

TUC OPT 1 CONCRETE BOLT

Features:

- Through fixing
- Approved for cracked and non-crack concrete
- Rapid Installation
- Hardened Steel with Zinc Plating, minimum 5um
- Fire tested class A1 resistant

Benefits:

- Quick and simple installation
- One anchor for concrete from C20/25 to C50/60
- Adjustable fixture thickness
- Removable for use with temporary structures



Concrete Ranges: C20/C25 according to EN 206:2013+A1:2016

Certification: European technical assessment 25/0814 & 25/0817

Product Range

Product Code	Thread Diameter	Anchor Length	Drill Hole Diameter	Minimum Drill Hole Depth	Maximum Fixture Thickness	Fixture Clearance Hole	Hex Head
	d	L	d _o	h _{nom}	t _{fix}	d _f	A/F
	mm	mm	mm	mm	mm	mm	mm
TUC06050	8	50	6	45	15	10	10
TUC06075		75			40		
TUC06100		100			65		
TUC06130		130			95		
TUC06150		150			115		
TUC08060	10	60	8	60	5	12	13
TUC08075		75			20		
TUC08100		100			45		
TUC10060	12	60	10	65	5	14	15
TUC10075		75			20		
TUC10100		100			45		
TUC10125		125			70		
TUC10140		140			85		
TUC10150		150			95		
TUC12075	14	75	12	75	10	16	16
TUC12100		100			35		
TUC12120		120			55		
TUC12130		130			65		
TUC12150		150			85		
TUC14100	16	100	14	95	15	18	18
TUC14120		120			35		
TUC14130		130			45		
TUC14150		150			65		
TUC16100	18	100	16	100	5	20	21
TUC16150		150			20		
TUC16200		200			45		

Installation Data

Anchor Diameter			M6		M8		M10			M12			M14			M16	
Nominal Embedment Depth	h_{nom}	[mm]	44	55	50	65	55	65	85	65	85	100	85	100	115	100	120
Effective Embedment Depth	h_{eff}	[mm]	30	41	34	47	37	45	62	44	61	73	60	72	85	71	88
Minimum Concrete Thickness	h_{min}	[mm]	80	80	80	80	80	90	120	100	120	150	120	150	150	150	150
Minimum Spacing	s_{min}	[mm]	35	35	35	35	40	40	40	50	50	50	60	60	60	70	70
Minimum Edge Distance	c_{min}	[mm]	35	35	35	35	40	40	40	50	50	50	60	60	60	70	70
Maximum Installation Torque	T_{inst}	[Nm]	200		250		350			450			600			800	
Design Spacing - Tension	$S_{cr,N,ucr}$	[mm]	3 x h_{ef}														
Design Edge Distance - Tension	$C_{cr,N,ucr}$	[mm]	1.5 x h_{ef}														

Load Data

Characteristics Resistance

Anchor Diameter			M6		M8		M10			M12			M14			M16	
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Non-Cracked Concrete

N_{Rk}	Tensile	[kN]	4.0	8.0	8.5	12.0	9.5	12.0	20.0	10.0	15.0	20.0	19.0	28.0	30.0	28.0	36.0
V_{Rk}	Shear without lever arm	[kN]	9.3	12.6	16.3	20.3	27.6	31.2	31.2	34.5	45.4	45.4	59.4	63.0	63.0	80.5	82.7

Design Resistance

Anchor Diameter			M6		M8		M10			M12			M14			M16	
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Non-Cracked Concrete

N_{Rd}	Tensile	[kN]	1.6	3.7	3.4	5.6	3.8	5.6	9.3	4.0	6.9	9.3	8.8	13.0	13.9	13.0	16.7
V_{Rd}	Shear without lever arm	[kN]	6.2	8.4	10.87	13.53	18.4	20.8	20.8	23.0	30.27	30.27	39.6	42.0	42.0	53.67	55.13

Recommended Resistance

Anchor Diameter			M6		M8		M10			M12			M14			M16	
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Non-Cracked Concrete

N_{rec}	Tensile	[kN]	1.1	2.6	2.4	4.0	2.7	4.0	6.6	2.9	5.0	6.6	6.3	9.3	9.9	9.3	11.9
V_{rec}	Shear without lever arm	[kN]	4.4	6.0	7.8	9.7	13.1	14.9	14.9	16.4	21.6	21.6	28.3	30.0	30.0	38.3	39.4

Includes Partial Safety Factor $\gamma = 1.4$ in the absence of national regulations and type of loading Data is for Static and Quasi Static Loads for a single anchor

Characteristics Resistance

Anchor Diameter			M6		M8		M10			M12			M14			M16	
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Cracked Concrete

N_{Rk}	Tensile	[kN]	n/a	4.0	2.5	9.0	4.5	9.0	14.0	7.0	12.0	15.0	14.0	21.0	24.0	15.0	24.0
V_{Rk}	Shear without lever arm	[kN]	9.3	12.6	16.3	20.3	27.6	31.2	31.2	34.5	45.4	45.4	59.4	63.0	63.0	80.5	82.7

Design Resistance

Anchor Diameter			M6		M8		M10			M12			M14			M16	
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Cracked Concrete

