UDC 621.882.219.092.2/.3 : 621.882.6

September 1986

Stud bolts

DIN 976

Gewindebolzen

Supersedes January 1970 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.

1 Scope and field of application

Dimensions in mm

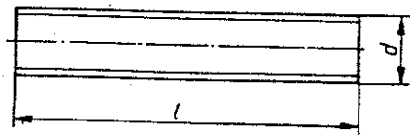
Stud bolts are designed to be used for various purposes, as for instance as double end studs with a nut on either side, or as studs. Tolerance class 6g specified for the thread is commonly used for bolted connections and applies to thread engagement group N. It may not be assumed that stud bolts for lengths of engagement greater than those specified for thread engagement group N as defined in DIN 13 Part 14 are true to gauge.

Stud bolts are supplied with as-rolled end or with chamfered end (DIN 78-K thread end). Three standard types of stud bolts are manufactured, viz. property class 4.6, 5.6 and 5.8 stud bolts. Other property classes or bolts with a rolled thread may be supplied for special applications.

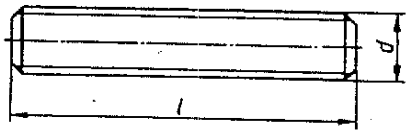
The table of dimensions has been extended to include all viable lengths, which makes it possible in future for stud bolts as described in the present standard to be used instead of threaded rods as specified in DIN 975.

2 Dimensions

Type A, with as-rolled end



Type B, with DIN 78-K thread ends (chamfered ends)



Thread size d			M 2	M 2,5	M 3	(M 3,5)	M 4	M 5	M 6	M 8	M 10	M 12
			–	–	–	–	–	–	–	M 8 × 1	M 10 × 1,25	M 12 × 1,25
			–	–	–	–	–	–	–	–	M 10 × 1	M 12 × 1,5
Nominal size	l min.	l max.	Mass (7,85 kg/dm³), in kg per 1000 units, approximately									
5	4,76	5,24	0,09	0,15								
6	5,76	6,24	0,11	0,18	0,28							
8	7,71	8,29	0,13	0,21	0,33	0,5	0,64					
10	9,71	10,29	0,17	0,27	0,42	0,62	0,8	1,3				
12	11,65	12,35	0,21	0,33	0,51	0,75	0,96	1,56	2,2			
(14)	13,65	14,35	0,24	0,39	0,6	0,87	1,12	1,82	2,56			
16	15,65	16,35	0,27	0,45	0,69	0,99	1,28	2,08	2,92	5,1		
(18)	17,65	18,35	0,31	0,52	0,78	1,11	1,44	2,34	3,28	5,7		
20	19,58	20,42	0,35	0,58	0,87	1,23	1,6	2,6	3,64	6,4	10	
(22)	21,58	22,42		0,64	0,96	1,35	1,76	2,86	4	7	11	
25	24,58	25,42		0,73	1,2	1,54	2	3,25	4,54	8	12,5	18,2
(28)	27,58	28,42			1,34	1,73	2,24	3,64	5,08	9	14	20,3
30	29,58	30,42			1,43	1,85	2,4	3,9	5,46	9,6	15	21,7
35	34,5	35,5				2,15	2,8	4,5	6,36	11,2	17,5	25,3
40	39,5	40,5					3,2	5,2	7,26	12,8	20	28,9
45	44,5	45,5						5,8	8,26	14,4	22,5	32,5
50	49,5	50,5						6,5	9,16	16	25	36,1
55	54,4	55,6							10,1	17,6	27,5	39,7
60	59,4	60,6							11	19,2	30	43,3
65	64,4	65,6								20,8	32,5	47
70	69,4	70,6								22,2	35	50,6
75	74,4	75,6								23,8	37,5	54,2
80	79,4	80,6								25,4	40	58
85	84,3	85,7									42,5	61,6
90	89,3	90,7									45	65,3
95	94,3	95,7									47,5	69
100	99,3	100,7									50	72,6
110	109,3	110,7										76,2
120	119,3	120,7										80

Continued on pages 2 to 5

Table (continued)

