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

GB/T 39518-2020

**Geometrical product specifications (GPS). Guidelines for the evaluation
of coordinate measuring machine(CMM)test uncertainty for CMMs
using single and multiple stylus contacting probing systems**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafting method to amend and adopt ISO /T S17865.2016

"Geometrical Technical Specifications for Products (GPS) using single probe and

Guidelines for Evaluation of Uncertainty of Detection of Coordinate Measuring Machines in Multi-probe Contact Probe Systems.

The technical differences between this standard and ISO /T S17865.2016 and the reasons are as follows.

--- Regarding normative reference documents, this standard has made adjustments with technical differences to adapt to my country's technical conditions and adjustments.

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows.

* Replace ISO 10360-1 with GB/T 16857.1 equivalent to the international standard (see Chapter 3);

* Replace ISO 14253-1.1998 with GB/T 18779.1-2002, which is equivalent to the international standard (see Chapter 3, 4.3);

- * Replace ISO 17450-2 with GB/T 24637.2 which is modified to adopt international standards (see Chapter 3);
- * Replace ISO /T S23165 with GB/T 34881 equivalent to the international standard (see Chapter 3);
- * Use JJF1001 instead of ISO /IEC Guide99 (see Chapter 3);
- * Use JJF1059.1 instead of ISO /IEC Guide98-3 (see Chapter 3).

This standard has made the following editorial changes.

---According to the requirements of GB/T 1.1-2009, in the "Scope" chapter, "This standard applies to the configuration of contact detection systems, using

Coordinate measuring machine with discrete point detection mode".

This standard was proposed and managed by the National Standardization Technical Committee for Product Geometric Technical Specifications (SAC/TC240).

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1 Scope

This standard gives guidelines for the method of evaluating the uncertainty of detection when testing coordinate measuring machines in accordance with GB/T 16857.5.

This standard applies to coordinate measuring machines equipped with a contact detection system and using discrete point detection mode.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 16857.1 Technical Specification for Product Geometrical Quantities (GPS) Acceptance Test and Retest Test of Coordinate Measuring Machine Part 1.Vocabulary

GB/T 16857.5-2017 Product Geometric Technical Specification (GPS) Acceptance Test and Reinspection Test of Coordinate Measuring Machine Part 5

Sub. Coordinate measuring machine (ISO 10360-5:2010, IDT) using single probe or

multi-probe contact detection system

GB/T 18779.1-2002 Technical Specification for Product Geometrical Quantity (GPS) Measurement and Inspection of Workpieces and Measuring Equipment Part 1.Press

Standardizing inspection rules for qualified or unqualified

GB/T 24637.2 Geometric Technical Specifications for Products (GPS) General Concepts Part 2.Basic Principles, Specifications, Operational Sets and Uncertainty

GB/T 34881 Geometric Technical Specification for Products (GPS) Coordinate Measuring Machine Inspection Uncertainty Evaluation Guide

JJF1001 General measurement terms and definitions

JJF1059.1 Evaluation and expression of measurement uncertainty

3 Terms and definitions

GB/T 16857.1, GB/T 16857.5, GB/T 18779.1, GB/T 24637.2, GB/T 34881, JJF1001 and JJF1059.1

The defined terms and definitions apply to this document.

4.1 Detect the influence of the bending and poor clamping of the ball support rod

In some applications, the following factors may affect the detection value.

---Clamping of the detection ball. If the clamping of the detection ball is not tight enough or there is a vibration source, the detection ball may be

Factors such as detection force, vibration and inertial force cause displacement;

---Detecting the bending of the ball support rod. If the rigidity of the detection ball support rod is insufficient, the bending caused by the detection force will become the detection value.

A significant source of stance.