N_{Rd}	Tensile	[kN]	n/a	1.6	1.2	3.6	2.1	3.6	6.5	3.2	4.8	6.9	6.5	9.7	11.1	6.9	11.1
V_{Rd}	Shear without lever arm	[kN]	6.2	8.4	10.87	13.53	18.4	20.8	20.8	23.0	30.27	30.27	39.6	42.0	42.0	53.67	55.13

Recommended Resistance

Anchor Diameter			M6		M8		M10			M12			M14			M16	
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Cracked Concrete

N_{rec}	Tensile	[kN]	n/a	1.1	0.8	2.6	1.5	2.6	4.6	2.3	3.4	5.0	4.6	6.9	7.9	5.0	7.9
V_{rec}	Shear without lever arm	[kN]	4.4	6.0	7.8	9.7	13.1	14.9	14.9	16.4	21.6	21.6	28.3	30.0	30.0	38.3	39.4

Includes Partial Safety Factor $\gamma = 1.4$ in the absence of national regulations and type of loading Data is for Static and Quasi Static Loads for a single anchor

⁽¹⁾ Not applicable

Increasing Concrete Factors

Anchor Diameter			M6		M8		M10			M12			M14			M16	
Ψ_c C30/37	[-]		1.09	1.00	1.06	1.09	1.09	1.07	1.08	1.06	1.08	1.06	1.07	1.07	1.07	1.09	1.09
Ψ_c C40/45	[-]		1.16	1.18	1.11	1.17	1.11	1.13	1.13	1.11	1.14	1.1	1.11	1.11	1.12	1.14	1.16
Ψ_c C50/60	[-]		1.21	1.25	1.15	1.23	1.14	1.18	1.18	1.15	1.18	1.13	1.15	1.15	1.19	1.19	1.222

When using increasing factors care must be taken not to exceed steel limits

Steel Failure with lever arm

Anchor Diameter			M6	M8	M10	M12	M14	M16
Cracked and Uncracked Concrete								
$M_{Rk,s}^0$	Characteristic Bending Moment	[Nm]	21.3	44.5	98.3	157.8	265.8	404.4
γ_M	Partial Safety Factor	[-]	1.5					

Characteristic resistance under fire exposure in cracked and uncracked concrete C20/25 to C50/60

Anchor Diameter				M6		M8		M10			M12			M14			M16	
Steel failure for tension and shear loads $F_{Rk,s,fi} = N_{Rk,s,fi} = V_{Rk,s,fi}$																		
Characteristic Resistance	$F_{Rk,s,fi}$	R30	[kN]	0.2	0.2	0.4	0.4	-	1.0	1.0	-	2.0	2.0	2.8	2.8	2.8	3.7	3.7
	$F_{Rk,s,fi}$	R60	[kN]	0.2	0.2	0.4	0.4	-	0.9	0.9	-	1.5	1.5	2.1	2.1	2.1	2.8	2.8
	$F_{Rk,s,fi}$	R90	[kN]	0.2	0.2	0.3	0.3	-	0.7	0.7	-	1.3	1.3	1.8	1.8	1.8	2.4	2.4
	$F_{Rk,s,fi}$	R120	[kN]	0.1	0.1	0.2	0.2	-	0.5	0.5	-	1.0	1.0	1.4	1.4	1.4	1.9	1.9
	$M_{Rk,s,fi}^0$	R30	[Nm]	0.2	0.2	0.5	0.5	-	1.4	1.4	-	3.4	3.4	5.6	5.6	5.6	8.5	8.5
	$M_{Rk,s,fi}^0$	R60	[Nm]	0.2	0.2	0.4	0.4	-	1.3	1.3	-	2.6	2.6	4.2	4.2	4.2	6.4	6.4
	$M_{Rk,s,fi}^0$	R90	[Nm]	0.1	0.1	0.3	0.3	-	1.0	1.0	-	2.2	2.2	3.6	3.6	3.6	5.5	5.5
$M_{Rk,s,fi}^0$	R120	[Nm]	0.1	0.1	0.2	0.2	-	0.8	0.8	-	1.7	1.7	2.8	2.8	2.8	4.3	4.3	
Pull out failure																		
Characteristic Resistance	$N_{Rk,s,fi}$	R30 - R90	[kN]	-	1.0	0.6	2.3	1.1	2.3	3.5	1.8	3.0	3.8	3.5	5.3	6.0	3.8	6.0
	$N_{Rk,s,fi}$	R120	[kN]	-	0.8	0.5	1.8	0.9	1.8	2.8	1.4	2.4	3.0	2.8	4.2	4.8	3.0	4.8
Concrete cone failure																		
Characteristic Resistance	$N_{Rk,s,fi}$	R30 - R90	[kN]	0.8	1.9	1.2	2.6	1.4	2.3	5.2	2.2	5.0	7.8	4.8	7.6	11.5	7.3	12.5
	$N_{Rk,s,fi}$	R120	[kN]	0.7	1.5	0.9	2.1	1.1	1.9	4.1	1.7	4.1	6.2	3.7	6.0	9.1	5.8	10.1
Edge Distance																		
R30 to R120	$C_{Cr,fi}$		[mm]	$2 \times h_{ef}$														
Anchor Spacing																		
R30 to R120	$S_{Cr,fi}$		[mm]	$4 \times h_{ef}$														
Pry-out Factor	k_8		[-]	1.0	1.0	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Trutek Impact Sockets available for all diameters

