
**Motorcycles — Test and analysis
procedures for research evaluation of
rider crash protective devices fitted to
motorcycles —**

Part 2:

**Definition of impact conditions in relation
to accident data**

*Motorcycles — Méthodes d'essai et d'analyse de l'évaluation par la
recherche des dispositifs, montés sur les motocycles, visant à la
protection des motocyclistes contre les collisions —*

*Partie 2: Définition des conditions de choc en fonction des données sur
les accidents*



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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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13232-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 22, *Motorcycles*.

This second edition cancels and replaces the first version (ISO 13232-2:1996), which has been technically revised.

ISO 13232 consists of the following parts, under the general title *Motorcycles — Test analysis procedures for research evaluation of rider crash protective devices fitted to motorcycles*:

- *Part 1: Definitions, symbols and general considerations*
- *Part 2: Definition of impact conditions in relation to accident data*
- *Part 3: Motorcyclist anthropometric impact dummy*
- *Part 4: Variables to be measured, instrumentation and measurement procedures*
- *Part 5: Injury indices and risk/benefit analysis*
- *Part 6: Full-scale impact-test procedures*
- *Part 7: Standardized procedures for performing computer simulations of motorcycle impact tests*
- *Part 8: Documentation and reports*

Introduction

ISO 13232 has been prepared on the basis of existing technology. Its purpose is to define common research methods and a means for making an overall evaluation of the effect that devices which are fitted to motorcycles and intended for the crash protection of riders, have on injuries, when assessed over a range of impact conditions which are based on accident data.

It is intended that all of the methods and recommendations contained in ISO 13232 should be used in all basic feasibility research. However, researchers should also consider variations in the specified conditions (for example, rider size) when evaluating the overall feasibility of any protective device. In addition, researchers may wish to vary or extend elements of the methodology in order to research issues which are of particular interest to them. In all such cases which go beyond the basic research, if reference is to be made to ISO 13232, a clear explanation of how the used procedures differ from the basic methodology should be provided.

ISO 13232 was prepared by ISO/TC 22/SC 22 at the request of the United Nations Economic Commission for Europe Group for Road Vehicle General Safety (UN/ECE/TRANS/SCI/WP29/GRSG), based on original working documents submitted by the International Motorcycle Manufacturers Association (IMMA), and comprising eight interrelated parts.

This revision of ISO 13232 incorporates extensive technical amendments throughout all the parts, resulting from extensive experience with the standard and the development of improved research methods.

In order to apply ISO 13232 properly, it is strongly recommended that all eight parts be used together, particularly if the results are to be published.

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Motorcycles — Test and analysis procedures for research evaluation of rider crash protective devices fitted to motorcycles —

Part 2:

Definition of impact conditions in relation to accident data

1 Scope

This part of ISO 13232 specifies minimum requirements for the collection and analysis of all motorcycle accident data, in order to provide:

- a standardized and representative sub-set of car/motorcycle accident data; and
- a sub-set of car/motorcycle impact conditions based on the analysis of this standardized accident data.

ISO 13232 specifies the minimum requirements for research into the feasibility of protective devices fitted to motorcycles, which are intended to protect the rider in the event of a collision.

ISO 13232 is applicable to impact tests involving:

- two-wheeled motorcycles;
- the specified type of opposing vehicle;
- either a stationary and a moving vehicle or two moving vehicles;
- for any moving vehicle, a steady speed and straight-line motion immediately prior to impact;
- one helmeted dummy in a normal seating position on an upright motorcycle;
- the measurement of the potential for specified types of injury by body region; and
- evaluation of the results of paired impact tests (i.e. comparisons between motorcycles fitted and not fitted with the proposed devices).

ISO 13232 does not apply to testing for regulatory or legislative purposes.

2 Normative references

The following referenced documents are indispensable for the application 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 13232-1, *Motorcycles — Test and analysis procedures for research evaluation of rider crash protective devices fitted to motorcycles — Part 1: Definition, and general considerations*

ISO 13232-7, *Motorcycles — Test and analysis procedures for research evaluation of rider crash protective devices fitted to motorcycles — Part 7: Standardized procedures for performing computer simulations of motorcycle impact tests*

AIS-90:1990, Association for the Advancement of Automotive Medicine (AAAM), Des Plaines, IL, USA *The abbreviated injury scale, 1990 revision*

3 Definitions

The following terms are defined in ISO 13232-1. For the purposes of this part of ISO 13232, those definitions apply. Additional definitions which could apply to this part of ISO 13232 are also listed in ISO 13232-1:

- cell;
- cell range;
- centre line of the OV or MC;
- corner of the OV;
- MC front unsprung assembly;
- MC contact point;
- MC impact speed;
- nominal values;
- OV contact point;
- OV impact speed;
- overall length of the OV or MC;
- relative heading angle (rha);
- structural element of the MC.

4 Requirements

4.1 Impact variables

The following impact variables shall define an impact test or impact data for an accident:

- relative heading angle;
- opposing vehicle (OV) impact speed;
- motorcycle (MC) impact speed;
- OV contact point;
- MC contact point.

These variables shall be as defined in 4.3 for impact tests and in Annex A for accident reports.