UDC 621.884.091.6 May 1993

Steel countersunk head rivets
with nominal diameters from 10 to 36 mm

DIN 302

Senkniete; Nenndurchmesser 10 bis 36 mm

Supersedes July 1977 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 dimensions of steel countersunk head rivets with nominal diameters from 10 to 36 mm.

2 Dimensions

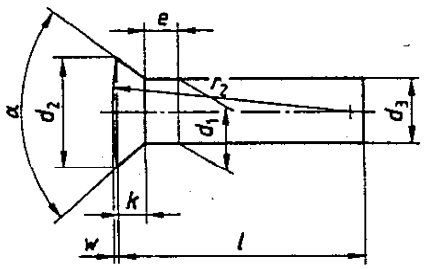


Table 1: Dimensions and mass

d_1	Nominal size	10	12	(14)	16	(18)	20	(22)	24	(27)	30	(33)	36
	Limit deviations	±0,2							±0,3				
α	$^{+5°}_{0}$	75°					60°				45°		
d_2	h16	14,5	18	21,5	26	30	31,5	34,5	38	42	42,5	46,5	51
d_3	min.	9,4	11,3	13,2	15,2	17,1	19,1	20,9	22,9	25,8	28,6	31,6	34,6
k	≈	3	4	5	6,5	8	10	11	12	13,5	15	16,5	18
e	max.	5	6	7	8	9	10	11	12	13,5	15	16,5	18
r_2	≈	32	45	60	85	105	120	75	85	110	120	145	170
w	≈	1	1	1	1	1	1	2	2	2	2	2	2
Nominal size	l Limit deviations	Approximate mass (7,85 kg/dm³), per 1000 units, in kg											
10	$^{+0,58}_{0}$	7,80											
12	$^{+0,70}_{0}$	9,03											
14		10,3	16,2										
16		11,5	18,0										
18		12,7	19,8	27,0									

(continued)

Continued on pages 2 to 7

Table 1 (continued)

d_1	Nominal size	10	12	(14)	16	(18)	20	(22)	24	(27)	30	(33)	36
	Limit deviations	± 0,2							± 0,3				
α	$^{+5°}_{0}$	75°					60°				45°		
d_2	h16	14,5	18	21,5	26	30	31,5	34,5	38	42	42,5	46,5	51
d_3	min.	9,4	11,3	13,2	15,2	17,1	19,1	20,9	22,9	25,8	28,6	31,6	34,6
k	≈	3	4	5	6,5	8	10	11	12	13,5	15	16,5	18
e	max.	5	6	7	8	9	10	11	12	13,5	15	16,5	18
r_2	≈	32	45	60	85	105	120	75	85	110	120	145	170
w	≈	1	1	1	1	1	1	2	2	2	2	2	2
Nominal size	l Limit deviations	Approximate mass (7,85 kg/dm³), per 1000 units, in kg											
20	$^{+0,84}_{0}$	14,0	21,6	29,4									
22		15,2	23,4	31,8									
24		16,4	25,2	34,3	47,7								
26		17,7	27,0	36,7	50,9	67,7							
28		18,9	28,8	39,1	54,1	71,7							
30		20,1	30,7	41,5	57,2	75,7	94,1						
32	$^{+1,0}_{0}$	21,4	32,5	43,9	60,4	79,7	99,1	125					
34		22,6	34,3	46,3	63,5	83,7	104	131					
36		23,8	36,0	48,8	66,7	87,7	109	137	167				
38		25,1	37,8	51,2	69,9	91,7	114	143	174				
40		26,3	39,6	53,6	73,0	95,7	119	149	181	230			
42		27,5	41,4	56,0	76,2	99,7	124	155	188	239			
45		29,4	44,0	59,7	80,9	106	131	164	198	253	302		
48		31,2	46,7	63,3	85,6	112	139	173	209	266	319		
50		32,5	48,5	65,7	88,8	116	144	179	216	275	330	401	
52	$^{+1,2}_{0}$	33,7	50,3	68,1	92,0	120	148	184	223	284	341	414	
55			52,9	71,7	96,7	126	156	193	234	298	358	435	524
58			55,6	75,4	101	132	163	202	245	311	374	455	548
60			57,4	77,8	105	136	165	208	252	320	385	468	564
62				80,2	108	140	170	214	259	329	396	481	580
65				83,8	113	146	178	223	269	343	413	502	604
68				87,4	117	152	185	232	280	356	430	522	628
70				89,8	120	156	190	238	287	365	441	535	644

(continued)

