

ICS 17.040.10

CCS J04



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

GB/Z 24636.2-2009

**Geometrical product specifications(GPS) - Statistical tolerance
- Part 2: Statistical tolerance values and their indication on
drawing**

产品几何技术规范 (GPS) 统计公差 第2部分: 统计公差值及其图样标注

Issued on: November 15, 2009

Implemented on: November 15, 2009

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

Table of Contents

Foreword	I
1 Scope	1
2 Normative references	1
3 Forms of the statistical tolerance value	1
3.1 Statistical tolerance values of the process quality indices	1
3.2 Standardized two-dimensional statistical tolerance values	1
3.3 Two-dimensional statistical tolerance values with dimensions	1
3.4 Quality level of the general requirement and the values of the statistical tolerances	1
4 Indication of the statistical tolerance on the drawing	1
4.1 Indication of the general requirement of statistical tolerance	2
4.2 Indication of a specific requirement of statistical tolerance	2
4.2.1 Indication of the statistical tolerance of a quality index expressed by a single value ..	2
4.2.2 Indication of the statistical tolerance of a process capability index expressed by a single value	2
4.3 Indication of the statistical tolerance of several quality targets	2
5 Expression of the middle-level and lower-level statistical tolerances in quality control documents	2
5.1 Expression of the middle-level statistical tolerance	2
5.1.1 Statistical tolerance expressed in the form of an array	2
5.2 Expression of the lower-level statistical tolerance	3
Annex A (informative) SIGMA quality levels of specific requirements and the values of the statistical tolerances	4
Annex B (informative) Statistical tolerance expressed by a quality target function	5
Annex C (informative) Position in the GPS matrix model	6
C.1 Information of this part and its application	6
C.2 Position of this part in the GPS matrix model	6
C.3 Related standards	6

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 2. This part of Appendix A, Appendix B and Appendix C are informative appendix. This part of the National Product Size and Geometry Technical Standardization Technical Committee proposed and centralized. This section drafted by: Machine Productivity Promotion Center, Shandong University of Technology, Zhongyuan Institute of Technology, Zhengzhou University. The main drafters of this section. Bear Xiong, Zhang Yu, Zhao Zexiang, Zhang Linna. Geometrical product specifications (GPS) statistical tolerances Part 2. statistical tolerance values and their designations

1 Scope

This part of GB/Z 24636 specifies the values of statistical tolerance and the method of indicating them on drawings. This part applies to linear dimensions to which statistical process control is applied, and in particular to fit dimensions of a comparatively high tolerance grade; it also applies to variable quality characteristics that have two-sided specification limits and to which statistical process control is applied.

GB /Z24636 provisions of this part of the statistical tolerance values and labeling in the drawings. 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 Statistical tolerance value form

The statistical tolerance of process quality indicators is determined by the application of specific statistical tolerances. Both upper and middle are dimensionless normalized

numbers Value, the lower is the value of the dimension.

3.1 Process Quality Indicators statistical tolerance value The statistical tolerance values (P^*d , P^*c , P^*ql) of the process quality indicators are expressed as a percentage and selected by the recommended form. Generally take a decimal point Bit or two. Of these, Pd , which requires exceptionally high, can be expressed in parts per million (10-6).

3.2 Standardized two-dimensional statistical tolerance value The two-dimensional statistical tolerance values are expressed as dimensionless numbers in $(C^*p,)$ and (C^*p, Δ^*) arrays whose sizes are defined by the upper direct mass index Standard or indirect quality indicators.

3.3 Dimensional two-dimensional statistical tolerance values The statistical tolerance values based on the two-dimensional statistical parameter interface with the actual dimensions are expressed by the values in the array (σ , Δ) whose size is given by Standardized two-dimensional statistical tolerance value conversion.

3.4 General requirements of the quality level and the value of the statistical tolerance
Statistical tolerances General requirements of the quality level can be 3sigma and 4sigma quality level of recommendation, according to industry and product characteristics to choose one of them As the default statistical tolerance common requirements, the implied values of the statistical tolerance shown in Table 1. Table 1 statistical tolerances General requirements implicit statistical tolerance tables

Quality level	C^*p	Δ^*	Pd^*	Pc	$(M \pm T/6)$	P^*c	$(M \pm T/4)$	$P^*3\sigma$	1	0	0	0.27%	68.3%	86.6%	11.11%	1.00	1.00	4sigma	1.33	0.5	0.125	0.0244%	76.3%	92.6%	7.84%	1.16

1.19 The specific SIGMA quality levels and statistical tolerance values are given in Appendix A.

4 Statistical tolerances in the design of the label

The general requirements and specific requirements for statistical tolerances may be expressed in terms of symbols and values, respectively, in the relevant drawings and technical documents.