Deutsches Institut für Bautechnik

Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Member of EOTA

www.eota.eu

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment ETA-09/0346 of 29 June 2018

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	KOELNER Flat Roof Fasteners
Product family to which the construction product belongs	Fasteners for flexible roof waterproofing membrane systems
Manufacturer	RAWLPLUG S.A. Kwidzynska 6 51-416 WROCLAW POLEN
Manufacturing plant	RAWLPLUG S.A. Kwidzynska 6 51-416 WROCLAW POLEN
This European Technical Assessment contains	59 pages including 54 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	ETAG 006, used as EAD according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011.
This version replaces	ETA-09/0346 issued on 21 June 2013

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

Specific Part

1 Technical description of the product

The construction products are mechanical fasteners.

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

The fasteners shall correspond to the information given in Annexes 1 to 53 of this ETA.

The material properties, dimensions and tolerances not indicated in Annexes 1 to 53 shall correspond to the information laid down in the technical information[1] to this European technical assessment.

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

The fasteners are intended to be used for the fastening of flexible roof waterproofing membranes according to ETAG 006. The possible substructures are steel decks, timber or concrete.

The performances given in Section 3 are only valid if the fasteners are used in compliance with the specifications and conditions given in the Annexes to this ETA and if the installation is carried out according to the manufacturer's assembly instructions.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fasteners of at least 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. The system ETA covers the wind uplift resistance of the entire system as well as the product characteristics of the components of the system.

[1] 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 implementation of the AVCP system is handed over to the approved bodies.

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

3.1 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic tensile loading	See Annex 54
Resistance to unwinding	pass
Resistance to corrosion of metallic fasteners	pass; ≤ 15 % surface corrosion
Impact resistance and brittleness of plastic fasteners (before and after heat ageing)	pass; drop hight > 1,0 m
Requirements for results of Charpy tests for plastic materials (before and after heat ageing)	pass; not any significant decline compared to the results before heat ageing

The characteristic values of the axial load resistance of the fasteners are given in Annex 54. 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.

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 galvanic coated carbon steel, polyamide or polypropylene components of the fasteners.

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 plastic 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 significant decline compared to the results before heat ageing.

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

In accordance with ETAG 006 the applicable European legal act is: 1998/143/EC.
The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

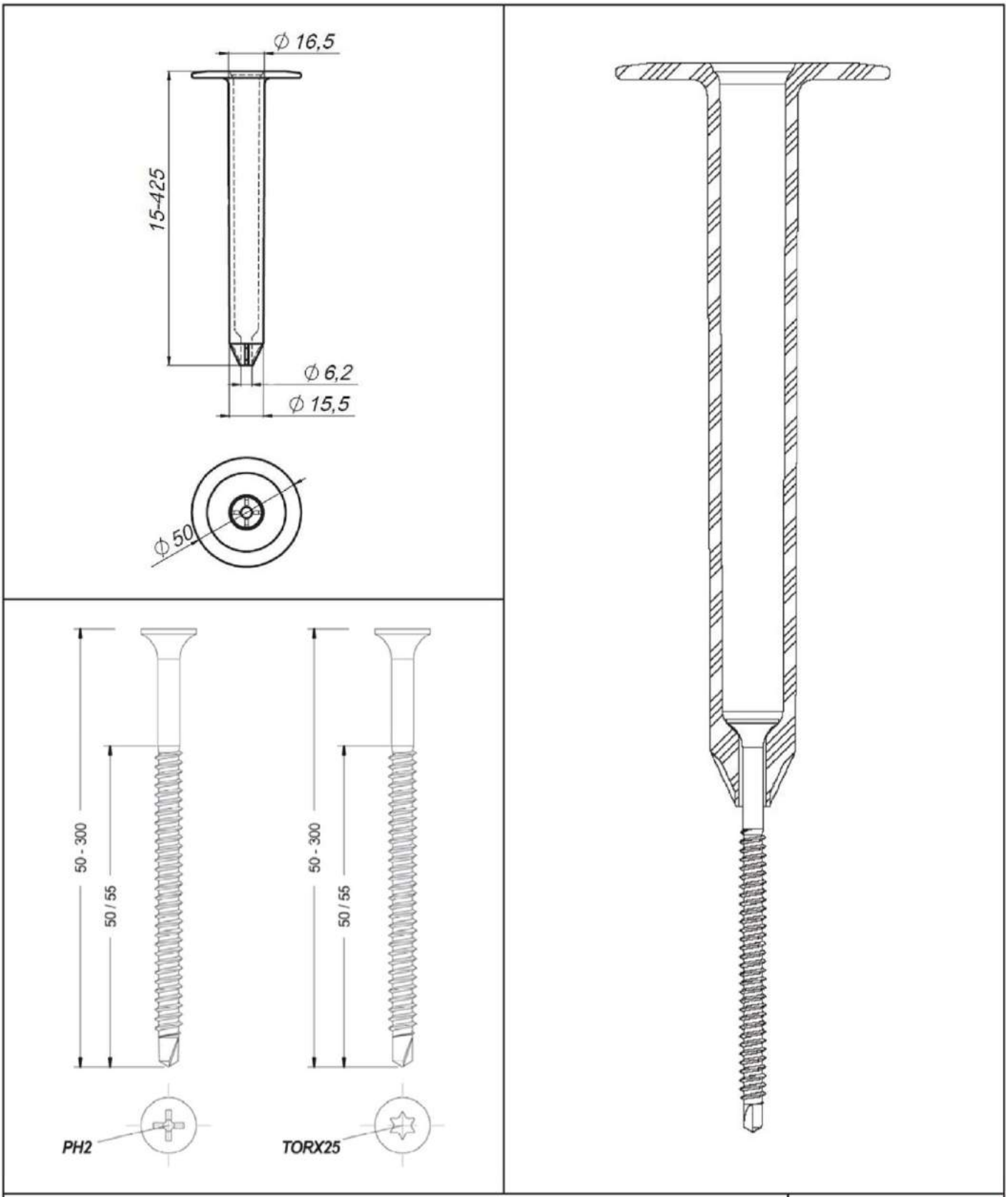
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 29 June 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Reimuth

Deutsches Institut für Bautechnik DIBt



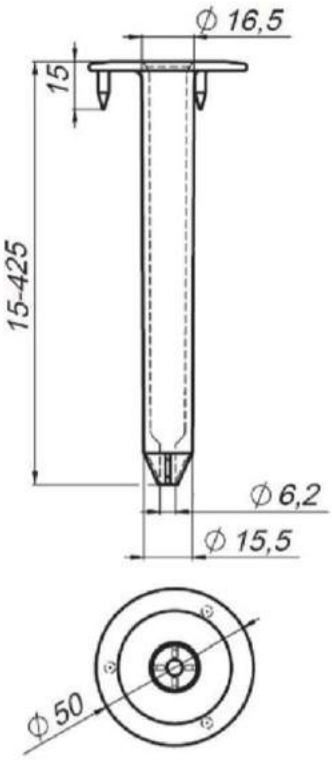
KOELNER **Flat Roof Fasteners**

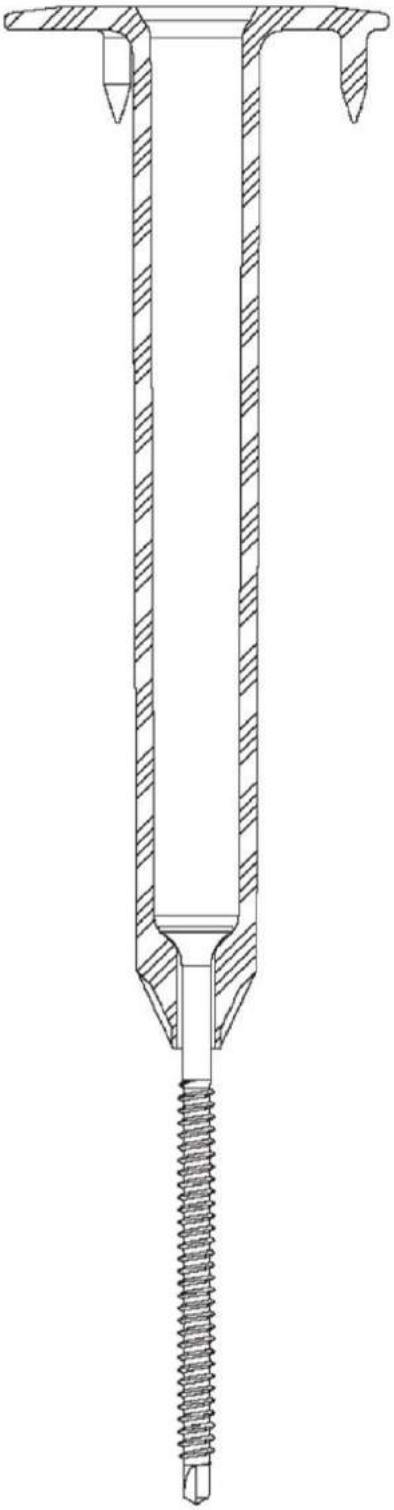
Combination 1

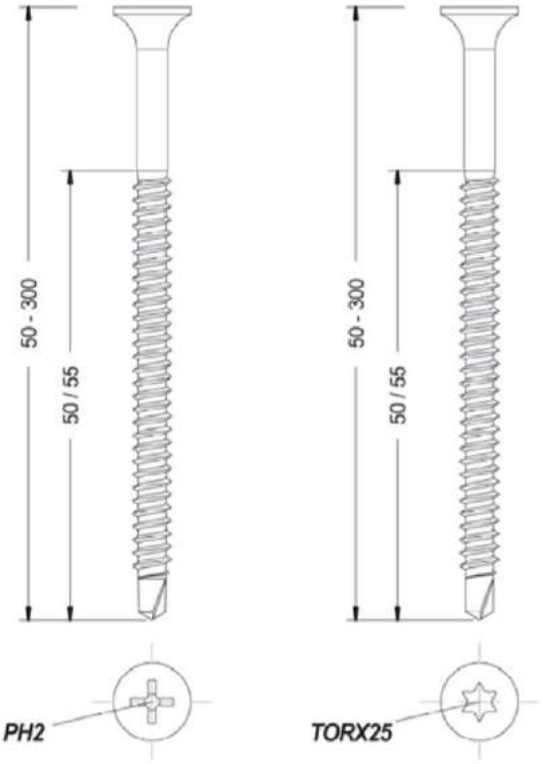
Mount: GOK
Fastener: WX (PH2- or Torx25-Drive)

Annex 1

Deutsches Institut für Bautechnik DIBt







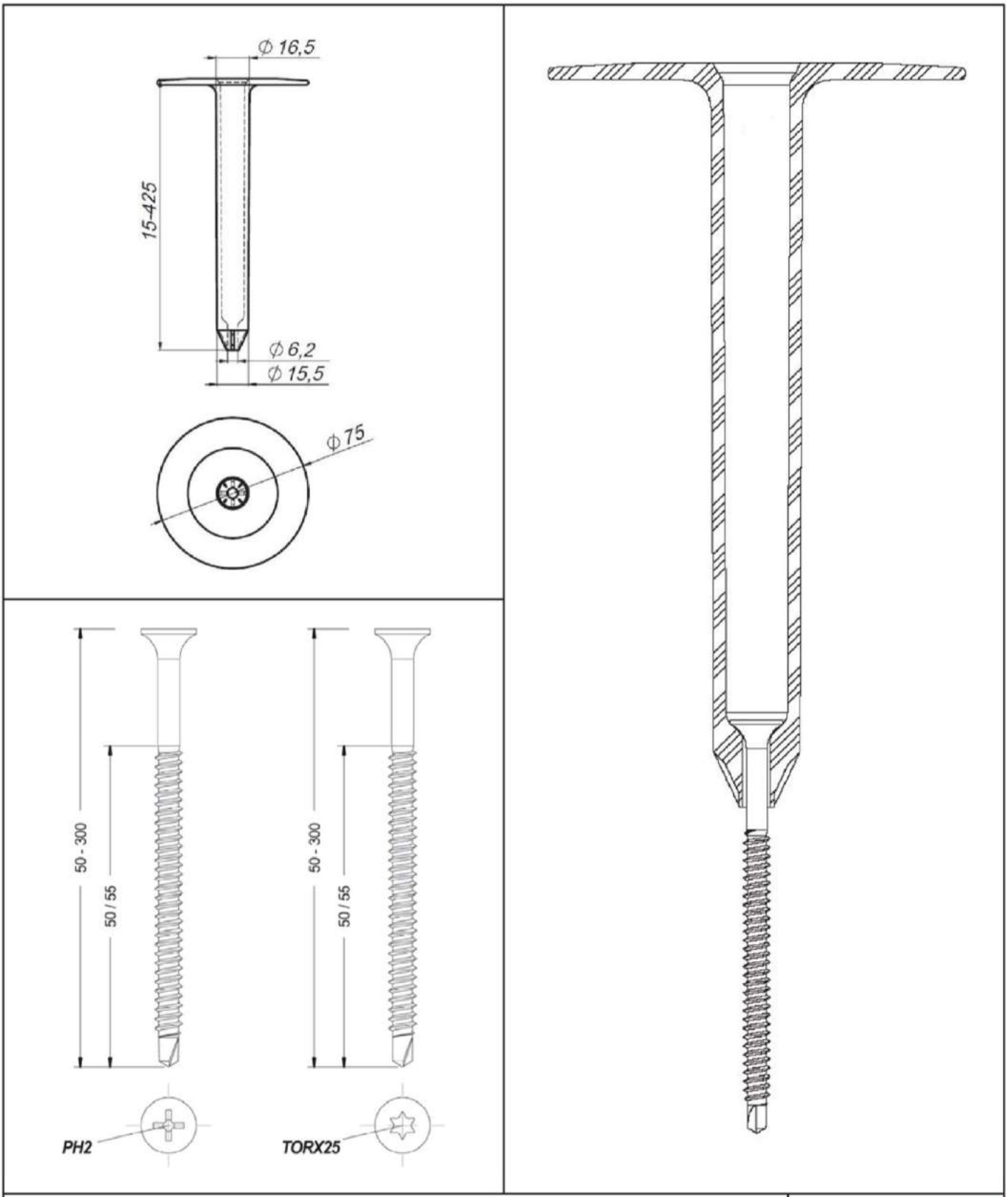
KOELNER **Flat Roof Fasteners**

Combination 2

Mount: GOK-PLUS
Fastener: WX (PH2- or Torx25-Drive)

