



FIFTH WHEEL KINGPIN

D-VALUE CALCULATION



Fifth Wheel and Kingpin

Calculation of D-Value for Tractor and Semi-Trailer Combinations

GENERAL NOTES

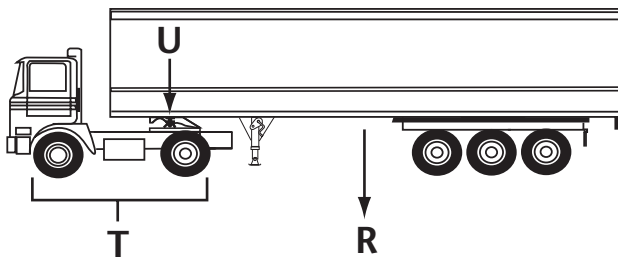
All fifth wheels and king pins, tested and approved under EC 94/20 regulations are given a D-value rating as an indication of the maximum horizontal force permitted between the towing vehicle and trailer.

In order to confirm the suitability of a particular fifth wheel or king pin for a given tractor/trailer combination it is necessary to carry out a D-value calculation.

FORMULA

The D-value formula for a tractor and semi-trailer combination is as follows:

$$D = g \times \frac{0.6 \times T \times R}{T + R - U} \quad (\text{kN})$$



T = Weight of towing vehicle including the vertical load on the fifth wheel

R = Total weight of the loaded semi-trailer

U = Vertical load on the fifth wheel

g = Acceleration due to gravity (assumed to be 9.81 m/s²)

DEFINITION

The 'D-value' is defined as the theoretical reference force for the horizontal force between towing vehicle and trailer.

The D-value is taken as the basis for horizontal loads in the dynamic tests for all automatic coupling devices between a towing vehicle and trailer.

EXAMPLE CALCULATION

T = 17 (Tractor weight 7t plus vertical load 10t)

R = 33 (10t imposed on fifth wheel and 23t on rear bogie)

U = 10

g = 9.81

$$D = 9.81 \times \frac{0.6 \times 17 \times 33}{17 + 33 - 10} \quad (\text{kN})$$

D-Value = 82.55 kN

The above calculation represents a 2 axle tractor with tri-axle trailer operating at a GCW of 40000 Kg.

For safe operation the D-value calculated must not exceed the D-value rating of the Fifth Wheel and/or King Pin.



WARNING

In order to maintain the full D-value of the Fifth Wheel and/or King Pin, mounting must be carried out in accordance with Holland instructions.



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