

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-09/0238
of 29 August 2014

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Trade name of the construction product

Product family
to which the construction product belongs

Manufacturer

Manufacturing plant

This European Technical Assessment
contains

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

Deutsches Institut für Bautechnik

TOGE metal frame anchor TU 10

Torque controlled expansion anchor made of galvanised
steel of size 10 for multiple use for non-structural
applications in concrete

TOGE Dübel GmbH & Co. KG
Illesheimer Straße 10
90431 Nürnberg
DEUTSCHLAND

TOGE Dübel GmbH & Co. KG

12 pages including 3 annexes which form an integral part
of this assessment

Guideline for European technical approval of "Metal
anchors for use in concrete", ETAG 001 Part 6: "Anchors
for multiple use for non-structural applications",
Edition August 2010,
used as European Assessment Document (EAD)
according to Article 66 Paragraph 3 of Regulation (EU)
No 305/2011.

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Specific Part

1 Technical description of the product

The metal frame anchor TU 10 in size M10 is an anchor made of zinc-plated steel which is placed into a drilled hole and anchored by torque-controlled expansion.

The description of the product is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance for tension and shear loads	See Annex C1
Edge distances and spacing	See Annex C1
Characteristic resistance for bending moments	See Annex C1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	See Annex C2

3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances there may be requirements (e.g. transposed European legislation and national laws, regulations and administrative provisions) applicable to the products falling within the scope of this European Technical Assessment. In order to meet the provisions of Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.4 Safety and accessibility (BWR 4)

The essential characteristics regarding Safety in use are included under the Basic Works Requirement Mechanical resistance and stability.

3.5 Protection against noise (BWR 5)

Not applicable.

3.6 Energy economy and heat retention (BWR 6)

Not applicable.

3.7 Sustainable use of natural resources (BWR 7)

The sustainable use of natural resources was not investigated.

3.8 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to Decision of the Commission of 24 June 1996 (96/582/EC) (Official Journal of the European Communities L 254 of 08.10.1996, p. 62–65) the system of assessment and verification of constancy of performance (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use(s)	Level or class	System
Metal anchors for use in concrete	For fixing and/or supporting concrete structural elements or heavy units such as cladding and suspended ceilings	—	2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

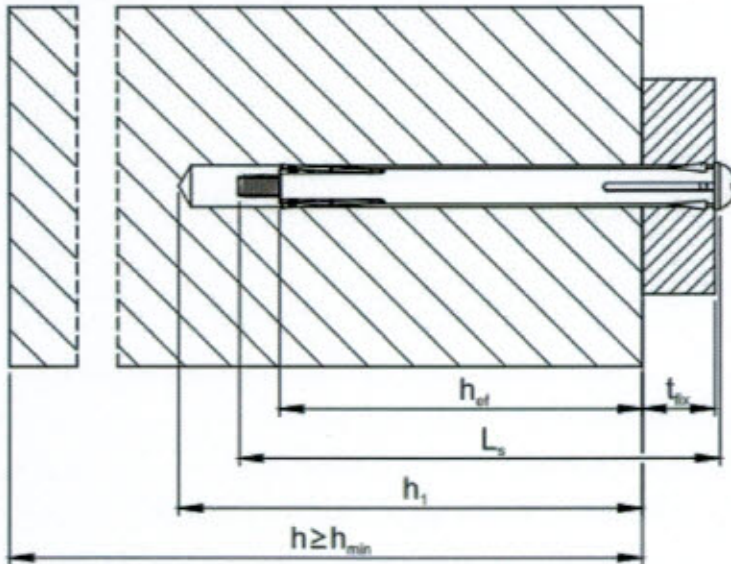
Issued in Berlin on 29 August 2014 by Deutsches Institut für Bautechnik

