

JIS

JAPANESE INDUSTRIAL STANDARD

Slotted head screws

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Slotted head screws

B 1101-1996

1. Scope This Japanese Industrial Standard specifies the steel slotted head screws (hereafter, referred to as “steel screws”), stainless steel slotted head screws (hereafter referred to as “stainless steel screws”) and nonferrous metal slotted head screws (hereafter referred to as “nonferrous metal screws”) for general use.

- Remarks
1. When the steel screws, stainless steel screws and nonferrous metal screws are generically called, these are simply called “screws”.
 2. The screws which are not in accordance with the text of this Standard are specified in Annex.
 3. The cited standards are given in Attached Table 5.
 4. The International Standards corresponding to the text of this Standard are given in Attached Table 6.

2. Definitions The main definitions to be used in this Standard are in accordance with JIS B 0101.

3. Classification The screws shall be classified as given in Table 1 according to the shapes of head.

Table 1. Classification of screws

Type	Corresponding International Standard
Slotted cheese head screws	ISO 1207 : 1992
Slotted pan head screws	ISO 1580 : 1994
Slotted countersunk head screws	ISO 2009 : 1994
Slotted raised countersunk head screws	ISO 2010 : 1994

4. Qualities The qualities of the screws shall be in accordance with Table 2.

Table 2. Qualities of screws

Division		Qualities		
		Steel screw	Stainless steel screw	Nonferrous metal screw
Screw threads	Tolerance class	6 g ⁽¹⁾		
	Applicable standards	Text of JIS B 0205 and text of JIS B 0209		
Mechanical properties	Division	Strength class 4.8, 5.8	Property class A2-50, A2-70	Material symbol ⁽²⁾ —
	Applicable standards	Text of JIS B 1051	JIS B 1054	JIS B 1057
Tolerances	Product grade	A		
	Applicable standard	JIS B 1021		
Surface treatment		Generally it shall not be processed. When the surface treatment of plating or the like is required particularly, it shall be so designated by the purchaser. When the electroplating is to be processed, it shall be in accordance with JIS B 1044.		
Surface discontinuities		Unless otherwise specified, it shall be in accordance with JIS B 1041.		

Notes ⁽¹⁾ The maximum permissible dimension of the screw threads, when the electroplating has been processed on the steel screw, it shall be in accordance with the maximum permissible dimension of tolerance class 4h specified in the text of JIS B 0209.

⁽²⁾ As to the material symbols of nonferrous metal screws, any one of those specified in JIS B 1057 shall be determined upon agreement between the purchaser and the manufacturer.

5. Shapes and dimensions The shapes and dimensions of the screws shall be in accordance with Attached Tables 1 to 4.

6. Materials The materials of the screws shall be in accordance with the following:

- (1) The material of the steel screws shall be in accordance with 3. of the text of JIS B 1051.
- (2) The material of the stainless steel screws shall be in accordance with 5. of JIS B 1054.
- (3) The material of the nonferrous metal screws shall be in accordance with 4. of JIS B 1057.

7. Inspection The inspection of the screws shall be in accordance with the following :

- (1) The inspection on the mechanical properties shall be in accordance with JIS B 1051 for steel screws, with JIS B 1054 for stainless steel screws and with JIS B 1057 for nonferrous metal screws, and the results shall conform to the strength class, property class and material symbol of Table 2.
- (2) As to the shapes and dimensions, the inspection on the screw threads and geometrical tolerances shall be carried out by the measuring method in accordance

with JIS B 1071 or a method instead of this, and the results shall conform to the values of Table 2 and Attached Tables 1 to 4. However, the go ring gauge used for the screw threads processed with electroplating shall be that for 4 h in accordance with JIS B 0251.

The shapes and dimensions of the countersunk head part of Attached Table 3 should preferably be in accordance with the gauge inspection specified in JIS B 1013.

- (3) The inspection on surface discontinuities, unless particularly designated, shall be carried out in accordance with JIS B 1041, and the results shall conform to the permissible limit specified in JIS B 1041.
- (4) The acceptance inspection, unless particularly specified, shall be in accordance with JIS B 1091.

8. Designation The screws shall be designated by the Standard number, type of screw, product grade, designation of thread (d) $\times$ nominal length (l), symbol of strength class of mechanical property (symbol of property class in the case of stainless steel screws, and material symbol in the case of nonferrous metal screws), and designated matter.

- Remarks
1. The Standard number, unless particularly required, may be omitted.
 2. As to the designated matter, the shape of screw end, type of surface treatment or the like shall be indicated, as required.

