Deutsches Institut für Bautechnik
Zulassungsstelle für Bauprodukte und Bauarten
Bautechnisches Prüfamt
Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts

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Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik

DIBt

Mitglied der EOTA
Member of EOTA

European Technical Approval ETA-07/0013

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*	EJOT Flachdachbefestiger *EJOT Fasteners Flat Roof*
Zulassungsinhaber *Holder of approval*	EJOT Baubefestigungen GmbH In der Stockwiese 35 57334 Bad Laasphe DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Befestigungselemente für Dachabdichtungssysteme *Fasteners for flexible roof waterproofing membrane systems*
Geltungsdauer: *Validity:* vom *from* bis *to*	13 June 2013 17 January 2017
Herstellwerke *Manufacturing plants*	Werk 1, Werk 2, Werk 3, Werk 4, Werk 5, Werk 6, Werk 7 Factory 1, Factory 2, Factory 3, Factory 4, Factory 5, Factory 6, Factory 7

Diese Zulassung umfasst *This Approval contains*	38 Seiten einschließlich 32 Anhänge *38 pages including 32 annexes*
Diese Zulassung ersetzt *This Approval replaces*	ETA-07/0013 mit Geltungsdauer vom 17.01.2012 bis 17.01.2017 *ETA-07/0013 with validity from 17.01.2012 to 17.01.2017*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by Article 2 of the law of 8 November 2011[5];*
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6];
- Guideline for European technical approval of "Mechanically fastened flexible roof waterproofing membranes", ETAG 006.

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2011*, p. 2178
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of the products and intended use

1.1 Definition of the construction product

The products are mechanical fasteners. The fasteners comprise a screw made of coated carbon steel or stainless steel and a washer with or without integrated sleeve. The washers without integrated sleeve are made of coated carbon steel whereas the washers with integrated sleeve are made of plastic materials (polyamide or polyethylene).

1.2 Intended use

The fasteners are intended to be used for the fastening of flexible roof waterproofing membranes according to ETAG 006. The possible substrates are steel decks, concrete, aerated concrete, light concrete, timber or wood-based material.

The provisions made in this European technical approval are based on an assumed working life of the fasteners of 10 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.

In order to use the fasteners for systems of mechanically fastened flexible roof waterproofing membranes according to ETAG 006 a separate ETA is necessary for the entire roof waterproofing system.

2 Characteristics of the products and methods of verification

2.1 Characteristics of the product

The fasteners shall correspond to the information given in Annexes 1 to 30.

The material properties, dimensions and tolerances not indicated in Annexes 1 to 30 shall correspond to the information laid down in the technical information[7] to this European technical approval.

2.2 Safety in use (ER 4)

The characteristic values and mean values of the axial load resistance of the fasteners are given in Annexes 31 and 32. The values were determined by axial loading tests according to ETAG 006.

The fasteners are deemed to satisfy the requirements of ETAG 006 concerning unwinding. This was evaluated on the basis of the existing field experience of the manufacturer.

2.3 Aspects of durability

The durability requirements of ETAG 006 (resistance to corrosion of metallic fasteners, impact resistance and brittleness of plastic fasteners before and after heat ageing, requirements for results of Charpy tests for plastic materials before and after heat ageing) are satisfied for the coated carbon steel, stainless steel, polyamide and polyethylene components of the fasteners.

[7] The technical documentation is deposited with Deutsches Institut für Bautechnik and as far as relevant for the tasks of the approved bodies involved in the attestation of conformity procedure is handed over to the approved bodies.

All coated carbon steel components resisted to 15 cycles of the test procedure described in ETAG 006 (Kesternich test) and did not show more than 15 % surface corrosion.

The test results of the tests to check the impact resistance and brittleness of the polyamide and polyethylene components showed a drop height of more than 1.0 m before and after heat ageing of these components. Furthermore the results of the corresponding Charpy tests after heat ageing did not show any decline compared to the results before heat ageing.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 98/143/EC of the European Commission[8] system 2+ of the attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 2+: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer:
  (1) initial type–testing of the product;
  (2) factory production control;
  (3) testing of samples taken at the factory in accordance with a prescribed test plan.

(b) Tasks for the approved body:
  (4) certification of factory production control on the basis of:
    – initial inspection of factory and of factory production control;
    – continuous surveillance, assessment and approval of factory production control.

Note: Approved bodies are also referred to as "notified bodies".

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use initial materials stated in the technical documentation of this European technical approval.

[8] Official Journal of the European Communities L 42 of 14/02/1998

The factory production control shall be in accordance with the control plan which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with Deutsches Institut für Bautechnik.[9]

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of “Fasteners for flexible roof waterproofing membranes" in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval.

3.2.2 Tasks for the approved bodies

The approved body shall perform the

- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control,

in accordance with the provisions laid down in the control plan.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control stating the conformity with the provisions of this European technical approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed on each packaging of fasteners. The letters "CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate for the factory production control,
- the number of the European technical approval,
- the name of the product.

[9] The control plan is a confidential part of the European technical approval and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

4 Assumptions under which the fitness of the products for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval shall be necessary.

4.2 Installation

The installation is carried out according to the manufacturer's instructions. The manufacturer hands over the assembly instructions to the assembler.

In order to use the fasteners for systems of mechanically fastened flexible roof waterproofing membranes according to ETAG 006 a valid ETA is issued for the entire roof waterproofing system. The system ETA covers the wind uplift resistance of the entire system as well as the product characteristics of the components of the system.

The conformity of the installed fastener with this ETA is attested by the executing company.

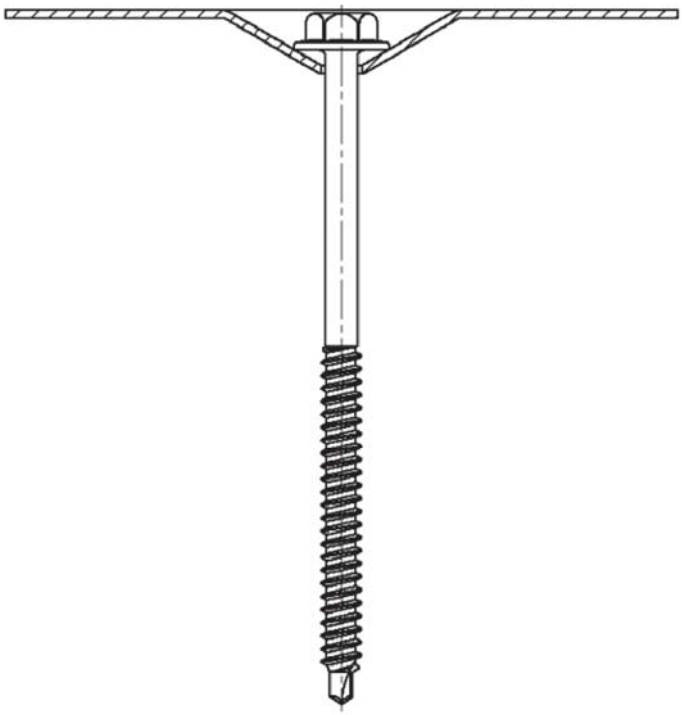
5 Indications to the manufacturer

It is in the responsibility of the manufacturer to ensure that the information on the specific conditions according to 1, 2 and 4 is given to those who are concerned. The information may be given by reproduction of the European technical approval. In addition all installation data shall be shown clearly on the package and/or on an enclosed instruction sheet, preferably using illustration(s).

Andreas Kummerow
p. p. Head of Department

beglaubigt:
Spohn

Deutsches Institut für Bautechnik



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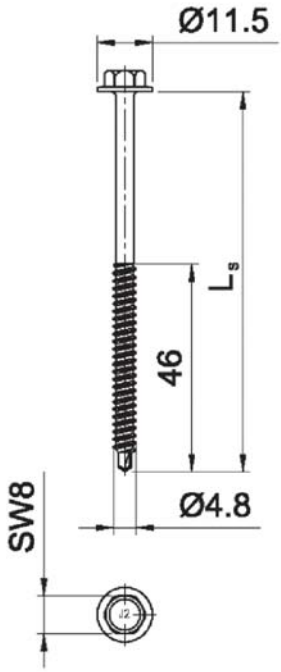

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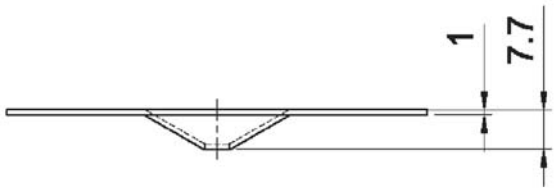
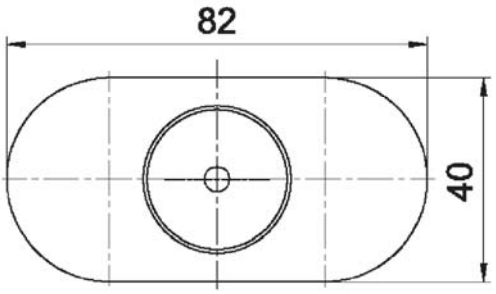




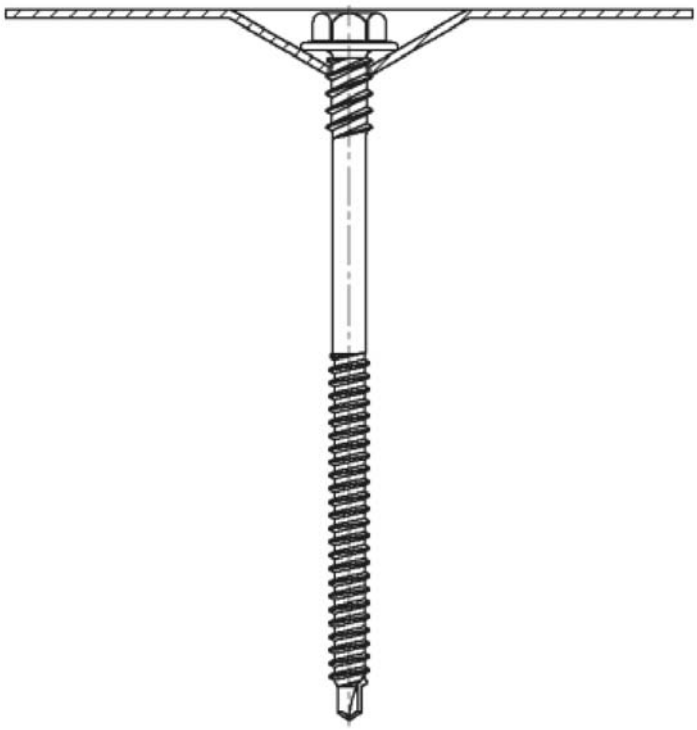
EJOT Flat Roof Fasteners

Combination 1

Fastener: EJOT Dabo® SW 8 R 4,8 x L_s
Washer: EJOT® HTV 82/40

Annex 1

Deutsches Institut für Bautechnik



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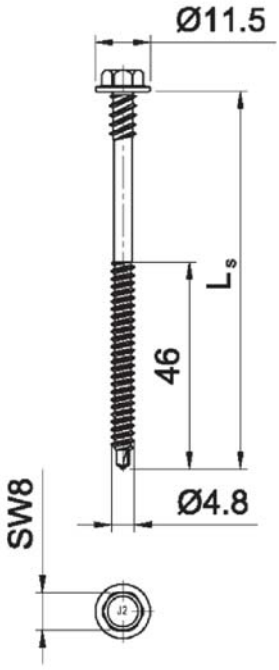

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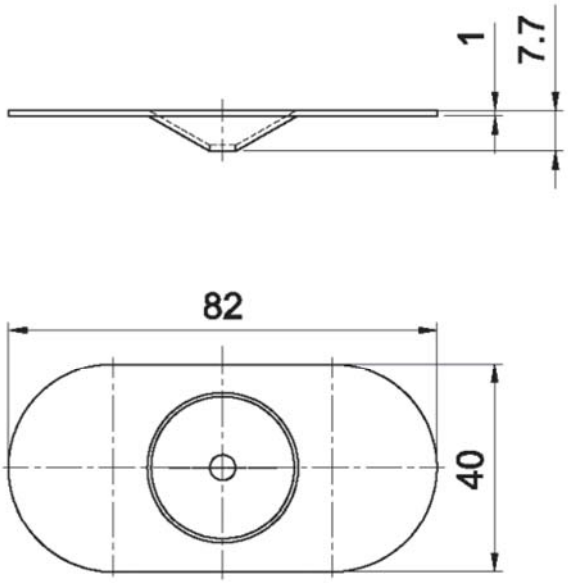