Uwe Bender
Head of Department

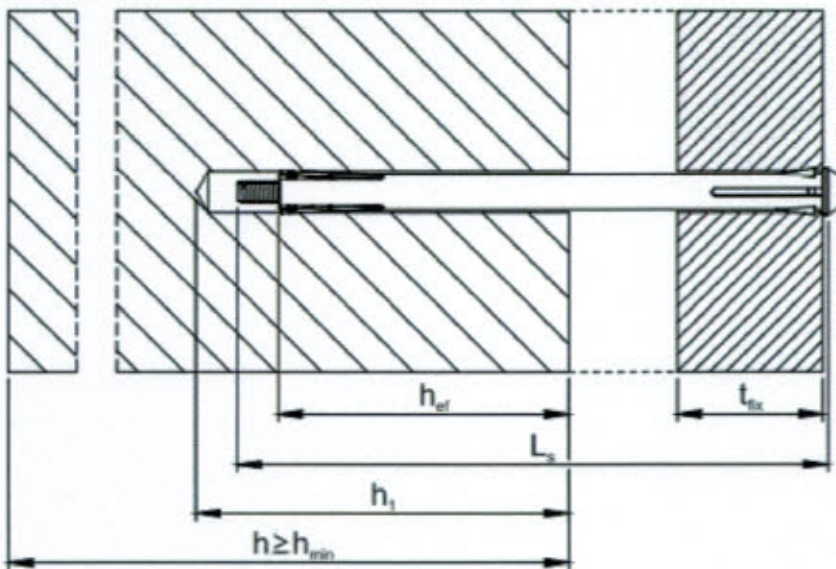
beglaubigt:
Tempel

product and installation condition

installed anchor – fixture attached to concrete



installed anchor – fixture mounted with distance to concrete



- | | | |
|-----------|---|---------------------------|
| h_{ef} | = | effective anchorage depth |
| h_1 | = | depth of the drill hole |
| h | = | thickness of member |
| t_{fix} | = | thickness of fixture |






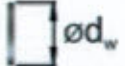

Toge metal frame anchor TU 10

Product description

Installed condition

Annex A 1

Table A 1: parts and materials

part	name	Material								
1,2,3,4	screw	steel acc. DIN EN ISO 896-1, zinc coated $\geq 5 \mu\text{m}$ DIN EN ISO 4042 A2K <table border="1"> <tr> <td>charakteristische Streckgrenze</td> <td>f_{yk}</td> <td>[N/mm²]</td> <td>400</td> </tr> <tr> <td>charakteristische Zugfestigkeit</td> <td>f_{uk}</td> <td>[N/mm²]</td> <td>240</td> </tr> </table>	charakteristische Streckgrenze	f_{yk}	[N/mm ²]	400	charakteristische Zugfestigkeit	f_{uk}	[N/mm ²]	240
charakteristische Streckgrenze	f_{yk}	[N/mm ²]	400							
charakteristische Zugfestigkeit	f_{uk}	[N/mm ²]	240							
		 <p>1) screw with counter sunk cross head</p>								
		 <p>2) screw with pan cross head</p>								
		 <p>3) screw with washer and hexagonal head</p>								
		 <p>4) screw with hexagonal head and connection thread</p>								
5	clamping sleeve	steel acc. EN 10327 DX51D								
		 <p>5) clamping sleeve</p>								
6	washer (optional) DIN-EN-ISO-887-7C	steel, zinc coated acc. DIN ISO 4042 A2K								
		 <p>6) washer</p>								
7	cone nut	steel acc. DIN 1651								
		 <p>7) cone nut</p>								