Annex 2

Deutsches Institut für Bautechnik DIBt



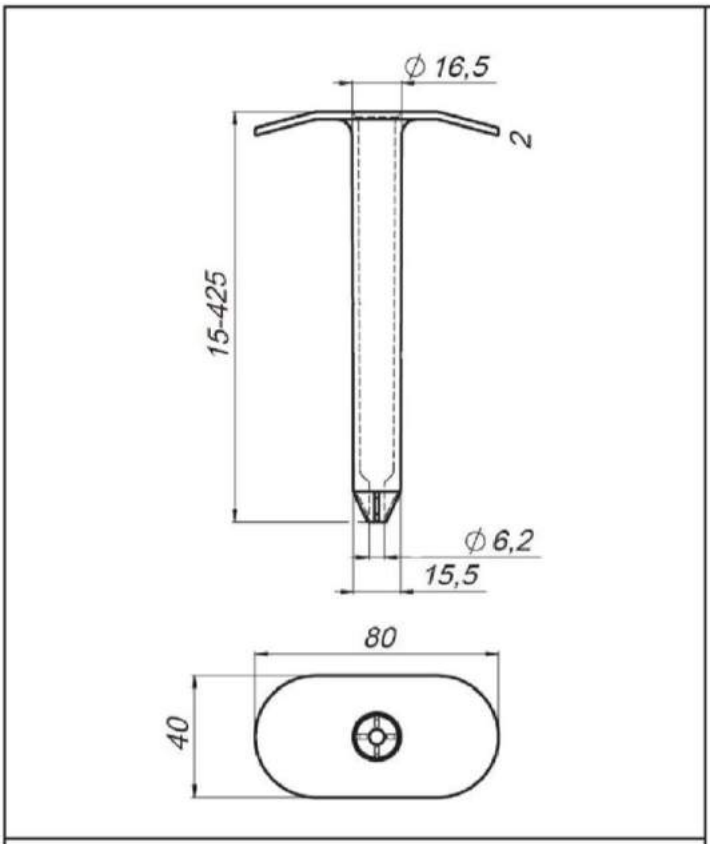
KOELNER Flat Roof Fasteners

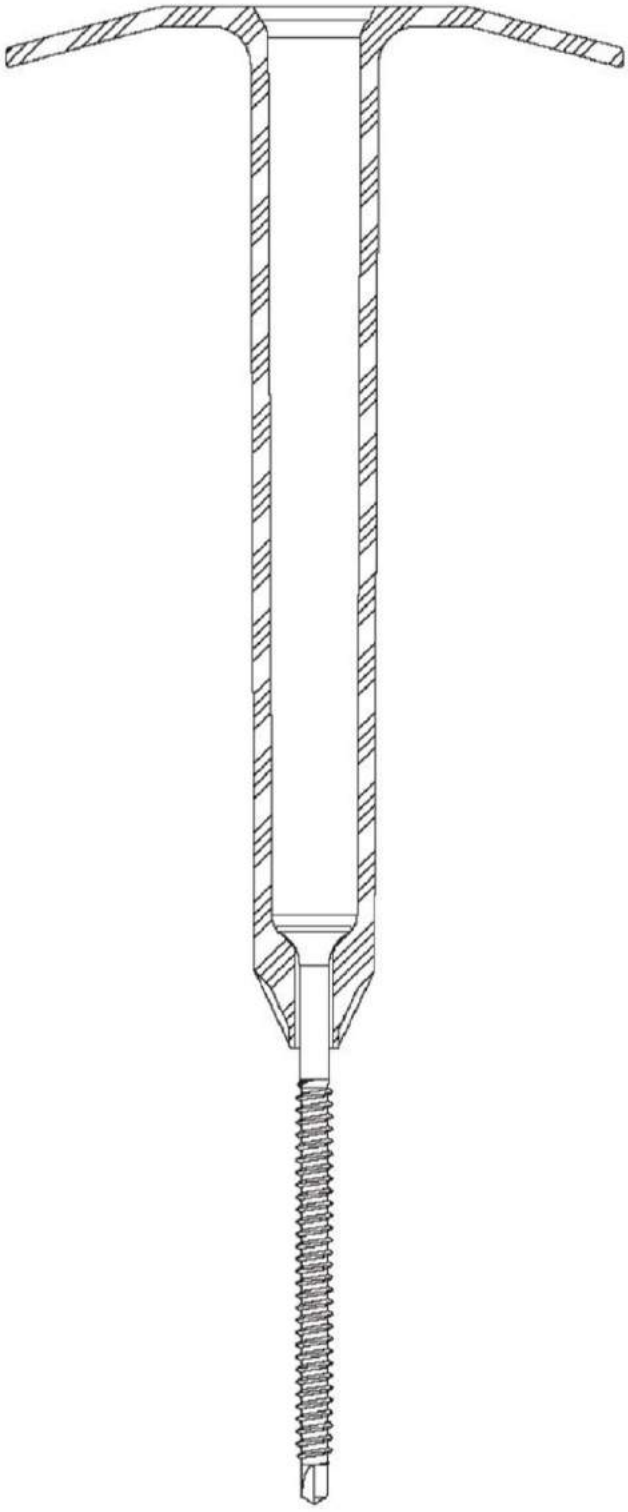
Combination 3

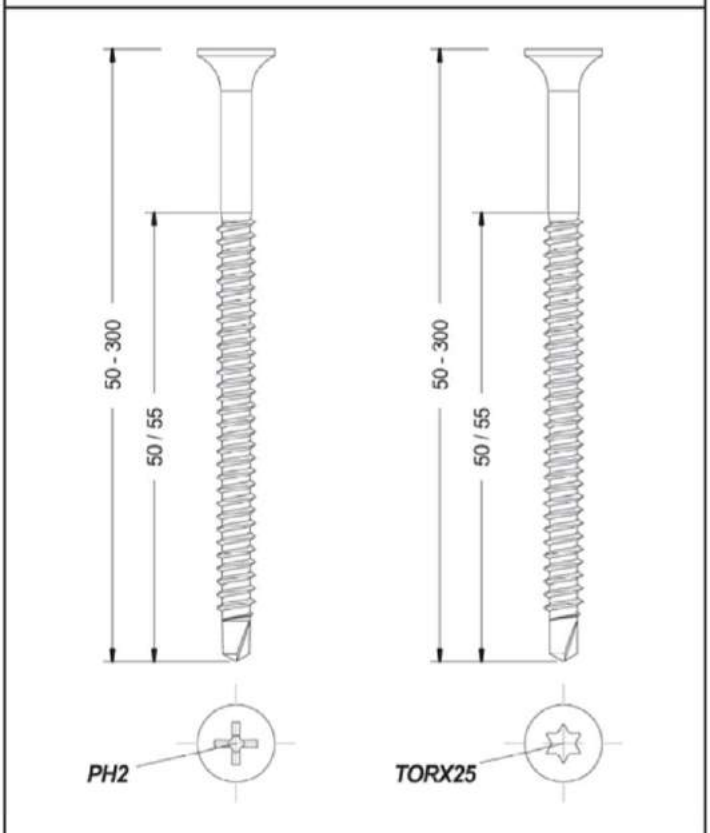
Mount: GOK75
Fastener: WX (PH2- or Torx25-Drive)

Annex 3

Deutsches Institut für Bautechnik DIBt







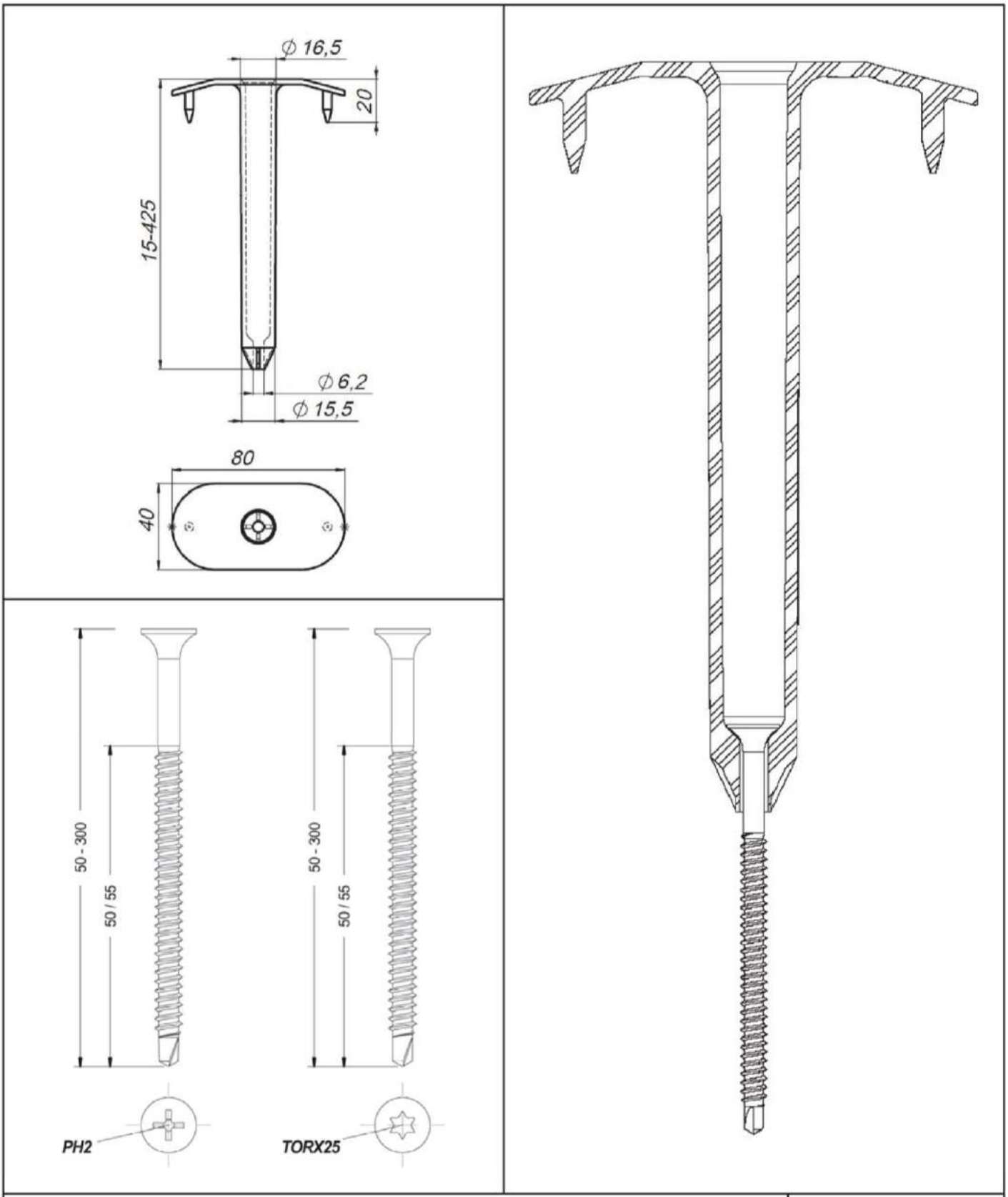
KOELNER **Flat Roof Fasteners**

Combination 4

Mount: GOW
Fastener: WX (PH2- or Torx25-Drive)

Annex 4

Deutsches Institut für Bautechnik DIBt



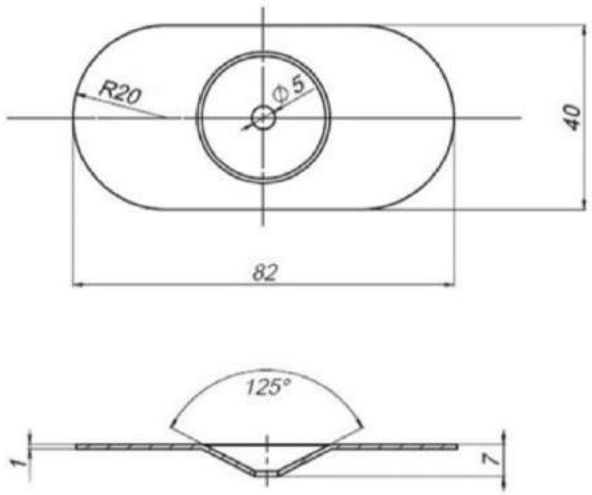
KOELNER **Flat Roof Fasteners**

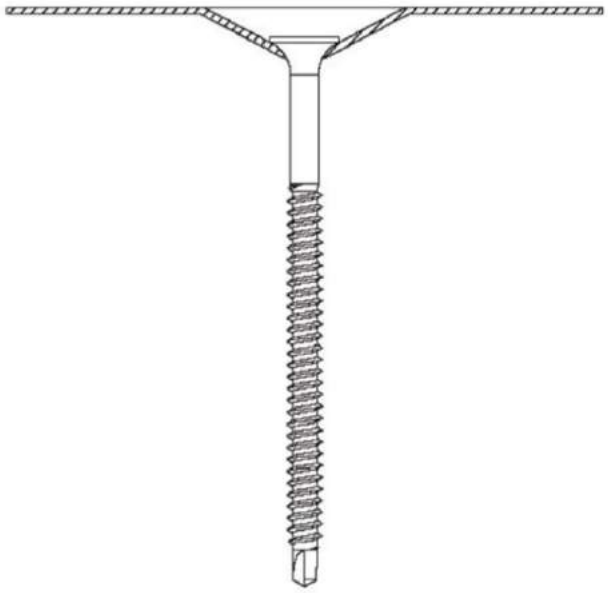
Combination 5

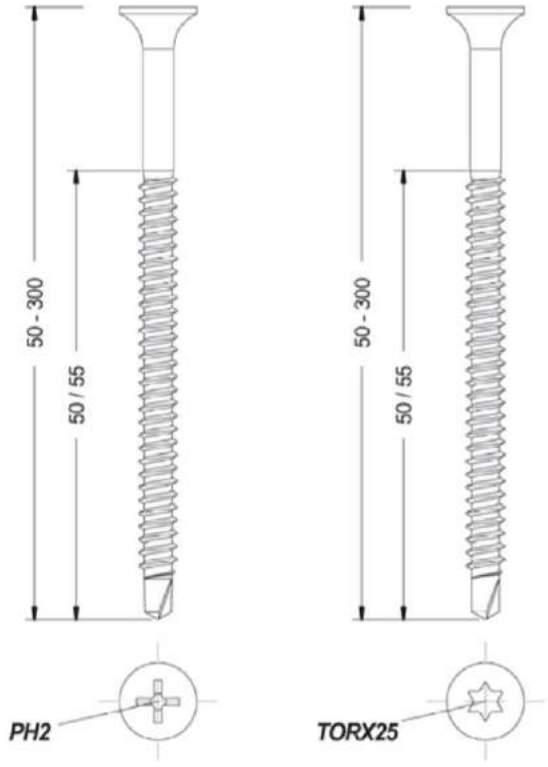
Mount: GOW-PLUS
Fastener: WX (PH2- or Torx25-Drive)

Annex 5

Deutsches Institut für Bautechnik DIBt







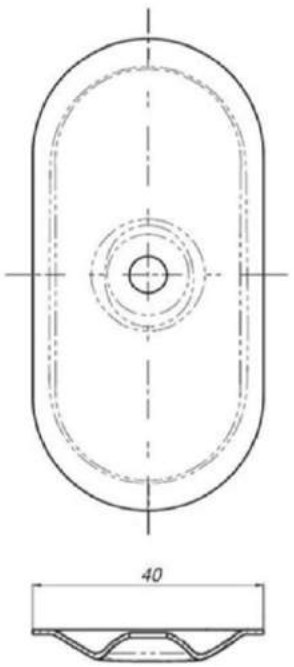
KOELNER **Flat Roof Fasteners**

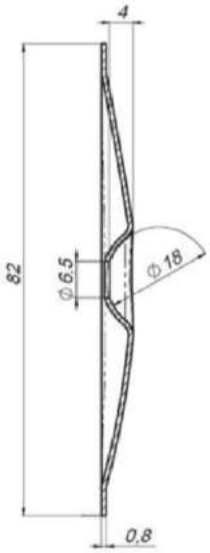
Combination 6

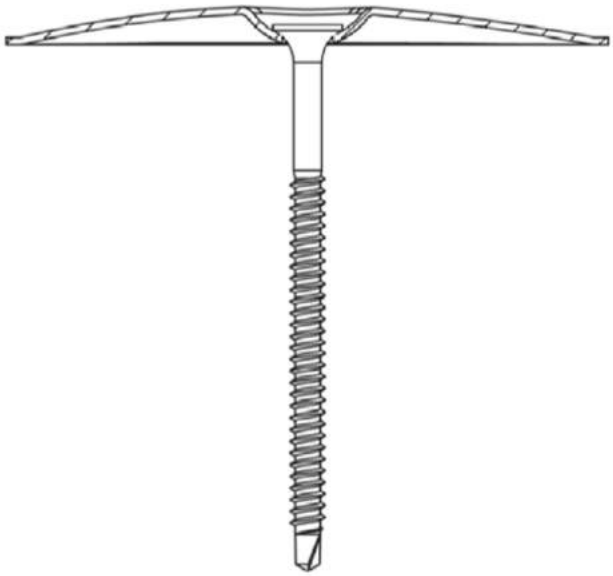
Mount: POW-05-AlZn
Fastener: WX (PH2- or Torx25-Drive)

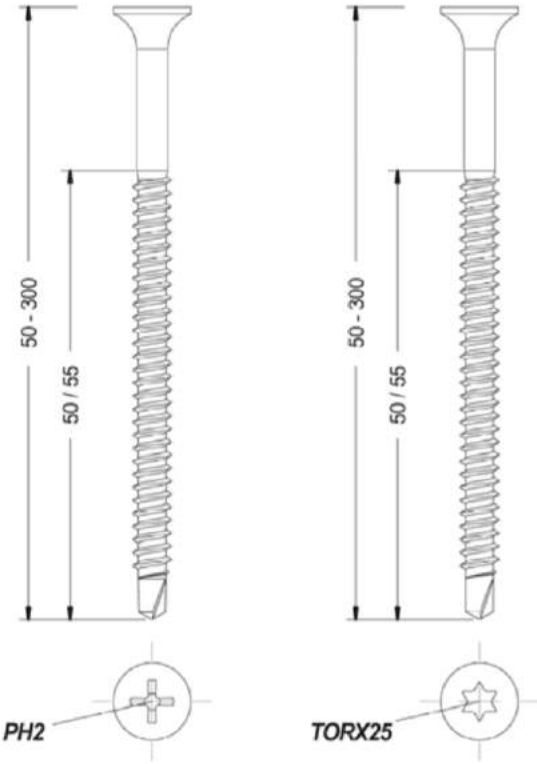
Annex 6

Deutsches Institut für Bautechnik DIBt









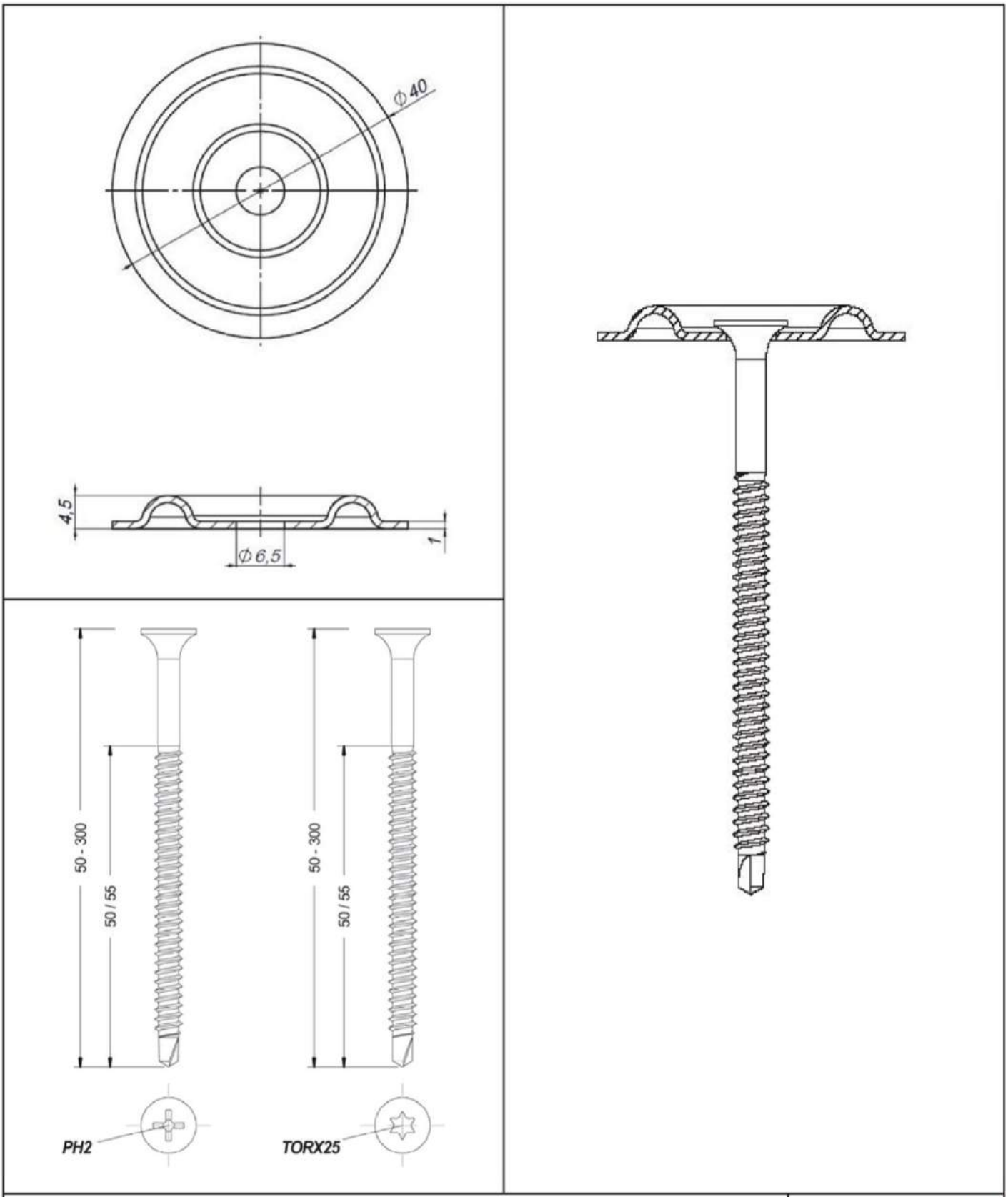
KOELNER **Flat Roof Fasteners**

Combination 7

Mount: POW-07-AlZn
Fastener: WX (PH2- or Torx25-Drive)

