A green rectangular bar is positioned above a light blue rectangular bar. The blue bar contains the text 'General construction technique permission' in a bold, blue, sans-serif font.

**General construction  
technique permission**

**Date:**  
16 July 2020

**Approval number:**  
**Z-21.8-2119**

**Validity**  
**from: 16 July 2020**  
**to: 16 July 2025**

**Applicant:**  
**MKT**  
**Metall-Kunststoff-Technik GmbH & Co. KG**  
Auf dem Immel 2  
67685 Weilerbach

**Subject of approval:**

**Concrete screw BSZ for temporary fastening of construction site equipment**

The subject of approval named above is hereby generally approved / approved by the building inspectorate.

This notification contains five pages and six annexes.

**English translation by MKT – Original version in German language**

*This is a not certified translation of the national technical approval Z-21.8-2119. The German version can be found at the end of the document. In case of differences between the German and the English version always the German version applies.*

## **I GENERAL PROVISIONS**

- 1 With this notification the fitness for use and application of the subject of approval in accordance with the Building codes of the federal states (*Landesbauordnungen*) has been verified.
- 2 This notification does not replace the permits, approvals and certificates prescribed by law for carrying out construction projects.
- 3 This notification is granted without prejudice to the rights of third parties, in particularly private intellectual property rights.
- 4 Copies of this notification must be made available to the user or the user of the regulatory subject, without prejudice to additional regulation in the "Special provisions". In addition, the user of the regulatory object must be informed that this notification must be present at the point of use. Upon request, the participating authorities must also be provided with copies.
- 5 This notification may only be duplicated in its entirety. Partial publication requires the consent of Deutsches Institut für Bautechnik. Text and drawings in advertising materials shall not contradict this notification. This document is a translation by MKT of the German original notification. In the event of a discrepancy between the German original of the notification and this translation by MKT, the German version shall prevail.
- 6 This notification may be withdrawn. The provisions of the notification can subsequently be supplemented and amended, particular where this is required by new technical findings.
- 7 This notification relates to the information provided by the applicant and submitted documents. A change of these bases will not be affected by this decision and must be immediately disclosed to Deutsches Institut für Bautechnik.
- 8 The general construction technique permission covered by this certificate is at the same time the national technical approval (*'allgemeine bauaufsichtliche Zulassung'*) for this construction type.

## II SPECIAL PROVISIONS

### 1 Construction product and area of application

#### 1.1 Construction product

This general construction technique permission regulates the temporary fastening in concrete by using concrete screw BSZ (in the following called anchor) according to the European Technical Assessment ETA-16/0240 of 19 May 2020.

The anchor is fastened by screwing it into a pre-drilled cylindrical hole. The special thread of the anchor cuts a thread into the base material. The anchorage is achieved by form-fit of the special thread in the concrete

Annex 1 illustrates the anchor when installed.

#### 1.2 Area of application

The anchor may only be used in reinforced and unreinforced normal weight concrete of strength class C20/25 at minimum and C50/60 at maximum according to DIN EN 206-1:2001-07 "Concrete - Part 1: Specification, properties, production and conformity" and in cracked and uncracked concrete.

The anchorage may be installed and loaded before the required characteristic compressive strength of the concrete is reached, upon verification according to Section 2.3.1.

The anchorage may only be used for the temporary attachment of construction site equipment such as props, fall protection devices and scaffolding.

After unscrewing, the anchor may be reused in new drill holes.

A drilled hole must not be reused after unscrewing a fastener.

The reusability of the anchor must be checked visually and with a sleeve gauge according to section 2.3.3 before each use. Installed anchors must be checked regularly for visible damage (e.g. due to corrosion).

The anchorage may be used for temporary indoor and outdoor use.

### 2 Provisions for planning, design and execution

#### 2.1 Planning

The anchorages are to be planned by an engineer. Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored.

The position of the anchor, size and screw-in depth are indicated on the design drawings.

#### 2.2 Design

Proof of the direct local load transfer into the concrete is provided with the following verification. The transmission of the loads to be anchored in the structural element must be verified.

Additional stresses which may occur in the anchor, in the component to be connected or in the component in which the anchor is installed as a result of restrained deformation (e.g. due to temperature changes) shall be taken into account.

The minimum spacing of the anchor (edge distances and spacings) and the thickness of the concrete member according to Annex A5 shall not be exceeded.

