

## C. Acceleration Test and Maximum Speed Test

### I. Acceleration Test

In practice it is frequently necessary to check the acceleration values of a car. For this purpose the acceleration values can be taken from the acceleration curves below (Fig. 00 — 4/3).

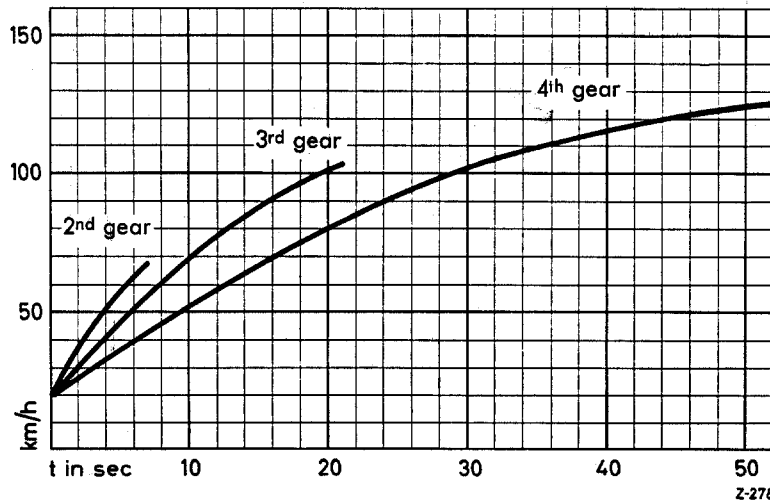


Fig. 00 — 4/3

It is advisable to carry out the acceleration test in 3<sup>rd</sup> gear. The 2<sup>nd</sup> gear is unsuitable because the time available is too short with the result that considerable measuring errors may occur. The 4<sup>th</sup> gear should not be used either because in view of modern traffic density even on freeways the clear stretch required for accurate measurement is hardly available anywhere.

Tests runs should be carried out under the following conditions:

- Use a stop watch to check the time necessary to accelerate the car from 20 km/h to 100 km/h. To do this, open the throttles fully at a speed of approx. 15 km/h and time the car as soon as it reaches an actual speed of 20 km/h. Time it again when the speed has gone up to 100 km/h, thus measuring the acceleration time. The throttles should be fully opened over the whole stretch.
- The speedometer must be calibrated at least for the two measuring speeds of 20 km/h and 100 km/h. **Measurements without a calibrated speedometer are useless.**
- Before measurements are taken, the engine must have reached its operating temperature (water and oil temperature approx. 80° C); transmission and rear axle must have warmed up.
- Test runs should only be made on dry roads.
- Tire pressure should be in accordance with our specifications (front 1.7 atm., rear 1.8 atm. with tires cold).

- f) Before carrying out a test run, it is advisable to check the compression, the ignition timing, the carburetor setting, and the tappet clearance.
- g) The test route must be level without major gradients (maximum 1.5%).
- h) The car must carry two persons.
- i) Make the acceleration test twice in both directions (wind influence) and compute the mean value of these measurements.
- k) The acceleration curves given in Fig. 00 — 4/3 only apply if the vehicle is in good working order. In order to eliminate the effect of unfavorable conditions a tolerance of +5 to +6% is permissible.

## **II. Maximum Speed Test**

In practice the measurement of maximum speed of cars with high terminal speed is almost impossible. Any check carried out under inadequate conditions is bound to produce wrong results. However, to complete this section of tests, we list below the conditions to be observed:

- a) The test route must be exactly 1 km long and must be level (short maximum gradients of 1.5%).
- b) The test route must be covered in opposite directions. There must be no time lag between the two runs. Compute the mean value from the two runs.
- c) Atmospheric pressure may be 745—765 Torr, air temperature 0°—30° C.
- d) The test run must be made on a windless day (maximum wind velocity 2—3).
- e) Engine, transmission, and rear axle must be in run-in condition.
- f) At the beginning of the test run the engine must have reached operating temperature (water and oil temperature approx. 80° C).
- g) The road surface must be dry.
- h) There must be a level approach-stretch of at least 3—4 km which should be covered like the test route with throttles fully opened.
- i) The car must be fully loaded.
- k) Tire pressure must be increased to the values laid down for continuous fast freeway driving (front 1.9 atm., rear 2.0 atm. with tires cold). The tires and their tread must be in good condition.
- l) Window and ventilating system must be closed.