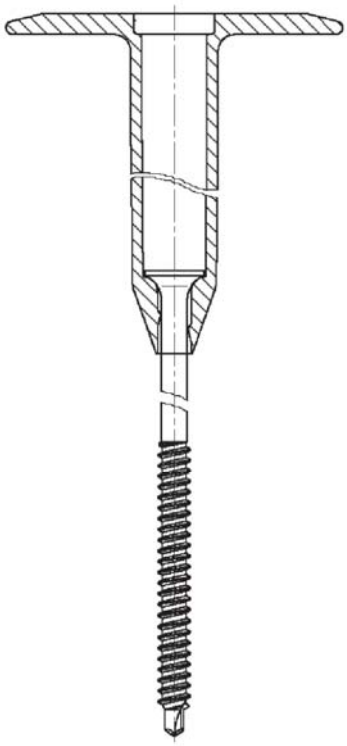
EJOT Flat Roof Fasteners

Combination 2

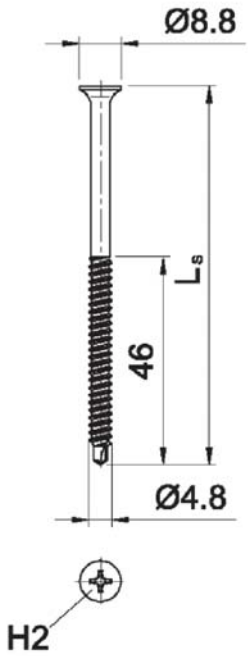
Fastener: EJOT Dabo® SW 8 RT 4,8 x L_s
Washer: HTV® 82/40

Annex 2

Deutsches Institut für Bautechnik



EJOT Dabo® TKR - 4,8 x L_s



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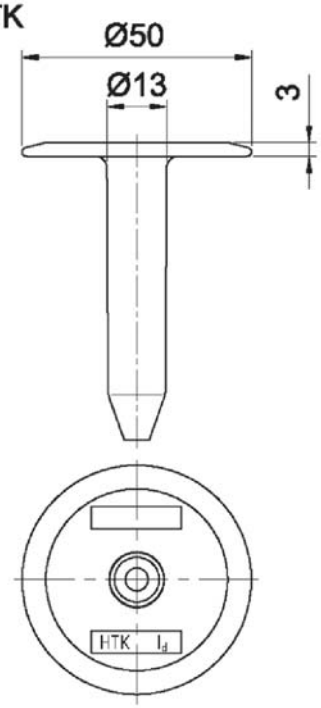

EJOT Flat Roof Fasteners

Combination 3

Fastener: EJOT Dabo® TKR 4,8 x L_S
Washer: EJOT® HTK

Annex 3

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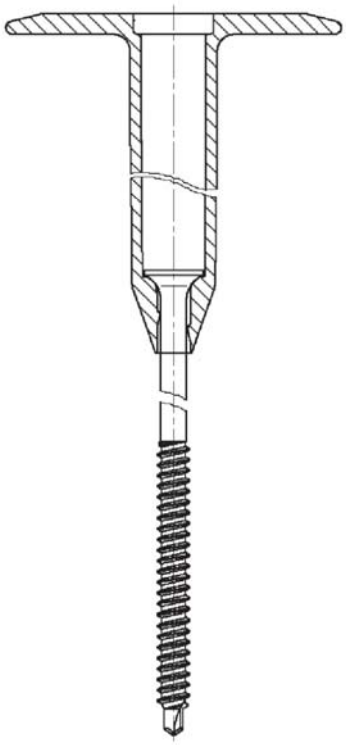
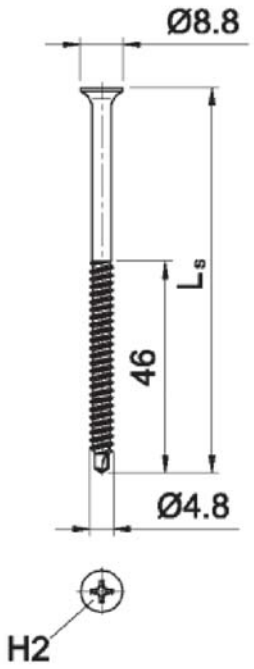


EJOT Dabo® TKE - 4,8 x L_s



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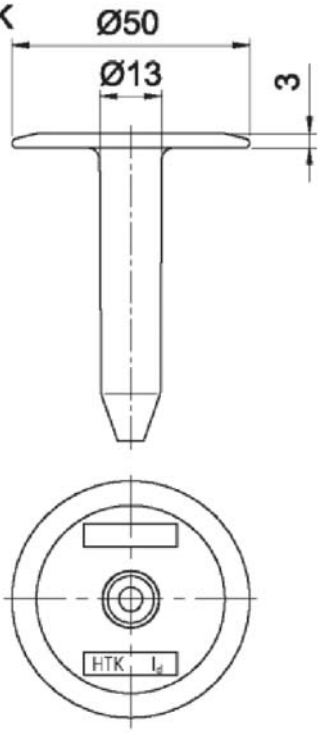


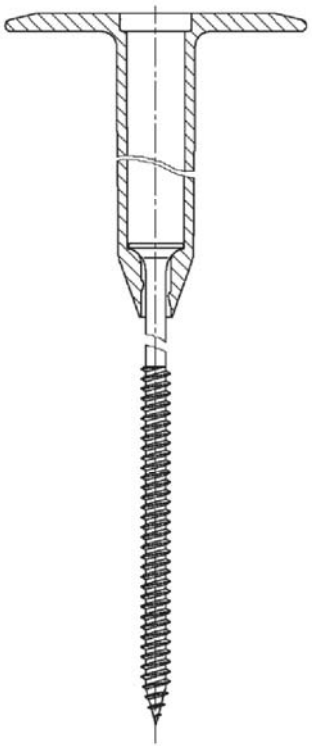
EJOT Flat Roof Fasteners

Combination 4

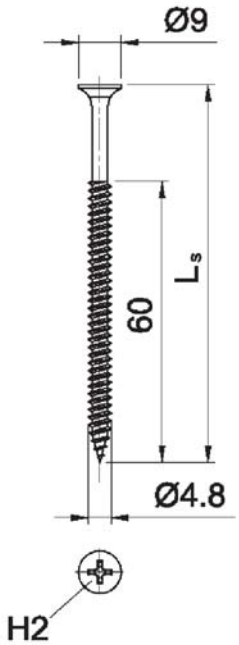
Fastener: EJOT Dabo® TKE 4,8 x L_S
Washer: EJOT® HTK

Annex 4

Deutsches Institut für Bautechnik DIBt



EJOT Dabo® VHT-R - 4,8 x L_s



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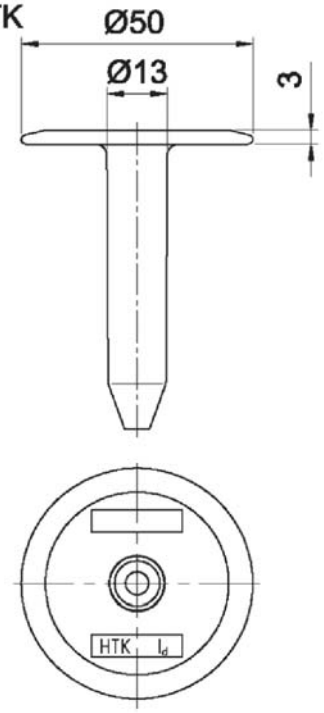


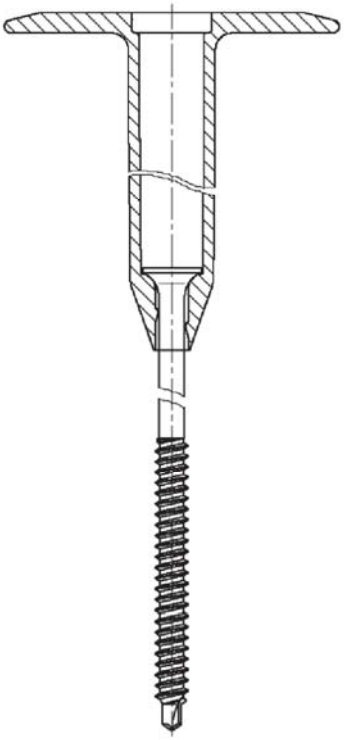
EJOT Flat Roof Fasteners

Combination 5

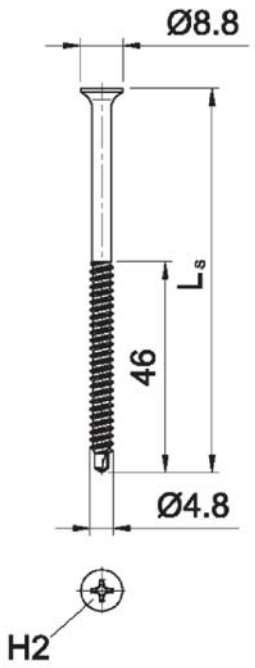
Fastener: EJOT Dabo® VHT-R 4,8 x L_S
Washer: EJOT® HTK

Annex 5

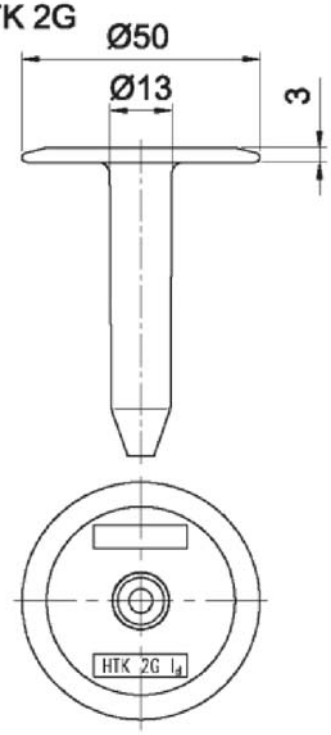
Deutsches Institut für Bautechnik DIBt



EJOT Dabo® TKR - 4,8 x L_s



EJOT® HTK 2G



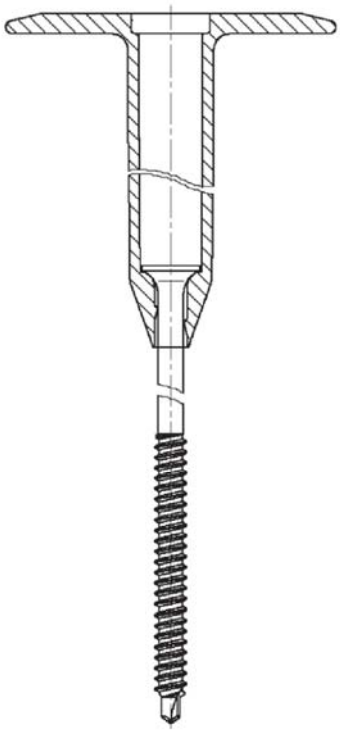
EJOT Flat Roof Fasteners

Combination 6

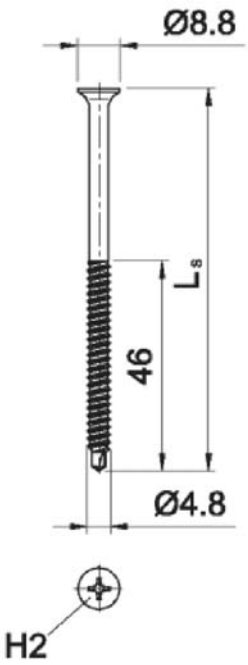
Fastener: EJOT Dabo® TKR 4,8 x L_S
Washer: EJOT® HTK 2G

Annex 6

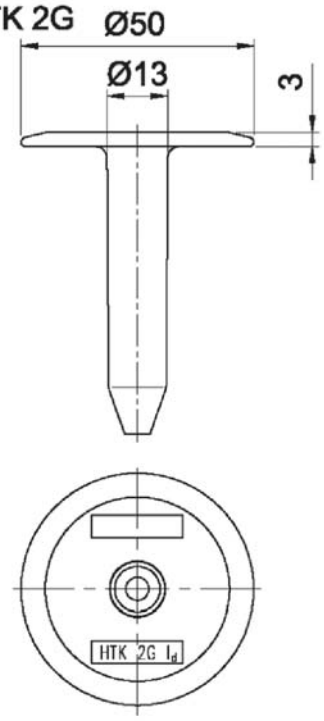
Deutsches Institut für Bautechnik DIBt



EJOT Dabo® TKE - 4,8 x L_s



EJOT® HTK 2G Ø50



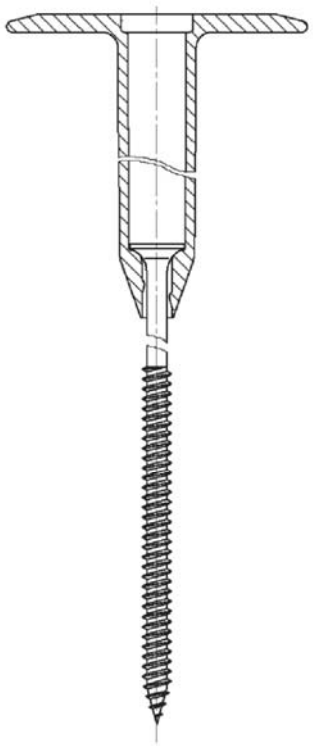
EJOT Flat Roof Fasteners

Combination 7

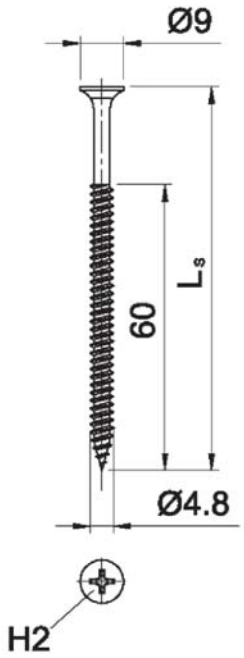
Fastener: EJOT Dabo® TKE 4,8 x L_S
Washer: EJOT® HTK 2G