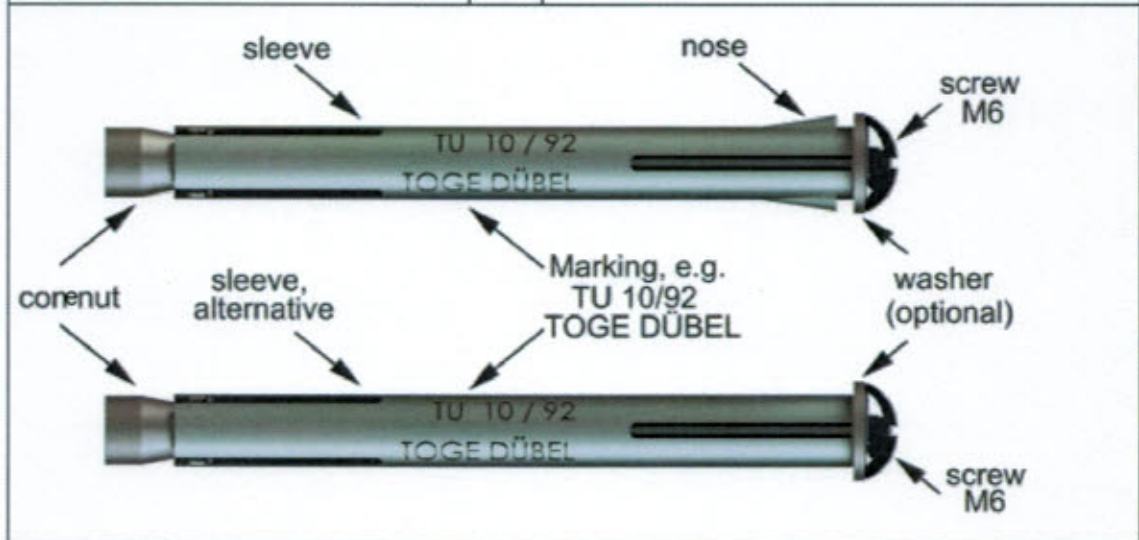
Toge metal frame anchor TU 10

Product description
parts and materials

Annex A 2

Table A 2: dimensions and markings

anchor name			TU 10
length of the clamping sleeve	$L \geq$	[mm]	52
diameter of the clamping sleeve	d	[mm]	6,40
screw length	$L_s \geq$	[mm]	66
diameter of the washer	$d_w \geq$	[mm]	14



Toge metal frame anchor TU 10

Product descriptions

Dimensions and markings

Annex A 3

Intended use

Anchorage subject to:

- static and quasi static loads,
- Used only for multiple use for non structural application according to ETAG 001, Part 6,
- Used for anchorages with requirements related to resistance of fire.

Base materials:

- reinforced and unreinforced normal weight concrete according to EN 206-1:2000-12,
- strength classes C 20/25 to C 50/60 according to EN 206-1:2000-12,
- cracked and non-cracked concrete.

Use conditions (Environmental conditions):

- anchorage subject to dry internal conditions.

Design:

- Anchorages 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.),
- Anchorages under static or quasi-static actions are designed for design method A in accordance with:
 - ETAG 001, Annex C, design method A, Edition August 2010 or
 - CEN/TS 1992-4:2009, design method A,
- In case of requirements for resistance to fire exposure local spalling of the concrete cover does not occur.

Installation:

- Hammer drilling only.
- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- After installation further turning of the anchor is not possible. The head of the anchor is supported on the fixture and is not damaged.

Toge metal frame anchor TU 10

Intended use

Specifications

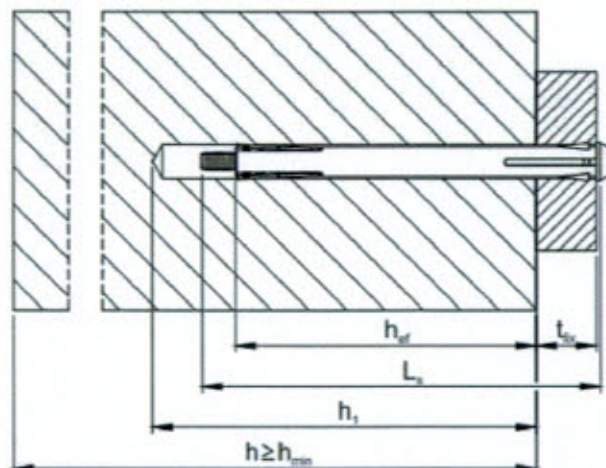
Annex B 1

Table B 1: Installation parameters

anchor identity			TU 10
nominal drill bit diameter	d_0	[mm]	10,0
cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10,45
depth of drill hole	$h_1 \geq$	[mm]	55
effective anchorage depth	$h_{ef} \geq$	[mm]	40
diameter of clearing hole in the fixture	$d_f \geq$	[mm]	10
Installation torque	T_{inst}	[Nm]	8

Table B 2: Minimum thickness of member, minimum edge distance and minimum spacing

anchor identity			TU 10
minimum thickness of member	h_{min}	[mm]	100
minimum edge distance	c_{min}	[mm]	70
minimum spacing	s_{min}	[mm]	60



