UDC 621.882.211

September 1987

M 1,6 to M 52 hexagon head screws threaded up to the head

Product grades A and B

DIN 933

Sechskantschrauben mit Gewinde bis Kopf; Gewinde M 1,6 bis M 52; Produktklassen A und B

This standard, together with DIN ISO 4017, September 1987 edition, supersedes the December 1983 edition.

This standard should be used together with ISO 4017. 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

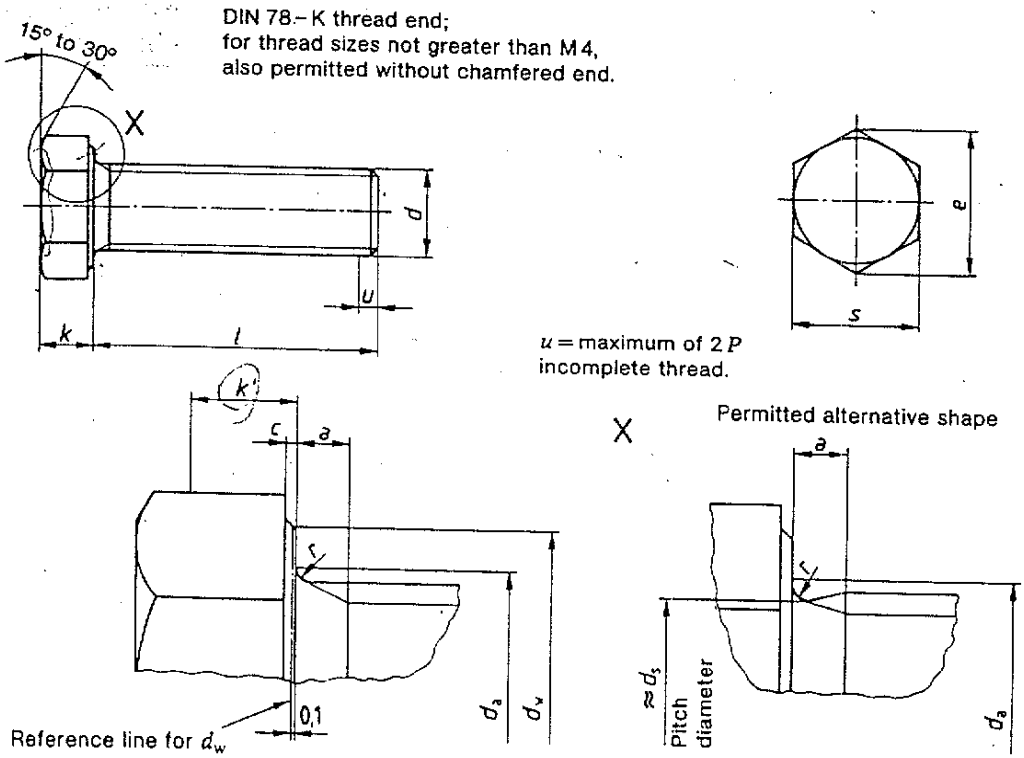
1 Field of application

This standard specifies requirements for M 1,6 to M 52 hexagon head screws threaded up to the head, assigned to product grade A, for sizes up to M 24 and lengths not exceeding 10 d or 150 mm, and to product grade B for sizes greater than M 24 or lengths exceeding 10 d or 150 mm.

The screws are designed similar to those specified in DIN 931 Part 1, but are threaded up to the head and have commercial lengths up to and including 200 mm.

If, in special cases, screws are to comply with specifications other than those given in this standard, e.g. regarding property class, these shall be selected in accordance with the appropriate standards.

2 Dimensions



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

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Table.

