MODEL T ENGINE PERFORMANCE

By MILT WEBB and CARL AMUNDSON
Elk Grove, California

A few months ago Milt started a well-planned restoration project for his Model T and asked Carl if he had heard of any performance or smog emission ratings on old-time cars. Carl looked at Milt rather puzzled and said, "not that I know of....what do you have in mind?

We decided to conduct a horsepower and emissions test on our Model T s just to see what the differences were. Milt did some further research and discovered that the *Model T Ford Service Bulletin Essentials* included data on "motor horsepower.

Carl s car is a fully restored 1915 touring Model T, equipped with a Ruckstell axle. The engine was completely rebuilt with stock parts, including balancing. Milt s car is a partially restored 1925 T coupe. The front. end, steering and rear axle systems have been reconditioned. The engine has only had the rod bearings tightened and the carburetion and ignition system restored. The engine has excess blowby fumes coming from the crankcase openings and it bums and leaks lots of oil.

Carl adjusted the carburetor at a road load cruise condition to provide smooth running. The horsepower tests were then conducted by running the car at wide open throttle (WOT) and simultaneously loading the dyno to maintain the desired test speed (20 to 40 mph). after reaching stabilized readings at a particular speed,

Having access to a chassis dynamometer and infrared analyzers to measure exhaust emissions, we decided to conduct some performance tests on our Model T s. Of course, Carl bet Milt that the old buggies were polluting less than today s automobiles!

When Milt drove the 1915 T up on the dyno rollers, Carl had a few anxious moments - just visualize those wooden spokes flying in every direction about. the time your old car gets up to the high speeds of 20, 30 and 40 mph. Will it hold together? The engine noise during the dyno test also caused Carl to have more anxious moments.

Carl recorded the horsepower, hydrocarbons and carbon monoxide. The load was then changed to allow the car to accelerate to the next higher speed at WOT. Carl had a sigh of relief as Milt started to unload the dyno and allow the car to cool at 40 miles per hour. The speed

TABLE 1
Model T Ford Performance

TEST CAR	SPEED MPH	HORSEPOWER at REAR WHEELS	CARBON MONOXIDE %	HYDROCARBONS (n-hexane) PPM
Carl's car				
1915 T	25	11	2.4	200
	30	13	2.2	180
	35	12	2.2	160
	40	10	2.6	140
	Idle	0	3.0	2000 +[1]
Milt's car				
1925 T	20	6	0.5	220
	25	8	0.5	220
	30	8	1.0	500 [2]
	35	9	1.2	180
	40	6	2.0	180

NOTES
1 Continuous misfire; spark plug shorted.
2 Intermittent ignition misfire.

was then dropped to zero and much to Carl s surprise the wheels were still in one piece. It worked! The same tests were then conducted on Milt s car.

Table 1 presents the smog emission and performance data. To our surprises, emission levels were not as high as we thought they might be (Carl won the bet that the concentration emission would not be any higher than some of the later model cars without emission control devices).