Examples :

(For steel screws)	JIS B 1101	Slotted pan head screw	- A -	M3 $\times$ 12	-	4.8	-	A2K ⁽³⁾
(For stainless steel screws)		Slotted countersunk head screw	- A -	M5 $\times$ 16	-	A2-50		
(For nonferrous metal screws)		Slotted raised countersunk head screw	- A -	M6 $\times$ 20	-	CU2	-	Flat point
	(Standard number)	(Type)	(Product grade)	($d \times l$)	(Strength class)	(Designated matter)		

Note ⁽³⁾ A2K is according to the symbol of Annex D to JIS B 1044.

9. Marking

9.1 Marking on products The marking on products of the screws shall be in accordance with the following :

- (1) The steel screws shall be in accordance with 6.1 of the text of JIS B 1051.
- (2) The stainless steel screws shall be in accordance with 8.1 of JIS B 1054.
- (3) The nonferrous metal screws shall be in accordance with 7.1 of JIS B 1057.

9.2 Marking on packages The package of the screws shall be marked with the following information on the outer face.

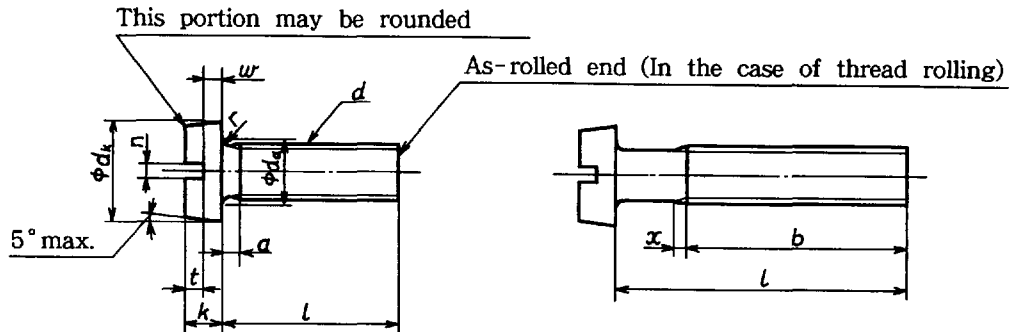
- (1) Type of screw
- (2) Product grade
- (3) Designation of thread $\times$ nominal length
- (4) Symbol of strength class (for steel screws), symbol of property class (in the case of stainless steel screws, a combined symbol of steel type and strength class) and material symbol (in the case of nonferrous metal screws)

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- (5) Designated matter
- (6) Quantity
- (7) Manufacturer's name or abbreviation (As to the abbreviation, the registered trade-mark should be used as far as possible.)

Attached Table 1. Shape and dimensions of slotted cheese head screws



Unit : mm

Designation of threads $d^{(4)}$		M1.6	M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10
Pitch (P)		0.35	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
a	Max.	0.7	0.8	0.9	1	1.2	1.4	1.6	2	2.5	3
b	Min.	25	25	25	25	38	38	38	38	38	38
d_k	Nominal=Max.	3.00	3.80	4.50	5.50	6.00	7.00	8.50	10.00	13.00	16.00
	Min.	2.86	3.62	4.32	5.32	5.82	6.78	8.28	9.78	12.73	15.73
d_a	Max.	2	2.6	3.1	3.6	4.1	4.7	5.7	6.8	9.2	11.2
k	Nominal=Max.	1.10	1.40	1.80	2.00	2.40	2.60	3.30	3.9	5.0	6.0
	Min.	0.96	1.26	1.66	1.86	2.26	2.46	3.12	3.6	4.7	5.7
n	Nominal	0.4	0.5	0.6	0.8	1	1.2	1.2	1.6	2	2.5
	Max.	0.60	0.70	0.80	1.00	1.20	1.51	1.51	1.91	2.31	2.81
	Min.	0.46	0.56	0.66	0.86	1.06	1.26	1.26	1.66	2.06	2.56
r	Min.	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.25	0.4	0.4
t	Min.	0.45	0.6	0.7	0.85	1	1.1	1.3	1.6	2	2.4
w	Min.	0.4	0.5	0.7	0.75	1	1.1	1.3	1.6	2	2.4
x	Max.	0.9	1	1.1	1.25	1.5	1.75	2	2.5	3.2	3.8
$l^{(5)}$		(Informative reference) Approximate mass per 1000 pieces in kg (Density : 7.85 kg/dm ³)									
Nominal length $^{(4)}$	Min.	Max.									
2	1.8	2.2	0.07								
3	2.8	3.2	0.082	0.16	0.272						
4	3.76	4.24	0.094	0.179	0.302	0.515					
5	4.76	5.24	0.105	0.198	0.332	0.56	0.786	1.09			
6	5.76	6.24	0.117	0.217	0.362	0.604	0.845	1.17	2.06		
8	7.71	8.29	0.14	0.254	0.422	0.692	0.966	1.33	2.3	3.56	
10	9.71	10.29	0.163	0.291	0.482	0.78	1.08	1.47	2.55	3.92	7.85
12	11.65	12.35	0.186	0.329	0.542	0.868	1.2	1.63	2.8	4.27	8.49
(14)	13.65	14.35	0.209	0.365	0.602	0.956	1.32	1.79	3.05	4.62	9.13
16	15.65	16.35	0.232	0.402	0.662	1.04	1.44	1.95	3.3	4.98	9.77
20	19.58	20.42		0.478	0.782	1.22	1.68	2.25	3.78	5.69	11
25	24.58	25.42			0.932	1.44	1.98	2.64	4.4	6.56	12.6
30	29.58	30.42				1.66	2.28	3.02	5.02	7.45	14.2
35	34.5	35.5					2.57	3.41	5.62	8.25	15.8
40	39.5	40.5						3.8	6.25	9.2	17.4
45	44.5	45.5							6.88	10	18.9
50	49.5	50.5							7.5	10.9	20.6
(55)	54.05	55.95								11.8	22.1
60	59.05	60.95								12.7	23.7
(65)	64.05	65.95									25.2
70	69.05	70.95									26.8
(75)	74.05	75.95									28.3
80	79.05	80.95									29.8

