UDC 621.882.214.2 September 1986

Knurled thin thumb screws

DIN 653

Rändelschrauben; niedrige Form

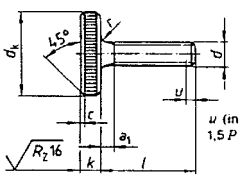
Supersedes January 1971 edition

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 Dimensions

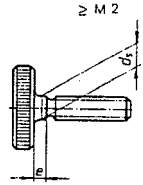
< M 2



u (incomplete thread): 1,5 *P* maximum.

Type RAA straight knurl, as specified in DIN 82. DIN 78 – K or DIN 78 – L thread end, at the manufacturer's discretion.

≥ M 2



Other dimensions and data as for left-hand illustration. DIN 76 – A thread undercut.

Where knurled thumb screws of sizes not less than M 2 shall be supplied threaded up to the head, letter A as specified in DIN 962 shall be stated in the designation (see example of designation given in clause 3).

Continued on pages 2 to 4

Thread size d		M 1	M 1,2	M 1,4	M 1,6	M 2	M 2,5	M 3	(M 3,5)	M 4	M 5	M 6	M 8	M 10
P [1]		0,25	0,25	0,3	0,35	0,4	0,45	0,5	0,6	0,7	0,8	1	1,25	1,5
a_1	max.	0,75	0,75	0,9	1,05	1,2	1,35	1,5	1,8	2,1	2,4	3	3,75	4,5
c		Edges chamfered					0,3	0,3	0,4	0,4	0,4	0,5	0,6	0,8
d_k	Nominal size	5,5	6	7	7,5	9	11	12	14	16	20	24	30	36
	max.	5,74	6,24	7,29	7,79	9,29	11,35	12,35	14,35	16,35	20,42	24,42	30,42	36,5
	min.	5,26	5,76	6,71	7,21	8,71	10,65	11,65	13,65	15,65	19,58	23,58	29,58	35,5
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
e [2]		-	-	-	-	1,5	2	2	2,5	3	3	4	5	6
k	max. = nominal size	1,5	1,5	2	2	2	2,5	2,5	3	3,5	4	5	6	8
	min.	1,25	1,25	1,75	1,75	1,75	2,25	2,25	2,75	3,2	3,7	4,7	5,7	7,64
r		0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	1	1	2	2
l Nominal size	min.	max.	Mass (7,85 kg/dm³), in kg per 1000 units, approximately											
2	1,9	2,1	0,288	0,347										
3	2,9	3,1	0,293	0,353	0,632	0,78								
4	3,9	4,1	0,297	0,36	0,641	0,792	1,07							
5	4,8	5,2	0,301	0,366	0,65	0,804	1,09	1,95						
6	5,8	6,2	0,305	0,373	0,659	0,816	1,11	1,98	2,47	3,96				
8	7,8	8,2		0,386	0,676	0,84	1,14	2,04	2,56	4,08	6,1			
10	9,7	10,3			0,694	0,864	1,18	2,1	2,64	4,2	6,25	11,1		
12	11,7	12,3				0,888	1,22	2,16	2,73	4,32	6,4	11,3	19,8	
(14)	13,7	14,3					1,25	2,22	2,82	4,43	6,55	11,5	20,1	
16	15,7	16,3					1,28	2,28	2,91	4,55	6,7	11,7	20,4	39
(18)	17,7	18,3						2,34	3	4,67	6,85	11,9	20,7	39,6
20	19,6	20,4							3,1	4,79	7	12,1	21	40,2
(22)	21,6	22,4								4,91	7,15	12,3	21,3	40,8
25	24,6	25,6									7,37	12,6	21,8	41,7
(28)	27,6	28,4										12,9	22,3	42,6
30	29,6	30,4										13,2	22,6	43,2
(32)	31,5	32,5												43,8
35	34,5	35,5												44,4
(38)	37,5	38,5												82,8
40	39,5	40,5												83,4

Sizes and intermediate lengths given in brackets should be avoided if possible.

Lengths above 40 mm shall be graded in 5 mm steps.

Knurled thin thumb screws are normally manufactured in sizes for which mass values have been specified.

1) P = pitch of thread (coarse pitch thread).

2) For lengths above the stepped line, e equals zero.

2 Technical delivery conditions

Material		Steel	Stainless steel	Non-ferrous metal
General requirements		As specified in DIN 267 Part 1.		
Thread	Tolerance class	For sizes up to and including M 1,4: 6h; from size M 1,6: 6g[1]).		
	Standard	DIN 13 Part 15		
Mechanical properties[4])	Property class (material)	St = steel[2])	A2-50 or C4-50	CuZn = copper-zinc alloy[3])
	Standard	DIN 1651[2])	DIN 267 Part 11	DIN 267 Part 18
Permissible dimensional deviations and deviations of form	Product grade	For sizes up to and including M 1,4: F; from size M 1,6: A.		
	Standard	DIN 267 Part 6; 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 of metals.		
Acceptance inspection		DIN 267 Part 5 shall apply with regard to acceptance inspection.[6])		

[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]) St = 9 SMnPb 28 K as specified in DIN 1651 or an equivalent steel in terms of strength. This material shall also be used in cases where property class 5.8 is given in existing documentation.

[3]) CuZn = CU3 (as specified in DIN 267 Part 18).

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

[5]) R_z 25 and R_z 16 shall apply for the surface roughness, R_z 16 for thread flanks of sizes not exceeding M 5, R_z 40 for thread flanks in the case of machine cut threads exceeding 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 the straight knurl being regarded as major characteristics, lengths l, height of the head, k, and diameter of the head, d_k, as minor characteristics.

3 Designation

Designation of an M 5 knurled thumb screw of nominal length l = 20 mm, made of steel (St):

Knurled thumb screw DIN 653 – M 5 × 20 – St

Designation of an M 5 knurled thumb screw threaded up to the head (A), of length l = 20 mm, made of steel (St):

Knurled thumb screw DIN 653 – A M 5 × 20 – St

Note If knurled thumb screws are manufactured in two parts, these shall be joined so as to ensure that the same torque will be transmitted as in the case of one-piece knurled thumb screws of the same thread size.

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 82	Straight knurls
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 6	Fasteners; technical delivery conditions; types of finish and dimensional accuracy for product grade F
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 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

DIN 652: 03.24; DIN 653: 03.24, 10.43, 07.53, 06.63, 01.71.

Amendments

The following amendments have been made in comparison with the January 1971 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 F as specified in DIN 267 Part 6 and product grade A as specified in ISO 4759 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 January 1971 edition of the present standard.

e) Property class 5.8 has been replaced by the indication of "St = 9 SMnPb 28 K".

International Patent Classification

F 16 B 35/00