Annex 7

Deutsches Institut für Bautechnik DIBt



EJOT Dabo® VHT-R - 4,8 x L_s



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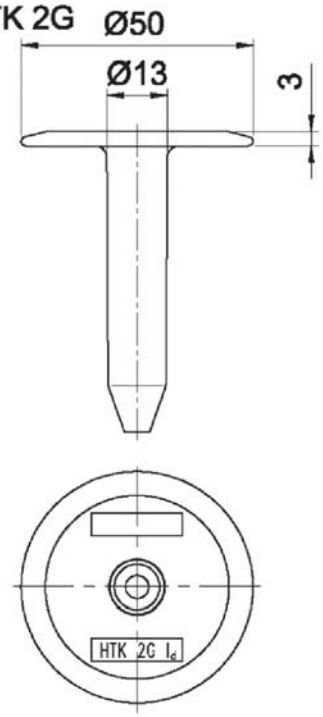


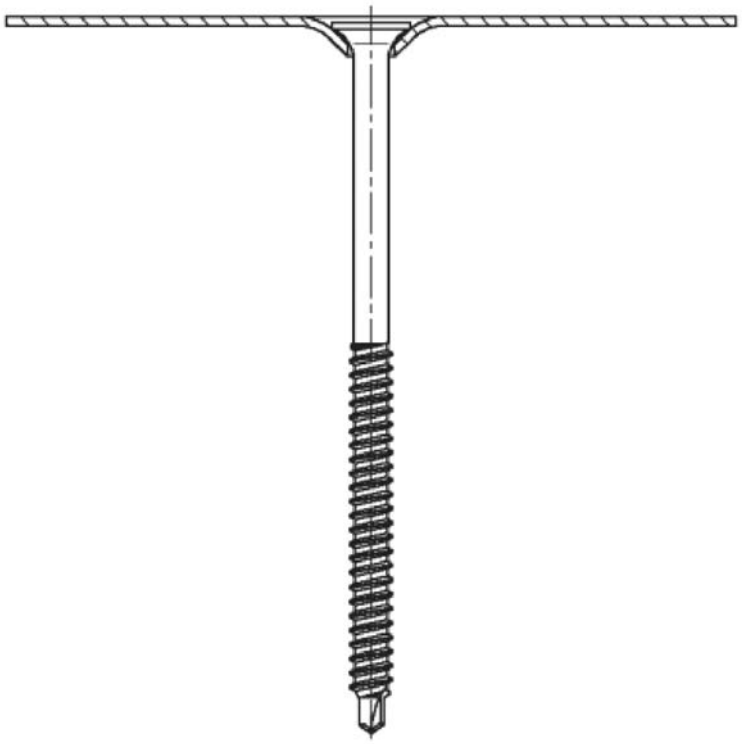
EJOT Flat Roof Fasteners

Combination 8

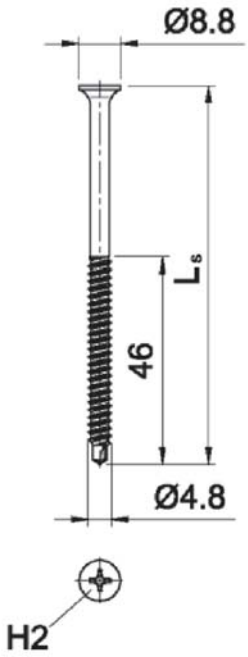
Fastener: EJOT Dabo® VHT-R 4,8 x L_S
Washer: EJOT® HTK 2G

Annex 8

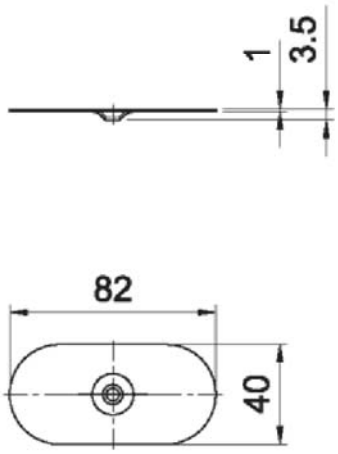
Deutsches Institut für Bautechnik DIBt



EJOT Dabo® TKR - 4,8 x L_s



EJOT® HTV 82/40 TK



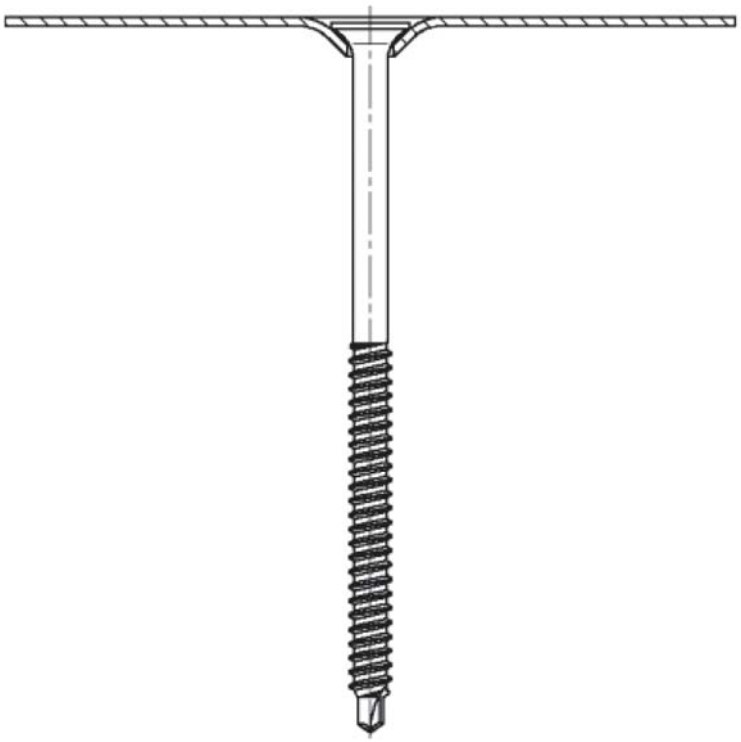
EJOT Flat Roof Fasteners

Combination 9

Fastener: EJOT Dabo® TKR 4,8 x L_S
Washer: EJOT® HTV 82/40 TK

Annex 9

Deutsches Institut für Bautechnik DIBt



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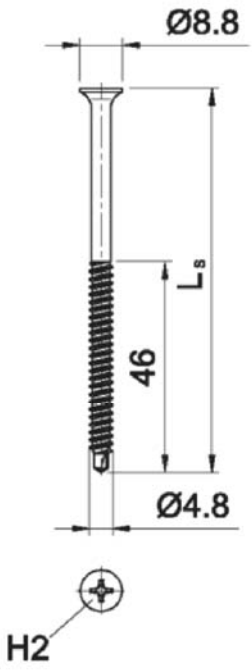

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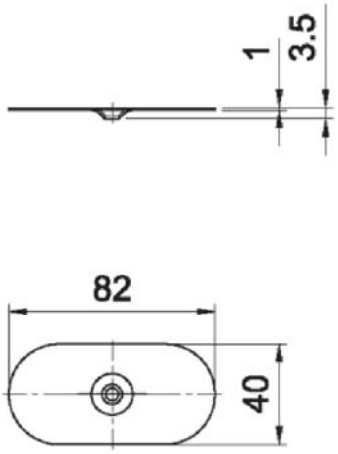


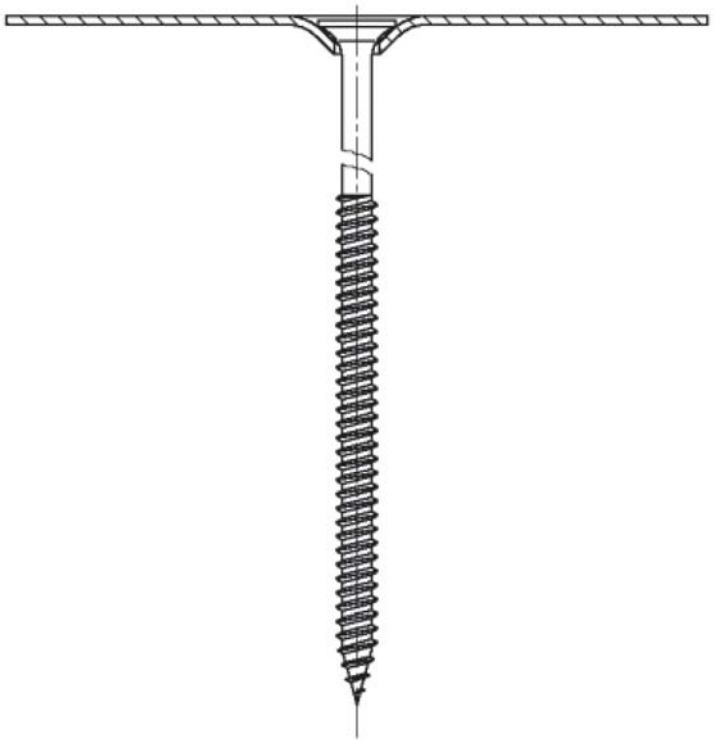
EJOT Flat Roof Fasteners

Combination 10

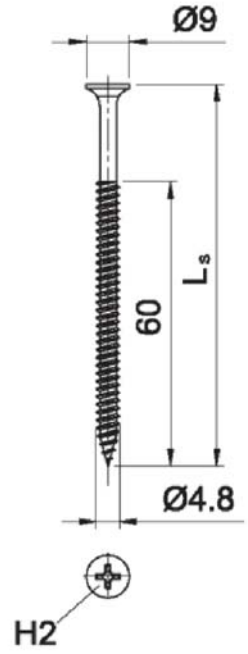
Fastener: EJOT Dabo® TKE 4,8 x L_S
Washer: EJOT® HTV 82/40 TK

Annex 10

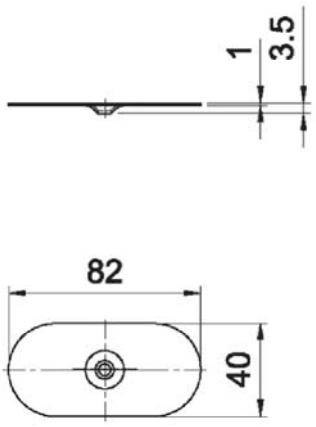
Deutsches Institut für Bautechnik DIBt



EJOT Dabo® VHT-R - 4,8 x L_s



EJOT® HTV 82/40 TK



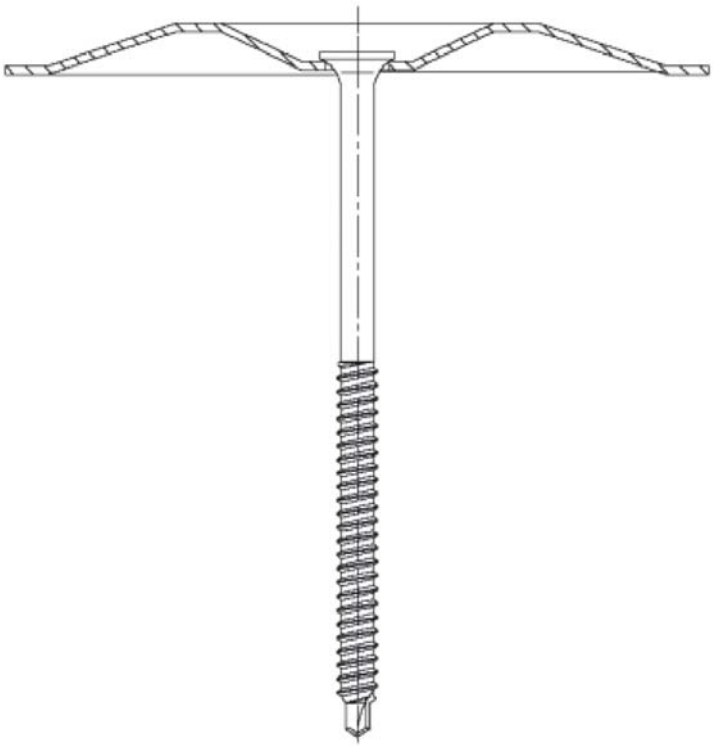
EJOT Flat Roof Fasteners

Combination 11

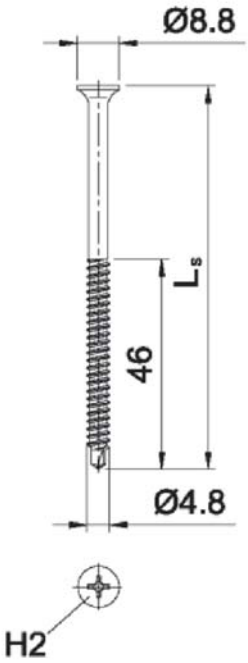
Fastener: EJOT Dabo® VHT-R 4,8 x L_S
Washer: EJOT® HTV 82/40 TK

