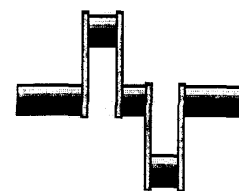


# The Crank Calls



February 2004

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**NEXT MEETING**  
February 21 – 10AM  
At Robert Schutz's Shop  
366 40th St. Oakland, CA

Check out the BAEM Web Site at  
[www.baemclub.com](http://www.baemclub.com)  
Send your project photos to the  
Web Master Jim Piazza.  
Phone: 408-446-4825  
Email: [jpiazza@ix.netcom.com](mailto:jpiazza@ix.netcom.com)

**Dues Are Due**  
Contact Lewis Troop at  
27272 Byrne Park Ln.  
Los Altos Hills 94022-4324  
650-941-8223  
[lthroop@aol.com](mailto:lthroop@aol.com)

**MAKE \$25.00 CHECK  
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## **Membership Dues**

If your membership dues (\$25.00) are not current by March 10, 2004 you will no longer receive The Crank Calls news letter.

Bill Nickels, Editor

## **Meeting Notes**

Jan. 17, 2004

Carl Wilson

Bay Area Engine Modelers started 2004 with the smell of hot exhaust and the sound of hit 'n miss engines at the January meeting. Read on for details of the engines, but first a little "boilerplate." We welcomed three visitors: Ken McMeas, Dean Atkinson, and Al Aldritch. Then President and Perpetual Dictator for Life, our very own Ken Hurst, called for election of officers for the new year. It didn't take too long to re-nominate the existing slate of officers and elect them by popular acclimation: President, Ken Hurst; Secretary, Bob Kradjian; Treasurer, Lew Throop; Newsletter, Bill Nickels and Tech Topics, Pat O'Connor. On behalf of the club members, thanks to all of you. And a special thanks to Robert Schutz for the use of our meeting place. As long as I am throwing thanks

around, a word for those members who bring their projects and show them and to the members who give Tech Topics. These are the factors that make our club such a success: leaders, participation, and a place to meet.

There has been one change in our leadership. Bob Kradjian has for many years performed the combined office of Secretary and Events Coordinator. Showing our engines to the public at auto shows was his idea and he made all of the necessary arrangements with the show promoters and persuaded club members to join him. Bob is no longer able to perform both jobs and has asked to be relieved of the office of Events Coordinator. Bob, thank you for a job well done. You have created a welcome for us at some of the finest auto shows in the area. And many of our members have enjoyed a day with you showing engines and telling about them.

Dick Pretel has volunteered for this job. Do you remember the Uncle Sam poster with the index finger pointed straight out and saying "Uncle Sam Wants You!" Well, Dick wants you, too. Please join him and other volunteers in running your engines at these shows.

**Treasurer's Report**

Lew Throop reported that we were still solvent and will be solvent after EDGETA dues and insurance are paid later in the year.

“Dues is due!” A bargain at \$25 a year! But if you do not pay by March you will be dropped from the roster and this newsletter will no longer appear in your mailbox.

**Special Thanks**

Some of our members met Pete Salakian of Fresno at the Men, Metal, and Machines Show at Visalia this fall. Pete fell in love with the V8 engines shown at our club stand, and 82 is not too old to fall in love. He determined that he would have a running Challenger at this year's show and is busy making parts. He sent a handful of swivel deburring tools to us as freebies. Thanks Pete.

**Bits and Pieces**

Al Vassallo brought his 1/2" bore Stirling engine. He saw one at a show and made one like it.



Al's work is entirely his own design and fabrication: this guy is good!



Don Catalano acquired this Wall Four in a trade for a Saito 90. It was built in the 1940's and sold to a

friend for about \$50 at a garage sale.



Dwight Giles showed his Upshur horizontal

engine. The original design used a throttle in a carburetor. Dwight redesigned it into a hit & miss governed engine with lots of changes.



Al Aldritch bought this Cole's small hit & miss on eBay. Dwight Giles and George Gravatt got it running and Dwight put it on one of his neat wood bases. This engine has a 1" bore and 1 5/8"

stroke.

This quad overhead camV-8 no longer looks much like a Challenger! The only thing that is close to stock is the block, and it has been heavily modified. The hot rodder is, of course, Dick Pretel. This is his custom design. The valves are made from titanium; the cams and crankshaft are by Roger Slocum; the pistons and rods are by Dave McMillan. Dick and Dave designed the custom front cover and it was CNC milled by Dave. This engine is in the finest tradition of hot rodding. Well done, Dick.



John Vlavianos is ready to kill two of our club members for talking him into making the patterns for a brand new V8 engine. Of course he's only kidding, but the joint project with



Dwight Giles and Ken Hurst has been a lot of work. John showed a block cast from Tensalloy, a solution hardening aluminum alloy with high strength. It has 5 four-bolt mains and will



take all the horsepower the pistons and rods (cast in A356) can deliver. The crankshaft will be cast in a chrome-moly steel. This one is

aluminum and will be used for checking the pattern and machining of the crank. The oil pan is a casting rather than a sheet metal stamping. Not shown in the photos is a small pattern for the front plate with integral oil pump driven from the camshaft. The



distributor drive will be at the back of the camshaft.



