International Standard 1413

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Horology — Shock-resistant watches

Horlogerie — Montres résistant aux chocs

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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 developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1413 was developed by Technical Committee ISO/TC 114, *Horology*, and was circulated to the member bodies in March 1983.

It has been approved by the member bodies of the following countries:

Czechoslovakia	Mexico
France	Romania
Germany, F. R.	Switzerland
India	USSR
Japan	

No member body expressed disapproval of the document.

This second edition cancels and replaces the first edition (i.e. ISO 1413-1973).

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Horology — Shock-resistant watches

1 Scope and field of application

This International Standard specifies the minimum requirements for shock-resistant watches and describes the corresponding method of test.

It is intended to allow homologation testing of watches rather than the individual control of all watches of a production batch. Indeed, assuming that each watch could comply with the minimum requirements without apparent damage, readjustment could still be made necessary because the test can lead to an alteration of the initial rate of a watch.

This International Standard is based on the simulation of the shock received by a watch on falling accidentally from a height of 1 m on to a horizontal hardwood surface.

2 Reference

ISO 3158, *Timekeeping instruments — Symbolization of control positions.*

3 Definitions

For the purpose of this International Standard, the following definitions apply.

3.1 shock-resistant watch : A watch complying with the minimum requirements of this International Standard.

3.2 residual effect : The difference of rates observed under the conditions of test specified in this International Standard.

4 Minimum requirements

When tested as specified in clause 5, a shock-resistant watch shall comply with the following minimum requirements :

a) it shall not stop after either of the two shocks;

b) the residual effect shall not exceed 2 s per day for quartz watches, or 60 s per day for all other types of watches;

c) examination of the watch shall not reveal any deterioration affecting its performance or its appearance (for example bent or displaced hands, altered display, impaired automatic device or calendar, cracked glass, bent horns, bent or broken crown or damaged push-button, etc.).

5 Method of test

A wristwatch shall be tested without the bracelet, unless the latter forms an integral part of the watch.

5.1 Test temperature

Throughout the test period, the ambient temperature shall be between 18 and 25 °C and shall not vary by more than 2 °C.

5.2 Apparatus

The apparatus used to produce the shock shall be a pendulum impact tester (see clause 7) or any other apparatus the construction of which complies with the characteristics specified in clause 6.

5.3 Procedure

5.3.1 Determination of rate before shocks

5.3.1.1 Mechanical watches

Sixty minutes after winding to maximum, the rate of the watch to be tested shall be checked continuously for at least 1 min in each of the positions FH, 6H and 9H (see ISO 3158) using an apparatus for measuring the instantaneous rate.

5.3.1.2 Quartz watches

Quartz watches shall be allowed to function for at least 2 h before starting the test; after this period, the rate shall be checked in position CH or FH using an apparatus for measuring the instantaneous rate.

5.3.2 First shock

The shock shall be directed against the caseband, parallel to the plane of the watch, on the "9 o'clock" side.

NOTE — Similarly, in the case of watches with a digital display, the shock should be given at the same location.