



...eine starke Verbindung

## DECLARATION OF PERFORMANCE

DoP Nr.: MKT-1.1-800\_en

- ◇ **Unique identification code of product-type:** **Wedge Anchor BL / BS**
- ◇ **Intended use/es:** Mechanical fastener for use in concrete, see Annex B
- ◇ **Manufacturer:** MKT Metall-Kunststoff-Technik GmbH & Co.KG  
Auf dem Immel 2  
67685 Weilerbach
- ◇ **System or systems of assessment and verification of constancy of performance:** 1
- ◇ **European Assessment Document:** **EAD 330232-00-0601**  
European Technical Assessment: **ETA-19/0041, 13.09.2019**  
Technical Assessment Body: DIBt, Berlin  
Notified body/ies: NB 2873 – Technische Universität Darmstadt
- ◇ **Declared performance/s:**

Essential Characteristics	Performance
<b>Mechanical resistance and stability (BWR 1)</b>	
Characteristic resistance to tension load (static and quasi-static loading)	Annex C1
Characteristic resistance to shear load (static and quasi-static loading)	Annex C2
Characteristic values for seismic performance category C1+C2	No performance assessed
Displacements	Annex C3
Durability	Annex B1
<b>Safety in case of fire (BWR 2)</b>	
Reaction to fire	Class A1
Resistance to fire	No performance assessed

The performance of the product identified above is in conformity with the set of declared performance/s.  
This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

  
**Stefan Weustenhagen**  
(General manager)

Weilerbach, 01.01.2021

p.p.   
**Dipl.-Ing. Detlef Bigalke**  
(Head of product development)



The original of this declaration of performance was written in German. In the event of deviations in the translation, the German version shall be valid.

## Specifications of intended use

Wedge anchor	BL				BS			
	M8	M10	M12	M16	M8	M10	M12	M16
Static or quasi-static action		✓				✓		
Uncracked concrete		✓				✓		
Standard anchorage depth		✓				-		
Reduced anchorage depth		✓				✓		

### Base materials:

- Compacted, reinforced or unreinforced normal weight concrete (without fibers) according to EN 206:2013 + A1:2016
- Strength classes C20/25 to C50/60 according to EN 206:2013 + A1:2016

### Use conditions (Environmental conditions):

- Structures subject to dry internal conditions

### Design:

- Fastenings are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Design according to EN 1992-4:2018 and Technical Report TR 055

### Installation:

- Drilling by hammer drill bit or vacuum drill bit
- For anchorages with embedment depth  $h_{ef} < 40\text{mm}$ , the use is restricted to anchorages of statically indeterminate non-structural systems

