

MODIFYING THE MODEL T ENGINE

or

Why Do We Play With This Junk Anyway?

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This is a project that I have been working on for about five years at this time. I bought two books, *Speed and Sport* and *Fast Ford Handbook* and I became fascinated with the things that were done to these cars in the Model T era. Also, at this time my first T engine was giving me trouble and I felt that I could build a better T. I learned after a while that if you built your T as good as Henry built them, that they were a pretty good automobile, but at the time I hadn't learned that yet.

So I took a 1923 block that I had and 1928 Model A cranks and rods and built an engine. You have to bore out the main saddles in the block so that you are just to the bolt holes. I made new main caps from blocks of 1½"-thick plate. The main bearings were the easy part of this job. I also dowel-pinned the main caps with 3/16 pins driven into holes on each side of the caps. This is to insure that the bearings go back together in the exact same position everytime and to prevent the caps from moving around when you are running the engine hard. All modern engines utilize this feature by some method or another.

At this time I threaded the main bearing holes that were in the block and ran steel tubing along the inside of the block for pressure oiling. I babbitted the mains using Model T molds, but I line-bored the block with no shims and I cut circumferential oil grooves to line up with the oil holes.

To install an A crank in a T you have to machine down the front of the crank to fit the T gear and shorten the front bearing a little bit. You also have a problem with the keyway in the Model A shaft in the packing area. I have seen this solved by welding up the keyway and then re-machining the shaft. I machined down the shaft and put a sleeve over the keyway area, and then machined a new keyway in the end for a V-belt pulley. I am going to use this V-belt pulley to drive the scavenge pump to dry sump the transmission. The other problem you have is that the A flywheel flange is about 1/2 further back than the T. I have seen this solved by drilling new holes in the crankcase and moving the block 1/2 ahead. You also have to move the front packing holder ahead in the pan, and make a 1/2 spacer for the back of the block so that the transmission cover will seal. I chose to move the flywheel flange ahead the required 1/2 by machining it off, moving it ahead, and re-machining it. I then drilled the crank for pressure oiling. I drilled using a seven-inch-long 3/16 drill bit from the front main to the No. 1 rod; from the center main to No. 2 and 3 rods; and from the rear main to the No. 4 rod. I also drilled a hole in the flywheel flange to intersect this hole to oil the transmission. I drilled a 3/16 hole down the transmission shaft, with two 3/16

holes at the main transmission bushings. Also at this time I machined the crankshaft to accept bolt-on counterweights which I calculated to balance the weight of the opposing crank pin and half the connecting rod weight.

Both Model T and Model A engines have a problem with the center main bearings failing when driven fast. This is caused by the flexing of the crankshaft from the unbalanced loads on each side of it. Counterbalancing helps this problem by equalizing the centrifugal loads on each side of the bearing. An added feature is the additional distributed flywheel effect to help the torsional flexing problems which break crankshafts. Even in modern high performance engines, the loads on the center main bearings present problems - leading to the use of four-bolt main caps or crossbolting as used on the Ford 427.

After finishing the machining operations on the crank, I then had it ground and dynamically balanced. When I babbitted the Model A rods I cut off the oil dippers and plugged the holes. I had them bored out without shims, and a circumferential oil groove cut out to line up with the oil holes in the crank.

The Model A engine had a longer stroke than the T, and corresponding with this, a higher deck height (greater distance from the crank to the top of the block). By using A rods, neither T nor A pistons will fit. I contacted Jahns Pistons and they were familiar with the problem and had a special piston available. These have a wrist pin located much higher in the piston (in fact behind the oil ring). With a .060 overbore and the A crank, my engine is now about 190 cubic inches (with the stock T at about 174 cu. in., and an A at about 200 cu. in.).

The next problem was the oil pump. I used a Melling high volume Volkswagen pump which I have mounted on the back of the camshaft. This requires removal of the magneto coil and magnets and a little machining of the flywheel for clearance. I fabricated an oil sump to fit where the dip tray went. I used a '50 Ford oil pickup screen and routed the oil suction line outside and back into the flywheel housing to the pump. From the pump, the oil comes back outside for full-flow oil filtering (a remotely mounted Fram PH8) and a relief valve set at 45 psi, and then back into the engine to the oil distribution tubing installed to the main bearings.

I am considering pressure oiling the cam bearings through the cam bearing plug holes in the block as I am now using a Model A camshaft ground to 3/4-race specifications. (Note: If someone wants an A camshaft reground to this, I have the master and can have it done.)

For valves, I am using 49-54 Ford flathead ones as they are slightly bigger, have larger stems and are slightly shorter (than T valves). Using the A cam and T adjustable lifters, and flathead V-8 springs and retainers, everything seems to fit just fine. The T springs fit fine on

the V-8 retainers but are too light for any sort of higher performance use.

The stock T and A intake ports severely restrict the potential from flathead T or A blocks. By 1932 Ford had realized this and the flathead V-8 has separate intake ports, and by 1934 even the intake manifold was a very well designed piece. I therefore machined the intake ports as far as possible to a rectangular shape and then split each port and fabricated a four-runner intake manifold to a single side-draft Carter YH carburetor (used originally on a Corvair Turbo).

For ignition I have a 1925 Chevrolet Remy generator with a distributor on it which, when the T generator gear is installed, fits just fine. I don't know if this generator fits in its original form because the one I acquired had already been converted many years ago.

I am now attempting to finish assembling this engine and hope to have it running in a chassis this summer. To write about all the mistakes I have made along the way would require another article twice this long. This is how I have done it so far and I am not suggesting that it is the only, or the best way.

NOTE: I mentioned that I was going to dry sump the transmission. A tremendous amount of power is wasted in the T engine by the flywheel plowing through the oil, especially at higher speeds. In addition, the lubricating effect to the transmission is somewhat marginal as evidenced by the wear on most T transmissions. By pressure oiling the center of the transmission, it shouldn't be any worse, and I will get rid of a lot of drag.

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3. 'Catalina Caper I. 16mm, color, silent, 30 mins. 1968 National Tour on Catalina Island, featuring bathing beauties and Model T Fords.
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6. 'Busy Bodies. Laurel and Hardy, 16mm, black and white, sound, 20 mins. See the first Model T with a "stereo system" and a Model T sawn in half.
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8. 'Hog Wild. Laurel and Hardy, 16mm, black and white, sound. Using a T touring for a ladder base results in the usual hi-jinks with the T being brushed between two trolleys.
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