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Westfield Fasteners Product Specification:

DIN 603 - Coach Bolts (Cup Head Square Neck Bolts)

This product guide contains the specification for metric threaded coach bolts / carriage bolts available from Westfield Fasteners. The basis of this specification is the DIN standard DIN 603.

Product Description

Generally used in timber to timber and timber to metal construction, these bolts incorporate a square neck to grip the hole in the timber when fitting, and therefore negates the need for any drive recess to be included on top of the head. Supplied to DIN 603, but could be either full or partially threaded.

Scope of the ISO standard.

DIN 603 specifies the tolerances and the permissible variation in form of carriage bolts / coach bolts / cup head bolts, and covers metric thread diameters from M5 up to and including M20. Mechanical properties for these items are defined in ISO 898 and ISO 3506.

Table 1 below defines the overall dimensions and tolerances of this screw type, whilst table 2 defines the tolerances on the shank length.

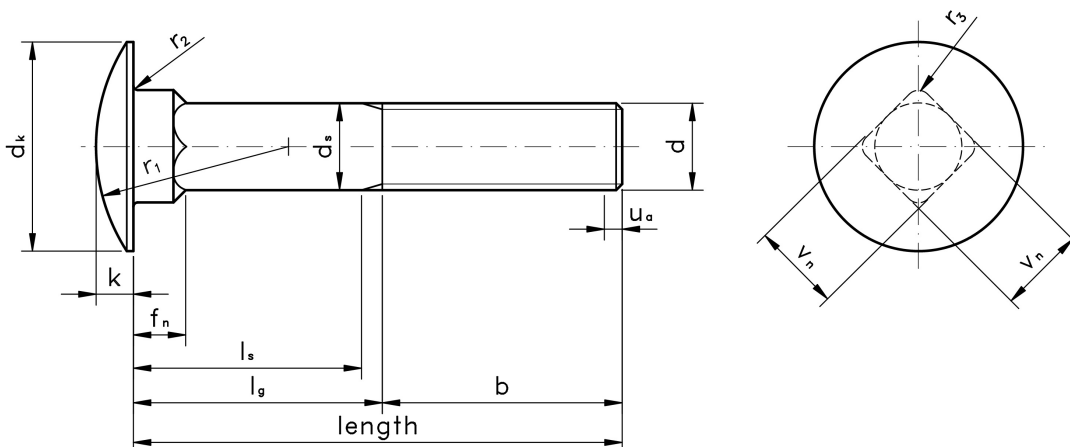


Figure 1: Coach Bolts

Notes to figure 1:

- There may be up to 2 incomplete threads at the end of the bolt (a).

Variations from DIN 603

In practice, the manufacturers often stray away from the standard when deciding how much thread to apply to the shank on these bolts. Therefore, The thread lengths quoted in table 2 should be considered a minimum, and should be taken as a guide only.

Table 1: Dimensions & Tolerances according to DIN 603

Thread, d		M5	M6	M8	M10	M12	M16	M20
thread pitch (standard metric coarse)		0.8	1	1.25	1.5	1.75	2	2.5
thread length	b min. (shank length ≤ 125mm)	16	18	22	26	30	38	46
	b min. (shank length > 125mm ≤ 200mm)	22	24	28	32	36	44	52
	b min. (shank length > 200mm)	-	-	41	45	49	57	65
head diameter	d _k max.	13.55	16.55	20.65	24.65	30.65	38.80	46.80
	d _k min.	12.45	15.45	19.35	23.35	29.35	37.20	45.20
shank diameter	d _s max.	5	6	8	10	12	16	20
	d _s min.	4.52	5.52	7.42	9.42	11.30	15.30	19.16
neck height	f _n max.	4.10	4.60	5.60	6.60	8.75	12.90	15.90
	f _n min.	2.90	3.40	4.40	5.40	7.25	11.10	14.10
head height	k max.	3.30	3.88	4.88	5.38	6.95	8.95	11.05
	k min.	2.70	3.12	4.12	4.65	6.05	8.05	9.95
head radius	r ₁ ≈ (approx.)	10.7	12.6	16	19.2	24.1	29.3	33.9
neck radius	r ₂ max.	0.5	0.5	0.5	0.5	1.0	1.0	1.0
square neck radius	r ₃ max.	0.75	0.90	1.20	1.50	1.80	2.40	3.0*
neck thickness	v _n max.	5.48	6.48	8.58	10.58	12.70	16.70	20.84
	v _n min.	4.52	5.52	7.42	9.42	11.30	15.30	19.16

*The dimensional table from DIN Standard 603:2017-05 states this dimension to be 30mm not 3.0mm, however we believe this is a mistake.

Table 2: Shank Length Tolerance according to DIN 603

total shank length			M5		M6		M8		M10		M12		M16		M20	
			unthreaded shank length (l_s) and distance from head to first full form thread profile(l_g)													
Nom. 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
16	15.10	16.90	-	8	-	10	/	/	/	/	/	/	/	/	/	/
20	18.95	21.05	-	8	-	10	-	12	-	14	/	/	/	/	/	/
25	23.95	26.05	-	8	-	10	-	12	-	14	/	/	/	/	/	/
30	28.95	31.05	-	18	-	10	-	12	-	14	-	18	/	/	/	/
35	33.75	36.25	15	19	12	17	-	12	-	14	-	18	/	/	/	/
40	38.75	41.25	20	24	17	22	11.75	18	-	14	-	18	/	/	/	/
45	43.75	46.25	25	29	22	27	16.75	23	11.5	19	-	18	/	/	/	/
50	48.75	51.25	30	34	27	32	21.75	28	16.5	24	-	18	/	/	/	/
55	53.50	56.50	35	39	32	37	26.75	33	21.5	29	16.25	25	-	23	/	/
60	58.50	61.50	40	44	37	42	31.75	38	26.5	34	21.25	30	-	23	/	/
65	63.50	66.50	45	49	42	47	36.75	43	31.5	39	26.75	35	17	27	/	/
70	68.50	71.50	50	54	47	52	41.75	48	36.5	44	31.25	40	22	32	-	28.5
80	78.50	81.50	60	64	57	62	51.75	58	46.5	54	41.25	50	32	42	21.5	34
90	88.25	91.75	-	-	67	72	61.75	68	56.5	64	51.25	60	42	52	31.5	44
100	98.25	101.75	-	-	77	82	71.75	78	66.5	74	61.25	70	52	62	41.5	54
110	108.25	111.75	-	-	87	92	81.75	88	76.5	84	71.25	80	62	72	51.5	64
120	118.25	121.75	-	-	97	102	91.75	98	86.5	94	81.25	90	72	82	61.5	74
130	128.00	132.00	-	-	101	106	95.75	102	90.5	98	85.25	94	76	86	65.5	78
140	138.00	142.00	-	-	111	116	105.75	112	100.5	108	95.25	104	86	96	75.5	88
150	148.00	152.00	-	-	121	126	115.75	122	110.5	118	105.25	114	96	106	85.5	98
160	156.00	164.00	-	-	-	-	-	-	120.5	128	115.25	124	106	116	95.5	108
180	176.00	184.00	-	-	-	-	-	-	140.5	148	135.25	144	126	136	115.5	128
200	195.40	204.60	-	-	-	-	-	-	160.5	168	155.25	164	146	156	135.5	148

For further details, please refer to the ISO/DIN standard document for this item.