Annex 11

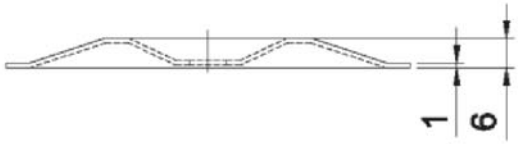
Deutsches Institut für Bautechnik

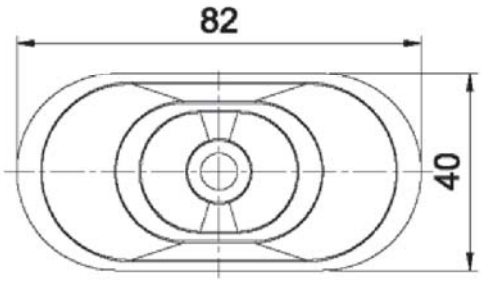


EJOT Dabo® TKR - 4,8 x L_s



EJOT® HTV 82/40 F





EJOT Flat Roof Fasteners

Combination 12

Fastener: EJOT Dabo® TKR 4,8 x L_S
Washer: EJOT® HTV 82/40 F

Annex 12

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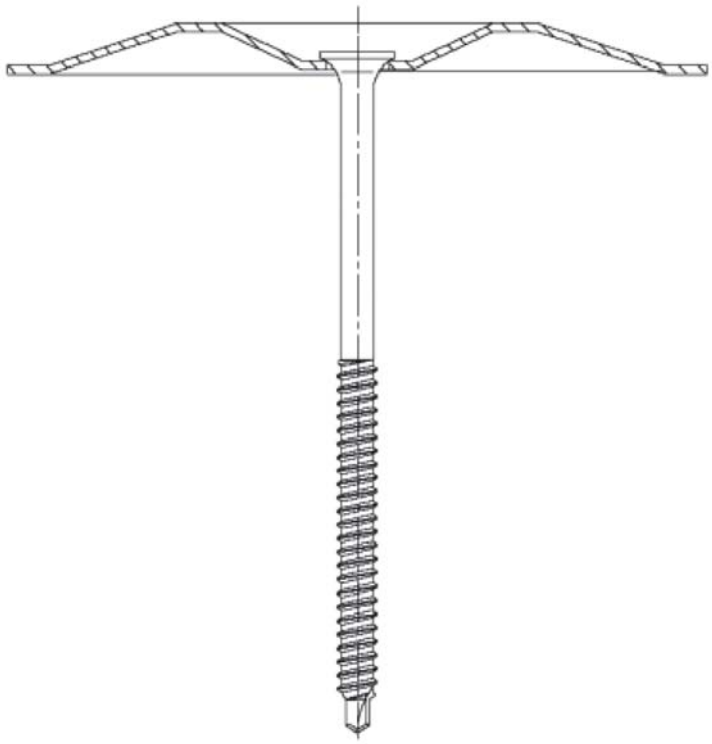
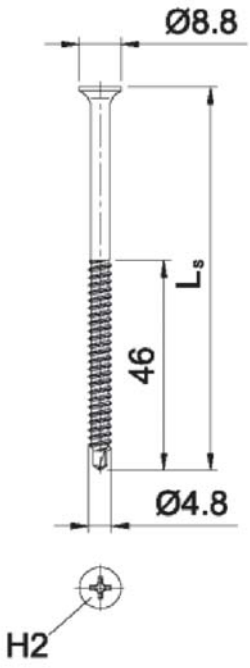
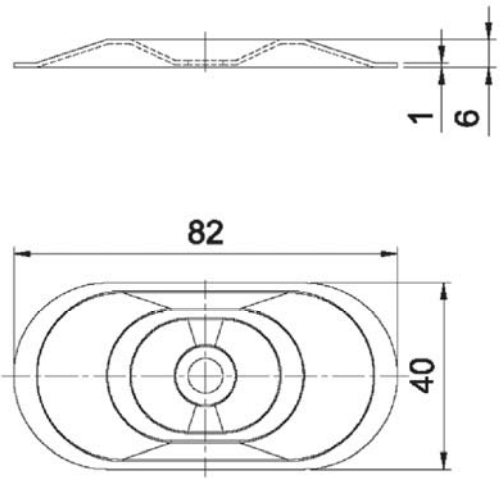


EJOT Dabo® TKE - 4,8 x L_s



EJOT® HTV 82/40 F



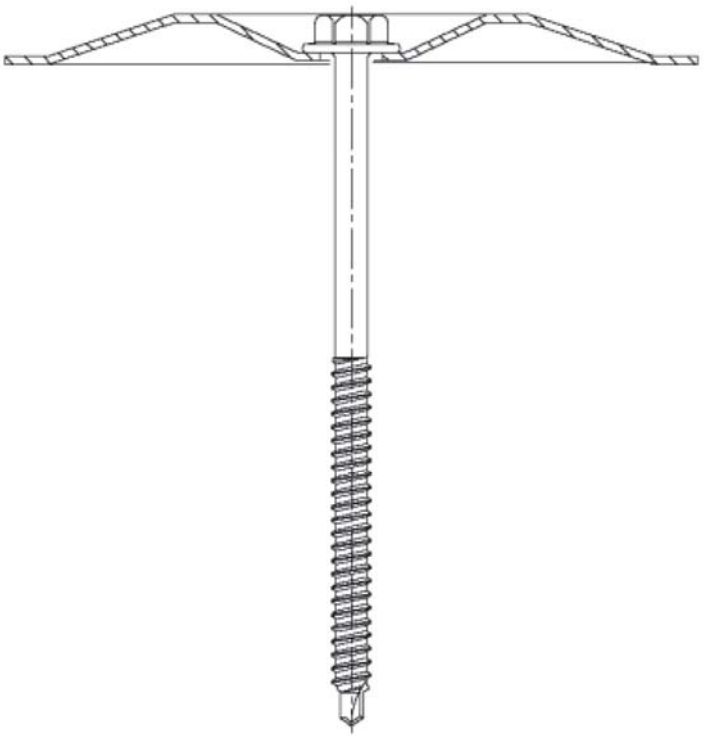
EJOT Flat Roof Fasteners

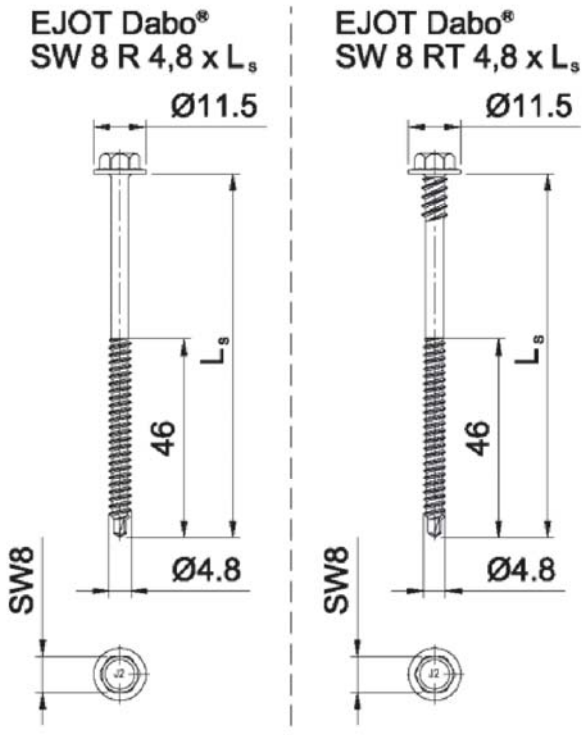
Combination 13

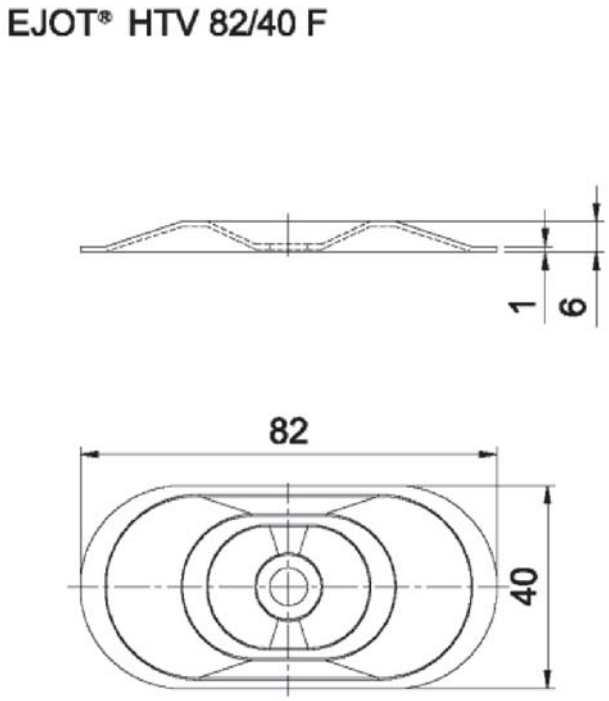
Fastener: EJOT Dabo® TKE 4,8 x L_S
Washer: EJOT® HTV 82/40 F

Annex 13

Deutsches Institut für Bautechnik







EJOT Flat Roof Fasteners

Combination 14

Fastener: EJOT Dabo® SW 8 R 4,8 x Ls / EJOT Dabo® SW 8 RT 4,8 x Ls
Washer: EJOT® HTV 82/40 F

Annex 14

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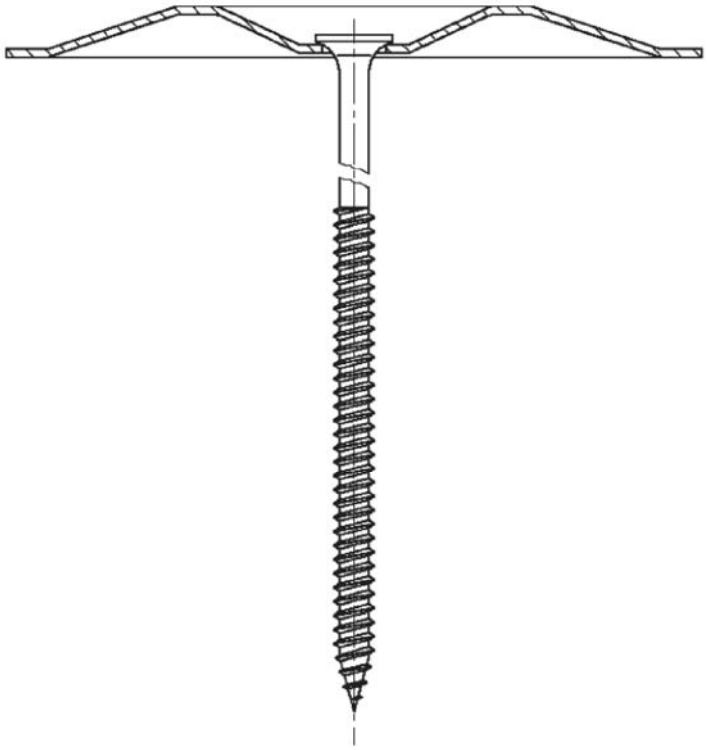
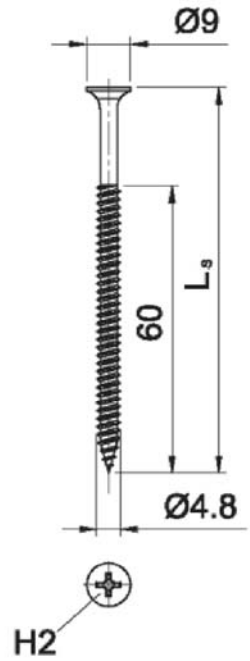
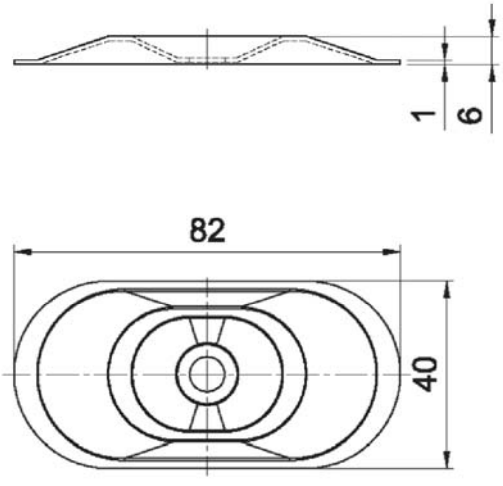