It shall be verified that the design value of action  $F_{Ed}$  does not exceed the design value of resistance  $F_{Rd}$ :  $F_{Ed} \leq F_{Rd}$

The values of resistance apply to all load directions (except transverse to the axis of the prop), independent of the type of failure. The resistances are given in Annex A6, Table 4 depending on anchor size, screw-in depth and concrete strength  $f_{ck,cube}$ .

## 2.3 Execution

### 2.3.1 General

The installation of the anchor shall be realized according to the design drawings prepared in compliance with Section 2.1.

The anchor may be used in young concrete before reaching the characteristic concrete compressive strength  $f_{ck,cube}$ . In this case, the concrete compressive strength must have reached a value of  $f_{ck,cube} \geq 10 \text{ N/mm}^2$ .

### 2.3.2 Drilling and cleaning of the drill hole

The position of the drill hole must be adjusted to the reinforcement in such a way that damage to the reinforcement is avoided.

The drill hole is to be drilled at 90° to the concrete surface using a hammer drill, vacuum drill or diamond drill.

In addition, the hard-metal masonry drill must comply with the information contained in the leaflet of the Institute of Building Technology on "Characteristics, requirements and tests of masonry drills with cutting bodies made of hard metal used for making the drill holes of anchorages for fixings" (January 2002 version). The compliance with the drill characteristics has to be proved by an inspection certificate 3.2 (DIN EN 10204:2005-01) or by the test mark of the Prüfgemeinschaft Mauerbohrer e.V., Remscheid (see leaflet, section 5).

Drill hole diameter, cutting edge diameter and drill hole depth must correspond to the values in Annex A5. Remove the drilling dust from the drill hole.

In case of a false drilling, a new drill hole has to be drilled at a distance of at least 2 x depth of the false drilling.

### 2.3.3 Installation of the anchor

The anchor is only intended for temporary use in a single drill hole.

After unscrewing, the anchor can be reused in other drill holes. However, the anchor must not be screwed into the same drill hole a second time.

Before each reuse, the abrasion of the thread must be checked with an appropriate sleeve gauge according to Annex A3. The anchor may only be re-used if no more than 3 threads can be inserted into the sleeve. Anchors with visible damage, e.g. by corrosion abrasion, must never be reused.

The anchor may be screwed in with an impulse screwdriver with tangential impact.

In order to prevent the anchor from being rotated through, the screwdriver with a capacity output in the upper area should be equipped with an automatic stop device, e.g. via the depth stop.

The anchor is correctly fastened if

- the anchor plate (attachment) to be fixed is screwed to the concrete over its entire surface without any intermediate layer,
- the anchor head rests on the base plate,
- it is not possible to continue turning the anchor easily,
- the setting depth  $h_{nom}$  is observed.

### 2.3.4 Control of the execution

During the installation of the anchors, the contractor entrusted with the anchoring or the site manager appointed by him or a competent representative of the site manager must be present at the construction site. He shall ensure that the work is carried out properly.

During the installation of the anchorages, the site manager or his representative shall keep records of the proof of the existing concrete compressive strength according to Section 2.3.1 and the proper installation of the anchor. The installed anchors shall be checked regularly by the site manager or his representative according to Section 2.3.3. The results must be documented.

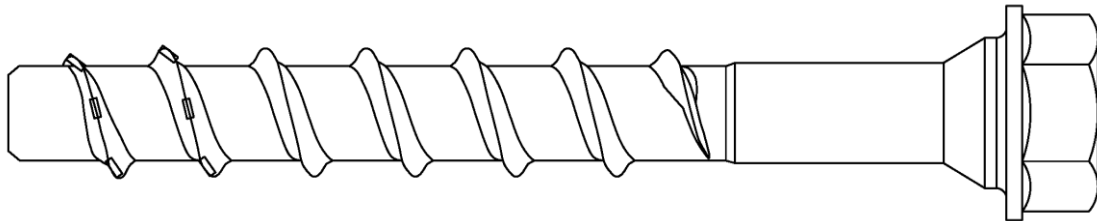
The documentation shall be available at the site during the construction period and shall to be presented to the person responsible for inspection on request. They are to be presented in the same way as the delivery bills after completion of the work at least 5 years from the company to store.