Annex 7

Deutsches Institut für Bautechnik DIBt

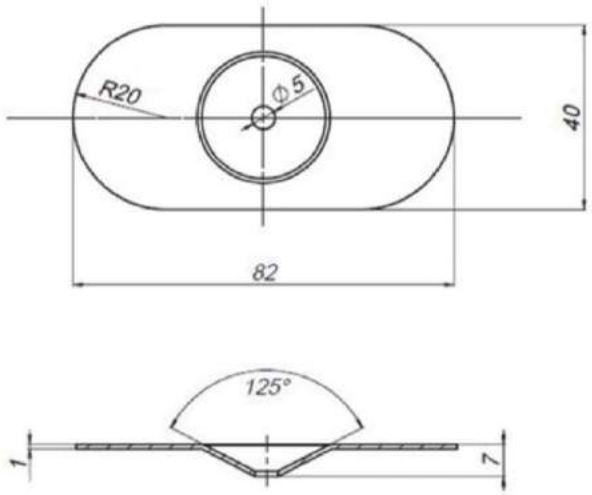


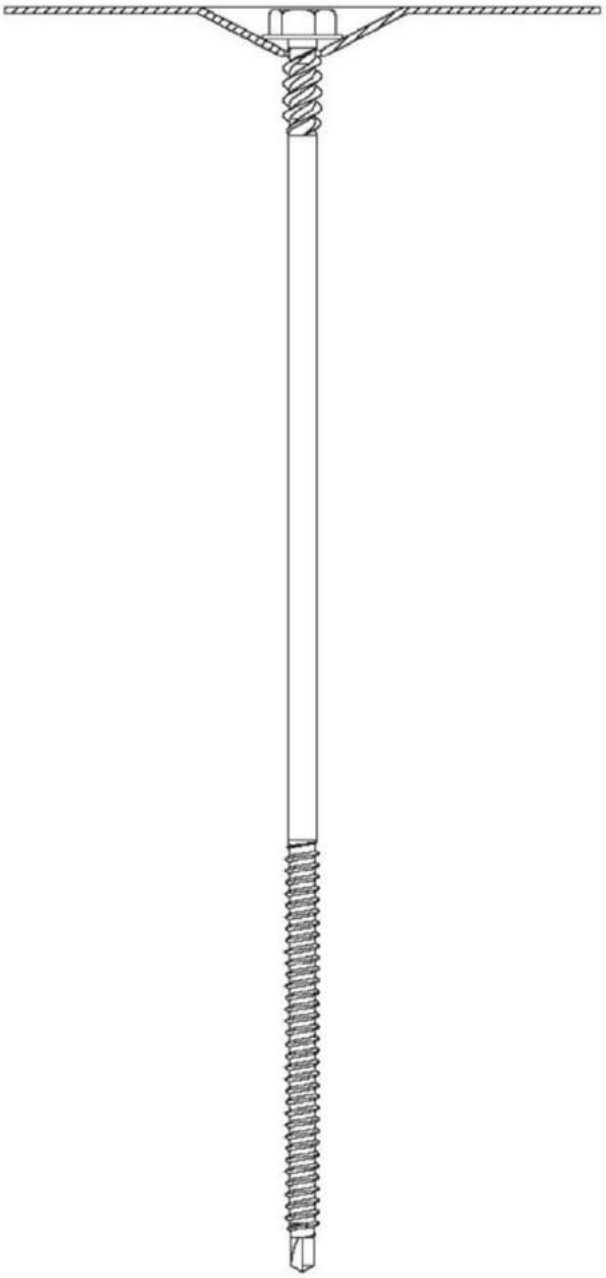
KOELNER **Flat Roof Fasteners**

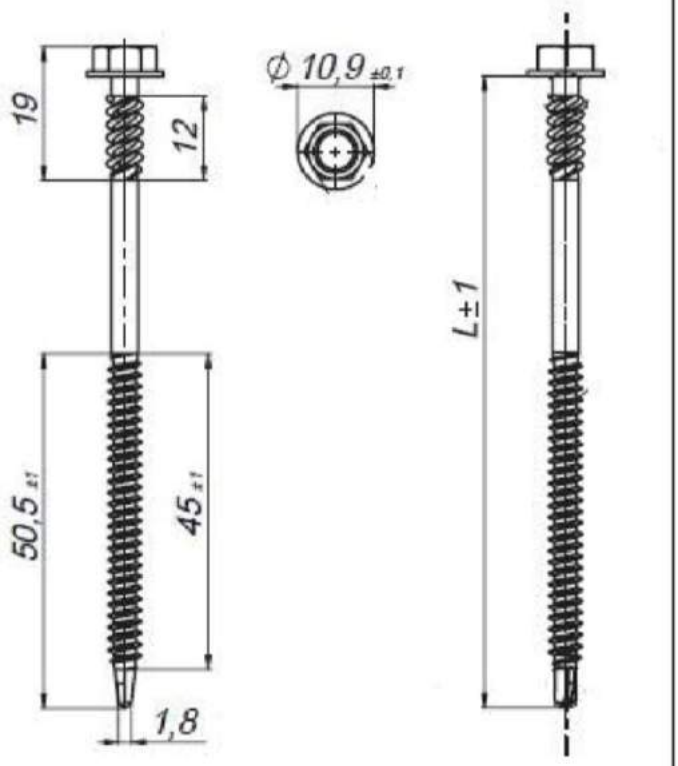
Combination 8

Mount: POK-041-AlZn
Fastener: WX (PH2- or Torx25-Drive)

