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Gauge blanks for screw threads limit gauges

ICS 17.040.30; 21.040.01

Descriptors : thread gauges, plug gauges, ring gauges, setting gauges

Reference number : JIS B 3102 : 2001 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by the Japan Precision Measuring Instruments Association (JMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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Gauge blanks for screw threads limit gauges

1 Scope This Japanese Industrial Standard specifies gauge blanks, shape and dimensions, including handles for the gauges specified in Annex (normative) to **JIS B 0251** and in **JIS B 0255**.

Concerning the gauges of **JIS B 0255**, Annex (normative) to this Standard, which gives the gauge blanks including handles specified in the Annex to **JIS B 3102 : 1975**, will be withdrawn on Dec. 31, 2004.

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) indicated below shall be applied.

JIS B 0251 *Limit gauges for metric screw threads*

JIS B 0255 *Limit gauges for unified screw threads*

JIS B 7420 *Plain limit gauges*

3 Definitions For the main terms used in this Standard, the following definitions apply.

- a) **ring gauge** A generic term of the solid screw ring gauge of **JIS B 0251** and the screw thread ring gauge and plain ring gauge of **JIS B 0255**.
- b) **plug gauge** A generic term of the screw thread plug gauge, check gauge and plain plug gauge specified in **JIS B 0251** and **JIS B 0255**.
- c) **taper lock type** A form of gauges assembled by fitting the tapered part of a plug gauge into the tapered bore of the handle.
- d) **trilock type** A form of such a gauge that a plug gauge is fixed by a bolt after fitting the three trapezium projections shaped on the end face of handle in the three Vee grooves provided in the plug gauge end face (hereafter referred to as trilock grooves).

4 Classification The shape of ring gauges and plug gauges shall be classified into thick and thin types, of which the applications shall be as given in Tables 1 and 2.

Table 1 Shape classification and its application of metric screw thread gauges

Thick type	Thin type
Solid GO screw ring gauge (GR)	Solid NOT-GO screw ring gauge (NR)
Plain GO ring gauge (PR GO)	Plain NOT-GO ring gauge (PR NOT-GO)
Plain caliper gauge (PC)	
GO screw plug gauge (GP)	NOT-GO screw plug gauge (NP)
Check plug GO for solid GO screw ring gauge (GRGF)	Check plug NOT-GO for solid GO screw ring gauge (GRNF)
Check plug GO for solid NOT-GO screw ring gauge (NRGF)	Check plug NOT-GO for solid NOT-GO screw ring gauge (NRNF)
Plain GO plug gauge (PP GO)	Wear check plug for solid or adjustable GO screw ring gauge (GW)
	Wear check plug for solid or adjustable NOT-GO screw ring gauge (NW)
	Plain NOT-GO plug gauge (PP NOT-GO)

Table 2 Shape classification and its application of unified screw thread gauges

Thick type	Thin type
GO thread ring gauge (GR)	NOT-GO thread ring gauge for working (WR)
	NOT-GO thread ring gauge for inspection (IR)
Plain snap gauge for working (WS)	
Plain snap gauge for inspection (IS)	
GO thread plug gauge (GP)	NOT-GO thread plug gauge for working (WP)
	NOT-GO thread plug gauge for inspection (IP)
GO fit checking thread plug gauge (GF)	NOT-GO fit checking thread plug gauge for working (WF)
	NOT-GO fit checking thread plug gauge for inspection (IF)
GO plain plug gauge for working (WM GO)	GO wear checking thread plug gauge (GW)
GO plain plug gauge for inspection (IM GO)	NOT-GO plain plug gauge for working (WM NOT-GO)
	NOT-GO plain plug gauge for inspection (IM NOT-GO)

5 Shape and dimensions The shape and dimensions shall be as given in Tables 3 and 4. Further, those for the taper lock type handle, trilock type handle and the bolt for trilock type handle are given in Tables 29 to 31 respectively.

**Table 3 Application of shape and dimensions
of metric screw thread gauges**

Shape		Nominal thread size range ⁽¹⁾	Threads series	Applicable table
Solid screw ring gauge		M1 to M68	Coarse thread	Table 5
Plain ring gauge		M1 to M150	Fine thread	Table 6
Plain caliper gauge	Double opening caliper gauge	M1 to M10	Coarse thread	Table 7
			Fine thread	
	Single opening caliper gauge	M3.5 to M48	Coarse thread	Table 8
		M3.5 to M50	Fine thread	
	C-shape caliper gauge	M52 to M68	Coarse thread	Table 9
		M52 to M150	Fine thread	
Screw plug gauge	Taper lock type	M1 to M3	Coarse thread	Table 10
			Fine thread	Table 11
		M3.5 to M48	Coarse thread	Table 12
		M3.5 to M50	Fine thread	Table 13
Check plug for screw ring gauge	Trilock type	M52 to M64	Coarse thread	Table 14
		M52 to M65	Fine thread	Table 15
Plain plug gauge		M68	Coarse thread	Table 16
		M68 to M150	Fine thread	Table 17

Note (1) The pitch is omitted from the nominal thread size of fine threads.