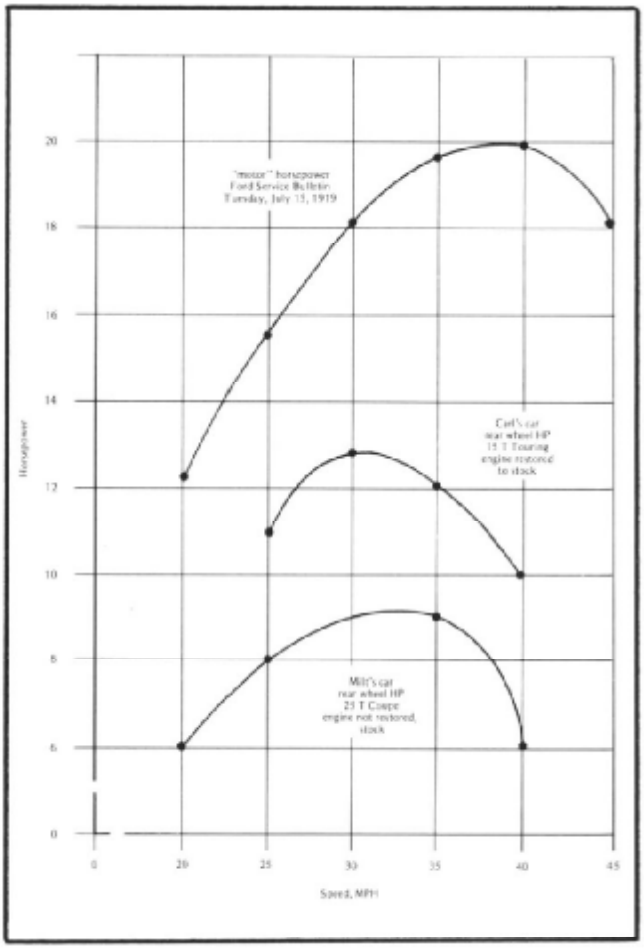
At WOT, Carl s car, equipped with a Zenith carburetor, shows a slight decrease in carbon monoxide (leaning) and then a slight increase in CO (richening) as the speed increases. Milt s car, equipped with a Ford NH carburetor, showed CO increasing (richening) as speed increases. Also, note that Milt s car had 500 PPM hydrocarbon at 30 mph. This was due to an intermittent ignition misfire. On Carl s car an induced continuous misfire (shorting spark plug) caused very high HC emissions of over 2000 PPM. The same thing happens on any late model car with misfiring spark plugs. So, gentlemen, keep those T s tuned properly.

Figure 1 is a plot of the measured horsepower compared to a plot of the "motor horsepower data. At WOT, Carl s car has a whopping maximum rear wheel horsepower of 13 at 30 miles per hour! Assuming that "motor horsepower is the horsepower measured at the flywheel, Carl s car could have as much as 7 horsepower loss between the engine and rear wheels. Also, peak horsepower occurs at a lower speed than the Ford "motor data. This is caused by friction in the transmission and driveline and some tire slippage between the rear wheels and the dynamometer rolls.

Milt s car shows a very tired 9 horsepower at 35 mph. This indicates the old engine is just plain wore out and could use some new rings and valves. Compression pressures are only 45 to 50 PSI with the engine warm. Any of you buffs know what a new T engine compression reading should be?

Anyone with the opportunity to have this test will find it is a great way to establish confidence in your own T after an overhaul. It is well worth the time and effort spent. If any of you T buffs or clubs are interested in some tests, please write to us through the magazine. This just might make an interesting tour. It would be our pleasure to conduct these tests for you.

FIGURE 1
HORSEPOWER AT WIDE OPEN THROTTLE
Temperature = 55° F; Pressure = 30.28" Hg
January 23, 1977



BACK ISSUES AVAILABLE

A group of older back issues have been made available by members who have lost interest and desire to "sell out and have asked for our help. Most of these are in near-mint condition.

Vol. 1, Nos. 4 and 5; $10 each.
Vol. 2, Nos. 4 and 5; $5 each.
Vol. 3, No. 4; $5.
Vol. 4, No. 5; $5.
Vol. 5, Nos. 1, 5 and 6; $5 each.
Vol. 6, Nos. 2, 4 and 5; $5 each.
Vol. 7, Nos. 2, 4 and 5; $5 each.
Vol. 8, Nos. 1 and 6; $5 each.
Vol. 9, Nos. 1, 3, 4 and 5; $2 each.
Vol. 10, 11 and 12, all issues, $2 each.

Stocks of some of these issues are very limited and all will be sold on a first come, first served basis. All prices include second class postage; issues will be mailed in our regular bulk mailings. If faster service is desired, add the necessary postage. (Each issue weighs an average of eight ounces; this amounts to 32¢ by second class mail, 90¢ by first class mail. Several issues could be shipped parcel post or United Parcel.)

Make checks payable to the MTFCA; refunds will be promptly made if any issue should be out of stock. You may phone (213) 842-2010 for a stock check if you like (but not "collect please!).

Order from The Model T Ford Club of America, Box 7400. Burbank, CA 91510.