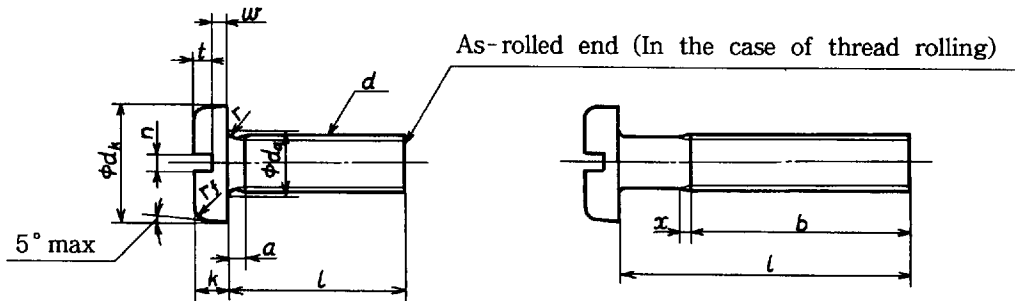
Notes ⁽⁴⁾ The designation of threads and nominal length given in parentheses should not be used as far as possible.

⁽⁵⁾ The preferable nominal length (l) relative to the designation of threads

shall be in the frame of bold lines, and those of shorter in nominal length than the positions of broken lines, unless designated by the purchaser, shall be of full screw threads. In this case, $b = l - a$.

- Remarks
1. The designation of n shall be used as the basic dimension when its minimum and maximum are determined.
 2. The diameter of unthreaded part (body) shall generally be approximately the pitch diameter of screw threads, or may also be the nominal diameter of screw threads approximately. However, its diameter shall not exceed the maximum value of major diameter of screw threads.
 3. The shape of screw end shall be as-rolled end in the case of thread rolling, and be chamfered end in the case of screw thread cutting, and when other screw end is required, it shall be designated by the purchaser. However, the shape and dimensions of screw end shall generally be in accordance with JIS B 1003.
 4. This Table is in accordance with ISO 1207.