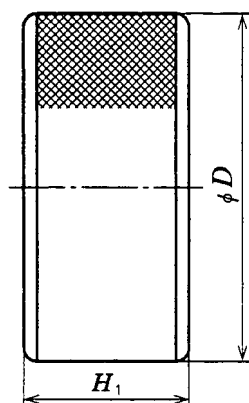
**Table 4 Application of shape and dimensions
of unified screw thread gauges**

Shape		Nominal thread size range ⁽²⁾	Threads series	Applicable table	
Thread ring gauge		No. 1 to 4	Coarse thread	Table 18	
		No. 0 to 1 1/2	Fine thread	Table 19	
Plain snap gauge	Double opening snap gauge	No. 1 to 3/8	Coarse thread	Table 20	
		No. 0 to 3/8	Fine thread		
	Single opening snap gauge	No. 6 to 1 3/4	Coarse thread	Table 21	
		No. 6 to 1 1/2	Fine thread		
	C-shape snap gauge	2 to 4	Coarse thread	Table 22	
Thread plug gauge	Taper lock type	No. 1 to No. 5	Coarse thread	Table 23	
		No. 0 to No. 5	Fine thread	Table 24	
		Check thread plug gauge	No. 6 to 2	Coarse thread	Table 25
			No. 6 to 1 1/2	Fine thread	Table 26
Plain plug gauge	Trilock type	2 1/4 to 2 1/2	Coarse thread	Table 27	
		2 3/4 to 4		Table 28	

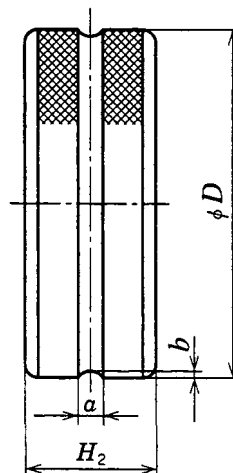
Note (2) For the nominal thread size, t.p.i. and thread series symbols are omitted from the nominal thread size.

Table 5 Shape and dimensions of ring gauge
For metric coarse screw threads

Thick ring gauge



Thin ring gauge



Unit : mm

Nominal thread size	D	Thick type	Thin type					
		H_1	H_2	a (informative)	b (informative)			
M1 to M1.2	22	2	2	0.6	0.6			
M1.4		3						
M1.6 to M2.5			3					
M3		4						
M3.5 to M5		5	4					
M6, M7	32	8	6	1	0.8			
M8, M9		12	8					
M10			10					
M11, M12	38	14	12	2	1			
M14		16						
M16	45	20	14					
M18, M20								
M22	53	24				18		
M24								
M27	63	28					24	
M30								
M33 to M39	71	32		32	3			1.5
M42 to M48	85	40						
M52 to M60	100	45						
M64 to M68	112	50	35					

- Remarks**
- 1 The ring gauge periphery shall be provided with crossed cut knurling of **JIS B 0951**.
 - 2 The outside diameter edges of the ring gauge shall be rounded or chamfered.

Table 6 Dimensions of ring gauge

Unit : mm

Nominal thread size ⁽³⁾	Pitch	D	Thick type	Thin type					
			H ₁	H ₂	a (informative)	b (informative)			
M1 to M1.8	0.2	22	2	2	0.6	0.6			
M2, M2.2	0.25								
M2.5 to M3.5	0.35		3	3					
M4 to M5	0.5		4						
M5.5				4					
M6, M7	0.75	32	6		1	0.8			
M8, M9	1		8	6					
	0.75		6	4			0.6	0.6	
M10	1.25		12	8			1	0.8	
	1		8	6					
	0.75		6	4	0.6	0.6			
M11	1		38	8	6	2	1		
	0.75								
M12 to M15	1.5	14		10					
	1.25	12		8					
	1	8		6					
M16, M17	1.5	45	14	10					
	1		8	8					
M18, M20	2		16	12					
	1.5		14	10					
	1		8	8					
M22 to M25	2	53	16	14					
	1.5		14	10					
	1		8	8					
M26 to M28	2	63	16	14					
	1.5			10					
	1		8	8					
M30, M32	3			24			18		
	2		16	14					
	1.5	10							
	1	8		8					
M33 to M40	3	71	24	18	3	1.5			
	2		16	14					
	1.5			12					
M42 to M50	4	85	32	24					
	3		24	18					
	2		16	16					
	1.5			12					

