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**INDUSTRY STANDARD OF THE
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**Calibration Specification for Coordinate Measuring Machines
(English Translation)**

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Introduction

JJF 1071-2010 "Rules for the Preparation of National Measurement and Calibration Specifications", JJF 1001-2011 "General Measurement Terms and Definition" and JJF 1059.1-2012 "Evaluation and Expression of Uncertainty in Measurement" together constitute the basis for the revision of this specification.

Basic series of specifications.

This specification adopts the metrological characteristics, symbols and calibration methods of coordinate measuring machines specified in the following standards.

GB/T 16857.1-2002 Technical Specification for Product Geometry (GPS) Coordinate Measuring Machine Acceptance Test and Retest Test Part 1: Vocabulary";

GB/T 16857.2-2017 Technical Specification for Product Geometry (GPS) Acceptance Test and Retest of Coordinate Measuring Machines Coordinate measuring machines for measuring linear dimensions.

GB/T 16857.3-2009 "Product Geometry Technical Specification (GPS) Coordinate Measuring Machine Acceptance Test and Retest" Part 3: Coordinate measuring machine with a turntable as the fourth axis;

GB/T 16857.4-2003 Technical Specification for Product Geometry (GPS) Coordinate Measuring Machine Acceptance Test and Retest Inspection - Part 4: Coordinate measuring machines used in scanning mode";

GB/T 16857.5-2017 Technical Specification for Product Geometry (GPS) Acceptance Test and Retest of Coordinate Measuring Machines Coordinate measuring machines using single or multi-probe contact probing systems" ISO 10360-7:2011 "Technical Specification for Product Geometry (GPS) Acceptance Testing and Retesting of Coordinate Measuring Machines" (GPS)-Acceptance and reverification tests for coordinate measuring machines ISO 10360-8:2013 Technical Specification for Product Geometric Quantity (GPS) Coordinate Measurement System Acceptance Test and Recheck ISO 10360-9:2013 Technical Specification for Product Geometric Measurements (GPS) Acceptance Testing and Reconstruction of Coordinate Measurement Systems However, the selected metering characteristics have the following deviations.

--- GB/T 16857.4-2003 only uses THP.

--- The detection error under the indirect calibration conditions of the universal detection system in GB/T 16857.5-2017 is not adopted.

--- The verticality error and Z-axis length indication error detection in ISO 10360-7:2011 are not adopted.

This specification adopts GB/T 34881-2017 "Product Geometry Technical Specification

(GPS) Coordinate Measuring Machine Inspection Guide to Certainty Assessment" and GB/T 39518-2020 "Product Geometry Specification (GPS) - Use of Single Probe and Multiple the uncertainty evaluation of calibration results in the "Guide to the evaluation of measurement uncertainty for coordinate measuring machines with probe contact probing systems" is as follows.

The method is specified in the form of a reference document as an example of measurement uncertainty report.

This specification is a revision of JJF 1064-2010 "Coordinate Measuring Machine Calibration Specification". In addition to editorial changes, the main technical changes are as follows.

---According to ISO 10360-2:2009 "Product Geometric Specification (GPS) Acceptance Testing of Coordinate Measuring Machines" Coordinate measuring machines for measuring linear dimensions and subsequent parts the changes in the metrological characteristic symbols in the sub-standards are unified with the currently valid ISO 10360 parts.

The symbols of metrological characteristics and maximum allowable error in the standard adopt new forms;

--- Adjusted the names of metrological characteristics for easy distinction;

---Gives a table of coordinate measuring machine configuration and corresponding calibration items;

--- It is specified that in the single probe detection error calibration, the probe direction is consistent with the probe direction;

--- Deleted the zoom detection error of the coordinate measuring machine equipped with the image detection system;

--- Added calibration of metrological characteristics of optical distance measuring probe;

---Added calibration of metrological characteristics of various detection systems;

---Deleted the requirement for period verification.

The previous versions of this specification are as follows.

---JJF 1064-2010;

---JJF 1064-2004;

---JJF 1064-2000.

Coordinate Measuring Machine Calibration Specifications

1 Scope

This specification applies to the calibration of coordinate measuring machines based on

three mutually perpendicular linear motion guides.

2 References

This specification references the following documents.

JJF 1001 General metrological terms and definitions JJF 1071 Rules for writing national metrology and calibration specifications GB/T 16857.1 Technical Specification for Product Geometry (GPS) Acceptance and Retesting of Coordinate Measuring Machines Part 1: Vocabulary GB/T 18779.1 Product geometry specification (GPS) Measurement and inspection of workpieces and measuring equipment Part 1 Part 1: Rules for judging whether a product is qualified or unqualified according to the specification GB/T 34881-2017 Product Geometry Technical Specification (GPS) Coordinate Measuring Machine Detection Uncertainty Evaluation guide GB/T 39518-2020 Product Geometry Specification (GPS) - Single and multi-probe contact probing A Guide to Evaluating Measurement Uncertainty for Coordinate Measuring Machines for any referenced document with a date, only the version with the date is applicable to this specification; for any referenced document without a date, the latest version (including all amendments) shall apply to this specification.

3 Terms and definitions the terms and definitions defined in JJF 1001, GB/T 16857.1 and the following apply to this specification.

When using a coordinate measuring machine for measurement, the installation position of the measured object in the measurement space and the measurement method used by the coordinate measuring machine are Head and probe configuration, number and distribution of detection points, measurement methods (such as point measurement, scanning measurement, centering measurement) the sum of environmental conditions, assessment methods, etc.

3.2 Operating condition Rated operating conditions under which the performance parameters specified by the manufacturer are guaranteed to be achieved.

NOTE Each detection system operating condition may be identified by an abbreviation and its corresponding performance value may be quoted.

The manufacturer will specify operating conditions for each detection system, but the manufacturer may specify several operating conditions for a single detection system.

To include.

- Length of probe and extension rod (if applicable);
- Installation (universal or fixed, whether to use a probe exchange rack);
- Lighting (if applicable);
- Calibration procedures;
- Filter settings;