# ROAD and TRACK

**HOW TO INSTALL A WILLYS ENGINE IN AN MG**

OCTOBER, 1953

35 CENTS

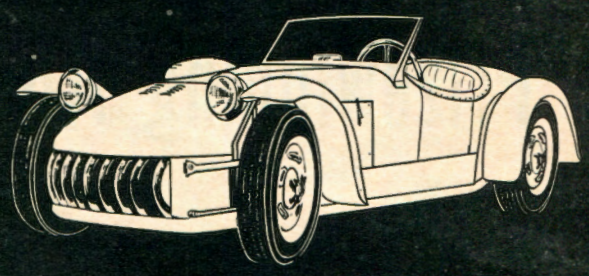
**oad Tests: Kurtis-Hornet • Two Ford Zephyrs**

# ROAD and TRACK ROAD TEST No. A-4-53

## Kurtis-Hornet Roadster

### SPECIFICATIONS

| | |
|---|---|
| Wheelbase | 100 in. |
| Tread, front | 58 in. |
| rear | 56 in. |
| Tire size | 6.00 x 16 |
| Curb weight | 2265 lbs. |
| weight on rear | 53% |
| Test weight | 2560 lbs. |
| Engine | line 6 |
| Valve system | L-head |
| Bore and stroke | 3.81 x 4.50 |
| Displacement | 308 cu. in. (5049 cc) |
| Compression ratio | 7.7 |
| Horsepower at 4000 | 160 |
| Torque at 1800 | 257 ft./lbs. |
| Gear ratios (overall) | |
| overdrive | 2.86 |
| direct | 4.09 |
| 2nd od | 5.21 |
| 2nd | 7.44 |
| 1st | 11.8 |
| Mph/1000 rpm | 28.5 |
| Mph at 2500 fpm piston speed | 117 |
| Seating capacity | 2 |
| Price (no eng. or trans.) | $4986 |



### PERFORMANCE

| | |
|---|---|
| Top speed (avg.) | 101.1 |
| fastest one way | 102.8 |
| Max. speed in gears | |
| direct | 93.4 |
| 2nd od | 78 |
| 2nd | 55 |
| 1st | 35 |
| Shift points from— | |
| direct | 90 |
| 2nd | 50 |
| 1st | 31 |

### ACCELERATION

| | |
|---|---|
| 0-30 mph | 2.0 secs. |
| 0-40 mph | 3.8 secs. |
| 0-50 mph | 6.0 secs. |
| 0-60 mph | 7.7 secs. |
| 0-70 mph | 10.3 secs. |
| 0-80 mph | 14.1 secs. |
| 0-90 mph | 22.5 secs. |
| Standing ¼ mile | |
| average | 16.3 secs. |
| best | 16.0 secs. |
| Mileage | 11/19 mpg |

### TAPLEY READINGS

| Pulling Power | Gear | mph |
|---|---|---|
| Off scale | 1st | — |
| Off scale | 2nd | — |
| 545 lbs/ton | 2nd od | 45 |
| 505 lbs/ton | direct | 48 |
| 350 lbs/ton | od | 50 |

### COASTING

(wind & rolling resistance)

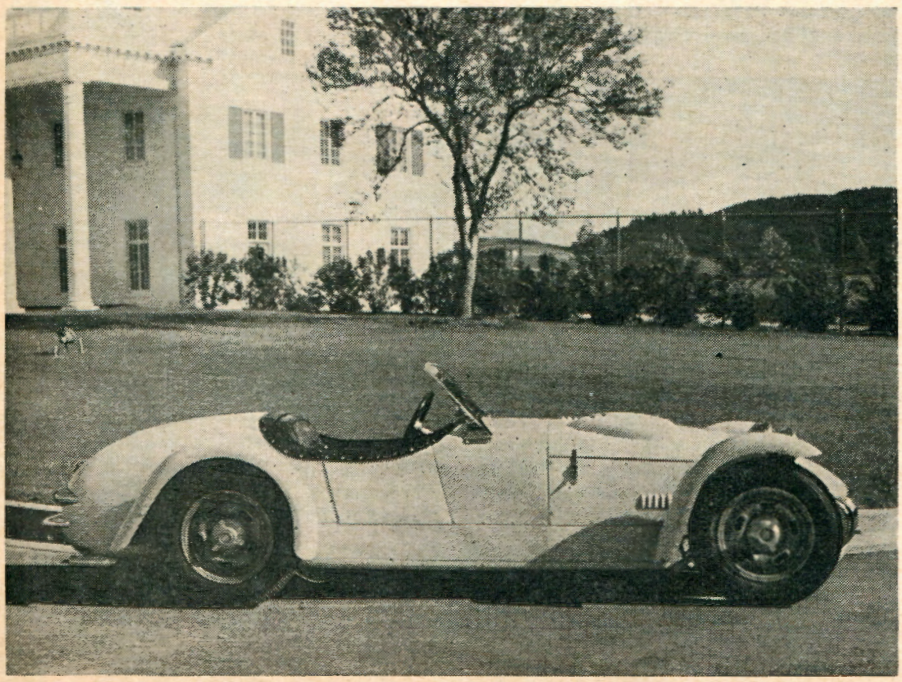
| | | |
|---|---|---|
| 40 lbs/ton | at | 10 mph |
| 70 lbs/ton | at | 30 mph |
| 135 lbs/ton | at | 60 mph |

