Adjustment of the Wheels

Job No.
40—3

A. General

The correct positioning of the four road wheels of the car relative to each other and to the surface of the road is the decisive factor for good road-holding qualities, satisfactory steering, and normal tire wear. Model 190, like all our other passenger models, has independent front and rear suspension.

The values indicated for the wheel adjustments on Model 190 are the result of extensive tests and represent an optimum with regard to road holding qualities and steering characteristics.

If irregularities occur in the car's steering characteristics, road holding qualities, or tire wear, it must be borne in mind that factors other than wheel adjustment play a part.

The following conditions must be fulfilled:

a) Correct tire pressure

b) Good tread on tires (as evenly worn as possible)

c) Perfectly balanced wheels

d) Springs which are functioning perfectly

e) Shock-absorbers which are functioning perfectly

f) Steering assembly units and wheel bearings with a minimum of play.

Since the position of the moving car relative to the road surface is dependent on road conditions, speed of travel and loading and consequently varies at all times, values for wheel adjustment are given for the cars when normally loaded and also when in curb condition.

Car in Curb Condition = Car in working order, with oil and water + full fuel tank + spare wheel + tool kit, but without passengers and luggage.

Car Normally Loaded = Car in curb condition + 6 × 65 kg load on the seats + 45 kg luggage in the trunk.

The car should be loaded with sandbags. The sandbags should not weigh more than 22 kg as heavier sandbags are awkward to handle.

Distribute the sandbags on the individual seats so that at both the front and the back there is 3 × 65 kg; in doing this, adjust the front seats to the central position (do not put the sandbags on the floor of the car).

Distribute the weight in the trunk compartment evenly (45 kg).

If the fuel tank is not full, additional weights must be put in the trunk to compensate for this (1 liter fuel = 0.750 kg).

Measurements for cars which have been involved in an accident or cars where irregularities in the road-holding qualities or tire wear are observed, should be carried out with the vehicle in both curb condition and loaded condition.

When carrying out routine checks it is generally sufficient to take measurements with the car in curb condition.

The measurement and the evaluation of the measurement requires expert knowledge and experience. For this reason only specially trained mechanics should be permitted to carry out this job.

B. Terminology and Methods of Adjustment

a) Camber

Camber is the term used to designate the angle which the wheel plane forms with a line drawn at right angles to the road surface. If the wheels are inclined outward at the top the camber is said to be positive (+) and if the wheels are inclined inward at the top the camber is said to be negative (—) (Fig. 40 — 3/1).

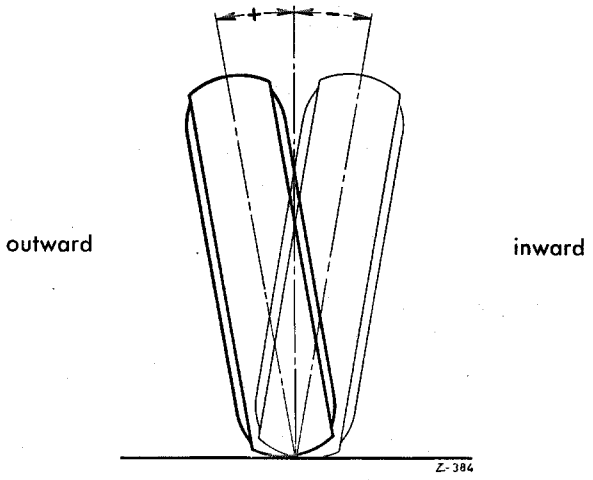

Fig. 40 — 3/1

Front Axle

The front wheels are adjusted to a positive camber. Positive camber together with king pin inclination ensures stable and smooth steering. With the low-pressure tires which are in general use today, the front wheel camber must not be too great, because this causes increased wear at the outside shoulder of the tire. The camber at the left and the right should be as nearly identical as possible. If there is a considerable discrepancy between the left and the right, the car tends to veer to the side at whichever wheel the camber is greatest. Camber is adjusted so that the least possible variation in camber results when the springs are fully depressed, with the car in normally loaded condition.

A camber of ± 0° to + 1° is permissible with the car in normally loaded condition, and a camber of + 0° 20′ to 0° 40′ should be aimed at. The difference between the camber at the right and the left should be as slight as possible; however, a maximum difference of ± 0° 30′ is permissible.

Adjustment of camber is carried out by turning the eccentric bolt (7) (Fig. 40 — 3/2). To do this, first back out the hexagon screw (13) and the lock washer (12) and remove it together with the locking plate (11). After unscrewing the hexagon nut (10), camber can be adjusted to the prescribed value with the aid of an SW 19 box wrench.