

The New Terry Burtz Model A Engine

In my last months report I said that one of the subjects I would be writing about was the "new" Terry Burtz Model A engine. Terry has been working on this project for more than 15 years and now is finally able to offer his new engine kits for sale.

The idea was to offer an engine that had the outward appearance of an original engine but was more robust and offered features found in a more modern engine. At one point, Terry almost gave up on the project because he could not find a foundry here in the U.S. that could produce a quality casting in the numbers he was able to commit to.

It is sad, but so much of this kind of industry is no longer available in our country. Terry finally found a company in China that manufactures engines who would take on his project. I would liked to have seen these components made right here in the U.S. but that was simply not possible. So, at this time, if we are going to have new engine components for our Model A's, we have to accept the fact, they will be coming from China.

The engine is designed with a fully counterbalanced 5 main bearing crank, insert bearings, full pressure oiling, improved intake porting, hardened exhaust valve seats and a modern rear main bearing seal. The exterior dimensions of the block are exactly the same as the original engine. All original components such as the head, pan, the front and side covers, pistons, cam, lifters and valves all fit the new block without modification. The only components specific to the Burtz engine are the block, crankshaft and connecting rods. Terry cleverly designed the engine so an

external full flow oil filter could be easily added with some very minor modifications to the block. Also available is a new light weight flywheel that is machined to accept a Ford V-8 clutch assembly.

The initial limited run of the new Burtz engine was completed about a year ago but there were a lot more customers than engine kits available. To my knowledge, none found their way to any members of the Model A clubs in our area. The second production run was completed last fall but shipping was delayed because of the back log of ships waiting to off load in our local ports. To expedite deliveries, Terry elected to ship the engine kits to the east coast for distribution from a warehouse in Kentucky. The orders for the west coast were then sent by truck to a distribution center in Hawthorne, California, where the kits could either be picked up in person or they would be forwarded on to the customer.

On Saturday, December 18th, Chuck Davies showed up at my shop with 2 of the new Burtz Model A engine kits and 2 new Burtz light weight flywheels.

Upon initial inspection, it looks like Terry has provided a high quality, well thought out product. The casting is generally smooth with minimal flashing or extra material where the mold sections come together. While all the machining is completed, in order to keep the costs down, de-burring



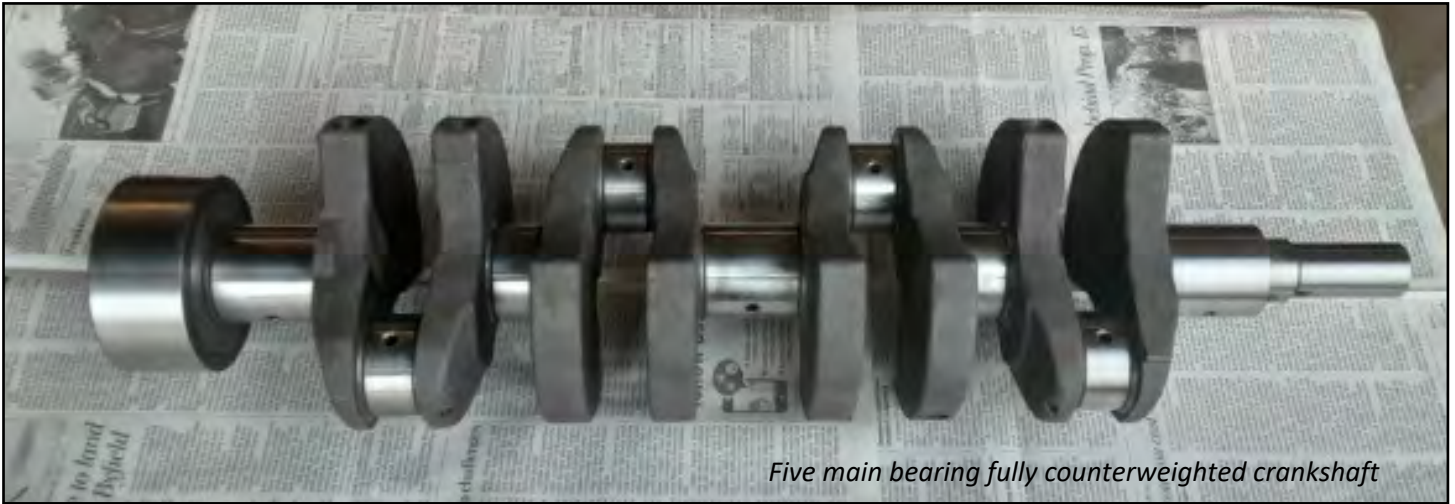
The Burtz engine kit arrives in 3 boxes: block, crankshaft and connecting rods



