

IV. Overall Fuel Consumption

To determine overall fuel consumption, which is the amount of fuel consumed on a fairly long stretch and under normal traffic conditions, it is advisable to select a circuit of approx. 100 km over ordinary roads. Measurements over shorter stretches are useless since traffic conditions, driving habits, and road conditions are bound to have an adverse effect. It goes without saying that the test route must be known to have exactly the required length.

The test route should be covered under normal traffic conditions and at a fairly constant speed, fuel consumption should be measured and the run should be accurately timed.

Overall fuel consumption is determined by means of the equation

$$k_s = \frac{K}{W} \text{ (liters/100 km)}$$

where k_s = overall consumption in liters/100 km

K = fuel consumption in liters

W = test route in km

The average speed is

$$v = 60 \frac{W}{t} \text{ km/h}$$

where v = average speed in km/h

W = test route in km

t = time in minutes required for the test run

In evaluating the measurements, attention should be given to the fact that even on such a long test route, consumption depends to a large extent on traffic conditions and above all on driving habits. For this reason consumption tests should always be made by the same driver, who must be an experienced expert, and the vehicle should always carry two persons or the driver plus 65 kg of weight. After selecting a stretch of accurately known length it is advisable to cover the distance several times in a car in good working order and to measure fuel consumption at different average speeds. These consumption figures can then be used as a basis for measurements carried out with other cars.

At a rough estimate, overall fuel consumption at a given average speed can be assumed to equal partial load consumption at a speed 20—25 km higher.

Example: At a measured average speed of 60 km/h permissible overall fuel consumption can be roughly as much as the partial load consumption at a speed of 80 to 85 km/h (see Fig. 00—4/1). The partial load curve would in this case indicate a permissible overall consumption of 8.1—8.5 liters/100 km.

V. Testers

Various firms manufacturing automobile accessories have brought a number of fuel-mileage testers on the market which are suitable for measuring fuel consumption (partial load consumption). Most of these testers have a capacity of 0.5—1 liter. The tester is connected via a three-way cock to the fuel tank and to the fuel feed pump. With this arrangement it is possible to use fuel from the fuel tank even when the tester is connected so that the car can be driven to the test route with the tester installed.