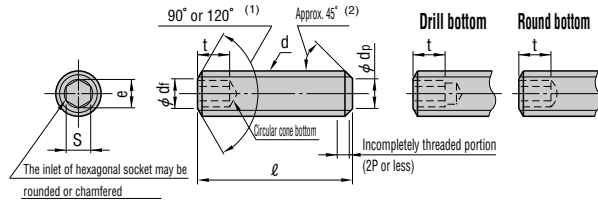


Hexagon Socket Set Screws—Flat Type

1. Shape and Dimensions of Hexagon Socket Set Screw and Its Flat End (JIS B 1177-1988)



Note (1) : Should be chamfered to 120° if l falls short of the dotted line, which forms stairs, in the table.
 (2) : 45° Slanted portion below the trough diameter line of the male screw.

Nominal of Screw (d)		M2	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24	
Pitch (P)		0.4	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0	2.5	3.0	
d _p	Max. (Standard size)	1.0	2.0	2.5	3.5	4.0	5.5	7.0	8.5	12.0	15.0	18.0	
	Min.	0.75	1.75	2.25	3.2	3.7	5.2	6.64	8.14	11.57	14.57	17.57	
d _t	Approx.	Core diameter of male screw											
e	Min. (3)	1.003	1.73	2.30	2.87	3.44	4.58	5.72	6.86	9.15	11.43	13.72	
	Min. (4)	1.003	1.73	2.30	2.87	3.44	4.58	5.72	6.86	9.15	11.43	13.72	
s	Nominal designation (Standard size)	0.9	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	
	Max.	0.902	1.545	2.045	2.560	3.080	4.095	5.095	6.095	8.115	10.115	12.142	
	Min.	0.889	1.520	2.020	2.520	3.020	4.020	5.020	6.020	8.025	10.025	12.032	
t	Min. (4) Column 1	0.8	1.2	1.5	2.0	2.0	3.0	4.0	4.8	6.4	8.0	10.0	
	Column 2	1.7	2.0	2.5	3.0	3.5	5.0	6.0	8.0	10.0	12.0	15.0	
l (5)		Approx Mass per 1000 Units Unit : kg (Density : 7.85kg/dm ³)											
Nominal Length (Standard size)	Min.	Max.											
2	1.8	2.2	0.029	0.059									
2.5	2.3	2.7	0.037	0.08	0.099								
3	2.8	3.2	0.044	0.1	0.14	0.2							
4	3.7	4.3	0.059	0.14	0.22	0.32	0.41						
5	4.7	5.3	0.074	0.18	0.3	0.44	0.585	0.945					
6	5.7	6.3	0.089	0.22	0.38	0.56	0.76	1.26	1.77				
8	7.7	8.3	0.119	0.3	0.54	0.8	1.11	1.89	2.78	4			
10	9.7	10.3	0.148	0.38	0.7	1.04	1.46	2.52	3.78	5.4	8.5		
12	11.6	12.4		0.46	0.86	1.28	1.81	3.15	4.78	6.8	11.1	15.8	
16	15.6	16.4		0.62	1.18	1.76	2.51	4.41	6.78	9.6	16.3	24.1	30
20	19.6	20.4			1.49	2.24	3.21	5.67	8.76	12.4	21.5	32.3	42
25	24.6	25.4				2.84	4.09	7.25	11.2	15.9	28	42.6	57
30	29.6	30.4					4.97	8.82	13.7	19.4	34.6	52.9	72
35	34.5	35.5						10.4	16.2	22.9	41.1	63.2	87
40	39.5	40.5						12	18.7	26.4	47.7	73.5	102
45	44.5	45.5							21.2	29.9	54.2	83.8	117
50	49.5	50.5							23.7	33.4	60.7	94.1	132
55	54.4	55.6								36.8	67.3	104	147
60	59.4	60.6								40.3	73.7	115	162

Note (3) : e (min.) = 1.14 × s (min). (Excluding nominal M25 or less for screws)

(4) : The values in Column 1 for t (min.) are applicable to the nominal lengths (l) falling short of the dotted border, and the values in Column 2 to the nominal lengths beyond the border.

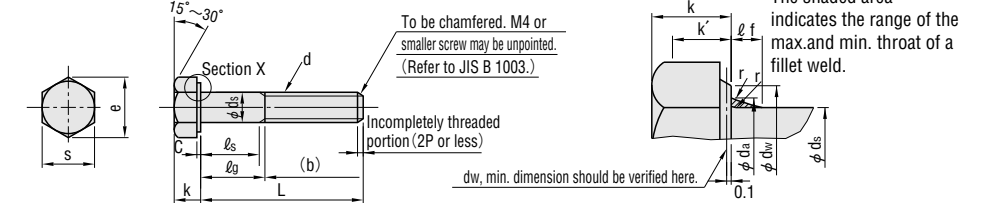
(5) : Min. l and max. l are based on JIS B 1021. They are rounded to the first digit below zero.

- Remarks :
- Recommended nominal lengths (l) for individual screw sizes are enclosed by thick lines. If the required length is not given in the table, it should be specified by the ordering side.
 - The shape and dimensions of the flat end of the screw are based on JIS B 1003 (shape and dimensions of the end of the screw).
 - The bottom of the hexagon socket may be a conical, drill or round shape.

