
**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 motos, 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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Printed in Switzerland

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.

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.

This part of ISO 13232 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 22, *Motorcycles*.

At the request of the United Nations Economic Commission for Europe, Group for Road Vehicle General Safety (UN/ECE/TRANS/SCI/WP29/GRSG), this International Standard has been prepared by ISO/TC 22/SC 22, *Motorcycles*, as eight interrelated parts, on the basis of original working documents submitted by the International Motorcycle Manufacturers Association (IMMA).

This is the first version of the standard.

ISO 13232 consists of the following parts, under the general title *Motorcycles — Test and 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: 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*

Annexes A, B, C and D form an integral part of this part of ISO 13232. Annexes E and F are for information only.

Introduction

This International Standard 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 motor cycles 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 this International Standard 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 this International Standard, a clear explanation of how the procedures used differ from the basic methodology should be provided.

It is recognized that the method of analysis as described in this part of ISO 13232 may be modified at a future date to reflect the availability of more detailed accident data bases which may be collected with a greater degree of precision than were the Hannover and Los Angeles accident data.

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

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 International Standard specifies the minimum requirements for research into the feasibility of protective devices fitted to motor cycles, which are intended to protect the rider in the event of a collision.

This International Standard is applicable to impact tests involving

- two wheeled motor cycles;
- 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 motor cycle;
- the measurement of the potential for specified types of injury by body region;
- evaluation of the results of paired impact tests (i.e., comparisons between motor cycles fitted and not fitted with the proposed devices).

This part of ISO 13232

- specifies minimum requirements for the collection and analysis of motor cycle accident data, in order to provide a statistical basis for defining impact test conditions;
- provides a standardized and representative set of accident data and a set of impact conditions based on an analysis of this accident data.

This International Standard does not apply to testing for regulatory or legislative purposes.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 13232 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 13232-1: 1996, Motor cycles – Test and analysis procedures for research evaluation of rider crash protective devices fitted to motor cycles – Part 1 – Definitions, symbols and general considerations.

ISO 13232-7: 1996, Motor cycles - Test and analysis procedures for research evaluation of rider crash protective devices fitted to motor cycles - Part 7 - Standardized procedures for performing computer simulations of motor cycle impact tests.

AIS-90: 1990, American Association of Automotive Medicine (AAAM). The abbreviated injury scale. 1990 revision. Des Plaines, IL, U.S.A.

3 Definitions

For the purposes of this part of ISO 13232, the definitions given in ISO 13232-1 apply, of which the following are of particular relevance to this part of ISO 13232.

- 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;
- motor cycle (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.

4.2 Standardized accident configurations

Standardized accident configurations shall be used for overall evaluations of rider crash protective devices, for failure mode and effects analyses of such devices, and for full-scale impact tests intended to verify such analyses.