Annex 8







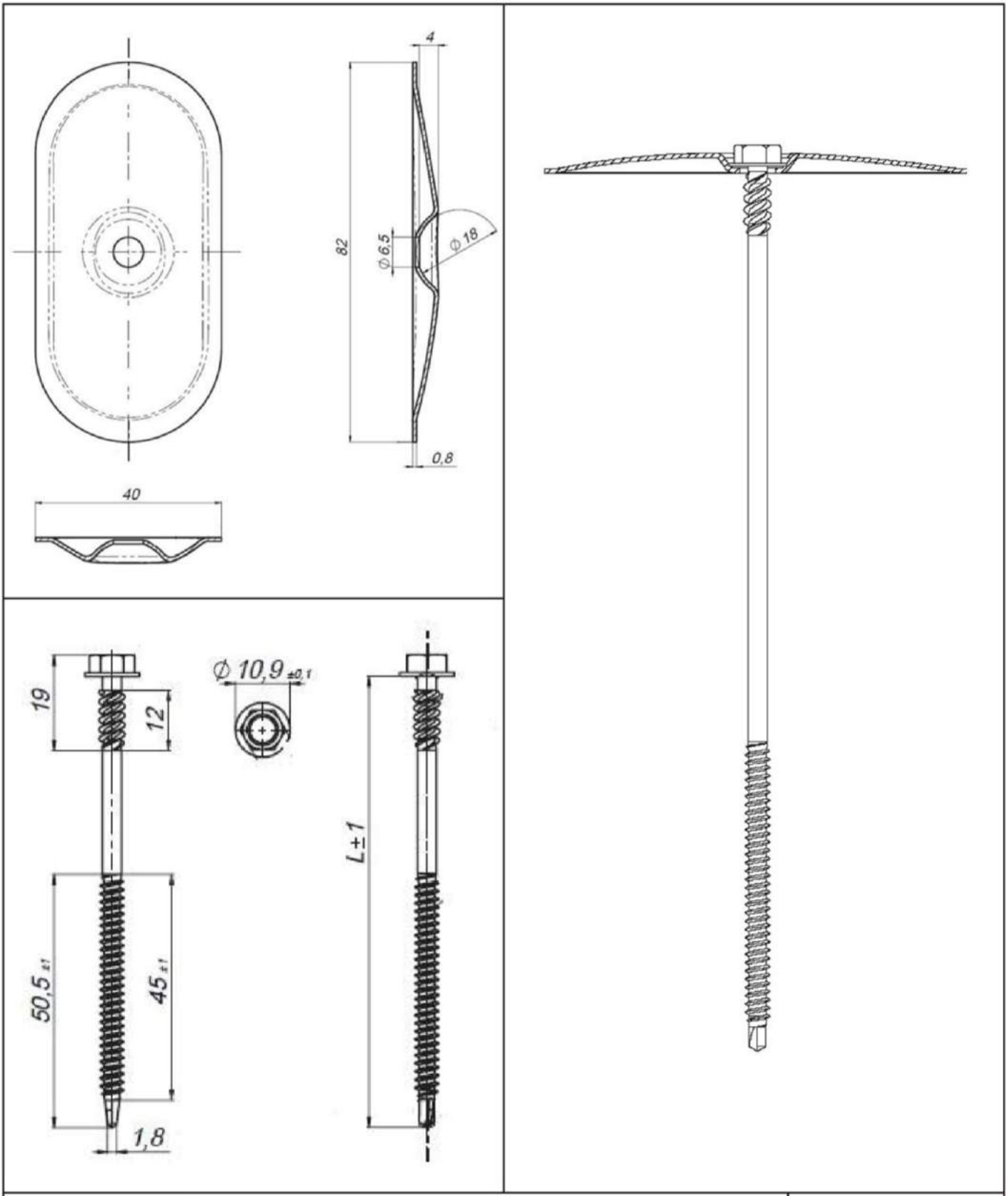
KOELNER **Flat Roof Fasteners**

Combination 9

Mount: POW-05-AlZn
Fastener: WB

Annex 9

Deutsches Institut für Bautechnik DIBt



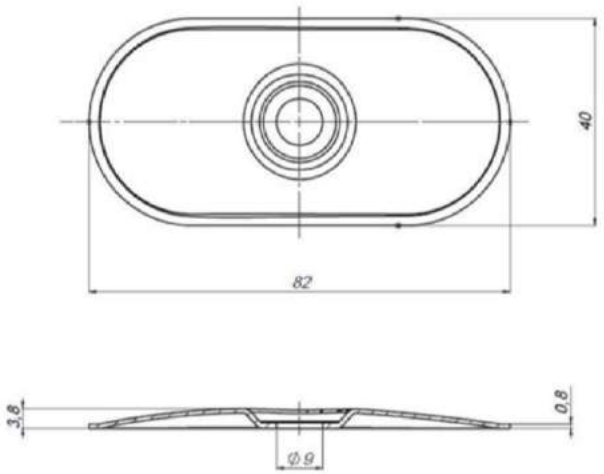
KOELNER **Flat Roof Fasteners**

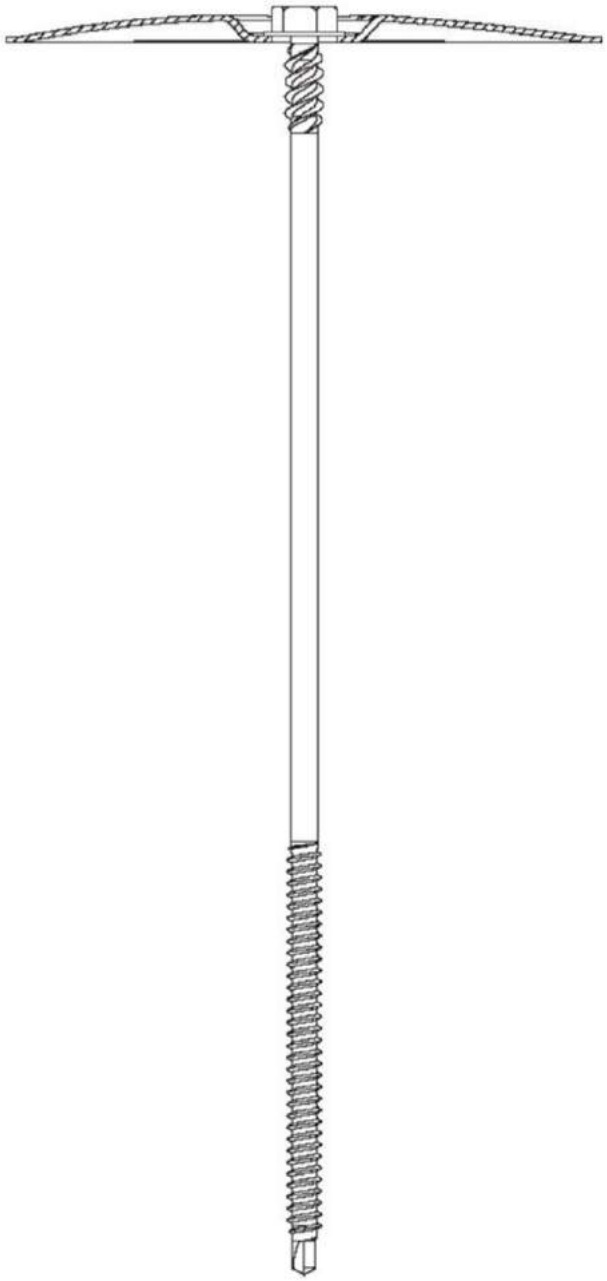
Combination 10

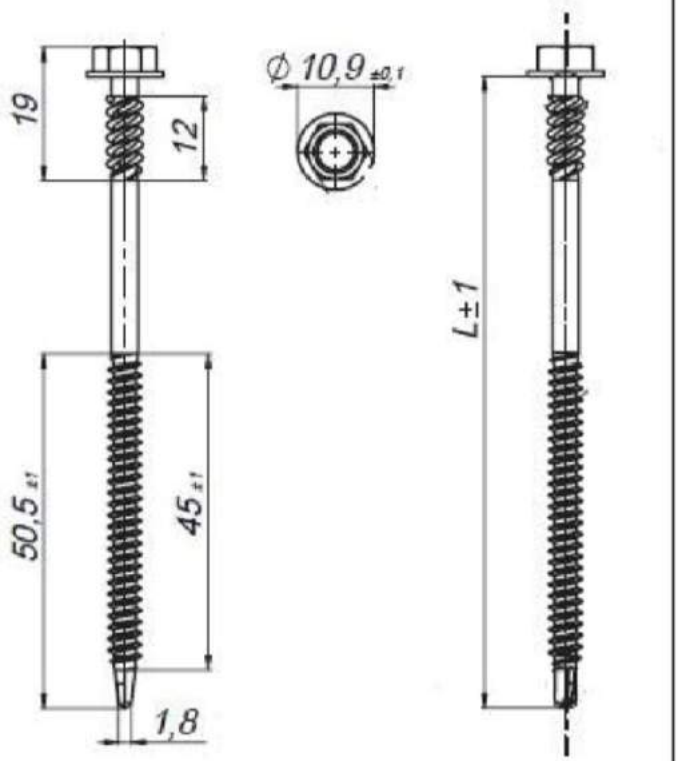
Mount: POW-07-AlZn
Fastener: WB

Annex 10

Deutsches Institut für Bautechnik DIBt







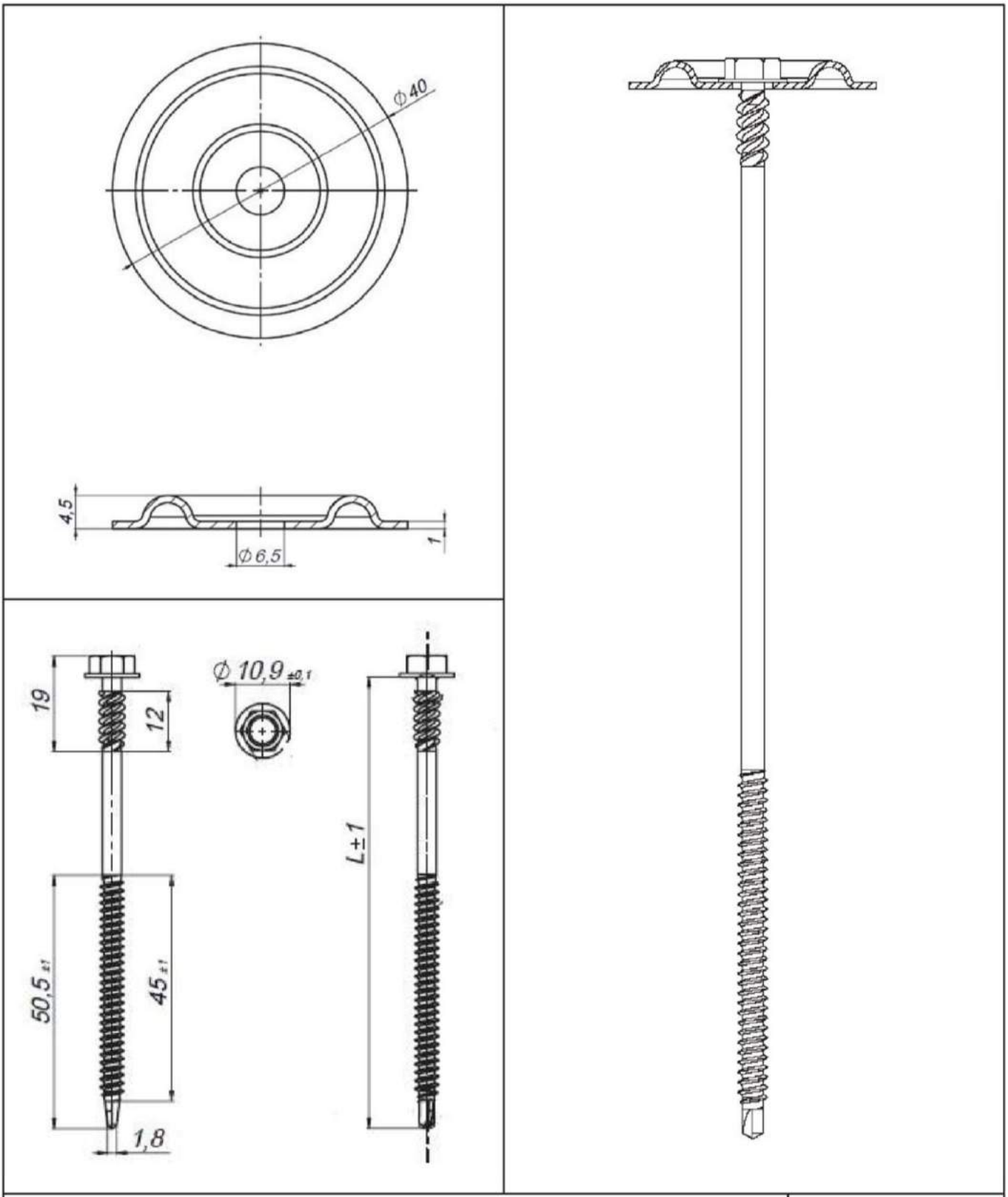
KOELNER **Flat Roof Fasteners**

Combination 11

Mount: POW-09-AlZn
Fastener: WB

Annex 11

Deutsches Institut für Bautechnik DIBt



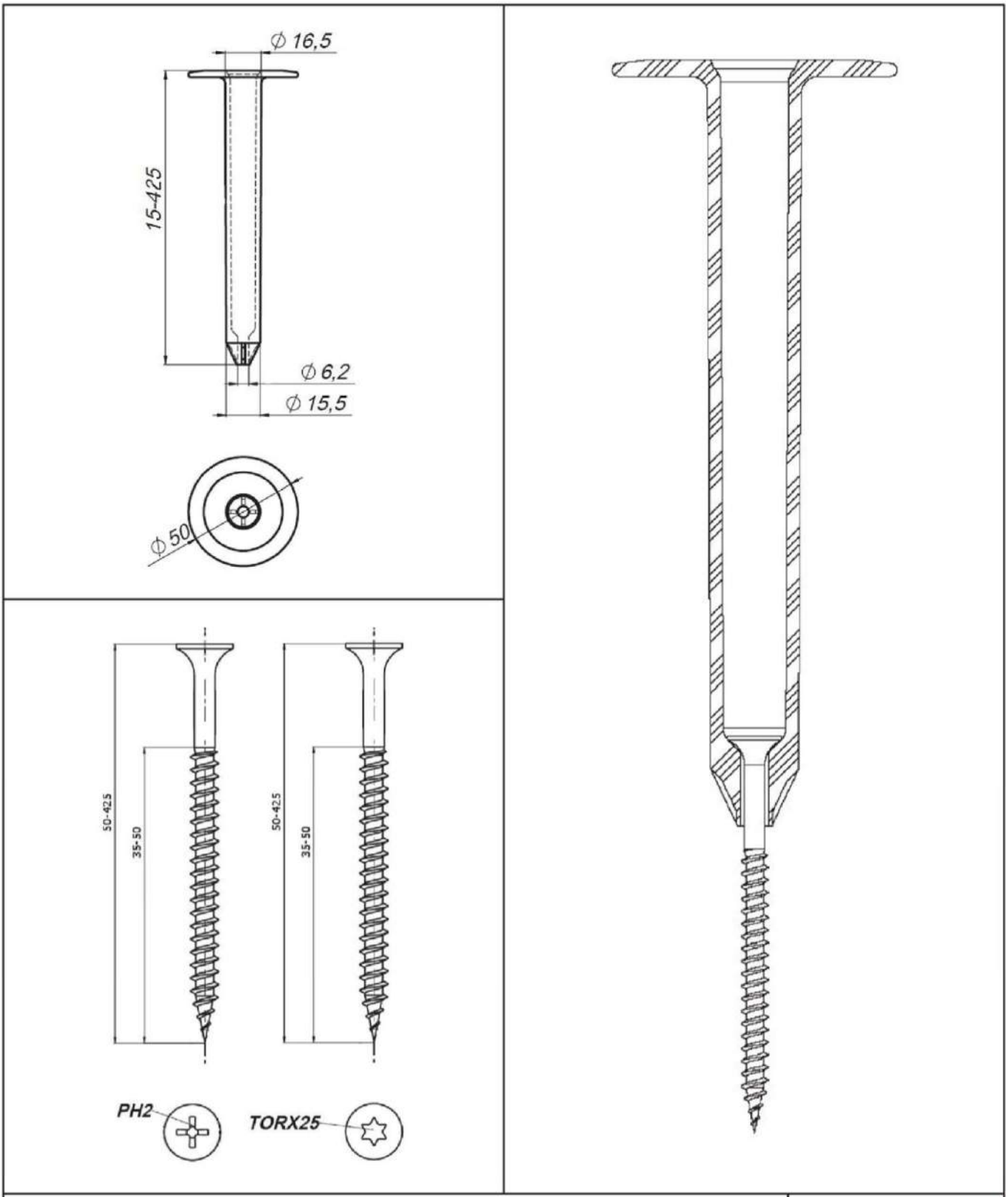
KOELNER **Flat Roof Fasteners**

Combination 12

Mount: POK-041-AlZn
Fastener: WB

Annex 12

Deutsches Institut für Bautechnik DIBt



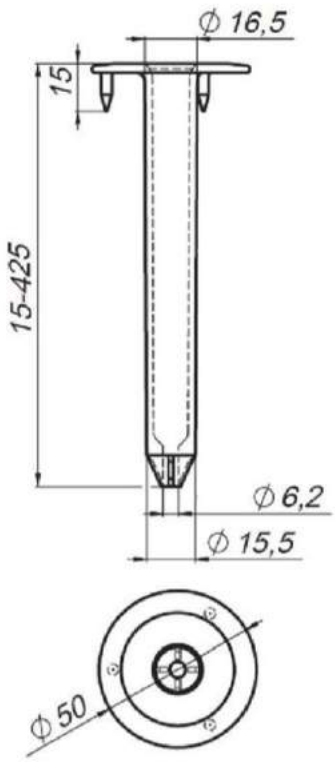
KOELNER **Flat Roof Fasteners**

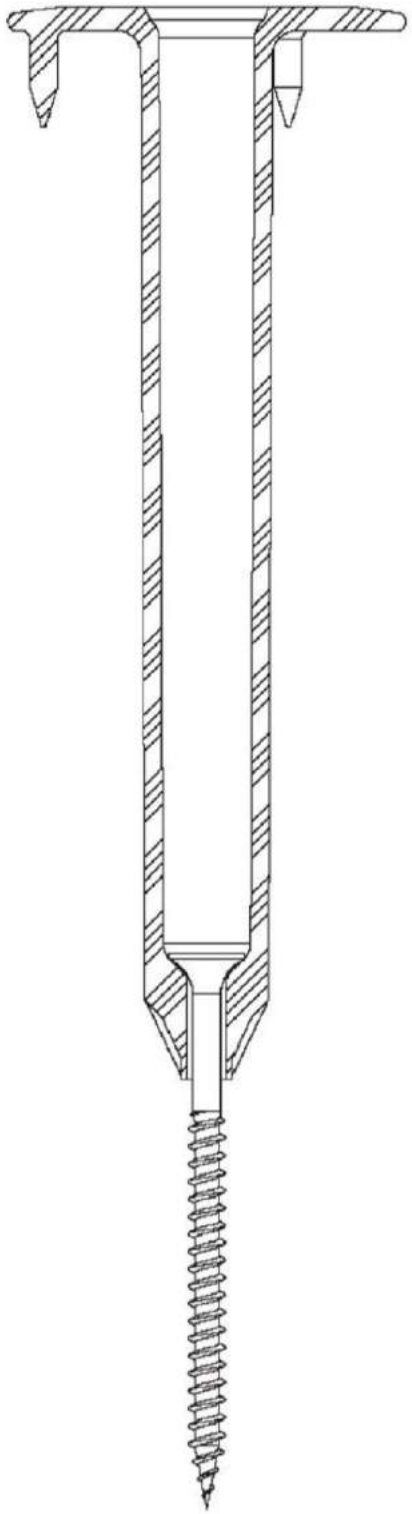
Combination 13

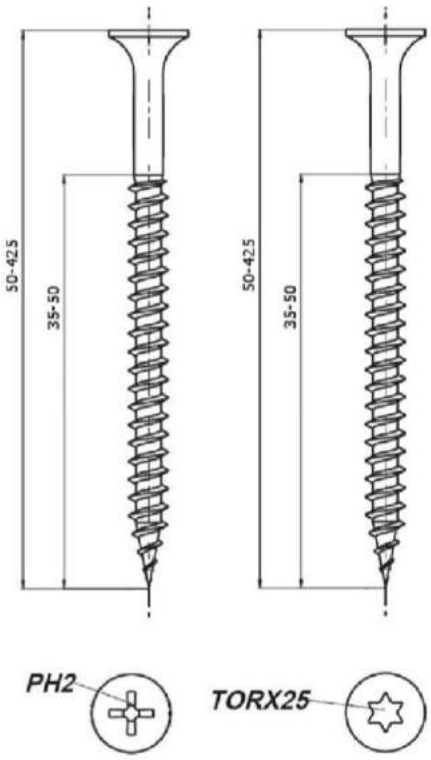
Mount: GOK
Fastener: WO (PH2- or Torx25-Drive)

Annex 13

Deutsches Institut für Bautechnik DIBt







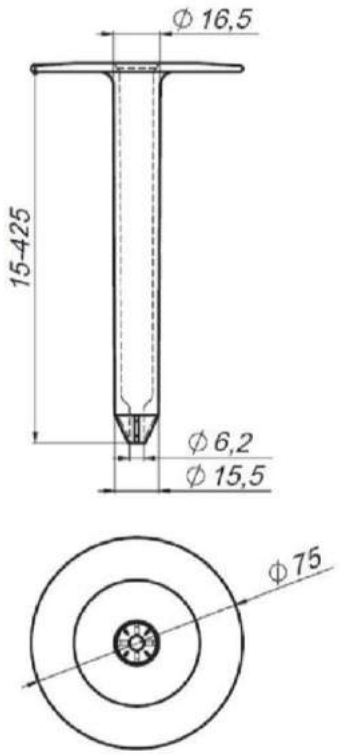
KOELNER **Flat Roof Fasteners**

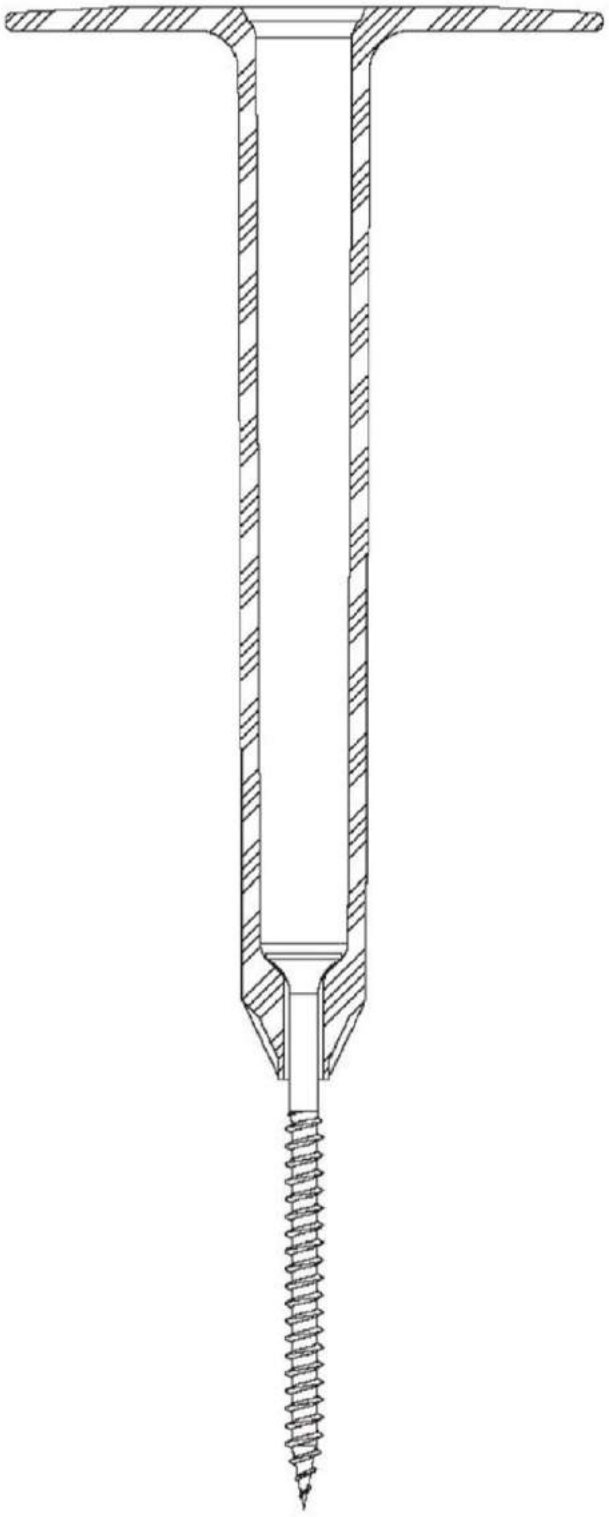
Combination 14

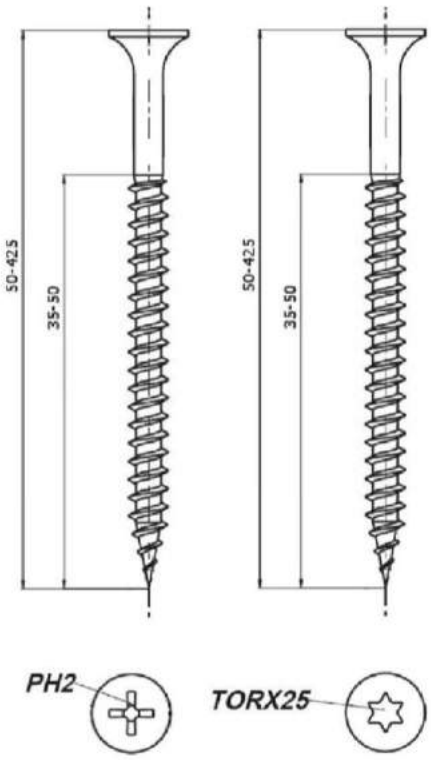
Mount: GOK-PLUS
Fastener: WO (PH2- or Torx25-Drive)

