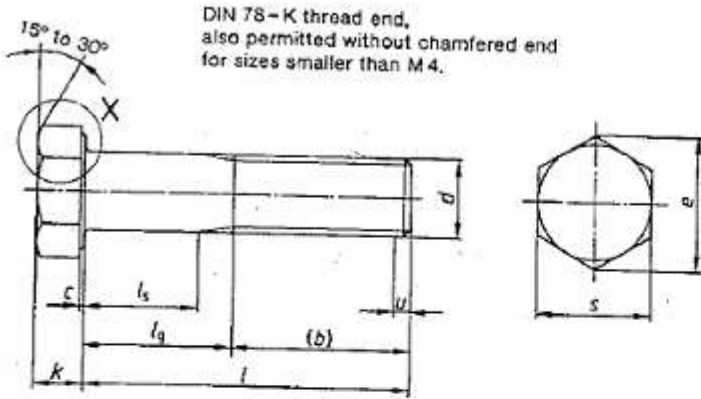


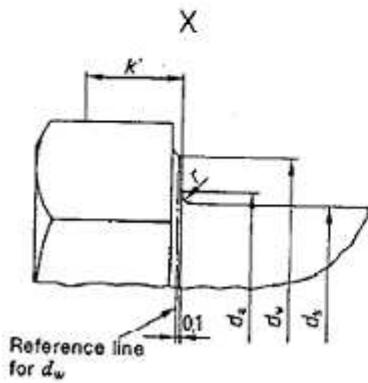
M1,6 to M39 hexagon head bolts

Product grades A and B

2 Dimensions



u = maximum of 2 P incomplete thread.



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

Continued on pages 2 to 7

Table.

Thread size		M 1,6	M 2	M 2,5	M 3	(M 3,5)	M 4	M 5	M 6
<i>p</i>	1) 0,35	0,4	0,45	0,5	0,6	0,7	0,8	0,8	1
<i>b</i>	2) 9	10	11	12	13	14	16	16	18
	3) -	-	-	-	-	-	22	22	24
<i>c</i>	4) 0,1	0,1	0,1	0,15	0,15	0,15	0,15	0,15	0,15
	min. 0,25	0,25	0,25	0,4	0,4	0,4	0,5	0,5	0,5
<i>d_s</i>	max. 2	2,6	3,1	3,6	4,1	4,7	5,7	5,7	6,8
	nominal size	1,6	2	2,5	3	3,5	4	5	6
<i>d_s</i>	Product grade A	1,46	1,86	2,36	2,86	3,32	3,82	4,32	5,82
	Product grade B	-	-	-	-	-	-	-	-
<i>d_w</i>	min. 2,4	3,2	4,1	4,6	5,1	5,9	6,9	6,9	8,9
	Product grade A	3,41	4,32	5,45	6,01	6,58	7,66	8,79	11,05
<i>e</i>	min. 1,1	1,4	1,7	2	2,4	2,8	3,5	3,5	4
	Product grade A	0,98	1,28	1,58	1,88	2,28	2,88	3,35	3,85
<i>f</i>	min. 1,22	1,52	1,82	2,12	2,52	2,92	3,65	3,65	4,15
	Product grade B	-	-	-	-	-	-	-	-
<i>k</i>	min. 0,7	0,9	1,1	1,3	1,6	1,9	2,28	2,28	2,63
	Product grade A	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,25
<i>s</i>	min. 3,2	4	5	5,5	6	7	8	8	10
	Product grade B	3,02	3,82	4,82	5,32	5,82	6,78	7,78	9,78

Nominal size	Product grade A		Product grade B		Shank length, <i>l_s</i> , and grip length, <i>l_g</i> ¹⁾											
	min.	max.	min.	max.	<i>l_s</i> min.	<i>l_s</i> max.	<i>l_g</i> min.	<i>l_g</i> max.	<i>l_s</i> min.	<i>l_s</i> max.	<i>l_g</i> min.	<i>l_g</i> max.	<i>l_s</i> min.	<i>l_s</i> max.	<i>l_g</i> min.	<i>l_g</i> max.
12	11,65	12,35	-	-	1,2	3	-	-	-	-	-	-	-	-	-	-
(14)	13,65	14,35	-	-	3,2	5	-	-	-	-	-	-	-	-	-	-
16	15,65	16,35	-	-	5,2	7	-	-	-	-	-	-	-	-	-	-
(18)	17,65	18,35	-	-	6	8	2,75	5	-	-	-	-	-	-	-	-
20	19,65	20,42	-	-	8	10	4,75	7	5,5	6	-	-	-	-	-	-
(22)	21,58	22,42	-	-	8	10	6,75	9	7,5	10	-	-	-	-	-	-
25	24,58	25,42	-	-	11,75	14	8,75	11	10,5	13	9	12	7,5	11	5	8
(28)	27,58	28,42	-	-	13,5	16	11,75	14	13,5	16	12	15	10,5	14	8	12
30	29,58	30,42	-	-	15,5	18	13,5	16	15,5	18	14	17	12,5	16	10	14
35	34,5	35,5	-	-	19	22	17,5	21	19	22	19	22	17,5	21	15	19
(40)	39,5	40,5	-	-	25	29	22,5	26	25	29	25	29	22,5	26	20	24
45	44,5	45,5	-	-	30	34	27	32	30	34	27	32	27	32	25	29
50	49,5	50,5	-	-	37	42	33	37	37	42	33	37	33	37	30	34
55	54,4	55,6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	59,4	60,6	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1) *l_s* max. = (nominal size) - *b*,
l_s min. = *l_s* max. - 5P.
 Note: Values of mass have been included in Supplement 1 to DIN 931.