EJOT Dabo® VHT-R - 4,8 x L_s



EJOT® HTV 82/40 F



EJOT Flat Roof Fasteners

Combination 15

Fastener: EJOT Dabo® VHT-R 4,8 x L_S
Washer: EJOT® HTV 82/40 F

Annex 15

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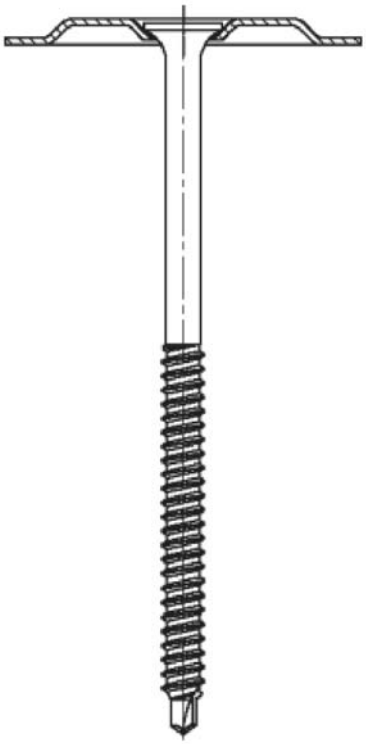
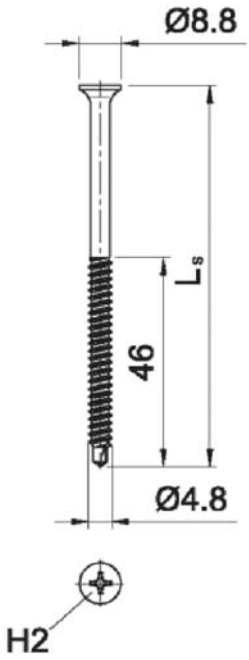
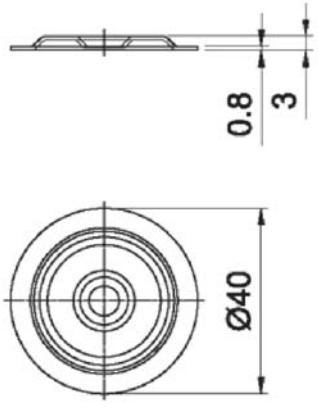
DIBt



EJOT Dabo® TKR - 4,8 x L_s



EJOT® HTV 40 RU 6,5



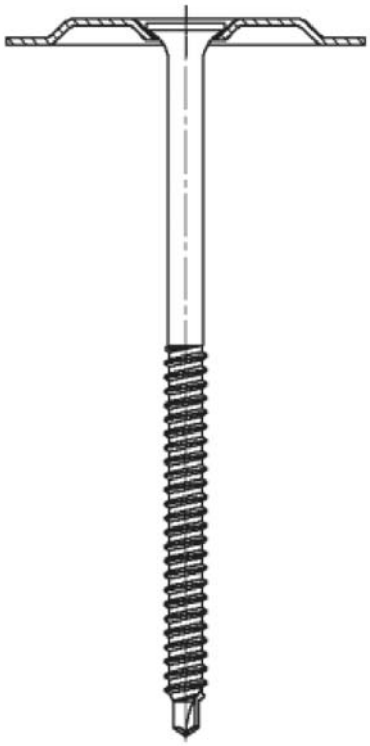
EJOT Flat Roof Fasteners

Combination 16

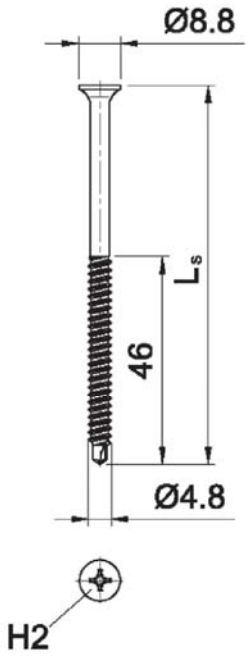
Fastener: EJOT Dabo® TKR 4,8 x L_S
Washer: EJOT® HTV 40 RU 6,5 mm

Annex 16

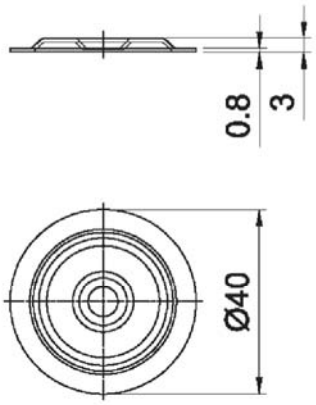
Deutsches Institut für Bautechnik DIBt



EJOT Dabo® TKE - 4,8 x L_s



EJOT® HTV 40 RU 6,5



EJOT Flat Roof Fasteners

Combination 17

Fastener: EJOT Dabo® TKE 4,8 x L_S
Washer: EJOT® HTV 40 RU 6,5 mm

Annex 17

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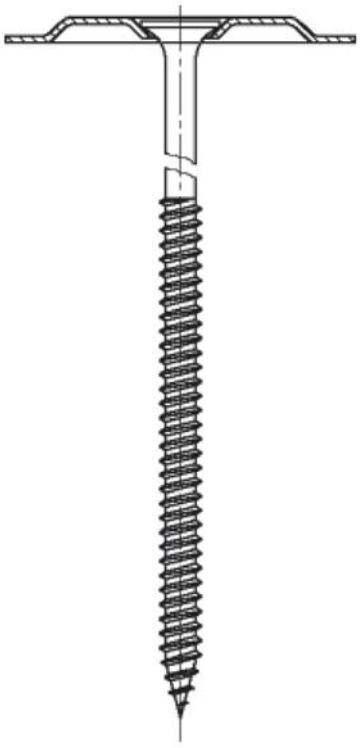
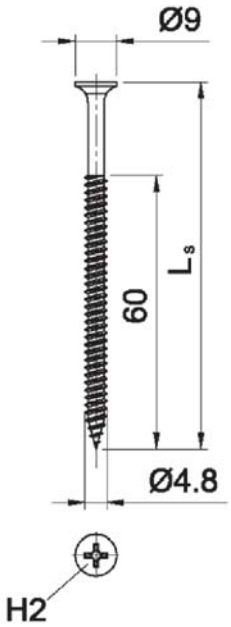
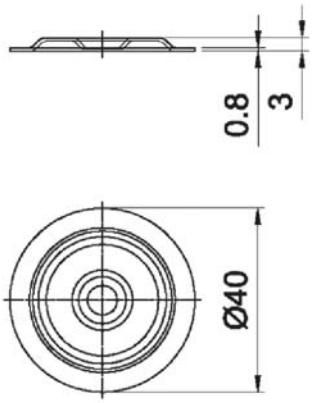


EJOT Dabo® VHT-R - 4,8 x L_s



EJOT® HTV 40 RU 6,5



EJOT Flat Roof Fasteners

Combination 18

Fastener: EJOT Dabo® VHT-R 4,8 x L_S
Washer: EJOT® HTV 40 RU 6,5 mm

Annex 18

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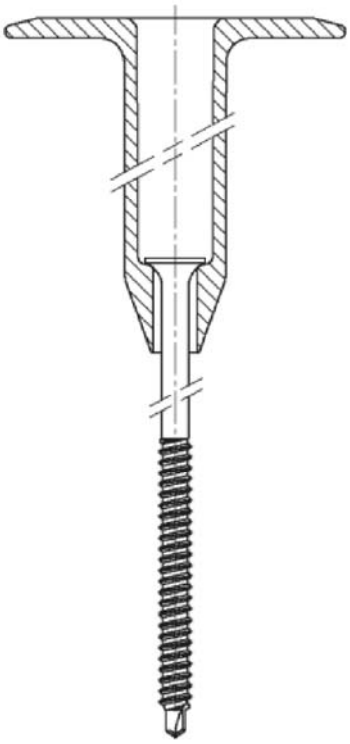
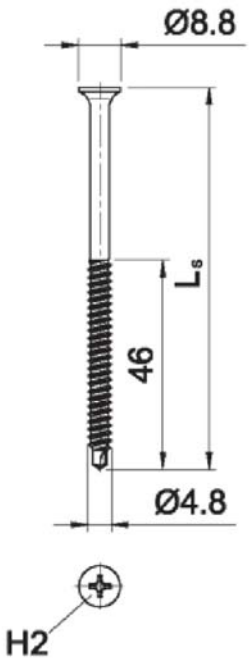
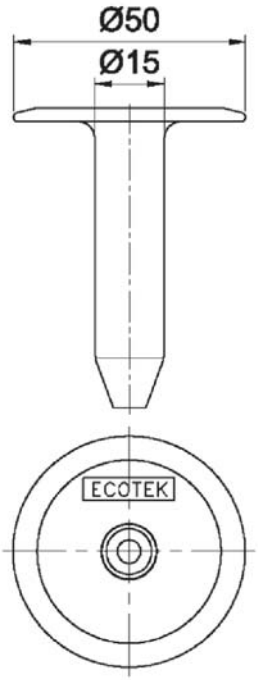


EJOT Dabo® TKR - 4,8 x L_s



EJOT® EcoTek 50



EJOT Flat Roof Fasteners

Combination 19

Fastener: EJOT Dabo® TKR 4,8 x L_S
Washer: EJOT® EcoTek 50

Annex 19

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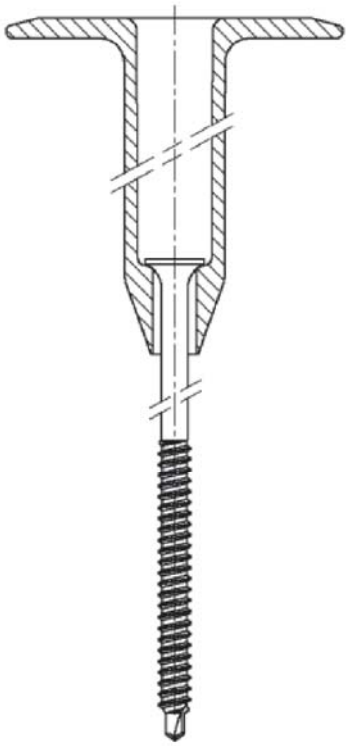
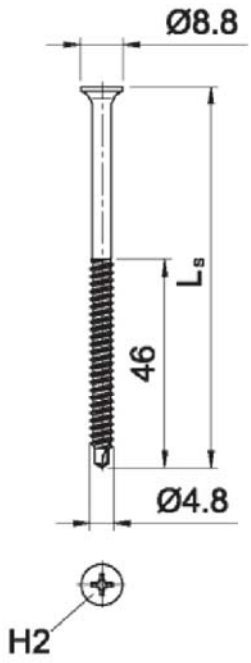
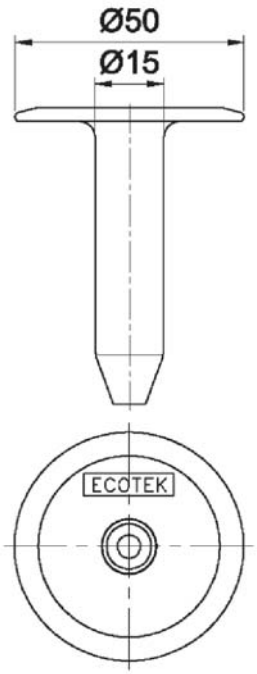


