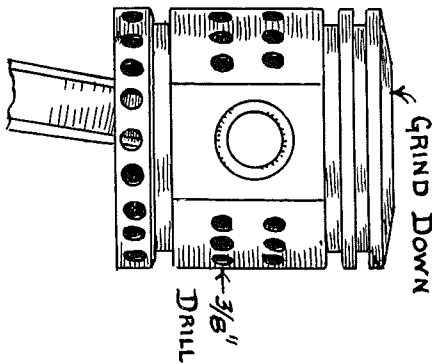


around off the big ends, until they are approximately equal.

After checking up the rotating weights, one can take the total weights of the rods and the difference will be the reciprocating weights. If the total weights are not the same, after the rotating weights have been made equal; then it will be necessary to remove some metal from the wrist pin ends of the rods. For really high speed work, the weights of the connecting rods should be made equal to within an eighth of an ounce.

#### Lightening Ford Pistons

In the spring of 1920, the Ford Motor company began to supply a new type of piston that is about nine ounces lighter than the old pistons previously used. These new pistons reduce vibration and give a smoother running engine.



#### Lightens Ford Pistons

An engine should not be assembled with both styles of pistons in it, as the difference in the weight will throw the engine very badly out of balance. It is, however, permissible, and usually even advisable, to replace the four old pistons with four of the new light weight type.

In one Ford sedan with 4.2-to-1 gears in the rear axle, the car would not attain more than 38 miles an hour with the old style pistons. With the new type of light weight pistons and connecting rods, the same car would attain speeds of 43 miles an hour, thus showing a five-mile an hour gain in speed, due to lighter moving parts.

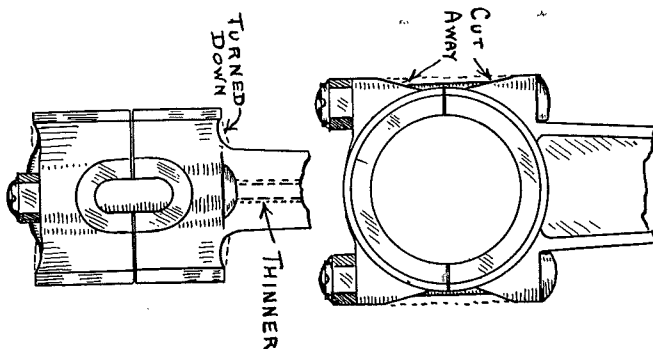
The new type Ford pistons have no reinforcement on the busted bosses or around the skirt. Because of their exceptionally light construction, it is difficult to achieve much in the way of lightening the regular Ford pistons, though it is possible to drill a series of 1/8 inch to 3/8 inch holes around the piston skirt, keeping these holes far enough away from the piston pin openings to avoid weakening the piston at these points.

The heads of the pistons can be filed or ground thinner, taking care not to thin the corner where the walls join the head, as this is the point at which the pistons are apt to crack. The skirt can be turned out, below the piston pin bosses on the inside.

The piston pins can be made with larger holes at the ends, leaving them of normal strength at the center, where the strain comes.

#### Buy Lighter Pistons

It is difficult to lighten the Ford pistons to any considerable extent without weakening them, or so reducing the bearing area of the pistons on the cylinder walls that the pistons will tend to wear out very rapidly in actual service.



To our way of thinking, when one really wants light pistons, the better way is to purchase them, buying pistons of special design light-weight iron or semi-steel, or one of the alloys such as Dymalloy or some aluminum alloy of special design to take care of the expansion.

Some of the light-weight iron or semi-steel pistons are very accurately made, and should give long wear, with less wear of cylinder walls than the regular Ford pistons. The lighter weight means less pressure against the cylinder walls. And when the pistons are specially designed for lightness, then a

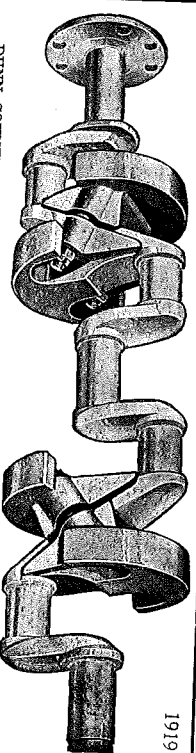
considerable decrease in weight from that of the Ford pistons can be obtained, the necessary strength being secured by deep webs and other features of design.

For those who do not mind the cost, Dymalloy or other alloy metals often give splendid results—such metals being very light indeed, and allowing the utmost in speed to be achieved.

