

# TOGE TSM Multiground

## Female threaded screw for various substrates

### Easy Installation

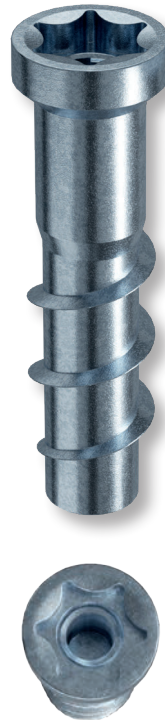
Easy, fast and safe installation with a impact screwdriver. This makes overhead work in particular much easier.

### Flush with surface

The flush surface installation results in a clean installation appearance without any interfering elements.

### Internal thread

The practical internal thread enables use for a wide range of applications.



### Demountable

If required, the TOGE TSM Multiground can be quickly and easily dismantled.

### High load values

The special thread geometry ensures secure hold and high loads in concrete.

### Small edge distances

Small edge distances and spacing allow particularly close-edge and closely spaced installation.

## Approval

### Approval

European technical assessment ETA-23/0542.

### Base Material

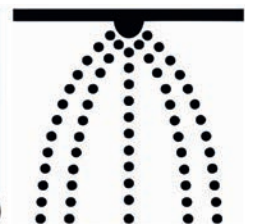
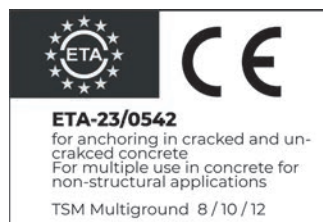
Approved for concrete strength classes from C20/25 to C50/60.

Cracked and non-cracked concrete.

Suitable for masonry, aerated concrete and wood.

### Material

Steel, zinc-plated.



# Headshapes & Materials



Female thread M6, M8, M10

Steel,  
zinc-plated



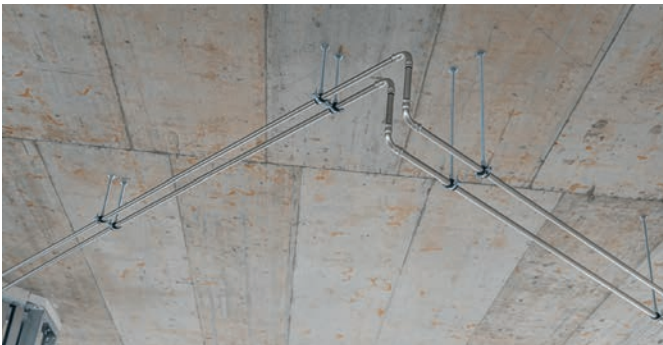
Steel, zinc  
flake-coated

Stainless steel  
A4

## Application Examples



Fastening of cable ducts



Fastening of piping



Detail: TSM Multiground with threaded rod and pipe clamp



Fastening of ceiling suspension of any kind

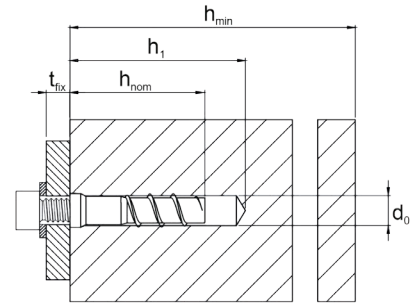
# Product Overview

## Steel - zinc-plated

Version with female thread



Size	Ø Female thread
8	M6
10	M8
12	M10



Item nr.	Designation	Depth of drill hole $h_1$	Embedment depth $h_{nom}$	Length female thread $L_{Gew}$	Packing Unit
345 008 040	TSM M 8x40 IM6x10 VZ50	50mm	40mm	10 mm	100
345 010 040	TSM M 10x40 IM8x10 VZ55	50mm	40mm	10 mm	100
345 012 040	TSM M 12x40 IM10x10 VZ60	50mm	40mm	10 mm	100