Annex 14

Deutsches Institut für Bautechnik DIBt







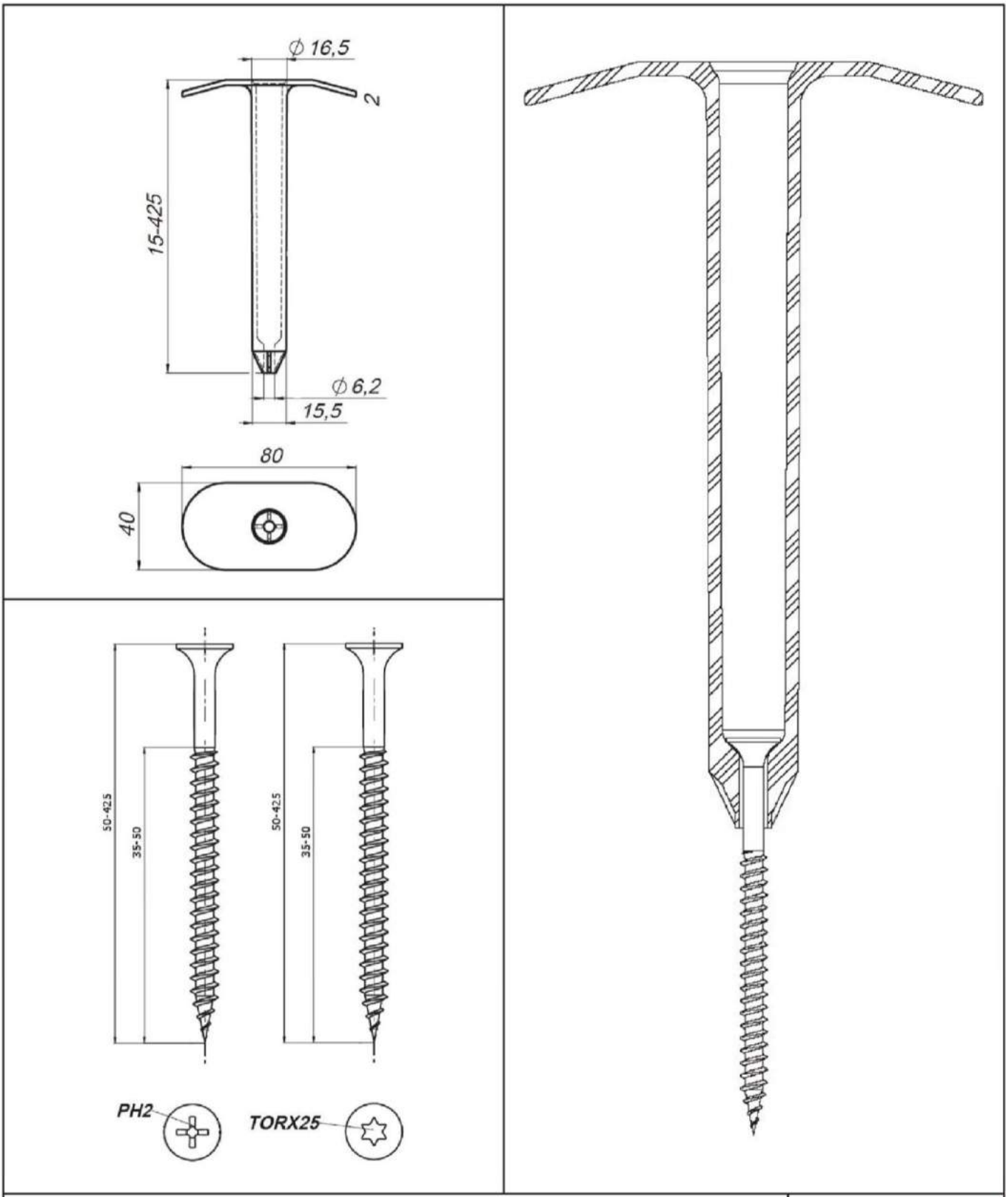
KOELNER **Flat Roof Fasteners**

Combination 15

Mount: GOK75
Fastener: WO (PH2- or Torx25-Drive)

Annex 15

Deutsches Institut für Bautechnik DIBt



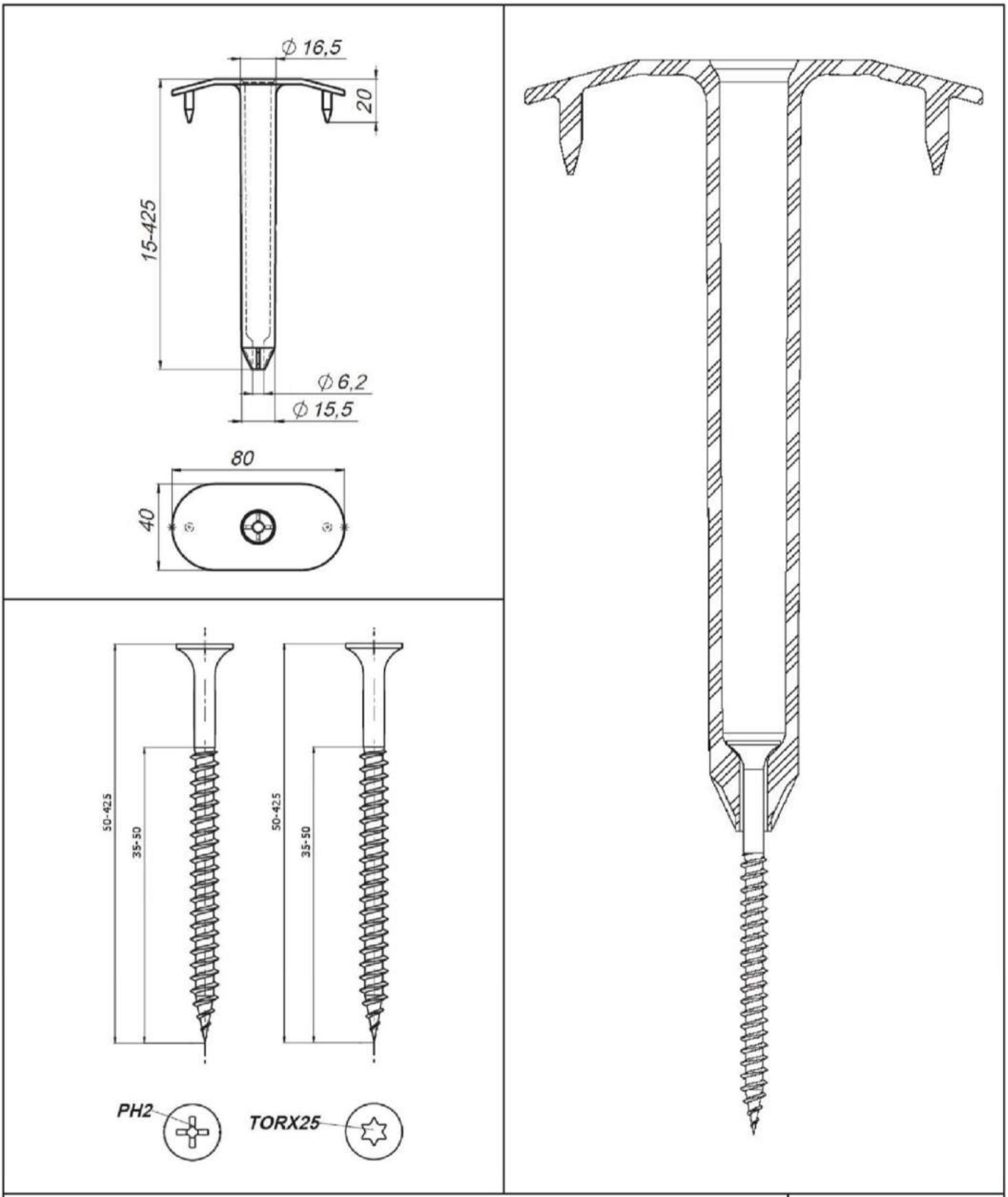
KOELNER **Flat Roof Fasteners**

Combination 16

Mount: GOW
Fastener: WO (PH2- or Torx25-Drive)

Annex 16

Deutsches Institut für Bautechnik DIBt



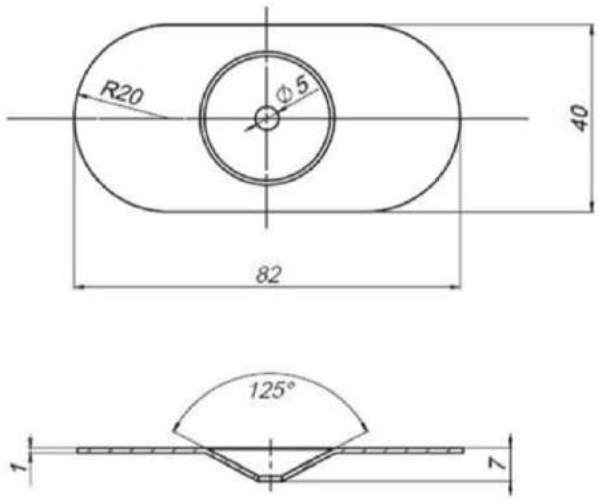
KOELNER **Flat Roof Fasteners**

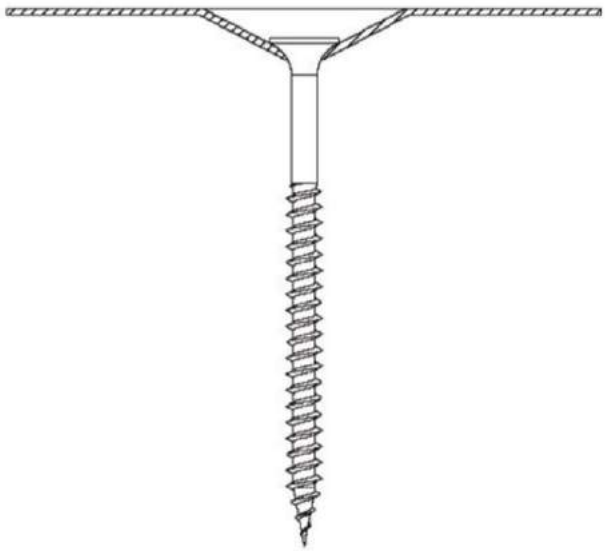
Combination 17

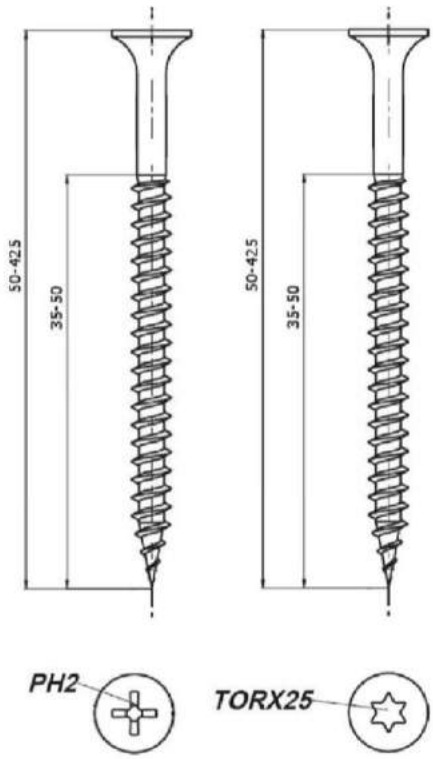
Mount: GOW-PLUS
Fastener: WO (PH2- or Torx25-Drive)

Annex 17

Deutsches Institut für Bautechnik DIBt







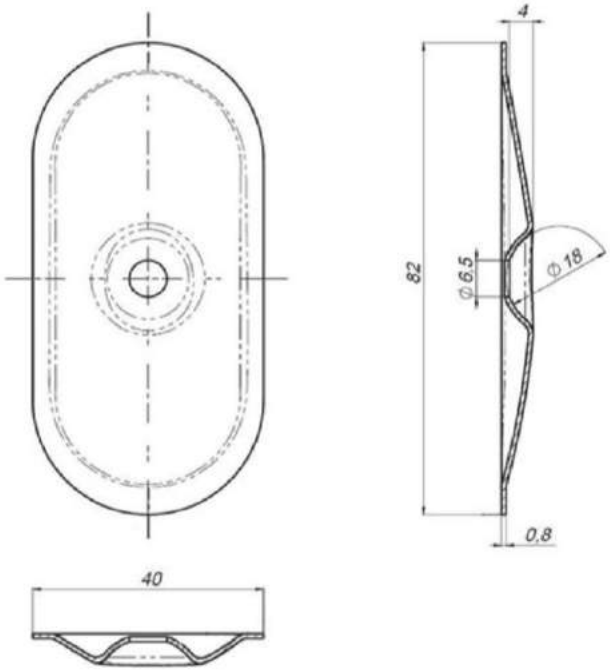
KOELNER **Flat Roof Fasteners**

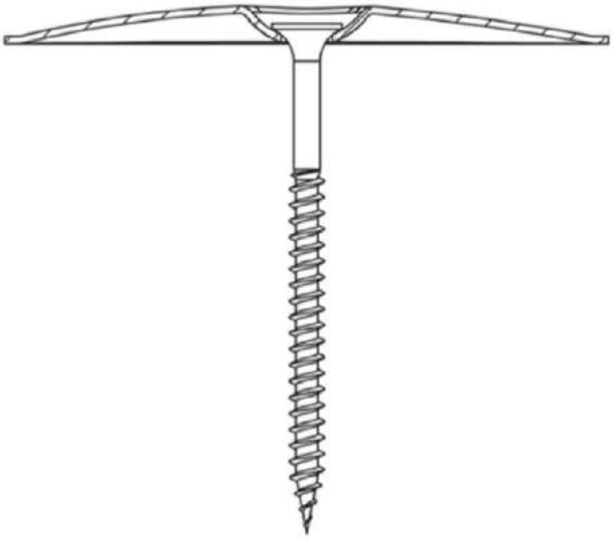
Combination 18

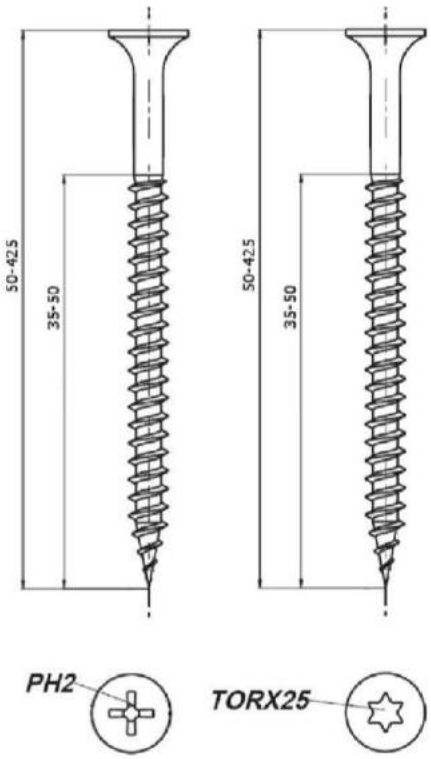
Mount: POW-05-AlZn
Fastener: WO (PH2- or Torx25-Drive)

Annex 18

Deutsches Institut für Bautechnik DIBt







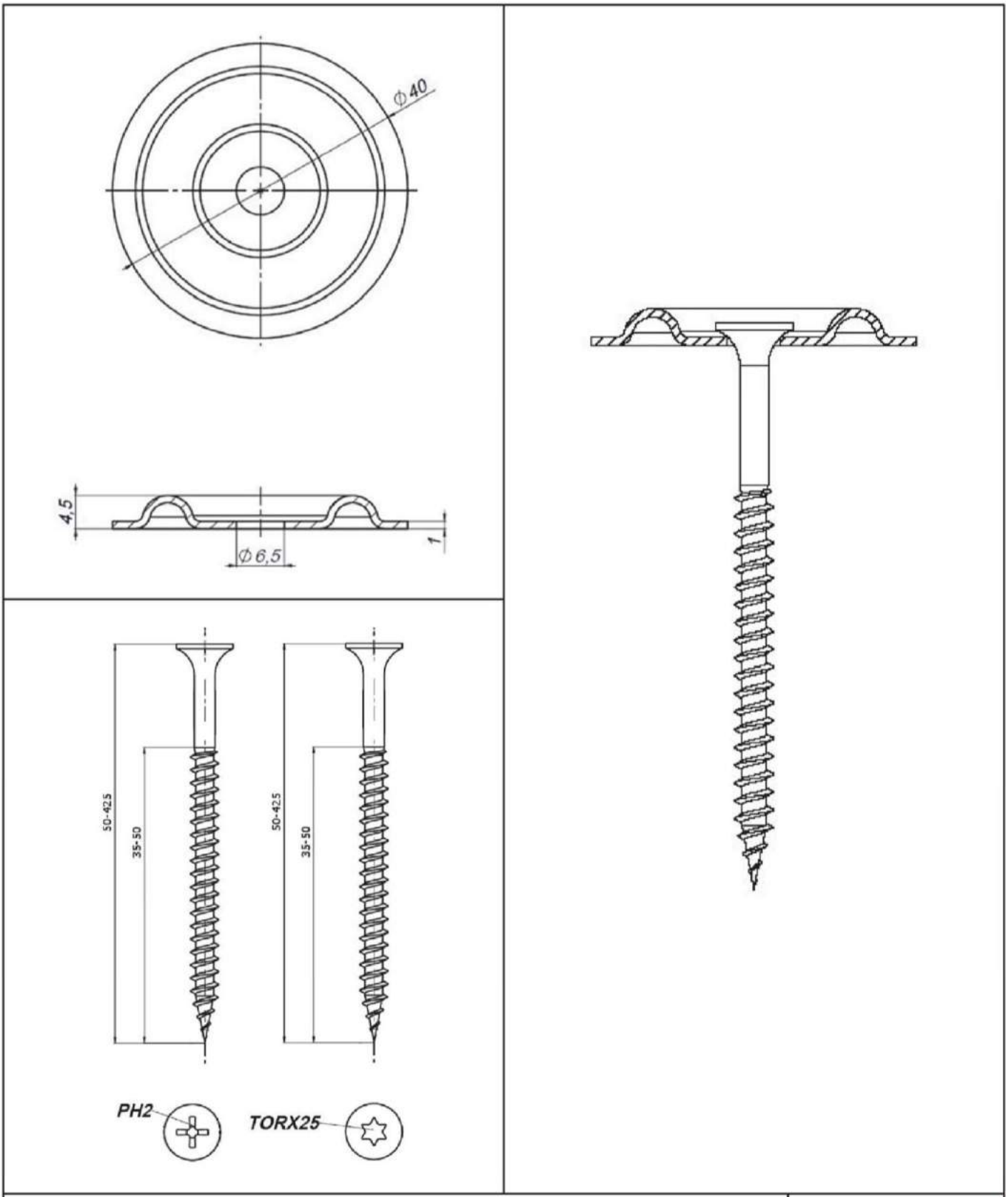
KOELNER **Flat Roof Fasteners**

Combination 19

Mount: POW-07-AlZn
Fastener: WO (PH2- or Torx25-Drive)