### SPEEDO ERROR

| Indicated | Actual |
|---|---|
| 10 mph | 10.6 |
| 20 mph | 20.4 |
| 30 mph | 29.5 |
| 40 mph | 39.5 |
| 50 mph | 49.2 |
| 60 mph | 59.2 |
| 70 mph | 69.1 |
| 80 mph | 78.6 |
| 90 mph | 88.2 |

# *A Good Handling Competition Sports Car*

Photographs by Canaan



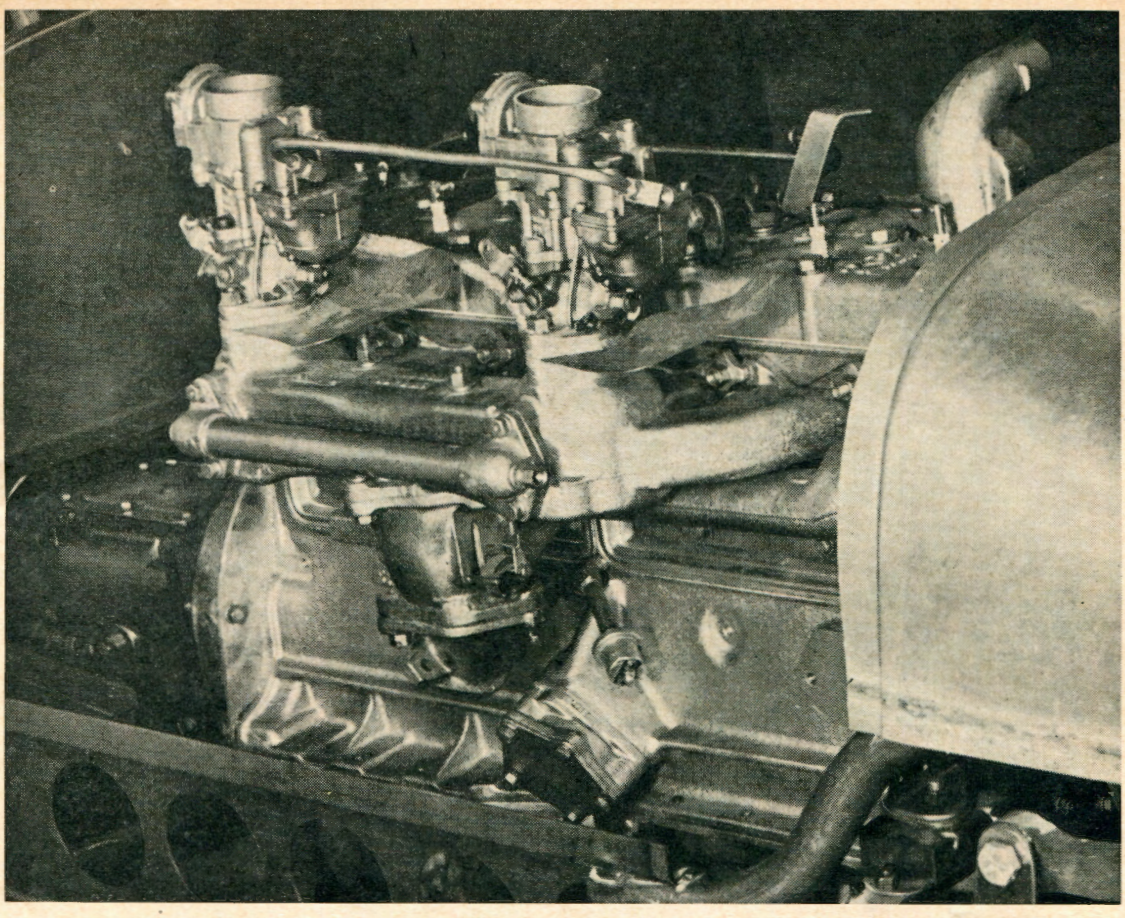
While Cunningham has rightfully achieved considerable praise for his achievements towards producing an American sports car, it is a fact that Frank Kurtis has been the first to actually build and sell "production" American sports cars to the general public.

