

# TOGE TSM B

## Adhesive screw anchor for fastening crash barriers

### High loads

High load bearing capacity in cracked and non-cracked concrete.

### Frost proof

Borehole sealing by the composite mortar prevents water penetration and frost damage in winter.



### Fast and safe installation

The optimized thread enables a quick and safe installation process.

### Immediately loadable

Immediately loadable without observing the curing time for the composite mortar.

### Special thread

Load transmission via undercut.

## Approval

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General type approval / General technical approval Z-21.1-1799.



### Base Materials

Application in cracked and non-cracked concrete of strength classes from C20/25 to C50/60.



## Headshapes & Materials

Steel,  
zinc-plated

Steel,  
anti-corrosion-  
coated

Steel,  
stainless A4



TSM B 14 M16 x 35 SW 12



TOGE KORR



TSM B 16 M18 x 45 SW 13



TOGE KORR



Injection mortar and  
accessories

## Application Examples



Fastening of crash barrier systems

## Single fastening without fire exposure, TSM B according Z-21.1-1799

Screw size TSM B			TSM B 14			TSM B 16				
			Embedment depth		$h_{ef,1}$	$h_{ef,2}$	$h_{ef,3}$	$h_{ef,1}$	$h_{ef,2}$	$h_{ef,3}$
			$h_{ef}$	[mm]	100	110	125	100	130	160
Diameter of drill bit	$d_o$	[mm]	12			14				
Depth of drill hole	$h_o$ min	[mm]	100	110	125	100	130	160		
Effective anchorage depth	$h_{ef}$	[mm]	100	110	125	100	130	160		
Diameter of clearance hole in the fixture	$d_f$ max	[mm]	18			20				
Diameter of the brush	$d_b$ max	[mm]	15			18				
Approved tension load in cracked concrete <sup>1) 2)</sup>	$N_{zul}$	[kN]	16,4	19,0	22,9	18,9	24,3	33,2		
Approved shear load in cracked concrete <sup>1) 2)</sup>	$V_{zul}$	[kN]	16,4	19,0	22,9	18,9	24,3	33,2		
Approved tension load in non-cracked concrete <sup>1) 2)</sup>	$N_{zul}$	[kN]	23,4	27,0	32,1	27,0	34,7	39,2		
Approved shear load in non-cracked concrete <sup>1) 2)</sup>	$V_{zul}$	[kN]	23,4	27,0	32,7	27,0	34,7	47,4		
Approved bending resistance	$M_{zul}$	[kN]	114,3			141,1				
Minimum edge distance	$C_{min}$	[mm]	60			70				
Minimum spacing	$S_{min}$	[mm]	60			70				
Minimum base material thickness	$h_{min}$	[mm]	170	180	195	170	200	230		
Installation torque	$T_{inst}$	[Nm]	80			100				
Max. torque (with impact screw driver)		[Nm]	650			650				

<sup>1)</sup> For the determination of the allowable load, the partial safety factor from the approval  $\gamma_M=1.5$  was taken into account for material resistance and a partial safety factor  $\gamma_F=1.4$  for load actions.

