International Standard 6779

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Acceptance conditions for broaching machines of vertical internal type — Testing of accuracy

Conditions de réception des machines verticales à brocher les intérieurs — 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 6779 was developed by Technical Committee ISO/TC 39, *Machine tools*, and was circulated to the member bodies in October 1979.

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

Australia	Japan	Sweden
Belgium	Korea, Rep. of	Switzerland
Germany, F.R.	Poland	USA
Hungary	Romania	USSR
India	South Africa, Rep. of	
Italy	Spain	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

France
United Kingdom

Printed in Switzerland

Acceptance conditions for broaching machines of vertical internal type — Testing of accuracy

1 Scope and field of application

This International Standard specifies, with reference to ISO/R 230, both preliminary levelling operations and geometrical tests on general purpose and normal accuracy machines, and gives the corresponding permissible deviations which apply. This International Standard also gives the terminology used for the main elements of the machine.[1]

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 its characteristics (speeds, feeds, etc.) which should generally be checked before testing accuracy.

2 Reference

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

3 Preliminary remarks

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

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

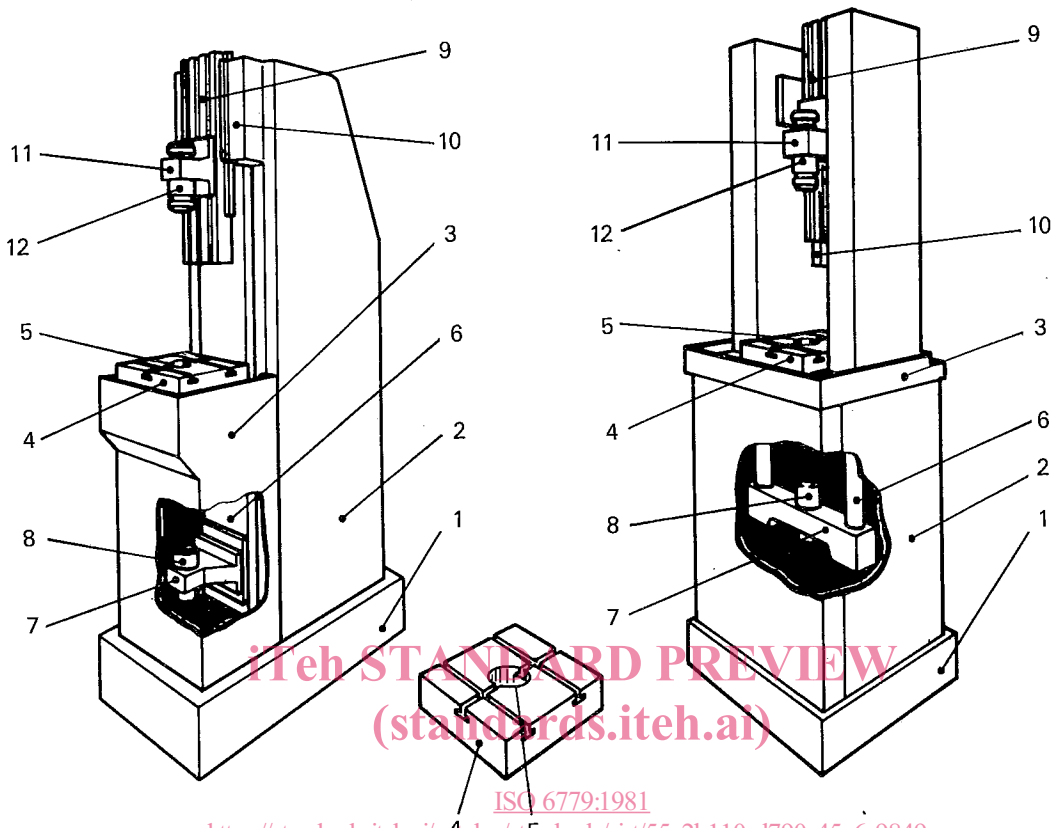
3.3 The sequence in which the geometrical tests are given is related to the sub-assemblies of the machine and this in no way defines the practical order of testing. In order to make the mounting of instruments or gauging easier, tests may be applied in any order.

3.4 When inspecting a machine, it is not always 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 properties which are of interest to him, but these tests are to be clearly stated when ordering a machine.

3.5 Because of the diversity of shape of the pieces, the practical tests have not been given. If the user wishes to carry out a practical test, this one has to be stated in agreement with the manufacturer.

3.6 When establishing the tolerance for a measuring range different from that given in this International Standard (see clause 2.311 in ISO/R 230), it should be taken into consideration that the minimum value of tolerance, for geometrical tests as well as for practical tests, is 0,01 mm (0,000 4 in).

1) In addition to terms used in the three official ISO languages (English, French and Russian), this International Standard gives the equivalent terms in German; these have been included at the request of ISO Technical Committee TC 39 and are published under the responsibility of the Member Body for Germany, F.R. However, only the terms and definitions given in the official languages can be considered as ISO terms and definitions.