The first Kurtis competition sports car was fully described in *Road and Track* for April, 1953, and is the car under discussion. This car is powered by a stock Hudson Hornet engine having the optional twin carburetors and a higher compression ratio. Because of the rather heavy stock engine and unfavorable (for competition) gearing, the owner has not entered the car in competition.

Despite the above-mentioned disadvantages of this particular car, we were very favorably impressed with the Kurtis, a fact perhaps enhanced by the tremendous success of the Bill Stroppe Mercury-powered Kurtis in West Coast road racing activity.

**Handling . . .**

Aside from the "boost in the back" acceleration, our first impression of the Kurtis-Hornet was its really uncanny handling qualities. The very trite expression "corners as if on rails" is the only way to describe how this car handles. Having driven just about every sports car we could lay our hands on, this car can only be compared to the best—and it is as good as (if not better than) any. Sometimes a sports car



The huge Hudson Hornet engine fills all the available space in the Kurtis Sports Car.

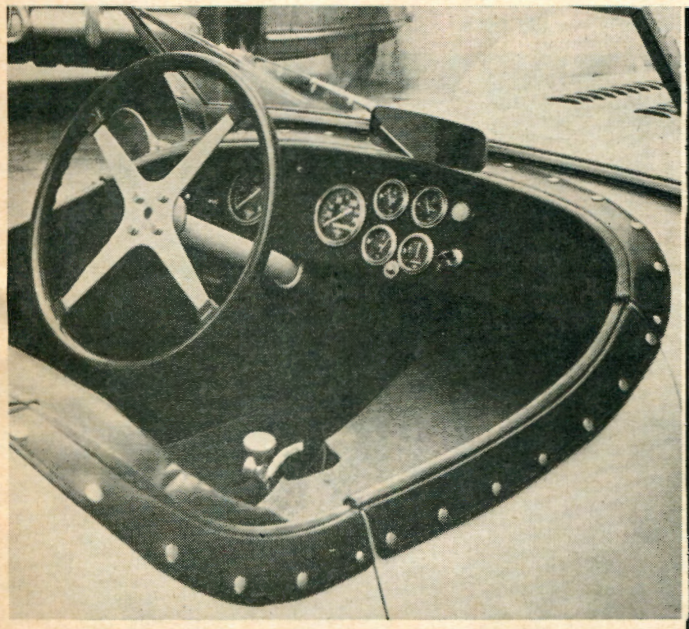
gets high praise for good cornering when actually it corners *easily* because of an oversteering characteristic. That is, the reporter is influenced by the lack of physical effort required to steer around the corner. But the Kurtis neither oversteers nor understeers. It just goes around—easily, fast and flat! If anything breaks loose, it is the rear end first (as it should). A steering ratio which required only 3.2 turns lock to lock was also a pleasure and did not prove tiring.

**Top Speed . . .**

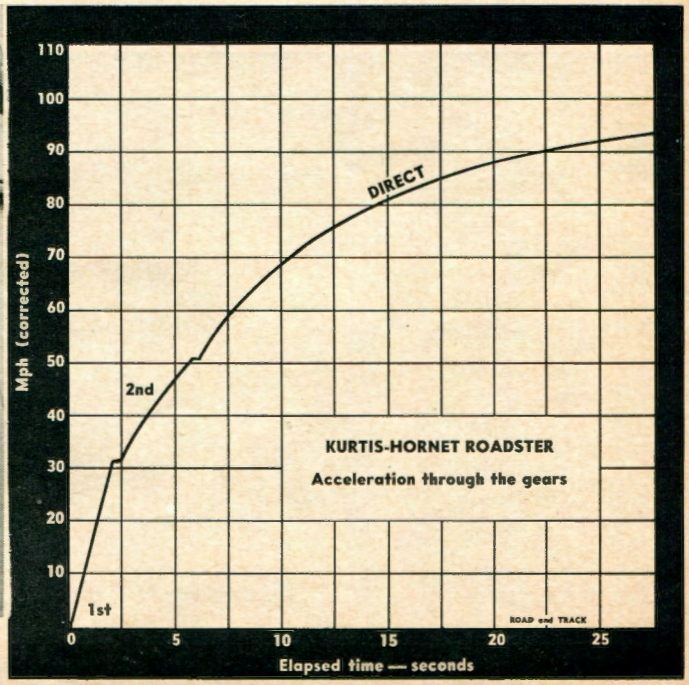
Hudson Hornet owners will wonder a bit about the top speed attained by this car—a little better than a stock sedan. The best run of four gave a top speed of 102.8 mph as shown in our usual data panel. This worried us a great deal as we expected a much higher figure. But a little comparison of Tapley readings for coasting and some slide rule work by the Tech. Ed. quickly proved that the combination of very high wind resistance and unfavorable gear ratios was responsible. As a matter of record the Tapley reading for coasting is one of the highest we've ever found, while the slide rule gives engine rpm as 4650 when clocking 93.3 mph in direct drive, 3600 rpm at 102.8 mph in overdrive. Since both figures are well off the power curve peak, it is certain that the engine could not do its best under the handicap imposed by the choice of gear ratios.

