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Australian Standard 2513—1982

ELECTRICAL CONNECTORS FOR TRAILER VEHICLES

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Commercial Vehicle Industry Association of Australia

Confederation of Australian Industry

Department of Transport

Federal Chamber of Automotive Industries

Federation of Automotive Products Manufacturers

Institute of Road Transport Engineers

National Roads and Motorists Association

Recreational Vehicle Manufacturers Association

Royal Automobile Club of Victoria

Road Safety and Traffic Authority Victoria

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PREFACE

This standard was prepared by the Association's Committee on Connectors for Trailer Vehicles. It supersedes AS D5—1965, Seven-pin Electrical Connectors for Vehicle-Trailer Jumper Cables.

During the preparation of this standard, surveys of current practice in Australia were carried out by organizations represented on the committee. The surveys indicated that as well as a multiplicity of connector types, conflicting practices are being followed in the various industries and localities for the combinations of pin numbers and conductor colours, and for the functions for which the pin numbers and conductor colours are used. It was noted that while the connector to AS D5 (equivalent to Type 1 of this standard) is used almost exclusively for commercial vehicle applications, several types of 5-pin, 6-pin, 7-pin connectors are used for recreational vehicles. The committee agreed that only 7-pin type connectors should be covered in the standard and that, while it would be desirable in the interest of standardization to specify one type only, the three types of 7-pin connectors that predominate in different parts of Australia must be included.

The basic requirements for future 12-pin connectors, i.e. compatibility with the appropriate type of 7-pin connector and circuit allocation/identification/cable colour, are specified, but other requirements for 12-pin connectors have not been included. The dimensions of one type of 12-pin connector which is compatible with a 7-pin Type 3 connector are given in Appendix A.

The performance requirements in this standard are based on *ISO 4091, Road Vehicles—Electrical Connections Between Towing Vehicles and Tractor—Test Methods and Requirements, but incorporate some changes that are being considered at present by the ISO committee responsible for ISO 4091. The requirements of ISO 1724, Road Vehicles—Electrical Connections Between Towing Vehicles and Towed Vehicles with 6 or 12 V Electrical Equipment—Type 12 N (Normal), were adopted by the committee where the requirements were deemed to be appropriate, but it was recognized that some statutory and other functions required of connectors in Europe (as specified in ISO 1724) are different to the functions required in Australia. The ISO 1724 connector is physically, but not functionally, interchangeable with the Type 1 connector in Part 2 of this standard.

This standard requires reference to the following Australian standards:

AS 1057	Glossary of Terms used in Quality Control
AS 2331	Methods of Test for Metallic and Related Coatings 2331.3.1—Part 3—Corrosion and Related Property Tests—Neutral Salt Spray (NSS) Test

*International Organization for Standardization.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
ELECTRICAL CONNECTORS FOR TRAILER VEHICLES

PART 1—DESIGN, CONSTRUCTION AND PERFORMANCE

1.1 SCOPE OF PART. This Part of this standard specifies requirements for the design, construction and performance of 7-pin electrical connectors for making detachable electrical connections between motor vehicles and trailers fitted with electrical equipment normally operating at a nominal d.c. voltage of 6 V, 12 V or 24 V. In addition, the general requirements only for 12-pin connectors are specified (see Clause 1.4).

The connectors are intended for use with both private and commercial motor vehicles.

Configurations and dimensions of connectors are specified in Part 2 of this standard.

1.2 DEFINITIONS. For the purpose of this standard, the following definitions apply:

Connector—a 2-part device intended for making a detachable connection (electrical) between a motor vehicle and trailer.

Contact—the mating components of a connector through which the electrical connection between plug and socket is made.

Motor vehicle—a self-propelled vehicle used on a public road.

Plug—the part of a connector that is normally attached by flexible cable to the trailer.

'Shall' and 'Should'—'shall' is taken to be mandatory; 'should' is taken to be advisory.

Socket—the part of a connector that is normally fixed to the rear of the motor vehicle.

Terminal—the device at the rear of the plug and the socket to which each conductor is connected.

Trailer—any vehicle without motive power of its own designed for attachment to a motor vehicle for the purpose of being towed. It includes both recreational and commercial vehicles.

Type test—the complete series of tests carried out on a single connector or number of connectors representative of the type of connector to verify that the quality of design* is such as to ensure that the type of connector under test complies with the requirements of this standard.

1.3 MATERIALS.

1.3.1 Electric Current-carrying Parts. All electric current-carrying parts shall be made of brass, bronze or other suitable copper alloy.

1.3.2 Terminal Screws. Terminal screws shall be made from a corrosion-resistant metal.

1.3.3 Body Parts. Materials for body parts shall—

(a) have adequate strength to withstand normal usage;

(b) have appropriate insulating properties where required; and

(c) (i) where metallic, be corrosion-resistant or be adequately protected against corrosion; or

(ii) where non-metallic, not be adversely affected by exposure to air, sunlight, or petroleum products.

1.4 GENERAL REQUIREMENTS.

1.4.1 Compatibility of 7-pin and 12-pin Connectors. In the design of any type of 12-pin connector, provision shall be made for the 12-pin socket to accommodate the plug of a 7-pin connector of the same basic configuration. A 7-pin plug shall be mechanically, electrically and functionally compatible with a 12-pin socket.

1.4.2 Circuits and Identification. The functions of the contacts shall be as specified in Table 1.1 and each contact shall be identified by the appropriate contact number given in Table 1.1. The numbers shall be legibly and permanently marked in numerals not less than 2 mm high on both the plug and the socket adjacent to each terminal, as appropriate.

NOTE: Conductors should be coloured in or on the insulation with the colours given in Table 1.1 for each circuit and contact number.

1.5 CONSTRUCTION REQUIREMENTS (7-PIN CONNECTORS).

1.5.1 Contacts. Contacts shall be of the pin and tube type. The diameters of the pin and tube shall be such as will permit them to be connected with a moderate push and also ensure a good electrical contact. Split elements shall have the ability to spring back to their original diameter after disengagement from their mating element.

All contacts in the socket shall be isolated from other contacts and from the connector body (where metallic).

The rear of all contacts in the plug and socket shall be isolated from each other and from the connector body (where metallic) except the earth contact.

Contact No 3 (and Contact No 10) shall be connected to either the vehicle structure or common return of the vehicle as appropriate to the arrangement of the return circuit in the towing vehicle.

*As defined in AS 1057.