

# TINKERIN TIPS

Tinkerin Tips is a new, regular column of hints and tips for the restorer. The newcomer to the hobby will find much of importance; the oldtimer may yet have a bit to learn. The column can only be continued if YOU will help to write it. Address all material to Tinkerin Tips., Box 711, Tarzana, California 91356.

TED ASCHMAN, JR.

Now that King Winter has cast his gloom over most of the United States, T-ing in all but a few isolated spots, has come to a flaming halt. Some have their pride and joy nestled snugly in wraps and covers out in the back shed, while others have given a little thought to a winter of engine rebuilding, fender fixing and a general restoring after a summer's hard use.

Recent issues of *The Vintage Ford* have given promise of a very fruitful season to come this summer, with two National Regional Tours. This has caused one Chapter, at least, to engage in a mass engine rebuilding program. To quote in part from a 1925 issue of the *Ford Dealer and Owner*: "Happy is the driver whose Ford is free from vibration, etc. etc.

"Vibration Free - those are nice words to a T-owner's ears, but like making a "silk purse out of a sow's ear, eliminating the many noises and peculiar vibrations that emit from beneath the "bonnet can be quite an undertaking. Basically, there are two ways to overcome or reduce vibrations. One is the use of lighter parts and the other is to balance the entire engine.

Most T-owners, during their initial restoration went to lightweight or aluminum pistons, and many with older Ts switched over to the lightweight connecting rods that Ford started using during the early twenties. These rods, according to legend, were supposed to weigh between a pound and a quarter to a pound and a half, but little thought was given to installing a so-called "matched set. Some have in recent years had the complete engine, including the transmission, balanced by a shop specializing in this work, and the results have been worth the forty to fifty dollars cost,

But for this dissertation, let us content ourselves with just the connecting rods, as a lot can be accomplished in this department. The length of the T rod from the center of the big end to the center of the little end is exactly seven inches, no more and no less. Any variation in length

between the rods will alter the position of the piston in the cylinder and consequently affect the compression between the cylinders. You can now begin to see the reason for a "matched set.

Presently, one supplier is offering newly manufactured, forged rods which are being made by a firm engaged in making connecting rods since 1906. A set of four of these rods was examined and dimensionally all four rods were identical. Upon being weighed, all four rods were within six grams of having the same weight. Since there are around twenty-four grams to the ounce, the quarter-ounce difference could almost be tolerated.

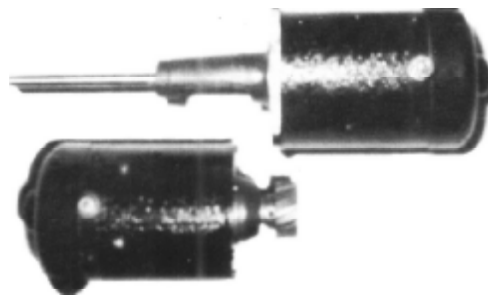
Now, to achieve good balance of the rods, it is not enough just to shave or grind a little bit off here and a little bit off there to make the rods weigh the same. With connecting rods, we experience two forces. All rods, so to speak, have a "dual motion. The big end describes a circular path and merrily (?) runs its life out in this manner. The small, or pin end moves up and down with a reciprocating motion. Remember, too, that twice during each revolution of the crankshaft the small end of the rod and the attached piston come to a complete stop and start. It is hoped that each piston and rod offsets the force of its neighbor and eliminates part of the strain of inertia placed upon this vital part. This "dual action of the

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connecting rods plays a very vital part in accurately balancing an engine. Rotating mass, or weight, must be balanced by rotating mass. Likewise, reciprocating mass by a reciprocating mass.

The "do-it-yourself-er", with just a minimum of equipment can quite accurately balance his own rods. All he needs is a small spring balance or a postage scale. It is important to remember that all weighing must be done with the rod in a horizontal position. When weighing the big end, the small end should be supported by a string or a nail. All four rods must be weighed in this manner to determine which of the four is the lightest. If the rotating weight of the rods is not the same, excess weight can be removed from the lower end of the heavier rods with a grinder or a file.

After all four big ends weigh within the accepted tolerance, the small ends are weighed in precisely the same manner. Use extreme care in removing surplus metal so as to not weaken the rod structurally.

With the rotating weight and the reciprocating weight in balance on all four rods, the next step is to weigh rods. For the average "tourer", each

rod should weigh within a half ounce of its neighbor. For the sake of clarity, rods one and two can be considered a pair; three and four likewise. Do remember that if you equip your rods with oil dippers, by all means have them attached when you balance the big ends. If you have to remove any excess weight, a sneaky way to do it is to enlarge the oil hole in the rod cap.

With lightweight rods, additional lightening by drilling holes in the web was a practice used by the hot-rodders of the twenties. This has a tendency to weaken the rods as it causes non-uniform stresses. A better solution, if further lightening is desired, is to machine portions of the web, equally from both sides, leaving a minimum thickness of at least 3/64.

One thing should be remembered; Henry built the Model T to cruise all day, up hill and down at around 25mph (1,000 rpm). Most of us now breeze down the turnpike at nearly twice that speed. Lightweight pistons and balanced rods will help us a lot but don't forget - the strain (or pressure) on the big end of the rod (and crankshaft) increases as the square of the speed. So watch it, Barney!

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