

TT THROUGHBOLT

Features:

- Through fixing
- Approved for non-cracked concrete
- 2 Embedment depths
- Zinc Plated minimum 5um
- Fire tested class A1 reaction

Benefits:

- Quick and simple installation
- One anchor for concrete from C20/25 to C50/60
- Visible installation check
- Internal and external applications
- Long thread for stand off installation

Load Data

- Concrete C20/25 ($f_{ck,cube} = 25 \text{ N/mm}^2$)
- No Edge and Spacing reductions
- Minimum base material thickness
- Correct installation



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

Certification: European technical assessment 20/0675

Product Range

Product Code	Thread Diameter	Anchor Length	Drill Hole Diameter	Standard Embedment		Reduced Embedment		Fixture Clearance Hole	Thread Length					
				Drill Hole Depth	Maximum Fixture Thickness	Drill Hole Depth	Maximum Fixture Thickness							
	d	L	d _o	h _{nom/std}	t _{fix/std}	h _{nom/red}	t _{fix/red}	d _r	g					
	mm	mm	mm	mm	mm	mm	mm	mm	mm					
TT08050	8	50	8	53	-	43	1	9	15					
TT08065		65			-		10		25					
TT08080		80			15		25		40					
TT08090		90			25		35		50					
TT08100		100			35		45		60					
TT08115		115			50		60		70					
TT08130		130			65		75		90					
TT10065		10			65		10		58	-	48	1	12	20
TT10075	75		1	10	30									
TT10090	90		15	25	45									
TT10105	105		30	40	60									
TT10120	120		45	55	70									
TT10140	140		65	75	70									
TT12080	12		80	12	80	-		60		1		14		30
TT12100			100			-				20				50
TT12120		120	20			40	70							
TT12140		140	40			60	85							
TT12180		180	80			100	95							
TT12200		200	100			120	145							
TT12220		220	120			140	145							
TT12240		240	140			160	145							
TT16105	16	105	16	99	-	79	1	18	45					
TT16125		125			1		20		60					
TT16150		150			25		45		80					
TT16175		175			50		70		100					
TT16200		200			75		95		110					
TT16220		220			95		115		130					
TT16240		240			115		135		150					
TT20130		20			130		20		110	-	90	5	22	60
TT20160	160		15	35	85									
TT20220	220		75	95	130									
TT20240	240		95	115	140									

Installation Data

Anchor Diameter			M8	M10	M12	M16	M20
Effective Anchorage Depth, Standard	h_{eff}	[mm]	45	50	70	85	100
Spacing, Standard Embedment Depth	$s_{cr,N,std}$	[mm]	40	40	85	90	285
Edge Distance, Tensile Standard Embedment Depth	$c_{cr,N,std}$	[mm]	55	60	80	115	150
Edge Distance, Shear, Standard Embedment Depth	$c_{cr,V,std}$	[mm]	70	90	115	195	310
Minimum Concrete Thickness, Standard	h_{min}	[mm]	100	100	140	170	200
Effective Anchorage Depth, Reduced	$h_{eff,red}$	[mm]	35	40	50	65	80
Spacing, Reduced Embedment Depth	$s_{cr,N,red}$	[mm]	95	65	60	170	225
Edge Distance, Tensile, Red. Embedment Depth	$c_{cr,N,red}$	[mm]	50	55	70	90	120
Edge Distance, Shear, Red. Embedment Depth	$c_{cr,V,red}$	[mm]	70	85	120	205	320
Minimum Concrete Thickness, Reduced	$h_{min,red}$	[mm]	100	100	140	170	200
Minimum Spacing	s_{min}	[mm]	35	40	50	65	80
Minimum Edge Distance	c_{min}	[mm]	35	40	50	65	80
Installation Torque	T_{inst}	[Nm]	25	35	60	120	200

For reductions in Spacing and Edge Distance refer to DesignFix for calculations

Standard Embedment

Characteristics Resistance (Non-Cracked concrete)

Anchor Diameter			M8	M10	M12	M16	M20
N_{Rk}		[kN]	9.5	11.0	20.0	26.0	48.0
V_{Rk}		[kN]	9.3	11.6	16.9	31.4	49.0

Design Resistance

Anchor Diameter			M8	M10	M12	M16	M20
N_{Rd}		[kN]	6.3	7.3	13.3	14.4	26.6
V_{Rd}		[kN]	5.8	9.2	13.5	25.1	39.2

Recommended Resistance

Anchor Diameter			M8	M10	M12	M16	M20
N_{rec}		[kN]	4.5	5.2	9.5	10.3	19.0
V_{rec}		[kN]	4.1	6.6	9.6	17.9	28.0

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

Reduced Embedment

Characteristics Resistance (Non-Cracked concrete)

Anchor Diameter			M8	M10	M12	M16	M20
N_{Rk}		[kN]	9.5	9.5	12.0	24.0	34.0
V_{Rk}		[kN]	7.3	12.4	16.9	31.4	49.0

Design Resistance

Anchor Diameter			M8	M10	M12	M16	M20
N_{Rd}		[kN]	6.3	6.3	8.0	13.3	18.8
V_{Rd}		[kN]	5.8	8.3	13.5	25.1	39.2

Recommended Resistance

Anchor Diameter			M8	M10	M12	M16	M20
N_{rec}		[kN]	4.5	4.5	5.7	9.5	13.4
V_{rec}		[kN]	4.1	5.9	9.6	17.9	28.0

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

Increasing Factor

Anchor Diameter			M8	M10	M12	M16	M20
Ψ_c C30/37		[-]			1.22		
Ψ_c C40/50		[-]			1.41		
Ψ_c C50/60		[-]			1.55		

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

Steel Limits

Anchor Diameter			M8	M10	M12	M16	M20
Characteristic Tensile Resistance	$N_{Rk,s}$	[kN]	14.6	23.2	33.7	62.8	98.0
Partial safety factor	$\gamma_{Ms,N}$	[-]	1.5				
Characteristic Shear Resistance	$V_{Rk,s}$	[kN]	7.3	11.6	16.9	31.4	49.0
Characteristic Bending Moment	$M^0_{Rk,s}$	[Nm]	15.0	29.9	52.4	133.2	259.6
Partial Safety Factor	$\gamma_{Ms,V}$	[-]	1.25				

Anchor Materials

Designation	Material	
Bolt	Q195 Cold formed steel $f_{uk} \geq 400$ MPa $f_{yk} \geq 300$ MPa	Zinc plated $\geq 5\mu\text{m}$ EN ISO 4042
Expansion Sleeve		
Washer	DIN 125 or EN ISO 7089	
Hexagon Nut	EN ISO 898-2 carbon steel class 8 / DIN 934 ? AISI 1008	

