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Tracking technology or back to basics?

With all the talk of new technologies, aimed at improving everything from engine emissions to fuel consumption, from driver safety to efficiency, and from vehicle aerodynamics to stability, it may come as a surprise to learn that there can be unintended engineering consequences.

The latest to come to the attention of this journal concerns nothing more complicated than truck suspension and steering, and specifically track rod ends – with complexity the culprit.

It is well known that, in a bid to improve stability and ride, and also to cut costs and maintenance interventions, OEMs and axle builders have increasingly been selecting different ball joint types for different vehicle applications – some even using multiple versions per vehicle. The classic is eight-wheel tippers with dual steering axles. Innovations long since adopted include, for example, the XCAP, claimed by TRW to be smaller, stronger and more durable than its predecessors, with improved debris protection and offering better steering, due to reduced torque.

That's fine, but integrity tests for the various track rod end types are not identical: some require a maximum lift of 0.5mm (rubber mounted), others 2mm (mostly, spring loaded). So the issue is that, unless technicians carrying out vehicle inspections know which type is used where, they won't necessarily check for the correct play. And the same, of course, applies to VOSA vehicle inspectors, when it comes to annual vehicle MoT testing.

Workshop technicians and VOSA's inspectors may rightly argue that the data is available on a per-truck basis. However, the issue remains, is it routinely referred to? Are individuals relying perhaps too readily on their experience? Further, in the real world of truck steering gear, given accessibility limits, how many, hand on heart, can be sure of measuring to such precision?

On top of that, though, there is another, potentially even more worrying, issue. What happens if the lift observed during testing appears close to, or actually, 0mm? First, would a technician or, for that matter, a VOSA inspector notice the difference? And secondly, what is the recognised process to follow, if either of them did?

For at least one unnamed operator, the answers to those questions were 'no' and 'none', respectively. Said operator's PMI shows zero movement on one of the track rod ends, but no defect recorded, following which VOSA passed the vehicle at MoT. Yet, two days later, the ball popped from its housing – pushed out by a build-up of corrosion resulting from water ingress – and the vehicle was forced (safely, as it happens) off the road, as it lost its second steer track.

This matters: ball joint security is clearly safety related and our transport industry, as well as society as a whole, is entitled to demand rock-solid reassurance that the integrity of these critical components can be satisfactorily monitored and maintained. Which means workable standards and processes must be in place that put any failure beyond reasonable doubt.

It is possible that implementation of the new Testing Directive on 1 January 2012, with its new focus on dust cover integrity, might go some way to solving the problem. However, the lesson is clear: it behoves us all to redouble our vigilance and, technology aside, get back to basics.

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