Thread size d			(M 14)	M 16	(M 18)	M 20	(M 22)	M 24	(M 27)	M 30	(M 33)	M 36
			(M 14 × 1,5)	M 16 × 1,5	(M 18 × 1,5)	M 20 × 1,5	(M 22 × 1,5)	M 24 × 2	(M 27 × 2)	M 30 × 2	(M 33 × 2)	M 36 × 3
l			Mass (7,85 kg/dm^3), in kg per 1000 units, approximately									
Nominal size	min.	max.										
30	29,58	30,42	30	40								
35	34,5	35,5	35	46,8	59,5							
40	39,5	40,5	40	73,4	68	80,4						
45	44,5	45,5	45	77,1	76,5	91	117					
50	49,5	50,5	50	83,9	85	101	130	155				
55	54,4	55,6	55	90,7	93,5	112	143	170	215			
60	59,4	60,6	60	97,5	102	122	156	186	235	282		
65	64,4	65,6	65	104	110	133	169	201	255	306	384	
70	69,4	70,6	70	111	119	143	182	217	275	329	414	483
75	74,4	75,6	75	118	127	154	195	223	295	353	442	552
80	79,4	80,6	80	125	136	164	208	238	315	376	472	621
(85)	84,3	85,7	85	132	144	175	221	254	335	400	501	690
90	89,3	90,7	90	138	153	185	234	269	355	423	530	759
(95)	94,3	95,7	95	145	161	196	247	285	375	447	559	828
100	99,3	100,7	100	152	170	206	260	301	395	470	589	897
110	109,3	110,7	110	165	187	227	286	333	434	517	648	967
120	119,3	120,7	120	179	204	248	312	364	473	564	707	1040
130	129,2	130,8	130	192	221	269	338	395	512	611	766	1110
140	139,2	140,8	140	206	238	290	364	426	551	658	825	1180
150	149,2	150,8		219	255	311	390	457	590	705	884	1250
160	159,2	160,8		233	272	332	416	488	629	752	943	1320
170	169,2	170,8			299	353	442	519	668	800	1000	1390
180	179,2	180,8			316	374	468	550	707	847	1060	1460
190	189,1	190,9				395	494	581	746	894	1120	1530
200	199,1	200,9				416	520	612	785	940	1180	1600
220	219,1	220,9					572	674	863	1030	1260	1740
240	239,1	240,9						736	941	1120	1340	1880
260	259	261							1020	1220	1420	2020
280	279	281							1100	1310	1500	2160
300	299	301							1160	1400	1620	2300

Table (concluded)

Thread size d			(M 39)	M 42	(M 45)	M 48	(M 52)	M 56	(M 60)	M 64	(M 68)	–
			(M 39 × 3)	M 42 × 3	(M 45 × 3)	M 48 × 3	(M 52 × 3)	M 56 × 4	(M 60 × 4)	M 64 × 4	(M 68 × 4)	M 72 × 6
l			Mass (7,85 kg/dm³), in kg per 1000 units, approximately									
Nominal size	min.	max.										
80	79,4	80,5	656									
(85)	84,3	85,7	697									
90	89,3	90,7	738	830								
(95)	94,3	95,7	779	876								
100	99,3	100,7	820	922	1060	1220						
110	109,3	110,7	900	1040	1170	1340						
120	119,3	120,7	980	1130	1270	1460	1740	1980				
130	129,2	130,8	1060	1220	1380	1580	1880	2140	2600	2930		
140	139,2	140,8	1140	1310	1480	1700	2030	2310	2800	3150	3600	
150	149,2	150,8	1220	1400	1590	1820	2170	2470	3000	3380	3850	4280
160	159,2	160,8	1300	1500	1690	1940	2320	2640	3200	3600	4110	4570
170	169,2	170,8	1380	1590	1900	2060	2460	2800	3400	3830	4360	4850
180	179,2	180,8	1460	1680	2010	2180	2610	2970	3600	4050	4520	5140
190	189,1	190,9	1540	1770	2110	2400	2750	3130	3800	4280	4770	5420
200	199,1	200,9	1620	1860	2220	2520	2900	3300	4000	4500	5030	5710
220	219,1	220,9	1790	2040	2430	2760	3190	3630	4400	4950	5540	6280
240	239,1	240,9	1950	2220	2640	3000	3480	3960	4800	5400	6050	6850
260	259	261	2120	2400	2850	3240	3770	4290	5200	5850	6560	7420
280	279	281	2280	2590	3060	3480	4060	4620	5600	6300	7070	7990
300	299	301	2440	2770	3270	3720	4350	4950	6000	6750	7580	8560
320	318,8	321,2	2600	2950	3480	3960	4640	5280	6400	7200	8090	9130
340	338,8	341,2	2770	3140	3700	4200	4930	5610	6800	7650	8600	9700
360	358,8	361,2	2930	3220	3910	4440	5220	5940	7200	8100	9110	10300
380	378,8	381,2	3100	3400	4120	4680	5510	6270	7600	8550	9620	10900
400	388,8	401,2		3580	4330	4920	5800	6600	8000	9000	10100	11400
420	418,7	421,3		3760	4540	5160	6090	6930	8400	9400	10600	12000
440	438,7	441,3			4750	5300	6380	7260	8800	9850	11100	12600
460	458,7	461,3			4960	5540	6670	7590	9200	10300	11600	13200
480	478,7	481,3				5780	6960	7920	9600	10700	12100	13700
500	498,7	501,3				6020	7250	8250	10000	11100	12600	14300