Thread size				M 1,6	M 2	M 2,5	M 3	(M 3,5)	M 4	M 5	M 6
P [1]				0,35	0,4	0,45	0,5	0,6	0,7	0,8	1
a [2]			max.	1,05	1,2	1,35	1,5	1,8	2,1	2,4	3
c			min.	0,1	0,1	0,1	0,15	0,15	0,15	0,15	0,15
			max.	0,25	0,25	0,25	0,4	0,4	0,4	0,5	0,5
d_a			max.	2	2,6	3,1	3,6	4,1	4,7	5,7	6,8
d_w	min.	Product grade	A	2,4	3,2	4,1	4,6	5,1	5,9	6,9	8,9
			B	–	–	–	–	–	5,7	6,7	8,7
e	min	Product grade	A	3,41	4,32	5,45	6,01	6,58	7,66	8,79	11,05
			B	–	–	–	–	–	7,5	8,63	10,89
k	Nominal size			1,1	1,4	1,7	2	2,4	2,8	3,5	4
	Product grade	A	min.	0,98	1,28	1,58	1,88	2,28	2,68	3,35	3,85
			max.	1,22	1,52	1,82	2,12	2,52	2,92	3,65	4,15
		B	min.	–	–	–	–	–	2,6	3,26	3,76
			max.	–	–	–	–	–	3	3,74	4,24
k'			min.	0,7	0,9	1,1	1,3	1,6	1,9	2,28	2,63
r			min.	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,25
s	max. = nominal size			3,2	4	5	5,5	6	7	8	10
	min.	Product grade	A	3,02	3,82	4,82	5,32	5,82	6,78	7,78	9,78
			B	–	–	–	–	–	6,64	7,64	9,64

Nominal size	l Product grade A min.	A max.	B min.	B max.	Mass (7,85 kg/dm³) for 1000 units, in kg, approximately							
2	1,8	2,2	–	–	0,1							
3	2,8	3,2	–	–	0,11	0,2	0,37					
4	3,76	4,24	–	–	0,12	0,21	0,4	0,48				
5	4,76	5,24	–	–	0,13	0,23	0,43	0,53	0,84	1,26		
6	5,76	6,24	–	–	0,14	0,25	0,46	0,57	0,9	1,33	2,18	3,4
(7)	6,71	7,29	–	–	0,15	0,27	0,49	0,61	0,96	1,41	2,28	3,57
8	7,71	8,29	–	–	0,16	0,29	0,52	0,66	1,02	1,49	2,38	3,74
10	9,71	10,29	–	–	0,18	0,33	0,58	0,75	1,14	1,64	2,63	4,08
12	11,65	12,35	–	–	0,2	0,36	0,64	0,84	1,26	1,8	2,87	4,42
(14)	13,65	14,35	–	–		0,39	0,7	0,92	1,38	1,95	3,12	4,76
16	15,65	16,35	–	–		0,42	0,76	1	1,5	2,1	3,37	5,11
(18)	17,65	18,35	–	–			0,82	1,09	1,61	2,25	3,62	5,45
20	19,58	20,42	–	–			0,88	1,18	1,73	2,41	3,87	5,8
(22)	21,58	22,42	–	–			0,94	1,27	1,85	2,56	4,12	6,15
25	24,58	25,42	–	–			1,02	1,4	2,03	2,8	4,49	6,65
(28)	27,58	28,42	–	–				1,52	2,21	3,04	4,86	7,15
30	29,58	30,42	–	–				1,61	2,33	3,19	5,11	7,51
35	34,5	35,5	–	–					2,63	3,57	5,73	8,37
40	39,5	40,5	–	–						3,96	6,35	9,23
45	44,5	45,5	43,75	46,25						4,34	6,99	10,1
50	49,5	50,5	48,75	51,25						4,73	7,59	11
55	54,4	55,6	53,5	56,5						5,12	8,21	11,9
60	59,4	60,6	58,5	61,5						5,5	8,83	12,7
65	64,4	65,6	63,5	66,5						5,89	9,45	13,6
70	69,4	70,6	68,5	71,5						6,28	10,1	14,4
(75)	74,4	75,6	73,5	76,5							10,7	15,3
80	79,4	80,6	78,5	81,5							11,3	16,2

[1] P = pitch of thread.

[2] a min. $\geq 1\,P$.

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.