Annex 19

Deutsches Institut für Bautechnik DIBt



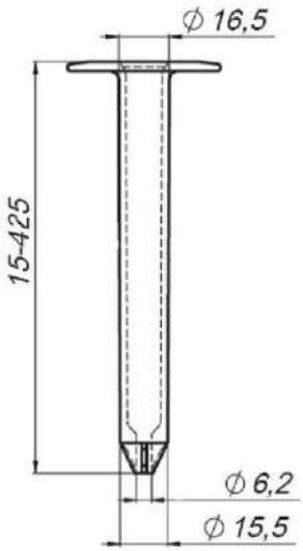
KOELNER **Flat Roof Fasteners**

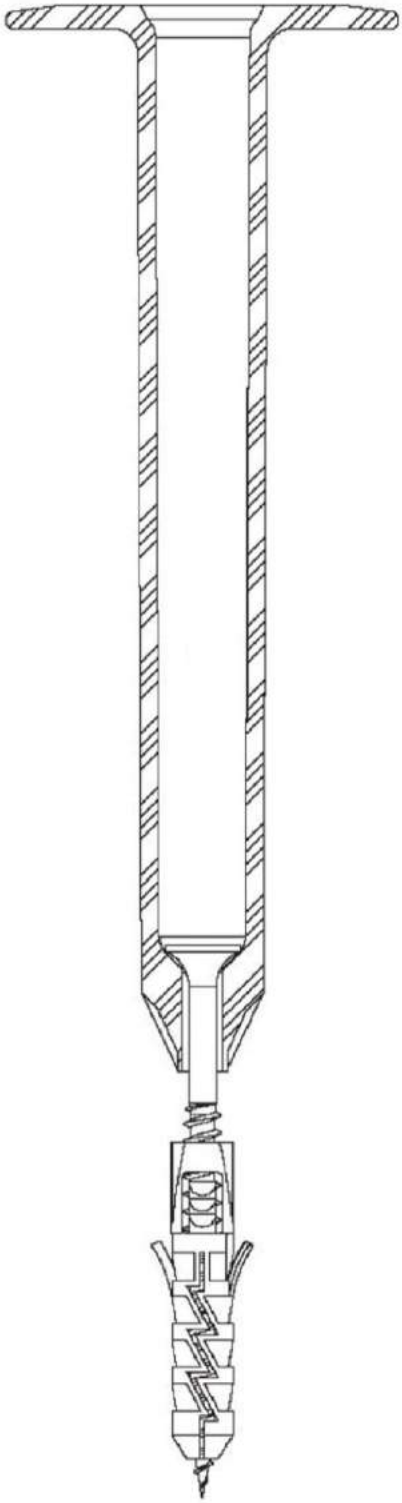
Combination 20

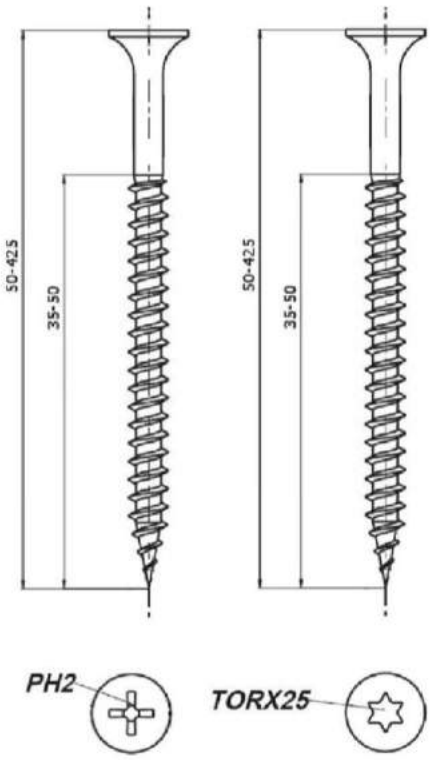
Mount: POK-041-AlZn
Fastener: WO (PH2- or Torx25-Drive)

Annex 20

Deutsches Institut für Bautechnik DIBt







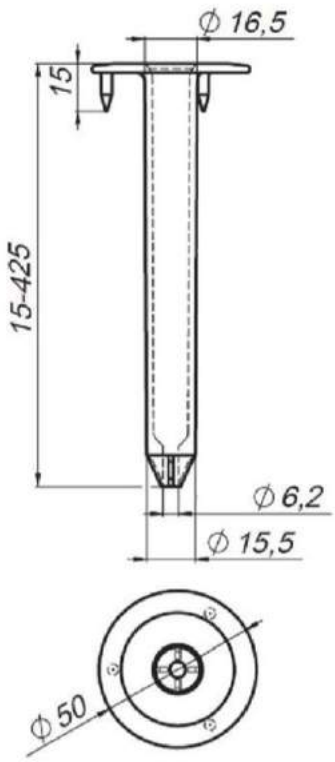
KOELNER **Flat Roof Fasteners**

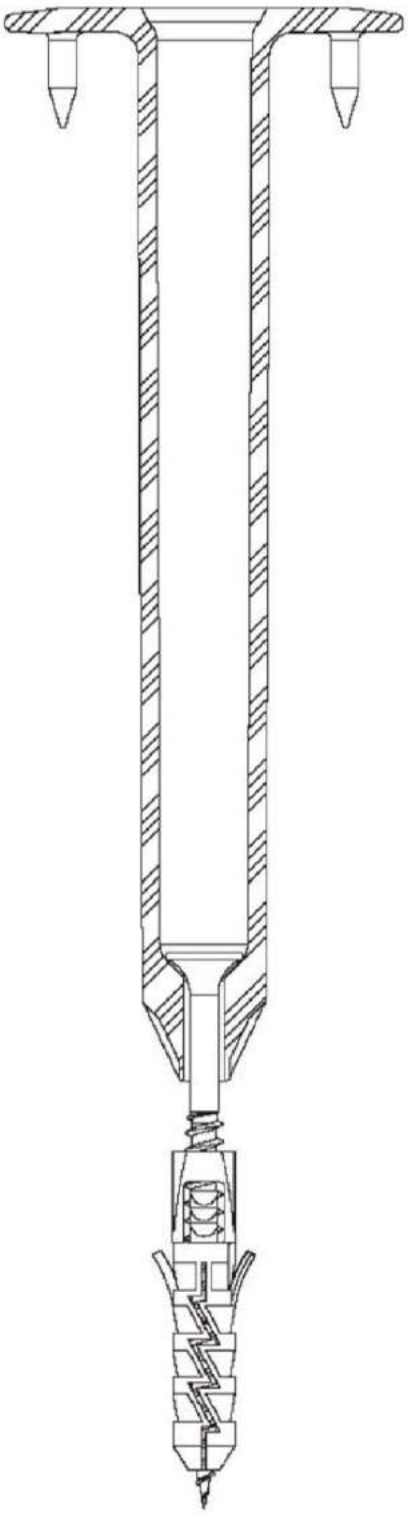
Combination 21

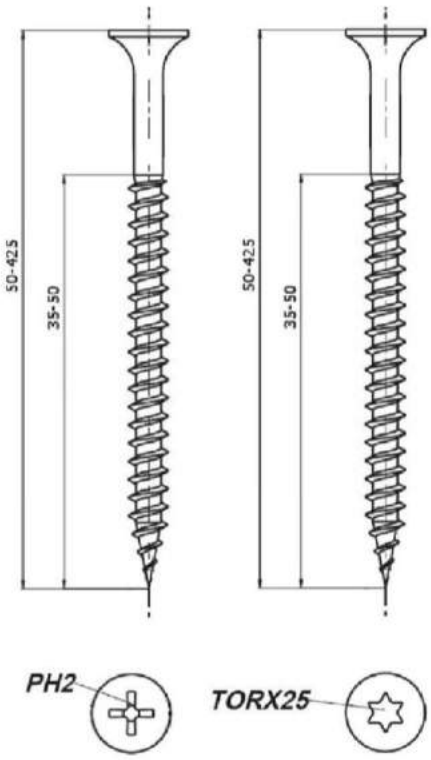
Mount: GOK
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 21

Deutsches Institut für Bautechnik DIBt







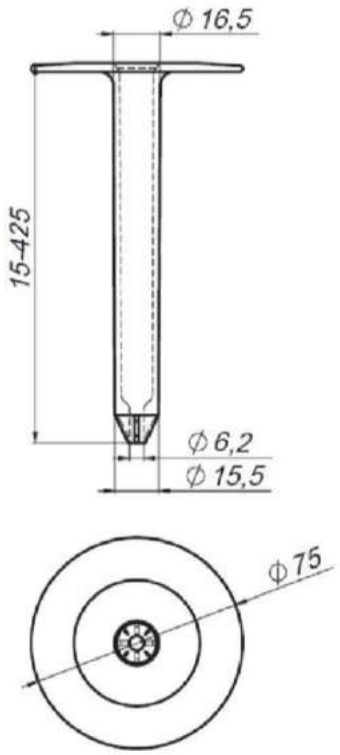
KOELNER **Flat Roof Fasteners**

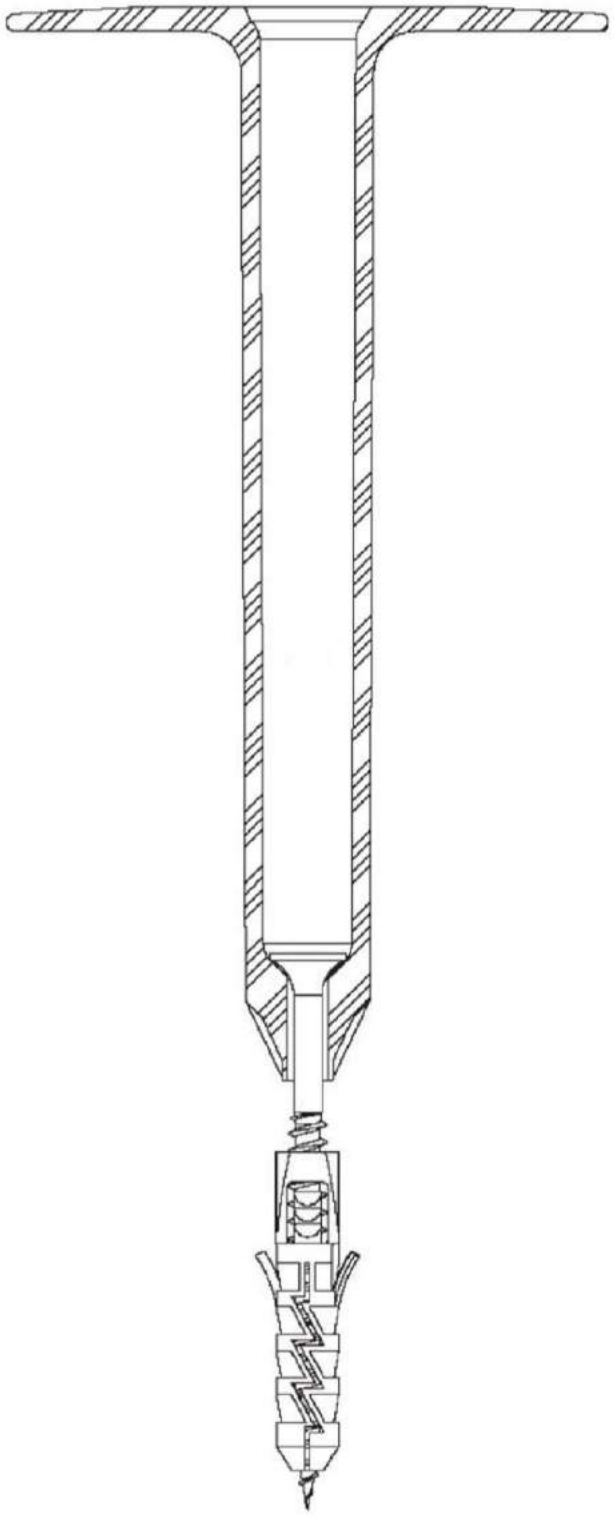
Combination 22

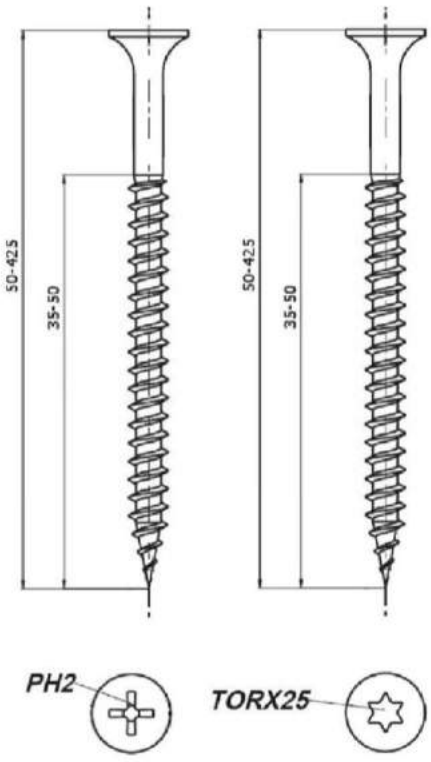
Mount: GOK-PLUS
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 22

Deutsches Institut für Bautechnik DIBt







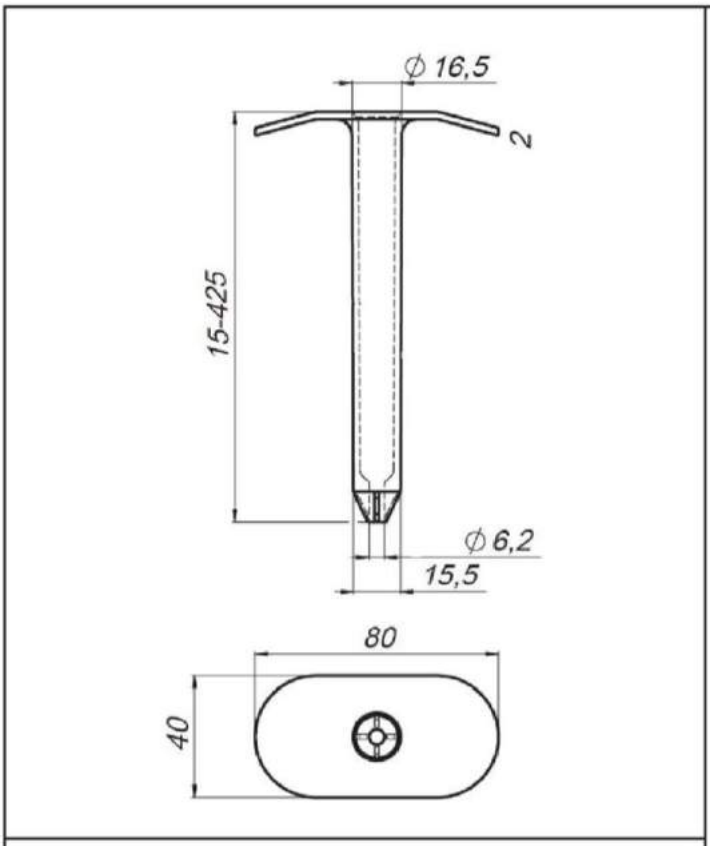
KOELNER **Flat Roof Fasteners**

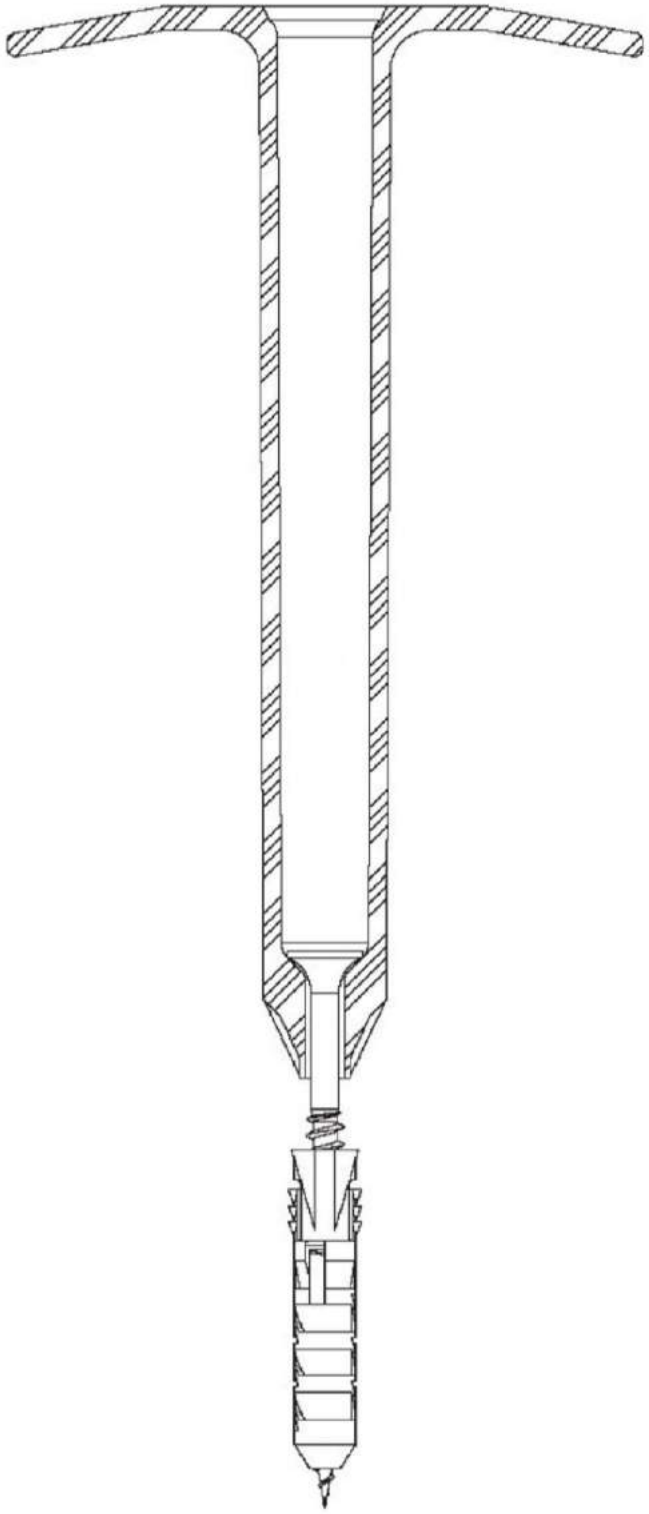
Combination 23

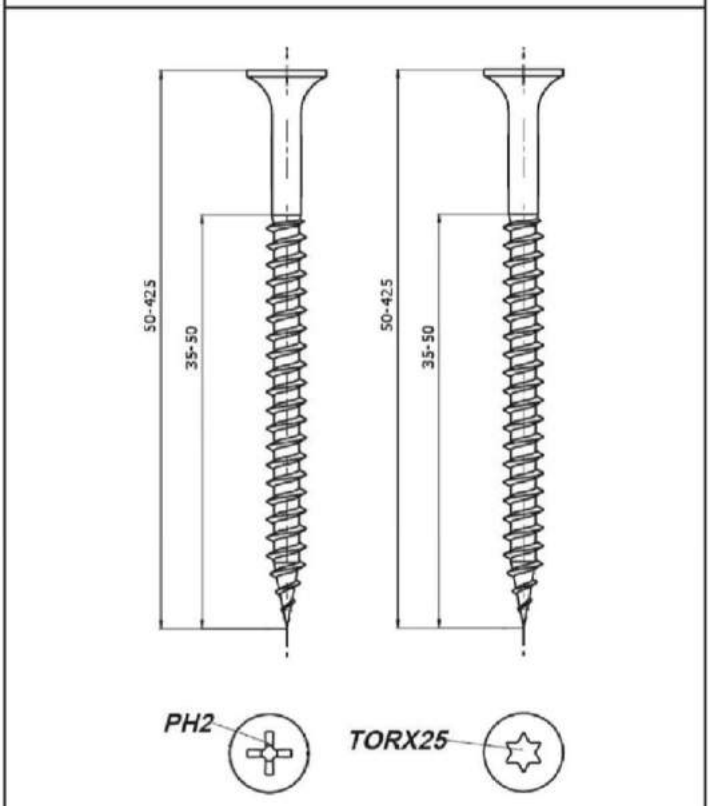
Mount: GOK75
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 23

