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September 1988

Slotted capstan screws

DIN 404

Kreuzlochschrauben

Supersedes February 1972 edition.

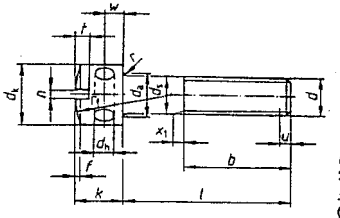
In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

1 Scope and field of application

Slotted capstan screws may be used both as fastening and adjusting screws. They are primarily designed for use in electrical engineering and may be tightened by means of a sliding tee bar where it is not possible to use a screwdriver. Locking wires are often attached to the cross holes for securing purposes.

2 Dimensions



DIN 78 – K or DIN 78 – L thread ends, at the manufacturer's discretion.

u (incomplete thread): 2 P maximum.
$x_1 = 2{,}5\,P$ maximum (as specified in DIN 76 Part 1).

Continued on pages 2 to 4

Thread size d		M 2	M 2.5	M 3	(M 3,5)	M 4	M 5	M 6	M 8	M 10
$P^{1)}$		0,4	0,45	0,5	0,6	0,7	0,8	1	1,25	1,5
b	≈	16	18	19	20	22	25	28	34	40
d_a	max	2,6	3,1	3,6	4,1	4,7	5,7	6,8	9,2	11,2
d_h	min = nominal size	1,2	1,2	1,5	1,8	2	2,5	3	4	5
	max	1,34	1,34	1,64	1,94	2,14	2,64	3,14	4,18	5,18
d_k	max = nominal size	3,8	4,5	5,5	6	7	8,5	10	13	16
	min	3,68	4,38	5,38	5,88	6,85	8,35	9,85	12,82	15,82
d_s	max = nominal size	2	2,5	3	3,5	4	5	6	8	10
	min	1,86	2,36	2,86	3,32	3,82	4,82	5,82	7,78	9,78
f	≈	0,3	0,4	0,5	0,5	0,6	0,7	0,9	1	1,3
k	Nominal size	3	3,5	4	4,5	5	6,5	8	10	12,5
	max	3,3	3,88	4,38	4,88	5,38	6,95	8,45	10,45	13,05
	min	2,7	3,12	3,62	4,12	4,62	6,05	7,55	9,55	11,95
n	Nominal size	0,5	0,6	0,8	0,8	1	1,2	1,6	2	2,5
	min	0,56	0,66	0,86	0,86	1,06	1,26	1,66	2,06	2,56
	max	0,7	0,8	1	1	1,2	1,51	1,91	2,31	2,81
r	min	0,1	0,1	0,1	0,2	0,2	0,2	0,25	0,4	0,4
s	≈	6	6	8	10	10	16	16	20	25
t	min	0,7	0,8	1	1,2	1,4	1,7	2,2	2,7	3,5
	max	0,9	1	1,25	1,5	1,7	2	2,6	3,2	4,1
w	Nominal size	1,2	1,2	1,5	1,8	2	2,5	3	4	5
	min	1,08	1,08	1,38	1,68	1,88	2,38	2,88	3,85	4,85
	max	1,32	1,32	1,62	1,92	2,72	2,62	3,12	4,15	5,15

Nominal size	l min	l max	Mass (7,85 kg/dm³), in kg per 1000 units, approximately								
3	2,8	3,2	0,24	0,4							
4	3,8	4,2	0,26	0,43	0,68						
5	4,8	5,2	0,28	0,46	0,72	0,99	1,41				
6	5,8	6,2	0,3	0,49	0,77	1,05	1,49	3,09			
8	7,7	8,3	0,35	0,55	0,86	1,16	1,64	3,33	4,79		
10	9,7	10,3	0,4	0,61	0,95	1,28	1,79	3,58	5,14	10,3	
12	11,7	12,3	0,45	0,67	1,05	1,4	1,94	3,82	5,49	10,9	19,3
(14)	13,7	14,3	0,5	0,73	1,16	1,54	2,1	4,06	5,84	11,5	20,5
16	15,7	16,3	0,55	0,79	1,27	1,68	2,28	4,3	6,2	12,1	21,3
(18)	17,7	18,3	0,6	0,85	1,38	1,84	2,48	4,6	6,55	12,7	22,3
20	19,6	20,4		0,91	1,5	2,02	2,7	4,85	6,9	13,3	23,2
(22)	21,6	22,4		0,97	1,62	2,18	2,93	5,1	7,25	14	24,2
25	24,6	25,4		1,06	1,78	2,4	3,23	5,6	7,8	15,2	25,7
(28)	27,6	28,4			1,95	2,62	3,52	6,1	8,4	16,4	27,2
30	29,6	30,4			2,06	2,77	3,72	6,4	8,9	17,2	28,2
35	34,5	35,5				3,15	4,21	7,2	10,1	19,2	31,3
40	39,5	40,5					4,71	8	11,2	21,1	34,4
45	44,5	45,5						8,8	12,3	23,1	37,5
50	49,5	50,5						9,6	13,4	25,1	41,1
55	54,4	55,6								27,1	44,2
60	59,4	60,6									47,3