For commercial sizes, shank lengths have been specified. Use of values given in brackets should be avoided where possible.

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

For 1) to 4), see page 5.

Table - (concluded)

Nominal size	Thread size		(M 22)		M 24		(M 27)		M 30		(M 33)		M 36		(M 39)	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
70	68.4	70.6	7.5	30	11	36	15	30	6.5	24	10.5	26	12	32	15	36
(75)	74.4	75.6	12.5	25	11	36	20	35	11.5	29	20.5	38	22	42	20	40
80	79.4	80.6	17.5	30	16	31	25	40	16.5	34	30.5	48	28	46	30	50
(85)	84.3	85.7	22.5	35	16	31	30	45	21.5	44	35	54	32	52	36	56
90	89.3	90.7	27.5	40	21	36	35	50	26.5	54	40	60	36	60	40	60
(95)	94.3	95.7	32.5	45	25	41	40	55	31.5	60	45	66	40	66	40	60
100	99.3	100.7	37.5	50	31	46	45	60	36.5	66	50	72	46	72	40	60
(105)	104.3	105.7	42.5	55	36	51	50	65	41.5	72	55	84	50	78	46	66
110	109.3	110.7	47.5	60	41	56	55	70	46.5	78	60	84	54	84	50	60
(115)	114.3	115.7	52.5	65	46	61	60	75	51.5	84	65	96	60	90	50	60
120	119.3	120.7	57.5	70	51	66	65	80	56.5	90	70	102	66	96	50	60
(125)	124.3	125.7	62.5	75	56	71	70	85	61.5	96	75	108	72	102	50	60
130	129.3	130.7	67.5	80	61	76	75	90	66.5	102	80	114	78	108	50	60
(135)	134.3	135.7	72.5	85	66	81	80	95	71.5	108	85	120	84	114	50	60
140	139.3	140.7	77.5	90	71	86	85	100	76.5	114	90	126	90	120	50	60
(145)	144.3	145.7	82.5	95	76	91	90	105	81.5	120	95	132	96	126	50	60
150	149.3	150.7	87.5	100	81	96	95	110	86.5	126	100	138	102	132	50	60
(155)	154.3	155.7	92.5	105	86	101	100	115	91.5	132	105	144	108	138	50	60
160	159.3	160.7	97.5	110	91	106	105	120	96.5	138	110	150	114	144	50	60
(165)	164.3	165.7	102.5	115	96	111	110	125	101.5	144	115	156	120	150	50	60
170	169.3	170.7	107.5	120	101	116	115	130	106.5	150	120	162	126	156	50	60
(175)	174.3	175.7	112.5	125	106	121	120	135	111.5	156	125	168	132	162	50	60
180	179.3	180.7	117.5	130	111	126	130	140	116.5	162	130	174	138	168	50	60
(185)	184.3	185.7	122.5	135	116	131	135	145	121.5	168	135	180	144	174	50	60
190	189.3	190.7	127.5	140	121	136	140	150	126.5	174	140	186	150	180	50	60
(195)	194.3	195.7	132.5	145	126	141	145	155	131.5	180	145	192	156	186	50	60
200	199.3	200.7	137.5	150	131	146	150	160	136.5	186	150	198	162	192	50	60
(205)	204.3	205.7	142.5	155	136	151	155	165	141.5	192	155	204	168	198	50	60
210	209.3	210.7	147.5	160	141	156	160	170	146.5	198	160	210	174	204	50	60
(215)	214.3	215.7	152.5	165	146	161	165	175	151.5	204	165	216	180	210	50	60
220	219.3	220.7	157.5	170	151	166	170	180	156.5	210	170	222	186	216	50	60
(225)	224.3	225.7	162.5	175	156	171	175	185	161.5	216	175	228	192	222	50	60
230	229.3	230.7	167.5	180	161	176	180	190	166.5	222	180	234	198	228	50	60
(235)	234.3	235.7	172.5	185	166	181	185	195	171.5	228	185	240	204	234	50	60
240	239.3	240.7	177.5	190	171	186	190	200	176.5	234	190	246	210	240	50	60
(245)	244.3	245.7	182.5	195	176	191	195	205	181.5	240	195	252	216	246	50	60
250	249.3	250.7	187.5	200	181	196	200	210	186.5	246	200	258	222	252	50	60
(255)	254.3	255.7	192.5	205	186	201	210	215	191.5	252	205	264	228	258	50	60
260	259.3	260.7	197.5	210	191	206	215	220	196.5	258	210	270	234	264	50	60
(265)	264.3	265.7	202.5	215	196	211	220	225	201.5	264	215	276	240	270	50	60
270	269.3	270.7	207.5	220	201	216	225	230	206.5	270	220	282	246	276	50	60
(275)	274.3	275.7	212.5	225	206	221	230	235	211.5	276	225	288	252	282	50	60
280	279.3	280.7	217.5	230	211	226	235	240	216.5	282	230	294	258	288	50	60
(285)	284.3	285.7	222.5	235	216	231	240	245	221.5	288	235	300	264	294	50	60
290	289.3	290.7	227.5	240	221	236	245	250	226.5	294	240	306	270	300	50	60
(295)	294.3	295.7	232.5	245	226	241	250	255	231.5	300	245	312	276	306	50	60
300	299.3	300.7	237.5	250	231	246	255	260	236.5	306	250	318	282	312	50	60