Table 6 (continued)

Unit : mm

Nominal thread size ⁽³⁾	Pitch	D	Thick type	Thin type		
			H_1	H_2	a (informative)	b (informative)
M52 to M60	4	100	32	24	3	1.5
	3		24	18		
	2		16	16		
	1.5			12		
M62 to M68	4	112	35	24		
	3		24	18		
	2		16	16		
	1.5			12		
M70	6	125	50	35		
	4		35	24		
	3		24	18		
	2		16	16		
	1.5			12		
M72 to M80	6	125	50	35		
	4		35	24		
	3		24	18		
	2		16	16		
	1.5			12		
M82 to M90	6	140	50	35		
	4		35	24		
	3		24	18		
	2		16	16		
M95 to M100	6	160	50	35		
	4		35	24		
	3		24	18		
	2		16	16		
M105, M110	6	170	50	35		
	4		35	24		
	3		24	18		
	2		16	16		
M115, M120	6	180	50	35		
	4		35	24		
	3		24	18		
	2		16	16		
M125, M130	6	190	50	35		
	4		35	24		
	3		24	18		
	2		16	16		

Table 6 (concluded)

Unit : mm

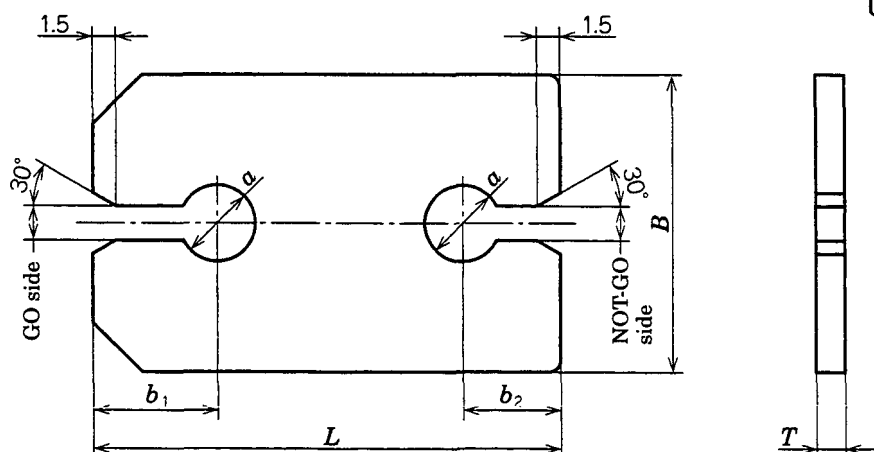
Nominal thread size ⁽³⁾	Pitch	<i>D</i>	Thick type	Thin type		
			<i>H</i> ₁	<i>H</i> ₂	<i>a</i> (informative)	<i>b</i> (informative)
M135, M140	6	200	50	35	3	1.5
	4		35	24		
	3		24	18		
	2		16	16		
M145, M150	6	212	50	35		
	4		35	24		
	3		24	18		
	2		16	16		

Note ⁽³⁾ The pitch is omitted from the nominal thread size.

- Remarks 1 The ring gauge periphery shall be provided with crossed cut knurling of **JIS B 0951**.
- 2 The outside diameter edges of the ring gauge shall be rounded or chamfered.
- 3 Such ring gauges having 125 mm or larger in dimension *D* and also 35 mm or larger in dimension *H*₁ or *H*₂ may be thinned at the periphery part to reduce the weight.

Table 7 Shape and dimensions of double opening plain caliper gauge
For metric coarse and fine screw threads