Table 1 (concluded)

d_1	Nominal size	10	12	(14)	16	(18)	20	(22)	24	(27)	30	(33)	36
	Limit deviations	± 0,2							± 0,3				
α	$^{+5°}_{0}$	75°					60°				45°		
d_2	h16	14,5	18	21,5	26	30	31,5	34,5	38	42	42,5	46,5	51
d_3	min.	9,4	11,3	13,2	15,2	17,1	19,1	20,9	22,9	25,8	28,6	31,6	34,6
k	≈	3	4	5	6,5	8	10	11	12	13,5	15	16,5	18
e	max.	5	6	7	8	9	10	11	12	13,5	15	16,5	18
r_2	≈	32	45	60	85	105	120	75	85	110	120	145	170
w	≈	1	1	1	1	1	1	2	2	2	2	2	2
Nominal size l	Limit deviations	Approximate mass (7,85 kg/dm³), per 1000 units, in kg											
72	$^{+1,2}_{0}$				124	160	195	244	294	374	452	548	660
75					128	166	202	254	305	388	469	569	684
78					133	172	210	263	316	401	485	589	708
80					136	176	215	269	323	410	496	602	724
85	$^{+1,4}_{0}$					186	227	284	341	433	524	636	764
90						196	239	299	359	455	552	670	804
95							252	314	377	478	580	704	844
100							264	329	395	500	607	738	884
105								344	413	522	635	772	924
110								359	431	545	663	806	964
115									449	568	691	840	1000
120									467	590	718	874	1040
125	$^{+1,6}_{0}$									613	746	908	1080
130										635	774	942	1120
135										658	802	976	1160
140											829	1010	1200
145											857	1044	1240
150											885	1078	1280
155												1112	1320
160												1146	1360

Use of sizes given in brackets and of intermediate lengths should be avoided where possible.
Lengths above 160 mm shall be graded in 10 mm steps.
Rivets are normally manufactured in the sizes for which values of mass have been specified.
The values of mass specified are for guidance only.

3 Technical delivery conditions

Table 2: Technical delivery conditions

Material[1])		Steel
		St = QSt 32-3 or QSt 36-3, at the manufacturer's discretion.
	Minimum tensile strength, R_m, in N/mm²	290
	As specified in	DIN 1654 Part 2
Dimensional and geometrical tolerances		As specified in DIN 101.
Surface finish		Standard finish: bright. Where a protective coating is required (e.g. an electroplated coating complying with ISO 4042), this shall be agreed when ordering. The tolerances and limit deviations specified in table 1 shall also apply after coating.
Testing of mechanical properties		As specified in DIN 101.
Acceptance inspection		As specified in DIN 101.
[1]) Use of other materials shall be the subject of agreement.		

4 Designation

Designation of a steel (St) countersunk head rivet with a nominal diameter, d_1, of 16 mm and a length, l, of 40 mm:

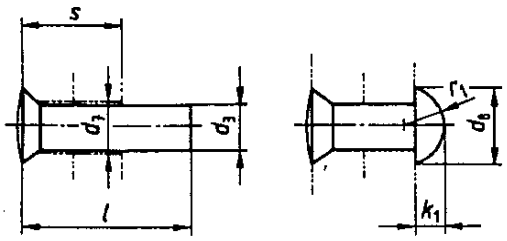
Rivet DIN 302 - 16 × 40 - St

The DIN 4000-9-3 tabular layout of article characteristics shall apply to rivets as covered in this standard.

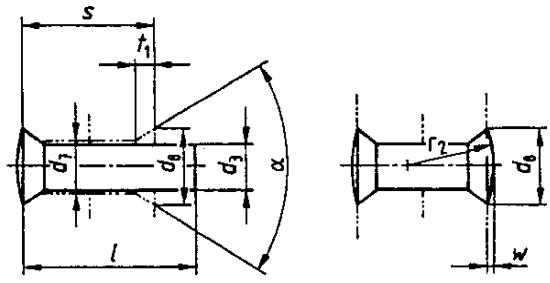
5 Examples of application

Table 3 specifies hole diameters and gives guide values for upset head dimensions and maximum grip lengths of both round head (A) and countersunk head (B) rivets.

Type A, upset head rounded



Type B, upset head countersunk



	d_1	10	12	(14)	16	(18)	20	(22)	24	(27)	30	(33)	36
	d_7 H12	10,5	13	15	17	19	21	23	25	28	31	34	37
Round head (A)	d_8	16	19	22	25	28	32	36	40	43	48	53	58
	k_1	6,5	7,5	9	10	11,5	13	14	16	17	19	21	23
	r_1 ≈	8	9,5	11	13	14,5	16,5	18,5	20,5	22	24,5	27	30
Countersunk head (B)	d_8	16	19	22	26	29	31	34,5	37	41,5	44	48	52
	r_2 ≈	32	45	60	85	105	120	75	85	110	120	145	170
	w ≈	1	1	1	1	1	1	2	2	2	2	2	2
	t_1	4,2	5,1	5,7	7	7,7	10	11,3	11,7	13,1	17,5	18,5	20
	α	75°					60°				45°		

