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(JFRI/JSA)

**ISO general purpose metric screw
threads—Tolerances—
Part 3: Deviations for constructional
screw threads**

ICS 21.040.10

Reference number : JIS B 0209-3 : 2001 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standard Committee according to the proposal of establishing a Japanese Industrial Standard from The Japan Research Institute for Screw Threads and Fasteners (JFRI)/the Japanese Standards Association (JSA), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

By this Standard, **JIS B 0209:1997**, **JIS B 0211:1997** and **JIS B 0215:1982** were withdrawn and replaced with **JIS B 0209 Part 1 to Part 3**.

This Standard has been made based on **ISO 965-3:1998** *ISO general purpose metric screw threads—Tolerances—Part 3: Deviations for constructional screw threads* for the purposes of making easy to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of International Standard which is based on Japanese Industrial Standard.

JIS B 0209 series consist of 5 parts with the title of *ISO general purpose metric screw threads — Tolerances*.

- JIS B 0209-1 *Part 1: Principles and basic data*
- JIS B 0209-2 *Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*
- JIS B 0209-3 *Part 3: Deviations for constructional screw threads*
- JIS B 0209-4 *Part 4: Limits of sizes for hot-dip galvanized external screw threads to mate with internal screw threads tapped with tolerance position H or G after galvanizing*
- JIS B 0209-5 *Part 5: Limits of sizes for internal screw threads to mate with hot-dip galvanized external screw threads with maximum size of tolerance position h before galvanizing*

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In the event of any doubts arising as to the contents,
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ISO general purpose metric screw threads – Tolerances – Part 3: Deviations for constructional screw threads

Introduction This Japanese Industrial Standard has been prepared based on the third edition of **ISO 965-3** *ISO general purpose metric screw threads–Tolerances–Part 3: Deviations for constructional screw threads* published in 1998 without modifying the technical contents.

1 Scope This Standard specifies deviations for pitch and crest diameters for ISO general purpose metric screw threads (M) conforming to **JIS B 0205-2** having basic profile according to **JIS B 0205-1**.

The deviations specified are derived from the fundamental deviations and tolerances specified in **JIS B 0209-1**.

Remarks: The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 965-3:1998 *ISO general purpose metric screw threads–Tolerances – Part 3 : Deviations for constructional screw threads* (IDT)

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this standard. The most recent editions of the standards (including amendments) shall be applied.

JIS B 0101 *Screw threads and fasteners — Vocabulary*

Remarks: The items cited from **ISO 5408:1983** *Cylindrical screw threads — Vocabulary* are equivalent to the corresponding matters of the said standard.

JIS B 0205-1 *ISO general purpose metric screw threads — Part 1: Basic profile*

Remarks: **ISO 68-1:1998** *ISO general purpose screw threads — Basic profile — Part 1: Metric screw threads* is identical with the said standard.

JIS B 0205-2 *ISO general purpose metric screw threads — Part 2: General plan*

Remarks: **ISO 261:1998** *ISO general purpose metric screw threads — General plan* is identical with the said standard.

JIS B 0209-1 *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

Remarks: **ISO 965-1:1998** *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data* is identical with the said standard.

3 Definitions For the purposes of this Standard the definitions given in **JIS B 0101** apply.

4 Deviations For internal threads as well as external threads, the actual root contour shall not in any point transgress the basic profile.

The tabulated deviation values for the minor diameter of the external thread are calculated on the basis of $\frac{H}{6}$ truncation and may be used for stress calculations

$$\left[\text{deviation} = - \left(\left| es \right| + \frac{H}{6} \right) \right].$$

For coated threads, the tolerances apply to the parts before coating, unless otherwise stated. After coating the actual thread profile shall not in any point transgress the maximum material limits for position H or h respectively.

Remarks: These provisions are intended for thin coatings, for example those obtained by electroplating.