Steve Jasik has a new toy! And a fine one it is. He bought a Hardinge Conquest 42 CNC lathe, 1989 vintage. This is the Z-axis ball leadscrew that was replaced after a crash. Steve said that he has spent a lot of time cleaning this machine: about 5 gallons of chips in the coolant reservoir!



John Palmer built this custom boring bar to finish the repair of the cooling fan bearing hous-



ing on a 1918 Best tractor. The bar was bolted to the back of this casting by its flange and machined the bushing on this side. John admitted that he was having so much fun making chips



that he went oversize on the first bushing and had to do it over again.

This is a door hinge from a 1904 Cadillac single cylinder automobile that is being restored by the City of San Jose Fire Department. Four sets of castings were made and John Palmer machined them. They were rather difficult to hold for machining. John had to make special fixtures to be able to clamp them and reach some of the features.

Having trouble tramming the head of your vertical mill?

(Tramming is aligning the spindle axis square to the surface of the table.) Take a look at this double indicator fixture shown by



Steve Myers. Grab the shank in a collet in the spindle and move the head until both indicators read the same. Rotate the spindle 90 degrees to check the other axis and true the head in that direction. Then take a 360-degree sweep reading only one indicator, and if that reads OK, you are done. No more swinging the indicator round and round and trying to remember which way to move the head.

Lew Throop has been playing with his CNC mill (sorry, no photo.) He milled a flat head for a 4-cylinder in-line engine from a balsa-plastic composite material that is used for proofing CNC programs. The top portion of the cylinder and pistons were milled in delrin – this was a thin piece and only represented the tops of the pistons and cylinders.

### Tech Tip

After the meeting Karl Van Dyke was watching

one of the hit & miss engines running. He was listening, too. It had a high pitched squeal, a sure sign of a dry bearing. He rubbed the side of his

nose to collect some oil, touched the ignition cam, and presto, the noise ceased. Didn't have to say much – a demonstration is worth quite a few



*Clen Tomlinson is seen here at the 2003 Pacific Rim International Model Engineering show in Oregon with his nearly-completed Napier Deltic 18-cylinder engine.*



Check out Clen Tomlinson's web site at <http://www.craftsmanshipmuseum.com/Tomlinson.htm>



## TECH TOPICS BY PAT O'CONNOR

Web Sites recommended by Pat O'Connor

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

<http://www.histomobile.com/histomob/tech/2/menu.htm>

### TECH TOPIC AT THE FEBRUARY MEET

Ken Hurst will start us on the road to building an engine from a casting kit. He will use a V-8 kit for the subject of his talk.

### Tech Topics

By Carl Wilson

Our scheduled speaker was unable to attend the meeting so Pat O'Connor asked for comments from us about our experience and knowledge of buying used machine tools. Here are some of the ideas:

Vertical mills: Look for wear in the sliding surfaces of the table, saddle and knee. The top surface of the knee is very easy to check: usually this surface has been flaked, a process that leaves distinctive markings. If these marks are worn away, there is possibly significant wear.

Bridgeport spindle bearings can be replaced and the R8 taper re-ground by a specialty shop in Oregon. Talk to Dick Pretel. He also knows how to repair a rattling noise in the v-belt J head. After-market Bridgeport parts are available; parts for most other machines must come from the manufacturer (if available at all.)

Broken or missing parts may be a serious problem. Broken gear teeth can be repaired. Bad bearings can usually be replaced, but some are OEM (Original Equipment Manufacturer) and may be unobtainable. A rusty machine tool can be very difficult to rebuild. Repairing or rebuilding tools can be an expensive and time-consuming hobby of its own.

The variable speed Bridgeport head is frequently

noisy. A kit of the necessary parts is available, but this is not a permanent cure: if you use the mill a lot, you might have to do it again.

If your mill has a 3-phase motor, think about making it a variable speed drive by adding a VFD: variable frequency drive. This electronic device will take the 240 volts single phase from your source and feed a 3 phase variable frequency voltage to the motor. A quick twist of a knob will take the motor from its highest speed to the lowest. And, it is easy to make a digital tachometer so that you know exactly how fast it is running. Works good on lathes, too.

If the mill has digital readouts, wear in the leadscrews may not be important. You will be reading the DRO rather than the dials. Lots of slop in the leadscrews and nuts may be an indication of a badly worn machine.

Leveling: A vertical mill does not need to be leveled. The only advantage in doing so is that it may be easier to set up some work with a precision level. Leveling a lathe is essential for true turning. There are two good methods: use a precision level, at least .0005" per foot accuracy or use the method popularly known as Rollie's dad method. A web search will turn this one up. This would make a good tech topic (hint, hint.)

The effect of wear on the bed of a lathe is harder to assess. The ability to turn straight and parallel is the final arbiter. Hardinge lathes do have

some problems with wear. These lathes are popular for manufacturing and used ones can be worn out despite the enormous surface area of the ways. One quick test is to tighten the carriage lock until it can be just moved with the handwheel, and then see how far it can be moved. You can almost plot the wear pattern with this test. Another problem with Hardinge lathes is that the tailstock is not adjustable to align it with the spindle. This is not an easy problem to fix.