Attached Table 2. Shape and dimensions of slotted pan head screws



Unit : mm

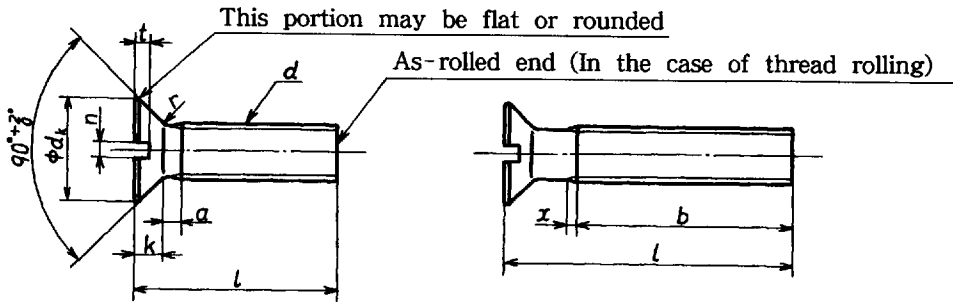
Designation of threads d (*)			M1.6	M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10
Pitch (P)			0.35	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
a	Max.		0.7	0.8	0.9	1	1.2	1.4	1.6	2	2.5	3
b	Min.		25	25	25	25	38	38	38	38	38	38
d_k	Nominal = Max.		3.2	4.0	5.0	5.6	7.00	8.00	9.50	12.00	16.00	20.00
	Min.		2.9	3.7	4.7	5.3	6.64	7.64	9.14	11.57	15.57	19.48
d_a	Max.		2	2.6	3.1	3.6	4.1	4.7	5.7	6.8	9.2	11.2
k	Nominal = Max.		1.00	1.30	1.50	1.80	2.10	2.40	3.00	3.6	4.8	6.0
	Min.		0.86	1.16	1.36	1.66	1.96	2.26	2.86	3.3	4.5	5.7
n	Nominal		0.4	0.5	0.6	0.8	1	1.2	1.2	1.6	2	2.5
	Max.		0.60	0.70	0.80	1.00	1.20	1.51	1.51	1.91	2.31	2.81
	Min.		0.46	0.56	0.66	0.86	1.06	1.26	1.26	1.66	2.06	2.56
r	Min.		0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.25	0.4	0.4
r_f	Ref.		0.5	0.6	0.8	0.9	1	1.2	1.5	1.8	2.4	3
t	Min.		0.35	0.5	0.6	0.7	0.8	1	1.2	1.4	1.9	2.4
w	Min.		0.3	0.4	0.5	0.7	0.8	1	1.2	1.4	1.9	2.4
x	Max.		0.9	1	1.1	1.25	1.5	1.75	2	2.5	3.2	3.8
l (°)			(Informative reference) Approximate mass per 1000 pieces in kg (Density : 7.85 kg/dm³)									
Nominal length(*)	Min.	Max.										
2	1.8	2.2	0.075									
2.5	2.3	2.7	0.081	0.152								
3	2.8	3.2	0.087	0.161	0.281							
4	3.76	4.24	0.099	0.18	0.311	0.463						
5	4.76	5.24	0.11	0.198	0.341	0.507	0.825	1.16				
6	5.76	6.24	0.122	0.217	0.371	0.551	0.885	1.24	2.12			
8	7.71	8.29	0.145	0.254	0.431	0.639	1	1.39	2.37	4.02		
10	9.71	10.29	0.168	0.292	0.491	0.727	1.12	1.55	2.61	4.37	9.38	
12	11.65	12.35	0.192	0.329	0.551	0.816	1.24	1.7	2.86	4.72	10	18.2
(14)	13.65	14.35	0.215	0.366	0.611	0.904	1.36	1.86	3.11	5.1	10.6	19.2
16	15.65	16.35	0.238	0.404	0.671	0.992	1.48	2.01	3.36	5.45	11.2	20.2
20	19.58	20.42		0.478	0.792	1.17	1.72	2.32	3.85	6.14	12.6	22.2
25	24.58	25.42			0.942	1.39	2.02	2.71	4.47	7.01	14.1	24.7
30	29.58	30.42				1.61	2.32	3.1	5.09	7.9	15.7	27.2
35	34.5	35.5					2.62	3.48	5.71	8.78	17.3	29.7
40	39.5	40.5						3.87	6.32	9.66	18.9	32.2
45	44.5	45.5							6.94	10.5	20.5	34.7
50	49.5	50.5							7.56	11.4	22.1	37.2
(55)	54.05	55.95								12.3	23.7	39.7
60	59.05	60.95								13.2	25.3	42.2
(65)	64.05	65.95									26.9	44.7
70	69.05	70.95									28.5	47.2
(75)	74.05	75.95									30.1	49.7
80	79.05	80.95									31.7	52.2

- Remarks 1. The designation of n shall be used as the basic dimension when its minimum and maximum are determined.
2. The diameter of unthreaded part (body) shall generally be approximately

the pitch diameter of screw thread, or may also be the nominal diameter of screw threads approximately. However, its diameter shall not exceed the maximum value of major diameter of screw threads.

3. The shape of screw end shall be as-rolled end in the case of thread rolling, and be chamfered end in the case of screw thread cutting, and when other screw end is required, it shall be designated by the purchaser. However, the shape and dimensions of screw end shall generally be in accordance with JIS B 1003.
4. This Table is in accordance with ISO 1580.

