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International Standard



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**Test conditions for milling machines with table of variable height, with horizontal or vertical spindle —  
Part 0 : General introduction**

*Conditions de réception des machines à fraiser à table à hauteur variable, à broche horizontale ou verticale —  
Partie 0 : Introduction générale*

First edition — 1984-06-01

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Descriptors : machine tools, milling machines, vocabulary.

## 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 1701/0 was developed by Technical Committee ISO/TC 39, *Machine tools*, and was circulated to the member bodies in April 1982.

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

Belgium	Ireland	Spain
Brazil	Italy	Sweden
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Hungary	Romania	
India	South Africa, Rep. of	

No member body expressed disapproval of the document.

# Test conditions for milling machines with table of variable height, with horizontal or vertical spindle — Part 0 : General introduction

## 1 Scope and field of application

This part of ISO 1701 defines the machining processes that can be carried out on milling machines with table of variable height with horizontal or vertical spindle, and describes the different types of machines.

Milling machines with table of fixed height are covered by ISO 1984.

This part of ISO 1701 also gives a nomenclature for the main elements of the machine.

NOTE — In addition to terms used in the three official ISO languages (English, French and Russian), this part of ISO 1701 gives the equivalent terms in German, Italian, Dutch, Spanish 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), the Netherlands (NMI), Spain (IRANOR) and Sweden (SIS). However, only the terms given in the official languages can be considered as ISO terms.

## 2 References

ISO 1984/0, *Test conditions for milling machines with table of fixed height, with horizontal or vertical spindle — Part 0: General introduction.*

ISO 3855, *Milling cutters — Nomenclature.*

## 3 Definitions of the machining processes that can be carried out

### 3.1 Milling operations

Milling is a machining operation which consists of removing material by means of a rotary tool called a "milling cutter" of which there are several different types.

The usual operations of milling can be divided into three categories :

- slab milling operations (see figure 1);
- face milling operations (see figure 2);
- end milling operations (see figure 3).

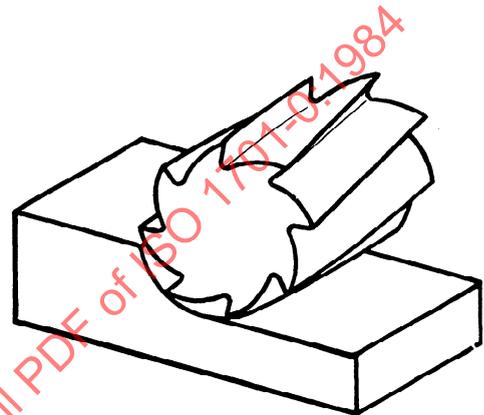


Figure 1 — Slab milling operation

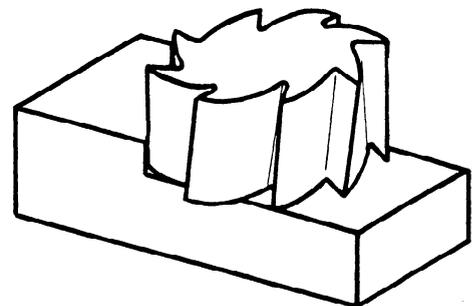


Figure 2 — Face milling operation

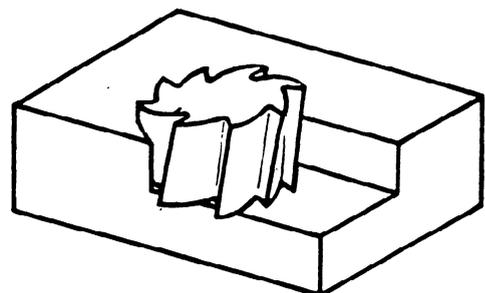


Figure 3 — End milling operation

### 3.2 Other operations

In addition to normal milling operations as described in 3.1, other operations such as boring and metal slitting (by the use of a metal slitting saw) may be carried out on milling machines.

## 4 Description of machines

In milling machines with table of variable height with horizontal or vertical spindle, the base-plate is rigidly fixed to the column (see figures 4, 5 and 6).

In this type of machine, the cutting movement is given by the spindle, the axis of which is horizontal or vertical.

The feed movements are as follows :

### 4.1 Spindle with a horizontal axis (see figure 4)

- the X axis of motion constitutes the longitudinal movement of the table;
- the Y axis of motion constitutes the vertical movement of the table;
- the Z axis of motion is parallel to the spindle axis and constitutes the transverse movement of the table.