## Multiple fastening without fire exposure, Steel

Screw size TSM M			TSM 8 M	TSM 10 M	TSM 12 M
Nominal embedment depth	$h_{nom}$	[mm]	40	40	40
Nominal diameter of drill bit	$d_0$	[mm]	8	10	12
Depth of drill hole	$h_1$ min	[mm]	50	50	50
Effective anchorage depth	$h_{ef}$	[mm]	31	31	30
Diameter of clearance hole in the fixture	$d_f$ max	[mm]	7	9	12
Minimum edge distance	$C_{min}$	[mm]	40	40	40
Minimum spacing	$S_{min}$	[mm]	30	40	40
Minimum base material thickness	$h_{min}$	[mm]	80	80	80
Installation torque (for metrical thread)	$T_{inst}$	[Nm]	4	8	15
Minimum screw-in depth metrical thread		[mm]	8	8	8
Maximum torque (with impact screwdriver)		[Nm]	180	180	180
<b>Permissible load for metrical thread of tension class 4.8</b>					
Permissible tension load in cracked concrete <sup>1) 3)</sup>	$N_{per}$	4.8 [kN]	2,6	2,8	1,8
Permissible shear load in cracked concrete <sup>2) 3)</sup>	$V_{per}$	4.8 [kN]	2,3	2,8	2,3
Permissible tension load in uncracked concrete <sup>1) 3)</sup>	$N_{per}$	4.8 [kN]	3,1	3,8	2,2
Permissible shear load in uncracked concrete <sup>2) 3)</sup>	$V_{per}$	4.8 [kN]	2,3	4,0	3,2
Permissible bending moment <sup>2) 3)</sup>	$M_{per}$	4.8 [kN]	2,9	7,1	13,7
<b>Permissible load for metrical thread of tension class 5.8</b>					
Permissible tension load in cracked concrete <sup>1) 3)</sup>	$N_{per}$	5.8 [kN]	2,6	2,8	1,8
Permissible shear load in cracked concrete <sup>2) 3)</sup>	$V_{per}$	5.8 [kN]	2,8	2,8	2,3
Permissible tension load in uncracked concrete <sup>1) 3)</sup>	$N_{per}$	5.8 [kN]	3,1	3,8	2,2
Permissible shear load in uncracked concrete <sup>2) 3)</sup>	$V_{per}$	5.8 [kN]	2,9	4,0	3,2
Permissible bending moment <sup>2) 3)</sup>	$M_{per}$	5.8 [kN]	3,6	8,8	13,7
<b>Permissible load for metrical thread of tension class 8.8</b>					
Permissible tension load in cracked concrete <sup>1) 3)</sup>	$N_{zul}$	8.8 [kN]	2,6	2,8	1,8
Permissible shear load in cracked concrete <sup>2) 3)</sup>	$V_{zul}$	8.8 [kN]	2,8	2,8	2,3
Permissible tension load in uncracked concrete <sup>1) 3)</sup>	$N_{zul}$	8.8 [kN]	3,1	3,8	2,2
Permissible shear load in uncracked concrete <sup>2) 3)</sup>	$V_{zul}$	8.8 [kN]	3,4	4,0	3,2
Permissible bending moment <sup>2) 3)</sup>	$M_{zul}$	8.8 [kN]	5,0	8,8	13,7

<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 of  $\gamma_F=1,4$  for load actions.

<sup>2)</sup> For the determination of the approved loads, the partial safety factor from the approval  $\gamma_M=1,25$  was taken into account for material resistance and a partial safety factor of  $\gamma_F=1,4$  for load actions.

<sup>3)</sup> These values apply without influence of the spacing and edge distances.

