

M 1,6 to M 39 hexagon head bolts

Product grades A and B

DIN
931
Part 1

Sechskantschrauben mit Schaft; Gewinde M 1,6 bis M 39; Produktklassen A und B

This standard, together with DIN ISO 4014, September 1987 edition, supersedes the December 1982 edition.

This standard should be used together with ISO 4014. For details, see Explanatory notes. It is intended to withdraw the present standard by 1 July 1992 at the latest.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

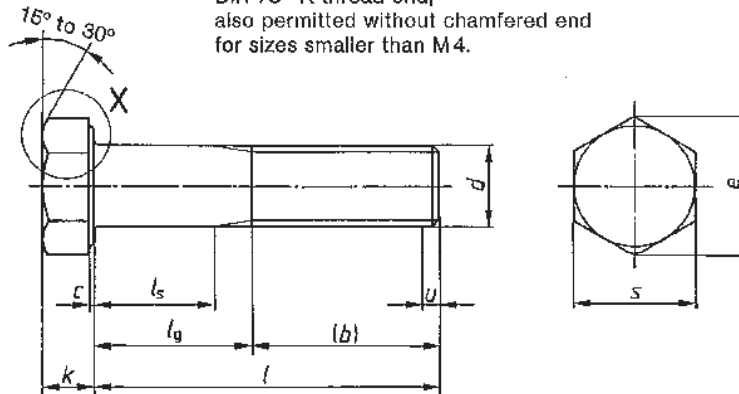
1 Field of application

This standard specifies requirements for M 1,6 to M 36 hexagon head bolts assigned to product grade A for thread sizes up to and including M 24 and lengths smaller than $10d$ or 150 mm, and assigned to product grade B for thread sizes above M 24 or lengths exceeding $10d$ or 150 mm.

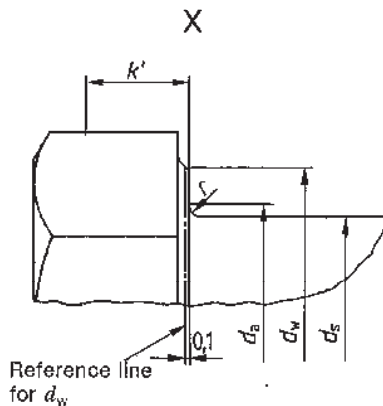
If, in special cases, bolts are to comply with specifications other than those given in this standard, e.g. regarding nominal lengths, these shall be selected in accordance with the appropriate standard.

2 Dimensions

DIN 78-K thread end, also permitted without chamfered end for sizes smaller than M 4.



u = maximum of 2P incomplete thread.



k' = minimum wrenching height (0,7 k min.).

Continued on pages 2 to 7

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Table. (concluded)

P	Thread size		(M 22)		(M 27)		M 30		(M 33)		M 36		(M 39)	
	1)	2)	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
b	Temporary size	50	54	60	66	72	78	84	90	96	102	108	114	120
	min.	50	54	60	66	72	78	84	90	96	102	108	114	120
	max.	50	54	60	66	72	78	84	90	96	102	108	114	120
	Product grade	50	54	60	66	72	78	84	90	96	102	108	114	120
c	min.	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
	max.	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1
d _g	max = nominal size	24.4	28.4	30.4	33.4	36.4	39.4	42.4	45.4	48.4	51.4	54.4	57.4	60.4
	min.	22	24	27	30	33	36	39	42	45	48	51	54	57
d _s	Product grade A	21.67	23.67	26.48	29.48	32.38	35.38	38.38	41.38	44.38	47.38	50.38	53.38	56.38
	Product grade B	30	33.6	38	42.7	46.6	51.1	55.9	60.4	64.4	68.4	72.5	76.5	80.4
e	Product grade A	35.72	39.98	45.2	50.85	55.37	60.79	66.44	71.5	76.5	81.5	86.5	91.5	96.4
	Product grade B	35.03	39.55	45.2	50.85	55.37	60.79	66.44	71.5	76.5	81.5	86.5	91.5	96.4
f	Nominal size	14	15	17	18.7	21	22.5	25	28	31	33	36	39	42
	Product grade A	14.22	15.22	18.65	20.58	24.58	28.08	31.58	35.08	38.58	42.08	45.58	49.08	52.58
k'	Product grade B	13.65	14.65	17.35	19.12	21.42	23.92	26.42	28.92	31.42	33.92	36.42	38.92	41.42
	min.	9.6	10.3	11.7	12.8	14.4	15.5	17.2	18.7	20.3	21.4	23.0	24.1	25.7
r	min.	0.8	0.8	1	1	1	1	1	1	1	1	1	1	1
	max = nominal size	32	36	41	46	50	55	60	65	70	75	80	85	90
s	Product grade A	31.61	35.33	40	45	49	53.8	58.8	63.8	68.8	73.8	78.8	83.8	88.8
	Product grade B	31	35	40	45	49	53.8	58.8	63.8	68.8	73.8	78.8	83.8	88.8

