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Westfield Fasteners Product Specification:

DIN 603 - Coach Bolts (Cup Head Square Neck Bolts), with Full Thread

This product guide contains the specification for metric threaded coach bolts / carriage bolts, specifically with a fully threaded shank, 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 with a fully threaded shank.

Scope of the ISO standard.

DIN 603 specifies the tolerances and the permissable 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.

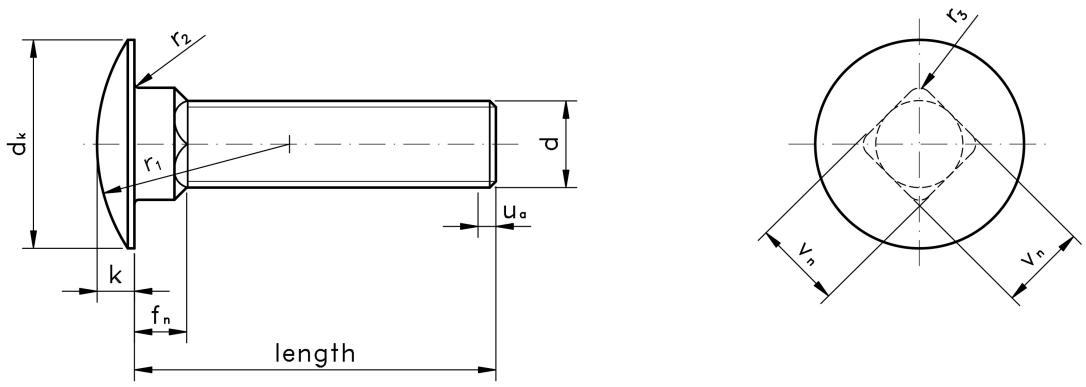

Figure 1: Coach Bolts (with full thread)

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. This is why there are fully threaded variants of many available sizes.

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
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	$r_1 \approx$ (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 dimention to be 30mm not 3.0mm, however we believe this is a mistake.

Table 2: Shank Length Tolerance according to DIN 603

shank length (mm)	+/- (mm)
16	0.9
20-30	1.05
35-50	1.25
55-80	1.5

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