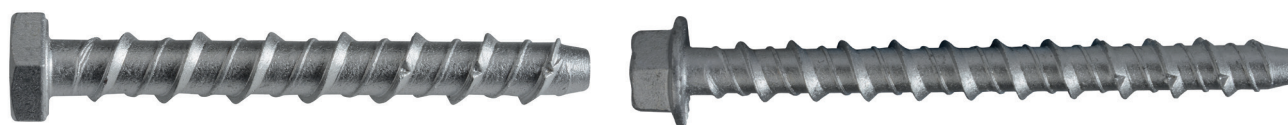


LIGHTNING BOLTS

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BOLTS



Size	Hole Diameter	Over Drill Depth	Clearance Hole Size	Head A/F (mm)	Max Tightening Torque	Min Embedment Depth (mm)	Ultimate Load Pull Out (kN)	Ultimate Load Shear Value (kN)
M6	6mm	10mm	8mm	10mm	15Nm	30	6.3	6.5
M8	8mm	15mm	10mm	15mm	40Nm	40	9.2	15.1
M10	10mm	20mm	12mm	17mm	50Nm	50	13.7	25.3
M12	12mm	25mm	14mm	19mm	60Nm	60	19.7	34.1
M16	16mm	35mm	18mm	27mm	100N	80	26.6	42.8

Performance Data									
Thread Diameter mm	Characteristic Resistance kN		Design Resistance kN		Recommended Load kN		Spacing mm	Edge Distance mm	
	Tensile	Shear	Tensile	Shear	Tensile	Shear	Tensile & Shear	Tensile	Shear
6	6	6.3	2.7	5	1.9	3.6	100	50	80
8	9	15	4.1	12	2.9	8.6	120	60	90
10	13.5	25	6.1	20	4.4	14.2	170	80	120
12	19.5	33.8	8.9	27	6.3	19.3	200	90	140
16	26.5	42.5	12	34	8.6	24.2	260	120	160

Shear Loads towards a free edge are for single bolts where Spacing $\geq 3 \times$ Edge Distance

Reduced Design Resistance (kN). Divide Loads by 1.4 for Recommended Loads

Spacing (C20/25 Concrete)					
Spacing mm	Tensile Resistance per Pair of bolt				
	M6	M8	M10	M12	M16
40					
45	3.9				
50	4.1				
55	4.2	6			
60	4.4	6.3			
70	4.6	6.5	8.6		
80	4.9	6.8	9		
90	5.2	7.2	9.3		
100	5.5	7.5	9.7	13.5	
120		8.3	10.5	14.2	17.5
130			10.8	14.7	18
140			11.1	15.2	18.5
150			11.5	15.6	18.9
160			11.8	16	19.5
170			12.2	16.5	19.8
180				16.9	20.3
200				17.8	21.2
220					22.2
240					23.2
260					24

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Edge Distance (C20/25 Concrete) for single bolts										
Edge mm	Tensile Resistance					Shear Resistance				
	M6	M8	M10	M12	M16	M6	M8	M10	M12	M16
35										
40	2.3									
45	2.5	3.5				2.8				
50	2.7	3.7	4.5			3.1	6.7			
55		3.9	4.8	6.5		3.5	7.3			
60		4.1	5	6.8	7.8	3.8	8	10		
70			5.6	7.5	8.5	4.5	9.3	11.7		
80			6.1	8.2	9.3	5	10.8	13.3		
90				8.9	10		12	15	17.5	
100					10.6			16.8	19.3	
110					11.3			18.5	21.2	
120					12			20	23.1	
125									24.2	26.6
130									25.1	27.6
140									27	29.8
150										31.9
160										34.1

Influence of Concrete Strength

Concrete Strength		C20/25	C25/C30	C30/37	C40/50	C45/55	C50/60
Cylinder	N/mm ²	20	25	30	40	45	50
Cube	N/mm ²	25	30	37	50	55	60
Factor		1.00	1.1	1.22	1.41	1.48	1.55

Concrete bolt Mechanical Properties

		M6	M8	M10	M12	M16
Tension	kN	8.8	13.9	20.3	29.3	49.3
Shear	kN	5	12	20	27	34

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