### 4.2 Spindle with a vertical axis (see figure 5)

- the X axis of motion constitutes the longitudinal movement of the table;
- the Y axis of motion constitutes the transverse movement of the table;
- the Z axis of motion is parallel to the spindle axis and constitutes the vertical movement of the spindle head;
- the W axis of motion constitutes the vertical movement of the table.

### 4.3 Movable head with horizontal or vertical spindle axis (see figure 6).

- the X axis of motion constitutes the longitudinal movement of the table;
- the Y axis of motion constitutes the transverse movement of the table;
- the Z axis of motion constitutes the vertical movement of the table.

NOTE — All these feed movements may be carried out by a rapid traverse of the element in question.

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## 5 Nomenclature

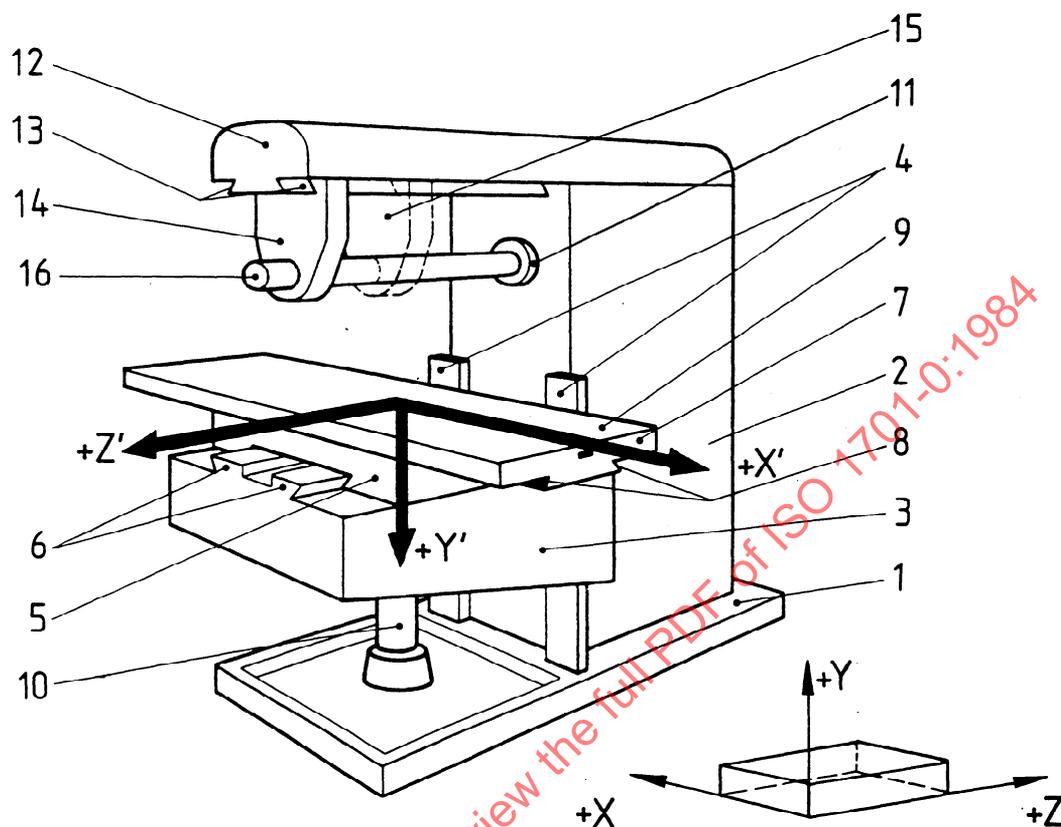


Figure 4 – Milling machine with table of variable height, with fixed horizontal spindle

Ref.	Designation		
	English	French	Russian
1	Base-plate with tray	Socle	Основание
2	Column	Montant	Стойка
3	Knee	Console	Консоль
4	Knee slideways	Glissières de la console	Направляющие консоли
5	Saddle	Chariot transversal	Салазки
6	Saddle slideways	Glissières du mouvement transversal de la table	Направляющие салазок
7	Table	Table porte-pièce	Стол
8	Table slideways	Glissières du mouvement longitudinal de la table	Направляющие стола
9	Table surface	Surface utile de la table	Рабочая поверхность стола
10	Vertical feed-screw	Vis verticale	Винт вертикального перемещения
11	Spindle nose	Nez de broche	Передний конец шпинделя
12	Overarm	Bras-support	Хобот
13	Overarm slideways	Glissière du bras-support	Направляющая хобота
14	Front arbor support	Lunette avant	Передняя серьга
15	Rear arbor support	Lunette arrière	Задняя серьга
16	Arbor	Arbre porte-fraise	Оправка

