

Accuracy of machine tools and methods of test —

Part 35: Specification for capstan, turret and automatic lathes, single spindle type less than 25 mm diameter capacity

[ISO title: Acceptance conditions for horizontal spindle capstan, turret and single spindle automatic lathes — Testing of the accuracy — Part 2: Machinable bar diameters 25 mm or less and chuck diameter up to 160 mm.]

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- Advanced Manufacturing Technology Research Institute
- Cranfield Institute of Technology
- Department of Trade and Industry [Mechanical Engineering and Manufacturing Technology Division (Mmt)]
- Federation of British Engineers' Tool Manufacturers
- Health and Safety Executive
- Institution of Production Engineers
- Ministry of Defence
- University of Aston in Birmingham

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National foreword

This Part of BS 4656 has been prepared under the direction of the Machine, Engineers and Hand Tools Standards Committee and implements agreements of the International Organization for Standardization (ISO). It is identical with ISO 6155-2:1986 “*Acceptance conditions for horizontal spindle capstan, turret and single spindle automatic lathes — Testing of the accuracy — Part 2: Machinable bar diameters 25 mm or less and chuck diameter up to 160 mm*”.

Inch dimensions. In accordance with the UK policy of metrication, inch dimensions given in this standard are not valid and are included for information purposes only.

Abbreviations. For the purposes of this standard, various methods of expressing permissible deviations are employed, each having a particular type of application. The methods employed are as follows.

- - - / - - - This type of expression applies to deviations of perpendicularity that are ratios.
- - - for any length of - - - This type of expression applies to deviations of straightness and parallelism, and is used in fact for local permissible deviations, the measurement length being obligatory.
- - - per - - - This type of expression applies to deviations of straightness and parallelism and is used to recommend a measurement length, but in this case the proportionality rule comes into operation if the measurement length differs from that indicated.

Diagrams. For reasons of simplicity the diagrams in this standard illustrate only one type of machine.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words “part of ISO 6155” appear, referring to this standard, they should be read as “Part of BS 4656”.

Cross-references

International Standard	Corresponding British Standard
ISO 68:1973	BS 3643 <i>ISO metric screw threads</i> Part 1:1981 <i>Principles and basic data</i> (Technically equivalent)
ISO 230-1:1986	BS 3800:1964 <i>Methods for testing the accuracy of machine tools</i> (Technically equivalent)

ISO 1101:1983, ISO 3442:1975 and ISO 6155-1:1981 are referred to for information only.

A related British Standard to ISO 1101:1983 is BS 308 “*Engineering drawing practice*”, Part 3:1972 “*Geometrical tolerancing*”. A related British Standard to ISO 3442:1975 is BS 1983 “*Specification for chucks for machine tools and portable power tools*”, Part 2:1972 “*Work-holding chucks*”. A related British Standard to ISO 6155-1:1981 is BS 4656 “*Specification for the accuracy of machine tools and methods of test*”, Part 31:1982 “*Specification for capstan, turret and automatic lathes, single spindle type greater than 25 mm diameter capacity*”.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 24, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

0 Introduction

This part of ISO 6155 applies only to lathes with a multi-tool turret of machinable bar diameter 25 mm or less and chuck diameter up to 160 mm. This turret can be manually indexed, semi-automatically indexed by motion of the turret slide, or automatically indexed by an independent control setting at the end of the operation.

1 Scope and field of application

This part of ISO 6155 describes, with reference to ISO 230-1, both geometrical and practical tests on general purpose and normal accuracy capstan, turret and single spindle automatic lathes. It deals only with the checking 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 (such as speeds, feeds, etc.) which should generally be checked before the accuracy is tested.

This part of ISO 6155 does not cover machines with contouring numerical control, machines with sliding headstocks, machines with rotating tools, nor single spindle automatic lathes with fixed combined system headstock.

2 References

ISO 68, *ISO general purpose screw threads — Basic profile*.

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

ISO 3442, *Self-centring chucks for machine tools with two-piece jaws (tongue and groove type) — Sizes for interchangeability and acceptance test specifications*.

ISO 6155-1, *Acceptance conditions for horizontal spindle capstan, turret and single spindle automatic lathes — Testing of the accuracy — Part 1: Machinable bar diameters greater than 25 mm*.

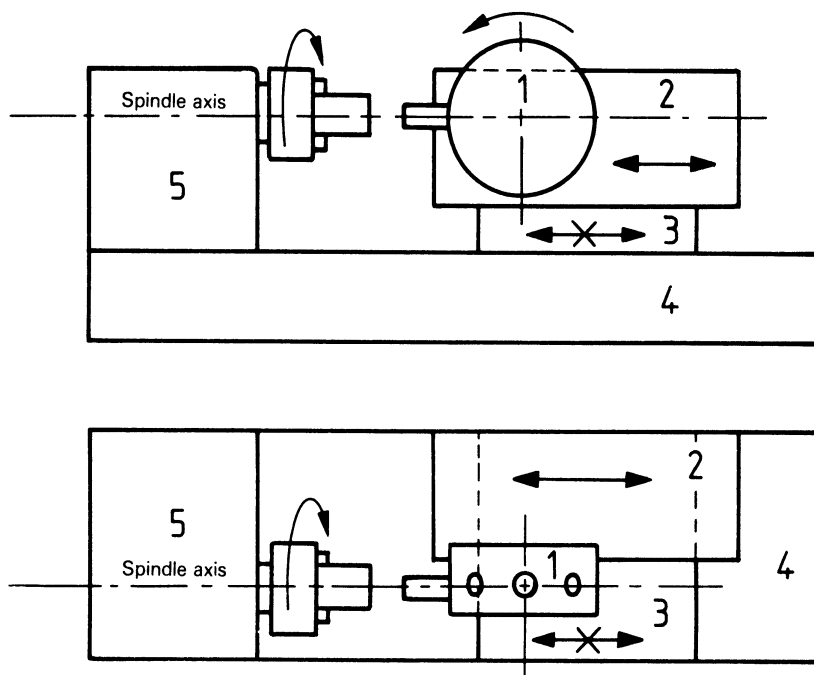
3 Definitions

The machines referred to in this part of ISO 6155 are defined as follows:

