

ANALYSIS OF FIFTH WHEEL AND KINGPIN DIMENSIONAL DATA

The data from the dimensional survey were analysed to determine: (i) the extent of compliance with the requirements of AS 1773 & 2175, (ii) the extent of dimensional mis-match between fifth wheel jaws and kingpins without a liner present and (iii) the extent of mismatch with a liner added. The data were also used to estimate the likely effect of controlling the critical dimensions of fifth wheels to which liners are fitted.

The analysis was carried out by setting up an Excel spreadsheet which could "simulate" the coupling of each fifth wheel in the survey sample to each kingpin in the sample. This resulted in $30 \times 26 = 780$ combinations. In the two cases where a plastic liner was fitted to the skid plate, an appropriate adjustment was made to the kingpin measurements.

Compliance with Australian Standards 1773 & 2175

The results show that the fifth wheel jaws tend to be set relatively close to the top of the coupler plate, as compared to the requirements of AS 1773:

in 8/30 cases (27%), dimension JA (Fig 1) was less than the AS minimum of 38.5mm

in 1/30 case (3%), dimension JB (Fig 1) was greater than the AS maximum of 66.5mm.

For kingpins, the results show that fitting to the skid plate tends to lead to greater kingpin protrusion than is allowed in AS 2175:

in 17/26 cases (65%), dimension A (Fig 2) was greater than the AS maximum of 35mm

in 3/26 cases (12%), dimension H (Fig 2) was less than the AS minimum of 70mm.

Mismatches without Liner

Interference between the bottom of the fifth wheel jaws and the lower section of the kingpin would occur in 7/780 cases (1%).

Interference between the top of the fifth wheel jaws and the upper section of the kingpin would occur in 176/780 cases (23%).

The total mismatch rate without a liner is 24%.