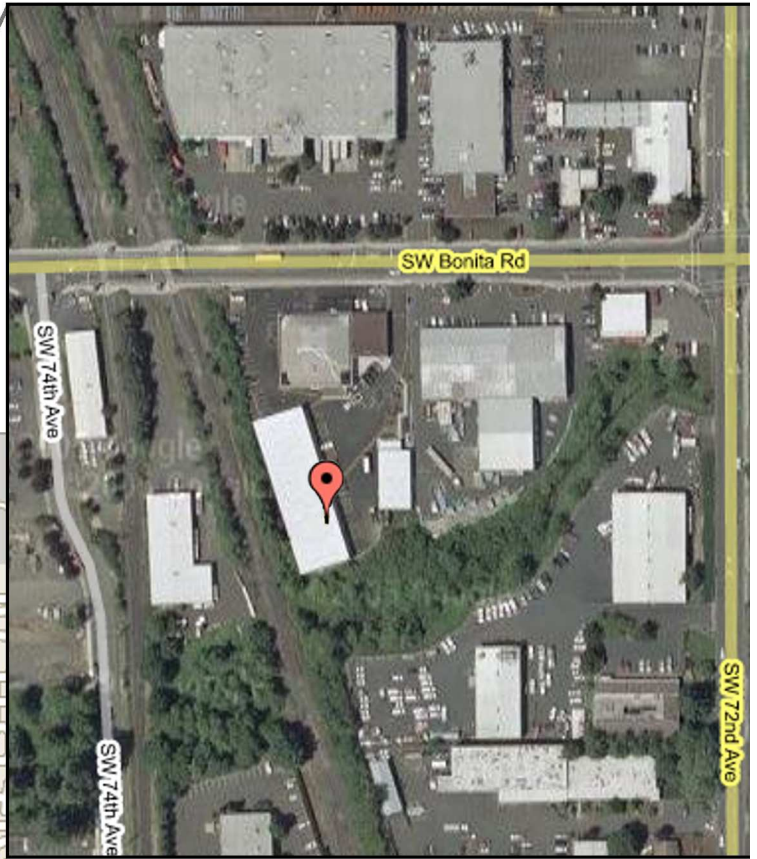
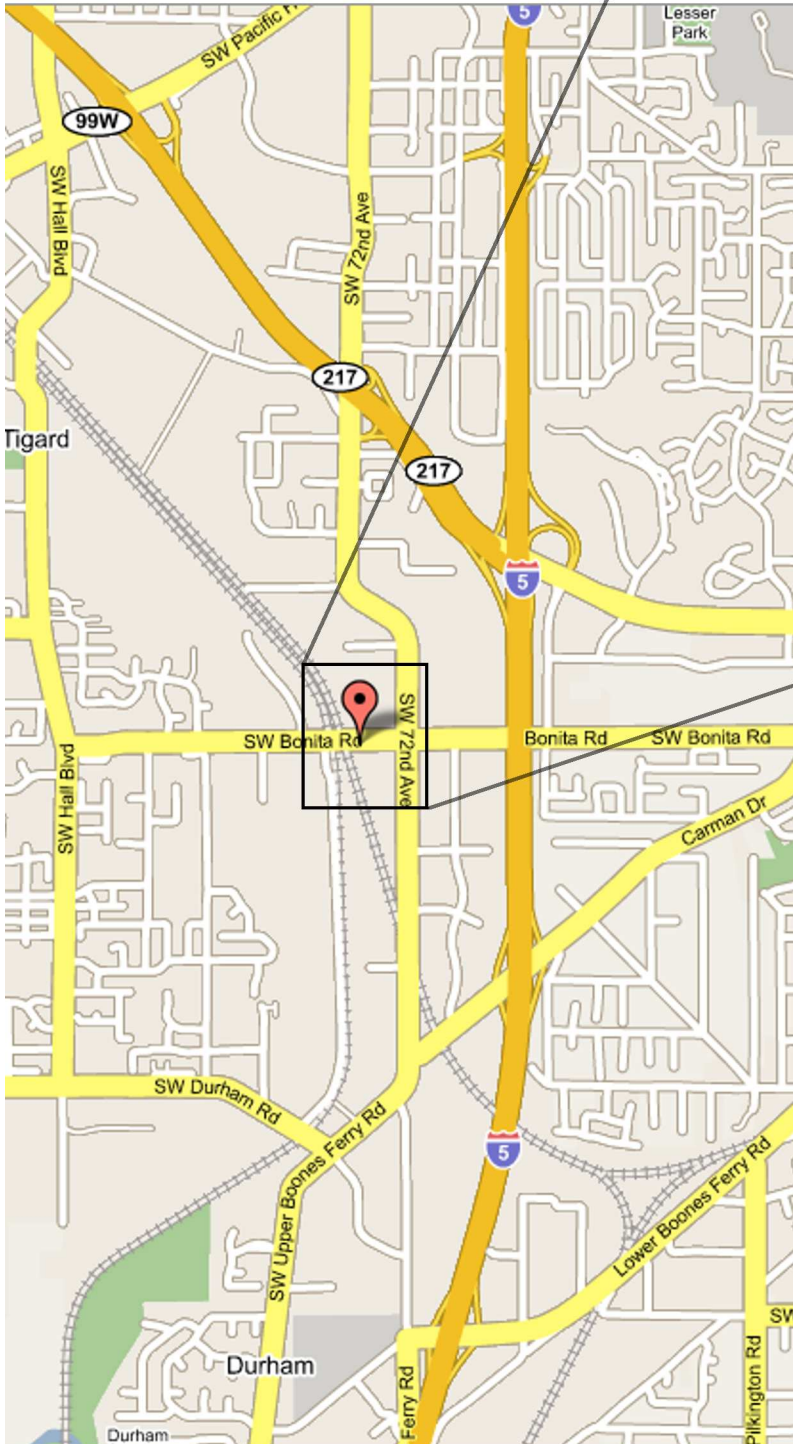
Remembering Hal May