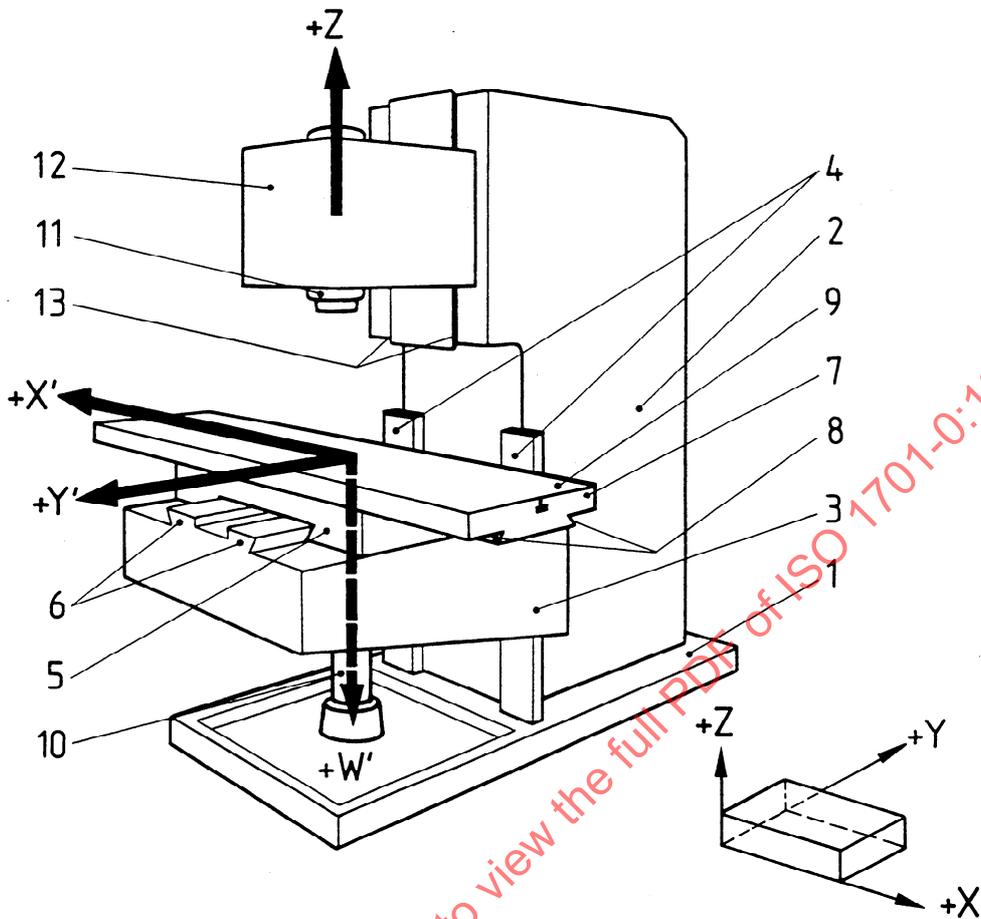


Figure 5 — Milling machine with table of variable height, with vertical spindle and a sliding vertical saddle spindle head

Ref.	Designation		
	English	French	Russian
1	Base-plate with tray	Socle	Основание
2	Column	Montant	Стойка
3	Knee	Console	Консоль
4	Knee slideways	Glissières de la console	Направляющие консоли
5	Saddle	Chariot transversal	Салазки
6	Saddle slideways	Glissières du mouvement transversal de la table	Направляющие салазок
7	Table	Table porte-pièce	Стол
8	Table slideways	Glissières du mouvement longitudinal de la table	Направляющие стола
9	Table surface	Surface utile de la table	Рабочая поверхность стола
10	Vertical feed-screw	Vis verticale	Винт вертикального перемещения
11	Spindle nose	Nez de broche	Передний конец шпинделя
12	Spindle head	Tête porte-broche	Шпиндельная бабка
13	Spindle head slideways	Glissière du mouvement vertical de la tête porte-broche	Направляющие шпиндельной бабки