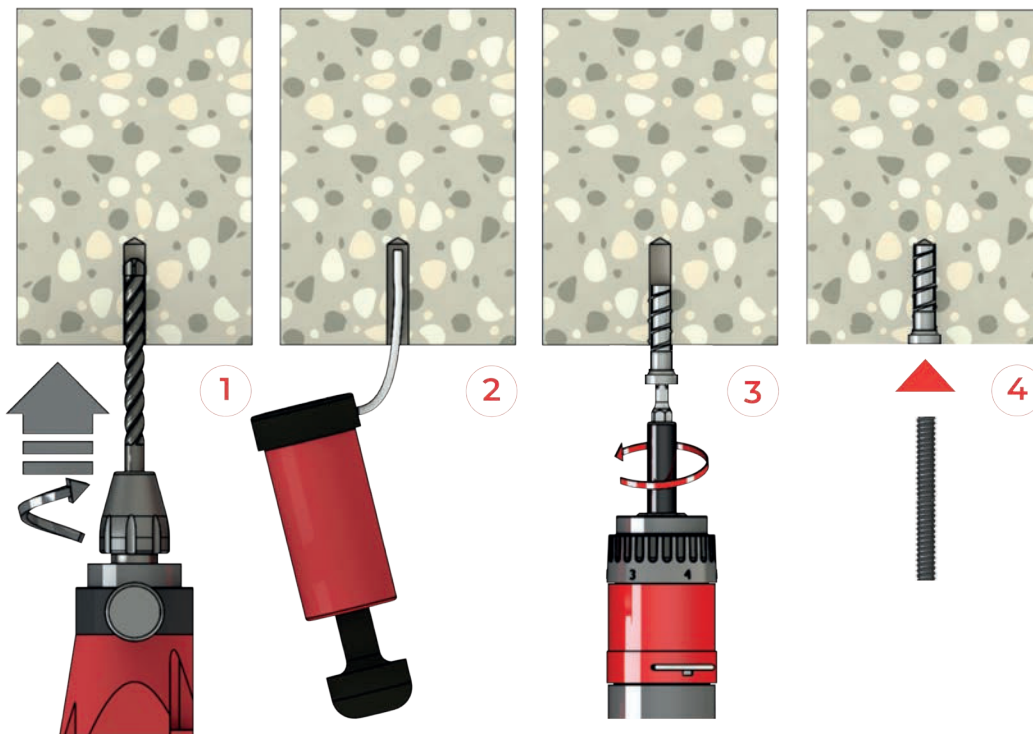
## Multiple fastening under fire exposure, Steel

Screw size TSM M			TSM 8 M	TSM 10 M	TSM 12 M
Nominal embedment depth		$h_{nom}$ [mm]	40	40	40
Permissible load under tensile and shear use ( $F_{per,fi} = N_{per,fi} = V_{per,fi}$ ) <sup>1) 2)</sup>					
Fire resistance class					
R 30	Approved load	$F_{per,fi 30}$ [kN]	0,9	0,9	0,8
R 60		$F_{per,fi 60}$ [kN]	0,9	0,9	0,8
R 90		$F_{per,fi 90}$ [kN]	0,9	0,9	0,8
R 120		$F_{per,fi 120}$ [kN]	0,7	0,7	0,7
R 30		$M_{per,fi 30}$ [Nm]	0,63	1,81	4,28
R 60		$M_{per,fi 60}$ [Nm]	0,49	1,36	3,12
R 90		$M_{per,fi 90}$ [Nm]	0,34	0,91	1,97
R 120		$M_{per,fi 120}$ [Nm]	0,27	0,68	1,39
Edge distance					
R 30 to R 120		$C_{cr,fi}$ [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					
R 30 to R 120		$S_{cr,fi}$ [mm]	$4 \times h_{ef}$		
Concrete pry-out failure					
R 30 to R 120		k	[-]		
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 of  $\gamma_F=1,0$  for load actions.

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

## Installation Instruction



- 1) Create drill hole with hammerdrill or hollow drill bit.
- 2) Thoroughly clean drill hole.
- 3) Screw in TOGE TSM Multiground with impact screwdriver or wrench.
- 4) Screw must be screwed in flush with the surface of the concrete. The attachment part is fastened with a standard metric screw or threaded rod. The tightening torque of the metric thread must be observed.