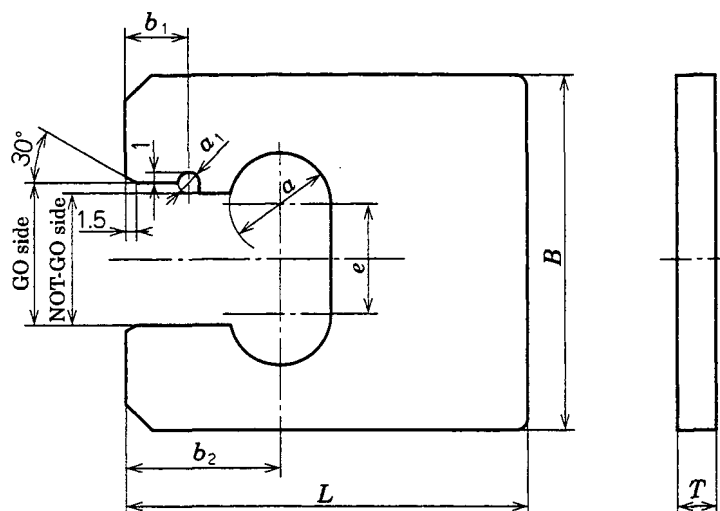
Unit : mm



Nominal thread size ⁽¹⁾	<i>B</i>	<i>L</i>	<i>T</i>	<i>b</i> ₁	<i>b</i> ₂	<i>a</i>
M1 to M3	25	50	3	11	8	8
M3.5 to M6	30		4	14	10	11
M7 to M10	36	60		16	12	12

**Table 8 Shape and dimensions of single opening plain caliper gauge
For metric coarse and fine screw threads**

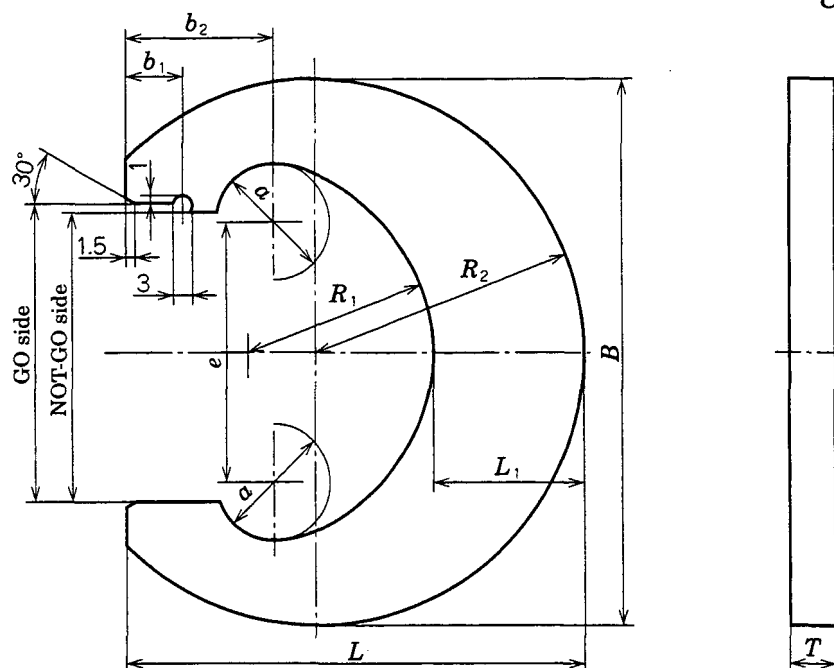
Unit : mm



Nominal thread size ⁽¹⁾	<i>B</i>	<i>L</i>	<i>T</i>	<i>b</i> ₁	<i>b</i> ₂	<i>a</i>	<i>a</i> ₁	<i>e</i>
M3.5 to M6	30	50	4	10	22	11	3	—
M7 to M10	36	60		11	23	12	5	
M11 to M14	50		6	12	28	18		
M15 to M18	60	70		13	32	25		
M20 to M24	65			14	34	28		
M25 to M30	75	80	10	15	36	34		22
M32 to M40	90	90		17	40	22		
M42 to M50	110	100		19	43	28	30	

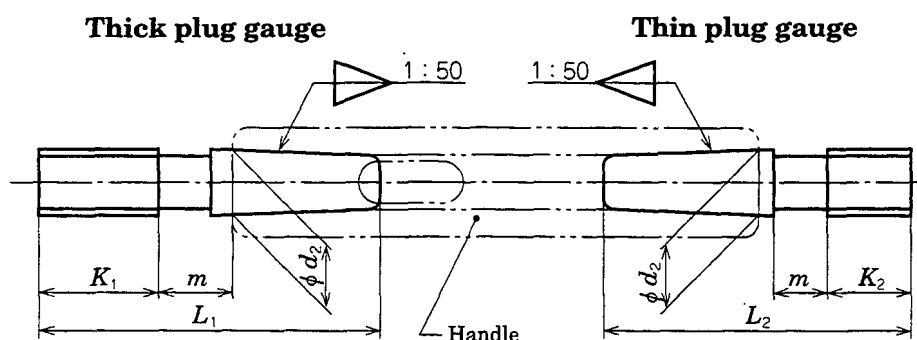
**Table 9 Shape and dimensions of C-shape plain caliper gauge
For metric coarse and fine screw threads**