Hal May, one of the charter members of Portland Model Engineers and an active participant, died in October after a lengthy illness. Hal was uniformly respected for his knowledge and skill. However, he will be missed even more for his hearty welcome, positive attitude and honest friendship.

A & G PRODUCTS

Saturday, November 11th, 2006
Meeting, 1:00pm

A & G Products
7360 SW Bonita Road, Unit C
Tigard, OR 97224



Directions to Grant's

From I-5:

Use exit 292 to Hwy 217, go north about 1/4 mile toward Beaverton to SW 72nd exit. Turn left onto SW 72nd Ave, go about 3/4 mile to Bonita Road, turn right. A & G will be on your left.

From Hwy 99 (Pacific Ave):

Turn south onto SW 72nd Ave, proceed about 1-1/2 miles to Bonita Road, turn right. A & G will be on your left.

Nominations for New Officers Due

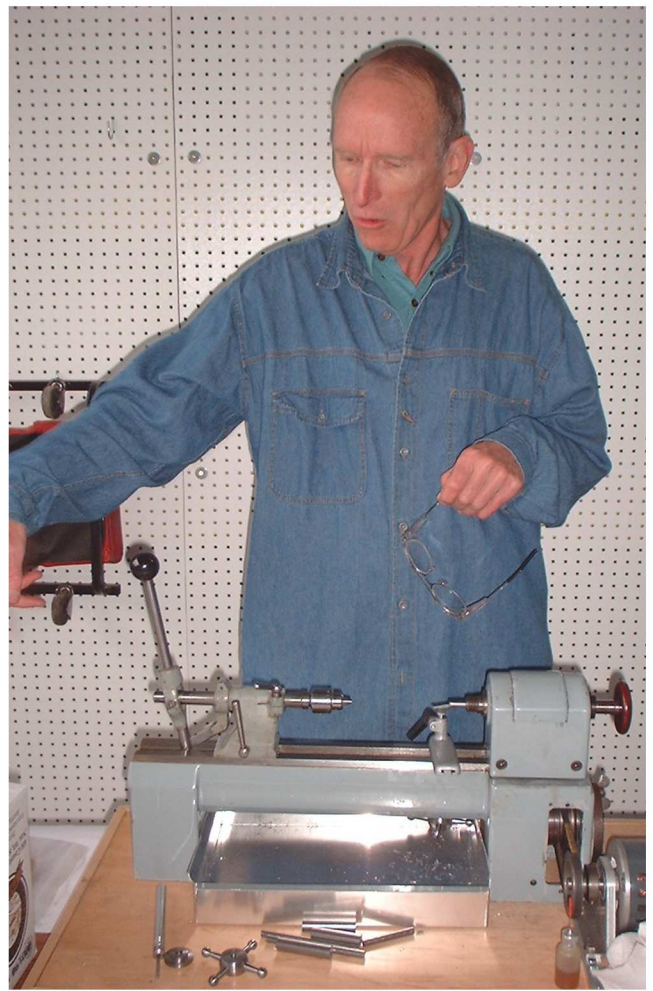
As the New Year quickly approaches, consider supporting the Portland Model Engineers by volunteering as an officer. The main qualification being a fervent desire to see more people enjoy this fine hobby. The next meeting will collect nominations for these offices. Elections will then be conducted during the December meeting.