More on lathe tailstocks: the spindle or its housing can be worn. The spindle will no longer be

parallel to the axis of the headstock spindle. This will affect all operations carried out from the tailstock.

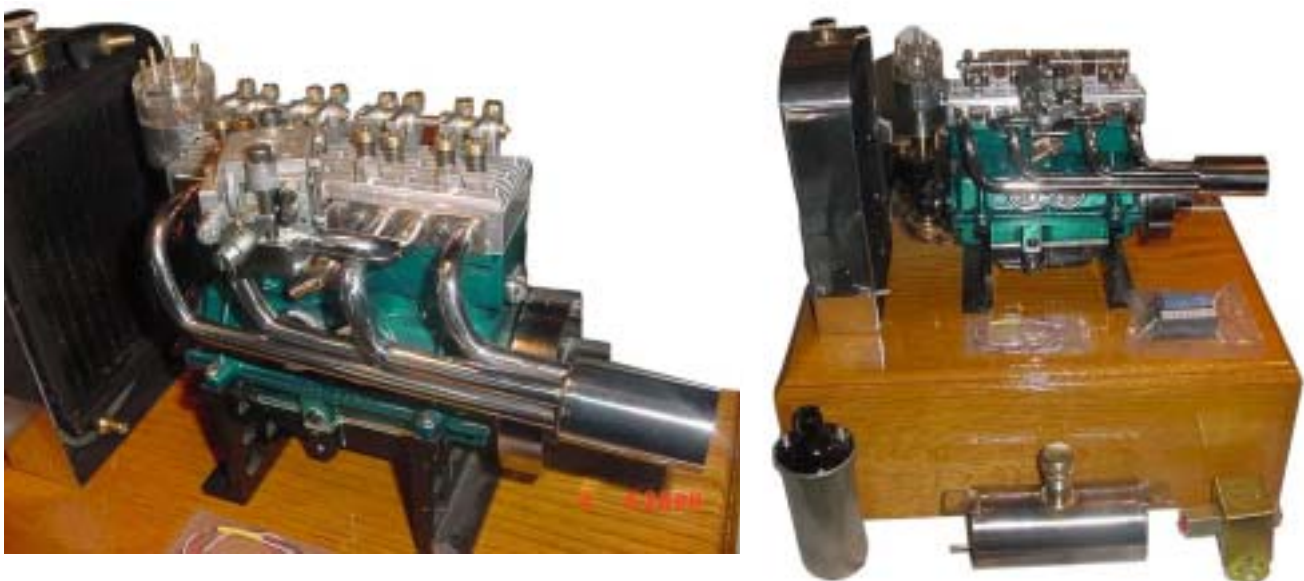
All large machine tools should be bolted down to a substantial floor. They can tip over in an earthquake. While bolting them down, adjust their height to suit your size. Saves wear and tear on your back and neck.

Last but not least: a worn machine may still be able to produce your parts to your desired tolerance. It might not make large or long parts very well, and you might have to do more handwork

### OHV WALL-4

This is one of three wall-4s that Dwight Giles and myself are building. You will notice they are OHV heads and we will have Mike Neal hall effect system, walbro carb with elect fuel pump, super hot camshaft and all the good stuff inside the engines. Should have a first pop in a couple days on the first one. The other two will follow not to long after.

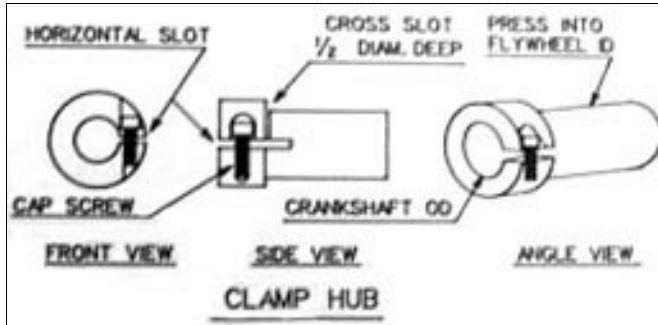
Ken Hurst February 4, 2004



## BOB SHORES TOPICS

The split type hub clamp eliminates damage to the crankshaft and the use of keyways, keys, setscrews, pins, hammers, wheel pullers and cuss words. It's easy to make and when you press it in, fill the cross slot with a shim to prevent bending the hub.

Happy Trails, Bob Shores



### Bob Shores Minimix carburetor

The Minimix is a self compensating, rotary drum, throttle type carburetor, specifically designed for single or multiple cylinder engines with a 5/8" bore.

The Minimix is the result of designing and building 14 carburetors, each one an improvement over the last. Some features are:

1. Appropriately sized for small engines so as to not overwhelm the engine.
2. Only 5 parts, including the throttle lever.
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4. Simplified machining procedure.
5. Easily machined with a flange or screw type engine connection.
6. Machined from aluminum, brass or stainless steel.

A free, 11 X 17" construction drawing is available from :

Bob Shores  
108 Carmelina St  
Ruskin, FL 33570  
bobshores@msn.com

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