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**Geometrical product specifications(GPS) - Statistical tolerance
- Part 4: Statistical tolerance design based on given confidence
levels**

产品几何技术规范（GPS） 统计公差 第4部分：基于给定置信水平的统计公差设计

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Table of Contents

Foreword	I
1 Scope	1
2 Normative references	1
3 Basic concepts	1
3.1 Point estimation of the statistical parameters	1
3.2 Confidence interval of the statistical parameters based on a given confidence level	1
3.3 Statistical tolerance of the estimated values	4
4 Confidence interval of the process quality indices based on a given confidence level	5
Annex A (normative) Statistical tolerance design based on a given confidence level and examples of application	6
Annex B (informative) Tables of the statistical tolerances of the estimated values C_p and k under specific conditions	9
Annex C (informative) Three ways of expressing the estimated values of the process mean and standard deviation in statistical process control	14
Annex D (informative) Position in the GPS matrix model	15

Foreword

GB /Z24636 "Product Geometrical Specifications (GPS) Statistical Tolerance" is divided into the following five parts.

- Part 1. Terms, definitions and basic concepts;
- Part 2. statistical tolerance values and their designations;
- Part 3. Part Lot (process) of the statistical quality indicators;
- Part 4. statistical tolerance design based on a given level of confidence;
- Part 5. Assembly batch (hole, shaft with) the statistical quality indicators. This section GB /Z24636 Part 4. This part of the Appendix A normative appendix, Appendix B, Appendix C and Appendix D is an informative annex. This part of the National Product Size and Geometry Technical Standardization Technical Committee proposed and centralized. This section is drafted. Shandong University of Technology, Machine Productivity Promotion Center, Zhejiang Asia-Pacific Mechanical and Electrical Co., Ltd., Zhengzhou University, in Former Institute of Technology, Xi'an Jiaotong University. The main drafters of this section. Zhang Yu, Xiong Xi, Huang Guoxing, Zhang Linna, Zhao Zexiang, King Wei Xuan. Product Geometry Specifications (GPS) Statistical tolerance Part 4. based on a given level of

confidence Statistical tolerance design

1 Scope

GB/Z 24636.4-2009 is the Chinese national standard on geometrical product specifications (GPS) - statistical tolerance - part 4: statistical tolerance design based on given confidence levels, in the field of metrology and measurement. The /Z suffix marks it as a guiding technical document: it does not prescribe requirements that can be certified against, but sets out the technique, the method or the state of the art that the standards bodies recommend following. It was issued on 15 November 2009 by the State Administration for Market Regulation; Standardization Administration of China. As a guiding technical document it carries no separate date of entry into force: it applies from publication. Classification: ICS 17.040.10, CCS J04. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This section GB /Z 24636 specifies the terms, symbols, formulas and design related statistical tolerance based on a given level of confidence method. This section applies to the linear size of the application of statistical process control, especially with a higher tolerance level with the size; also applies to Bilateral specification limits and the application of statistical process control metrology quality characteristics.

2 Normative references

The following documents contain provisions which, through reference in this part of GB /Z24636, become the provisions of this section. Any reference to the date of the citation All subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to be reached under this section The parties to the agreement examine whether the latest versions of these documents are available. For undated references, the latest version applies to this book section. GB /Z20308 Geometrical product specifications (GPS) master plan (GB /Z20308-2006, ISO /T R14638..1995, MOD)

3.1 Statistical parameters of the point estimate $\hat{C} \wedge p = \frac{USL-LSL}{6\sigma} \wedge = T$ $6\sigma \wedge (1)$

Note. The standard deviation estimate $\sigma \wedge$ can be calculated according to the type of control chart of the data source in one of three ways, see Appendix C.

3.1.2 Process Offset The estimated value of the relevant parameter $\wedge$ If the overall mean of the estimated $\mu \wedge$ (or $=$) Instead of the theoretical value μ in the formula of , the resulting

estimate (or point estimate) $\hat{\mu} = \bar{M} - \frac{MT}{2} = -\frac{MT}{2} = 2\Delta^2$ Where. M

--- tolerance zone center value; Δ^2

--- The estimate of the overall mean $\hat{\mu}$ (or $\bar{M}$) Offset to M

3.2 Confidence intervals based on statistical parameters for a given confidence level

3.2.1 Confidence intervals of the process mean μ based on a given confidence level of 100 (1- α)%

3.2.1.1 Standard deviation known situation The confidence interval for obtaining the population mean μ with a certain confidence probability of 1- α is as follows: Bilateral 100 (1- α)% confidence interval.