Attached Table 3. Shape and dimensions of slotted countersunk head screws



Unit : mm

Designation of threads $d^{(4)}$			M1.6	M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10
Pitch (P)			0.35	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
a	Max.		0.7	0.8	0.9	1	1.2	1.4	1.6	2	2.5	3
b	Min.		25	25	25	25	38	38	38	38	38	38
$d_k^{(6)}$	Maximum theoretical dimension		3.6	4.4	5.5	6.3	8.2	9.4	10.4	12.6	17.3	20
	Actual dimension	Nominal = Max.	3.0	3.8	4.7	5.5	7.30	8.40	9.30	11.30	15.80	18.30
		Min.	2.7	3.5	4.4	5.2	6.94	8.04	8.94	10.87	15.37	17.78
$k^{(6)}$	Nominal = Max.		1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5
n	Nominal		0.4	0.5	0.6	0.8	1	1.2	1.2	1.6	2	2.5
	Max.		0.60	0.70	0.80	1.00	1.20	1.51	1.51	1.91	2.31	2.81
	Min.		0.46	0.56	0.66	0.86	1.06	1.26	1.26	1.66	2.06	2.56
r	Max.		0.4	0.5	0.6	0.8	0.9	1	1.3	1.5	2	2.5
t	Max.		0.50	0.6	0.75	0.85	1.2	1.3	1.4	1.6	2.3	2.6
	Min.		0.32	0.4	0.50	0.60	0.9	1.0	1.1	1.2	1.8	2.0
x	Max.		0.9	1	1.1	1.25	1.5	1.75	2	2.5	3.2	3.8
$l^{(7)}$			(Informative reference) Approximate mass per 1000 pieces in kg (Density : 7.85 kg/dm ³)									
Nominal length ⁽⁴⁾			Min.	Max.								
2.5	2.3	2.7	0.053									
3	2.8	3.2	0.058	0.101								
4	3.76	4.24	0.069	0.119	0.206							
5	4.76	5.24	0.081	0.137	0.236	0.335						
6	5.76	6.24	0.093	0.152	0.266	0.379	0.633	0.903				
8	7.71	8.29	0.116	0.193	0.326	0.467	0.753	1.06	1.48	2.38		
10	9.71	10.29	0.139	0.231	0.386	0.555	0.873	1.22	1.72	2.73	5.68	
12	11.65	12.35	0.162	0.268	0.446	0.643	0.993	1.37	1.96	3.08	6.32	9.54
(14)	13.65	14.35	0.185	0.306	0.507	0.731	1.11	1.53	2.2	3.43	6.96	10.6
16	15.65	16.35	0.208	0.343	0.567	0.82	1.23	1.68	2.44	3.78	7.6	11.6
20	19.58	20.42		0.417	0.687	0.996	1.47	2	2.92	4.48	8.88	13.6
25	24.58	25.42			0.838	1.22	1.77	2.39	3.52	5.36	10.5	16.1
30	29.58	30.42				1.44	2.07	2.78	4.12	6.23	12.1	18.7
35	34.5	35.5					2.37	3.17	4.72	7.11	13.7	21.2
40	39.5	40.5						3.56	5.32	7.98	15.3	23.7
45	44.5	45.5							5.92	8.86	16.9	26.2
50	49.5	50.5							6.52	9.73	18.5	28.8
(55)	54.05	55.95								10.6	20.1	31.3
60	59.05	60.95								11.5	21.7	33.8
(65)	64.05	65.95									23.3	36.3
70	69.05	70.95									24.9	38.9
(75)	74.05	75.95									26.5	41.4
80	79.05	80.95									28.1	43.9

Notes ⁽⁶⁾ As to d_k and k , refer to JIS B 1013.

⁽⁷⁾ The preferable nominal lengths relative to the designation of threads shall be within the frame of bold lines, and those of shorter nominal length than

the positions of broken lines, unless designated by the purchaser, shall be of full screw threads. In this case, $b=l-(k+a)$.

- Remarks
1. The designation of n shall be used as the basic dimension when its minimum and maximum are determined.
 2. The diameter of unthreaded part (body) shall generally be approximately the pitch diameter of screw thread, or may also be the nominal diameter of screw threads approximately. However, its diameter shall not exceed the maximum value of major diameter of screw threads.
 3. The shape of screw end shall be as-rolled end in the case of thread rolling, and be chamfered end in the case of screw thread cutting, and when other screw end is required, it shall be designated by the purchaser. However, the shape and dimensions of screw end shall generally be in accordance with JIS B 1003.
 4. This Table is in accordance with ISO 2009.