



**Proposed revision of EU Agricultural Tractor & Trailer Braking Regulations**  
**- Recommendations of recent research study and likely practical implications**

**Martin Dodd – TRL Limited**

Directive 76/432/EEC specifies the performance requirements for the braking systems of wheeled agricultural tractors with a maximum speed of up to 40 km/h. The technical requirements were last revised in 1996 and it has been recognised for some time that the requirements are out of date and do not cover a wide enough scope. For example, there are no requirements relating to agricultural trailers or machinery towed by the tractors, track-laying tractors and tractors that are capable of speeds in excess of 40km/h. In addition to this, the maximum permissible mass of various categories of tractor has been increased, placing increased demands on the braking system.

TRL was commissioned by The European Commission (EC) to prepare a revision of Directive 76/432/EEC that contains the specific technical requirements and the appropriate testing conditions for vehicles of categories T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub>, T<sub>5</sub>, C, R<sub>a</sub>, R<sub>b</sub>, S<sub>a</sub> and S<sub>b</sub>.

The first stage of the project was a consultation with industry this identified the following key areas:

- Braking performance – performance corridors, predominance and compatibility between new and old vehicles
- Physical compatibility between different braking systems
- Requirements for parking and secondary brakes
- Inclusion of T5 (>40 km/h) vehicles and their braking requirements
- Reaction time of braking systems

Some areas were analysed theoretically whilst others were investigated using physical testing that included straight line braking and brake in a turn tests.

In parallel a cost benefit analysis of the proposed technical requirements was carried out. Benefits were expected to arise from reduced casualties in road traffic and off-road accidents involving agricultural vehicles, reduction of premature brake wear and hence reduced warranty claims, simplification of the approvals process and standardisation of components. The cost for industry to comply with the new requirements was estimated from data supplied to TRL by industry.

It was not possible to quantify the benefits from a reduction of premature brake wear, simplification of the approvals process and standardisation of components however, it was estimated that a cost saving of between €110 and €399 per vehicle would be required from these areas to achieve a benefit to cost ratio of one (i.e. break even).

The key recommendations included in the proposed revision to 76/432/EEC were:

- Modification of performance corridors for vehicles of categories T and C.
- Inclusion of performance corridors for vehicles of categories T5, R and S
- Prohibition of user adjustable predominance valves
- Automatic connection of left and right braking circuits for vehicles of category T5
- Improved parking and secondary brake requirements
- Changes to the service brake requirements
- Fitment of ABS to vehicles of category T5

The presentation will summarise the methodology and key findings of the project and outline the proposed changes to Directive 76/432/EEC recommended by TRL.