#### Variations in Piston Weight

Finished Ford pistons may vary in weight a maximum of from four to six ounces. Consequently, it has been Ford factory procedure to weigh and mark each piston on the head with a heavy center punch. (Used without a hammer) with one, two, three or four center marks dividing the pistons into four weight classifications, with a maximum weight variation in each class of 1/4 ounce.

After inspection, each piston is placed on one of four shelves, according to the center marks on the piston head. Then the pistons are aired for weight on opposite crank throws by the engine assemblers.



1919

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This equalization of piston weights at the Ford factory may be one of the inappreciable reasons why Ford engines often run better than they come from the factory than they do after any subsequent overhaul at a less skilled mechanic or repair shop. And so many well-known mechanics now make a practice of weighing Ford pistons and picking out four pistons of as nearly the same weight as possible for each engine overhaul job.

On other-than-Ford cars, pistons are often balanced to weigh within 1/8-ounce of each other for the entire set. Why be contented with less careful balancing on the good-as-any Ford?

It takes but a few seconds to weigh up the individual pistons on parcel post scales, and then the weights can be marked with chalk or crayon on each individual piston. Where pistons do not quite match up in weight, they can be most easily equalized by filing some metal from the top of the piston head, by drilling holes through the skirt, or removing some metal from the bottom of the skirt of the piston.

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At first, we mistake to put these which is the "point o to the pressure of the piston towards the crank pin. Second thought, however, reminds us that a crank connecting rod does not have a "one-direction" load at all, but that the load shifts around to every point of the compass. And that, when the piston and connecting rod are being pulled down on the suction stroke of the engine and the crank pin and the top half of the connecting rod bearing tend to separate, then the oil can flow in very nicely.

... of a Ford connect-  
... of 8 ounces or 1/2 pound. In other words, the Ford connecting rod weighs 80 per cent more than the aluminum alloy rod.

Then Triple-Lite connecting rods are designed to have ample strength with lightweight grey-iron pistons as well as with aluminum alloy pistons. They are not designed for use with the regular heavy Ford pistons, as it would be foolish to use light connecting rods, without using light pistons also.

## Lightens Ford Connecting Rod

One of our reader friends, Mr. W. M. Todd sent us a regular Ford connecting rod, which we believe will be of interest to Ford car owners and garage men generally.

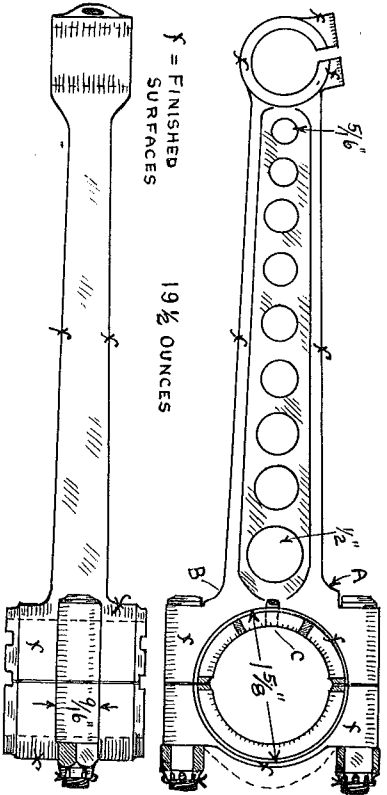
This is a genuine Ford connecting rod, but has been "lightened" down to 19 1/2 ounces net weight, with bolts as shown in the drawing. Mr. Todd believes these rods to be practically as strong as some of the regular weight rods, and states that he has never known any of these lightened rods to fail.

If these lightened rods are used with pistons that are one pound lighter than the Ford standard pistons, then there will be a considerable

However, one must be careful in reducing the weight of the connecting rods for speedster use; for, if the engine speed is greatly increased by the use of a 16-valve cylinder head, or by fitting of the light-weight pistons, then it is possible that the connecting rods may need all the strength they originally possess.

As Mr. Todd is installing these rods in a speedster, with high-tension magnets, 1 1/4 inch carburetor, and 16-valve cylinder head, this should prove a thorough test of the ability of the rods to endure maximum strains without failure, or getting sprung.

It will be noticed that Mr. Todd has drilled



reduction in the reciprocating weights. The weight of the connecting rods is partially a reciprocating, and partially a revolving weight.

the web with a series of holes of gradually decreasing diameter, thus decreasing the