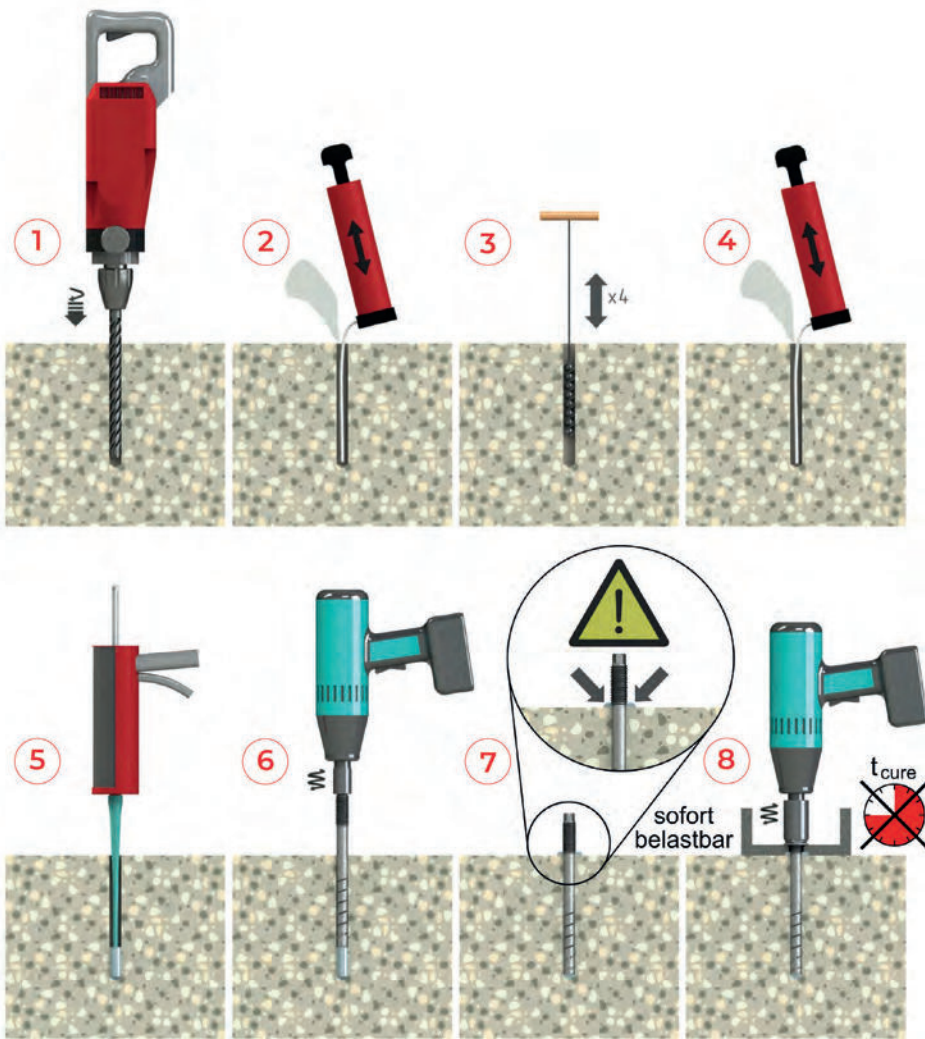
<sup>2)</sup> These values apply without the influence of the spacing and edge distances.

## Single fastening under fire exposure TSM B according Z-21.1-1799

Screw size TSM B		TSM B 14			TSM B 16		
Embedment depth	$h_{ef}$ [mm]	$h_{ef,1}$	$h_{ef,2}$	$h_{ef,3}$	$h_{ef,1}$	$h_{ef,2}$	$h_{ef,3}$
		100	110	125	100	130	160
Approved load under tensile and shear use ( $F_{zul} = N_{zul,fi} = V_{zul,fi}$ )							
Fire resistance class							
R30	Approved load	$F_{zul, fi30}$ [kN]	9,8		13,9		
R60		$F_{zul, fi60}$ [kN]	8,1		11,0		
R90		$F_{zul, fi90}$ [kN]	5,9		8,0		
R120		$F_{zul, fi120}$ [kN]	4,8		6,5		
R30		$M_{zul, fi30}$ [kN]	18,8		30,9		
R60		$M_{zul, fi60}$ [kN]	15,6		24,4		
R90		$M_{zul, fi90}$ [kN]	11,3		17,8		
R120		$M_{zul, fi120}$ [kN]	9,2		14,4		
Edge distance							
R30 to R120	$C_{cr,fi}$ [mm]	$2 \times h_{ef}$					
The edge distance must be at least 300 mm, if the fire load attacks from more than one side.							
Spacing							
R30 to R120	$S_{cr,fi}$ [mm]	$4 \times h_{ef}$					
Concrete pry-out failure							
R30 to R120	k [-]	2,0					
For wet concrete, increase the anchorage depth by at least 30 mm.							

<sup>1)</sup> For the determination of the allowable load, the partial safety factor from the approval  $\gamma_M=1.0$  was taken into account for material resistance and a partial safety factor  $\gamma_F=1.0$  for load actions.

# Installation Instructions



- 1) Create borehole.
- 2) Clean the borehole thoroughly.
- 3) Brush the borehole 4x.
- 4) Thoroughly clean the borehole again.
- 5) Discard three full strokes of composite mortar – then inject composite mortar.
- 6) Screw in concrete screw.
- 7) After reaching the embedment depth, the composite mortar must emerge at the concrete surface.
- 8) The attachment can be installed immediately – there is no need to observe the curing time of the composite mortar.