Table. (continued)

Thread size				(M 7)	M 8	M 10	M 12	(M 14)	M 16	(M 18)	M 20
P [1]				1	1,25	1,5	1,75	2	2	2,5	2,5
a [2]			max.	3	3,75	4,5	5,25	6	6	7,5	7,5
c			min.	0,15	0,15	0,15	0,15	0,15	0,2	0,2	0,2
			max.	0,5	0,6	0,6	0,6	0,6	0,8	0,8	0,8
d_a			max.	7,8	9,2	11,2	13,7	15,7	17,7	20,2	22,4
d_w	min.	Product grade	A	9,6	11,6	15,6	17,4	20,5	22,5	25,3	28,2
			B	9,4	11,4	15,4	17,2	20,1	22	24,8	27,7
e	min.	Product grade	A	12,12	14,38	18,9	21,1	24,49	26,75	30,14	33,53
			B	11,94	14,2	18,72	20,88	23,91	26,17	29,56	32,95
k	Nominal size			4,8	5,3	6,4	7,5	8,8	10	11,5	12,5
	Product grade	A	min.	4,65	5,15	6,22	7,32	8,62	9,82	11,28	12,28
			max.	4,95	5,45	6,56	7,68	8,98	10,18	11,72	12,72
		B	min.	4,56	5,06	6,11	7,21	8,51	9,71	11,15	12,15
			max.	5,04	5,54	6,69	7,79	9,09	10,29	11,85	12,85
k'			min.	3,19	3,54	4,28	5,05	5,96	6,8	7,8	8,5
r			min.	0,25	0,4	0,4	0,6	0,6	0,6	0,6	0,8
s	max. = nominal size			11	13	17	19	22	24	27	30
	min.	Product grade	A	10,73	12,73	16,73	18,67	21,67	23,67	26,67	29,67
			B	10,57	12,57	16,57	18,48	21,16	23,16	26,15	29,16

l Nominal size	Product grade A min.	A max.	B min.	B max.	Mass (7,85 kg/dm³) for 1000 units, in kg, approximately							
(7)	6,71	7,29	–	–	5,6							
8	7,71	8,29	–	–	5,85	8,5	15,2					
10	9,71	10,29	–	–	6,35	9,1	16,2	23,3	38			
12	11,65	12,35	–	–	6,85	9,8	17,2	25	40	52,9		
(14)	13,65	14,35	–	–	7,35	10,5	18,2	26,4	42	55,6		
16	15,65	16,35	–	–	7,85	11,1	19,2	27,7	44	58,3	82	105
(18)	17,65	18,35	–	–	8,35	11,7	20,2	29,1	46	60,9	84,9	110
20	19,58	20,42	–	–	8,85	12,3	21,2	31	48	63,5	87,2	114
(22)	21,58	22,42	–	–	9,35	12,9	22,2	33	50	66,2	92,2	119
25	24,58	25,42	–	–	10	13,9	23,7	34,1	53	70,2	95,8	124
(28)	27,58	28,42	–	–	10,7	14,9	25,2	36,2	55,9	74,2	100	129
30	29,58	30,42	–	–	11,3	15,5	26,2	37,7	57,9	76,9	104	134
35	34,5	35,5	–	–	12,5	17,1	28,7	41,3	62,9	83,5	112	145
40	39,5	40,5	–	–	13,8	18,7	31,2	44,9	67,9	90,2	120	155
45	44,5	45,5	–	–	15	20,3	33,7	48,5	72,9	97,1	128	165
50	49,5	50,5	–	–	16,3	21,8	36,2	52	77,9	103	136	176
55	54,4	55,6	–	–	17,5	23,4	38,7	55,6	82,8	110	145	186
60	59,4	60,6	–	–	18,7	25	41,3	58,2	87,8	117	153	196
65	64,4	65,6	–	–	20	26,6	43,8	62,8	92,8	123	161	207
70	69,4	70,6	–	–	21,2	28,2	46,3	66,4	97,9	130	169	217
(75)	74,4	75,6	73,5	76,5	22,5	29,8	48,8	70	102	137	177	227
80	79,4	80,6	78,5	81,5	23,7	31,4	51,3	73,6	107	144	186	236
(85)	84,3	85,7	83,25	86,75	25	33	53,8	77,2	112	150	194	247
90	89,3	90,7	88,25	91,75	26,2	34,6	56,3	80,8	117	157	202	258
(95)	94,3	95,7	93,25	96,75	27,5	35,2	59,8	84,4	122	164	210	268
100	99,3	100,7	98,25	101,75	28,7	37,7	61,3	88	127	170	218	279
110	109,3	110,7	108,25	111,75		40,9	66,4	95,2	137	184	235	300
120	119,3	120,7	118,25	121,75			71,4	102	147	197	251	320
130	129,2	130,8	128	132			76,4	109	157	210	268	340
140	139,2	140,8	138	142			81,4	116	167	224	284	361
150	149,2	150,8	148	152			86,4	123	177	237	300	381
160	159,2	160,8	158	162							316	402
(170)	169,2	170,8	168	172							332	422
180	179,2	180,8	178	182							348	442
(190)	189,08	190,92	187,7	192,3							364	462
200	199,08	200,92	197,7	202,3							380	464