Stud bolts are normally manufactured in sizes for which mass values have been specified.

The values of mass shall apply for type A stud bolts with coarse pitch thread.

Lengths above 500 mm shall be graded in 20 mm steps.

Intermediate lengths are permitted, should, however, be avoided if possible.

Bracketed sizes should be avoided if possible.

3 Technical delivery conditions

Material		Steel	Stainless steel	Non-ferrous metal
General requirements		As specified in DIN 267 Part 1.		
Thread	Tolerance class	6g		
	Standard	DIN 13 Part 15		
Mechanical properties	Property class (material)	4.6; 5.6; 5.8 [1]	A2; A4	CuZn = copper-zinc alloy [2]
	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		As processed. 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 acceptance inspection.		

[1] Where no property class is specified, it shall be left to the discretion of the manufacturer.

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

4 Designation

Designation of an M10 type A stud bolt of length $l = 80$ mm:

Stud bolt DIN 976 – A M10 × 80

Where only stud bolts with rolled end are to be supplied, the symbol gw shall be added to the designation, e.g.:

Stud bolt DIN 976 – A M10 × 80 – gw

Where a particular property class or other materials are required, the property class or the material shall be indicated in the designation, e.g.:

Stud bolt DIN 976 – A M10 × 80 – 5.6

The DIN 4000–2–3 tabular layout of article characteristics shall apply to stud bolts conforming to this standard.

Standards referred to

DIN	13 Part 14	ISO metric screw threads; principles for a tolerance system for screw threads from 1 mm diameter and larger
DIN	13 Part 15	ISO metric screw threads; fundamental deviations and tolerances for screw threads of 1 mm and larger
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; types of finish and dimensional accuracy
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 10	Fasteners; technical delivery conditions; hot dip galvanized components
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	975	Threaded rods
DIN	4000 Part 2	Tabular layouts of article characteristics for bolts, studs and nuts
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

01.70.

Amendments

The following amendments have been made in comparison with the January 1970 edition.

a) 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 4759 Part 1.

b) The commercial manufacturing range has been extended.

c) Material groups "stainless steel" and "non-ferrous metals" have been additionally included.

d) The technical delivery conditions have been amended.

e) The content of the standard has been editorially revised.

Explanatory notes

Stud bolts as specified in DIN 976 are designed to cover the diameter and length ranges of threaded rods conforming to DIN 975. Therefore, instead of threaded rods as specified in the present standard, only stud bolts of the required lengths as specified in DIN 976 shall be used for new designs or as basic products for the manufacture of stud bolts of any length (including the associated tolerances). It is intended that DIN 975 be replaced by DIN 976 after a transition period of approximately 5 years.

International Patent Classification

F16B 35/00