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European Technical Assessment

ETA-22/0455 of 25/11/2022

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	TDA drop-in fasteners
Product family to which the construction product belongs	Deformation-controlled expansion fasteners for use in concrete for redundant non-structural systems
Manufacturer	Trutek Fasteners Polska Sp. z o.o. Al. Krakowska 38, Janki 05-090 Raszyn, Poland e-mail: info@trutek.com.pl www.trutek.com.pl www.trutekfasteners.eu
Manufacturing plant	Manufacturing plant No. 7
This European Technical Assessment contains	10 pages including 3 Annexes which form an integral part of this Assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document EAD 330747-00-0601 “Fasteners for use in concrete for redundant non-structural systems”

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Specific Part

1 Technical description of the product

TDA drop-in fasteners are deformation-controlled expansion fasteners, made of carbon steel.

The fastener is installed in a drilled hole and anchored by deformation-controlled expansion.

The products description is given in Annex A.

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

The performances given in Annex C are only valid if the fastener is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, 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 Performance of the product

3.1.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A
Resistance to fire	Annex C2

3.1.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for all load directions	Annex C1
Edge distance and spacing	Annex C1

3.1.3 Aspects of durability

Essential characteristic	Performance
Durability	Annexes A1 and B1

3.2 Methods used for the assessment

The assessment has been made in accordance with the EAD 330747-00-0601.

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

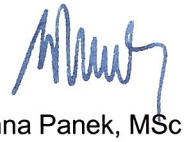
According to Decision 97/161/EC of the European Commission the system 2+ of assessment and verification of constancy of performance applies (see Annex V to regulation (EU) No 305/2011).

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

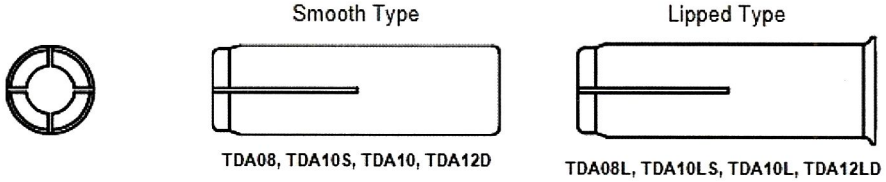
For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 25/11/2022 by Instytut Techniki Budowlanej



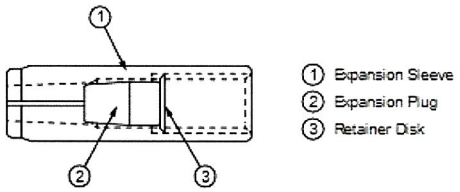
Anna Panek, MSc

Deputy Director of ITB



Marking on the body

1. TDA anchor identification and type
   XX – size
2. producer identification mark



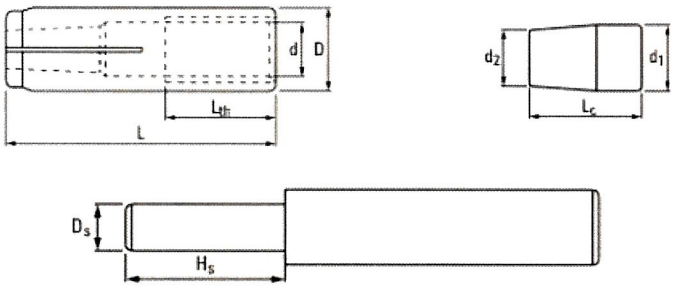


Table A1. Dimensions

Dimensions			TDA08 TDA08L	TDA10S TDA10LS	TDA10 TDA10L	TDA12D TDA12LD
Fastener size			**M8x30**	**M10x30**	**M10x40**	**M12x50**
Expansion sleeve						
Sleeve diameter	D	[mm]	10	12	12	16
Sleeve length	L	[mm]	30	30	40	50
Thread	d	[-]	M8	M10	M10	M12
Thread length	L_{th}	[mm]	13	13	19	22
Expansion plug						
Plug diameter	d_1	[mm]	6.5	8	8.1	10.15
	d_2	[mm]	5.55	6.925	6.5	8.5
Plug length	L_c	[mm]	12	11.1	15.25	20.0
Installation pin						
Setting pin diameter	D_s	[mm]	6.5	8.0	8.0	10.2
Setting pin length	H_s	[mm]	18	18	24	30

Table A2. Materials

Element	Material	Protection
Expansion sleeve	Carbon steel wire rod grade C1008	Zinc coating ≥ 5 µm Electroplated according to EN ISO 4042
Expansion plug	Carbon steel wire rod grade Q195	

TDA drop-in fasteners	**Annex A1**
Product description Characteristics of the product	of European Technical Assessment ETA-22/0455

Specification of intended use

Anchorages subject to:
- Multiple use for non-structural application.
- Static and quasi-static loads.

Base material:
- Reinforced or unreinforced normal weight concrete (without fibres) of strength class C20/25 to C50/60 according to EN 206.
- Uncracked and cracked concrete.

