
International Standard



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Acceptance conditions for boring and milling machines with horizontal spindle — Testing of the accuracy — Part 0: General introduction

*Conditions de réception des machines à aléser et à fraiser, à broche horizontale — Contrôle de la précision —
Partie 0: Introduction générale*

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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 3070/0 was developed by Technical Committee ISO/TC 39, *Machine tools*.

This second edition was submitted directly to the ISO Council, in accordance with clause 6.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 3070/0-1975), which had been approved by the member bodies of the following countries:

Austria	Japan	Thailand
Bulgaria	Mexico	Turkey
Czechoslovakia	New Zealand	United Kingdom
France	Romania	USA
Germany, F.R.	South Africa, Rep. of	USSR
Hungary	Spain	Yugoslavia
India	Sweden	
Italy	Switzerland	

The member body of the following country had expressed disapproval of the document on technical grounds:

Belgium

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1 Scope and field of application

So as to avoid any confusion when performing the tests, this part of ISO 3070 defines the machining operations carried out on boring and milling machines with horizontal spindle and describes the different types of such machines.

These machines are classified according to the three following groups:

- a) table type machines (see 3.1);
- b) planer type machines (see 3.2);
- c) movable column machines or floor type machines (see 3.3).

In addition, the terminology of certain elements in the English, French, Russian, German and Italian languages is given.

NOTE — In addition to terms used in the three official ISO languages (English, French and Russian), this part of ISO 3070 gives the equivalent terms in German and Italian; these have been included at the request of ISO Technical Committee 39 and are published under the responsibility of the member bodies for Germany, F.R. (DIN) and Italy (UNI). However, only the terms given in the official languages can be considered as ISO terms.

2 Definitions of the machining operations carried out on these machines

2.1 Boring operations

Boring consists in machining to the required size the diameter of cylindrical, conical, blind or through holes.

In the case of coaxial bores situated on opposite faces of the same workpiece, the operation may be carried out using a boring bar, the driving taper of which is engaged into the spindle nose of the machine boring spindle (see figure 4) and the other end of which is rotating within the bearing of the steady block.

Due to the significant amount of dead time incurred by such an operation it is becoming more and more frequent to bore with a special toolholder directly mounted into the spindle nose, then turn the table 180° to bore the opposite side of the workpiece (reverse boring).

Although more economical, this latter method requires closer tolerances for table positioning.

2.2 Milling operations

Milling operations mostly involve face milling or end milling. The tools are mounted either in the boring spindle taper (see figure 4) or, as for face milling cutters, on the milling spindle nose.

3 Definition and brief description of the various types

The machines referred to below are machines with a horizontal spindle. The technical development of tooling and the efforts to limit workpiece mounting and removal operations have led to the production of machines able to bore and mill.

There is a tendency to use both expressions "boring and milling machines" and "milling and boring machines". However, the latter expression would appear preferable when the spindle is mounted in a sleeve, quill or ram, with the spindle axis passing through the spindle head (see figure 6).

It is generally accepted that these machines fall into three categories characterized by their particular configuration.

3.1 Table type machines (see figure 1)

Machines à montant fixe (F)

Tischbohrwerke (D)

With this type of machine the column is fixed to the bed.

The cutting movement is generated by the rotation of the spindle(s) and possibly of the facing head.

The feed movements are as follows:

- a) longitudinal, transverse and possibly rotary movements of the table;
- b) vertical movement of the spindle head;
- c) axial movement of the spindle;
- d) possibly movement of radial facing slide.

3.2 Planer type machines (see figure 2)

Machines à banc en croix (F)

Kreuzbettbohrwerke (D)

This type of machine may include three beds, the column and the steady beds being placed on each side of the table bed. The steady bed and the steady block are not shown in figure 2, since they are not integral parts of the machine.