UDC 621.882.213.3

January 1987

T-head bolts

DIN 261

Hammerschrauben

Supersedes December 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.

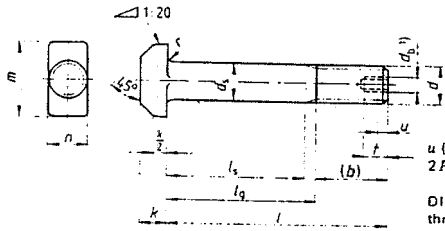
Dimensions in mm

1 Scope and field of application

This standard specifies M 8 to M 100 × 6 T-head bolts. They are designed for use in attaching components to foundations or similar structures by means of T-slots, such as are specified in DIN 649, where T-head bolts are considered adequate detachable fasteners.

2 Dimensions

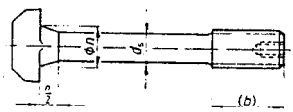
With normal shank (commercial for sizes up to and including M 36)
(bolt sizes up to and including M 100 × 6 also permissible, at the manufacturer's discretion)



u (incomplete thread); 2 *P* maximum.

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

With reduced shank (commercial from size M 42)



For 1), see clause 4.

Continued on pages 2 to 6

Thread size d		M 8	M 10	M 12	M 16	M 20	M 24	M 30	M 36
P [1]		1,25	1,5	1,75	2	2,5	3	3,5	4
b (auxiliary size)	[2]	22	26	30	38	46	54	66	78
	[3]	–	–	–	44	52	60	72	84
	[4]	–	–	–	–	–	–	–	–
d_b		–	–	–	–	–	–	–	M 12
d_s	max.	8,58	10,58	12,7	16,7	20,84	24,84	30,84	37
	min.	7,42	9,42	11,3	15,3	19,16	23,16	29,16	35
k	Nominal size	5,5	7	8	10,5	13	15	19	23
	max.	5,9	7,5	8,75	11,4	13,9	15,9	20	24
	min.	5,1	6,5	7,25	9,6	12,1	14,1	18	22
n	Nominal size	8	10	12	16	20	24	30	36
	max.	8,75	10,75	12,9	16,9	21	25	31	37,25
	min.	7,25	9,25	11,1	15,1	19	23	29	34,75
m	Nominal size	18	21	26	30	36	43	54	66
	max.	18,9	22	27	31	37,25	44,25	55,5	67,5
	min.	17,1	20	25	29	35,75	41,75	52,5	64,5
r	≈	0,5	0,5	1	1	1	1,6	1,6	2
t	min.	–	–	–	–	–	–	–	22

l			Shank lengths l_s and l_g																	
Nominal size	min.	max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.
30	28,95	31,05	–	8	–	9														
(35)	33,75	36,25	6,75	13	–	9														
40	38,75	41,25	11,75	18	6,5	14														
(45)	43,75	46,25	16,75	23	11,5	19	6,25	15												
50	48,75	51,25	21,75	28	16,5	24	11,25	20	–	5										
(55)	53,5	56,5	26,75	33	21,5	29	16,25	25	7	17										
60	58,5	61,5	31,75	38	26,5	34	21,25	30	12	22	–	6								
(65)	63,5	66,5	36,75	43	31,5	39	26,25	35	17	27	6,5	19								
70	68,5	71,5	41,75	48	36,5	44	31,25	40	22	32	11,5	24	–	7,5						
(75)	73,5	76,5	46,75	53	41,5	49	36,25	45	27	37	16,5	29	6	21						
80	78,5	81,5	51,75	58	46,5	54	41,25	50	32	42	21,5	34	11	26						
90	88,25	91,75			56,5	64	51,25	60	42	52	31,5	44	21	36	6,5	24				
100	98,25	101,75			66,5	74	61,25	70	52	62	41,5	54	31	46	16,5	34				
(110)	108,25	111,75					71,25	80	62	72	51,5	64	41	56	26,5	44				
120	118,25	121,75					81,25	90	72	82	55,5	68	45	60	36,5	54	22	42		
(130)	128	132							76	86	65,5	78	55	70	40,5	58	26	46		
140	138	142							86	96	75,5	88	65	80	50,5	68	36	56		
(150)	148	152							96	106	85,5	98	75	90	60,5	78	46	66		
160	156	164							106	116	95,5	108	85	100	70,5	88	56	76		
(170)	166	174									105,5	118	95	110	80,5	98	66	86		
180	176	184									115,5	128	105	120	90,5	108	76	96		
(190)	185,4	194,6									125,5	138	115	130	100,5	118	86	106		
200	195,4	204,6									135,5	148	125	140	110,5	128	96	116		