Reference : The shape and dimensions indicated in the table are based on ISO 4026-1977

Hexagon Head Bolts

1. Shape and Dimensions of Hexagon Head Bolt (Parts Grade A)



Unit : mm

Nominal of Screws d	Coarse Thread Column I		M2	M3	M4	M5	M6	M8	M10	M12	—	M16	M20	M24													
	Column II		—	—	—	—	—	—	—	—	M14	—	—	—													
b (Reference)	Coarse Thread Pitch P		0.4	0.5	0.7	0.8	1	1.25	1.5	1.75	—	2	2.5	3													
	Fine Thread Column I		—	—	—	—	—	—	M8×1	M10×1	M12×1.5	—	M16×1.5	M20×1.5	M24×2												
c	Column II		—	—	—	—	—	—	M10×1.25	M12×1.25	M14×1.5	—	M20×2	—													
	L ≤ 125mm	10	12	14	16	18	22	26	30	34	38	46	54														
da	125 < L ≤ 150mm		—	—	—	—	—	—	—	—	40	44	52	60													
	Min.	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.2	0.2	0.2													
ds	Max.		0.25	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.8	0.8	0.8													
	Min.	2.6	3.6	4.7	5.7	6.8	9.2	11.2	13.7	15.7	17.7	22.4	26.4														
dw	Standard size=Max.		2	3	4	5	6	8	10	12	14	16	20	24													
	Min.	1.86	2.86	3.82	4.82	5.82	7.78	9.78	11.73	13.73	15.73	19.67	23.67														
e	Max.		3.07	4.57	5.88	6.88	8.88	11.63	14.63	16.63	*19.64	22.49	28.19	33.61													
	Min.	4.32	6.01	7.66	8.79	11.05	14.38	17.77	20.03	23.36	26.75	33.53	39.98														
l _f	Max.		0.8	1	1.2	1.2	1.4	2	2	3	3	4	4														
	Standard size=Nominal	1.4	2	2.8	3.5	4	5.3	6.4	7.5	8.8	10	12.5	15														
k	Min.		1.275	1.875	2.675	3.35	3.85	5.15	6.22	7.32	8.62	9.82	12.285	14.785													
	Max.	1.525	2.125	2.925	3.65	4.15	5.45	6.58	7.68	8.98	10.18	12.715	15.215														
k'	Min.		0.89	1.31	1.87	2.35	2.7	3.61	4.35	5.12	6.03	6.87	8.6	10.35													
	Min.	0.1	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6	0.6	0.8	0.8														
s	Standard size=Max.		4	5.5	7	8	10	13	16	18	21	24	30	36													
	Min.	3.82	5.32	6.78	7.78	9.78	12.73	15.73	17.73	20.67	23.67	29.67	35.38														
Length of Bolt L			l _s and l _g																								
Nominal Length (Basic Dimension)	Min.		l _s		l _g		l _s		l _g		l _s		l _g		l _s		l _g		l _s		l _g						
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.					
16	15.65	16.35	4	6																							
20	19.58	20.42	8	10	5.5	8																					
25	24.58	25.42			10.5	13	7.5	11	5	9																	
30	29.58	30.42			15.5	18	12.5	16	10	14	7	12															
35	34.5	35.5					17.5	21	15	19	12	17															
40	39.5	40.5					22.5	26	20	24	17	22	11.75	18													
45	44.5	45.5							25	29	22	27	16.75	23	11.5	19											
50	49.5	50.5							30	34	27	32	21.75	28	16.5	24	11.25	20									
55	54.4	55.6									32	37	26.75	33	21.5	29	16.25	25									
60	59.4	60.6									37	42	31.75	38	26.5	34	21.25	30	16	26							
65	64.4	65.6											36.75	43	31.5	39	26.25	35	21	31	17	27					
70	69.4	70.6											41.75	48	36.5	44	31.25	40	26	36	22	32					
80	79.4	80.6											51.75	58	46.5	54	41.25	50	36	46	32	42	21.5	34			
90	89.3	90.7													56.5	64	51.25	60	46	56	42	52	31.5	44	21	36	
100	99.3	100.7													66.5	74	61.25	70	56	66	52	62	41.5	54	31	46	
110	109.3	110.7															71.25	80	66	76	62	72	51.5	64	41	56	
120	119.3	120.7															81.25	90	76	86	72	82	61.5	74	51	66	
130	129.2	130.8																	80	90	76	86	65.5	78	55	70	
140	139.2	140.8																		90	100	86	96	75.5	88	65	80
150	149.2	150.8																			96	106	85.5	98	75	90	

- Remarks :
- Priority should be given to the screw sizes in Column I. The screw size codes are based on JIS B 0123.
 - Recommended nominal lengths (L) are enclosed by thick lines.
 - A tolerance for the length of the threaded portion (b) of a bolt that exceeds the max. nominal value given within the thick lines should be agreed to by the delivering and receiving sides. It should be based on JIS B 1021.
 - Max. value, l_g = Nominal length (L) - b. Min. value, l_s = Max. value, l_g - 5P (P = Coarse pitch)
 - da and r in this table are based on JIS B 1005.
 - Whether the end of the screw is to be "chamfered" or "unpointed" should be decided according to JIS B 1003.
 - * The asterisked figures in the table are values after correction of the error in the relevant international standard.

※With some of the hexagon head bolts and M10, M12 hexagon nuts distributed at present, the opposite side S is based on JIS prior to the revision.