For [1] and [2], see page 2.

Table. (continued)

Thread size				(M 22)	M 24	(M 27)	M 30	(M 33)	M 36	(M 39)
p [1]				2,5	3	3	3,5	3,5	4	4
a [2]			max.	7,5	9	9	10,5	10,5	12	12
c			min.	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	1
d_a			max.	24,4	26,4	30,4	33,4	36,4	39,4	42,4
d_w	min.	Product grade	A	30	33,6	–	–	–	–	–
			B	29,5	33,2	38	42,7	46,5	51,1	55,9
e	min.	Product grade	A	35,72	39,98	–	–	–	–	–
			B	35,03	39,55	45,2	50,85	55,37	60,79	66,44
k		Nominal size		14	15	17	18,7	21	22,5	25
		Product grade	A min.	13,78	14,78	–	–	–	–	–
			A max.	14,22	15,22	–	–	–	–	–
			B min.	13,65	14,65	16,65	18,28	20,58	22,08	24,58
			B max.	14,35	15,35	17,35	19,12	21,42	22,92	25,42
k'			min.	9,6	10,3	11,7	12,8	14,4	15,5	17,2
r			min.	0,8	0,8	1	1	1	1	1
s	max. = nominal size			32	36	41	46	50	55	60
	min.	Product grade	A	31,61	35,38	–	–	–	–	–
			B	31	35	40	45	49	53,8	58,8

Nominal size	l Product grade A min.	A max.	B min.	B max.	Mass (7,85 kg/dm³) for 1000 units, in kg, approximately						
16	15,65	16,35	–	–	133	173					
(18)	17,65	18,35	–	–	137	178					
20	19,58	20,42	–	–	143	184					
(22)	21,58	22,42	20,95	23,05	148	190	269				
25	24,58	25,42	23,95	26,05	155	199	280				
(28)	27,58	28,42	26,95	29,05	161	200	292				
30	29,58	30,42	28,95	31,05	168	214	310				
35	34,5	35,5	33,75	36,25	181	229	319	424	543	670	869
40	39,5	40,5	38,75	41,25	193	244	338	448	572	714	910
45	44,5	45,5	43,75	46,25	206	259	358	472	601	748	951
50	49,5	50,5	48,75	51,25	219	274	377	496	630	783	992
55	54,4	55,6	53,5	56,5	232	289	397	519	659	817	1030
60	59,4	60,6	58,5	61,5	244	304	416	543	688	851	1070
65	64,4	65,6	63,5	66,5	257	319	435	566	717	886	1110
70	69,4	70,6	68,5	71,5	269	334	454	590	746	910	1160
(75)	74,4	75,6	73,5	76,5	282	348	473	614	775	950	1200
80	79,4	80,6	78,5	81,5	295	363	492	637	806	990	1240
(85)	84,3	85,7	83,25	86,75	308	378	512	661	837	1020	1280
90	89,3	90,7	88,25	91,75	321	393	531	685	866	1060	1320
(95)	94,3	95,7	93,25	96,75	333	408	550	708	891	1100	1360
100	99,3	100,7	98,25	101,75	346	423	569	732	920	1140	1400
110	109,3	110,7	108,25	111,75	371	453	608	779	978	1200	1480
120	119,3	120,7	118,25	121,75	397	483	647	827	1040	1260	1560
130	129,2	130,8	128	132	421	513	685	874	1090	1330	1650
140	139,2	140,8	138	142	448	543	724	921	1150	1400	1730
150	149,2	150,8	148	152	473	572	762	969	1210	1470	1810
160	159,2	160,8	158	162	498	602	801	1010	1270	1540	1890
(170)	169,2	170,8	168	172	523	632	839	1060	1330	1610	1970
180	179,2	180,8	178	182	548	662	875	1110	1390	1680	2050
(190)	189,08	190,92	187,7	192,3	573	692	911	1160	1440	1740	2140
200	199,08	200,92	197,7	202,3	598	722	947	1210	1500	1810	2220