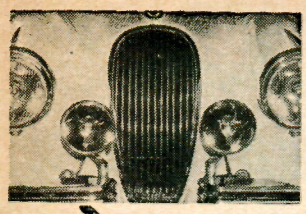
On the other hand, the Kurtis-Mercury, with nearly 200 bhp and with windshield removed, has been timed at 128 mph on a short straight, so an axle ratio of around 3.4 to 1 should add 10 mph to the speed

*(Continued on page 44)*



Positioning of the engine results in a rather obtrusive floor tunnel. Floor shift with overdrive switch is very convenient.





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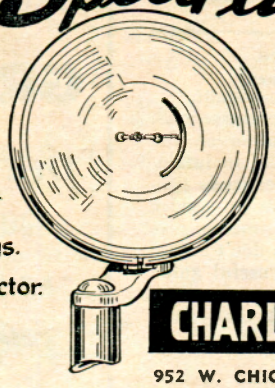

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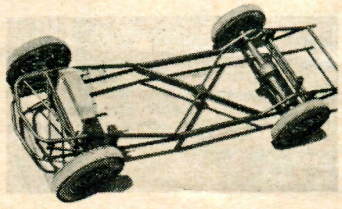

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**KURTIS ROAD TEST . . .**

*(Continued from page 9)*

of the Kurtis-Hornet—even with the stock "Twin H Power" engine. What the Kurtis-Hornet could achieve with a full-race modified engine is further indicated by an official Nascar time (at Daytona) of 122 mph, attained by an Indianapolis type car with a 200 plus bhp Hornet engine. Certainly it was shattering to discover that a light open sports car is little, if any, faster than a big fat sedan.

The neat floor shift mechanism worked admirably, as did the overdrive selector switch on the shift knob. The combination gave a choice of six speeds forward, but after much experimenting we concluded that only the high-overdrive was worth using. However, here is a perfect example of how poorly chosen gear ratios can hurt the performance of an automobile. Aside from the poor choice of final drive ratio already mentioned, a glance at the acceleration graph will show that second gear in particular leaves much to be desired. Notice the shortness of the second speed range—from 31 to 50 mph only, using a rev limit of 4500 rpm in both 1st and 2nd. This effect is caused by the use of a standard Hudson transmission having a low gear ratio of 2.88, with 1.82 to 1 in second. A Cadillac manual transmission with ratios of 2.42 and 1.51 would boost the 4500 rpm shift points to 37 mph in 1st, 60 mph in 2nd. Used in combination with a 3.4 rear axle those speeds would increase still more—to 44.5 and 71.5 mph respectively. While the Hudson ratios may be an excellent combination for a family sedan, they certainly hurt the potential performance of this otherwise excellent sports car.

**Comfort . . .**

There isn't much comfort in a sports car and the Kurtis was no exception. The narrow windshield literally churns the air and gives very little protection. The ride was surprisingly good though this "first" car suffered from occasional bottoming of the rear suspension, a fault that has been corrected in later models.

The seating and steering wheel position proved fortuitious, but the cramped pedal space made traffic driving a difficult task. This lack of space appeared to be due to the proximity of the Hudson clutch housing and later cars we examined had ample pedal room.

**General Comment . . .**

The huge engine would reach 5000 rpm if pressed to the limit, but we used 4500 as a maximum during the acceleration tests. Despite the overdrive, it used quite a bit of premium gasoline for so light a car. The cooling system seemed to be borderline—it ran at 190 to 200° F in traffic and boiled once between acceleration tests.

Luggage space was small, but an external spare tire mount for touring would correct this fault and be simple to arrange.

As we said in the beginning, we were very favorably impressed with the Kurtis. Given a lighter and more powerful engine (such as a DeSoto V-8) and a set of proper gear ratios this new sports car need make no apologies for using American components. With four wins out of five starts, the first Kurtis in active competition has made an impressive showing. This is no Ferrari, but it costs less than half as much, and you don't have to bow low toward Milan to get parts.

Finally, we would like to express our gratitude to the owner—Mr. Charles A. Painter, Laguna Beach, California, for his cooperation in providing the car for this road test. •