EJOT Dabo® TKE - 4,8 x L_s



EJOT® EcoTek 50



EJOT Flat Roof Fasteners

Combination 20

Fastener: EJOT Dabo® TKE 4,8 x L_S
Washer: EJOT® EcoTek 50

Annex 20

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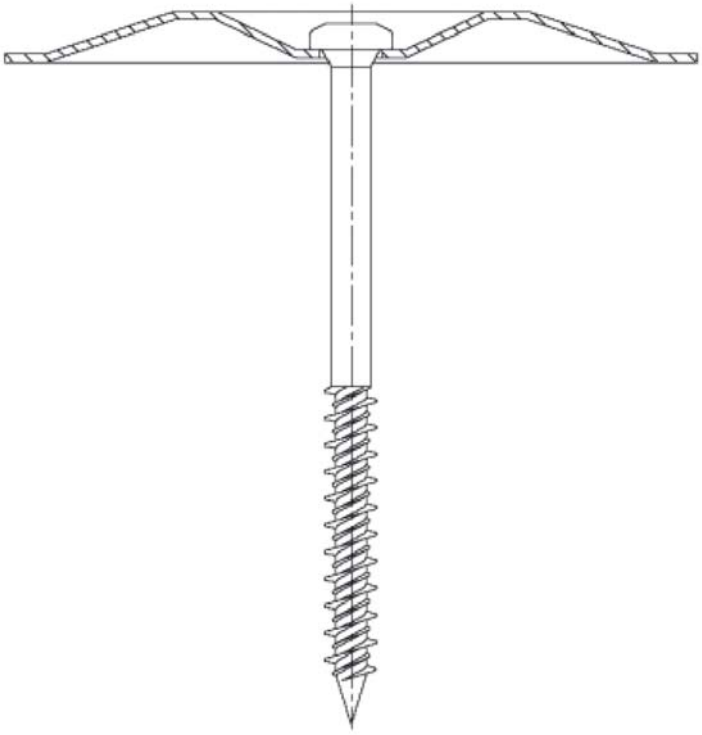
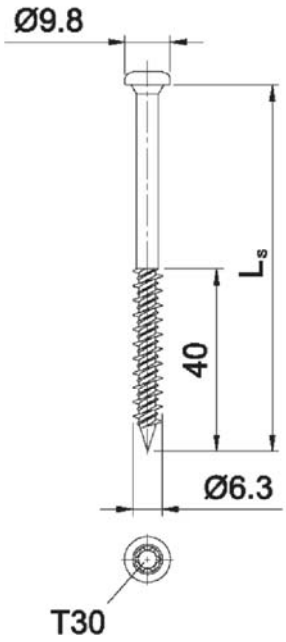
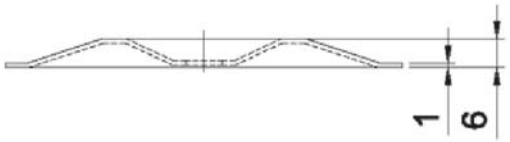
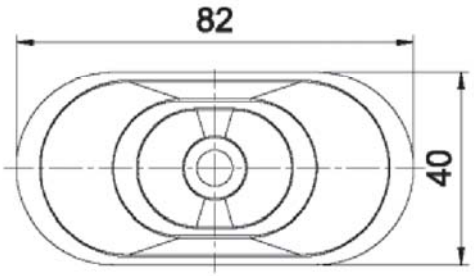


EJOT® FBS - R - 6,3 x L_s



EJOT® HTV 82/40 F





EJOT Flat Roof Fasteners

Combination 21

Fastener: EJOT® FBS - R - 6,3 x Ls
Washer: EJOT® HTV 82/40 F

Annex 21

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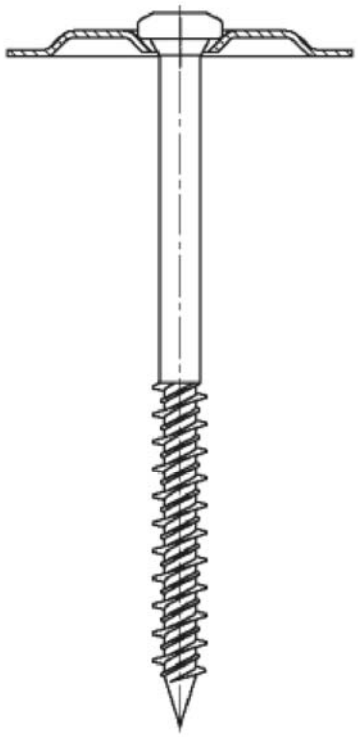
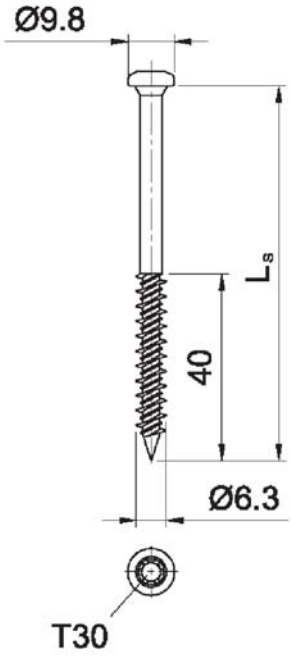
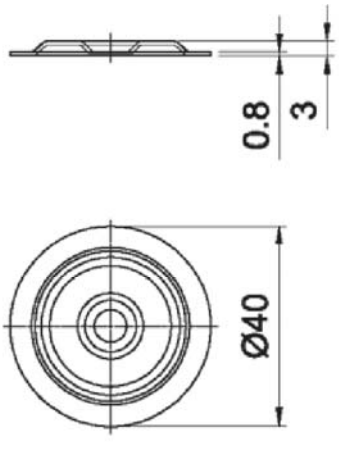


EJOT® FBS - R - 6,3 x L_s



EJOT® HTV 40 RU 6,5



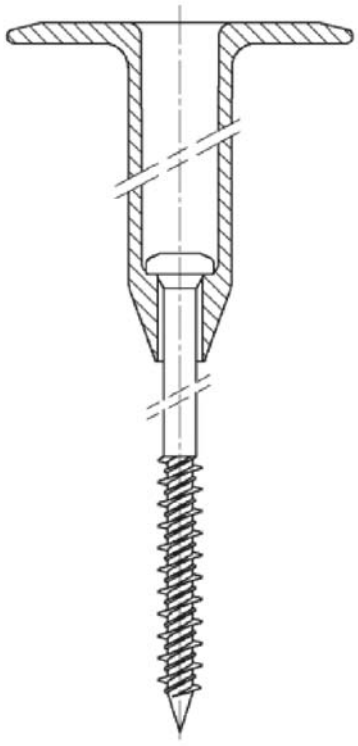
EJOT Flat Roof Fasteners

Combination 22

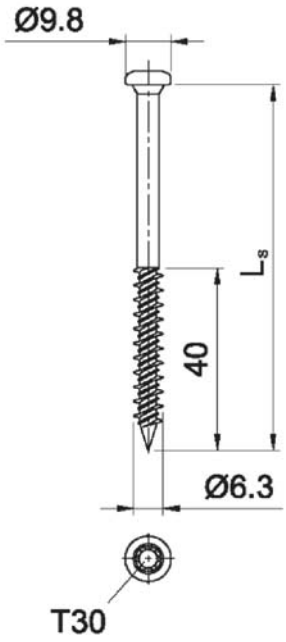
Fastener: EJOT® FBS - R - 6,3 x Ls
Washer: EJOT® HTV 40 RU 6,5 mm

Annex 22

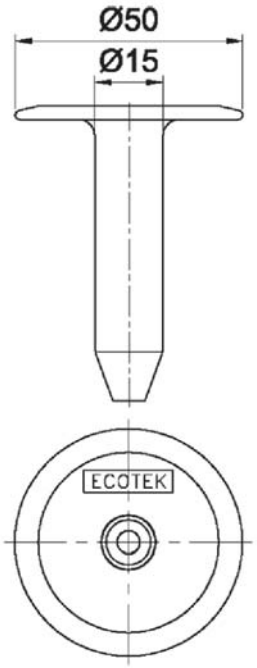
Deutsches Institut für Bautechnik DIBt



EJOT® FBS - R - 6,3 x L_s



EJOT® EcoTek 50



EJOT Flat Roof Fasteners

Combination 23

Fastener: EJOT® FBS - R - 6,3 x Ls
Washer: EJOT® EcoTek 50

Annex 23

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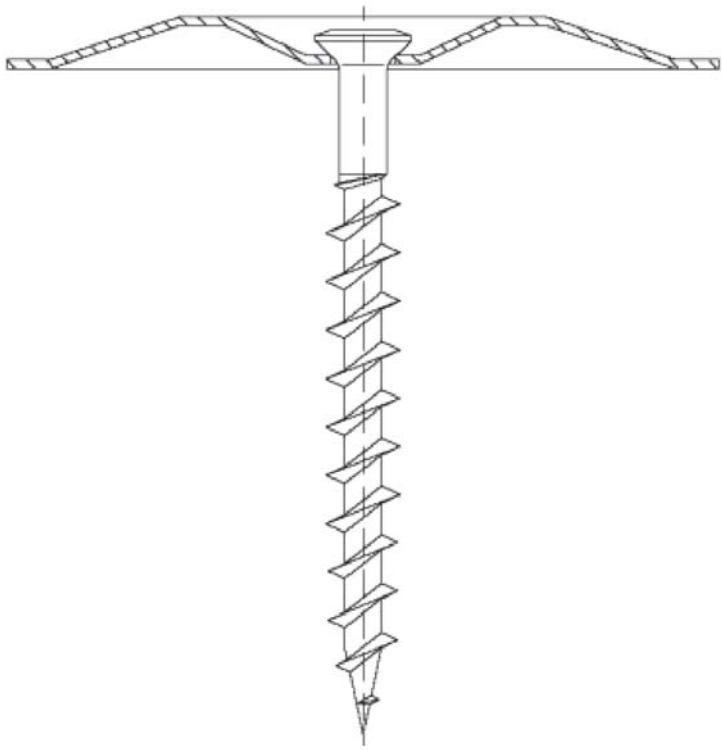
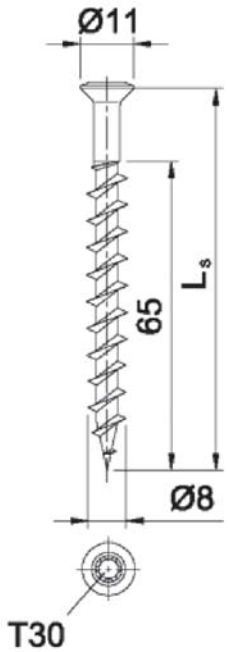
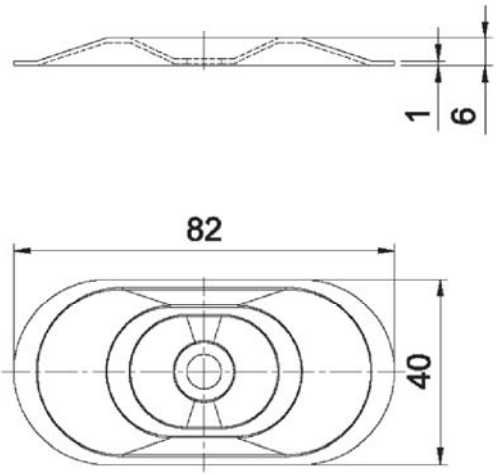


EJOT® FPS - E - 8,0 x L_s



EJOT® HTV 82/40 F



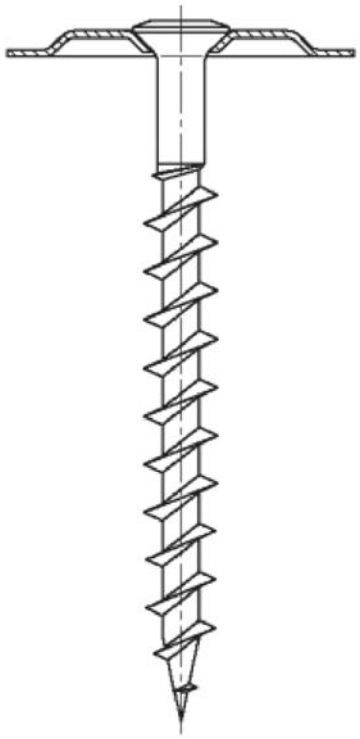
EJOT Flat Roof Fasteners

Combination 24

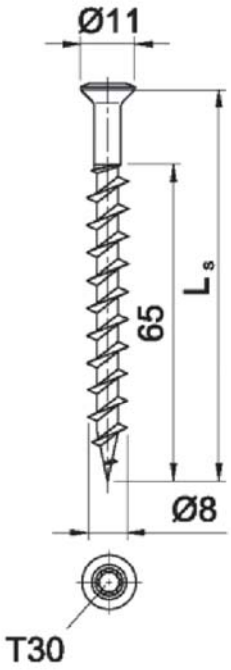
Fastener: EJOT® FPS - E - 8,0 x L_S
Washer: EJOT® HTV 82/40 F