Use conditions (environmental conditions):
- Structures 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 transmitted. The position of the fastener is indicated on the design drawings (e.g. position of the fastener relative to reinforcement or to supports, etc.).
- Anchorages under static and quasi-static loads and under fire exposure are designed in accordance with EN 1992-4:2018.
- Fasteners are only to be used for multiple use for non-structural applications according to EAD 330747-00-0601.

Installation:
- Fastener installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Use of the fastener only as supplied by the manufacturer without exchanging any component of the fastener.
- Fastener installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Check of concrete being well compacted, e.g. without significant voids.
- Positioning of the drill holes without damaging the reinforcement.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.
- Fastener installation such that the effective anchorage depth is complied with.

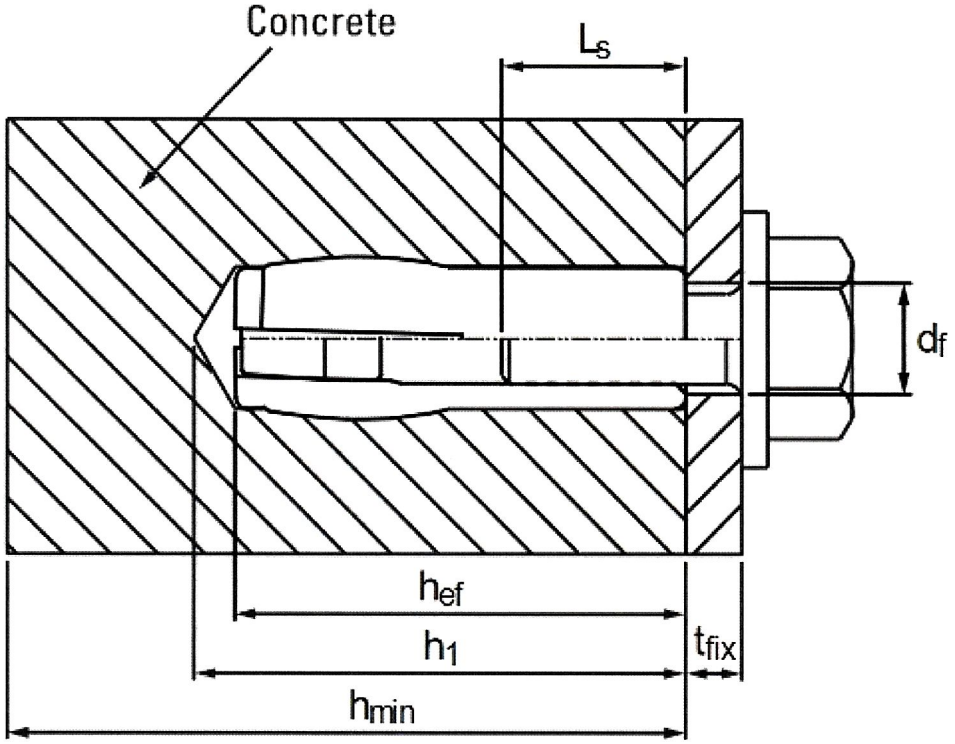
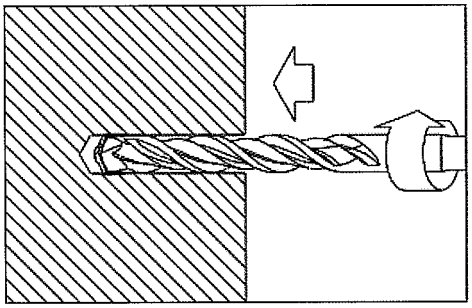


Table B1. Installation parameters

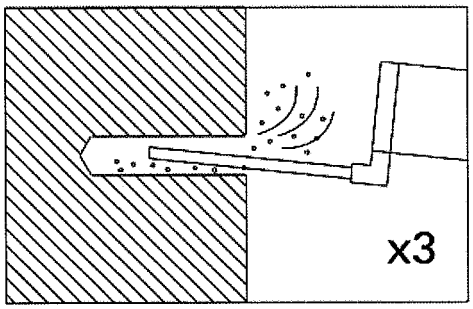
Fastener			**TDA08 TDA08L**	**TDA10S TDA10LS**	**TDA10 TDA10L**	**TDA12D TDA12LD**
Size			**M8x30**	**M10x30**	**M10x40**	**M12x50**
Effective anchorage depth	h_{ef}	[mm]	30	30	40	50
Drill hole depth	h_1	[mm]	33	33	43	54
Drill hole diameter	d_0	[mm]	10	12	12	16
Maximum installation torque	T_{inst}	[mm]	11	17	17	38
Minimum thickness of concrete member	h_{min}	[mm]	80	80	80	80
Minimum screwing depth	$L_{s,min}$	[mm]	8	10	10	12
Maximum screwing depth	$L_{s,max}$	[mm]	13	13	19	22
Diameter of clearance hole in the fixture	d_f	[mm]	9	12	12	14
Minimum spacing	s_{min}	[mm]	200	200	200	250
Minimum edge distance	c_{min}	[mm]	150	150	150	150

