INTERNATIONAL STANDARD

ISO 15031-1

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Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics —

Part 1: General information

Véhicules routiers — Communications entre un véhicule et un équipement externe pour le diagnostic relatif aux émissions —

Partie 1: Informations générales

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 15031 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15031-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 15031 consists of the following parts, under the general title *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics*:

— *Part 1: General information*

— *Part 2: Terms, definitions, abbreviations and acronyms*

— *Part 3: Diagnostic connector and related electrical circuits, specification and use*

— *Part 4: External test equipment*

— *Part 5: Emissions-related diagnostic services*

— *Part 6: Diagnostic trouble code definitions*

— *Part 7: Data link security*

Introduction

The service technician requires a means of observing and influencing vehicle behaviour. Since modern vehicle powertrain systems are controlled by software-based electronics with built-in diagnostics, much of the required interaction may be performed directly between technician and vehicle through a suitable data link.

ISO 15031 consists of seven parts. Taken together, these provide a coherent, self-consistent set of specifications that facilitate the emissions-related diagnostics of road vehicles. Such standardization is of benefit to many sectors of the automotive industry, including the service technician required to work on a variety of vehicle types and component supplier providing similar products to several different vehicle manufacturers.

It is neither necessary nor sufficient to adopt all the parts of ISO 15031 in order to achieve a useful, standardized mechanism for emissions-related diagnosis. Some areas of the industry may properly regard particular parts of ISO 15031 as being irrelevant or inappropriate for their standardization needs. For example, for vehicle systems that provide only basic diagnostic services there may be no need to limit access to those services and, consequently, no need to implement the security protocols defined in ISO 15031-7. For most implementations, users will need to refer to other International Standards, not necessarily directly related to vehicle emissions, in order to achieve their objectives. Data transmission protocols such as those covered by ISO 9141-2 and ISO 14230 are examples.

ISO 15031-2 to 15031-7 are based on recommended practices developed by the Society of Automotive Engineers (SAE) in the United States. The correspondence between ISO and SAE document numbering is given in this part of ISO 15031. It was the intention of the ISO drafting committee responsible for ISO 15031 that any vehicle meeting the requirements of these particular SAE recommended practices would also meet the corresponding requirements in ISO 15031. However, ISO cannot guarantee that this will remain true in the case of future revisions of the parts of ISO 15031 or relevant SAE documents.

Some of the related documents have a wider scope than purely emissions-related issues. The legislator is the authority qualified to make the appropriate references in these cases.

Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics —

Part 1:
General information

1 Scope

This part of ISO 15031 provides an introduction to ISO 15031 and its application to communication between vehicles and external equipment for emissions-related diagnostics. This part of ISO 15031 presents an overview of ISO 15031, describing its partitioning and the relation of its other parts to SAE (US Society of Automotive Engineers) recommended practices.

2 Partitioning of ISO 15031

2.1 Corresponding SAE standards

Table 1 indicates the SAE standard for recommended practice corresponding to each part of ISO 15031.

Table 1 — Corresponding SAE standards

Part of ISO 15031	SAE standard (see Bibliography)
ISO 15031-1	—
ISO 15031-2	J1930 [1]
ISO 15031-3	J1962 [2]
ISO 15031-4	J1978 [3]
ISO 15031-5	J1979 [4]
ISO 15031-6	J2012 [5]
ISO 15031-7	J2186 [6]

2.2 Description of the other parts of ISO 15031

ISO/TR 15031-2:—[1], *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 2: Terms, definitions, abbreviations and acronyms* presents a standard nomenclature for vehicle components. It includes the standard names, abbreviations and acronyms that have already been assigned to commonly used components.

ISO 15031-3:—[1], *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 3: Diagnostic connector and related electrical circuits, specification and use*, specifies a standard connector between the test tool and the vehicle, together with the location of the connector within the vehicle.

ISO 15031-4:—[1], *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 4: External test equipment* specifies the facilities to be provided by a minimal, standard test tool, which may be used to extract digital information from the vehicle, clear fault codes and request actuator operation. These facilities do not include provision of secure access.

ISO 15031-5:—[1], *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 5: Emissions-related diagnostic services* specifies the messages which pass between the vehicle and the test tool in order to provide a set of basic, standard diagnostic facilities.

ISO 15031-6:—[1], *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 6: Diagnostic trouble code definitions* assigns specific codes to particular vehicle malfunctions, as identified by monitoring facilities within the vehicle.

ISO 15031-7, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 7: Data link security* specifies a standard mechanism for limiting access to particular vehicle services (such as those intended for use only within the original manufacturing plant). The minimal test tool specified in ISO 15031-4 is not required to support ISO 15031-7.

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1) To be published.

Bibliography

[1] SAE J1930, *Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations and Acronyms*

[2] SAE J1962, *Diagnostic Connector*

[3] SAE J1978, *OBD II Scan Tool*

[4] SAE J1979, *E/E Diagnostic Test Modes*

[5] SAE J2012, *Recommended Practice for Diagnostic Trouble Code Definitions*

[6] SAE J2186, *E/E Data Link Security*

[7] SAE J1850, *Class B Data Communications Network Interface*

[8] SAE J2190, *Enhanced E/E Diagnostic Test Modes*

[9] Mail out 96-03, Title 13, California Code of Regulations, Section 1968.1 *Malfunction and Diagnostic System Requirements - 1994 and Subsequent Model Year Passenger Cars, Light-duty Trucks, and Medium-duty vehicles with Feedback Fuel Control Systems*

[10] Annex XI, Commission Directive 1999/102/EC of 15 December 1999 adapting to technical progress Council Directive 70/220/EEC relating to measures to be taken against air pollution by emissions from motor vehicles