Lengths above 400 mm shall be graded in 20 mm steps. Bracketed sizes should be avoided if possible. T-head bolts are normally manufactured in sizes for which shank lengths have been specified.

l_g max. = l (nominal lengths) − b (auxiliary size) shall apply for screws with lengths below the stepped line;
l_s min. = l_g max. − 5 P.

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

2) For l up to and including 120 mm.

3) For l above 120 up to and including 200 mm.

4) For l exceeding 200 mm.

Thread size d		M 42	M 48	M 56	M 64	M 72 × 6	M 80 × 6	M 90 × 6	M 100 × 6
P [1]		4,5	5	5,5	6	6	6	6	6
b (auxiliary size)	[2]	90	–	–	–	–	–	–	–
	[3]	98	108	124	130	–	–	–	–
	[4]	109	121	137	143	169	185	205	225
d_h		M 12	M 12	M 16	M 16	M 16	M 20	M 20	M 20
d_s	max.	34	38	45	50	55	65	70	80
	min.	33	37	44	49	53,8	63,8	68,8	78,8
k	Nominal size	26	30	35	40	45	50	55	62
	max.	27	31	36,25	41,25	46,25	51,25	56,5	63,5
	min.	25	29	33,75	38,75	43,75	48,75	53,5	60,5
n	Nominal size	42	48	56	64	72	80	90	100
	max.	43,25	49,25	57,5	65,5	73,5	81,5	91,75	101,75
	min.	40,75	46,75	54,5	62,5	70,5	78,5	88,25	98,25
m	Nominal size	80	88	102	115	128	140	155	170
	max.	81,5	89,75	103,75	116,75	130	142	157	172
	min.	78,5	86,25	100,25	113,25	126	138	153	168
r	≈	2	2	3	3	4	4	4	5
t	min.	22	22	26	26	26	33	33	33

l			Shank lengths l_s and l_g															
Nominal size	min.	max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.	l_s min.	l_g max.
120	118,25	121,75	6,5	30														
(130)	128	132	11,5	34														
140	138	142	21,5	44														
(150)	148	152	31,5	54	17	42												
160	156	164	41,5	64	27	52												
(170)	166	174	51,5	74	37	62												
180	176	184	61,5	84	47	72	28,5	56										
(190)	185,4	194,6	71,5	94	57	82	38,5	66										
200	195,4	204,6	81,5	104	67	92	48,5	76	40	70								
220	215,4	224,6	88,5	111	74	99	55,5	83	47	77								
240	235,4	244,6	108,5	131	94	119	75,5	103	67	97								
260	254,8	265,2	128,5	151	114	139	95,5	123	87	117	61	91						
280	274,8	285,2	148,5	171	134	159	115,5	143	107	137	81	111	65	95				
300	294,8	305,2	168,5	191	154	179	135,5	163	127	157	101	131	85	115				
320	314,3	325,7	188,5	211	174	199	155,5	183	147	177	121	151	105	135	85	115		
340	334,3	345,7	208,5	231	194	219	175,5	203	167	197	141	171	125	155	105	135		
360	354,3	365,7	228,5	251	214	239	195,5	223	187	217	161	191	145	175	125	155	105	135
380	374,3	385,7	248,5	271	234	259	215,5	243	207	237	181	211	165	195	145	175	125	155
400	394,3	405,7	268,5	291	254	279	235,5	263	227	257	201	231	185	215	165	195	145	175

Lengths above 400 mm shall be graded in 20 mm steps. Bracketed sizes should be avoided if possible. T-head bolts are normally manufactured in sizes for which shank lengths have been specified.

l_g max. = l (nominal lengths) − b (auxiliary size) shall apply for screws with lengths below the stepped line;
l_s min. = l_g max. − 5 P.