E : Details 4 and 5 represented at a larger scale

F : Détails 4 et 5 représentés agrandis

R : Увеличенное изображение деталей 4 и 5

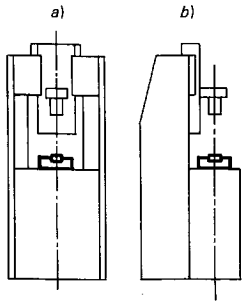
D : Einzelheit 4 und 5 vergrö)ert dargestellt

4 Terminology

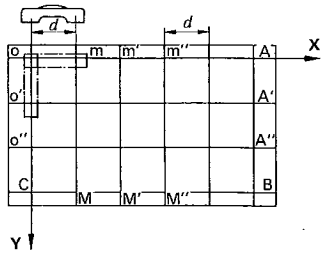
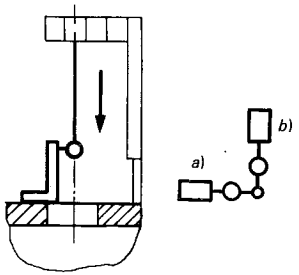
Ref.	English	French	Russian
1	Base	Socle	Основание
2	Column	Bâti	Станина
3	Table base	Support du plateau de fixation	Опора стола
4	Work table	Plateau de fixation (ou table)	Стол
5	Table location bore or register bore	Centrage du support de pièce	Отверстие под планшайбу
6	Pull slide	Coulisseau de traction	Рабочие салазки
7	Pull block	Traverse de traction	Кронштейн рабочих салазок
8	Pull chuck	Tête d'accrochage avant	Рабочий патрон
9	Retriever slide	Coulisseau de relevage	Вспомогательные салазки
10	Retriever slide guide	Guidage du coulisseau de relevage	Направляющие вспомогательных салазок
11	Retriever block	Chariot d'amenage	Кронштейн вспомогательных салазок
12	Retriever chuck	Tête d'accrochage arrière	Вспомогательный патрон

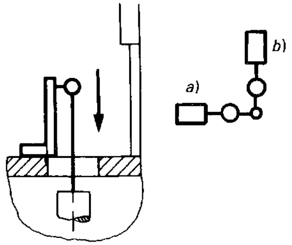
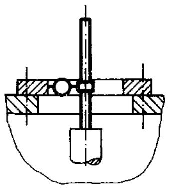
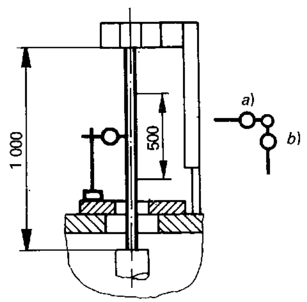
5 Acceptance conditions and permissible deviations

5.1 Preliminary levelling operations

No.	Diagram	Object	Permissible deviation		Measuring instruments	Observations and references to the test code ISO/R 230
			mm	in		
G01		Checking of levelling of the machine : *a*) longitudinal verification; *b*) transverse verification.	*a*) and *b*) 0,05/1000	*a*) and *b*) 0.002/40	Level	Clause 3.11 The level shall be placed on the work table in the longitudinal and transverse directions and the deviation observed. This test shall be carried out in accordance with the manufacturers instructions.

5.2 Geometrical tests

G 1		Checking of flatness of the work table.	0,04 up to 1000	0.0016 up to 40	Level or straightedge and gauge blocks	Clauses 5.322 and 5.323 The level shall be placed on the work table successively in the longitudinal and transverse directions [*a*) and *b*)] and the deviation observed.
G 2		Checking of squareness of the retriever chuck movement to the work table : *a*) longitudinal verification; *b*) transverse verification.	*a*) and *b*) 0,05/300	*a*) and *b*) 0.002/12	Dial gauge Square	Clause 5.522.2 The dial gauge shall be fixed on the retriever chuck hole. The square shall be placed against the work table. The retriever chuck shall be moved downwards, and the deviation shall be observed in positions *a*) and *b*). This test is not applicable to machines with a floating retriever chuck.

No.	Diagram	Object	Permissible deviation mm	Permissible deviation in	Measuring instruments	Observations and references to the test code ISO/R 230
G 3		Checking of squareness of the pull chuck movement to the work table : *a)* longitudinal verification; *b)* transverse verification.	*a)* and *b)* 0,03/300	*a)* and *b)* 0.0012/12	Dial gauge Square	Clause 5.522.2 The dial gauge shall be fixed on the pull chuck hole. The square shall be placed against the work table. The pull chuck shall be moved downwards, and the deviation shall be observed in positions *a)* and *b)*.
G 4		Checking of coincidence of the pull chuck hole axis with the central hole axis of the work table.	0,05	0.002	Dial gauge Test mandrel	Clause 5.44 The dial gauge shall be set swivelling on the test mandrel, and the test mandrel shall be fixed on the pull chuck. The dial gauge shall be rotated through 360° around the central hole and any deviation observed. The variation in the readings represents twice the error of co-incidence.
G 5		Checking of the alignment of the pull chuck hole and the retriever chuck hole axes : *a)* longitudinal verification; *b)* transverse verification.	*a)* and *b)* 0,06 for a measuring length of 500 mm	*a)* and *b)* 0.0024 for a measuring length of 20.	Dial gauge Test mandrel The length of the mandrel = 1000 mm	Clause 5.44 The test mandrel shall be fixed in the pull chuck hole and in the retriever chuck hole. The stylus of the dial gauge shall touch the test mandrel. The test mandrel shall be moved downwards, and the deviation shall be observed in positions *a)* and *b)*. NOTE — For machines whose retriever chuck does not follow through the spindle during broaching, it is impossible to carry out the check over the 500 mm stroke required in the test. This test is not applicable to machines with a floating retriever chuck.

Annex

Ref.	German
1	Unterkasten (Sockel)
2	Ständer
3	Tisch
4	Aufspannplatte
5	Aufspannplattenbohrung
6	Werkzeugschlitten
7	Schafthalteraufnahme
8	Schafthalter
9	Endstückhalterschlitten
10	Endstückhalterschlittenführung
11	Endstückhalteraufnahme
12	Endstückhalter