

# TOGE TSM BC

## Shear-Connector

Fast and economical solution for the rehabilitation of structures



### Authorized approval

Approved by building authorities as shear-connector.

### Accessories

Hole corrugation disc optionally serves to support or tie the rebars.

### Fast and safe installation

The optimized thread enables a fast and easy installation process.

### Force Transmission

Transmission of forces in existing concrete by undercutting technique.

Transmission of forces in the new concrete via shear studs.

## Approval

### Approval

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

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

European technical assessment ETA 15/0514, single fastening.

### Base Material

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



## Headshapes & Material

Steel,  
blank

Stahl,  
anti-corrosion  
coated

Steel,  
stainless A4



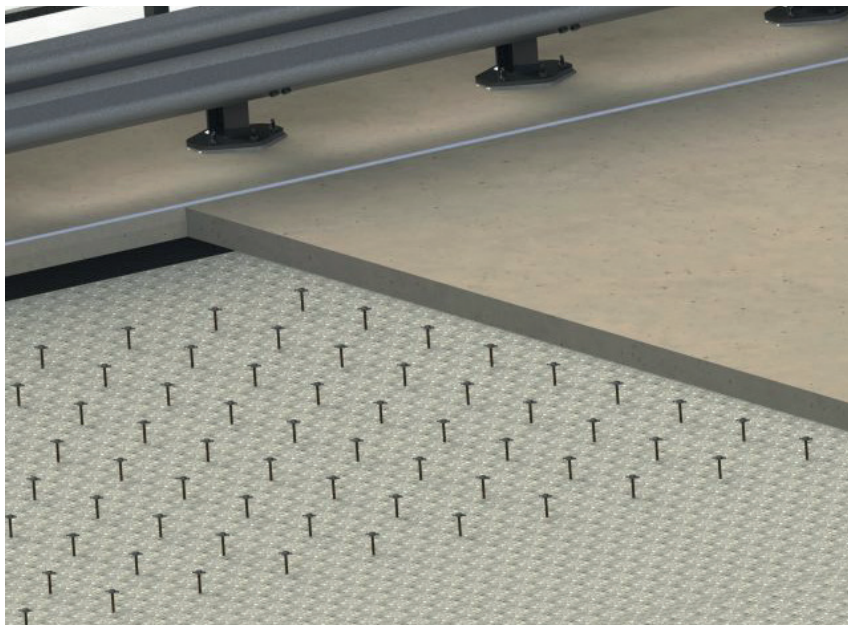
Shear-Connector  
TSM BC



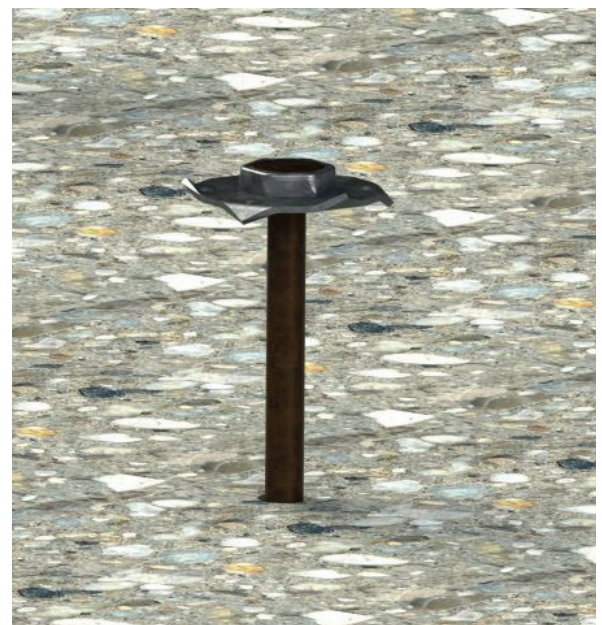
Hole corrugating disc  
(optional)



## Application Examples



Shear-connector under the asphalt surface



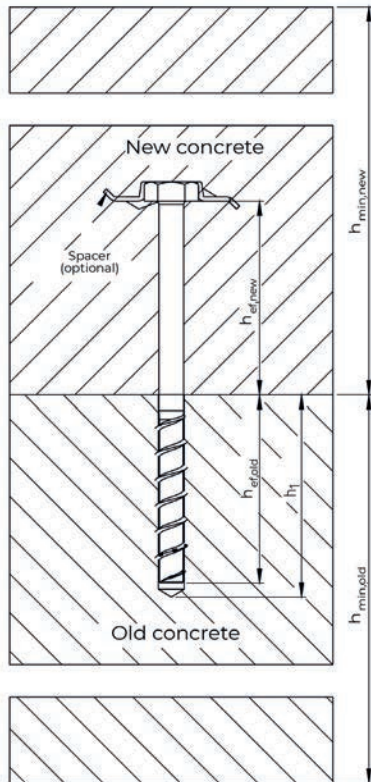
Detail

# Product Overview

## Steel - blank



Item nr.	Designation	Depth of drill hole $h_o$	Embedment depth of anchor $h_{nom}$	Max. thickness of fixture $t_{fix}$	Packing Unit
742 121 500	TSM BC 12x155 SW22 AB	110 mm	100 mm	-	25
742 121 800	TSM BC 12x180 SW22 AB	110 mm	100 mm	-	25
742 121 802	TSM BC AB disc (optional)	-	-	-	25



