Studs
with a length of engagement equal to about 1,25 d

DIN 939

ICS 21.060.10

Supersedes December 1972 edition.

Descriptors: Fasteners, studs.

Stiftschrauben; Einschraubende ≈ 1,25 d

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.

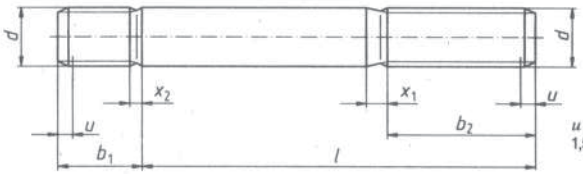
Dimensions in mm

1 Scope and field of application

This standard specifies dimensions and technical delivery conditions for studs intended for use mainly in cast iron. As specified in DIN 267-2, the stud end thread shall be produced to tolerance Sk6 as in DIN 13-51, unless the stud is designated Fo ('without interference-fit thread') or Sn4.

2 Dimensions

DIN 78 — K type nut end



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

b_1 = stud end
b_2 = nut end

Continued on pages 2 to 5.

Table 1: Dimensions

d	M4 — —	M5 — —	M6 — —	(M7) — —	M8 M8×1 —	M10 M10×1,25 —	M12 M12×1,25 M12×1,5	(M14) (M14×1,5) —	M16 M16×1,5 —	(M18) (M18×1,5) —	M20 M20×1,5 —	(M22) (M22×1,5) —	M24 M24×2 —
b_1	5	6,5	7,5	9	10	12	15	18	20	22	25	28	30
b_2 [1]	14	16	18	20	22	26	30	34	38	42	46	50	54
b_2 [2]	20	22	24	26	28	32	36	40	44	48	52	56	60
b_2 [3]	—	—	—	—	—	45	49	53	57	61	65	69	73
x_1	1,75	2,0	2,5	2,5	3,2	3,8	4,3	5,0	5,0	6,3	6,3	6,3	7,5
x_2	0,9	1,0	1,25	1,25	1,6	1,9	2,2	2,5	2,5	3,2	3,2	3,2	3,8
l js15	Approximate mass (7,85 kg/dm³) per 1 000 units, in kg												
12													
(14)													
16													
(18)													
20	2,03												
(22)	2,23	3,65											
25	2,52	4,11	5,85										
(28)	2,82	4,57	6,52	9,49									
30	3,02	4,88	6,96	10,1	13,1								
35	3,51	5,65	8,07	11,6	15,1	24,2							
40	4,01	6,42	9,18	13,1	17,0	27,2	41,0						
45		7,19	10,2	14,6	19,0	30,3	45,4	64,0					
50		7,96	11,4	16,1	21,0	33,3	49,9	70,0	94,9				
55			12,5	17,7	22,9	36,4	54,3	76,1	103	130			
60			13,6	19,2	24,9	39,5	58,8	82,1	111	140	180		
65				20,7	26,9	42,6	63,2	88,2	119	150	192	242	
70				22,2	28,9	45,7	67,6	94,2	126	160	205	257	305
75					30,8	48,8	72,1	100	134	170	217	272	323
80					32,8	51,8	76,5	106	142	180	229	287	341
(85)						54,9	81,0	112	150	190	241	302	358
90						58,0	85,4	118	158	199	254	317	376
(95)						61,1	89,8	124	166	210	266	332	394
100						64,2	94,3	130	174	220	279	346	412
110							103	143	190	240	303	376	447
120							112	155	205	260	328	406	483
130								167	221	280	353	436	518
140								179	237	300	377	466	554
150									253	320	402	496	589
160									269	340	427	525	625
170										360	451	555	660
180										380	476	585	696
190											501	615	731
200											525	645	767

For [1] to [3], see page 3.

(continued)

Table 1 (concluded)

d	(M27) (M27×2)	M30 M30×2	(M33) (M33×2)	M36 M36×3	(M39) (M39×3)	M42 M42×3	(M45) (M45×3)	M48 M48×3	(M52) (M52×3)
b_1	35	38	42	45	50	52	58	60	65
b_2 [1]	60	66	72	78	84	90	96	102	110
b_2 [2]	66	72	78	84	90	96	102	108	116
b_2 [3]	79	85	91	97	103	109	115	121	129
x_1	7,5	9,0	9,0	10,0	10,0	11,0	11,0	12,5	12,5
x_2	3,8	4,5	4,5	5,0	5,0	5,5	5,5	6,3	6,3
l js15	Approximate mass (7,85 kg/dm³) per 1 000 units, in kg								
50									
55									
60									
65									
70									
75	430								
80	452								
(85)	475	591							
90	497	619	776						
(95)	520	646	810						
100	542	674	843	1011					
110	587	730	910	1091	1326				
120	632	785	977	1171	1420	1647	1963		
130	677	841	1045	1251	1514	1756	2088	2364	
140	722	896	1112	1331	1607	1865	2213	2506	3027
150	767	952	1179	1411	1701	1973	2338	2648	3194
160	812	1007	1246	1490	1795	2082	2462	2790	3360
170	857	1062	1313	1570	1889	2191	2587	2932	3527
180	902	1118	1380	1650	1982	2300	2712	3074	3694
190	947	1173	1447	1730	2076	2408	2837	3216	3861
200	992	1229	1515	1810	2170	2517	2962	3358	4027
220	1082	1340	1649	1970	2358	2735	3211	3642	4361
240	1172	1450	1784	2130	2545	2952	3461	3927	4694
260	1262	1562	1918	2289	2733	3170	3711	4211	5028
280	1352	1672	2052	2449	2920	3387	3961	4495	5361
300		1784	2186	2609	3108	3605	4210	4779	5694
320			2321	2769	3295	3822	4460	5063	6028
340			2455	2929	3483	4040	4710	5347	6361
360				3088	3670	4257	4959	5631	6695
380					3858	4475	5209	5915	7028
400					4045	4692	5459	6199	7362

[1]) For lengths, l, of 125 mm or less.