Annex 24

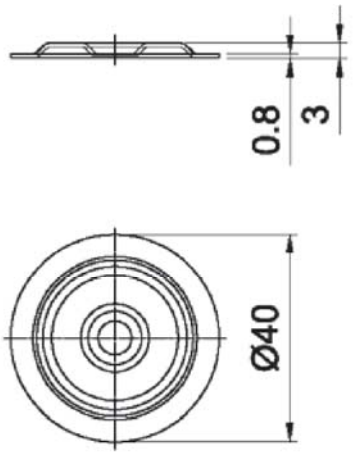
Deutsches Institut für Bautechnik DIBt



EJOT® FPS - E - 8,0 x L_s



EJOT® HTV 40 RU 6,5



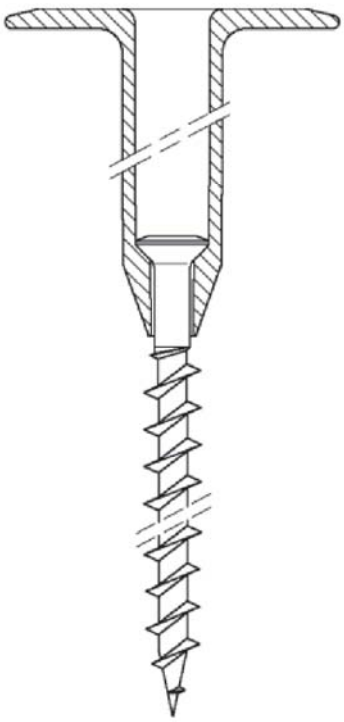
EJOT Flat Roof Fasteners

Combination 25

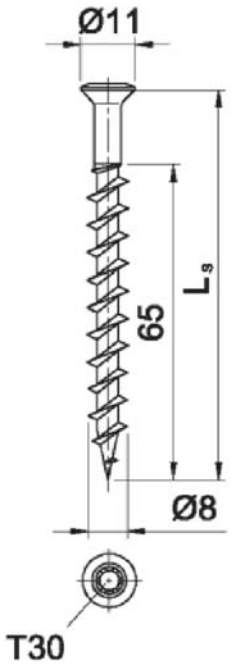
Fastener: EJOT® FPS - E - 8,0 x L_S
Washer: EJOT® HTV 40 RU 6,5 mm

Annex 25

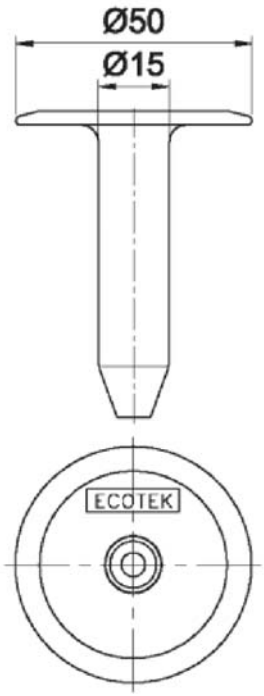
Deutsches Institut für Bautechnik DIBt



EJOT® FPS - E - 8,0 x L_s



EJOT® EcoTek 50



EJOT Flat Roof Fasteners

Combination 26

Fastener: EJOT® FPS - E - 8,0 x L_S
Washer: EJOT® EcoTek 50

Annex 26

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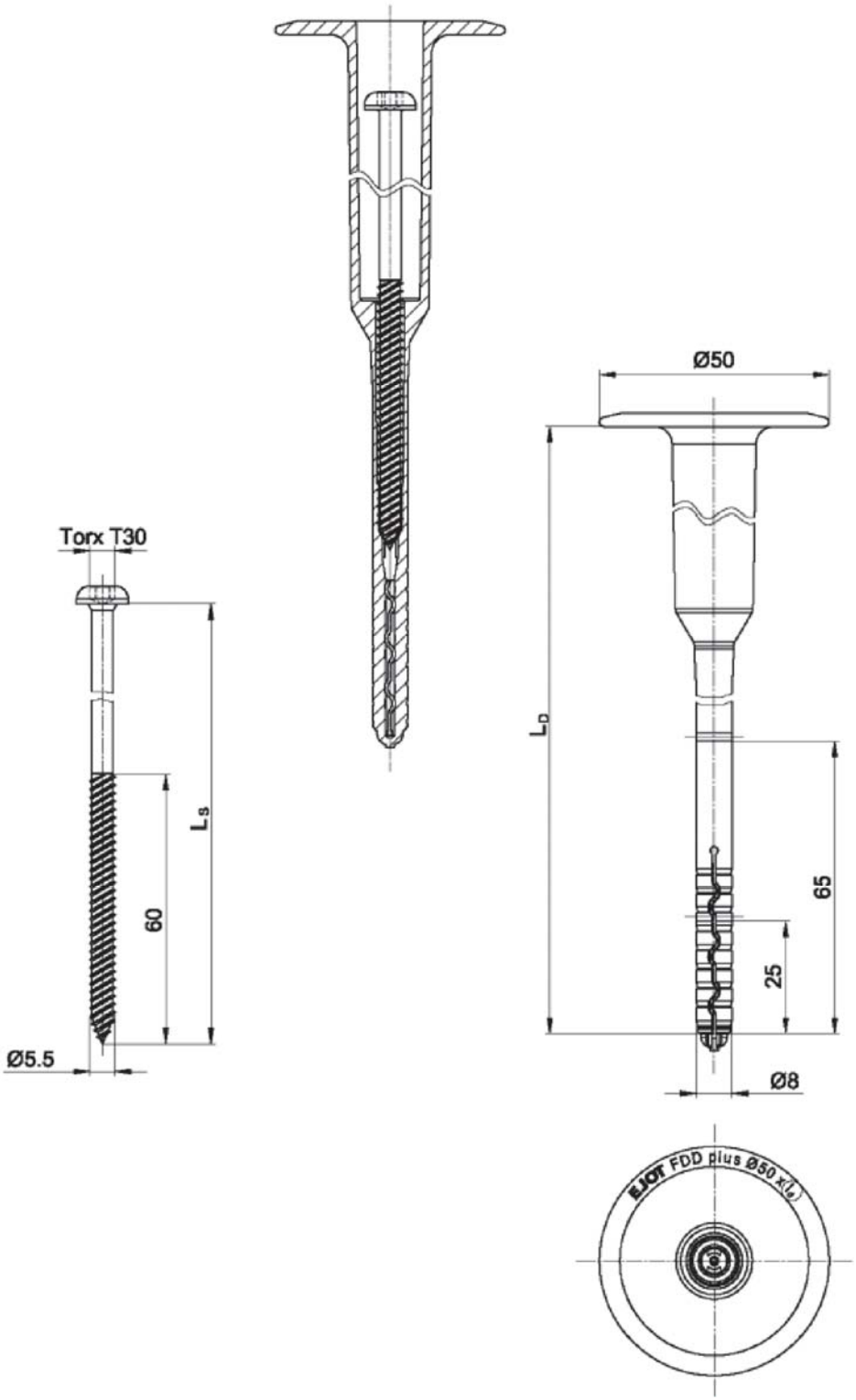
EJOT® FDD plus 50 x L_D - R



EJOT Flat Roof Fasteners

Combination 27

EJOT® FDDplus 50 x L_D-R (one-part)

Annex 27

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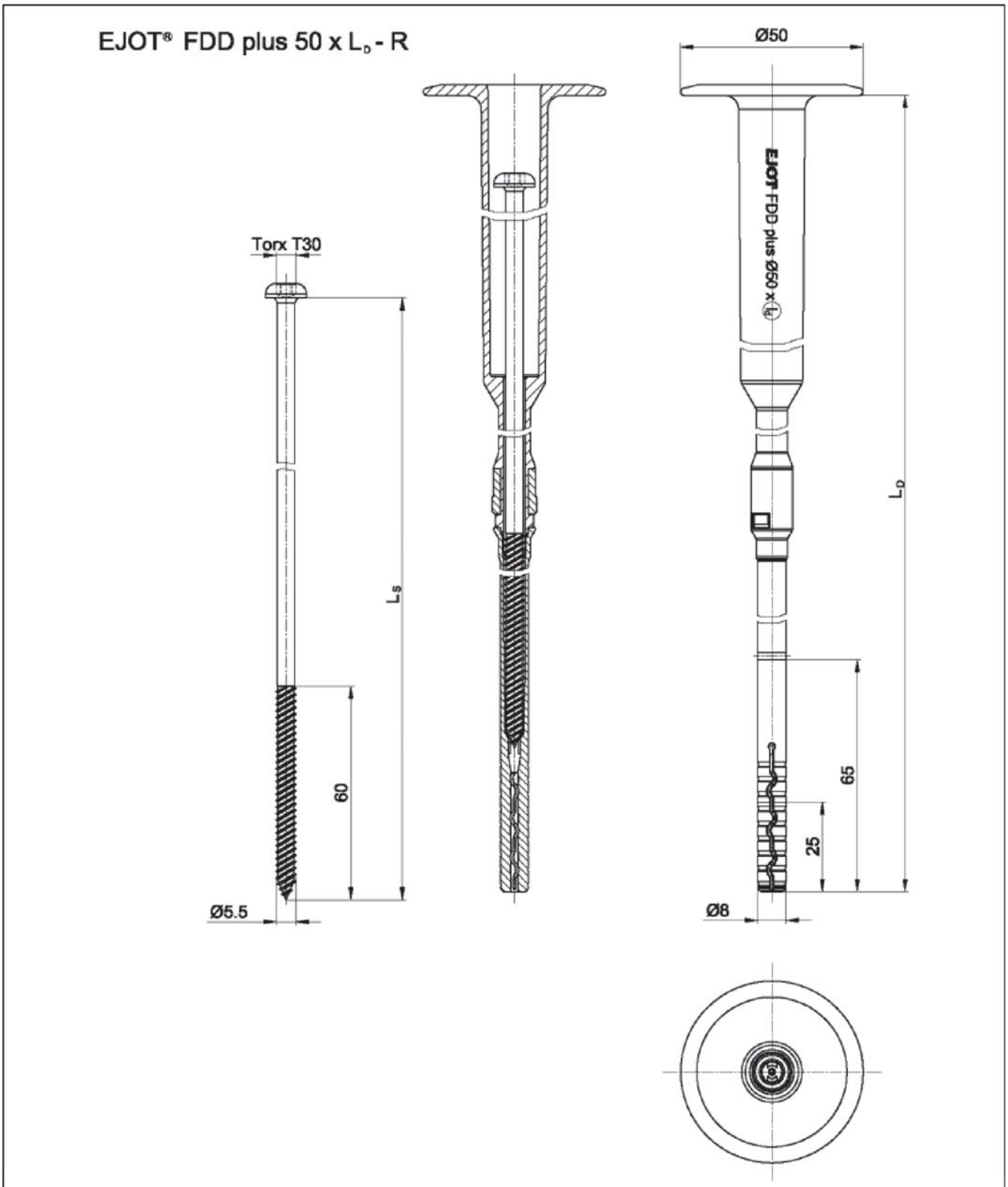

EJOT Flat Roof Fasteners

Combination 28

EJOT® FDDplus 50 x L_D-R (two-piece)

Annex 28

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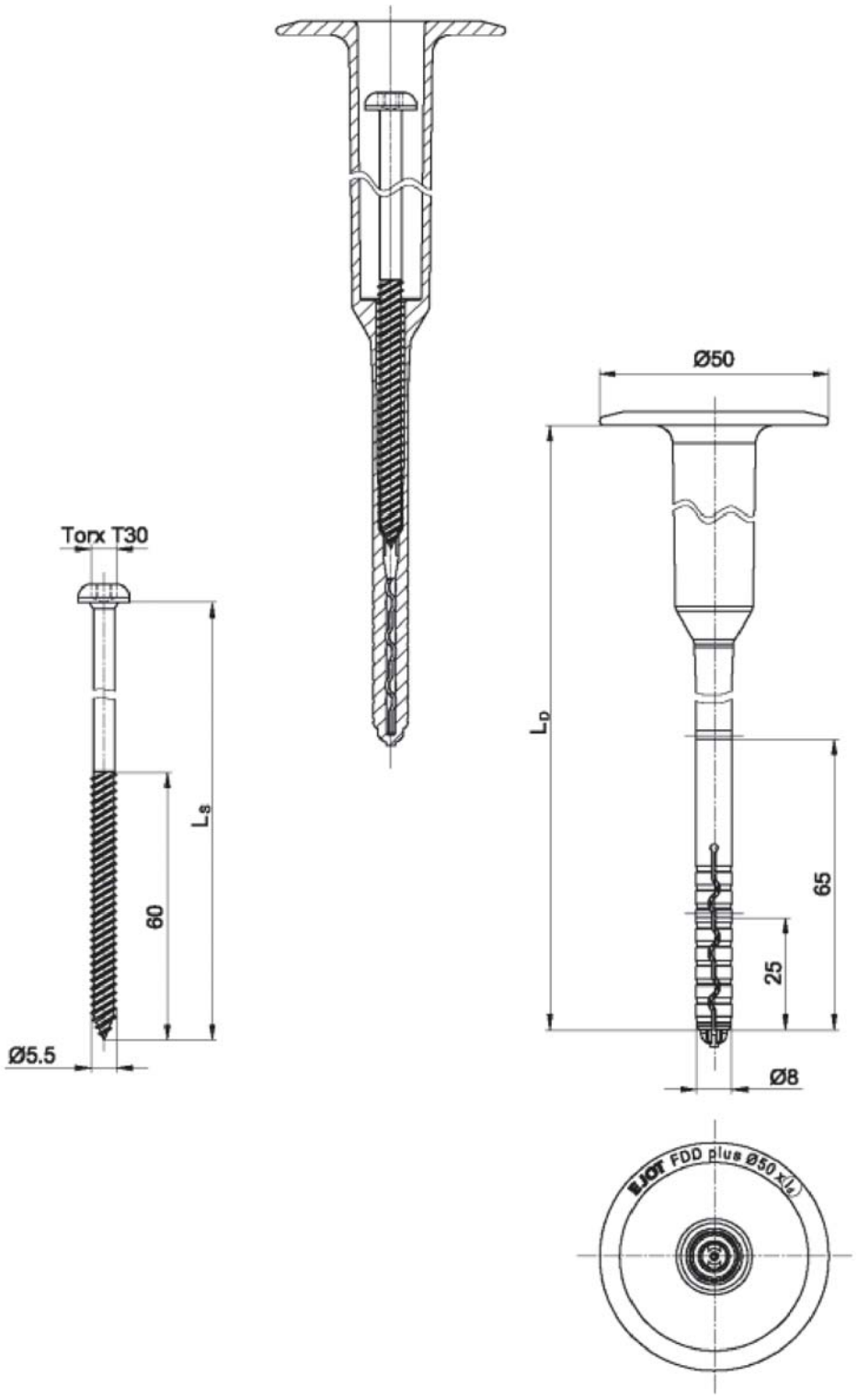
EJOT® FDD plus 50 x L_D - E



