

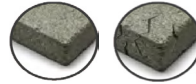
TX & TXSS THROUGHBOLTS

Features:

- Through fixing
- Approved for cracked & 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



Concrete Ranges:	C20/C25 according to EN 206:2013+A1:2016
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Certification:	European technical assessment 20/0933
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Product Range

Product Code		Thread Diameter	Anchor Length	Drill Hole Diameter	Drill Hole Depth	Maximum Fixture Thickness	Fixture Clearance Hole	Thread Length
		d	L	d ₀	h _{nom}	t _{fix}	d _f	g
		mm	mm	mm	mm	mm	mm	mm
TX08060 ⁽¹⁾	-	8	60	8	50	5	9	20
TX08075	TX08075SS		75					35
-	TX08085SS		85					45
TX08095	TX08095SS		95					55
TX08115	TX08115SS		115					70
TX10085	-	10	85	10	70	20	12	45
-	TX10090SS		90					50
TX10105	TX10105SS		105					65
TX10120	TX10120SS		120					70
TX10140	-		140					70
TX12090 ⁽¹⁾	TX12090SS ⁽¹⁾	12	90	12	90	15	14	50
TX12100	TX12100SS		100					60
-	TX12110SS		110					70
TX12125	TX12125SS		125					70
TX12140	TX12140SS		140					70
TX12175	-		175					70
-	TX16090SS ⁽¹⁾	16	90	16	80	0	18	40
TX16115 ⁽¹⁾	TX16115SS ⁽¹⁾		115					65
-	TX16145SS		145					70
TX16150	-		150					70
-	TX16175SS		175					70

⁽¹⁾ Not included in ETA

Installation Data

Anchor Diameter			M8	M10	M12	M16
Nominal Anchorage Depth	h_{nom}	[mm]	55	60	80	100
Effective Anchorage Depth	h_{eff}	[mm]	41	45	62	88
Minimum Concrete Thickness	h_{min}	[mm]	100	120	140	160
Characteristic Spacing	$S_{cr,N}$	[mm]	125	135	185	265
Characteristic Edge Distance - Tension	$C_{cr,N}$	[mm]	63	68	93	133
Characteristic Edge Distance - Shear - ZP	Uncracked Concrete	$C_{cr,V,ucr}$	75	95	120	190
Characteristic Edge Distance - Shear - SS		$C_{cr,V,ucr}$	90	95	255	395
Characteristic Edge Distance - Shear - ZP	Cracked Concrete	$C_{cr,V,cr}$	90	95	170	170
Characteristic Edge Distance - Shear - SS		$C_{cr,V,cr}$	90	95	275	315
Minimum Spacing	s_{min}	[mm]	45	60	70	60
Minimum Edge Distance	c_{min}	[mm]	45	70	85	70
Torque moment	T_{inst}	[Nm]	15	25	65	110

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

Load Data

TX Carbon Steel Anchors

Characteristics Resistance

Anchor Diameter			M8	M10	M12	M16
Non-Cracked Concrete						
N_{rk}	Tension	[kN]	12.9	11.0	18.0	25.0
V_{rk}	Shear	[kN]	9.6	14.8	21.3	36.9
Cracked Concrete						
N_{rk}	Tension	[kN]	4.0	6.0	8.0	18.0
V_{rk}	Shear	[kN]	9.0	10.4	21.3	36.9

Design Resistance

Anchor Diameter			M8	M10	M12	M16
Non-Cracked Concrete						
N_{Rd}	Tension	[kN]	8.6	7.3	12.0	16.6
V_{Rd}	Shear	[kN]	6.4	9.9	14.2	24.6
Cracked Concrete						
N_{Rd}	Tension	[kN]	2.6	4.0	5.3	12.0
V_{Rd}	Shear	[kN]	6.0	6.9	14.2	24.6

Recommended Resistance

Anchor Diameter			M8	M10	M12	M16
Non-Cracked Concrete						
N_{rec}	Tension	[kN]	6.1	5.2	8.6	11.9
V_{rec}	Shear	[kN]	4.3	5.0	10.1	17.6
Cracked Concrete						
N_{rec}	Tension	[kN]	1.9	2.9	3.8	8.6
V_{rec}	Shear	[kN]	4.3	5.0	10.1	17.6

