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Passenger cars — Braking in a turn — Open-loop test method

Voitures particulières — Freinage en virage — Méthode d'essai en boucle ouverte

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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 7975 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 9, *Vehicle dynamics and road-holding ability*.

This third edition cancels and replaces the second edition (ISO 7975:1996), which has been technically revised.

Introduction

The dynamic behaviour of a road vehicle is a most important part of active vehicle safety. Any given vehicle, together with its driver and the prevailing environment, forms a unique closed-loop system. The task of evaluating the dynamic behaviour is therefore very difficult, because of the significant interaction of these driver-vehicle-environment elements, each in itself complex. A complete and accurate description of the behaviour of the road vehicle must necessarily involve information obtained from a number of tests of different types.

Since the braking in turn test procedures quantify only one small part of the complete vehicle handling characteristics, the results of these tests can only be considered significant for a correspondingly small part of the overall dynamic behaviour.

Moreover, insufficient knowledge is available concerning the relationship between overall vehicle dynamic properties and accident avoidance. A substantial amount of work is needed to acquire sufficient and reliable data on the correlation between accident avoidance and vehicle dynamic properties in general and the results of these tests in particular. Therefore, it is not possible to use these procedures and test results for regulation purposes.

Test conditions and tyres have a strong influence on test results. Therefore, only vehicle dynamic properties obtained under identical test and tyre conditions are comparable to one another.

Passenger cars — Braking in a turn — Open-loop test method

1 Scope

This International Standard specifies an open-loop test procedure to examine the effect of braking on course holding and directional behaviour of a vehicle. Specifically, the method determines how the steady-state circular response of a vehicle is altered by a braking action only. This International Standard applies to passenger cars as defined in ISO 3833 and to light trucks.

The open-loop manoeuvre specified in this test method is not representative of real driving conditions, but is useful to obtain measures of vehicle braking behaviour resulting from control inputs under closely controlled test conditions.

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 3833, *Road vehicles — Types — Terms and definitions*

ISO 4138, *Passengers cars — Steady-state circular driving behaviour — Open-loop test methods*

ISO 8855, *Road vehicles — Vehicle dynamics and road-holding ability — Vocabulary*

ISO 15037-1:1998 [1], *Road vehicles — Vehicle dynamics test methods — Part 1: General conditions for passenger cars*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8855 and the general conditions given in ISO 15037-1 apply.

4 Principle

The purpose of this test is to examine the effect of braking on course holding and directional behaviour of a vehicle. Specifically, the method determines how the steady-state circular response of a vehicle is altered by braking action only.

The initial conditions are defined by constant longitudinal velocity and by a circle with a given radius, as specified by the constant-radius test method of ISO 4138. The steering-wheel angle required for the steady-state circular run shall be constantly maintained during the entire test. During the test, the driver input and the vehicle response are measured and recorded. From the recorded signals, characteristic values are calculated.

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[1] To be revised.