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Motorcycles — Functional safety

Motocycles — Sécurité fonctionnelle

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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*.

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Introduction

This Publicly Available Standard is the adaptation of ISO 26262:2011 (all parts) to comply with needs specific to the application sector of electrical and/or electronic (E/E) systems installed in motorcycles, and provides the partial tailoring activities of ISO 26262-2:2011, Clause 6, ISO 26262-3:2011, Clause 7, and ISO 26262-4:2011, Clauses 8 and 9.

ISO 26262:2011 (all parts) is intended to be applied to safety-related systems that include one or more E/E systems and that are installed in series production passenger cars with a maximum gross vehicle mass up to 3 500 kg. ISO 26262:2011 (all parts) does not address unique E/E systems in special purpose vehicles such as vehicles designed for drivers with disabilities.

The motorcycle industry recognizes the need to use appropriate safety-related techniques to avoid unreasonable risk resulting from random or systematic faults of E/E systems.

Many of the requirements specified in ISO 26262:2011 (all parts) are applicable for E/E systems produced for the motorcycle industry and therefore it was accepted by SC 22 (superseded to SC 38) that the E/E systems developed for motorcycles should be within the scope of ISO 26262:2011 (all parts).

However, the adoption of ISO 26262:2011 (all parts) can lead to an inappropriate estimation of motorcycle risk. Therefore, some existing ISO 26262:2011 (all parts) requirements are considered infeasible for the motorcycle industry, e.g. user test under real-life conditions.

Motorcycle Safety Integrity Level (MSIL) is the output of hazard analysis and risk assessment. This is then apportioned between the risk reduction mechanisms and measures assigned to E/E systems using Automotive Safety Integrity Level (ASIL) and the risk reduction taken care of by external measures and/or other technologies [which are outside the scope of ISO 26262:2011 (all parts) and this Publicly Available Standard].

Specifically in the motorcycle industry, a greater proportion of the overall risk reduction is generally apportioned to external measures (for example, riding rules, training/qualification of riders, personal protective equipment, e.g. helmets and infrastructure features).

The worldwide established level of technology (“state-of-the-art”) in the motorcycle industry suggests that ASIL requirements are not appropriate for motorcycles. This is addressed through the alignment between MSIL and ASIL.

It is acknowledged that product development processes and technical solutions within the motorcycle industry are inhomogeneous with those of the automobile industry; therefore, the difference between MSIL and ASIL has been made to accommodate worldwide capability.

It can be necessary to modify certain requirements, methods, and measures of ISO 26262:2011 (all parts) in order to adapt the standards’ best practices to match state-of-the-art practices for motorcycle functional safety.

Other areas of ISO 26262:2011 (all parts) which would be affected by inclusion of motorcycles within the scope of the standard have also been identified and necessary changes recommended. The content of this Publicly Available Standard requires consideration and acceptance by SC 32 in order to facilitate the inclusion of motorcycles within the scope of ISO 26262:2011 (all parts) Edition 2.

Figure 1 shows the structure and relation of this Publicly Available Standard and ISO 26262:2011 (all parts).

