AS 4235—1994

Australian Standard®

Articulated vehicles—Design criteria for fifth wheel skid plates

This Australian Standard was prepared by Committee ME/53, Semitrailer and Heavy Trailer Couplings. It was approved on behalf of the Council of Standards Australia on 29 June 1994 and published on 14 November 1994.

The following interests are represented on Committee ME/53:

Australian Road Research Board
AUSTROADS
Commercial Vehicle Industry Association of Australia
Department of Defence
Department of Transport and Communications
Federal Chamber of Automotive Industries
Institute of Road Transport Engineers
Society of Automotive Engineers Australasia
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PREFACE

This Standard was prepared by the Standards Australia Committee on Semitrailer and Heavy Trailer Couplings at the request of the transport industry as a result of the incidence of skid plate failure. It is based on background information and a specification produced by a major transport company.

The objective of this Standard is to provide assistance to manufacturers in the design and construction of skid plates of adequate strength and performance.

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FOREWORD

The skid plate has the following functions:

(a) To impose vertical loading at the forward end of the trailer onto the towing vehicle's fifth wheel coupler plate.

(b) To provide a mounting for the trailer kingpin which couples to the towing vehicle's fifth wheel.

(c) To provide roll stability at the forward end of the trailer.

The skid plate and its attachment system are designed to accept vertical, longitudinal and overturning forces developed between the towing vehicle's fifth wheel assembly and the trailer during road operation.

The attachment of the skid plate is designed so that the forward end of the trailer will operate at the correct height, to ensure—

(i) proper operation of the suspension and braking systems within the axle group supporting the rear end of the trailer; and

(ii) complete and interference-free coupling, uncoupling and operation of the fifth wheel connection.

For trailers operating in conjunction with towing vehicles equipped with fixed-base fifth wheels, two critical aspects of the skid plate which affect the road handling and driving characteristics of the combination vehicle are—

(A) whether the skid plate, in its installed attitude, is horizontal; and

(B) whether the skid plate has a flat surface.

STANDARDS AUSTRALIA

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1 SCOPE This Standard covers design criteria for skid plates intended for use on fifth wheel assemblies complying with AS 1773 (using kingpins complying with AS 2175) for semitrailers in the heavy trailer (TD) category only, as defined in the Australian Design Rules, in normal use on sealed and unsealed roads.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1594 Hot-rolled steel flat products

1771 Installation of fifth wheel and turntable assemblies

1773 Articulated vehicles—Fifth wheel assemblies

2174 Articulated vehicles—Mechanical coupling between prime movers and semitrailers—Interchangeability requirements

2174.1 Part 1: Non-dedicated vehicle combinations

2175 Articulated vehicles—Kingpins

SAE
J 700 Upper coupler kingpin—Commercial trailers and semitrailers

3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

3.1 Gross combination mass—value specified for the vehicle by the 'manufacturer' as being the maximum of the sum of the 'gross vehicle mass' of the drawing vehicle plus the sum of the 'axle loads' of any vehicle capable of being drawn as a trailer.

3.2 Heavy trailer (TD)—a trailer with a 'gross' trailer mass exceeding 10 t.

3.3 Kingpin—a pin attached to a semitrailer and used for connecting the semitrailer to the fifth wheel of a towing vehicle.

3.4 Shall—indicates that a statement is mandatory.

3.5 Should—indicates a recommendation.

3.6 Skid plate—the plate structure on the semitrailer which houses the kingpin and which mounts onto the coupler plate to form the connection between the towing vehicle and the semitrailer.

3.7 Skid plate locking key—a steel block attached to the underside of the skid plate. It is located rearward of the kingpin to key into the throat of the coupler plate of a turntable-base fifth wheel, in order to prevent relative rotation of these two components.

NOTE: This means that the fifth wheel transverse pivot mounting is fixed constantly at 90° relative to the longitudinal centreline of the trailer. Rotation is effected at the turntable.

3.8 Turntable-base fifth wheel—a fifth wheel incorporating a horizontally disposed turntable as a base.