
INTERNATIONAL STANDARD



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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Test conditions for turret and single spindle co-ordinate drilling and boring machines with table of fixed height with vertical spindle — High accuracy machines — Testing of the accuracy

Conditions d'essai des machines à percer et à aléser verticales à coordonnées à table de hauteur fixe, du type monobroche ou à tourelle revolver — Machines de haute précision — Contrôle de la précision

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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 3686 was drawn up by Technical Committee ISO/TC 39, *Machine tools*, and was circulated to the Member Bodies in May 1975.

It has been approved by the Member Bodies of the following countries :

Australia	India	South Africa, Rep. of
Austria	Italy	Spain
Belgium	Japan	Sweden
Czechoslovakia	Korea, Dem. P. Rep. of	Switzerland
France	Mexico	Turkey
Germany	Poland	Yugoslavia
Hungary	Romania	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

United Kingdom
U.S.A.

Test conditions for turret and single spindle co-ordinate drilling and boring machines with table of fixed height with vertical spindle — High accuracy machines — Testing of the accuracy

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies, with reference to ISO/R 230, both geometrical and practical tests of high accuracy turret and single spindle co-ordinate drilling and boring machines with table of fixed height with vertical spindle, and gives the corresponding permissible deviations which apply.

Moreover, it should be noted that besides drilling and boring operations it may be possible to carry out light milling operations with these machines, but this International Standard does not deal with jig boring machines or machining centres.

This International Standard deals only with the verification of accuracy of the machines. It does not apply to the testing of the running of the machine (vibrations, abnormal noises, stick-slip motion of components, etc.), or to machine characteristics (speeds, feeds, etc.) which should generally be checked before testing accuracy.

There is a wide variety of machine configurations within the scope of these machines, the most common being :

- single column type machines;
- double column type or bridge type machines.

Therefore the geometrical tests given in this International Standard should be selected according to the particular configuration of the machine being considered.

2 REFERENCES

ISO/R 230, *Machine tool test code*.

ISO 3190, *Test conditions for turret and single spindle co-ordinate drilling machines with vertical spindle — Testing of the accuracy*.

3 PRELIMINARY REMARKS

In this International Standard all the dimensions and permissible deviations are expressed in millimetres and in inches.

To apply this International Standard, reference should be made to ISO/R 230, especially for the installation of the machine before testing, warming up of spindles and other moving parts, description of measuring methods and recommended accuracy of testing equipment.

The sequence in which the geometrical tests are given is related to the sub-assemblies of the machine and this in no way defines the practical order of testing. In order to make the mounting of instruments or gauging easier, tests may be applied in any order.

When inspecting a machine, it is not always possible, or necessary, to carry out all the tests described in this International Standard. It is up to the user to choose, in agreement with the manufacturer, those tests relating to the existing elements of the machine or to the properties which are of interest to him, but these tests are to be clearly stated when ordering a machine.

It should be noted that for turret head drilling machines, all the geometrical tests that concern the rotation of the spindle, i.e. tests G7, G8, G9 and G12, should be carried out on all spindles.

When the tolerance is established for a measuring range different from that given in this International Standard (see 2.311 in ISO/R 230) it should be taken into consideration that the minimum value of tolerance is 0,005 mm (0.000 2 in).