For [1] and [2], see page 2.

Table. (concluded)

Thread size			M 42	(M 45)	M 48	(M 52)
P [1]			4,5	4,5	5	5
a [2]		max.	13,5	13,5	15	15
c		min.	0,3	0,3	0,3	0,3
		max.	1	1	1	1
d_a		max.	45,6	48,6	52,6	56,6
d_w		min.	59,9	64,7	69,4	74,2
e		min.	71,3	76,95	82,6	88,25
k	Nominal size		26	28	30	33
		min.	25,58	27,58	29,58	32,5
		max.	26,42	28,42	30,42	33,5
k'		min.	17,9	19,3	20,9	22,8
r		min.	1,2	1,2	1,6	1,6
s	max. = nominal size		65	70	75	80
		min.	63,1	68,1	73,1	78,1

Nominal size	l Product grade B min.	max.	Mass (7,85 kg/dm³) for 1000 units, in kg, approximately			
35	34,5	35,5				
40	39,5	40,5	1090	1330	1590	
45	44,5	45,5	1130	1380	1650	
50	49,5	50,5	1180	1430	1710	2090
55	54,4	55,6	1230	1490	1770	2170
60	59,4	60,6	1270	1540	1830	2240
65	65,4	65,6	1310	1600	1890	2310
70	69,4	70,6	1370	1650	1950	2390
(75)	74,4	75,6	1410	1710	2010	2460
80	79,4	80,6	1460	1760	2080	2540
(85)	84,3	85,7	1500	1810	2140	2610
90	89,3	90,7	1550	1870	2200	2680
(95)	94,3	95,7	1600	1920	2260	2750
100	99,3	100,7	1650	1980	2320	2830
110	109,3	110,7	1740	2090	2450	2970
120	119,3	120,7	1840	2190	2570	3120
130	129,2	130,8	1930	2300	2690	3260
140	139,2	140,8	2020	2410	2820	3410
150	149,2	150,8	2120	2520	2940	3550
160	159,2	160,8	2210	2630	3060	3700
(170)	169,2	170,8	2300	2740	3180	3850
180	179,2	180,8	2400	2850	3310	4000
(190)	189,08	190,92	2500	2960	3430	4150
200	199,08	200,92	2590	3060	3560	4300

For [1]) and [2]), see page 2.

As a general rule, screws are manufactured in the sizes for which values of mass (guideline values) have been given.

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)	8.8, 5.6, 10.9 >M39: subject to agreement.	≤M20: A2-70, A4-70 >M20 ≤M39: A2-50, A4-50 ≤M39: C3, C4 >M39: subject to agreement.	e.g. CU2, CU3
	Standard	DIN ISO 898 Part 1	DIN 267 Part 11	DIN 267 Part 18
Limit deviations, geometrical tolerances	Product grade	A for products up to size M24 and $l \leq 10\,d$ or 150 mm [1]). B for products exceeding size M24 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 19 shall apply with regard to permissible surface discontinuities. DIN 267 Part 9 shall apply with regard to electroplating [2]). 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).

