

EMERGENCY BRAKE LIGHT DISPLAY

Previous UK Research

Transmitted by the expert from the United Kingdom

The UK is currently researching the safety benefits of emergency brake light display. The results of this work will not be available for some time. However previously work was carried out in 1994 and the results are attached.

Vehicle Technology and Standards
5 March 2004

Flashing stoplights for heavy braking

Summary

This chapter describes the results of trials to investigate a modified operation of the stoplight display, intended to obtain better response from following drivers during heavy braking. This method assumes that an accelerometer or brake pressure transducer is used to sense the heavy braking, which then rapidly flashes the stoplights (3-4Hz). All the presentations, including the 'normal', against which these two methods were compared included a third light centrally placed, as this will probably be the display in use for new cars in Europe in future.

Results indicate that the use of flashing stoplights appears to be ineffective in the indication of heavy braking.

Introduction

Twenty-nine members of the public drove the simulator, while following a lead vehicle which performed braking manoeuvres of several types. The driver had to slow down to avoid a collision in all cases. Heavy braking by the driver ahead, representing quite a severe manoeuvre, was simulated using a) the present system (no differentiation between severities of braking), and b) flashing stoplights. The drivers' responses, in terms of reaction time, closest approach during the braking manoeuvre, peak brake pressure, together with the time and following distance at which this occurred, were measured.

Overall results

| | Reaction time | Peak brake | | | Closest approach |
|-----------------|------------------|------------|----------|----------|---------------------|
| | | Time | Pressure | Distance | |
| Heavy braking | 1.03 | 2.68 | 1778 | 25.8 | 21.2 |
| Flashing lights | 1.07 | 2.70 | 1707 | 26.9 | 22.1 |

Flashing lights during heavy braking

The reaction time to these lights is virtually identical to the non-flashing lights. The peak brake pressure and the time at which it occurs are also the same. The distance at which peak brake pressure occurs is slightly longer and most of this gain is retained for the closest approach. Overall, however, the use of flashing lights seems to be practically ineffective at changing driver behaviour during heavy braking.

Conclusions

Surprisingly, the use of flashing stoplights to indicate that braking is severe was ineffective in this simulated situation where drivers knew what to expect. If in real life only a few vehicles were fitted with flashing stoplights, there could well be an advantage (for drivers following those vehicles) until the whole vehicle population was fitted, when the result of this experiment indicates that this effect would wear off.