UDC 621.882.6

September 1986

Double end studs

DIN 2509

Schraubenbolzen

Supersedes November 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

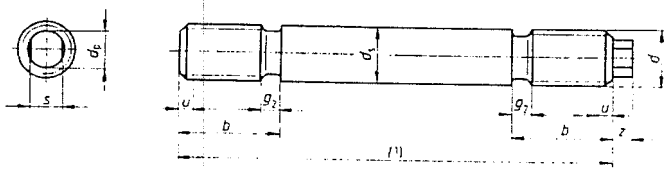
1 Scope and field of application

Double end studs are designed to be used for clamping two components together by tightening nuts that are screwed onto both ends, for example. A flattened dog point on one thread end is intended to prevent the double end stud from turning during assembly.

For sizes up to M 39, this standard specifies two thread lengths for each size. The short thread is designed for nuts specified in DIN 934, taking into consideration a 5 mm grading for the overall length of double end studs [1]. The long thread is designed for style 1 ISO nuts, e.g. as specified in DIN 970, which have an increased nut height and which shall be given preference because of their higher resistance to stripping. Double end studs with a long thread can also be used together with thinner nuts as specified in DIN 934. This shall therefore be done whenever possible.

Stud bolts with short-thread studs shall only be used as spare parts for existing designs, and for sizes exceeding M 39 where ISO nuts with a greater height are not yet available.

2 Dimensions



DIN 78 – K thread end;
u (incomplete thread): $2P$ maximum;
DIN 76 – A thread undercut ($g_2 = 3{,}5P$ maximum).

[1] Length l is to be calculated from the clamping length + 2 r_1 (length of projection) (see example of application). The resulting minimum dimension shall be rounded to the next higher multiple of five. For l, tolerance zone js 15 shall apply. The formula for calculating b takes into account a 5 mm step, as follows: $b = r_1 + g_2 + 2{,}5$ mm (where 2,5 mm is a half step).

Continued on pages 2 to 4

Thread size d		M 12	M 16	M 20	M 24	M 27	M 30	M 33	M 36	M 39	M 42
P 1)		1.75	2	2.5	3	3	3.5	3.5	4	4	4.5
	Short thread 3)										
	min. = nominal size	21	25	30	36	38	42	44	50	52	57
	max.	23.5	28	34	40.5	42.5	47	49	56	58	64
b 2)	Long thread										
	min. = nominal size	23	28	34	40	43	47	50	55	58	–
	max.	25.5	31	37	44.5	47.5	52	55	61	64	–
e_1	min.	13.5	17	21	25	28	31	33	37	39	43
	max. = nominal size	12	16	20	24	27	30	33	36	39	42
d_s	min.	11.82	15.82	19.79	23.79	26.79	29.79	32.75	35.75	38.75	41.75
	max. = nominal size	8	12	14	14	18	18	25	25	28	28
d_p	min.	7.78	11.73	13.73	13.73	17.73	17.73	24.67	24.67	27.67	27.67
	max. = nominal size	7	10	11	11	13	13	22	22	24	24
s	min.	6.82	9.78	10.73	10.73	12.73	12.73	21.67	21.67	23.67	23.67
	Nominal size	4	5	6	6	6	6	9	9	10	10
z	max.	4.24	5.24	6.24	6.24	6.24	6.24	9.29	9.29	10.29	10.29
	min.	3.76	4.76	5.76	5.76	5.76	5.76	8.71	8.71	9.71	9.71

Thread size d		M 45	M 48	M 52	M 56	M 60	M 64	M 72 × 6	M 80 × 6	M 90 × 6	M 100 × 6
P 1)		4.5	5	5	5.5	5.5	6	–	–	–	–
	Short thread										
b 2)	min. = nominal size	58	64	68	73	76	82	89	95	103	111
	max.	65	71.5	75.5	81	84	91	98	104	112	120
e_1	min.	45	48	52	56	59	63	70	76	84	92
	max. = nominal size	45	48	52	56	60	64	72	80	90	100
d_s	min.	44.75	47.75	51.7	55.7	59.7	63.7	71.7	79.7	89.65	99.65
	max. = nominal size	32	32	36	36	42	42	50	50	50	50
d_p	min.	31.61	31.61	35.61	35.61	41.61	41.61	49.61	49.61	49.61	49.61
	max. = nominal size	27	27	30	32	36	36	41	41	41	41
s	min.	26.67	26.67	29.67	31.61	35.38	35.38	40.38	40.38	40.38	40.38
	Nominal size	11	11	12	13	14	14	15	15	15	15
z	max.	11.35	11.35	12.35	13.35	14.35	14.35	15.35	15.35	15.35	15.35
	min.	10.65	10.65	11.65	12.65	13.65	13.65	14.65	14.65	14.65	14.65

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

2) Long thread studs are at present not customary for nominal sizes equal to and exceeding M 42 (see clause 1).

3) Not intended for new designs.

3 Technical delivery conditions

Material		Steel
General requirements		As specified in DIN 267 Part 1.
Thread	Tolerance class	6g
	Standard	DIN 13 Part 15
Mechanical properties [2]	Property class (material)	5.6 [1]
	Standard	ISO 898 Part 1
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 [3] shall apply with regard to acceptance inspection.

1) Property class 5.6 shall also be used in cases where no property class is given in the designation.
2) Other property classes and materials shall be subject to agreement.
3) AQL (acceptable quality level) 1 shall apply for major characteristics and AQL 1,5 for minor characteristics, thread size d, diameter of the unthreaded shank, d_s, and thread length b being regarded as major characteristics, the thread undercut and the long dog point dimensions as minor characteristics.

4 Designation

Designation of an M 30 double end stud with short threads (K) [2], of length l = 200 mm [1], assigned to property class 5.6:

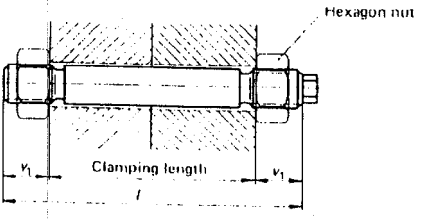
Double end stud DIN 2509 – K M 30 × 200 – 5.6

Designation of an M 30 double end stud with long threads (L), of length l = 200 mm [1], assigned to property class 5.6:

Double end stud DIN 2509 – L M 30 × 200 – 5.6

The DIN 4000 - 2 - 4 tabular layout of article characteristics shall apply to double end studs conforming to this standard.

Example of application



1) See page 1
2) The short thread shall also be used in cases where no thread length has been specified in existing documentation.

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 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 parts
DIN 267 Part 19	Fasteners; technical delivery conditions; surface discontinuities on bolts and screws
DIN 934	Metric hexagon nuts; product grades A and B
DIN 970	Style 1 hexagon nuts with metric coarse pitch thread; product grades A and B (modified version of ISO 4032)
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

DIN 2509: 10.28, 10.47, 11.60, 04.68, 11.70.

Amendments

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

a) The technical delivery conditions have been amended.

b) 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.

c) Limit dimensions have been included.

d) Letter symbols K and L identifying the thread length have been included.

International Patent Classification

F 16 B 35/00