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			M8	M10	M12	M16
Non-Cracked Concrete						
N _{Rk}	Tension	[kN]	12.9	11.0	18.0	25.0
V _{Rk}	Shear	[kN]	12.9	14.8	48.0	70.5
Cracked Concrete						
N _{Rk}	Tension	[kN]	4.0	6.0	8.0	18.0
V _{Rk}	Shear	[kN]	9.0	10.4	33.6	56.8

Design Resistance

Anchor Diameter			M8	M10	M12	M16
Non-Cracked Concrete						
N _{Rd}	Tension	[kN]	8.6	7.3	12.0	16.6
V _{Rd}	Shear	[kN]	8.6	9.9	32.0	47.0
Cracked Concrete						
N _{Rd}	Tension	[kN]	2.6	4.0	5.3	12.0
V _{Rd}	Shear	[kN]	6.0	6.9	22.4	37.9

Recommended Resistance

Anchor Diameter			M8	M10	M12	M16
Non-Cracked Concrete						
N _{rec}	Tension	[kN]	6.1	5.2	8.6	11.9
V _{rec}	Shear	[kN]	6.1	7.0	22.9	33.6
Cracked Concrete						
N _{rec}	Tension	[kN]	4.4	3.7	6.1	8.5
V _{rec}	Shear	[kN]	4.3	5.0	16.0	27.0

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 Concrete Factors

Anchor Diameter			M8	M10	M12	M16
Ψ_c C30/37	Increasing factor for N _{Rk,p}	[-]	1.00	1.08	1.22	1.21
Ψ_c C40/50		[-]	1.00	1.14	1.41	1.39
Ψ_c C50/60		[-]	1.00	1.20	1.58	1.55

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

Steel Limits

Steel limits				M8	M10	M12	M16
N _{Rk,s}	Characteristic Tensile Failure	TX	[kN]	15.0	22.0	45.0	68.0
		TX SS	[kN]	15.0	25.0	47.0	79.0
VMsN	Partial Safety Factor	TX	[-]	1.4			
		TX SS	[-]	1.4			
V _{Rk,s}	Characteristic Shear Failure	TX	[kN]	9.6	15.4	21.3	37.0
		TX SS	[kN]	18.7	28.1	52	70.6
M ⁰ _{Rk,s}	Characteristic Bending Moment	TX	[Nm]	25.0	51.0	92.0	200.0
		TX SS	[Nm]	26.0	52.0	95.0	233.0
VMsV	Partial Safety Factor	TX	[-]	1.5			
		TX SS	[-]	1.5			

Characteristic Tensile Resistance for Fire Loads

Anchor Diameter		M8	M10	M12	M16	
TX						
NRk,s,f,30	Duration = 30 minutes	[kN]	0.22	0.48	1.33	2.26
NRk,s,f,60	Duration = 60 minutes	[kN]	0.20	0.42	1.00	1.70
NRk,s,f,90	Duration = 90 minutes	[kN]	1.15	0.32	0.86	1.47
NRk,s,f,120	Duration = 120 minutes	[kN]	0.11	0.26	0.66	1.13
TX SS						
NRk,s,f,30	Duration = 30 minutes	[kN]	0.44	0.81	2.00	3.39
NRk,s,f,60	Duration = 60 minutes	[kN]	0.35	0.65	1.33	2.26
NRk,s,f,90	Duration = 90 minutes	[kN]	0.26	0.52	1.07	1.81
NRk,s,f,120	Duration = 120 minutes	[kN]	0.22	0.31	0.93	1.58

For fire exposure cracked concrete is usually assumed in the absence of other national regulations the partial safety for resistance under fire exposure = 1.0

Anchor Materials

Designation	Material	
	TX	TX SS
Bolt	Zinc plated steel. Thickness of zinc plating $\geq 5\mu\text{m}$	Stainless steel
Expansion Sleeve	Zinc plated steel. Thickness of zinc plating $\geq 5\mu\text{m}$	Carbon steel with Zn-Ni coating
Washer	Zinc plated steel acc. To DIN / EN ISO 7089 DIN 9021 / EN ISO 7093 or DIN 440 / EN ISO 7094	Stainless steel acc to DIN / EN ISO 7089 DIN 9021 / EN ISO 7093 or DIN 440 / EN ISO 7094
Hexagon Nut	Zinc plated steel acc. to DIN934	Stainless steel acc. DIN 934