[2]) For lengths, l, above 125 mm up to 200 mm.

[3]) For lengths, l, exceeding 200 mm.

Lengths above 400 mm shall be graded in 20 mm steps.

Bracketed sizes and intermediate lengths should be avoided if possible.

The zone between the continuous thick lines indicates the range of commercial sizes of studs with coarse pitch thread.

Studs of sizes above this range cannot be manufactured with a nut end thread length, b_2, as specified in the table. In such cases, b_2 will be approximately equal to $l - (x_1 + 3)$. For sizes above the dashed line, $b_2 + x_1$ will be less than 1,2 b_1. The nut end of these studs shall be rounded (i.e. given a DIN 78—L type end), unless the end is already marked with the property class.

3 Technical delivery conditions

Table 2: Technical delivery conditions

Material		Steel	
General requirements		As specified in ISO 8992.	
Thread	Tolerance	Stud end: Sk6.	Nut end: 6g.
	As specified in	DIN 13-51.	DIN 13-12 and DIN 13-15.
Mechanical properties	Property class (material)[1]	5.6, 8.8 or 10.9	
	As specified in	DIN EN 20 898-1.	
Limit deviations, geometrical tolerances	Product grade	A	
	As specified in	ISO 4759-1.	
Surface finish		Property class 5.6: as processed. Property classes 8.8 and 10.9: (thermally or chemically) blackened. DIN 267-2 shall apply with regard to surface roughness. DIN EN 26 157-3 shall apply with regard to limits for surface discontinuities. ISO 4042 shall apply with regard to electroplating. The limits of thread size shall also apply after coating.	
Acceptance inspection		As specified in ISO 3269.	

[1]) Use of other property classes or materials shall be subject to agreement.

4 Designation

Designation of an M12 stud with interference-fit thread as in DIN 13-51, with a nominal length, *l*, of 80 mm, and assigned to property class 8.8:

Stud DIN 939 — M12 × 80 — 8.8

Designation of an M12 stud without interference-fit thread (Fo), with a nominal length, *l*, of 80 mm, and assigned to property class 8.8:

Stud DIN 939 — M12 Fo × 80 — 8.8

Where studs are to be supplied with a different thread on either end, this shall be indicated in the designation, with the symbol for the thread of the stud end preceding that for the nut end, e.g.:

Stud DIN 939 — M12 — M12 × 1,25 × 80 — 8.8

DIN 962 shall apply to the designation of type and finish, with additional information to be given on ordering.

The DIN 4000 — 2 — 4 tabular layout of article characteristics shall apply to studs as covered in this standard.

Standards referred to

DIN 13-12	ISO metric screw threads; coarse and fine pitch threads with diameters from 1 to 300 mm; selected diameters and pitches
DIN 13-15	ISO metric screw threads; fundamental deviations and tolerances for screw threads of 1 mm diameter and larger
DIN 13-51	ISO metric screw threads; external threads for transition fits; tolerances, limit deviations and limits of size
DIN 78	Stud ends and lengths of projection of bolt ends for ISO metric screw threads in accordance with DIN 13
DIN 267-2	Fasteners; technical delivery conditions; design and dimensional accuracy
DIN 962	Bolts, screws, studs and nuts; designation of types and finishes
DIN 4000-2	Tabular layouts of article characteristics for screws and nuts
DIN EN 20 898-1	Mechanical properties of fasteners; bolts, screws and studs (ISO 898-1 : 1988)
DIN EN 26 157-3	Fasteners; surface discontinuities; bolts, screws and studs for special requirements (ISO 6157-3 : 1988)
ISO 3269 : 1988	Fasteners; acceptance inspection
ISO 4042 : 1989	Threaded components; electroplated coatings
ISO 4759-1 : 1978	Tolerances for fasteners; bolts, screws and nuts with thread diameters from 1,6 to 150 mm; product grades A, B and C
ISO 8992 : 1986	Fasteners; general requirements for bolts, screws, studs and nuts

Previous editions

DIN 833 : 1943-12, 1952-12; DIN 834 : 1943x-12, 1953-03; DIN 939-1 : 1926-01, 1943-12, 1951-09, 1953-02, 1953-11; DIN 939 : 1972-12.

Amendments

The following amendments have been made to the December 1972 edition.

a) By analogy with ISO 4759-1, the length of the stud end is now designated b_1.
b) Symbol b has been replaced by b_2.
c) By analogy with DIN 78, symbol z_1 has been replaced by u.
d) By analogy with DIN 76-1, symbol x has been replaced by x_1.
e) The stud end shall be provided with a run-out, x_2, conforming to DIN 76-1.
f) The standard has been editorially revised.