Wittstock  
Head of section

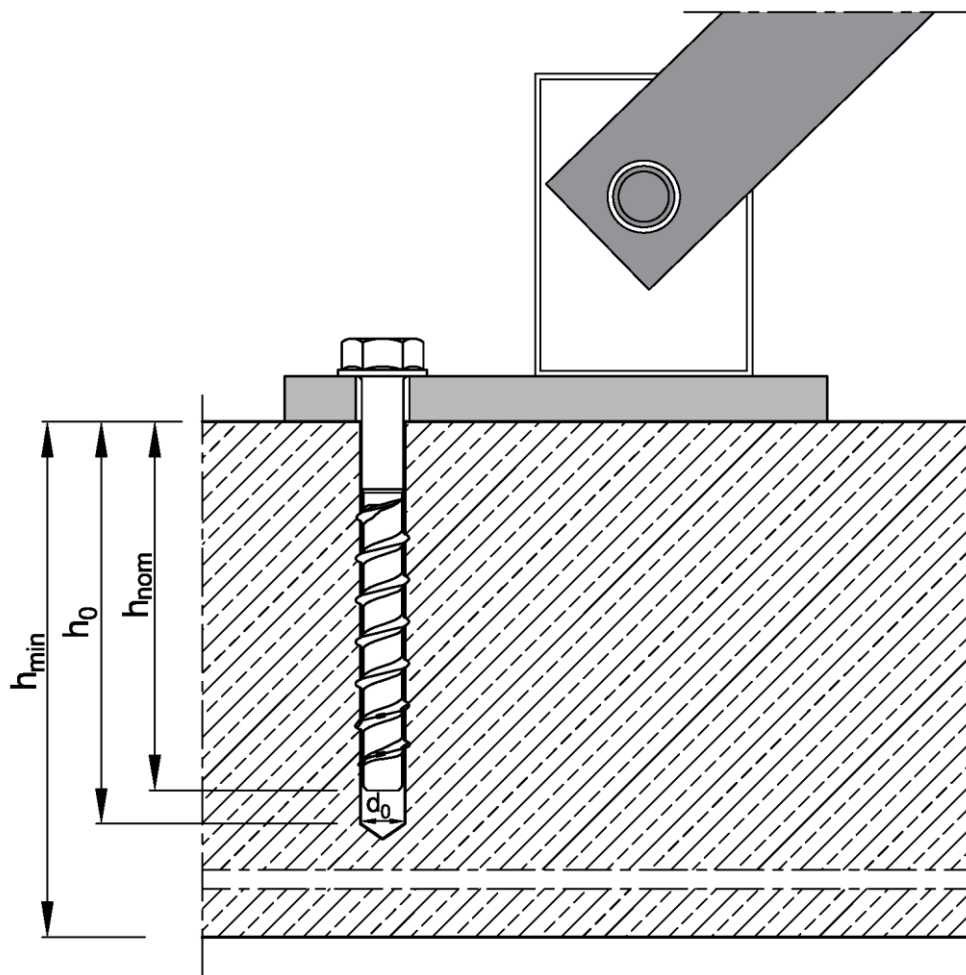
*drawn up by*  
Baderschneider

### Concrete screw BSZ for temporary fastening

BSZ M10, BSZ M12, BSZ M14



### Installation situation



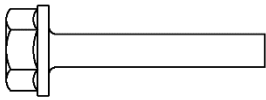

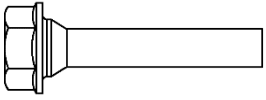

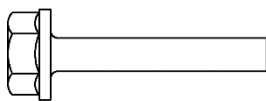

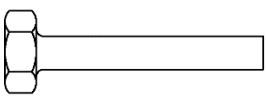

$d_0$  = nominal drill bit diameter  
 $h_{norm}$  = nominal embedment dept  
 $h_0$  = depth of the drill hole  
 $h_{min}$  = minimum thickness of member

### Concrete Screw BSZ

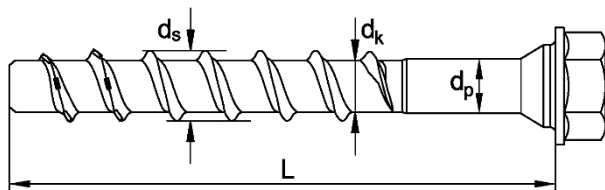
Product description  
Product and installation situation