l	Maximum grip length, s_{max}																							
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
10	–	8																						
12	–	9																						
14	–	10	–	10																				
16	2	11	2	11																				
18	4	13	4	12	4	12																		
20	6	15	6	14	6	14																		
22	8	16	8	16	8	16																		
24	10	17	10	17	10	17	8	16																
26	14	19	12	18	12	18	10	17	8	16														
28	15	20	14	19	13	19	12	18	10	18														
30	16	22	15	20	14	20	13	20	12	20	8	20												
32	18	24	16	22	15	22	14	22	14	22	10	21	8	20										
34	19	25	18	24	17	24	16	24	15	24	12	22	10	22										
36	20	26	20	26	18	26	17	26	16	25	14	24	12	24	8	22								
38	22	28	22	28	20	28	18	28	18	26	16	26	14	26	10	24								
40	24	30	24	30	22	30	20	30	19	28	18	28	16	28	12	26	10	26						
42	26	32	26	32	24	32	22	32	20	30	19	30	18	30	14	28	12	28						
45	28	35	28	34	26	34	24	34	22	32	20	32	19	32	16	30	14	30	14	28				
48	32	38	30	36	28	36	26	36	24	34	22	34	20	34	18	32	16	32	16	30				
50	34	40	32	38	30	38	28	38	26	36	24	36	22	36	20	34	18	34	18	32	16	32		
52	36	42	34	40	32	40	30	40	28	38	26	38	24	38	22	36	20	36	20	34	18	34		
55			36	43	34	42	32	42	30	41	28	40	26	40	24	40	22	38	22	36	20	36	20	40
58			38	46	36	44	34	44	32	44	30	42	28	42	26	42	24	43	24	38	22	38	22	42
60			40	48	38	46	36	46	34	46	32	44	30	44	28	44	26	44	26	44	24	44	24	44

(continued)

Table 3 (concluded)

	d_1	10	12	(14)	16	(18)	20	(22)	24	(27)	30	(33)	36
	d_7 H12	10,5	13	15	17	19	21	23	25	28	31	34	37
Round head (A)	d_8	16	19	22	25	28	32	36	40	43	48	53	58
	k_1	6,5	7,5	9	10	11,5	13	14	16	17	19	21	23
	r_1 ≈	8	9,5	11	13	14,5	16,5	18,5	20,5	22	24,5	27	30
Countersunk head (B)	d_8	16	19	22	26	29	31	34,5	37	41,5	44	48	52
	r_2 ≈	32	45	60	85	105	120	75	85	110	120	145	170
	w ≈	1	1	1	1	1	1	2	2	2	2	2	2
	t_1	4,2	5,1	5,7	7	7,7	10	11,3	11,7	13,1	17,5	18,5	20
	α	75°					60°				45°		

l	Maximum grip length, s_{max}																							
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
62					40	48	38	48	36	48	34	46	32	46	30	46	28	46	28	46	26	46	26	46
65					44	50	40	50	38	50	36	48	34	48	32	48	32	48	30	48	28	48	28	48
68					46	53	44	52	42	52	40	51	38	51	36	50	34	50	32	50	30	50	30	50
70					48	55	46	54	44	54	42	52	40	52	38	52	36	52	34	52	32	52	32	52
72							48	56	46	56	44	54	42	54	40	54	38	54	36	54	34	54	34	54
75							50	58	48	58	46	58	44	58	42	56	40	56	38	56	36	56	36	56
78							52	60	50	60	48	60	46	60	44	60	42	60	40	60	38	58	38	58
80							54	62	52	62	50	62	48	64	46	64	44	64	42	64	40	62	40	62
85									58	65	56	66	54	68	54	67	50	68	46	68	44	66	42	66
90									62	70	60	70	58	72	58	72	54	72	52	70	48	70	46	70
95											64	74	62	76	62	76	58	78	56	78	54	76	52	76
100											68	79	66	80	66	80	62	80	60	80	58	80	56	80
105													70	84	70	84	66	84	64	84	62	84	60	84
110													76	88	74	88	72	88	70	88	68	88	64	88
115															78	92	76	94	74	94	72	94	70	94
120															82	96	80	97	78	97	76	97	74	97
125																	82	100	80	102	78	102	76	102
130																	86	102	84	106	82	106	80	106
135																	92	106	90	110	88	110	86	110
140																			94	115	92	115	90	115
145																			98	120	96	120	94	120
150																			102	124	100	124	98	124
155																					104	128	102	128
160																					108	130	106	130

Since the grip lengths specified are for guidance only, trial riveting is recommended, especially if automated procedures are used.

01-10-29; 1:37PM; ; # 37/108

Standards referred to

DIN 101	Rivets; technical delivery conditions
DIN 1654 Part 2	Cold heading and cold extruding steel; technical delivery conditions for killed unalloyed steel not intended for heat treatment
DIN 4000 Part 9	Tabular layout of article characteristics for bolts, pins, rivets, split pins and keys
ISO 4042:1989	Threaded components; electroplated coatings

Previous editions

DIN 302 Part 1: 11.21, 07.48, 06.56; DIN 302 Parts 2 and 4: 10.23, 02.52; DIN 302: 07.77.

Amendments

The following amendments have been made to the July 1977 edition.

a) Clauses 2 to 7 have been replaced by clause 3 'Technical delivery conditions'.

b) The specifications for materials have been amended.

c) The value specified for the minimum tensile strength, R_m, has been amended.

d) The standard has been editorially revised.

International Patent Classification

F 16 B 019/04