Deutsches Institut für Bautechnik DIBt







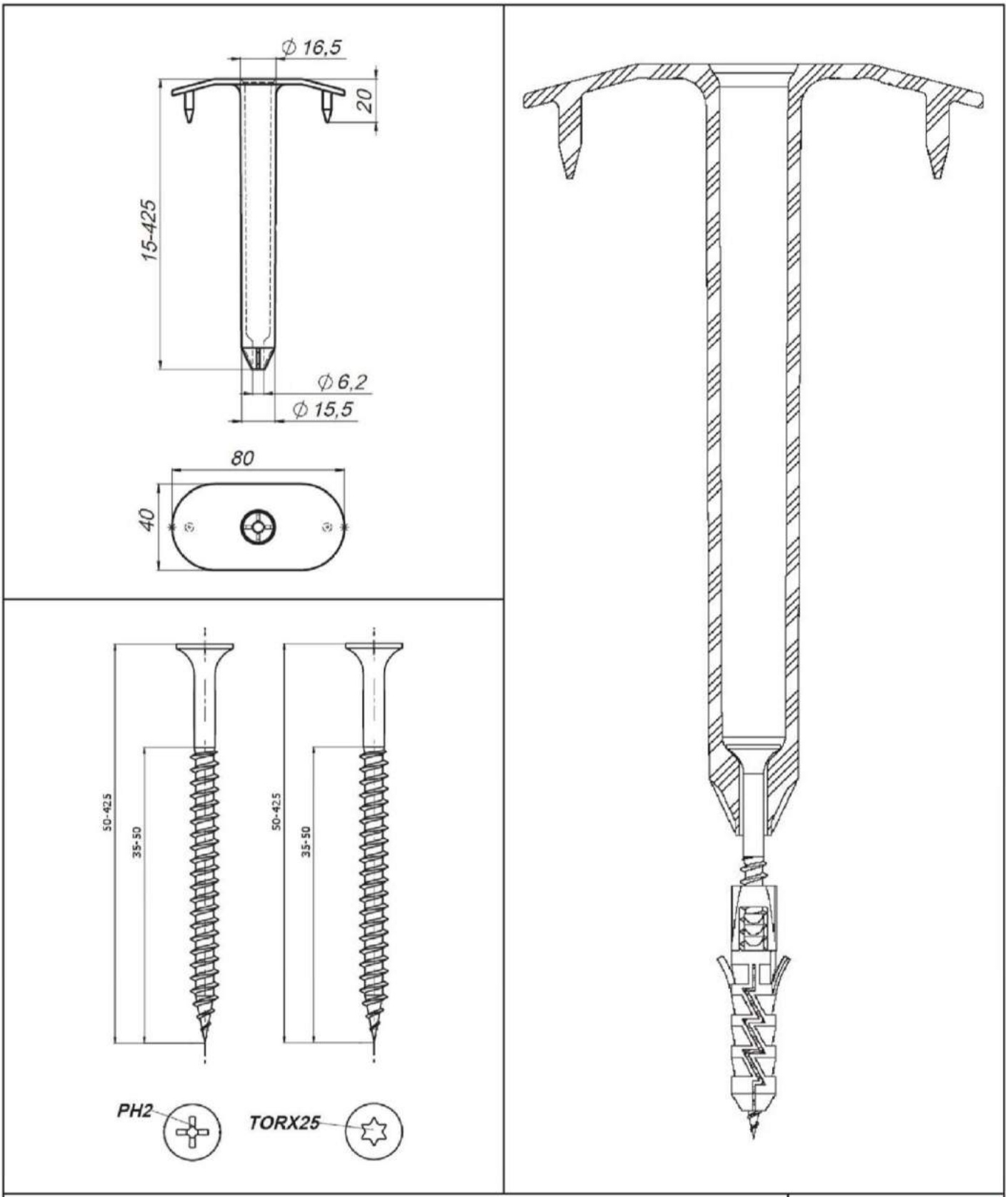
KOELNER **Flat Roof Fasteners**

Combination 24

Mount: GOW
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 24

Deutsches Institut für Bautechnik DIBt

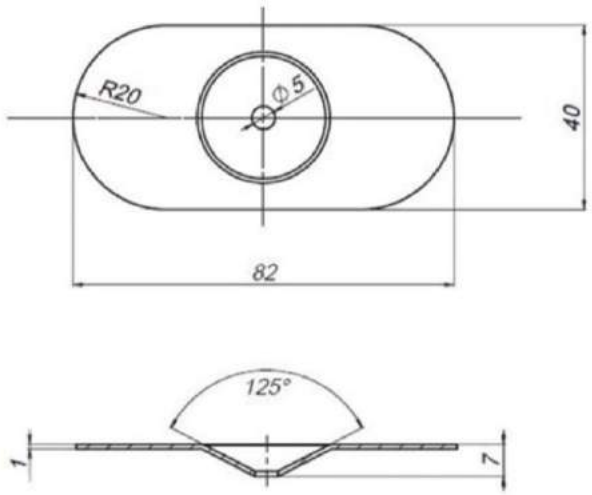


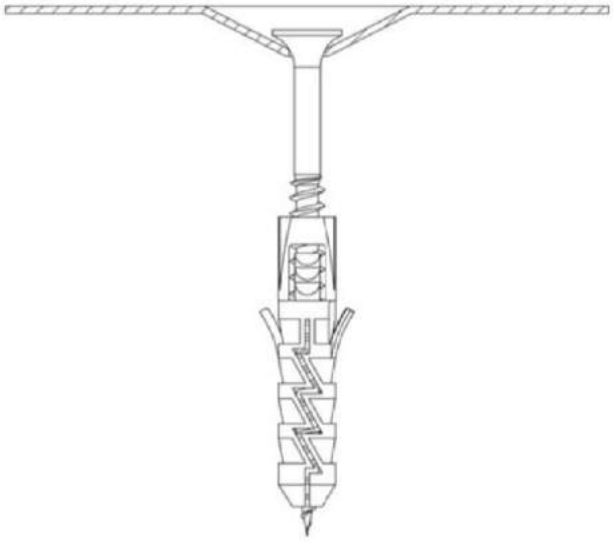
KOELNER **Flat Roof Fasteners**

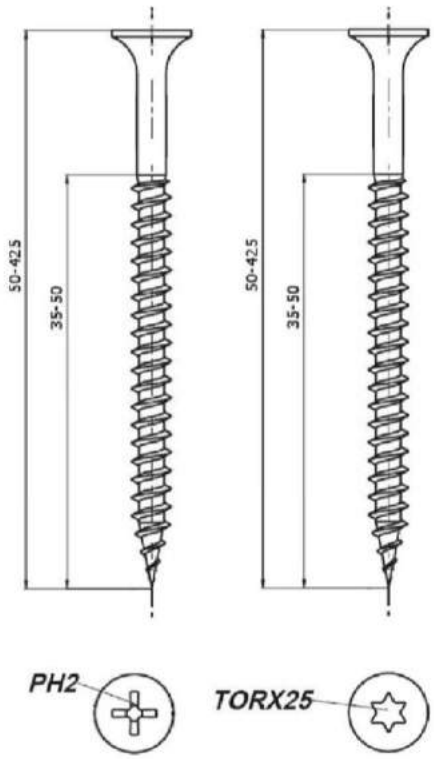
Combination 25

Mount: GOW-PLUS
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 25







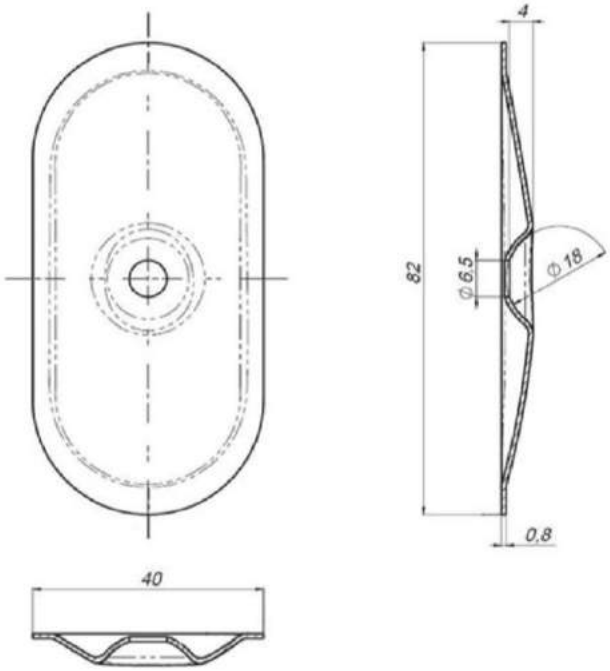
KOELNER **Flat Roof Fasteners**

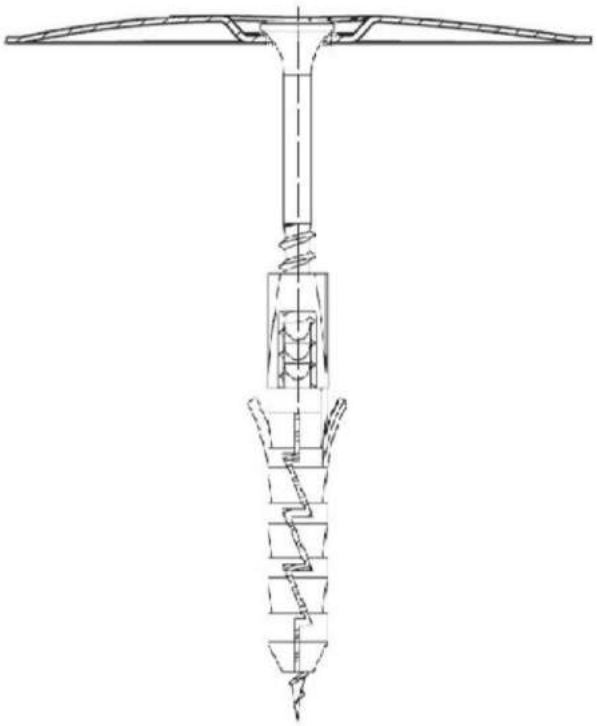
Combination 26

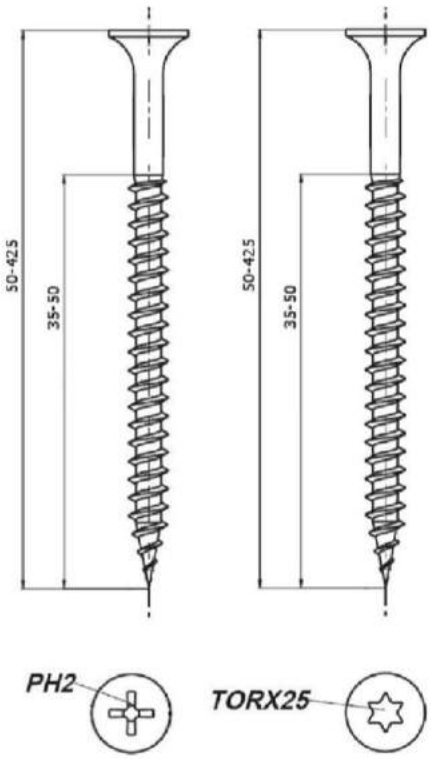
Mount: POW-05-AlZn
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 26

