

# Throughbolt HDG

## Performance Data (20/25 Concrete)

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
8	12.0	11.0	8.0	8.8	5.7	6.3	85	85	150
10	16.0	16.7	10.7	11.2	7.6	8.0	130	115	180
12	25.0	25.0	16.7	20.0	11.9	14.3	175	155	250
16	35.0	44.0	23.3	33.1	16.6	23.6	215	190	320
20	50.0	69.0	33.3	51.9	23.8	37.1	300	250	420

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

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

### Edge Distance (C20/25 Concrete) for single anchors

Edge mm	Tensile Resistance					Shear Resistance				
	M8	M10	M12	M16	M20	M8	M10	M12	M16	M20
50	6.0					3.0				
55	6.3					3.4				
65	6.8	7.4				4.4	4.8			
75	7.5	8.1				5.0	5.5			
85	8.0	8.7				5.6	6.1			
95		9.4	12.1			6.1	6.7	8.9		
105		10.1	12.8	16.1		6.6	7.2	9.7	12.5	
115		10.7	13.6	16.9		7.2	7.8	10.4	14.2	
125			14.4	17.7	21.4	7.7	8.4	11.2	15.3	18.1
135			15.1	18.6	22.3	8.2	8.9	11.9	16.3	20.2
150			16.4	19.9	23.7	8.8	9.7	13.0	17.8	22.0
155			16.7	20.3	24.1		10.0	13.4	18.2	22.6
180				22.6	26.5		11.2	15.1	20.7	25.6
190				23.3	27.4			15.8	21.6	26.8
210					29.4			17.2	23.5	29.1
230					31.5			18.6	25.4	31.4
250					33.3			20.0	27.2	33.7
275									29.4	36.5
300									31.6	39.2
320									33.1	41.4
370										46.7
420										51.9

### Spacing (C20/25 Concrete)

Spacing mm	Tensile Resistance per Pair of Anchors				
	M8	M10	M12	M16	M20
50	13.5				
60	14.3	15.8			
65	14.6	16.2			
70	15.0	16.6			
80	15.8	17.4	24.8		
85	16.0	17.8	25.3		
100		18.9	26.6	35.1	
105		19.3	27.1	35.6	45.4
115		20.1	28.0	36.6	46.5
130		21.3	29.4	38.1	48.2
150			31.2	40.2	50.4
175			33.3	42.7	53.2
200				45.2	56.0
215				46.7	57.7
230					59.4
250					61.6
275					64.4
300					66.7

### Influence of Concrete Strength

Concrete Strength		C20/25	C25/30	C30/37	C40/50	C45/55	C50/60
Cylinder	N/mm <sup>2</sup>	20	25	30	40	45	50
Cube	N/mm <sup>2</sup>	25	30	37	50	55	60
Factor		1	1.1	1.22	1.41	1.48	1.55

When using concrete factors check all other information to ensure Steel Tensile and Shear Resistance is not exceeded

### Steel Design Resistance for single anchor

		M8	M10	M12	M16	M20
Tension	kN	11.3	18.6	26.6	42.5	66.8
Shear	kN	8.8	13.6	20.0	33.0	51.8

### Anchor Mechanical Properties

		M8	M10	M12	M16	M20
Tensile Strength	N/mm <sup>2</sup>	560	660	660	560	560
Yield Strength	N/mm <sup>2</sup>	475	560	560	475	475
Nut A/F	mm	13	17	19	24	30
Washer Diameter	mm	17	21	24	30	37