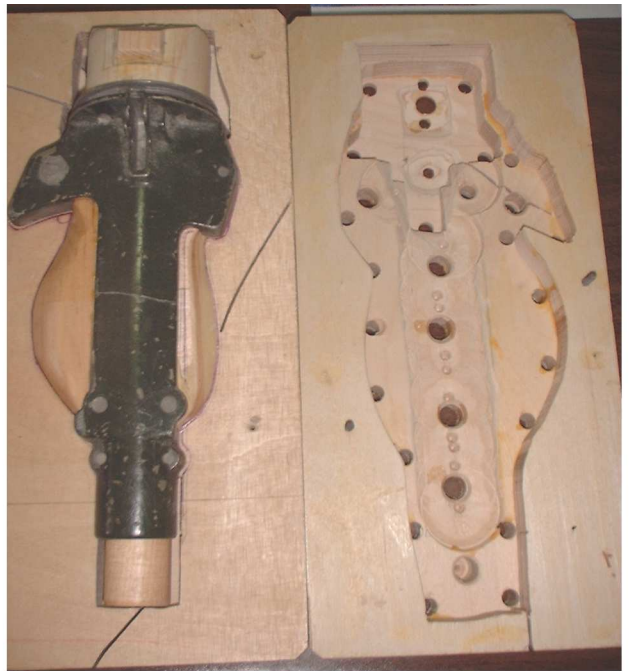
Newsletter Photographers Needed

In addition, if you have a digital camera or would like to gain experience using one, consider joining the Newsletter staff. Two or three people are needed to help balance out our coverage of projects and events. This mainly involves taking pictures, asking questions (which you were going to do anyway) and writing down names and facts. The level of involvement is reporting on one meeting per quarter. By sheer coincidence, your editor will be out of town for the December meeting and this would be a perfect occasion to get started! Contact Jarod Eells for further details.

Tutorial on Hand Turning

The second session in our tutorial series was conducted by Tom Hammond (shown upper-right). About 20 people came early to hear him talk about the benefits and different setups that are needed to support this style of turning. He brought in a small lathe to demo. Show below are some of the turning tools that he uses to achieve excellent results. After the talk, Steve Hampson decided to try his hand at the process.



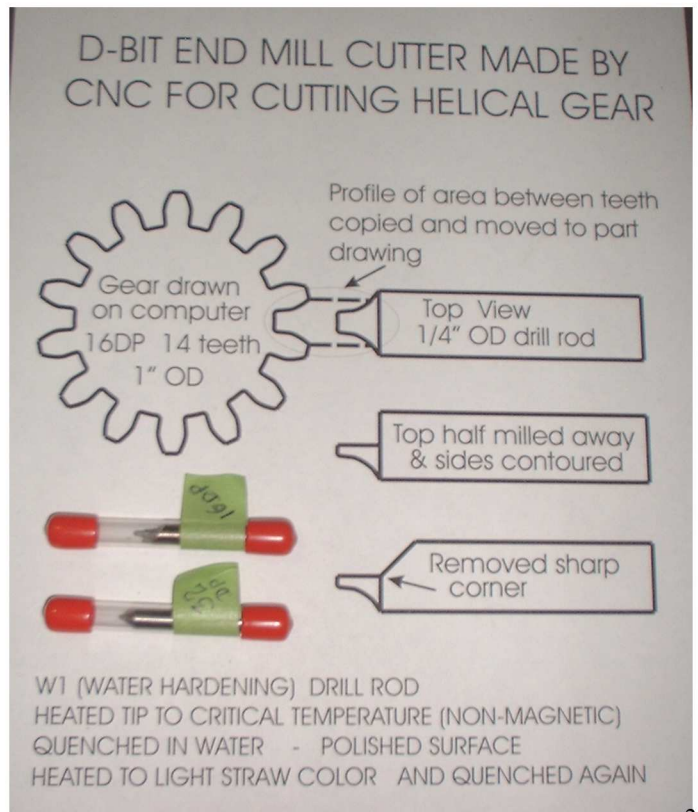
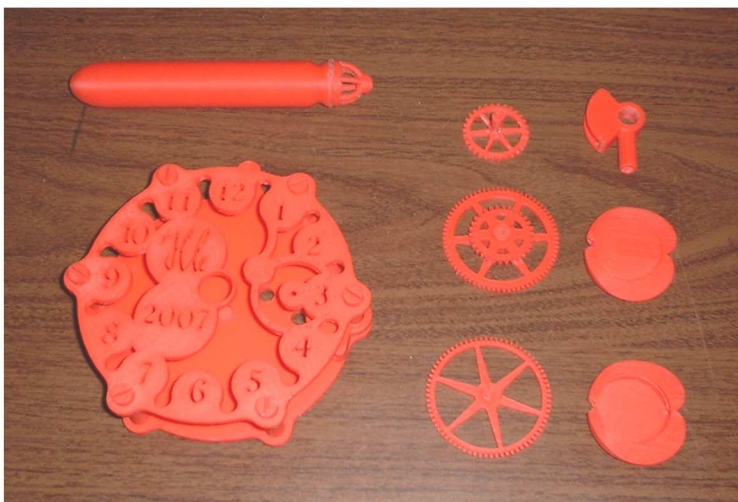
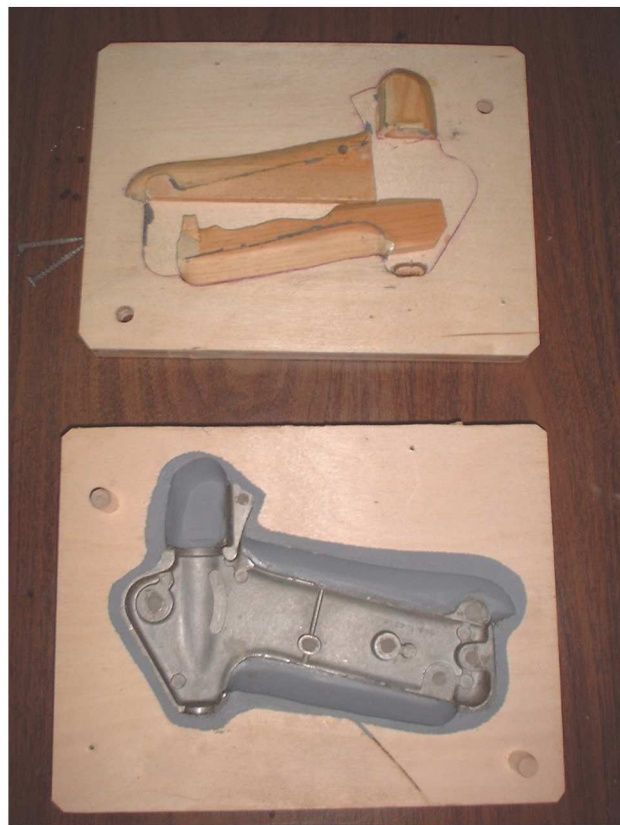