[2]) Only for screws without surface protection. 6g makes it possible for normal coating thicknesses to be applied in accordance with DIN 267 Part 9, the reference line not being exceeded. Depending on the coating thickness required, a larger fundamental deviation shall be selected than that for the g position. This might, however, impair the resistance to stripping of the bolt/nut assembly.

4 Designation

Designation of an M 12 hexagon head screw of nominal length, $l = 80$ mm, with the material assigned to property class 8.8:

Hexagon head screw DIN 933 – M12 × 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 $10\,d$, or for sizes above M 24, this shall be indicated in the designation by adding 'A', e.g.

Hexagon head screw DIN 933 – M30 × 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 designs with captive components.

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

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

Appendix A

Additional thread sizes for spare parts

The previous thread sizes M 1,7, M 2,3 and M 2,6, which are not included in the international selection of screw threads for bolts, screws and nuts, shall no longer be used. In consideration of existing documents and of the demand for spare parts, they may, however, still be ordered in accordance with DIN 933, December 1970 edition*). The table below shall apply with regard to the dimensions of bolts (DIN 13 Parts 1 and 15 applying with regard to screw threads).

Thread size		M 1,7	M 2,3	M 2,6
b		9	11	11
c		–	–	–
d_a	max.	2,1	2,9	3,2
e	min.	3,82	4,95	5,51
k	js14	1,2	1,6	1,8
r	min.	0,1	0,1	0,1
s	h13	3,5	4,5	5
l ± ½ IT 15		Mass (7,85 kg/dm³) for 1000 units, in kg, approximately		
2		0,125		
3		0,135	0,290	0,383
4		0,145	0,310	0,413
5		0,155	0,340	0,443
6		0,170	0,360	0,473
(7)		0,185	0,390	0,513
8		0,195	0,410	0,543
10		0,225	0,470	0,603
12		0,255	0,520	0,673
(14)		0,285	0,570	0,740
16		0,315	0,620	0,806
(18)			0,670	0,873
20			0,720	0,933
(22)				1,00
25				1,09

*) Withdrawn in 1982.

Standards referred to

DIN 13 Part 1	ISO metric screw threads; 1 mm to 68 mm diameter coarse pitch threads; nominal sizes
DIN 13 Part 12	ISO metric screw threads; coarse and fine pitch threads with diameters from 1 to 300 mm; selection for diameters and pitches
DIN 13 Part 15	ISO metric screw threads; fundamental deviations and tolerances for screw threads of 1 mm diameter and larger
DIN 78	Thread ends and ends of projection of bolt ends for ISO metric threads in accordance with DIN 13
DIN 267 Part 1	Fasteners; technical delivery conditions; general requirements
DIN 267 Part 2	Fasteners; technical delivery conditions; finish and dimensional accuracy
DIN 267 Part 5	Fasteners; technical delivery conditions; acceptance inspection
DIN 267 Part 9	Fasteners; technical delivery conditions; electroplated components
DIN 267 Part 10	Fasteners; technical delivery conditions; hot-dip galvanized components
DIN 267 Part 11	Fasteners; technical delivery conditions, with addenda to ISO 3506; corrosion-resistant stainless steel components
DIN 267 Part 18	Fasteners; technical delivery conditions; non-ferrous metal components
DIN 267 Part 19	Fasteners; technical delivery conditions; surface discontinuities on bolts
DIN 931 Part 1	M 1,6 to M 39 hexagon head bolts; product grades A and B
DIN 962	Bolts, screws, studs and nuts; designations; types and finishes
DIN 4000 Part 2	Tabular layout of article characteristics for bolts, screws and nuts
DIN 6900	Screw and washer assemblies
DIN 7500 Part 1	Thread rolling screws for ISO metric threads; dimensions, requirements, testing
ISO 898 Part 1	Mechanical properties of fasteners; bolts, screws and studs
ISO 4759 Part 1	Tolerances for fasteners; bolts, screws, and nuts with thread diameters $\geq$ 1,6 and $\leq$ 150 mm and product grades A, B and C

Previous editions

DIN KrK 144: 02.31; DIN Kr 553: 09.35; DIN 933 Part 1: 07.26, 04.42, 12.52, 03.63; DIN 933 Part 2: 07.26, 04.42; DIN 933: 12.67, 12.70, 12.83.

