INTERNATIONAL STANDARD 3190

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Test conditions for turret and single spindle co-ordinate drilling machines with vertical spindle — Testing of the accuracy

Conditions d'essai des machines à percer verticales à coordonnées, du type monobroche ou à tourelle revolver — 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 3190 was drawn up by Technical Committee ISO/TC 39, *Machine tools,* and circulated to the Member Bodies in November 1973.

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

Australia	Hungary	Sweden
Austria	India	Switzerland
Belgium	Italy	Thailand
Bulgaria	Japan	Turkey
Czechoslovakia	New Zealand	United Kingdom
Egypt, Arab Rep. of	Romania	U.S.A.
France	South Africa, Rep. of	U.S.S.R.
Germany	Spain	Yugoslavia

No Member Body expressed disapproval of the document.

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Test conditions for turret and single spindle co-ordinate drilling machines with vertical spindle — Testing of the accuracy

1 SCOPE AND FIELD OF APPLICATION

This International Standard describes, with reference to ISO/R 230, both geometrical and practical tests on general purpose and normal accuracy turret and single spindle co-ordinate drilling machines with vertical spindle and the corresponding permissible deviations which apply.

It deals only with the verification of accuracy of the machine. 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.

As there is great variety in the configuration of these machines, the most common being

- box type and variable height table machines,
- box type and fixed height table machines,
- bridge machines,

it is specified that the geometrical tests given in this International Standard shall be selected according to the particular conformation of the machine type considered.

2 REFERENCES

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

ISO 3686, *Test conditions for turret and single spindle co-ordinate drilling and boring machines with table of fixed height with vertical spindle — Testing of the accuracy.* [1)]

3 PRELIMINARY REMARKS

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

To apply this International Standard, reference should be made to ISO/R 230, especially for 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 given 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.

As far as turret head drilling machines are concerned it is intended that all geometrical tests which concern the rotation of the spindle, i.e. Tests G7, G8, G9 and G12, shall be carried out on all spindles.

When establishing the tolerance 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 0,01 mm (0.000 4 in).

1) At present at the stage of draft.

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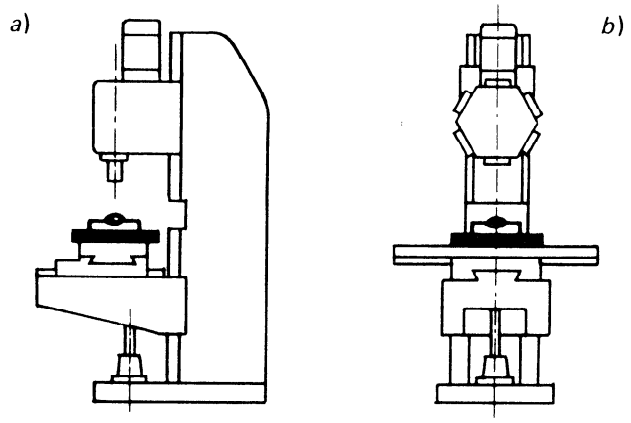
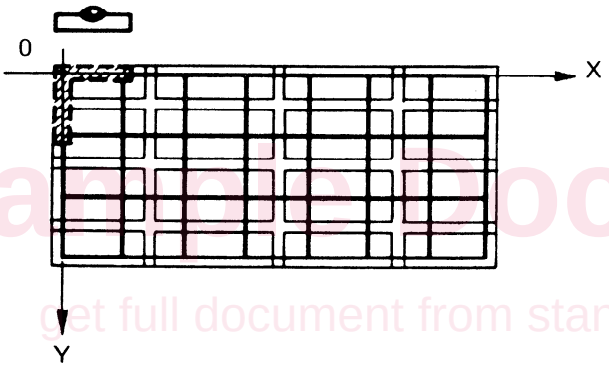
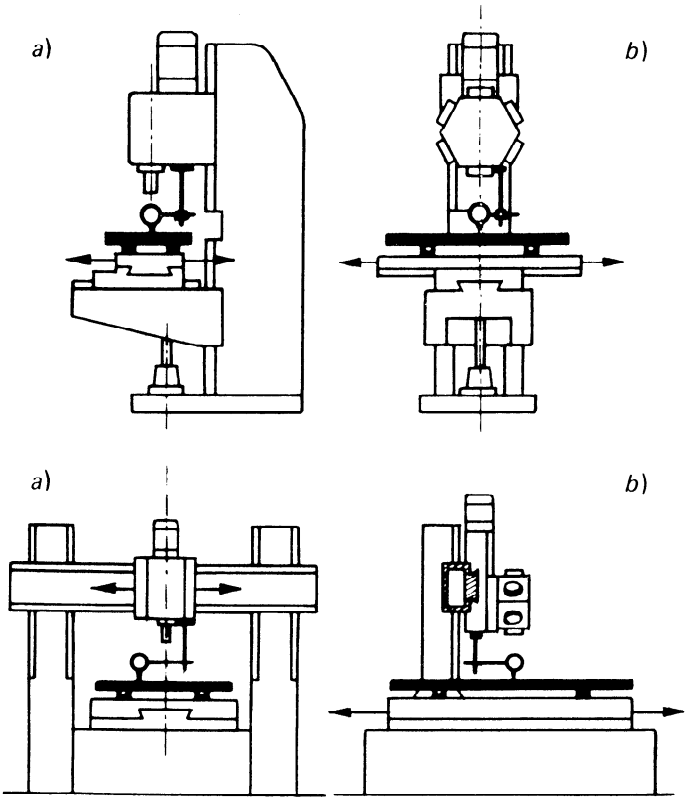
4 TEST CONDITIONS AND PERMISSIBLE DEVIATIONS

4.1 Geometrical tests

No.	Diagram	Object
G0		Levelling of the machine : *a*) in the plane of symmetry of the machine; *b*) in the plane perpendicular to the plane of symmetry of the machine and co-axial with the spindle axis.
G1		**A – TABLE** Checking of flatness of the table surface.
G2		Checking of parallelism of the table surface to : *a*) transverse movement of the table, or transverse movement of the spindle head; *b*) longitudinal movement of the table.