International Standard 3655

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Acceptance conditions for vertical turning and boring lathes with one or two columns and a single fixed or movable table — General introduction and testing of the accuracy

Conditions de réception des tours verticaux à un ou deux montants, à un seul plateau fixe ou déplaçable — Introduction générale et contrôle de la précision

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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.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3655 was prepared by Technical Committee ISO/TC 39, *Machine tools*.

This second edition cancels and replaces the first edition, published in two parts (ISO 3655/0-1976 and ISO 3655/1-1986), of which it constitutes a minor revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Acceptance conditions for vertical turning and boring lathes with one or two columns and a single fixed or movable table — General introduction and testing of the accuracy

1 Scope and field of application

This International Standard defines machining operations on vertical turning and boring lathes with one or two columns and a single fixed or movable table. It defines and summarizes the different types of machines and establishes a glossary for the various types of machine tool. It indicates, with reference to ISO 230/1, both geometrical and practical tests for such vertical lathes, and gives the corresponding permissible deviations for general purpose use machines of normal accuracy.

NOTE — In addition to terms used in the three official ISO languages (English, French and Russian), this International Standard gives the equivalent terms in German, Italian and Swedish; these have been included at the request of Technical Committee ISO/TC 39 and are published under the responsibility of the member bodies for Germany F.R. (DIN), Italy (UNI) and Sweden (SIS). However, only the terms given in the official languages can be considered as ISO terms.

It deals only with the verification of accuracy of the machine. It does not apply to 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.

2 References

ISO 230/1, *Machine tools — Acceptance code for machine tools — Part 1: Geometric accuracy of the machine operating under no load or finishing conditions.*

ISO 841, *Numerical control of machines — Axis and motion nomenclature.*

ISO 1101, *Technical drawings — Geometrical tolerancing — Tolerancing of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings.*

3 Definitions of the machining operations carried out on these machines

3.1 Turning operations

Turning consists of machining of internal or external, cylindrical or conical or other revolving surfaces by means of one or more single point cutting tools.

3.2 Facing operations

A vertical turning and boring lathe can also be used for machining flat surfaces, perpendicular to the axis of rotation of the table. This operation is called facing.

3.3 Threading operations

Threads of given pitches are machined on external or internal cylindrical surfaces by means of special thread form cutting tools.

3.4 Scroll cutting operations

Scroll (Archimedian spiral) cutting is the machining of spiral grooves in a surface perpendicular to the axis of rotation of the table.

4 Definition and description of the various types

The common characteristic of all vertical turning and boring lathes is that they have at least one circular table which revolves on a fixed or movable base. The axis of rotation of the table is vertical and the horizontal surface is used as a location face for workpiece location fixtures.

These machines fall into two categories characterized by type, i.e.:

- vertical turning and boring lathes with a single column;
- vertical turning and boring lathes with two columns.

In addition, in the machines of the first category or "single column lathes", there are machines with:

- fixed column and fixed table;
- fixed column and movable table;
- movable column and fixed table.