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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 16857.5-2017

Replacing GB/T 16857.5-2004

**Geometrical product specifications (GPS) -- Acceptance and
reverification tests for coordinate measuring machines (CMM) -- Part 5:
CMMs using single or multiple stylus contacting probing systems**

产品几何技术规范(GPS) 坐标测量机的验收检测和复检检测 第5部分：使用单探
针或多探针接触式探测系统的坐标测量机

(English Translation)

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Administration of the People's Republic of China**

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Foreword

GB/T 16857 "Geometrical product specifications (GPS) CMM acceptance testing and re-inspection" is divided into the following sections.

- Part 1. Vocabulary;
- Part 2. Coordinate measuring machine for measuring linear dimensions;
- Part 3. Configure the axis of the turntable as a coordinate measuring machine for the fourth axis;
- Part 4. Coordinate measuring machines used in scanning mode;
- Part 5. Coordinate measuring machine using single or multi-probe contact detection system;
- Part 6. Calculation of Gaussian fitting elements of the error assessment;
- Part 7. Coordinate measuring machines using visual detection system 1);
- Part 8. Coordinate measuring machines using optical distance sensors 1);
- Part 9. Coordinate measuring machines with multiple detection systems 1);
- Part 10. Laser tracker for measuring point-to-point distance 1).

1) Under development.

This section GB/T 16857 Part 5.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 16857.5-2004 "Geometrical product specifications (GPS) CMM acceptance testing and reinspection Measuring Part 5. Coordinate measuring machine using multi-probe detection system ", compared with GB/T 16857.5-2004 compared to the main technical changes are as follows.

- Increased single-probe shape error and single-probe size error;
- According to different detection systems and methods of operation, divided into four

multi-probe error.

This section identical with ISO 10360-5:2010 "Product Geometrical Specifications (GPS) CMM acceptance inspection and reinspection Measurement Part 5. Coordinate measuring machines using single or multi-probe contact probing systems ".

The documents of our country that have a consistent correspondence with the international documents to which this normative reference applies are as follows.

--- GB/T 16857.1-2002 Geometrical Product Specifications (GPS) Coordinate Measuring Machine acceptance testing and re-examination of the Part 1. Vocabulary (ISO 10360-1:2000, eqv) Geometrical product specifications (GPS) - Tests for the determination of parts and measuring equipment - Part 1.

According to the rules of test pass or fail decision rules (ISO 14253-1:1998, eqv) this part of the National Product Geometrical Specifications Standardization Technical Committee (SAC/TC240) and focal point.

This part of the drafting unit. Hexagon Measurement Technology (Qingdao) Co., Ltd., Shanghai University, Machine Productivity Promotion Center, Suzhou Tian Zhichen Mi Instrument Co., Ltd., Putian, Fujian Zhi Zhou High-tech Industrial Park Co., Ltd., Ningbo Institute of Technology.

1 Scope

GB/T 16857 provisions of this part with a contact detection system CMM acceptance inspection and re-inspection of the party Method and only applies if the CMM has the following configuration.

- any type of contact detection system;
- discrete point detection mode;
- Probe needle is spherical or hemispherical.

GB/T 16857 This section applies to any of the following configuration coordinate measuring machine.

- a) Single-probe detection system;
- b) Multi-probe detection system where multiple probes (such as star-shaped probes) are fixedly connected under one touch probe;
- c) multi-probe detection system, such as the configuration of a number of probes, are installed in each probe;
- d) universal detection system;
- e) probe and probe exchange system;

f) Manual (drive-less) CMM.

This section does not apply to non-contact detection system, which requires different testing steps.

For the convenience of the user, the "dimensional error of the multi-probe detection system of the coordinate measuring machine" is simply referred to as "multi-probe dimensional error".

If it is possible to separate the characteristics of the detection system from those of the CMM, the effects of the CMM can be neglected. detailed See Appendix C for details.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 16857.2-2017 Geometrical Product Specifications (GPS) CMM acceptance testing and re-inspection Part 2 Coordinate Measuring Machines for Measuring Linear Dimensions (ISO 10360-2:2009, IDT) Geometrical product specifications (GPS) - Acceptance, testing and retesting of coordinate measuring machines - Part 1.

Glossary [Geometricalproductspecifications (GPS) -Acceptance andreverificationtestsforcoordinate measuringmachines (CMM) -Part 1: Vocabulary] ISO 14253-1 Geometrical product specifications (GPS) - Tests for the measurement of parts and measuring equipment - Part 1. Test according to specifications Geometrical products specifications (GPS) -Inspectionbymeasurementof workpiecesandmeasuringequipment-Part 1:

Decisionrulesforprovingconformanceornon-conform-ancewithspecifications] ISO/IEC Guide99 Common measurement terms and definitions

[Internationalvocabularyofmetrology-Basicandgen-eralconceptsandassociatedterms (VIM)]