

## Driver-Centred Safety Device

Following a survey among 950 Southern Railway train drivers a key emerging issue was the drivers' safety device (DSD) foot pedal and its potential for inducing musculoskeletal complaints.

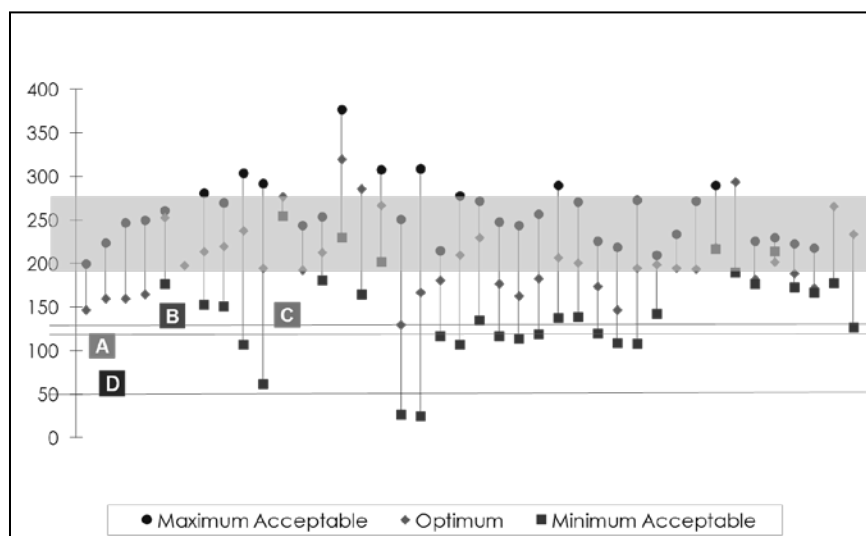
The main concerns about the DSD were:

- the awkward angle of operation;
- excessive force required to depress the pedal; and
- off-centre position of the pedal.

Southern therefore started from first principles to produce a DSD that would meet the concerns of their drivers. They used a series of fitting, acceptance and usability trials to develop a new design specification. The fitting trials using 20 drivers looked at:

- positioning of the pedal;
- the force needed to operate the pedal.

The results were analysed to identify the best position for the pedal. Letters A to D show existing pedal positions on Southern's train cabs.



Example plot of fitting trials data for pedal width (mm)

Initial trials indicated that angle, force and width of the pedal were worthy of further investigation and therefore acceptability trials were arranged. These involved drivers holding down the pedal for 45 minutes to represent a typical long duration journey.



**Acceptability mock-up trials rig**

The trials indicated that most drivers preferred a reduced angle pedal, which required less force to operate and was wider than existing pedals. In particular it:

- gave better lower limb comfort
- allowed drivers with different sized lower limbs and feet to have healthier seated postures.
- enabled drivers to use both or either foot to operate the pedal without compromising posture.
- allowed the driver to frequently/regularly adjust their lower leg and feet positions to help avoid the adverse effects of static muscular loading such as fatigue, discomfort and injury.

The DSD provider confirmed that at present only a reduced force design was possible. Following trials of a new design which was favourably commented on by drivers it was felt sufficient evidence had been gathered to support an in-service trial. The resizing and positioning of the pedal would be looked at in future as opportunities arise.

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