

TOGE TSM BC

Shear-Connector

Fast and economical solution for the rehabilitation of structures

Approval

Approved by building authorities as shear-connector.

Accessories

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



Installation

Fast and safe installation.

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.

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



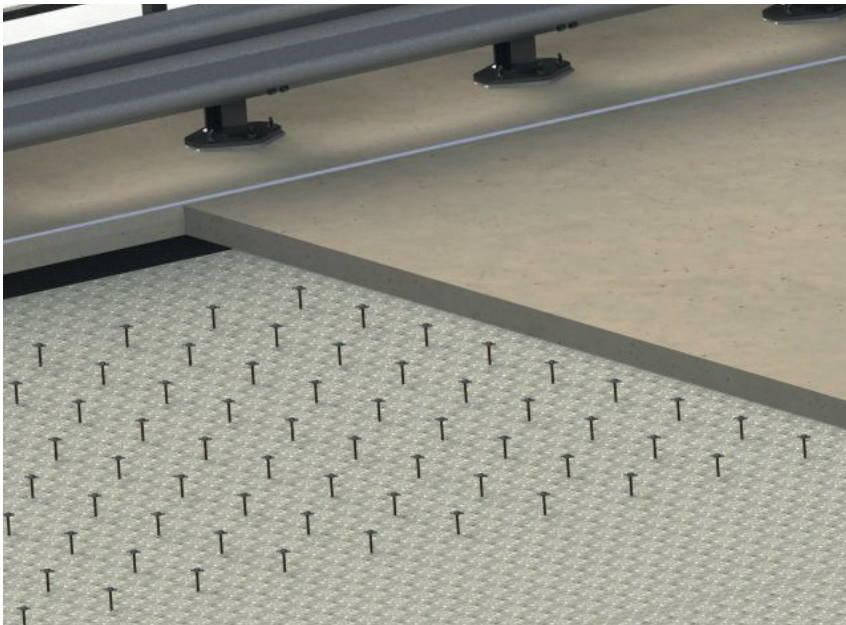
Shear-Connector
TSM BC



Hole corrugating disc
(optional)



Application Examples



Shear-connector under the asphalt surface



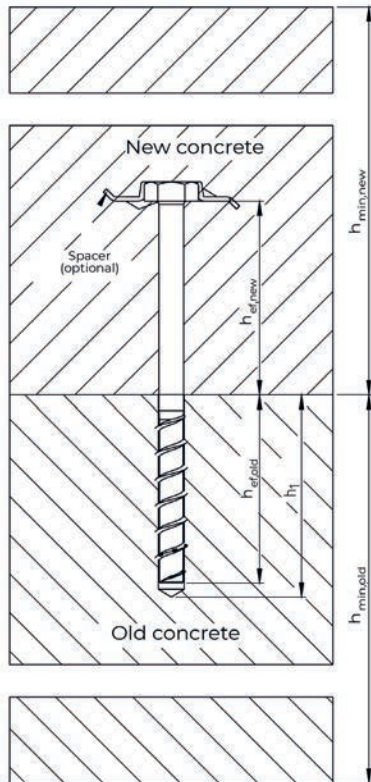
Detail

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 | $h_{eff} \geq$ | [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 ^{1) 3)} | N_{Rd} | [kN] | 17,2 |
| Design value of tension load in non-cracked concrete C 20/25 ^{1) 3)} | N_{Rd} | [kN] | 23,9 |
| Design value of shear load in cracked and non-cracked concrete C 20/25 bis C 50/60 ^{1) 3)} | V_{Rd} | [kN] | 28,0 |
| Permissible tension load in cracked concrete C 20/25 ^{2) 3)} | N_{per} | [kN] | 12,3 |
| Permissible tension load in non-cracked concrete C 20/25 ^{2) 3)} | N_{per} | [kN] | 17,1 |
| Permissible shear load in cracked and non-cracked concrete C 20/25 bis C 50/60 ^{2) 3)} | V_{per} | [kN] | 20,0 |

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

²⁾ 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.

³⁾ The specified values apply regardless of center distances and edge distances.

Processing in new concrete

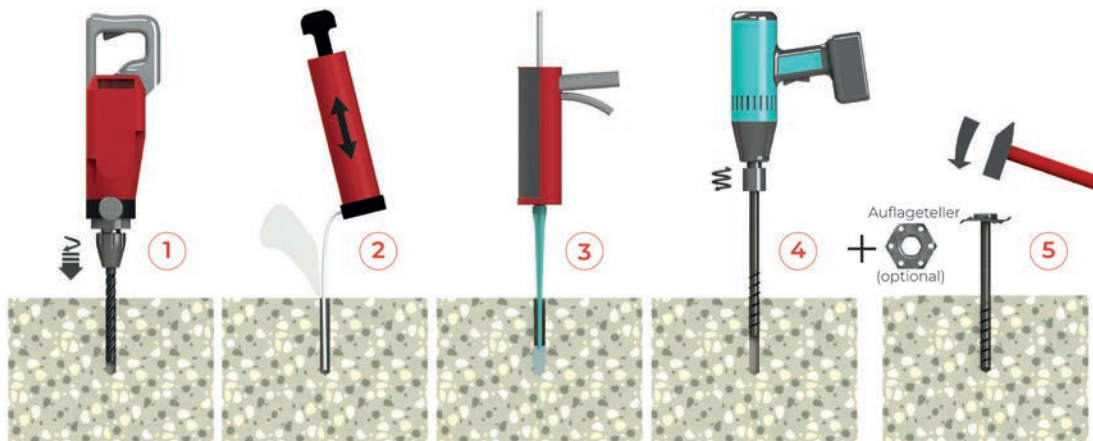
| Ankergröße | | | TSM BC 12 |
|---|----------------|------|----------------------------------|
| Effective anchorage depth | $h_{ef, new}$ | [mm] | 40 - 120 |
| Minimum edge distance | $C_{min} \geq$ | [mm] | $0,5 \times h_{ef, new}$ |
| Minimum spacing | $S_{min} \geq$ | [mm] | 80 |
| Minimum base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

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

²⁾ 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.

³⁾ 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).