40–0325 Checking toe-out on turns

Preceding work:
General information on chassis alignment (40-0200).
Attachment of Mercedes-Benz quick-clamp holder (40-0230).

The toe-out on turns can be measured to check the steering geometry. This is the difference in the angles at which the wheel on the inside and the outside of the curve are turned with the wheel on the inside of the curve turned 20°. This assumes that the toe-in is distributed equally between the two wheels with the wheels in the straight-ahead position.

When the toe-out on turns is measured optically the toe-in value included in the reading must be taken into consideration when calculating the actual toe-out on turns, because the values specified in the data assume that both wheels are in the straight-ahead position without toe-in.

Example:

Toe-in adjustment: = +0°20'

Toe-out on turns measured on wheel on outside of curve with wheel on inside of curve turned to an angle of 20° = -1°20'

Corresponds to actual toe-out on turns without toe-in of = -1°

When the toe-out on turns is measured with the aid of the rotating supports (e.g made by Beissbarth), the actual toe-out on turns can be read off directly, because the scales on the rotating supports are set to the straight-ahead position, i.e. to 0°, before measuring.

Slight deviations from the specified value have no effect on the handling characteristics or tire wear. Major deviations take the form of tire wear pattern such as incorrect toe-in.

Greater differences may be caused by the following, assuming that the caster and camber are correctly adjusted:

1. Toe-in not adjusted with the steering gear in the straight-ahead position resulting in unequal length track rods.
2. Incorrect pitman arm, idler arm or steering knuckle arm installed.
3. Pitman arm mounted incorrectly on pitman arm shaft.
4. Steering knuckle arm, pitman arm or idler arm bent.
5. On vehicles involved in accidents, excessive deviations at the front end (frame side members, frame cross members, wheelhouse and firewall) can impair the adjustment range for camber and caster, resulting in large differences in toe-out on turns between the left and right.