Annex A1

**Table 1: Anchor types, description and material**

Anchor types		BSZ -	Description
1			<b>SU</b> Anchor version with hexagon head and pressed-on washer
2			<b>SUB</b> Anchor version with hexagon head and collar
3			<b>SU...TX</b> Anchor version with hexagon head, pressed-on washer and TORX drive
4			<b>S</b> Anchor version with hexagon head
<b>Material</b>		Steel DIN EN 10263-4:2018-02 galvanized acc. to DIN EN ISO 4042:2018-11 or zinc flake coating acc. to DIN EN ISO 10683:2018-11 ( $\geq 5 \mu\text{m}$ )	

**Marking**



e.g.:  $\diamond$  BSZ 10 100  
 or TSM 10 100

$\diamond$  BSZ Trade name  
 or (optional with manufacturer  
 TSM identification  $\diamond$ )  
 10 Anchor size  
 100 Length of anchor

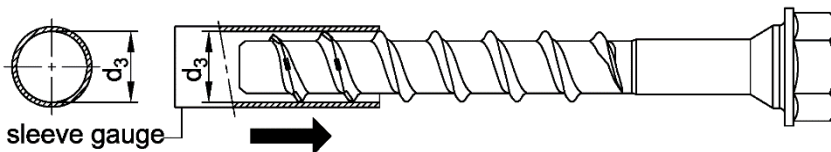
**Concrete Screw BSZ**

**Product description**  
 Anchor types, description, Material

**Annex A2**

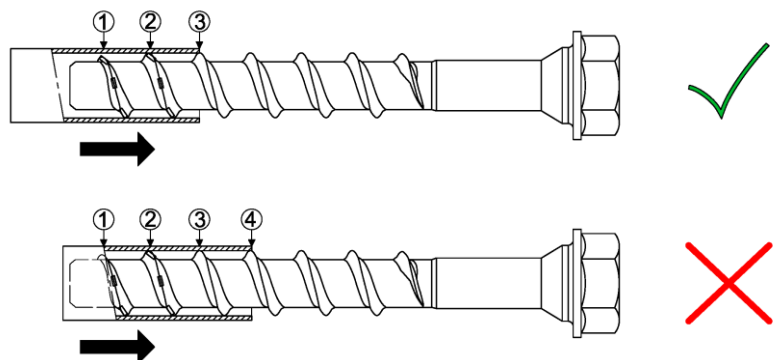
**Table 1: Dimensions**

Anchor size		BSZ 10	BSZ 12	BSZ 14
Length of the anchor	$L_{min}$ [mm]	80		
	$L_{max}$ [mm]	310		
Core diameter	$d_k$ [mm]	9,1	11,1	13,1
Outside diameter	$d_s$ [mm]	12,6	14,6	16,6
Shaft diameter	$d_1$ [mm]	9,9	11,7	13,7
Sleeve gauge internal diameter	$d_3$ [mm]	12	14	16



**Application of the sleeve gauge**

- before every re-use the thread abrasion must be checked with the corresponding sleeve gauge
- the concrete screw may only be reused if a maximum of 3 threads can enter the sleeve
- Screws with visible damage e.g. due to corrosion must not be used



**Concrete Screw BSZ**

**Product description**  
 Marking / Dimensions / Application of sleeve gauge

**Annex A3**



### Installation instructions

Drill hole preparation and cleaning		
1		<p>Drill hole perpendicular to concrete surface. Using a vacuum drill, continue with step 3.</p>
2		<p>Blow out dust or alternatively vacuum clean down to the bottom of the hole.</p>
Installation concrete screw		
3		<p>Screw in, e.g. with tangential impact screw driver or torque wrench.</p>
4		<p>After installation, the head of the concrete screw is supported on the fixture and must be undamaged.</p>