## Processing in existing concrete

Ankergröße			TSM BC 12
Nominal diameter of drill bit	$d_0$	[mm]	12
Depth of drill hole	$h_1 \geq$	[mm]	110
Embedment depth of anchor	$h_{nom}$	[mm]	100
Effective anchorage depth	$h_{ef} \geq$	[mm]	80
Minimum edge distance	$C_{min} \geq$	[mm]	80
Minimum spacing	$S_{min} \geq$	[mm]	80
Minimum base material thickness	$h_{min} \geq$	[mm]	150
Characteristic edge distance	$C_{cr,N}$	[mm]	120
Characteristic spacing	$S_{cr,N}$	[mm]	240
Design value of tension load in cracked concrete C 20/25 <sup>1) 3)</sup>	$N_{Rd}$	[kN]	17,2
Design value of tension load in non-cracked concrete C 20/25 <sup>1) 3)</sup>	$N_{Rd}$	[kN]	23,9
Design value of shear load in cracked and non-cracked concrete C 20/25 bis C 50/60 <sup>1) 3)</sup>	$V_{Rd}$	[kN]	28,0
Permissible tension load in cracked concrete C 20/25 <sup>2) 3)</sup>	$N_{per}$	[kN]	12,3
Permissible tension load in non-cracked concrete C 20/25 <sup>2) 3)</sup>	$N_{per}$	[kN]	17,1
Permissible shear load in cracked and non-cracked concrete C 20/25 bis C 50/60 <sup>2) 3)</sup>	$V_{per}$	[kN]	20,0

<sup>1)</sup> For the determination of the design value the partial safety factor from the approval  $\gamma_M = 1,5$  was considered.

<sup>2)</sup> For the determination of the load action the partial safety factor from the approval  $\gamma_M = 1,5$  for material resistance and  $\gamma_F = 1,4$  for load actions were considered.

<sup>3)</sup> The specified values apply regardless of center distances and edge distances.

## Processing in new concrete

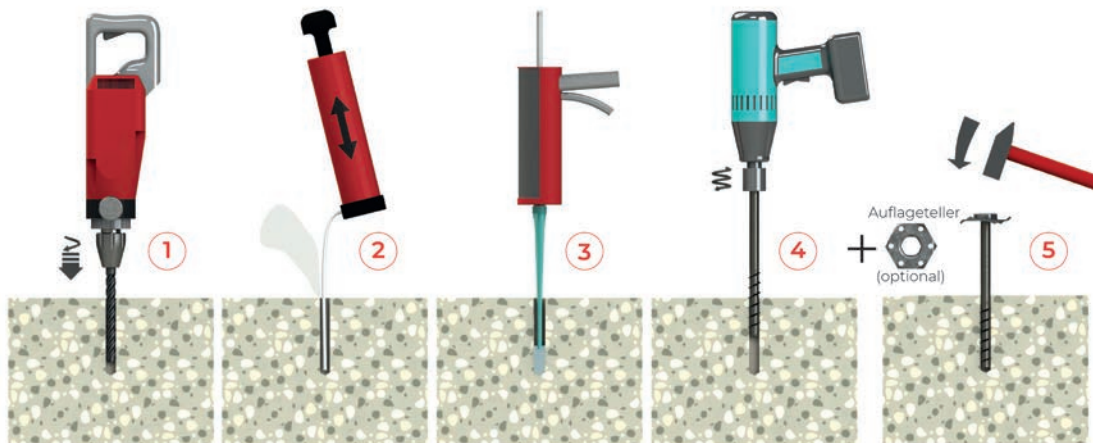
Ankergröße			TSM BC 12
Effective anchorage depth	$h_{ef, new}$	[mm]	40 - 120
Minimum edge distance	$C_{min} \geq$	[mm]	$0,5 \times h_{ef, new}$
Minimum spacing	$S_{min} \geq$	[mm]	80
Minimum base material thickness	$h_{min}$	[mm]	$h_{ef} + \text{concrete cover}$
Characteristic edge distance	$C_{cr, N}$	[mm]	$1,5 \times h_{ef, new}$
Characteristic spacing	$S_{cr, N}$	[mm]	$3 \times h_{ef, new}$
Design value of tension load in cracked concrete C 20/25 <sup>1) 3)</sup>	$N_{Rd, min}$	[kN]	7,1
	$N_{Rd, max}$		17,6
Design value of tension load in non-cracked concrete C 20/25 <sup>1) 3)</sup>	$N_{Rd, min}$	[kN]	10,1
	$N_{Rd, max}$		24,8
Design value of shear load in cracked and non-cracked concrete C 20/25 bis C 50/60 <sup>1) 3)</sup>	$V_{Rd}$	[kN]	32,6
Permissible tension load in cracked concrete C 20/25 <sup>2) 3)</sup>	$N_{Zul, min}$	[kN]	5,1
	$N_{Zul, max}$		12,6
Permissible tension load in non-cracked concrete C 20/25 <sup>2) 3)</sup>	$N_{Zul, min}$	[kN]	7,2
	$N_{Zul, max}$		17,7
Permissible shear load in cracked and non-cracked concrete C 20/25 bis C 50/60 <sup>2) 3)</sup>	$V_{per}$	[kN]	23,3

<sup>1)</sup> For the determination of the design value the partial safety factor from the approval  $\gamma_M = 1,5$  was considered.

<sup>2)</sup> For the determination of the load action the partial safety factor from the approval  $\gamma_M = 1,5$  for material resistance and  $\gamma_F = 1,4$  for load actions were considered.

<sup>3)</sup> The specified values apply regardless of center distances and edge distances.

# Installation Instructions



- 1) Create borehole.
- 2) Clean the borehole thoroughly.
- 3) Discard three full strokes of composite mortar – then inject composite mortar (optional).
- 4) Screw in concrete screw.
- 5) Hammer spacer onto screw head (optional).