For [1] to [4], see page 2.

3 Technical delivery conditions

Material		Steel
General requirements		As specified in DIN 267 Part 1.
Thread	Tolerance class	8g
	Standard	DIN 13 Part 15
Mechanical properties	Property class (material)	For size up to and including M 36: 3.6 or 4.6, at the manufacturer's discretion. For sizes exceeding M 36: subject to agreement. Other property classes or materials shall be subject to agreement.
	Standard	ISO 898 Part 1
Permissible deviations, geometrical tolerances	Product grade	C
	Standard	ISO 4759 Part 1
Surface finish		As processed. 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.

4 Designation

Designation of an M 20 T-head bolt, of nominal length l = 120 mm:

T-head bolt DIN 261 – M 20 x 120

Normally, the internal thread diameter, d_b, is to be specified for T-head bolts exceeding a mass of 10 kg and shall be particularly agreed upon when ordering. The designation shall then read, e.g.:

T-head bolt DIN 261 – M 72 X 6 X 400 X M 16

5 Masses

Thread size d	M 8	M 10	M 12	M 16	M 20	M 24	M 30	M 36
l	Mass (7,85 kg/dm³), in kg per 1000 units, approximately							
30	18,0	28,2						
(35)	19,5	31,3						
40	20,0	34,4						
(45)	22,0	37,5	56,5					
50	23,9	40,6	60,9	113				
(55)	25,9	43,7	65,4	121				
60	27,9	46,8	69,8	129	211			
(65)	29,8	49,9	74,3	137	223			
70	31,8	53,0	78,7	145	236	355		
(75)	33,8	56,1	83,1	153	248	373		
80	37,7	59,2	87,6	161	260	390		
90		65,4	96,5	176	285	426		
100		71,6	105	192	310	461	812	
(110)			114	208	334	497	868	
120			123	224	359	532	923	1310
(130)				239	384	568	978	1390
140				255	408	603	1030	1470
(150)				271	433	639	1090	1550
160				287	458	674	1140	1630
(170)					483	710	1200	1710
180					507	745	1260	1790
(190)					532	781	1310	1870
200					557	816	1370	1950

Thread size d	M 42	M 48	M 56	M 64	M 72 × 6	M 80 × 6	M 90 × 6	M 100 × 6
l	Mass (7,85 kg/dm³), in kg per 1000 units, approximately							
120	1800							
(130)	1870							
140	1940							
(150)	2010	2770						
160	2080	2860						
(170)	2150	2950						
180	2220	3040	4310					
(190)	2290	3130	4440					
200	2360	3220	4560	6290				
220	2510	3400	4800	6600				
240	2650	3570	5060	6910				
260	2790	3750	5310	7220	9530			
280	2930	3930	5560	7530	9900			
300	3080	4110	5810	7840	10300	13600		
320	3220	4290	6060	8150	10600	14200		
340	3360	4460	6310	8460	11000	14700	18500	
360	3500	4640	6560	8770	11400	15200	19100	24500
380	3640	4820	6810	9080	11800	15700	19700	25300
400	3780	5000	7060	9390	12300	16200	20300	26100

The values of mass specified are for guidance only and cover the commercial sizes.

Standards referred to

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 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 649	T-slots for T-head bolts
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

DIN 261: 06.23, 04.27, 07.36, 12.70.
DIN 261 Part 1: 01.42, 08.53, 03.63.

Amendments

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

a) The previous design g as specified in DIN 267 Part 2 has been replaced by product grade C as specified in ISO 4759 Part 1.
b) The technical delivery conditions have been amended and harmonized with the relevant basic standards.
c) The limits of size calculated from the permissible deviations have been included.
d) The shank lengths, l_s and l_g, have been included.
e) The standard has been editorially revised.

International Patent Classification

F 16 B 35/04