Toge metal frame anchor TU 10

Intended use

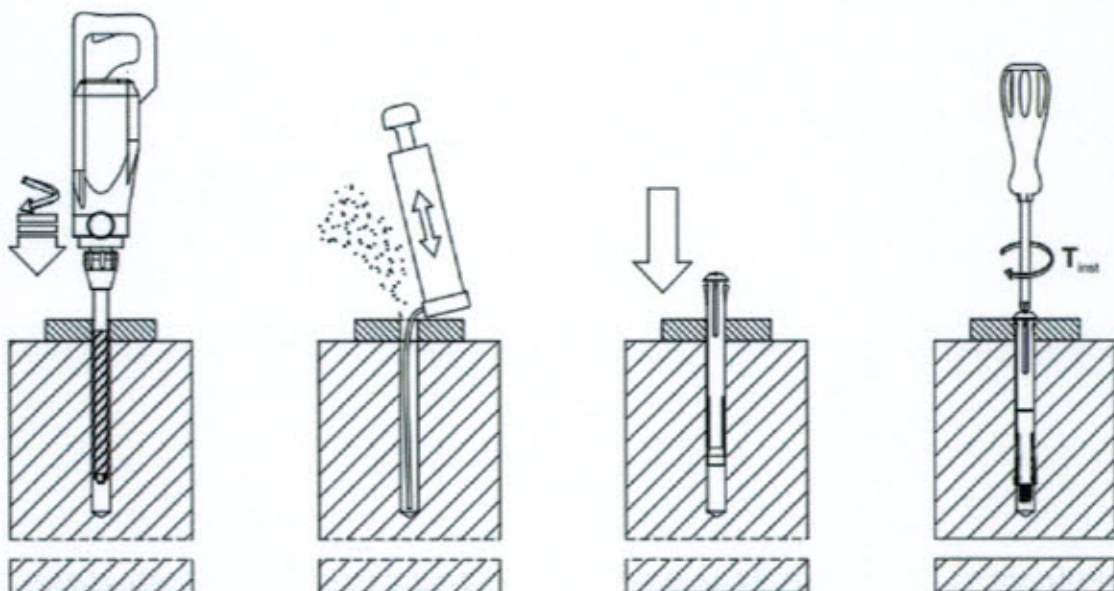
Installation parameters

Annex B 2

Table B 3: Length of the anchor and maximum thickness of the fixture t_{fix}

anchor identity	TU 10
length of the anchor [mm]	maximum thickness of the fixture t_{fix} [mm]
52	10
72	30
92	50
112	70
132	90
152	110
182	140
202	160

Installation instructions



Toge metal frame anchor TU 10

Intended use

Installation parameters / installation instruction

Annex B 3

Table C 1: Characteristic values for design method A according to ETAG 001, Annex C or CEN TS 1992-4

anchor identity			TU 10
steel failure for tension- and sear load			
characteristic load	$N_{Rk,s}$	[kN]	8,0
	$V_{Rk,s}$	[kN]	4,0
	$M^0_{Rk,s}$	[Nm]	6,1
pull-out failure			
characteristic tension load in concrete C20/25 to C50/60	$N_{Rk,p}$	[kN]	6,0
concrete cone and splitting failure			
effective anchorage depth	h_{ef}	[mm]	44
factor for non cracked	$k_{ucr}^{1)}$	[-]	10,1
concrete cone failure	spacing	$S_{cr,N}$	[mm] 3 x h_{ef}
	edge distance	$C_{cr,N}$	[mm] 1,5 x h_{ef}
splitting failure	spacing	$S_{cr,Sp}$	[mm] 80
	edge distance	$C_{cr,Sp}$	[mm] 160
concrete pry out failure (pry-out)			
k-Factor	$k^{1)} = k_3^{2)}$	[-]	1,0
concrete edge failure			
effective length of anchor	$l_f = h_{ef}$	[mm]	40
outside diameter of anchor	d_{nom}	[mm]	10
installation safety factor	$\gamma_2^{1)} = \gamma_{inst}^{2)}$	[-]	1,0 ²⁾

¹⁾ Parameter relevant only for design according to CEN/TS 1992-4:2009

²⁾ Parameter relevant only for design according ETAG 001 Annex C

Toge metal frame anchor TU 10

Performances

Characteristic values for design method A

Annex C 1

Table C 2: Characteristic values of resistance to fire exposure

anchor identity				TU 10
fire resistance class				
R 30	characteristic resistance	$F_{Rk,f30}$	[kN]	0,20
R 60	characteristic resistance	$F_{Rk,f60}$	[kN]	0,18
R 90	characteristic resistance	$F_{Rk,f90}$	[kN]	0,14
R 120	characteristic resistance	$F_{Rk,f120}$	[kN]	0,10
R 30 bis R 120	spacing	$s_{cr,fi}$	[mm]	120
	edge distance	$c_{cr,fi}$		$2 h_{ef}$

Toge metal frame anchor TU 10

Performances

Characteristic values of resistance to fire exposure

Annex C 2