**Concrete Screw BSZ**

**Intended use**  
 Installation instructions

**Annex A4**

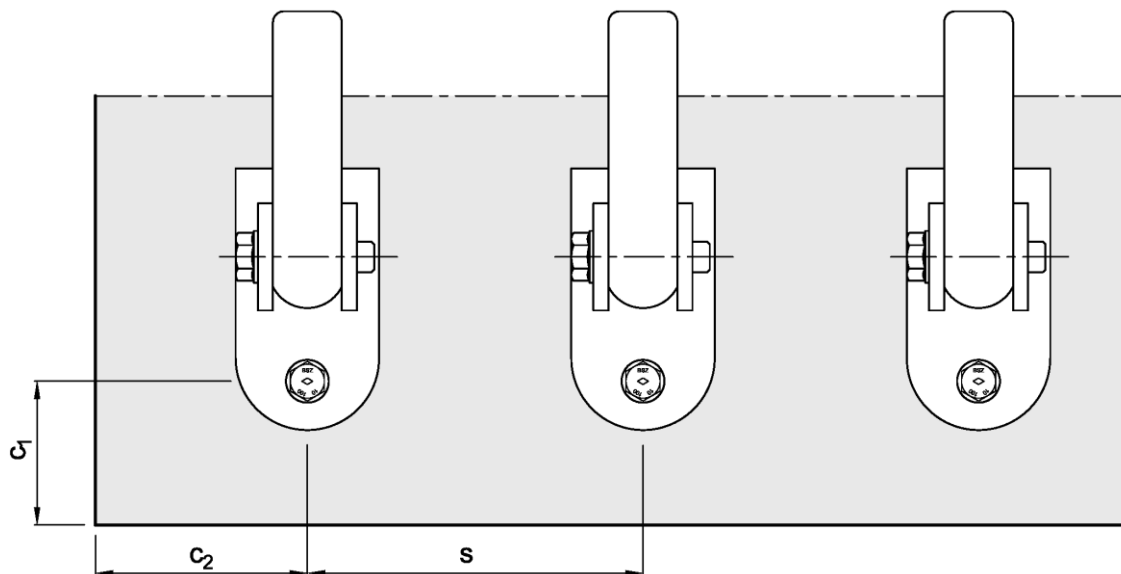
**Table 2: Installation parameters**

Anchor size		BSZ 10	BSZ 12		BSZ 14			
Nominal embedment depth	$h_{nom}$	$h_{nom,1}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	
	[mm]	75	75	90	75	90	115	
Nominal drill bit diameter	$d_0$	[mm]	10	12	14			
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10,45	12,5	14,5			
Depth of drill hole	$h_0 \geq$	[mm]	85	85	100	85	100	125
Tangential impact screw driver <sup>1)</sup>	$T_{imp,max}$	[Nm]	400	650		650		

<sup>1)</sup> Installation with tangential impact screw driver, with maximum power output  $T_{imp,max}$  acc. to manufacturers instructions

**Table 3: Minimum thickness of member, minimum edge distance and minimum spacing**

Anchor size		BSZ 10	BSZ 12		BSZ 14			
Nominal embedment depth	$h_{nom}$	$h_{nom,1}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	
	[mm]	75	75	90	75	90	115	
Minimum thickness of member	$h_{min}$	[mm]	150	150	195	150	195	200
Minimum spacing	$s$	[mm]	320	320	390	320	390	500
Minimum edge distance in load direction	$c_1$	[mm]	105	105	130	105	130	165
Minimum edge distance transverse to load direction	$c_2$	[mm]	160	160	195	160	195	250



**Concrete Screw BSZ**

**Intended use**

Installation parameters / Minimum thickness of concrete member, minimum spacing and edge distances

**Annex A5**

**Table 4: Design resistances in cracked and uncracked concrete, all load directions**

Anchor size		BSZ 10	BSZ 12		BSZ 14		
Nominal embedment depth	$h_{nom}$	$h_{nom,1}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$
	[mm]	75	75	90	75	90	115
Design resistance in concrete with compressive strength $f_{ck,cube} \geq 10 \text{ N/mm}^2$	$F_{Rd}$ [kN]	6	6	12	6	12	15 (17) <sup>1)</sup>
Design resistance in concrete with compressive strength $f_{ck,cube} \geq 15 \text{ N/mm}^2$	$F_{Rd}$ [kN]	7	7	13	7	13	18 (21) <sup>1)</sup>
Design resistance in concrete with compressive strength $f_{ck,cube} \geq 20 \text{ N/mm}^2$	$F_{Rd}$ [kN]	8	8	14	8	14	20 (24) <sup>1)</sup>

<sup>1)</sup> Value in brackets for thickness of member  $h \geq 225\text{mm}$

**Concrete Screw BSZ**

Performance  
 Design resistances

**Annex A6**