

## Recommendation for technical inspection of TRW steering and track rods on commercial vehicles

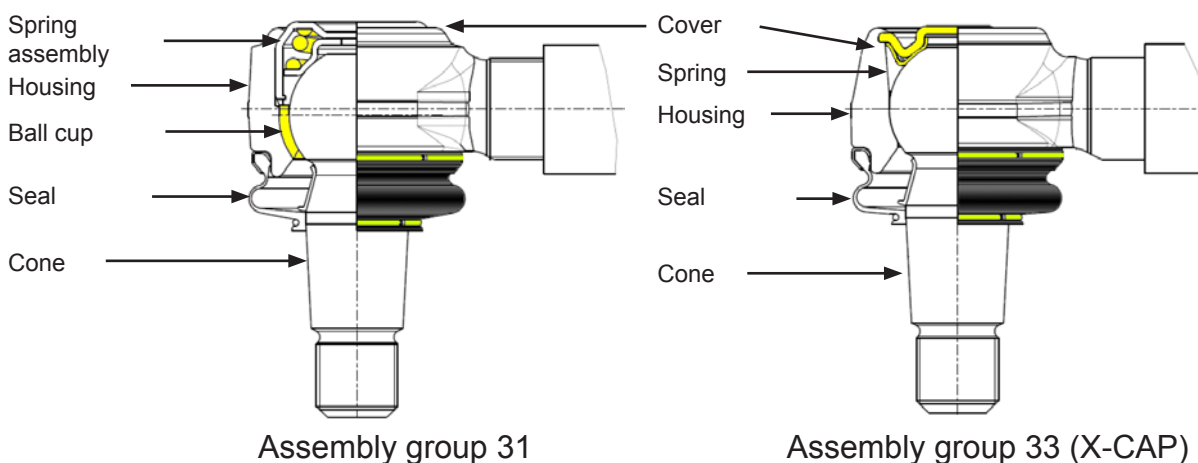
### Preliminary note:

The following recommendation contains information on how to test properties which are crucial to road safety. The recommendations do not replace the individual testing routines which have to be set out by the responsible tester for the respective vehicle.

The recommendations take into consideration that it must be possible to carry out the tests with the means and methods available to the test centre.

### The design of a ball joint

The special properties of assembly group 33 (X cap) are: a deeper cover and lower height



### Testing ball joints

Condition of the vehicle: Loaded ready for driving. The axle being tested must not be relieved.

### Preparation

Clean the joint including the sealing bellow and connection parts. When doing so, do not use cleaning agent or solvents; only use dry cloths or cotton wool. Do not damage the bellows!

### Visual corrosion inspection

The shaft housing must not show any signs of deep rusting (depth of no more than approx. 1 mm). Particular attention must be paid to checking the roll edge and the cover where there must be no significant traces of corrosion at all. Replace the joint or steering/track rod if the result is not OK. Corrosion must be cleaned from the contact faces of the counterpart (e.g. steering/track lever eye).



## Bellows

Squeeze (massage) the bellows by hand and make sure no grease is expelled from the bellows wall. Grease must only be expelled from the bellows opening. Perform an additional and exact visual inspection of the surface. There must be no holes, tears or chafe marks. Damaged bellows may cause the joint to fail very quickly due to the possibility of water penetrating into the joint. Replace the joint or steering/track rod if the result is not OK.

## Tension ring and clamping ring

Tension rings and clamping rings press the sealing bellows against the housing or the journal. They must lie concentrically in the level of the counter-groove. It must be possible to turn the bellows on the housing by hand (do not use any tools!). To do so, you hold the bellows in the area of the tension ring or clamping ring and attempt to turn them with a lot of manual force. Replace the joint or steering/track rod if the result is not OK.

## Self-locking nut

The self-locking nut must be properly in place and must only be used once.

The screw connection which fastens the journal must be checked to make sure it is firmly in place.

## Castellated nut and cotter

The nut and cotter must be properly in place and must only be used once.

The screw connection which fastens the journal must be checked to make sure it is firmly in place.