Unit : mm



Nominal thread size ⁽¹⁾	<i>B</i>	<i>L</i>	<i>T</i>	<i>L</i> ₁	<i>R</i> ₁	<i>R</i> ₂	<i>b</i> ₁	<i>b</i> ₂	<i>a</i>	<i>e</i>
M52 to M65	120	100	14	36	36	60	18	35	15	55
M68 to M80	142	114		41	45	71	19	38	18	69
M82 to M100	162	130		45	55	81	20	40	20	88
M105 to M150	192	150		51	65	96	22	44	22	106

Table 10 Shape and dimensions of plug gauge (taper lock type)
For metric coarse screw threads



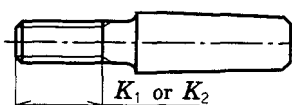
Unit : mm

Nominal thread size	Thick type		Thin type		m	d_2 ± 0.01	Handle No. ⁽⁵⁾
	K_1	L_1	K_2	L_2 ⁽⁴⁾			
M1 to M1.8	3.5	19	3.5	19	5.5	2.5	1
M2 to M3	4.5	20	4.5	20			

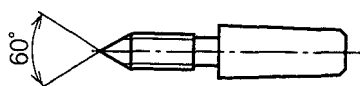
Notes ⁽⁴⁾ The numerical value of L_2 may be the same as L_1 .

⁽⁵⁾ For the handle, that for plug gauge of Table 29 shall apply.

Remarks 1 The plug gauge may be shaped without recess as shown in the drawing below.



2 The gauge end may be shaped in centre point as shown in the drawing below.



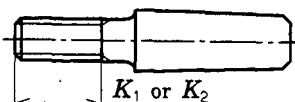
3 The plug gauge and handle may be integrated in the shape.

**Table 11 Dimensions of plug gauge
For metric fine screw threads**

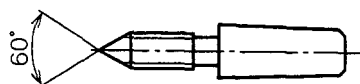
Unit : mm

Nominal thread size ⁽³⁾	Thick type		Thin type		m	d_2 ± 0.01	Handle No. ⁽⁵⁾
	K_1	L_1	K_2	L_2 ⁽⁴⁾			
M1 to M3	3.5	19	3.5	19	5.5	2.5	1

Remarks 1 The plug gauge may be shaped without recess as shown in the drawing below.



2 The gauge end may be shaped in centre point as shown in the drawing below.

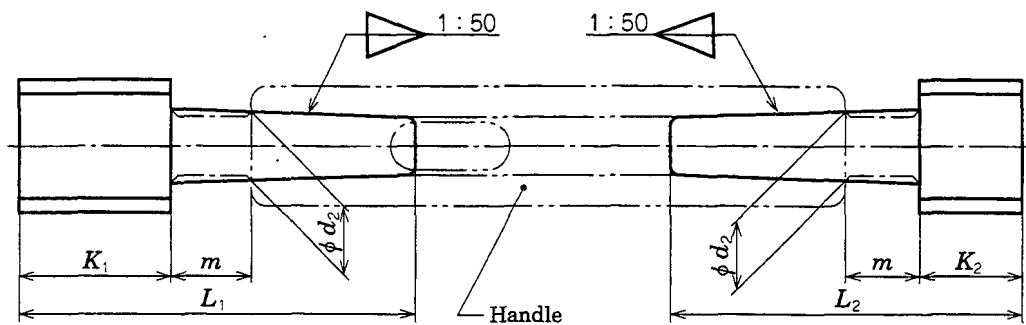


3 The plug gauge and handle may be integrated in the shape.

Table 12 Shape and dimensions of plug gauge (taper lock type)
For metric coarse screw threads

Thick plug gauge

Thin plug gauge



Unit : mm

Nominal thread size	Thick type		Thin type		m	d ₂ ± 0.01	Handle No. (°)
	K ₁	L ₁	K ₂	L ₂ (°)			
M3.5 to M4.5	6	24	6	24	6	4	2
M5, M6	8	26					
M7	10	32	10	28	7	5.5	3
M8 to M10	12	34		32			
M11, M12	16	44	12	38	8	7	4
M14				40			
M16		48	16	44	10	9	5
M18	20	52		48			
M20		56	20	52	12	12	6
M22	24	60					
M24, M27			24	56			
M30	28	64		60			
M33 to M39	32	72	32	64	15	16	7
M42 to M48	40	80		72			

- Remarks 1 Where the minor diameter of the thread gauge is smaller than d_2 , a recess shall be provided as indicated by long dashed short dashed lines in the drawing.
- 2 For plain plug gauges the handle No. may be changed according to the outside diameter size.