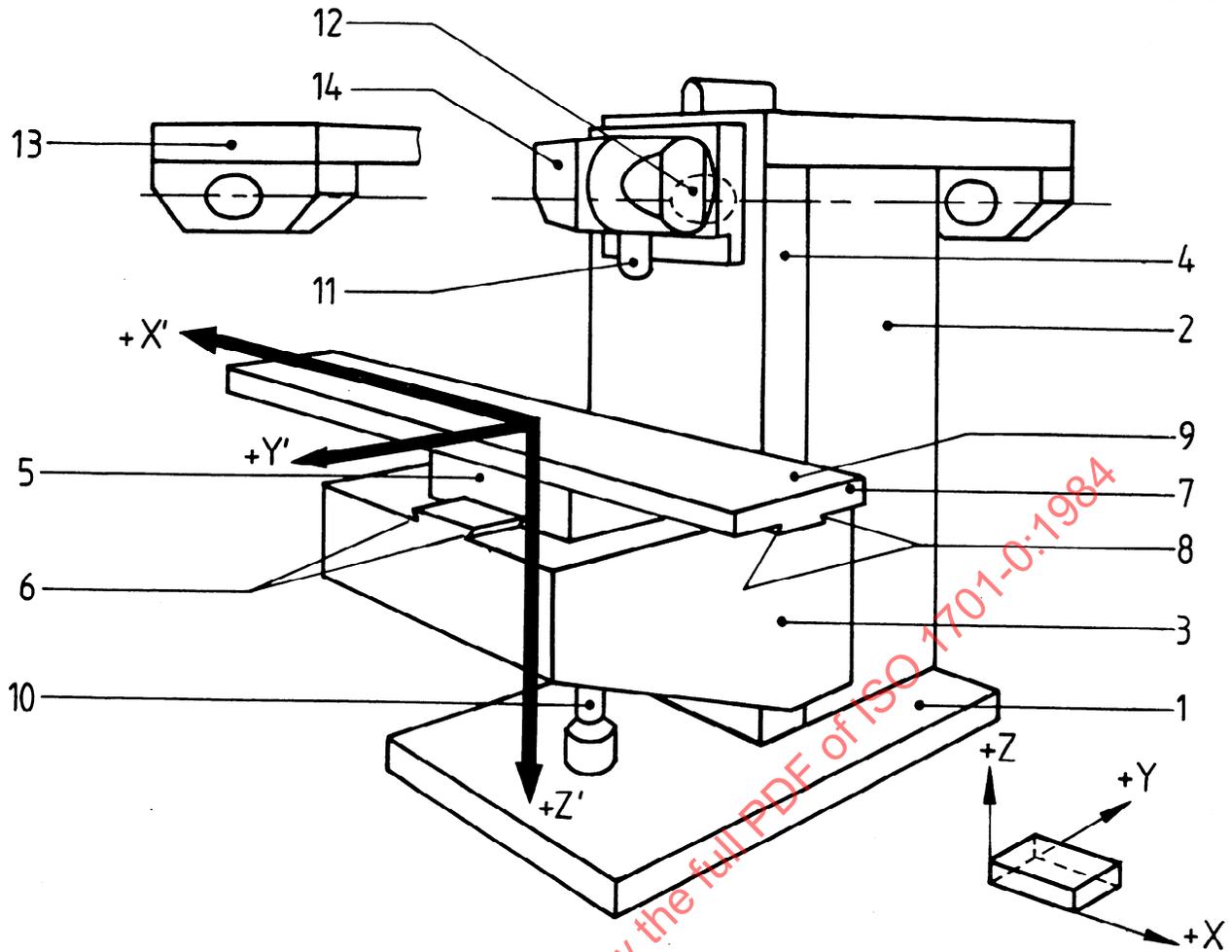


Figure 6 – Milling machine with table of variable height, with a movable head, with horizontal or vertical spindle

Ref.	Designation		
	English	French	Russian
1	Base-plate with tray	Socle	Основание
2	Column	Montant	Стойка
3	Knee	Console	Консоль
4	Knee slideways	Glissières de la console	Направление консоли
5	Saddle	Chariot transversal	Салазки
6	Saddle slideways	Glissières du mouvement transversal de la table	Направляющие салазок
7	Table	Table porte-pièce	Стол
8	Table slideways	Glissières du mouvement longitudinal de la table	Направляющие стола
9	Table surface	Surface utile de la table	Рабочая поверхность стола
10	Vertical feed-screw	Vis verticale	Винт вертикального перемещения
11	Vertical spindle nose	Nez de broche vertical	Конец вертикального шпинделя
12	Horizontal spindle nose	Nez de broche horizontal	Конец горизонтального шпинделя
13	Horizontal milling attachment	Dispositif de fraisage horizontal	Ползун
14	Movable head	Tête amovible	Поворотная головка

