

Design Data

Concrete

Loads shown are for 30N/mm² (C20/25) concrete.

For other grades of concrete between 20 and 50N/mm² where the anchor is in tension the load can be calculated using the following empirical formula:

$$\text{Tensile SWL in } 30\text{N/mm}^2 \text{ Concrete} \times \sqrt{\frac{\text{Actual Concrete Strength}}{30}}$$

This calculation is not valid for shear.

Edge and Spacing Distances

The loads shown are applicable to characteristic edge and spacing distances. For reduced edge and spacing distances, reduction factors must be calculated from the appropriate tables below.

Performance Data

SIZE	CONCRETE 30N/mm ² (C20/25)										
	STANDARD EMBEDMENT DEPTH				REDUCED EMBEDMENT DEPTH				CHARACTERISTIC EDGE DISTANCE (mm)		CHARACTERISTIC SPACING (mm) Tension & Shear
	SAFE WORKING LOAD (kN)		FAILURE LOAD (kN)		SAFE WORKING LOAD (kN)		FAILURE LOAD (kN)		Tension	Shear	
	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	
M6	2.3	2.0	8.9	8.6	1.8	1.5	5.8	6.1	60	60	80
M8	3.8	4.4	13.6	16.6	2.3	2.9	11.1	13.1	80	80	100
M10	5.8	6.6	19.5	22.8	3.1	4.5	14.0	20.1	100	100	120
M12	9.0	10.5	30.5	32.2	5.2	6.5	19.6	29.2	120	120	150
M16	14.2	16.3	47.6	61.4	7.1	12.8	30.0	57.8	160	160	180
M20	17.5	24.0	59.0	90.0	13.4	20.5	49.7	85.2	190	190	260
M24	19.1	28.8	69.0	118.0	17.8	28.8	64.2	118.0	250	250	300

Reduction Factors - Edge and Spacing Distances

The characteristic edge and spacing distances quoted in the table above are the minimum allowable for the quoted safe loads to apply.

Where the design dictates reduced edge and spacing distances, the appropriate reduction factor/s from the tables below must be applied to the safe working load.

Choose the required bolt diameter across the top of the table

and read down the left hand column until actual edge or spacing distance is found. Read off the reduction factor where the two lines intersect (interpolate as required). Multiply this factor by the safe working load quoted in the table. On the occasion that multiple close edge and/or spacing distances occur, the appropriate reduction factors must be applied.

Edge Distance (Concrete)

EDGE (mm)	TENSILE : EDGE REDUCTION FACTORS								SHEAR : EDGE REDUCTION FACTORS							
	M6	M8	M10	M12	M16	M20	M24	M6	M8	M10	M12	M16	M20	M24		
30	0.60															
40	0.73	0.60						0.64								
50	0.87	0.73						0.82	0.62							
60	1.0	0.87	0.65					1.0	0.74	0.60						
80		1.0	0.83	0.65					1.0	0.80	0.67					
100			1.0	0.83	0.65					1.0	0.84	0.62				
120				1.0	0.77	0.65					1.0	0.74	0.58			
140					0.88	0.77	0.65					0.87	0.73	0.58		
160					1.0	0.88	0.74					1.0	0.82	0.66		
190						1.0	0.83						1.0	0.78		
220							0.91							0.88		
250								1.0							1.0	

Spacing (Concrete)

SPACING (mm)	TENSILE & SHEAR REDUCTION FACTORS							
	M6	M8	M10	M12	M16	M20	M24	
30								
40	0.65							
50	0.77	0.65						
60	0.88	0.77	0.65					
80	1.0	0.88	0.77	0.65				
100		1.0	0.88	0.77	0.65			
120			1.0	0.88	0.77			
150				1.0	0.88	0.74		
180					1.0	0.83	0.74	
220						0.91	0.83	
260							1.0	
300								