Fastening screws or fastener threaded rods:
Steel, property class 4.8 / 5.8 / 6.8 / 8.8 according to EN-ISO 898-1; thickness of zinc coating ≥ 5 µm

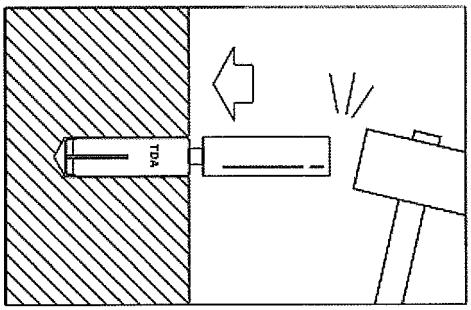
TDA drop-in fasteners	**Annex B2**
Intended use Installation parameters	of European Technical Assessment ETA-22/0455



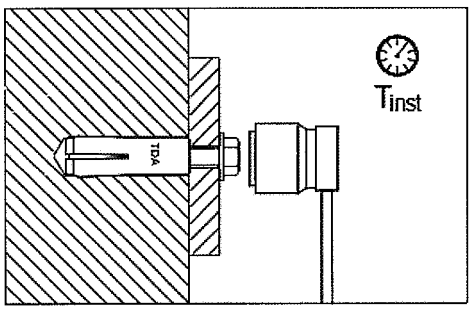
Drill hole with metal hammer drill machine.
Drill to a required depth.



Blow out dust at least 3 times with a hand pump.



Put the fastener into the drill hole, hammering with the installation tool, until the setting pin fully insert into the fastener.



Fix the fixture by screw or threaded rod with max. T_{inst}

TDA drop-in fasteners	Annex B3
Intended use Installation instructions and tools	of European Technical Assessment ETA-22/0455

Table C1: Characteristic resistance in concrete C20/25 to C50/60

Fastener			**TDA08 TDA08L**	**TDA10S TDA10LS**	**TDA10 TDA10L**	**TDA12D TDA12LD**
Size			**M8x30**	**M10x30**	**M10x40**	**M12x50**
All load directions (fastening screw or threaded rod property class ≥ 4.8)						
Characteristic resistance in concrete C20/25 to C50/60	F^0_{Rk}	[kn]	4.0	4.5	4.5	7.0
Installation safety factor	γ_{inst}	[-]	1.4	1.4	1.2	1.2
Partial factor	γ_M [1)]	[-]	1.5	1.5	1.5	1.5
Spacing	s_{cr}	[mm]	200	200	200	250
Edge distance	c_{cr}	[mm]	150	150	150	150
Minimum member thickness	h_{min}	[mm]	80	80	80	80
Shear load: steel failure with lever arm						
Characteristic bending moment: screw class 4.8	$M^0_{Rk,s}$	[Nm]	15.0	30.0	30.0	52.4
Partial factor	γ_{Ms} [1)]	[-]	1.25	1.25	1.25	1.25
Characteristic bending moment: screw class 5.8	$M^0_{Rk,s}$	[Nm]	19.0	37.0	37.0	65.6
Partial factor	γ_{Ms} [1)]	[-]	1.25	1.25	1.25	1.25
Characteristic bending moment: screw class 6.8	$M^0_{Rk,s}$	[Nm]	23.0	45.0	45.0	78.7
Partial factor	γ_{Ms} [1)]	[-]	1.25	1.25	1.25	1.25
Characteristic bending moment: screw class 8.8	$M^0_{Rk,s}$	[Nm]	30.0	60.0	60.0	104.9
Partial factor	γ_{Ms} [1)]	[-]	1.25	1.25	1.25	1.25

[1)] in the absence of other national regulation

Table C2: Characteristic resistance under fire exposure in concrete C20/25 to C50/60

Fastener			**TDA08 TDA08L**	**TDA10S TDA10LS**	**TDA10 TDA10L**	**TDA12D TDA12LD**
Size			**M8x30**	**M10x30**	**M10x40**	**M12x50**
Fire resistance class (fastening screw or threaded rod property class ≥ 4.8)						
R30	Characteristic resistance $F^0_{Rk,fi}$ [1)]	[kN]	0.89	0.89	1.13	1.75
R60		[kN]	0.89	0.89	1.13	1.75
R90		[kN]	0.89	0.89	1.13	1.75
R120		[kN]	0.71	0.71	0.90	1.40
Spacing	$s_{cr,fi}$	[mm]	4 x h_{ef}			
Edge distance	$c_{cr,fi}$	[mm]	2 x h_{ef}			

The design method covers fasteners with a fire attack from one side only. In case of fire attack from more than one side, the edge distance shall be ≥ 300 mm.

[1)] in the absence of other national regulation a partial safety factor $\gamma_{M,fi}$ = 1,0 is recommended