

TOGE TSM BS

For new in-situ concrete construction on road bridges

Approval

Approved by building authorities as shear-connector.

Impermeability

Verification of the impermeability of the system without or after alternating load.



Installation

Fast and safe installation.

Force Transmission

Transmission of forces in existing concrete by the undercutting technique in combination with chemical mortar.

Force transmission in new concrete via shear studs (hexagonal head or shear stud washer).

Approval

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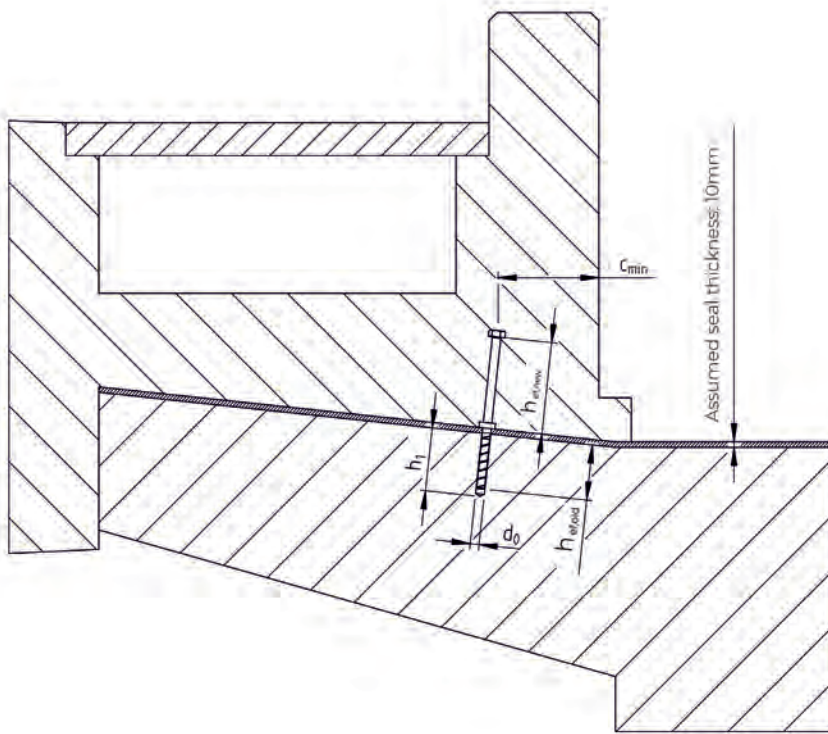
General type approval / General technical approval Z-21.1-1799.

General type approval / General technical approval Z-21.1-1880.

Base Material

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





Anchoring in the superstructure for new in-situ concrete construction Cap anchor TSM BS

Anchor size			TSM BS 16		TSM BS 22
	L	[mm]	230	275	290
Screw length	L	[mm]	230	275	290
Nominal diameter of drill bit	d_0	[mm]	16		22
Depth of drill hole	$h_0 \geq$	[mm]	110		110
Effective anchorage depth	$h_{nom} = h_{ef} \geq$	[mm]	100		100
Minimum edge distance	$C_{min} \geq$	[mm]	70		80
Minimum spacing	$S_{min} \geq$	[mm]	70		80
Minimum base material thickness	$h_{min,alt} \geq$	[mm]	$h_{nom} + 70$		$h_{nom} + 80$
Hexagonal drive	SW	[mm]	27		17
Design value of tension load in cracked and non-cracked concrete C20/25 ^{1) 2)}	$N_{Rd,c} \geq$	[kN]	26,5		26,5
Design value of shear force for steel failure without lever arm ^{1) 2)}	V_{Rds}	[kN]	76,8		85,6
Design value of shear force for steel failure with lever arm ^{1) 2) 3)}	$V_{Rds,M} \leq$	[kN]	46,3		77,9
Nominal torque of tangential screwdriver		[Nm]	≤ 650		≤ 1000

¹⁾ For the determination of the design values, the partial safety factor from the approval was taken into account on the resistance side.

²⁾ The specified values apply regardless of center distances and edge distances.

³⁾ For the determination of the shear force with lever arm bituminous waterproofing membrane of 8mm was applied.

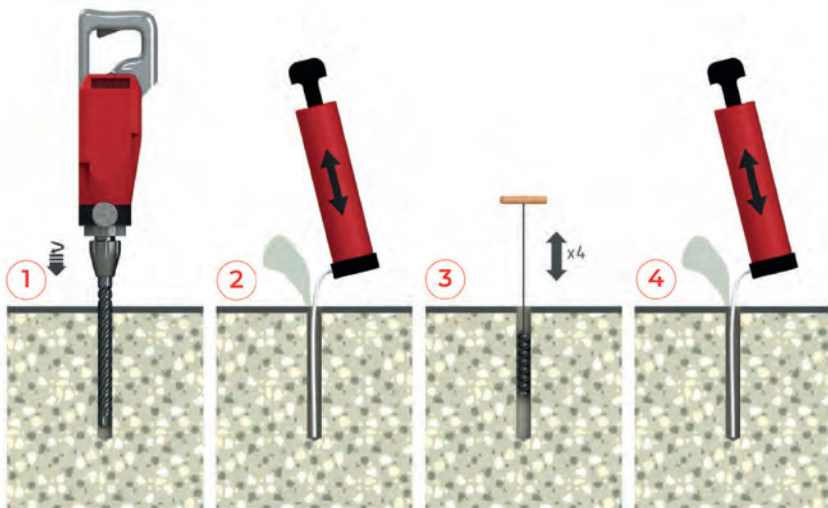
Anchoring in the cap for new in-situ concrete construction Cap anchor TSM BS

Anchor size			TSM BS 16		TSM BS 22
	L	[mm]	230	275	290
Screw length					
Effective anchorage depth	$h_{ef,new}$	[mm]	40 - 205		
Minimum edge distance	$C_{min} \geq$	[mm]	$1,5 \times h_{ef,new}$		
Minimum spacing	$S_{min} \geq$	[mm]	$3 \times h_{ef,new}$		
Minimum base material thickness	$h_{min,new} \geq$	[mm]	$h_{ef,new} + \text{Concrete Cover}$		
Hexagonal drive	SW	[mm]	27		17
Diameter head bolt	d2	[mm]	27		36
Design value of tension load in cracked and non-cracked concrete C20/25 ^{1) 2)}	$N_{Rd,c} \geq$	[kN]	6,7		6,7
Design value of shear force for steel failure without lever arm ^{1) 2)}	$V_{Rd,s}$	[kN]	64,0		71,3
Design value of shear force for steel failure with lever arm ^{1) 2) 3)}	$V_{Rd,sM} \leq$	[kN]	38,6		64,9

¹⁾ For the determination of the design values, the partial safety factor from the approval was taken into account on the resistance side.

²⁾ The specified values apply regardless of center distances and edge distances.

³⁾ For the determination of the shear force with lever arm bituminous waterproofing membrane of 8mm was applied.



- 1) Create borehole diameter.
- 2) Thoroughly blow out the borehole.
- 3) Brush the borehole 4x.
- 4) Thoroughly clean borehole again.
- 5) Discard three full strokes of composite mortar – then inject composite mortar.
- 6) Screw in concrete screw.
- 7) After reaching the screw-in depth, the composite mortar must emerge at the concrete surface.