Nominal size	Product grade A		Product grade B		Shank length, l _s and grip length, l _g *)											
	min.	max.	min.	max.	l _s min.	l _s max.	l _g min.	l _g max.	l _s min.	l _s max.	l _g min.	l _g max.	l _s min.	l _s max.	l _g min.	l _g max.
70	69.4	70.6	70.6	70.6	7.5	20	26	31	30	35	24	29	10.5	12	32	38
(75)	74.4	75.6	75.6	75.6	12.5	25	30	35	40	45	34	39	10.5	12	42	40
80	79.4	80.6	80.6	80.6	17.5	30	36	41	50	55	54	59	30.5	22	46	50
(85)	84.3	85.7	85.7	85.7	22.5	35	41	46	60	64	58	62	34.5	26	56	60
90	89.3	90.7	90.7	90.7	27.5	40	46	51	74	78	68	72	38.5	26	66	70
(95)	94.3	95.7	95.7	95.7	32.5	45	51	56	84	88	78	82	42.5	26	76	80
100	99.3	100.7	100.7	100.7	37.5	50	56	61	104	108	94	98	46.5	26	86	90
110	109.3	110.7	110.7	110.7	47.5	60	66	71	124	128	108	112	54.5	26	96	100
120	119.3	120.7	120.7	120.7	57.5	70	76	81	134	138	118	122	62.5	26	106	110
130	129.2	130.8	130.8	130.8	61.5	74	80	85	144	148	128	132	66.5	26	116	120
140	139.2	140.8	140.8	140.8	71.5	84	90	95	154	158	138	142	74.5	26	126	130
150	149.2	150.8	150.8	150.8	81.5	94	100	105	164	168	148	152	82.5	26	136	140
(170)	—	—	—	—	101.5	114	120	125	184	188	168	172	90.5	26	146	150
180	—	—	—	—	111.5	124	130	135	194	198	178	182	98.5	26	156	160
(190)	—	—	—	—	121.5	134	140	145	204	208	188	192	106.5	26	166	170
200	—	—	—	—	131.5	144	150	155	214	218	198	202	114.5	26	176	180
220	—	—	—	—	138.5	151	157	162	224	228	208	212	122.5	26	186	190
240	—	—	—	—	151	167	173	178	234	238	218	222	130.5	26	196	200
260	—	—	—	—	166	182	188	193	244	248	228	232	138.5	26	206	210
280	—	—	—	—	181	197	203	208	254	258	238	242	146.5	26	216	220
300	—	—	—	—	197.5	213	219	224	264	268	248	252	154.5	26	226	230

For 1) to 3), see page 5.

Product grade A has been given above, product grade B below the stepped line.

3 Technical delivery conditions

Material		Steel	Stainless steel	Non-ferrous metal
General requirements		As specified in DIN 267 Part 1.		
Thread	Tolerance	6g		
	Standard	DIN 13 Parts 12 and 15.		
Mechanical properties	Property class (material)	5.6, 8.8, 10.9	$\leq M20$: A2-70, A4-70 $> M20$: A2-50, A4-50 C3, C4	Subject to agreement.
	Standard	ISO 898 Part 1	DIN 267 Part 11	DIN 267 Part 18
Limit deviations, geometrical tolerances	Product grade	A for products up to size M 24 and $l \leq 10d$ or 150 mm ¹⁾ . B for products exceeding size M 24 or $l > 10d$ or 150 mm ¹⁾ .		
	Standard	ISO 4759 Part 1		
Surface finish		As processed. Property class 8.8 and above: (thermally or chemically) blackened.	Bright.	Bright.
		DIN 267 Part 2 shall apply with regard to surface roughness. DIN 267 Part 19 shall apply with regard to permissible surface discontinuities. DIN 267 Part 9 shall apply with regard to electroplating. DIN 267 Part 10 shall apply with regard to hot dip galvanizing.		
Acceptance inspection		DIN 267 Part 5 shall apply with regard to acceptance inspection.		
1) Whichever is shorter (see stepped line in the dimension table).				

4 Designation

Designation of an M12 hexagon head bolt of nominal length, $l=80$ mm, with material assigned to property class 8.8:

Hexagon head bolt DIN 931 – M 12 × 80 – 8.8

If product grade A is required for sizes up to M 24 with lengths over 150 mm or with l greater than $10d$, or for sizes above M 24, then this shall be indicated in the designation by adding 'A', e.g.

Hexagon head bolt DIN 931 – M 30 × 100 – 8.8 – A

DIN 962 shall apply with regard to the designation of designs and types, with additional details to be given when ordering.

DIN 6900 shall apply with regard to the designation of types with captive components.

DIN 7500 Part 1 shall apply with regard to the designation of types with thread rolling properties.

The DIN 4000-2-1 tabular layout of article characteristics shall apply to bolts covered in this standard.

Footnotes for the tables on pages 2 to 4:

- 1) P = pitch of thread (coarse pitch thread).
- 2) For $l \leq 125$ mm.
- 3) For $l > 125$ mm ≤ 200 mm.
- 4) For $l > 200$ mm.