3.1

capstan lathe

a lathe on the bed of which is fitted a slide base that may be manually moved longitudinally along the bed and clamped in the desired position. On this slide base is mounted a short stroke slide which in turn carries an indexing turret which may be automatically operated by the return motion of the slide or manually indexed

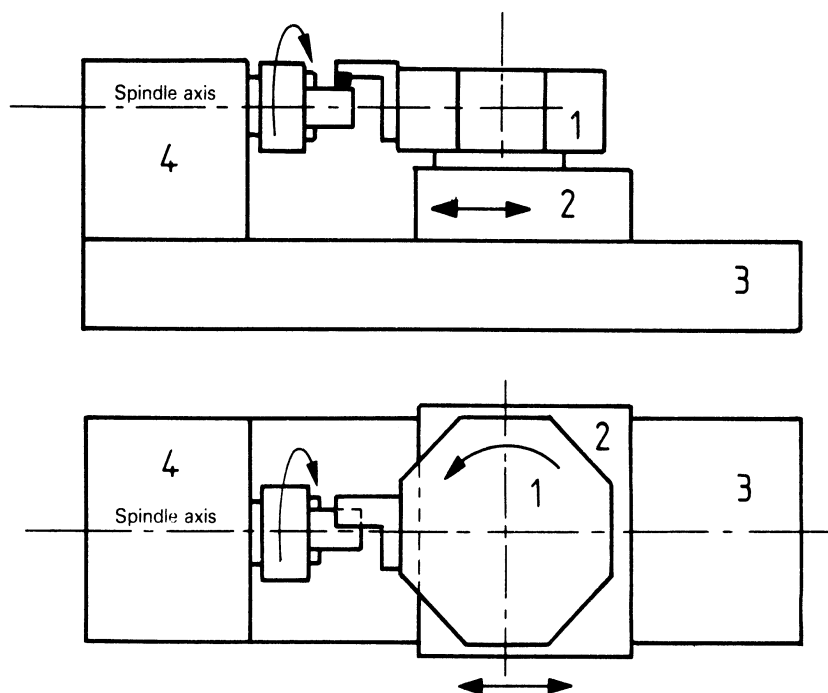


- 1 – Indexable capstan turret
- 2 – Small slide
- 3 – Saddle with manual operation
- 4 – Bed
- 5 – Fixed headstock

3.2

turret lathe

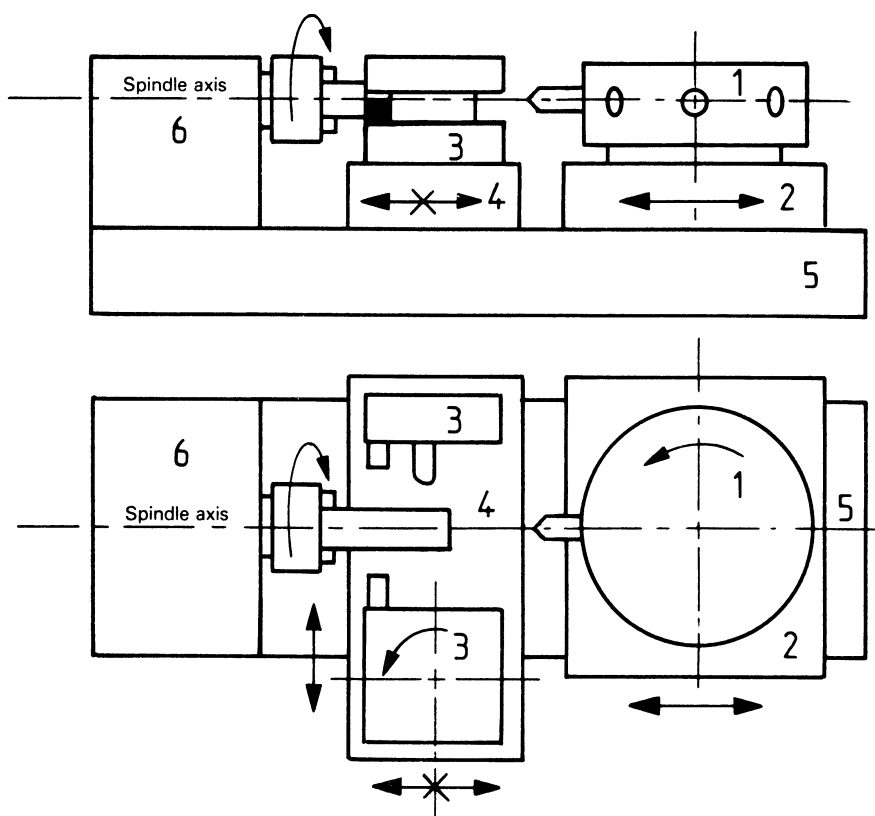
a lathe on the bed of which is fitted a saddle capable of longitudinal motion, which in turn carries an indexing turret



3.3

combination turret lathe

a turret lathe with the addition of a second saddle which carries a cross-slide



3.4

cross-feeding turret lathe

a lathe on the bed of which is fitted a saddle capable of longitudinal motion, which carries an indexing turret capable of transverse motion