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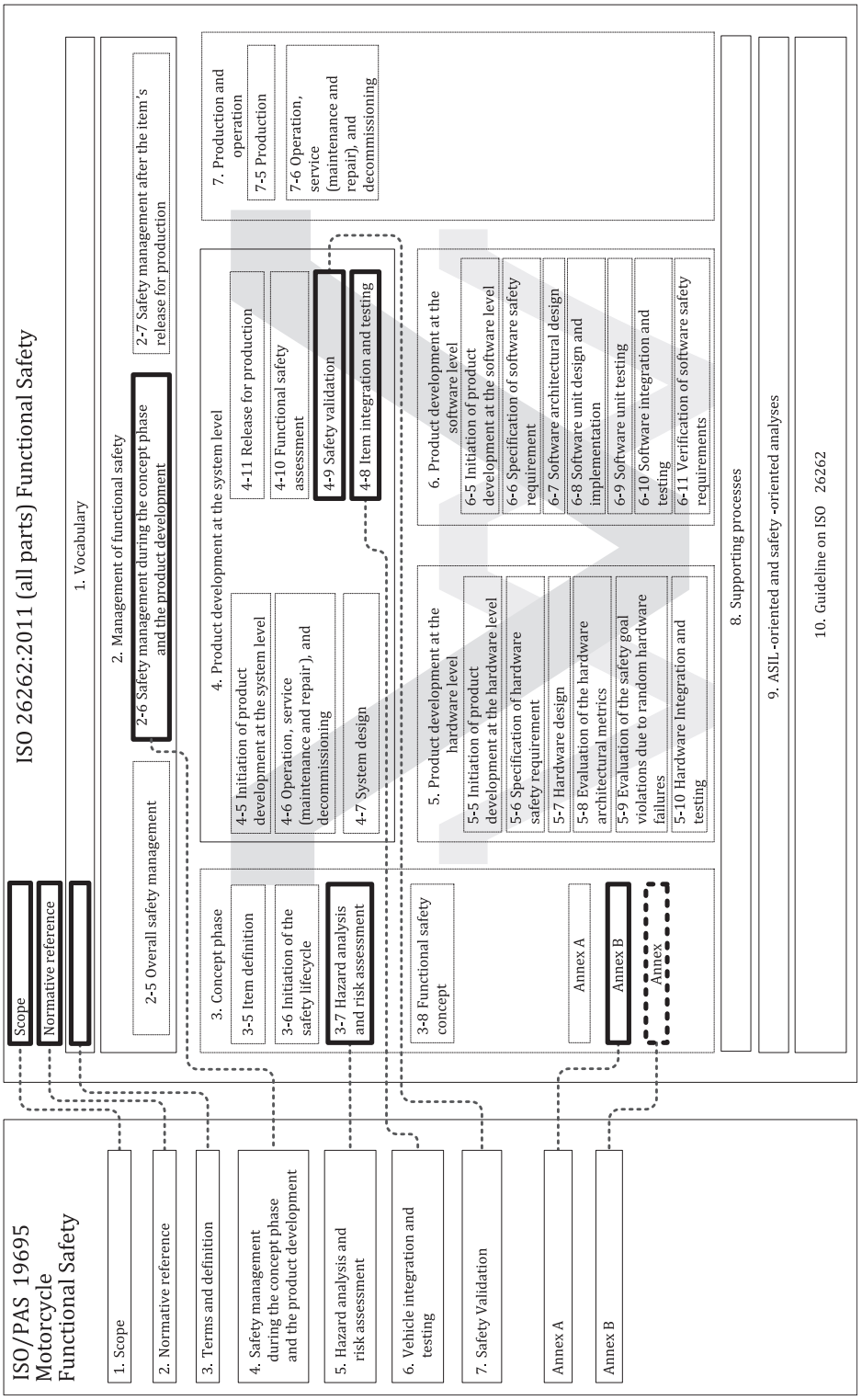


Figure 1 — Overview of this Publicly Available Standard and the relation to ISO 26262:2011 (all parts)

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Motorcycles — Functional safety

1 Scope

This Publicly Available Standard is intended to be applied to safety-related systems that include one or more electrical and/or electronic (E/E) systems and that are installed in series production two-wheeled or three-wheeled motorcycles.

This Publicly Available Standard does not address unique E/E systems in special purpose vehicles, such as vehicles designed for competition.

This Publicly Available Standard addresses possible hazards caused by malfunctioning behaviour of E/E safety-related systems, including interaction of these systems. It does not address hazards related to electric shock, fire, smoke, heat, radiation, toxicity, flammability, reactivity, corrosion, release of energy, and similar hazards, unless directly caused by malfunctioning behaviour of E/E safety-related systems.

This Publicly Available Standard does not address the nominal performance of E/E systems, even if dedicated functional performance standards exist for these systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 26262-1:2011, *Road vehicles — Functional safety — Part 1: Vocabulary*

ISO 26262-2:2011, *Road vehicles — Functional safety — Part 2: Management of functional safety*

ISO 26262-3:2011, *Road vehicles — Functional safety — Part 3: Concept phase*

ISO 26262-4:2011, *Road vehicles — Functional safety — Part 4: Product development at the system level*

ISO 26262-5:2011, *Road vehicles — Functional safety — Part 5: Product development at the hardware level*

ISO 26262-6:2011, *Road vehicles — Functional safety — Part 6: Product development at the software level*

ISO 26262-8:2011, *Road vehicles — Functional safety — Part 8: Supporting processes*

ISO 26262-9:2011, *Road vehicles — Functional safety — Part 9: Automotive Safety Integrity Level (ASIL)-oriented and safety-oriented analyses*

3 Terms, definitions, and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 26262-1:2011 and the following apply

3.1
expert rider
role filled by persons capable of evaluating controllability classifications based on operation of actual motorcycles

Note 1 to entry: An expert rider is a rider who has the

— skill to evaluate controllability,

— capability to conduct the vehicle test, and

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