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Square head bolts with collar

DIN
478

Vierkantschrauben mit Bund

Supersedes March 1968 edition.

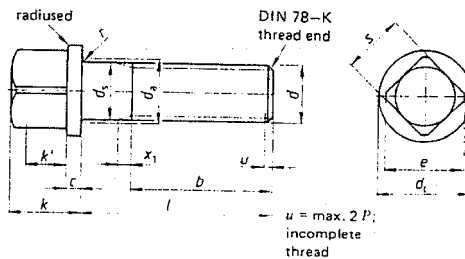
In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

1 Scope and field of application

This standard specifies product grade A square head bolts with collar and M 5 to M 24 coarse thread.

Where, for special purposes, the bolts are to meet requirements differing from those specified in the present standard, e.g. in respect of nominal length or property class, the specifications of the relevant standards shall be complied with.

2 Dimensions

k' is the minimum wrenching height; for this zone at least c shall be maintained, x_1 as in DIN 76 Part 1.

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Thread size <i>d</i>		M 5	M 6	M 8	M 10	M 12	M 16	M 20	M 24
<i>P</i> ¹⁾		0,8	1	1,25	1,5	1,75	2	2,5	3
<i>h</i> ²⁾		16	18	22	26	30	38	46	54
<i>h</i> ³⁾					32	36	44	52	60
Nominal dimension		2	2	2	3	3	4	5	6
<i>t</i>	mm	1,08	1,88	1,08	2,88	2,88	3,85	4,85	5,85
	max	2,12	2,12	2,12	3,12	3,12	4,15	5,15	6,15
<i>d₁</i>	max	5,7	6,8	9,2	11,2	13,7	17,7	22,4	26,4
<i>d</i>	max - nominal dimension	9,5	10,5	13,5	16,5	19,5	25	31	36
	mm	8,92	9,8	12,8	15,8	18,16	24,16	30	35
<i>d₂</i>	max - nominal dimension	5	6	8	10	12	16	20	24
	mm	4,82	5,82	7,78	9,78	11,73	15,73	19,67	23,67
<i>r</i>	max - nominal dimension	6,5	8	10	13	17	21	27	32
	mm	5,92	7,42	9,42	12,3	16,3	20,16	26,16	31
	mm	7	8	10	13	15	20	25	28
Nominal dimension		7	8	10	13	15	20	25	28
<i>k</i>	mm	6,82	7,82	9,82	12,78	14,78	19,74	24,74	27,74
	max	7,18	8,18	10,18	13,22	15,22	20,26	25,26	28,26
<i>K</i>	mm	3,4	4,1	5,5	6,9	8,3	11,1	13,8	15,2
<i>r</i>	mm	0,2	0,25	0,4	0,4	0,6	0,6	0,8	0,8
<i>s</i>	max - nominal dimension	5	6	8	10	13	16 ⁴⁾	17	21 ⁴⁾
	mm	4,82	5,82	7,78	9,78	12,73	15,73	16,73	20,67
<i>s₁</i>	max	2	2,5	3,2	3,8	4,3	5	6,3	7,5
Nominal size		Mass (7,85 kg/dm ³), in kg per 1000 units ≈							
	min								
	max								
10	9,71	10,29	3,19	4,57					
16	15,65	16,35	3,94	5,65	10,8				
20	19,58	20,42	4,60	6,35	12,1	21,9			
25	24,58	25,42	5,37	7,45	13,7	24,4	39,5		
30	29,58	30,42	6,74	8,55	15,7	27,5	43,0	88,0	
35	34,5	35,5		9,65	17,7	30,6	47,5	95,0	172
40	39,5	40,5		10,9	19,7	33,7	52,0	102	182
45	44,5	45,5			21,7	36,8	56,5	110	193
50	49,5	50,5				39,9	61,0	118	203
55	54,4	55,6				43,0	65,5	126	215
60	59,4	60,6				46,1	70,0	134	227
70	69,4	70,6					79,0	150	252
80	79,4	80,6					88,0	176	277
90	89,3	90,7					97,0	192	302
100	99,3	100,7						208	327
110	109,3	110,7						224	352
120	119,3	120,7						240	377
140	139,2	140,8						272	427
160	159,2	160,8							477
180	179,2	180,8							527
									735

Intermediate lengths shall be avoided as far as possible.
Lengths over 180mm shall be graded in 20 mm steps. For these lengths, the permissible deviations specified in ISO 4759 Part 1 shall apply.
For screws above the stepped line, $b \approx l - a$ (as in DIN 76 Part 1).
1) *P* = pitch of thread (coarse thread).
2) For lengths $l \leq 125$ mm.
3) For lengths $l > 125$ mm.
4) See clause 4.

3 Technical delivery conditions

Material		Steel
General requirements		As in DIN 267 Part 1.
Thread	Tolerance	6g
	Standard	DIN 13 Part 15
Mechanical properties ¹⁾	Property class (material)	5.6; 5.8; 8.8
	Standard	ISO 898 Part 1
Permissible dimensional deviations and deviations of form	Product grade	A (previously m).
	Standard	ISO 4759 Part 1
Surface	As processed. Property class 8.8 bolts: (thermally or chemically) blackened. 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 the acceptance inspection.	
¹⁾ Other property classes or materials are subject to agreement.		

4 Designation

Designation of an M 12 square head bolt with collar of length l (nominal size) = 40 mm and assigned to property class 5.6:

Square head bolt DIN 478 – M 12 × 40 – 5.6

If it is required that M 16 and M 20 bolts be supplied with the new widths across flats 16 mm and 21 mm as specified in ISO 272, then the width across flats (SW) is to be incorporated in the designation, e.g.:

Square head bolt DIN 478 – M 16 × 50 – SW 16 – 5.6

For ordering purposes, the designation of types and designs not specified here shall conform to DIN 962.

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Standards referred to

DIN 13 Part 15	ISO metric screw thread; fundamental deviations and tolerances for threads from 1 mm diameter
DIN 76 Part 1	Thread runouts; undercuts for ISO metric screw threads as defined in DIN 13
DIN 78	Thread ends; lengths of projection of thread ends for ISO metric screw threads as defined in DIN 13
DIN 267 Part 1	Fasteners; technical delivery conditions; general requirements
DIN 267 Part 2	Fasteners; technical delivery conditions; design 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 parts
DIN 267 Part 19	Fasteners; technical delivery conditions; surface discontinuities on bolts and screws
DIN 962	Screws, bolts, studs; designations, types and designs
ISO 272	Fasteners; hexagon products, widths across flats
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 from 1,6 to 150 mm, product grades A, B and C

Previous editions

DIN 478 Part 1: 10.26, 10.47, 06.53

DIN 478: 03.68

Amendments

The following amendments have been made in comparison with the March 1968 edition:

- a) Additions have been made to the technical delivery conditions, which have also been brought into line with the relevant standards.
- b) The previous design m as specified in DIN 267 Part 2 has been replaced by product grade A as specified in ISO 4759 Part 1.
- c) Limits of size calculated from the permissible dimensional tolerances have been included.
- d) The content of the standard has been editorially revised.
- e) For size M 12, the maximum collar diameter d_c has been changed from 20,5 mm to the originally specified 19,5 mm.
- f) The dimensioning of the head height has been extended to include the collar ($h + c$).
- g) For sizes M 16 and M 20, the widths across flats 16 mm and 21 mm as specified in ISO 272 have been added.
- h) For sizes M 12 and M 16, the values of d_a have been changed.

International Patent Classification

F 16 B 35/00

F 16 B 23/00