k) Rear Axle Misalignment

The axle tubes of the rear axle must be perpendicular to the longitudinal axis of the vehicle. If, however, the rear axle becomes turned about the mounting bolt, this results in misalignment and a maximum value of 0° 20′ is permissible (Fig. 40—3/12).

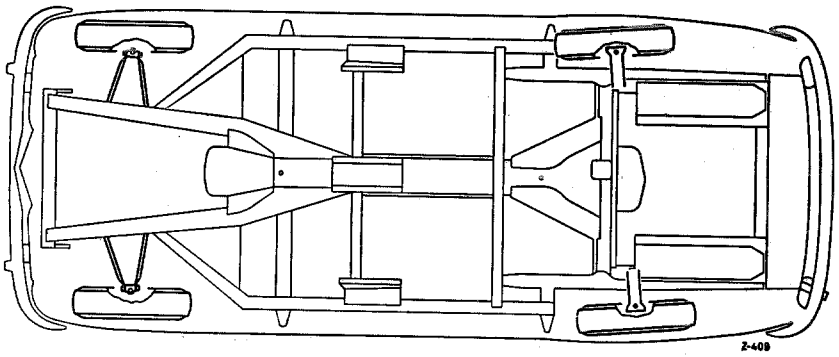

Fig. 40—3/12

If the misalignment is in excess of this value, considerable tire wear results. The rear axle can be straightened by adjusting the cross strut.

l) Lateral Axle Displacement

The term lateral axle displacement refers to the lateral offsetting of the rear axle, relative to the longitudinal axis of the vehicle.
An axle displacement of up to 20 mm is not normally a disadvantage when the vehicle is in motion. If considerable lateral axle displacement is present, the car will veer to the left (with engine pulling) and to the right (with car "driving" engine) or vice-versa, depending on whether the rear axle is offset to the right or to the left. It is usually unnecessary to correct this.

C. Wheel Adjustment Values

vehicle loading	Front axle							Rear axle					Wheel-base permissible difference in mm
	Camber	Toe-in in mm	Track angularity at 20° lock of inner wheel	Caster	King pin inclination	Pivot point distance in mm	Axle positioning distance permissible difference in mm	Camber left	Camber right	Toe-in or Toe-out in mm	Center position permissible deviation in mm	Axle positioning distance permissible difference in mm	Permissible misalignment up to	
curb condition	0° to 1°*	0–2	–	2° 50′* to 4°	5° 20′ to 5° 40′	34±2	5	approx. +1° 30′	approx. +1° 45′	0±2	2	3	0° 20′	5
normally loaded	0° to 1°*	0–2	–2° 30′*	3° 10′* to 4° 10′	5° 20′ to 5° 40′	34±2	5	–2° 30′** to –3° 30′	–3°** to 4°	0±2	2	3	0° 20′	5

* This value should be as nearly identical as possible at both sides the maximum permissible difference is 0° 30′. The ideal value for front wheel camber = 0° 20′ to +0° 40′.

** At the rear wheels a variation in camber of approx. 0° 30′ if the car is in loaded condition, and of 0° 15′, if the car is in curb condition, is normal. (The variation in camber at the left and the right arises from the design of the single-jointed swing axle, since the connecting pin of the axle halves lies outside the longitudinal axis of the car. For this reason right wheel camber is greater than left wheel camber).

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.

Front axle track	:	1430 mm
Rear axle track	:	1470 mm
Smallest turning circle diameter	:	approx. 10.7 m
Smallest track circle diameter	:	approx. 10.0 m

The smallest **turning circle diameter** is understood to be the diameter of a circle described by the circumferential extremities of the turning vehicle with the steering at full lock.

The smallest **track circle diameter** is understood to be the diameter of the circle described by the outside front wheel (center of tire) when turning with the steering at full lock.

Note: When too great a negative camber is present, particularly in the case of vehicles with special bodies produced by other firms, it is advisable to check the permissible axle load after weighing the vehicle in fully loaded condition, with a full fuel tank and all equipment (see Job No. 32 — 0 and Job No. 40 — 0, Section B). This is carried out by weighing the vehicle on a platform scale twice; the first time with only the front axle on the scale, and the second time with only the rear axle on the scale.
As a check the complete vehicle can then be weighed.

D. Tire Wear

Irregular and extreme tire wear occurs if the wheels are incorrectly adjusted. In many cases it is possible to detect incorrect wheel adjustment without the aid of any measuring device, purely by reference to typical tire wear diagrams. The following diagrams show some such tire wear phenomena and give in each case the cause.

a) Tire Wear Diagrams

(The arrow indicates in each case the direction of travel)

Excessive toe-in

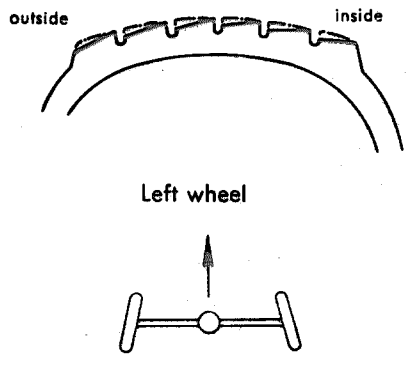

Fig. 40 — 3/14

The fault can occur at both the front and the rear axle.

Excessive toe-out

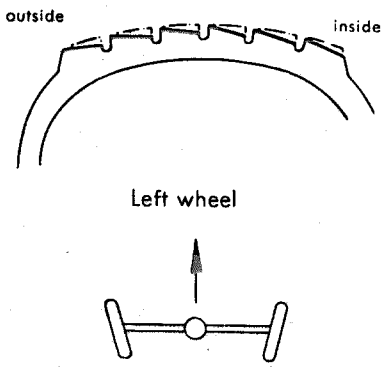

Fig. 40 — 3/15

The fault can occur at both the front and the rear axle.