## Inspection for wear on the bearing pairing

Turn the steering wheel (which the axle loaded) alternately to the left and right so that the front wheels move.

## Joint design, assembly group -31-

The ball stud must not deflect axially any more than 2 mm into the housing.

## Joint design, assembly group -33 (X-CAP)

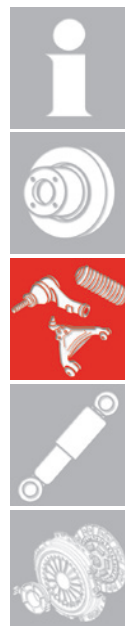
The ball stud must not deflect axially any more than 0.5 mm into the housing.

In border-line cases the distance must be checked with a suitable measuring instrument (e.g. callipers).

## Inspecting the screw connection on the steering/track rod tube

The clamping screw must be properly fitted. The nut must rest firmly on the clamp; the screw must not be visibly bent. There must be no signs of pitting corrosion of more than 1 mm on the screw, nut, clamp and fine adjustment piece. If you identify that the clamp, the fine adjustment piece or the joint are not firmly locked in place, it is to be assumed that the thread has a pre-existing defect.

Replace the steering/track rod if the result is not OK. If the clamp or the clamping screw is stuck to the nut and if heavy corrosion is visible, these parts must be replaced.



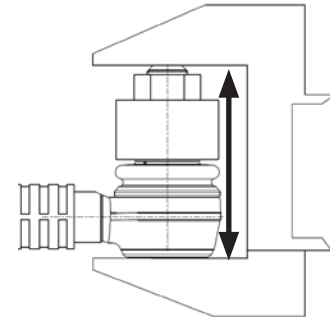
### Identification by the shape of the end cap



Assembly group 31 - domed cap  
maximum of **2 mm** deflection



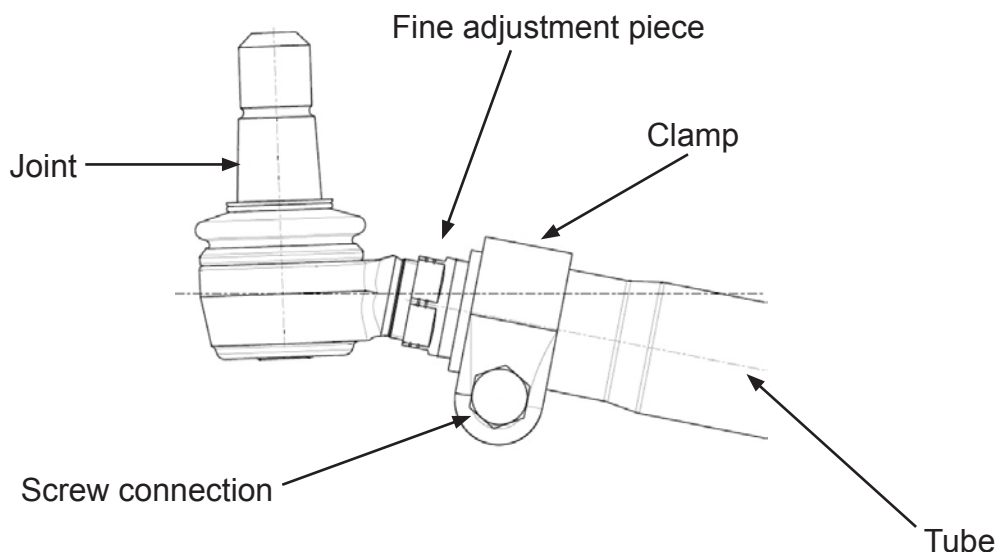
Assembly group 33 - deep cover, low height  
maximum of **0.5 mm** deflection



### Screw connection on the fine adjustment piece/tube

Turn the steering wheel alternately to the left and right so that the front wheels move. Whilst doing so, place your finger to check whether the thread moves in the fine adjustment piece/tube. If there is too much play, it is to be assumed that the thread has a pre-existing defect.

The steering/track rod must be replaced if the result is not OK.



### Inspecting the tube

Check the tube for other damage. If there are signs of forced deformation, it is imperative to replace the steering/track rods.