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JJG

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

JJG 739-2005

Replacing JJG 739-1991

**Verification Regulation of Laser Interferometers
(English Translation)**

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7.5 Verification cycle (5)

Appendix verification certificate (inside page) format (6)

Laser interferometer verification procedure

1 Scope

This procedure applies to the first verification and subsequent verification of the laser interferometer.

2 Citations

This procedure refers to the following documents.

JJG 353-1994 Calibration Procedure for Stabilized He-Ne Laser in Lamb Depression JJG 860-1994 Pressure sensor (static) verification procedure JJG 998-2005 Laser Small Angle Measuring Instrument Verification Procedure JJF1001-1998 General measurement terms and definitions JJF1059-1999 Measurement Uncertainty Evaluation and Representation JJF1094-2002 Technical Specifications for Measuring Instrument Characteristics when using this procedure, care should be taken to use the current valid version of the above cited documents.

3 terms

Laser interferometer nonlinearity. refers to the interference of the laser interferometer in an interference period in order to obtain high resolution.

The length measurement error caused by the subdivision.

4 Overview

The laser interferometer measures the geometrical quantities such as displacement, straightness and angle based on the laser wavelength.

Precision, multi-function measuring instrument. It uses two single-frequency laser beams, or two beams with a small fixed frequency difference Beam, an instrument for interferometric measurements.

Laser interferometers include laser heads, electrical boxes (including data transfer cards), optical components, computers, and environments Parameter sensors, measurement software, etc. It is mainly used for the inspection of machine tools, machining centers, coordinate measuring machines and other equipment.

5 Metrological performance requirements

5.1 Laser wavelength uncertainty the relative expansion uncertainty of the laser wavelength should be 1×10^{-7} ($k = 3$).

5.2 Displacement measurement indication error

5.2.1 Maximum allowable indication error for displacement measurement under standard conditions. $\pm(0.03 \ 0.5L)\mu\text{m}$.

L---Measure the length in m.

5.2.2 The maximum allowable indication error of the displacement measurement using the air parameter compensation unit. $\pm(0.03 \ 1.5L)\mu\text{m}$.

L---Measure the length in m.

5.3 Environmental parameter indication error

5.3.1 Maximum allowable indication error of air temperature sensor. $\pm 0.55\text{ }^{\circ}\text{C}$.