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Road vehicles — Connection interface for pyrotechnic devices, two-way and three-way connections —

Part 2: Test methods and general performance requirements

Véhicules routiers — Interface de raccordement pour dispositifs pyrotechniques, deux voies et trois voies —

Partie 2: Méthodes d'essai et exigences des performances générales

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

This third edition cancels and replaces the second edition (ISO 19072-2:2013), which has been technically revised.

The main changes compared to the previous edition are as follows:

— 4.4.2.1 Table 1, force and torque requirements for straight connectors;

— 4.4.2.2 Table 2, force and torque requirements for right angle connectors;

— 4.9.1.2 Figure 8 including key, signal contact resistance;

— 4.9.2.1 Table 5, maximum signal contact resistance;

— 4.9.2.2 Table 6, maximum contact resistance between ground and squib holder.

A list of all parts in the ISO 19072 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Road vehicles integrate an increasing number of pyrotechnic devices contributing to occupant safety in vehicles (for example, frontal and side air bags, safety belt pretensioner, etc.).

To build the complete system providing the function requires a supply of various components from several different equipment makers. Vehicle manufacturers need to define a common specification to ensure that connectors designed and produced by the various equipment makers meet the same performance criteria and requirements.

In the current design of this vehicle equipment, three areas of connection have been identified:

— between the pyrotechnic device (e.g. initiator) and the harness connector;

— between the tab holder and the clip holder of the harness connector;

— between the harness connector and the electronic control module.

The connection between the pyrotechnic device and the harness connector is the only connection that can be standardized and forms the subject of this document. Due to the location of the safety device in the vehicle, the connector design could be a right angle or straight.

A sealed variant of the pyrotechnic device/initiator harness connector assembly is defined in Annex A.

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Road vehicles — Connection interface for pyrotechnic devices, two-way and three-way connections —

Part 2: Test methods and general performance requirements

1 Scope

This document specifies the performance criteria and requirements of a three-way connection interface, including ground connection, linking the pyrotechnic device and harness connector built into a road vehicle.

Performance criteria and requirements are defined for a sealed variant of the pyrotechnic device/initiator harness connector assembly (see Annex A).

Performance criteria and requirements are defined for a two-way (without ground) variant of the pyrotechnic device/initiator harness connector assembly (see Annex B).

Performance criteria and requirements are defined for a variant without a retainer of the pyrotechnic device/initiator harness connector assembly is defined (see Annex C).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8092-2, *Road vehicles — Connections for on-board electrical wiring harnesses — Part 2: Definitions, test methods and general performance requirements*

ISO 20653, *Road vehicles — Degrees of protection (IP code) — Protection of electrical equipment against foreign objects, water and access*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
connector
assembly used to connect several conductors together or a single conductor to an appliance

Note 1 to entry: A male (female) connector is a *housing* (3.2) containing male (female) contacts and accessory items. A male connector may be permanently fixed to a wiring harness or to an appliance [an electronic control unit (ECU) for example]. A female connector is generally permanently fixed to a wiring harness.

[SOURCE: ISO 19072-1:2019, 3.1]

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3.2
housing
connector (3.1) without its contacts

[SOURCE: ISO 19072-1:2019, 3.2]

3.3
retainer
ring holding an optional shorting clip (shunt) and providing coding and electrical insulation, generally made of plastic

Note 1 to entry: The shorting clip (shunt) may be omitted by decision between manufacturer and supplier.

[SOURCE: ISO 19072-1:2019, 3.5]

3.4
short-circuited initiator
inert *initiator* (3.6) with two male contacts internally short-circuited with a shunt, used for testing

3.5
squib holder
part of the pyrotechnic device, holding the *initiator* (3.6) and the *retainer* (3.3)

3.6
initiator
part of the pyrotechnical device with two male contacts

4 Functional characteristics of mated connectors

4.1 General

Mated connectors shall meet the requirements specified in 4.2 to 4.16.

Unless other specifications are given, the temperature class to be taken into account for these tests (see ISO 8092-2) is class 2.

4.2 Visual examination

The test and corresponding requirements shall comply with ISO 8092-2.

4.3 Mating and unmating

The test shall be carried out in compliance with ISO 8092-2 by measuring the force applied on the connector.

The connector shall not be locked during the mating and unmating process unless otherwise specified.

The mating/unmating sequence shall comply with the one described in Table 7.

The maximum connecting and disconnecting force measured on the connector shall be less than 40 N.

NOTE The movements of the mating sequence (Table 7) can be carried out simultaneously with the same force.

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