Amendments

The following amendments have been made to the December 1983 edition.

a) A note on the period of validity of this standard has been included.

b) For sizes M 10, M 12, M 14 and M 22, the widths across flats as specified in ISO 272 have been deleted.

c) A reference line for the determination of the bearing face diameter, d_w, has been included.

Explanatory notes

For more than 20 years efforts have been directed towards the achievement of the international interchangeability of fasteners by preparing international standards for the product concerned. ISO Standards have now been published for the most important types of fasteners (see ISO Standards Handbook 18).

However, international efforts only serve a useful purpose if national standards are adapted as far as possible to international standards, or, ideally, replaced by them. Current DIN Standards already agree in substance with the relevant ISO Standards, but still differ in some respects, as for instance in the widths across flats for hexagon products.

The Federal Republic of Germany adopted International Standard ISO 272 on widths across flats as national standard DIN ISO 272 in October 1979. Nevertheless, widths across flats deviating from DIN ISO 272 are still being used in Germany for nominal sizes M 10, M 12, M 14 and M 22. The table below compares the previous widths across flats with the new ones specified for the four nominal sizes referred to.

Thread size	M 10	M 12	M 14	M 22
Previous width across flats, in mm	17	19	22	32
New width across flats as in ISO 272, in mm	16	18	21	34

The manufacturers and users of hexagon products participating in the work of the *Normenausschuß Mechanische Verbindungselemente* (Fasteners Standards Committee), together with representatives of the dealers in fasteners, have decided to introduce the new widths across flats in all relevant product standards. Since experience has shown, that the introduction of the new widths across flats has not been advanced by their inclusion in DIN Standards merely as preferred alternatives to the previous widths across flats, the following decisions have been reached to accelerate the changeover procedure.

Supplementary to current DIN Standards specifying the previous widths across flats, DIN ISO Standards dealing with the same products will, wherever ISO Standards are available, be published which, besides introducing a number of other minor amendments, will specify the new widths across flats conforming to ISO 272. In both DIN and DIN ISO Standards attention will be drawn to the fact that the relevant ISO Standards are to be preferred and that the DIN Standard is to be replaced after a transition period of 5 years.

If no relevant ISO Standard is available, the DIN Standard will contain a foreword stating that the previous width across flats specifications are to be withdrawn after a transition period of 5 years and replaced by those specified in ISO 272.

This sets a time limit for both manufacturer and user of hexagon products by which the changeover to the new widths across flats must be effected. The responsible committee is of the opinion, that it will still be possible after this period to obtain fasteners complying with the superseded specifications as spare parts.

In some cases, the replacement of the previous DIN Standards by the relevant ISO Standards will have further consequences, besides the changeover to the new widths across flats, attention being drawn to this circumstance in the national foreword of the relevant DIN ISO Standards. These consequences result from the fact that the ISO Standards have not yet reached the same level of completeness as the DIN Standards. Thus a number of nominal sizes, as well as several product specifications for fine pitch threads are not found in the ISO product standards. Furthermore, ISO Standards on technical delivery conditions are still in the initial stages, so that specific requirements are still subject to separate agreement when ordering products in accordance with ISO Standards, as they are not included in the designation for order purposes.

Besides these consequences, which are of importance when applying the new ISO Standards, the amendment of the widths across flats also have a number of consequences as regards the use of the new products which the designer must take into consideration. Besides the amended assembly sizes, this applies above all to the different surface pressure for the bearing area of the nut or the heads of the bolts. These difficulties are discussed in Recommendation VDA 262*) published by the *Verband der Automobilindustrie e.V.* (German Automobile Manufacturers Association).

International Patent Classification

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*) Obtainable from: *Dokumentation Kraftfahrwesen e.V.*, Grönerstraße 5, D-7140 Ludwigsburg.