EJOT Flat Roof Fasteners

Combination 29

EJOT® FDDplus 50 x L_D-E (one-part)

Annex 29

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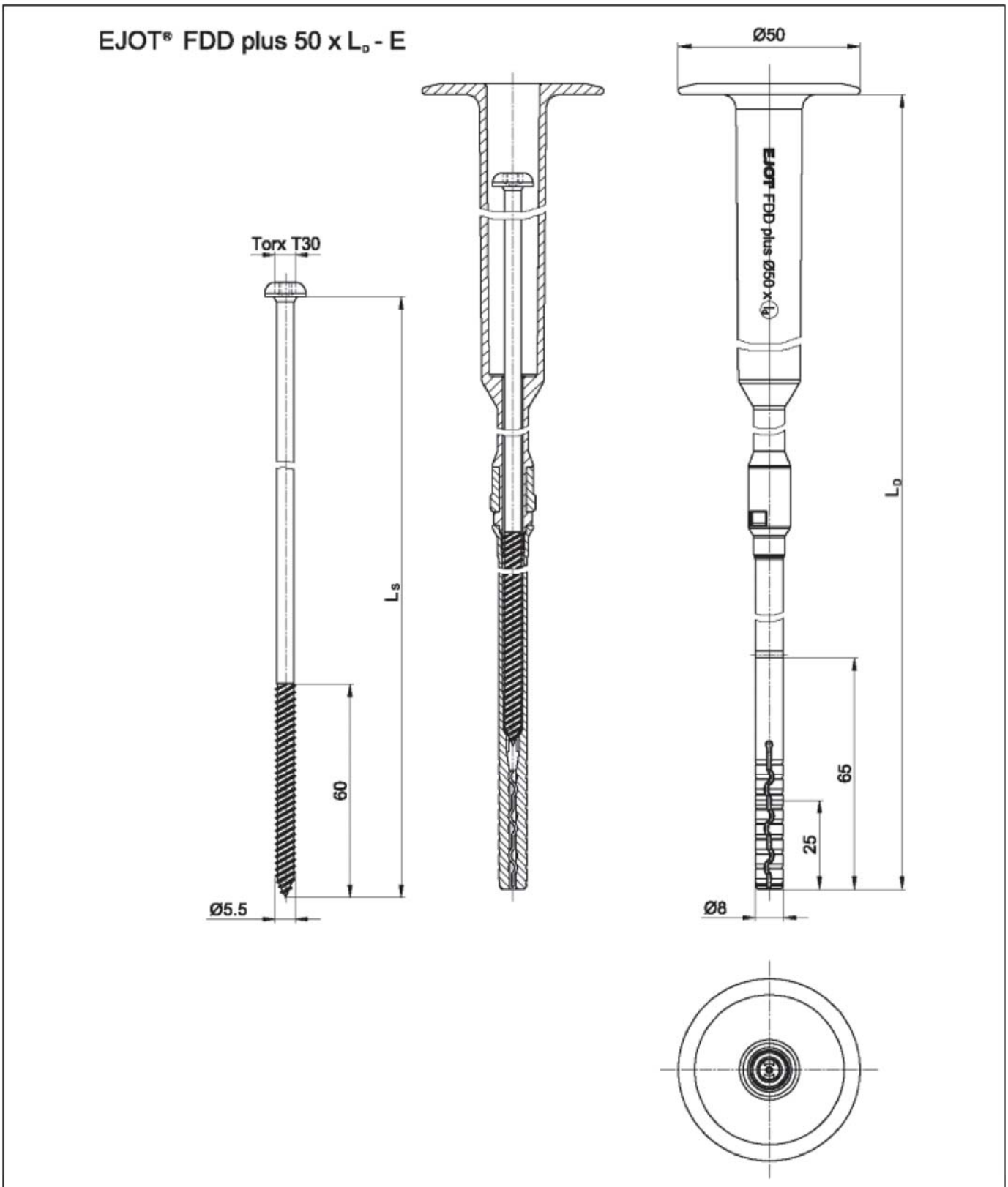

EJOT Flat Roof Fasteners

Combination 30

EJOT® FDDplus 50 x L_D-E (two-piece)

Annex 30

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Characteristic Values of Axial Load Resistance

Nr.	EJOT Fastening Systems		Substrate								
	Screw	Washer	Metalsheets		Timber				Concrete[7]	Light-concrete[8]	Aerated-concrete[9]
			1)	2)	3)	4)	5)	6)			
			[kN]								
1	Dabo® SW 8 R 4,8 x L	HTV 82/40		1.06	1.42		1.70	1.08			
2	Dabo® SW 8 RT 4,8 x L										
3	Dabo® TKR - 4,8 x L	HTK		1.06	1.42		1.70	1.08			
4	Dabo® TKE - 4,8 x L										
5	Dabo® VHT-R - 4,8 x L		0.86	0.94	0.90	1.20	1.20	1.20			
6	Dabo® TKR - 4,8 x L	HTK 2G		1.06	1.20		1.20	1.08			
7	Dabo® TKE - 4,8 x L										
8	Dabo® VHT-R - 4,8 x L		0.86	0.94	0.90	1.21	1.30	1.30			
9	Dabo® TKR - 4,8 x L	HTV 82/40 TK		1.06	1.42		1.70	1.08			
10	Dabo® TKE - 4,8 x L										
11	Dabo® VHT-R - 4,8 x L		0.86	0.94	0.90	1.21	2.61	1.76			
12	Dabo® TKR - 4,8 x L	HTV 82/40 F		1.06	1.42		1.70	1.08			
13	Dabo® TKE - 4,8 x L										
14	Dabo® SW 8 R(T) 4,8 x L										
15	Dabo® VHT-R - 4,8 x L		0.86	0.94	0.90	1.21	2.61	1.76			
16	Dabo® TKR - 4,8 x L	HTV 40 RU 6,5mm		1.06	1.42		1.70	1.08			
17	Dabo® TKE - 4,8 x L										
18	Dabo® VHT-R - 4,8 x L		0.86	0.94	0.90	1.21	2.61	1.76			
19	Dabo® TKR - 4,8 x L	EcoTek 50		1.06	1.42		1.58	1.08			
20	Dabo® TKE - 4,8 x L										
21	FBS - R - 6,3 x L	HTV 82/40 F							1.78		
22	FBS - R - 6,3 x L	HTV 40 RU 6,5mm							1.73		
23	FBS - R - 6,3 x L	EcoTek 50							1.58		
24	FPS - E - 8,0 x L	HTV 82/40 F									1.72[10]
25	FPS - E - 8,0 x L	HTV 40 RU 6,5mm									1.72[10]
26	FPS - E - 8,0 x L	EcoTek 50									1.58[10]
27	FDDplus 50 x L-R (one-piece)								1.35	1.34	1.78[11]
28	FDDplus 50 x L-R (two-piece)										
29	FDDplus 50 x L-E (one-piece)										
30	FDDplus 50 x L - E (two piece)										

1) S280GD - EN 10346, thickness t_{min} = 0,63 mm
2) S280GD - EN 10346, thickness t_{min} = 0,75 mm
3) Structural Timber: EN 338 / C24, thickness ≥ 25 mm
4) Flake Board P4; EN 12369-1, thickness ≥ 19 mm
5) Plywood: EN 12369-2; thickness ≥ 21 mm
6) OSB/3: EN 12369-1; thickness ≥ 18 mm
7) C 12/15 EN 206, effective anchorage depth ≥ 30 mm
8) LC 12/13 EN 206; effective anchorage depth ≥ 30 mm
9) P 3.3 / 5,0 EN 12602
10) effective anchorage depth ≥ 60 mm
11) effective anchorage depth ≥ 65 mm

EJOT Flat Roof Fasteners

Characteristic values of axial load resistance

Annex 31

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Mean Values of Axial Load Resistance

Nr.	EJOT Fastening Systems		Substrate								
	Screw	Washer	Metalsheets		Timber				Concrete[7]	Light-concrete[8]	Aerated-concrete[9]
			1)	2)	3)	4)	5)	6)			
			[kN]								
1	Dabo® SW 8 R 4,8 x L	HTV 82/40		1.28	3.07		3.14	2.04			
2	Dabo® SW 8 RT 4,8 x L										
3	Dabo® TKR - 4,8 x L	HTK		1.28	2.12		2.12	2.04			
4	Dabo® TKE - 4,8 x L										
5	Dabo® VHT-R - 4,8 x L		1.10	1.10	1.28	1.28	1.28	1.28			
6	Dabo® TKR - 4,8 x L	HTK 2G		1.28	1.28		1.28	1.28			
7	Dabo® TKE - 4,8 x L										
8	Dabo® VHT-R - 4,8 x L		1.10	1.10	1.38	1.38	1.38	1.38			
9	Dabo® TKR - 4,8 x L	HTV 82/40 TK		1.28	3.07		3.14	2.04			
10	Dabo® TKE - 4,8 x L										
11	Dabo® VHT-R - 4,8 x L		1.10	1.10	1.94	1.47	5.54	2.08			
12	Dabo® TKR - 4,8 x L	HTV 82/40 F		1.28	2.96		2.96	2.04			
13	Dabo® TKE - 4,8 x L										
14	Dabo® SW 8 R(T) 4,8 x L										
15	Dabo® VHT-R - 4,8 x L		1.10	1.10	1.94	1.47	5.54	2.08			
16	Dabo® TKR - 4,8 x L	HTV 40 RU 6,5mm		1.28	3.07		3.14	2.04			
17	Dabo® TKE - 4,8 x L										
18	Dabo® VHT-R - 4,8 x L		1.10	1.10	1.94	1.47	5.54	2.08			
19	Dabo® TKR - 4,8 x L	EcoTek 50		1.28	1.61		1.61	1.61			
20	Dabo® TKE - 4,8 x L										
21	FBS - R - 6,3 x L	HTV 82/40 F							2.96		
22	FBS - R - 6,3 x L	HTV 40 RU 6,5mm							3.21		
23	FBS - R - 6,3 x L	EcoTek 50							1.61		
24	FPS - E - 8,0 x L	HTV 82/40 F									2.15[10]
25	FPS - E - 8,0 x L	HTV 40 RU 6,5mm									2.15[10]
26	FPS - E - 8,0 x L	EcoTek 50									1.61[10]
27	FDDplus 50 x L-R (one-piece)								1.59	1.83	1.89[11]
28	FDDplus 50 x L-R (two-piece)										
29	FDDplus 50 x L-E (one-piece)										
30	FDDplus 50 x L - E (two piece)										

1) S280GD - EN 10346, thickness t_{min} = 0,63 mm
2) S280GD - EN 10346, thickness t_{min} = 0,75 mm
3) Structural Timber: EN 338 / C24, thickness ≥ 25 mm
4) Flake Board P4; EN 12369-1, thickness ≥ 19 mm
5) Plywood: EN 12369-2; thickness ≥ 21 mm
6) OSB/3: EN 12369-1; thickness ≥ 18 mm
7) C 12/15 EN 206, effective anchorage depth ≥ 30 mm
8) LC 12/13 EN 206; effective anchorage depth ≥ 30 mm
9) P 3.3 / 5,0 EN 12602
10) effective anchorage depth ≥ 60 mm
11) effective anchorage depth ≥ 65 mm

EJOT Flat Roof Fasteners

Mean values of axial load resistance

Annex 32