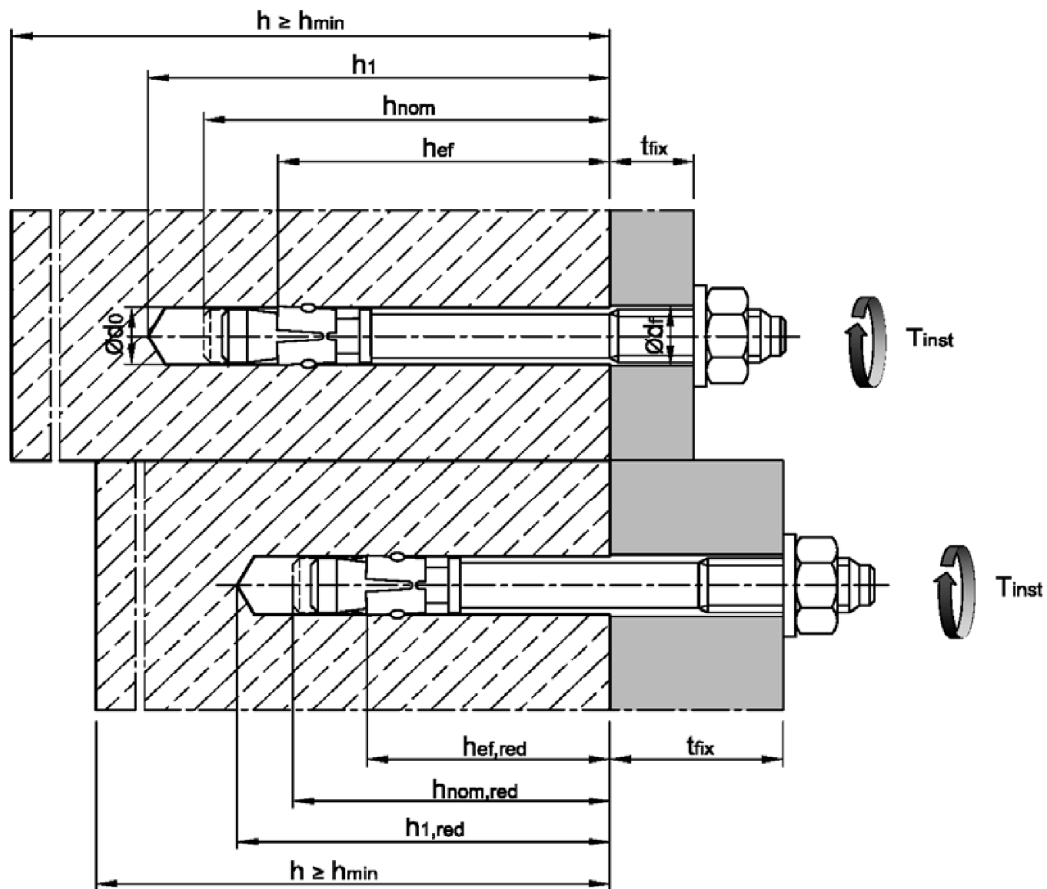
## Wedge Anchor BL / BS

Intended use  
Specifications

Annex B1

**Table B1: Installation parameters**

Fastener size		M8	M10	M12	M16
Nominal drill hole diameter	$d_0 =$ [mm]	8	10	12	16
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45	10,45	12,50	16,50
Diameter of clearance hole in the fixture	$d_f \leq$ [mm]	9	12	14	18
Installation torque	$T_{inst} =$ [Nm]	15	30	50	100
<b>Standard anchorage depth</b>					
Effective anchorage depth	$h_{ef} \geq$ [mm]	44	48	65	82
Depth of drill hole	$h_1 \geq$ [mm]	65	70	90	110
Embedment depth	$h_{nom} \geq$ [mm]	56	62	82	102
<b>Reduced anchorage depth</b>					
Effective anchorage depth	$h_{ef,red} \geq$ [mm]	30	40	50	65
Depth of drill hole	$h_{1,red} \geq$ [mm]	50	60	75	95
Embedment depth	$h_{nom,red} \geq$ [mm]	42	54	67	85



**Wedge Anchor BL / BS**

Intended use  
Installation data

**Annex B2**

**Table B2: Minimum spacing and edge distances**

Fastener size			M8	M10	M12	M16
Minimum member thickness	$h_{min}$	[mm]	100	100	130	170
Minimum spacing	$s_{min}$	[mm]	40	55	75	90
Minimum edge distance	$c_{min}$	[mm]	45	65	90	105

**Installation instructions**

1		Drill hole perpendicular to concrete surface by hammer drill bit or vacuum drill bit. If using a vacuum drill bit, proceed with step 3.
2		Blow out dust. Alternatively vacuum clean down to the bottom of the hole.
3		Check position of nut.
4		Drive in anchor, such that $h_{ef}$ or $h_{ef,red}$ is met.
5		Apply installation torque $T_{inst}$ as specified in Table B1.