## Annex A

## Equivalent terms in German, Italian, Dutch, Spanish and Swedish, corresponding to figure 4

Ref.	Designation				
	German	Spanish	Italian	Dutch	Swedish
1	Grundplatte mit Wanne	Base	Basamento	Grondplaat met bak	Fot med tråg
2	Ständer	Columna	Montante	Staander	Pelare
3	Konsole	Consola	Mensola	Hoektafel	Knä
4	Konsolenführung	Guías de la consola	Guide della mensola	Leibanen van de hoektafel	Knägejder
5	Querschlitten (Z-Achse)	Carro transversal	Slitta trasversale	Dwarsslede (Z-as)	Tvärslid
6	Querschlittenführung	Guías del movimiento transversal de la mesa	Guide della slitta trasversale	Leibanen van de dwarsslede	Tvärslidsgejder
7	Längsschlitten (X-Achse)	Mesa porta-pieza	Tavola	Tafel (of langsslede) (X-as)	Bord
8	Längsschlittenführung	Guías del movimiento longitudinal de la mesa	Guide della tavola	Leibanen van de langsslede	Bordgejder
9	Aufspannfläche	Superficie útil de la mesa	Piano della tavola	Opspanoppervlak van de tafel	Bordyta
10	Verstellspindel (Y-Achse)	Tornillo del movimiento vertical de la consola	Vite della mensola	Verticale voedingspencil (Y-as)	Vertikalskruv
11	Spindelnase	Extremo del husillo	Naso del mandrino	Spilneus	Spindelnos
12	Gegenhalter	Brazo-soporte	Slittone	Steunarm	Bom
13	Gegenhalterführung	Guías del brazo-soporte	Guide dello slittone	Geleiding van de steunarm	Bomgejder
14	Vorderes Gegenhalterlager	Luneta delantera	Sopporto principale	Voorste frees-spilsteun	Främre dornstöd
15	Hinteres Gegenhalterlager	Luneta trasera	Sopporto intermedio	Achterste frees-spilsteun	Bakre dornstöd
16	Fräserdorn	Eje porta-fresas	Albero portafrese	Freesdoorn	Fräsdorn

## Annex B

Equivalent terms in German, Italian, Dutch, Spanish  
and Swedish corresponding to figure 5

Ref.	Designation				
	German	Spanish	Italian	Dutch	Swedish
1	Grundplatte mit Wanne	Base	Basamento	Grondplaat met bak	Fot med tråg
2	Ständer	Columna	Montante	Staander	Pelare
3	Konsole	Consola	Mensola	Hoektafel	Knä
4	Konsolenführung	Guías de la consola	Guide della mensola	Leibanen van de hoektafel	Knägejder
5	Querschlitten (Y-Achse)	Carro transversal	Slitta trasversale	Dwarslede (Y-as)	Tvärslid
6	Querschlittenführung	Guías del movimiento transversal de la mesa	Guide della slitta trasversale	Leibanen van de dwarslede	Tvärslidsgejder
7	Längsschlitten (X-Achse)	Mesa porta-pieza	Tavola	Tafel (of langsslede) (X-as)	Bord
8	Langsschlittenführung	Guías del movimiento longitudinal de la mesa	Guide della tavola	Leibanen van de langsslede	Bordgejder
9	Aufspannfläche	Superficie útil de la mesa	Piano della tavola	Opspanoppervlak van de tafel	Bordyta
10	Verstellspindel (W-Achse)	Tornillo del movimiento vertical de la consola	Vite della mensola	Verticale voedings-spil (W-as)	Vertikalskruv
11	Spindelnase	Extremo del husillo	Naso del mandrino	Spilneus	Spindelnos
12	Spindelstock (Z-Achse)	Cabezal	Testa	Spilkop	Spindeldocka
13	Spindelstockführung	Guías del movimiento vertical del cabezal	Guide della testa	Leibanen van de spilkop	Gejder för spindel-docka