

technical information

capsule and stud data

Capsule diameter : mm (d)	Capsule length : mm (l)	Hole diameter concrete : mm (d _o)	Rec min drill depth concrete : mm (b _o)	Stud diameter : mm (d)	Standard stud length : mm (l)	Recommended torque : Nm (T _{inst})
8	80	10	90	8	110	11
10	80	12	90	10	130	22
12	95	14	110	12	160	38
16	95	18	125	16	190	95
20	175	24	190	20	260	150
24	210	28	230	24	300	200
30	265	35	290	30	380	320

performance data

In C20/25 - 30Nmm² concrete using standard embedment depths and 5.8Gr steel anchor studs in clean blown and brushed drill holes.

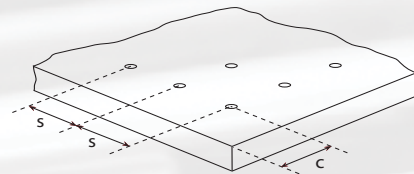
Size : mm	Characteristic resistance : kN		Design resistance : kN		Recommended load kN	
	Tension : (N _{Rk})	Shear : (V _{Rk})	Tension : (N _{Ed})	Shear : (V _{Ed})	Tension : (N _{rec})	Shear : (V _{rec})
8	15.40	9.90	8.30	7.90	5.90	5.70
10	23.80	15.70	11.30	12.60	8.10	9.00
12	35.10	22.90	15.90	18.30	11.40	13.10
16	64.40	42.50	28.00	34.00	20.00	24.30
20	103.90	66.80	43.30	53.40	30.90	38.20
24	138.30	95.70	55.30	76.60	39.50	54.70
30	213.90	152.50	85.50	122.00	61.10	87.10

All load data calculated using the Partial Safety Factor concept and to Eurocode 1 standard. For engineers preferring to use the Global Safety Factor approach the Characteristic Resistance loads are 95% of the Ultimate load values and Recommended loads remain constant for both methods.

edge distance and spacings

In C20/25 - 30Nmm² concrete

Size	Characteristic edge distance : mm (C)		Characteristic spacing : mm (S)
	Tension : (C _{cr,T})	Shear : (C _{cr,V})	Tension and shear : (S _{cr})
M8	100	130	130
M10	130	150	150
M12	150	170	170
M16	170	190	190
M20	220	220	220
M24	260	260	260
M30	340	340	340



Edge and anchor centre spacings quoted are the minimum distances required either between anchors or an anchors distance from the substrates free edge to achieve the load values detailed (in concrete)

reduction factors

Where characteristic edge and spacing distances are not achievable and closer spacings are required, the appropriate reduction factor from the following tables must be applied to the Design Resistance or Recommended Load.

To use the tables select the required bolt diameter across the top of the table and the actual edge or spacing distance from the left column. The figure at the intersecting point is the Reduction Factor and should be multiplied by the Design Resistance or the Recommended Load to give the correct load data for the required spacing.

edge distance

In C20/25 - 30Nmm² concrete

Edge distance - remote from a free edge : mm	Tensile load : edge reduction factors							Shear load : edge reduction factors						
	M8	M10	M12	M16	M20	M24	M30	M8	M10	M12	M16	M20	M24	M30
60	0.76							0.50						
70	0.82	0.75						0.58	0.50					
80	0.88	0.80	0.74					0.66	0.57	0.50				
90	0.94	0.85	0.78					0.75	0.64	0.56				
100	1.00	0.90	0.83	0.77				0.83	0.71	0.62	0.52			
110		0.95	0.87	0.81				0.92	0.78	0.69	0.58	0.50		
130		1.00	0.96	0.89	0.77	0.76		1.00	0.93	0.81	0.68	0.59	0.50	
150			1.00	0.96	0.83	0.76			1.00	0.94	0.79	0.68	0.57	
170				1.00	0.88	0.81				1.00	0.89	0.77	0.65	0.50
190					0.94	0.86	0.75				1.00	0.86	0.73	0.58
220					1.00	0.93	0.80				1.00	0.85	0.65	
260						1.00	0.88						1.00	0.76
300							0.92							0.88
340							1.00							1.00

centre spacing

In C20/25 - 30Nmm² concrete

Spacing distances : mm	Tensile and Shear load reduction factors						
	M8	M10	M12	M16	M20	M24	M30
60	0.80						
70	0.83	0.80					
80	0.87	0.83	0.80				
90	0.90	0.86	0.83				
100	0.93	0.89	0.85	0.81			
110	0.97	0.91	0.87	0.83	0.80		
130	1.00	0.97	0.92	0.87	0.84	0.80	
150		1.00	0.97	0.92	0.87	0.83	
170			1.00	0.96	0.91	0.86	0.80
190				1.00	0.95	0.89	0.82
220					1.00	0.94	0.85
260						1.00	0.90
300							0.95
340							1.00

curing times

Substrate temperature : °C	Cure time dry : hours	Cure time wet : hours
20+	0.5	1
11-20	1	2
6-10	3	6
1-5	6	12
-5-0	15	30

Cure rates for guidance only and are dependant on site conditions.