

GRRF 61st Session

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Commercial vehicle wheel detachment and fixings

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Phase 1 research

Heavy vehicle wheel detachment,
frequency of occurrence and loose
wheel fixing problem

Website: www.dft.gov.uk

URL: www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft_roads_613560.hcsp

Research Objectives

1. Identify the current frequency of wheel detachment in the UK
2. Analyse existing sources of UK data on wheel fixing problems
3. Gather parallel information on wheel detachment from other countries

Research objectives (cont'd)

4. Identify current wheel fixing standards and best practice in tightening methods
5. Survey the views of drivers, operators and manufacturers

RESULTS

TRL's estimated frequency of wheel fixing/detachment problems

	Estimated number of incidents per year				
	Wheel defects (loose, missing, damaged nuts, etc)	Wheel detachment (no collision)	Wheel detachment (damage only accident)	Wheel detachment (injury accident)	Wheel detachment (fatal accident)
Upper estimate	11,000	400	134	27	7
Lower estimate	7,500	150	50	10	3

Do wheels fall off abroad?

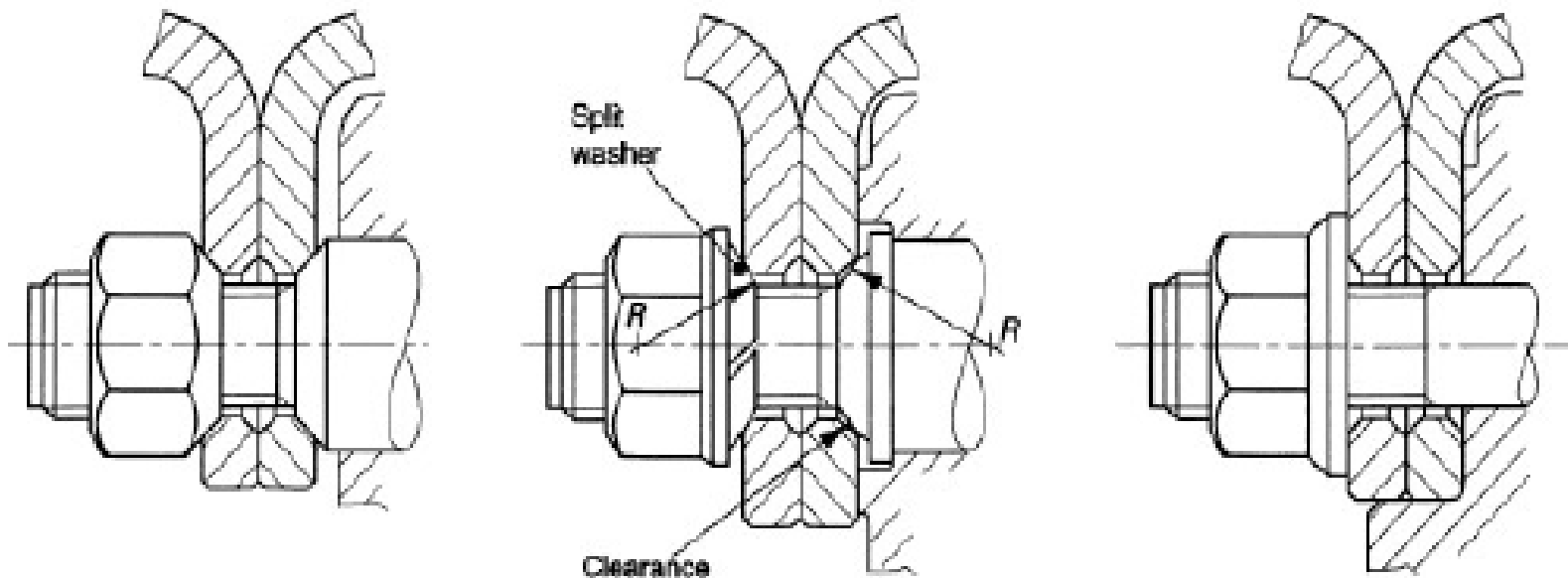
Information with supporting data was received from:

- Finland
- Canada
- Japan
- USA
- New Zealand

Replies received from other countries:

- Luxemburg
- Sweden
- Norway
- Holland
- France
- Germany
- Ivory Coast

Designs & Standards



Cone (type B mounting)

Spherical

Spigot located (type A mounting)

- Three different designs and three main standards: BS, DIN and ISO

Conclusions

- Wheel clamp load critical
- Current fixings adequate for clamping force providing relaxation is accounted for
- Joint relaxation is a key maintenance issue
- Wheel fixing problems not unique to UK - worldwide problem
- Higher incidence of problems on left-side - bias small for loose wheel nuts - large for wheel detachment

- 86% of operators have formal policies for wheel fixings, but 12% reported never re-torquing a wheel
- Operators have daily safety check regimes, but drivers
 - 26% of drivers admit not always checking while 32% admit not always looking for loose wheels
 - 2% never check

Where next?

- Phase 2 - project will include:
 - Comparison of torque vs angular tightening and assess repeatability of clamp force
 - Assessment, testing and durability of wheel nut retention and movement indicator devices
 - Further standardisation of best practice and wheel tightening methods
 - Further education to encourage adoption of wheel maintenance procedures

Thank you
for your attention