Block with main bearing caps and hardware

and smoothing of the casting must be performed by the purchaser. The main caps are in place and the cam bearings are installed. The crank is finished ground and appears to have been done very well. The connecting rods are fully finished with pin bushings installed and finish honed. The optional flywheel was finished machined and balanced, ready for the ring gear to be installed.

The first block was placed on an engine stand and all the critical dimensions were checked and found to be well within specifications. The only thing that I was not completely happy with was the valve seats.



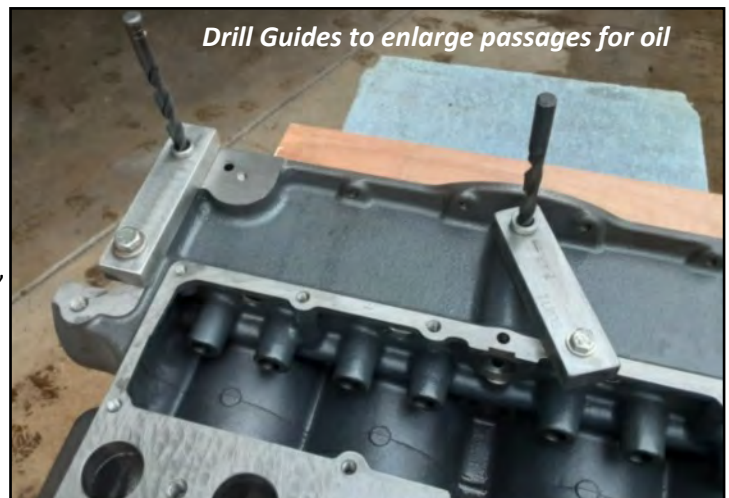
Five main bearing fully counterweighted crankshaft

The finish on some were rough and all the seats appeared to have been machined slightly off center resulting in the width of the seat not being consistent. It was decided to have the seats re-ground to insure proper sealing and heat transfer.

All five cam bearings were installed but for those using a three bearing cam, only the end and center bearing shells were drilled for oil. This engine would be using a new five bearing cam. So, using the instructions provided with the engine, the #2 and #4 bearing shells were drilled for oil pressure. This required making a tool to guide the extra long drill bit that was necessary for this operation.

Chuck also wanted to use an external full flow oil filter which required enlarging two holes in the block. Additional tooling was necessary to accurately perform these modifications. The Burtz "New Engine Builders Guide" includes detailed instructions for this operation. The rest of the preparation included deburring the block and generally going over the exterior to smooth out rough areas and removing excess flashing. The only modification performed that was not covered in the instructions was to drill a small hole from the bottom of the outside of the rear cam bearing down at an angle thru the back wall of the block. This hole will allow any oil that may collect behind the cam to drain back into the crankcase and not become pressurized which

could result in a leak between the back of the block and the flywheel housing. After the valve guides were installed, the block was sent to the automotive machine shop to have the valve seats re-ground. While the block was away, the crank and rods were inspected and the dimensions were verified. Again, all dimensions were well within specifications including the fit of the piston pins.



Drill Guides to enlarge passages for oil



Heavy duty connecting rods

As I get into this project, I am starting to appreciate more and more all the thought and planning Terry has put into his "new" engine. It is a real treat to work on a Model A engine that is not all worn out and has to have major work to try to save a 90 year old block casting that has suffered from lack of maintenance and poor workmanship. The availability of good quality improved components for the Model A engine will be a great benefit to our hobby for many years to come.



Special tooling to drill cam bearing shells

Stay tuned next month for a report on the assembly process. Hopefully by then, the engine will be finished and ready for the test stand.