

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 19/0276

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
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	