Bracketed thread sizes and intermediate lengths should be avoided if possible.
Lengths above 60 mm shall be graded in 10 mm steps.
Slotted cheese head screws are normally manufactured in sizes for which mass values have been specified.
b = l – as for as specified in DIN 76 Part 1) shall apply for screws with lengths above the stepped line.
1) P = pitch of thread (coarse pitch thread)

3 Technical delivery conditions

Material		Steel	Stainless steel	Non-ferrous metal
General requirements		As specified in DIN 267 Part 1.		
Thread	Tolerance class	6g [1]		
	Standard	DIN 13 Part 15		
Mechanical properties [4]	Property class (material)	5.8 [2]	A1-50 or C4-50	CuZn = copper-zinc alloy [3]
	Standard	ISO 898 Part 1 (test programme B)	DIN 267 Part 11	DIN 267 Part 18
Permissible dimensional deviations and deviations of form	Product grade	A		
	Standard	ISO 4759 Part 1		
Surface finish [5]		As processed.	Bright.	Bright.
		DIN 267 Part 19 shall apply with regard to permissible surface discontinuities. DIN 267 Part 9 shall apply with regard to electroplating. DIN 50 942 shall apply with regard to phosphating.		
Acceptance inspection		DIN 267 Part 5 [6] shall apply with regard to acceptance inspection.		

[1] Applies only for screws without surface protection. 6g makes it possible for normal coating thicknesses to be applied in accordance with DIN 267 Part 9 with the reference line (h position) not being exceeded. The coating thickness may require a fundamental deviation larger than that specified for the g position, which however may impair the resistance to stripping of the bolt/nut assembly.

[2] Where cold drawn steels as specified in DIN 1651 are used, the following values of elongation at break, A_5, are permissible: for sizes up to M 6, 6%; for sizes exceeding M 6, 7%.

[3] CuZn = CU2 or CU3 (as specified in DIN 267 Part 18), at the manufacturer's discretion.

[4] Other property classes or materials shall be subject to agreement.

[5] As a rule, R_z 25 shall apply for the surface roughness, R_z 16, however, for thread flanks of sizes not exceeding M 5, R_z 40 for thread flanks in the case of machine cut threads exceeding size M 5, and R_z 100 for thread ends.

[6] AQL (acceptable quality level) 1 shall apply for major characteristics and AQL 1,5 for minor characteristics, thread size d and cross hole diameter d_h being regarded as major characteristics, lengths l and b, height of the head, k, and diameter of the head, d_k, as minor characteristics.

4 Designation

Designation of an M 6 capstan screw of nominal length $l = 20$ mm and assigned to property class 5.8:

Capstan screw DIN 404 – M 6 × 20 – 5.8

DIN 962 shall apply with regard to the designation of types and designs with additional data to be given when ordering. The DIN 4000 – 2 – 1 tabular layout of article characteristics shall apply to screws conforming to this standard.

Standards referred to

DIN	13 Part 15	ISO metric screw threads; fundamental deviations and tolerances for screw threads of 1 mm and larger
DIN	76 Part 1	Thread run-outs and thread undercuts for ISO metric threads as specified 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 5	Fasteners; technical delivery conditions; acceptance inspection (modified version of ISO 3269, 1984 edition)
DIN	267 Part 9	Fasteners; technical delivery conditions; components with electroplated coatings
DIN	267 Part 11	Fasteners; technical delivery conditions (with additions to ISO 3506); corrosion-resistant stainless steel fasteners
DIN	267 Part 18	Fasteners; technical delivery conditions; components made of non-ferrous metals
DIN	267 Part 19	Fasteners; technical delivery conditions; surface discontinuities on bolts and screws
DIN	962	Screws, bolts, studs and nuts; designations, types and finishes
DIN	1651	Free cutting steels; technical delivery conditions
DIN	4000 Part 2	Tabular layouts of article characteristics for bolts, studs and nuts
DIN	50942	Phosphating of metals; principles, symbols and test methods
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 between 1,6 (inclusive) and 150 mm (inclusive) and product grades A, B and C

Previous editions

01.20, 02.23, 03.39, 10.42, 06.53, 02.72.

Amendments

The following amendments have been made in comparison with the February 1972 edition.

a) The content of the standard has been editorially revised and aligned with the basic standards concerned.

b) The technical delivery conditions have been amended.

c) The previous design m as specified in DIN 267 Part 2, April 1968 edition, has been replaced by product grade A as specified in ISO 4749 Part 1.

d) Sizes M 1,7, M 2,3 and M 2,6 have been deleted. However, to cater for documents already in existence and spare parts requirements, they can still be ordered in accordance with the February 1972 edition of DIN 404.

e) Some values of slot depth have been amended.

International Patent Classification

F 16 B 35/00
F 16 B 23/00