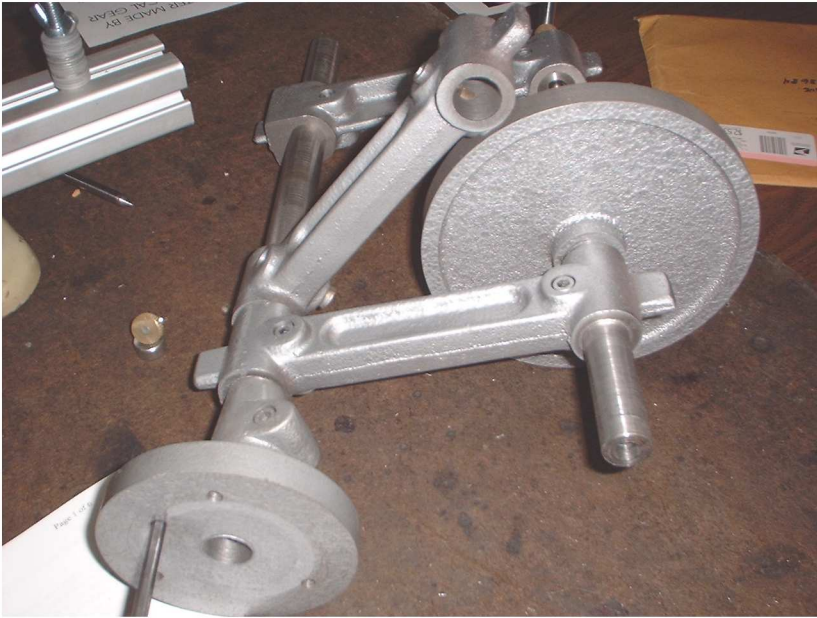
In counter-clockwise order:

Bud Statton brought in the latest patterns for his WWII flamethrower reproductions. The one on the upper-right is ready to be filled with Duracast. Note the original is broken halfway.

Henry Casson described his recent work with ABS rapid prototyping. The main clock face would ordinarily be built from several separate pieces.

Gary Hart showed the design of a mill cutter for shaping gears. The cutters were made from W1 drill rod and hardened.





Above are two different views of the pillar tool that Jim Pfaltzgraff was working on. It allows for very precise drilling and tapping.

Below are the helical gears that Gary Hart cut with his newly-made cutters.

Also Tom Hammond gave us an update on the StrongArm shaper project. Gary Martin is taking orders for cast iron parts for this project if you would like to make one.

John Benjamin reported on his wife's new Miller plasma cutter. They were very satisfied with its performance for the price and light weight. It cuts 1/2" steel plate with ease.

