

# TOGE TSM L

## Concrete screw for interior and drywall construction

### Fast Installation

A small drilling diameter of just 6 mm ensures fast and easy drilling progress – even in high-strength concrete.

### No more reinforcement hits

The low embedment depths of 25 mm and 35 mm allow particularly user-friendly processing completely WITHOUT reinforcement hits.

### Particularly near the edge

Small edge distances and spacing allow very closed-edge and closely spaced installation.



### Easily demountable

If required, the TOGE TSM L can be quickly and easily demounted again. This means that drywalls can be removed and reinstalled afterwards.

### Easy Installation

The patented special thread of the TOGE TSM L allows installation with a standard cordless screwdriver without the need for additional special tools.

### Variable load absorption

Two different embedment depths of 25 mm or 35 mm allow variable load absorption – tailored to your individual application requirements.

## Approval

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European technical assesment ETA-15/0055.

### Basements

Approved for concrete strength classes from C20/25 bis C50/60.

Cracked and non-cracked concrete.



R 30 - R 120



# Technical characteristics

## Multiple fastening without fire exposure, Steel

Screw size TSM L			6	
Nominal embedment depth	h <sub>nom</sub>	[mm]	h <sub>nom,1</sub>	h <sub>nom,2</sub>
			25	35
Nominal diameter of drill bit	d <sub>0</sub>	[mm]	6	
Depth of drill hole	h <sub>1 min</sub>	[mm]	28	38
Effective anchorage depth	h <sub>ef</sub>	[mm]	19	27
Diameter of clearance hole in the fixture	d <sub>f max</sub>	[mm]	8	
Approved tension load in cracked concrete <sup>1) 2)</sup>	N <sub>zul</sub>	[kN]	0,4	1,0
Approved shear load in cracked concrete <sup>1) 2)</sup>	V <sub>zul</sub>	[kN]	1,4	2,3
Approved tension load in non-cracked concrete <sup>1) 2)</sup>	N <sub>zul</sub>	[kN]	1,0	1,9
Approved shear load in non-cracked concrete <sup>1) 2)</sup>	V <sub>zul</sub>	[kN]	1,9	3,3
Approved bending resistance	M <sub>zul</sub>	[kN]	6,3	
Minimum edge distance	C <sub>min</sub>	[mm]	30	
Minimum spacing	S <sub>min</sub>	[mm]	30	
Minimum base material thickness	h <sub>min</sub>	[mm]	80	
Installation torque (with metric connection thread)	T <sub>inst</sub>	[Nm]	10	

<sup>1)</sup> For the determination of the approved loads, 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 influence of the space and edge distancing.

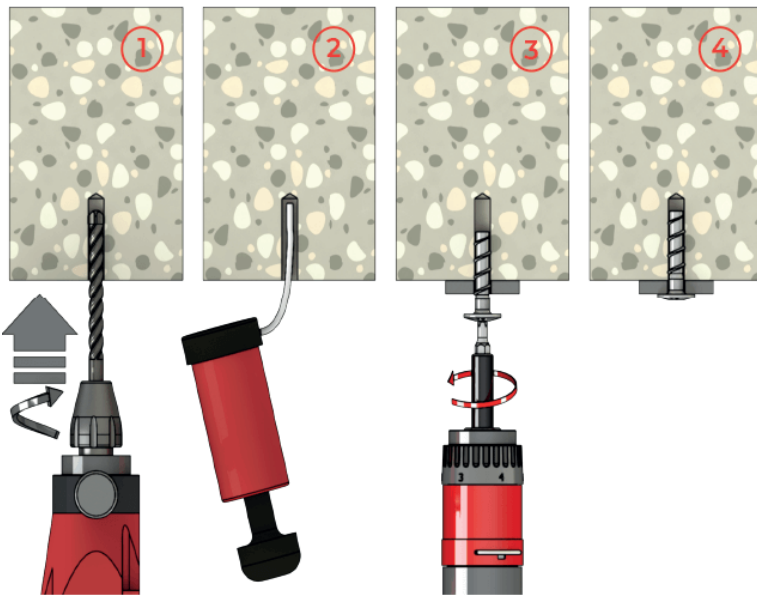
## Multiple fastening under fire exposure, Steel

Screw size TSM L			6		
Nominal embedment depth	h <sub>nom</sub>	[mm]	h <sub>nom,1</sub>	h <sub>nom,2</sub>	
			25	35	
Approved load under tensile and shear use ( $F_{zul,fi} = N_{zul,fi} = V_{zul,fi}$ ) <sup>1) 2)</sup>					
Fire resistance class					
R 30	Approved load	F <sub>zul,fi 30</sub>	[kN]	0,23	0,27
R 60		F <sub>zul,fi 60</sub>	[kN]	0,23	0,27
R 90		F <sub>zul,fi 90</sub>	[kN]	0,22	
R 120		F <sub>zul,fi 120</sub>	[kN]	0,17	
R 30		M <sub>zul,fi 30</sub>	[Nm]	0,22	
R 60		M <sub>zul,fi 60</sub>	[Nm]	0,22	
R 90		M <sub>zul,fi 90</sub>	[Nm]	0,18	
R 120		M <sub>zul,fi 120</sub>	[Nm]	0,14	
Fire resistance class					
R 30 to R 120	C <sub>cr,fi</sub>	[mm]	2 x h <sub>ef</sub>		
The edge distance must be at least 300 mm if the fire load attacks from more than one side.					
Spacing					
R 30 to R 120	S <sub>cr,fi</sub>	[mm]	4 x h <sub>ef</sub>		
Concrete pry-out failure					
R 30 to R 120	k	[-]	1,0		
In wet concrete, the embedment depth must be increased by at least 30 mm.					

<sup>1)</sup> For the determination of the approved loads, 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.

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

## Installation Instructions



- 1) Create borehole.
- 2) Thoroughly clean borehole.
- 3) Screw in the TOGE TSM L with a standrd cordless screwdriver - without special tools.
- 4) The screwhead must rest completely on the attachment.