Table 1

ES, es = upper deviation; *El, ei* = lower deviation

Basic major diameter		Pitch	Internal thread						External thread				
over	up to		Tolerance class	Pitch diameter		Minor diameter		Tolerance class	Pitch diameter		Major diameter		Minor diameter
				<i>ES</i>	<i>EI</i>	<i>ES</i>	<i>EI</i>		<i>es</i>	<i>ei</i>	<i>es</i>	<i>ei</i>	Deviation $-\left(es + \frac{H}{6}\right)$ for stress calculation
				μm	μm	μm	μm		μm	μm	μm	μm	μm
0.99	1.4	0.2	—	—	—	—	—	3h4h	0	-24	0	-36	-29
			4H	+40	0	+38	0	4h	0	-30	0	-36	-29
			5G	—	—	—	—	5g6g	-17	-55	-17	-73	-46
			5H	—	—	—	—	5h4h	0	-38	0	-36	-29
			—	—	—	—	—	5h6h	0	-38	0	-56	-29
			—	—	—	—	—	6e	—	—	—	—	—
			—	—	—	—	—	6f	—	—	—	—	—
			6G	—	—	—	—	6g	-17	-65	-17	-73	-46
			6H	—	—	—	—	6h	0	-48	0	-56	-29
			—	—	—	—	—	7e6e	—	—	—	—	—
			7G	—	—	—	—	7g6g	—	—	—	—	—
			7H	—	—	—	—	7h6h	—	—	—	—	—
			8G	—	—	—	—	8g	—	—	—	—	—
			8H	—	—	—	—	9g8g	—	—	—	—	—
		0.25	—	—	—	—	—	3h4h	0	-26	0	-42	-36
			4H	+45	0	+45	0	4h	0	-34	0	-42	-36
			5G	+74	+18	+74	+18	5g6g	-18	-60	-18	-85	-54
			5H	+56	0	+56	0	5h4h	0	-42	0	-42	-36
			—	—	—	—	—	5h6h	0	-42	0	-67	-36
			—	—	—	—	—	6e	—	—	—	—	—
			—	—	—	—	—	6f	—	—	—	—	—
			6G	—	—	—	—	6g	-18	-71	-18	-85	-54
			6H	—	—	—	—	6h	0	-53	0	-67	-36
			—	—	—	—	—	7e6e	—	—	—	—	—
			7G	—	—	—	—	7g6g	—	—	—	—	—
			7H	—	—	—	—	7h6h	—	—	—	—	—
			8G	—	—	—	—	8g	—	—	—	—	—
			8H	—	—	—	—	9g8g	—	—	—	—	—
		0.3	—	—	—	—	—	3h4h	0	-28	0	-48	-43
			4H	+48	0	+53	0	4h	0	-36	0	-48	-43
			5G	+78	+18	+85	+18	5g6g	-18	-63	-18	-93	-61
			5H	+60	0	+67	0	5h4h	0	-45	0	-48	-43
			—	—	—	—	—	5h6h	0	-45	0	-75	-43
			—	—	—	—	—	6e	—	—	—	—	—
			—	—	—	—	—	6f	—	—	—	—	—
			6G	+93	+18	+103	+18	6g	-18	-74	-18	-93	-61
6H	+75		0	+85	0	6h	0	-56	0	-75	-43		

Table 1 (continued)

Basic major diameter		Pitch	Internal thread						External thread							
over	up to		Tolerance class	Pitch diameter		Minor diameter		Tolerance class	Pitch diameter		Major diameter		Minor diameter $-\left(es + \frac{H}{6}\right)$ for stress calculation			
				ES	EI	ES	EI		es	ei	es	ei				
				μm	μm	μm	μm		μm	μm	μm	μm				
0.99	1.4	0.3	— 7G 7H 8G 8H	— — — — —	— — — — —	— — — — —	— — — — —	7e6e 7g6g 7h6h 8g 9g8g	— — — — —	— — — — —	— — — — —	— — — — —				
1.4	2.8	0.2	— 4H 5G 5H — — — 6G 6H — 7G 7H 8G 8H	— +42 — — — — — — — — — — — —	— 0 — — — — — — — — — — — —	— +38 — — — — — — — — — — — —	— 0 — — — — — — — — — — — —	3h4h 4h 5g6g 5h4h 5h6h 6e 6f 6g 6h 7e6e 7g6g 7h6h 8g 9g8g	0 0 -17 0 0 — -32 -17 0 — — — — —	-25 -32 -57 -40 -40 — -82 -67 -50 — — — — —	0 0 -17 0 0 — -32 -17 0 — — — — —	-36 -36 -73 -36 -56 — -88 -73 -56 — — — — —	-29 -29 -46 -29 -29 — -61 -46 -29 — — — — —			
			0.25	— 4H 5G 5H — — — 6G 6H — 7G 7H 8G 8H	— +48 +78 +60 — — — — — — — — — —	— 0 +18 0 — — — — — — — — — —	— +45 +74 +56 — — — — — — — — — —	— 0 +18 0 — — — — — — — — — —	3h4h 4h 5g6g 5h4h 5h6h 6e 6f 6g 6h 7e6e 7g6g 7h6h 8g 9g8g	0 0 -18 0 0 — -33 -18 0 — — — — —	-28 -36 -63 -45 -45 — -89 -74 -56 — — — — —	0 0 -18 0 0 — -33 -18 0 — — — — —	-42 -42 -85 -42 -67 — -100 -85 -67 — — — — —	-36 -36 -54 -36 -36 — -69 -54 -36 — — — — —		
				0.35	— 4H 5G 5H — — — 6G 6H — 7G 7H 8G 8H	— +53 +86 +67 — — — +104 +85 — — — — —	— 0 +19 0 — — — +19 0 — — — — —	— +63 +99 +80 — — — +119 +100 — — — — —	— 0 +19 0 — — — +19 0 — — — — —	3h4h 4h 5g6g 5h4h 5h6h 6e 6f 6g 6h 7e6e 7g6g 7h6h 8g 9g8g	0 0 -19 0 0 — -34 -19 0 — -19 0 — — —	-32 -40 -69 -50 -50 — -97 -82 -63 — -99 -80 — — —	0 0 -19 0 0 — -34 -19 0 — -19 0 — — —	-53 -53 -104 -53 -85 — -119 -104 -85 — -104 -85 — —	-51 -51 -70 -51 -51 — -85 -70 -51 — -70 -51 — —	
					0.4	— 4H 5G	— +56 +90	— 0 +19	— +71 +109	— 0 +19	3h4h 4h 5g6g	0 0 -19	-34 -42 -72	0 0 -19	-60 -60 -114	-58 -58 -77