For 1 to 5, see page 5.

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

Shank length, l_s and grip length, l_g (*)

3 Technical delivery conditions

Material		Steel	Stainless steel	Non-ferrous metal
General requirements		As specified in DIN 267 Part 1.		
Thread	Tolerance	6 g		
	Standard	DIN 13 Parts 12 and 15.		
Mechanical properties	Property class (material)	5.6, 8.8, 10.9	≤ M 20: A2-70, A4-70 > M 20: 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 $l \leq 10 d$ or 150 mm ¹⁾ . B for products exceeding size M 24 or $l > 10 d$ 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 18 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).				

Table (continued)

Nominal size	Thread size		M 8		M 10		M 12		M 14		M 16		M 20	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
30	29.56	30.22	1	1.75	2	2	2	2	2	2	2	2	2	2
35	34.5	35.5	2	2.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
40	39.5	40.5	3	2.8	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
45	44.5	45.5	4	3.4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
50	49.5	50.5	5	4.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
55	54.4	55.6	6	4.6	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
60	59.4	60.6	7	5.2	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
65	64.4	65.6	8	5.8	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
70	69.4	70.6	9	6.4	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
(75)	74.4	75.6	10	7.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
80	79.4	80.6	11	7.6	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
(85)	84.3	85.7	12	8.2	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
90	89.3	90.7	13	8.8	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
(95)	94.3	95.7	14	9.4	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
100	99.3	100.7	15	10.0	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6
110	109.3	110.7	16	10.6	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
120	119.3	120.7	17	11.2	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
130	129.2	130.8	18	11.8	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
140	139.2	140.8	19	12.4	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
150	149.2	150.8	20	13.0	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
160	159.2	160.8	21	13.6	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
(170)	169.2	170.8	22	14.2	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
180	179.2	180.8	23	14.8	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6
(190)	189.08	190.92	24	15.4	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
200	199.08	200.92	25	16.0	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1

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_g max.
30	29.56	30.22	10	15	6.25	15
35	34.5	35.5	15	20	11.5	20
40	39.5	40.5	20	25	16.5	25
45	44.5	45.5	25	30	21.5	30
50	49.5	50.5	30	35	26.5	35
55	54.4	55.6	35	40	31.5	40
60	59.4	60.6	40	45	36.5	45
65	64.4	65.6	45	50	41.5	50
(75)	74.4	75.6	50	55	46.5	55
80	79.4	80.6	55	60	51.5	60
(85)	84.3	85.7	60	65	56.5	65
90	89.3	90.7	65	70	61.5	70
(95)	94.3	95.7	70	75	66.5	75
100	99.3	100.7	75	80	71.5	80
110	109.3	110.7	80	85	76.5	85
120	119.3	120.7	85	90	81.5	90
130	129.2	130.8	90	95	86.5	95
140	139.2	140.8	95	100	91.5	100
150	149.2	150.8	100	105	96.5	105
160	159.2	160.8	105	110	101.5	110
(170)	169.2	170.8	110	115	106.5	115
180	179.2	180.8	115	120	111.5	120
(190)	189.08	190.92	120	125	116.5	125
200	199.08	200.92	125	130	121.5	130

* For 1) to 4), see page 5. Product grade A has been given above, product grade B below the stepped line.