**Wedge Anchor BL / BS**

**Intended use**  
Minimum spacing and edge distances, Installation instructions

**Annex B3**

**Table C1: Characteristic values for tension loads**

Fastener size			M8	M10	M12	M16
Installation factor	$\gamma_{inst}$	[-]	1,0			
<b>Steel failure</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	18,1	30,4	41,6	84,0
Partial factor	$\gamma_{Ms}$	[-]	1,5			
<b>Pull-out</b>						
Characteristic resistance in uncracked concrete C20/25 ( <b>Standard</b> anchorage depth)	$N_{Rk,p}$	[kN]	12	14	32	38
Characteristic resistance in uncracked concrete C20/25 ( <b>Reduced</b> anchorage depth)	$N_{Rk,p}$	[kN]	7,5	10	19	26
Increasing factor for $N_{Rk,p}$	$\psi_C$	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$			
<b>Splitting</b>						
Characteristic resistance in uncracked concrete C20/25	$N^0_{Rk,sp}$	[kN]	min [ $N_{Rk,p}$ ; $N^0_{Rk,c}$ ]			
Spacing	$s_{cr,sp}$	[mm]	3 $h_{ef}$			
Edge distance	$c_{cr,sp}$	[mm]	1,5 $h_{ef}$			
<b>Concrete cone failure</b>						
Effective anchorage depth ( <b>Standard</b> anchorage depth)	$h_{ef} \geq$	[mm]	44	48	65	82
Effective anchorage depth ( <b>Reduced</b> anchorage depth)	$h_{ef,red} \geq$	[mm]	30 <sup>1)</sup>	40	50	65
Spacing	$s_{cr,N}$	[mm]	3 $h_{ef}$			
Edge distance	$c_{cr,N}$	[mm]	1,5 $h_{ef}$			
Factor for $k_1$	$k_{ucr,N}$	[-]	11,0			

<sup>1)</sup> Use restricted to dry internal exposure and statically indeterminate structural components, when in case of failure the load may be distributed to other fasteners.

**Wedge Anchor BL / BS**

**Performance**  
Characteristic values for **tension loads**

**Annex C1**

**Table C2: Characteristic values for shear loads**

Fastener size			M8	M10	M12	M16
Installation factor	$\gamma_{inst}$	[-]	1,0			
<b>Steel failure without lever arm</b>						
Characteristic shear resistance	$V_{RK,s}^0$	[kN]	10,3	16,2	23,6	44,0
Partial factor	$\gamma_{Ms}$	[-]	1,25			
Ductility factor	$k_7$	[-]	1,0			
<b>Steel failure with lever arm</b>						
Characteristic bending resistance	$M_{RK,s}^0$	[Nm]	21	42	73	186
Partial factor	$\gamma_{Ms}$	[-]	1,25			
<b>Concrete pry-out failure</b>						
Pry-out factor for $h_{ef}$ ( <b>Standard</b> anchorage depth)	$k_8$	[-]	1,0	1,0	2,0	2,0
Pry-out factor for $h_{ef,red}$ ( <b>Reduced</b> anchorage depth)	$k_8$	[-]	1,0	1,0	1,0	2,0
<b>Concrete edge failure</b>						
Effective length of fastener in shear loading for $h_{ef}$ ( <b>Standard</b> anchorage depth)	$l_f$	[mm]	44	48	65	82
Effective length of fastener in shear loading for $h_{ef,red}$ ( <b>Reduced</b> anchorage depth)	$l_{f,red}$	[mm]	30 <sup>1)</sup>	40	50	65
Outside diameter of fastener	$d_{nom}$	[mm]	8	10	12	16

<sup>1)</sup> Use restricted to dry internal exposure and statically indeterminate structural components, when in case of failure the load may be distributed to other fasteners.

**Wedge Anchor BL / BS**

**Performance**  
Characteristic values for **shear loads**

**Annex C2**

**Table C3: Displacements under tension load**

Fastener size			M8	M10	M12	M16
Tension load	N	[kN]	5,71	6,67	12,29	17,38
Displacement	$\delta_{N0}$	[mm]	0,32	0,18	0,64	1,81
	$\delta_{N\infty}$	[mm]	3,65			

**Table C4: Displacements under shear load**

Fastener size			M8	M10	M12	M16
Shear load	V	[kN]	5,86	9,28	13,49	25,12
Displacement	$\delta_{V0}$	[mm]	1,70	1,02	1,75	1,93
	$\delta_{V\infty}$	[mm]	2,55	1,53	2,63	2,90

**Wedge Anchor BL / BS**Performance  
Displacements**Annex C3**