Deutsches Institut für Bautechnik DIBt







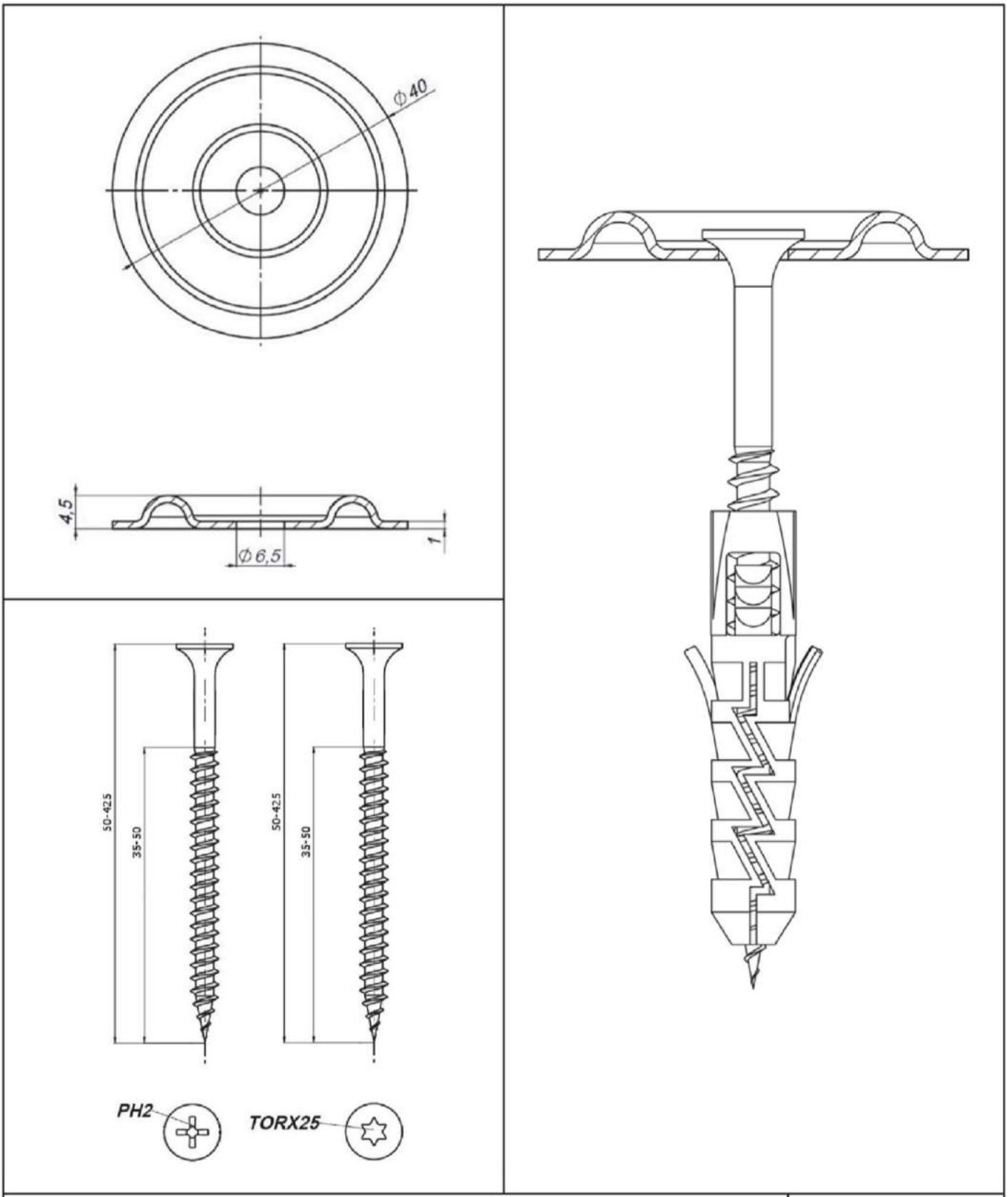
KOELNER **Flat Roof Fasteners**

Combination 27

Mount: POW-07-AlZn
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 27

Deutsches Institut für Bautechnik DIBt



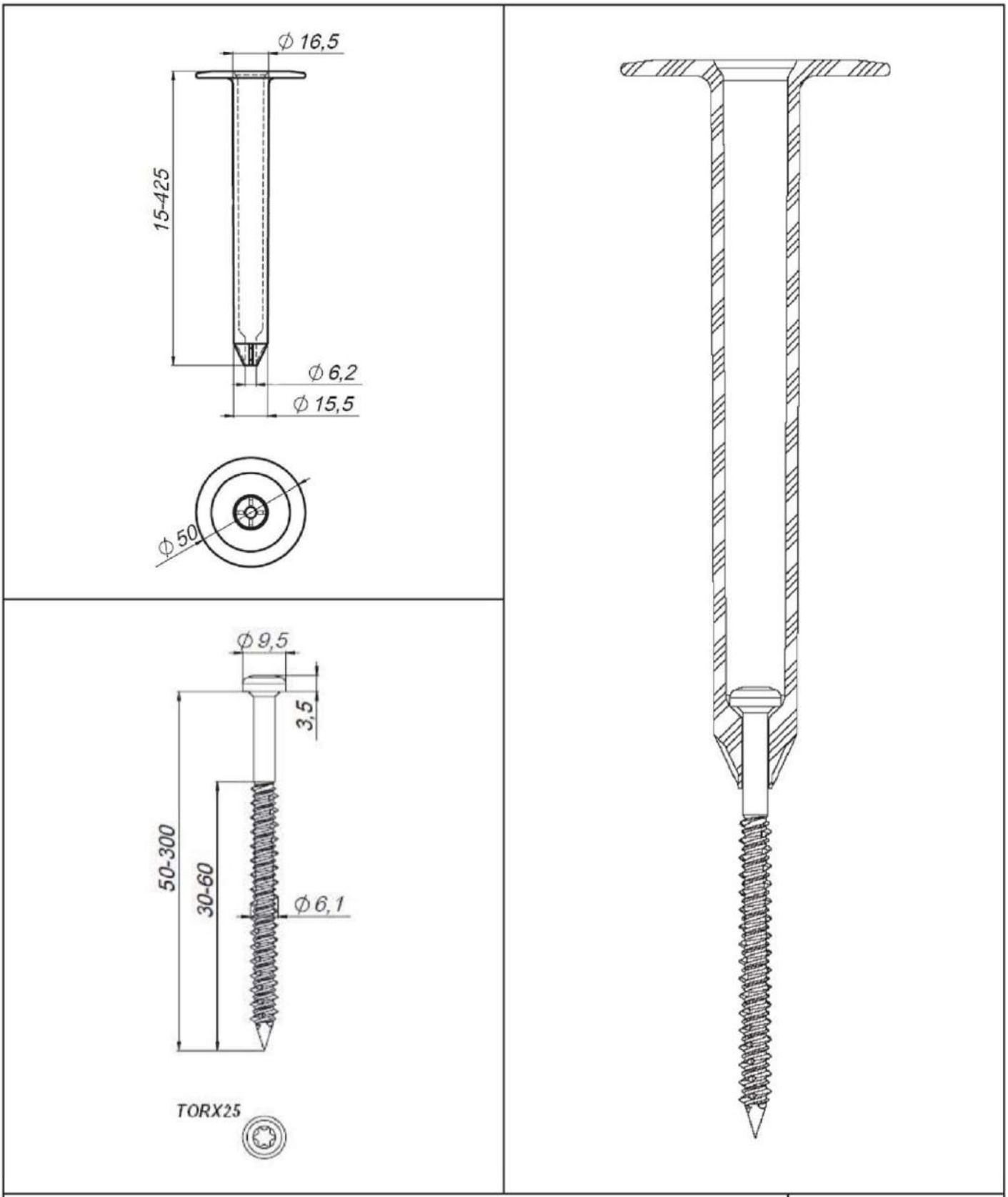
KOELNER **Flat Roof Fasteners**

Combination 28

Mount: POK-041-AlZn
Fastener: WO (PH2- or Torx25-Drive) with K08

Annex 28

Deutsches Institut für Bautechnik DIBt



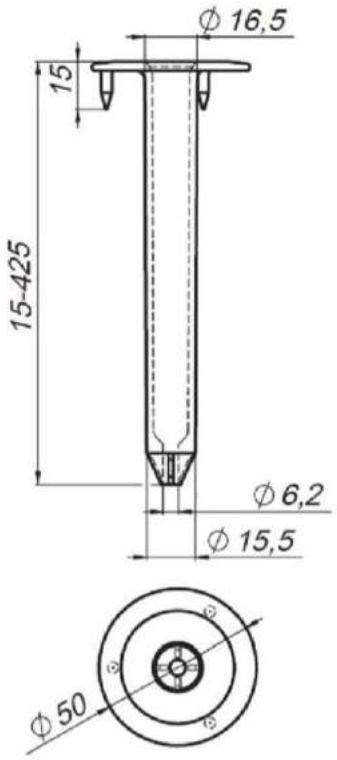
KOELNER **Flat Roof Fasteners**

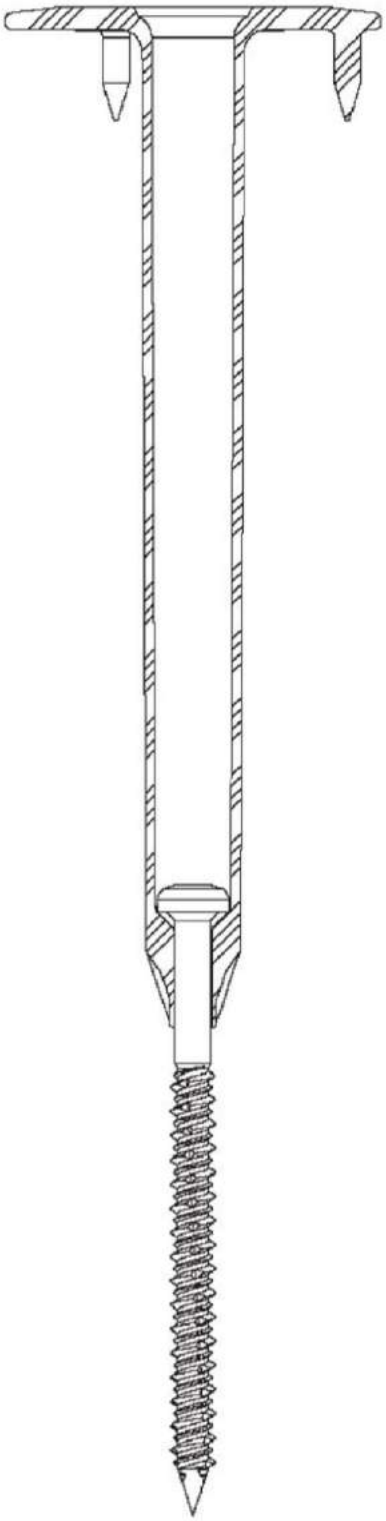
Combination 29

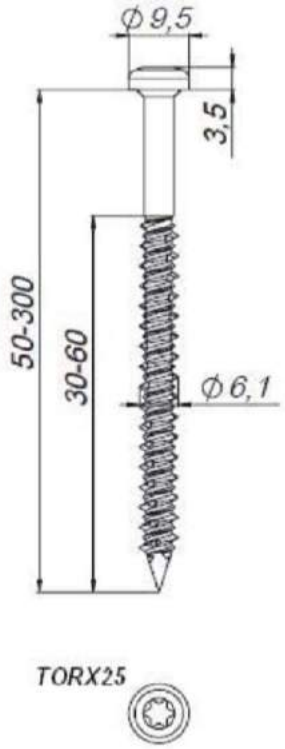
Mount: GOK
Fastener: WBT

Annex 29

Deutsches Institut für Bautechnik DIBt







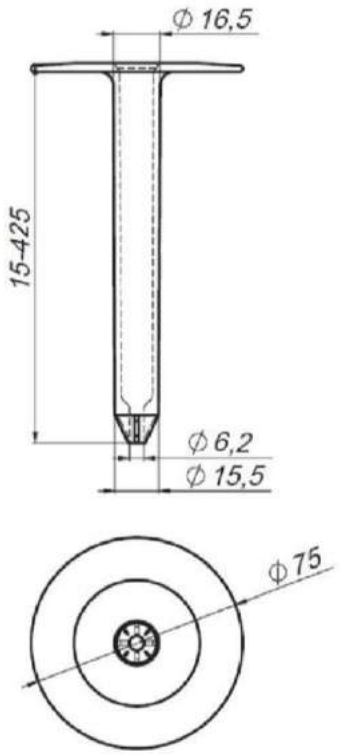
KOELNER **Flat Roof Fasteners**

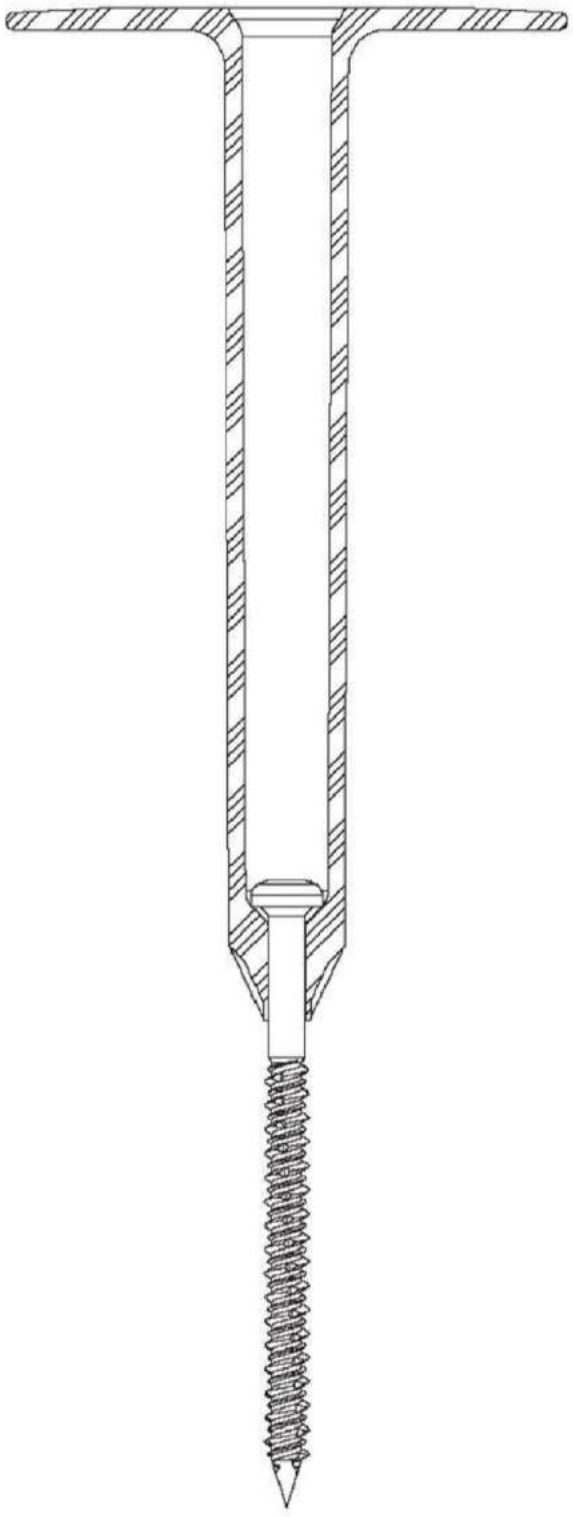
Combination 30

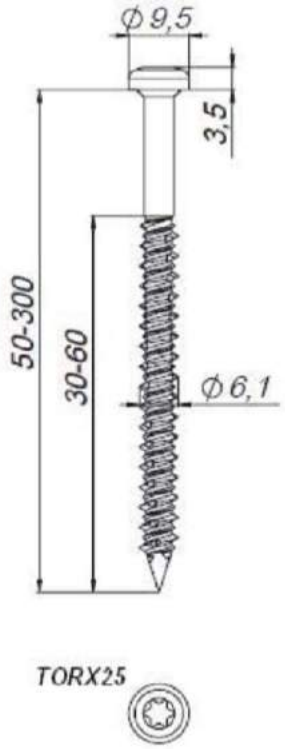
Mount: GOK-PLUS
Fastener: WBT

Annex 30

Deutsches Institut für Bautechnik DIBt







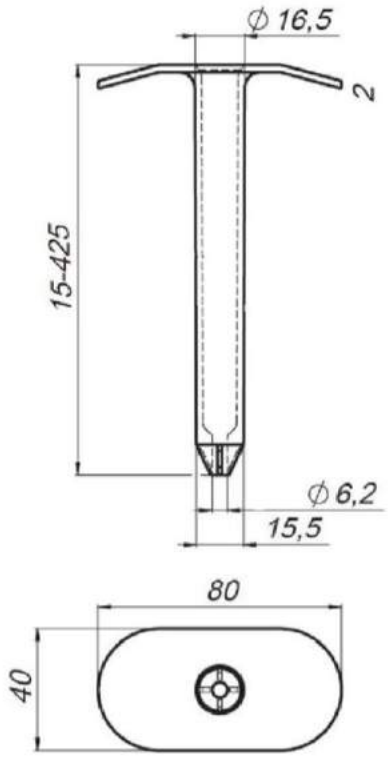
KOELNER **Flat Roof Fasteners**

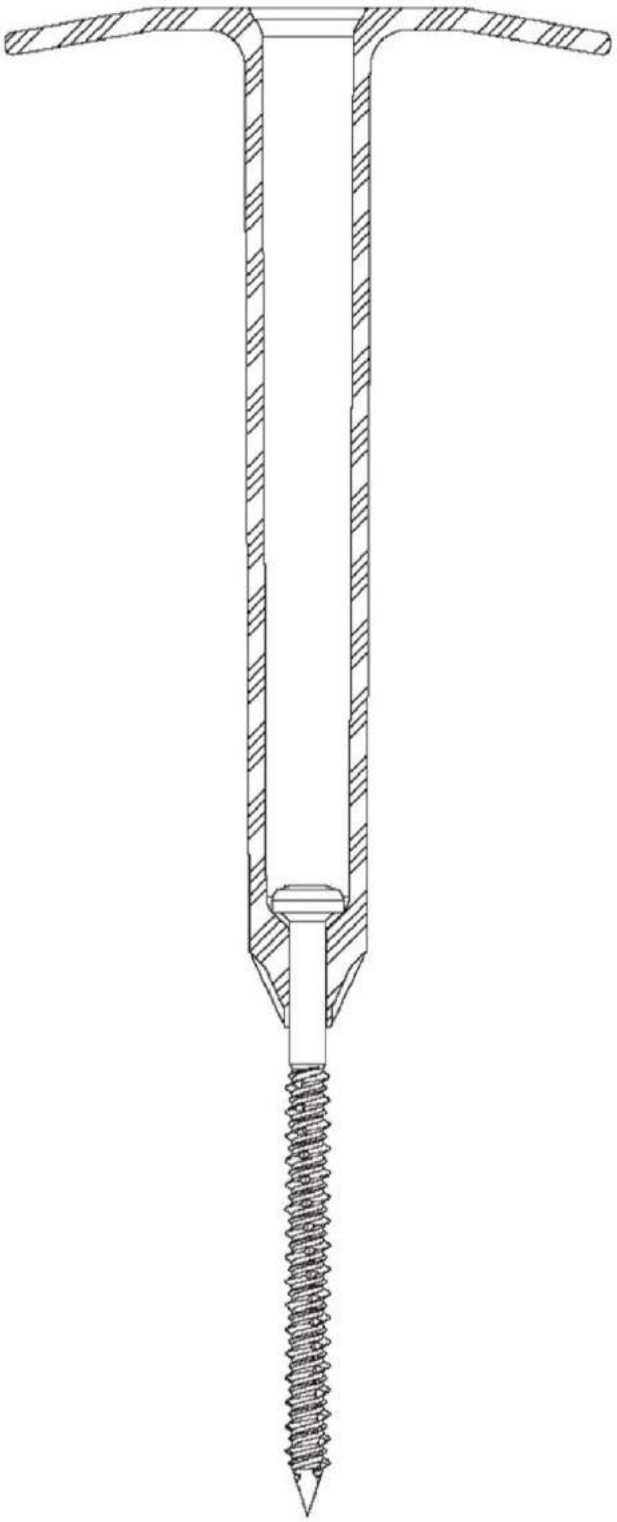
Combination 31

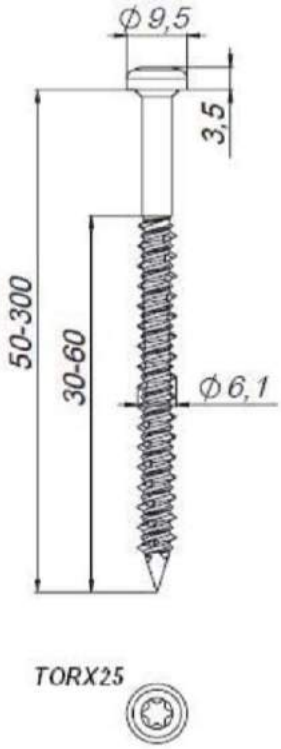
Mount: GOK75
Fastener: WBT

Annex 31

Deutsches Institut für Bautechnik DIBt







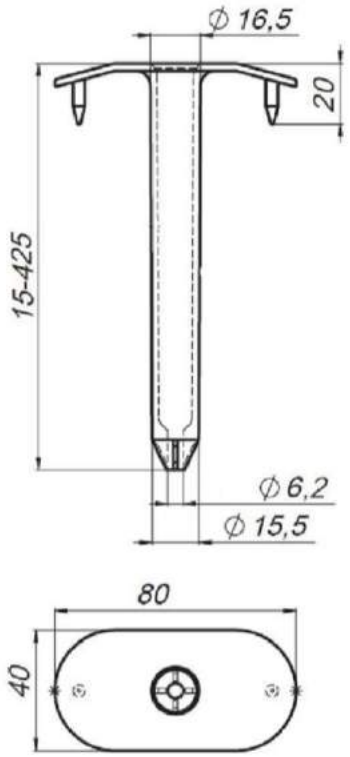
KOELNER **Flat Roof Fasteners**

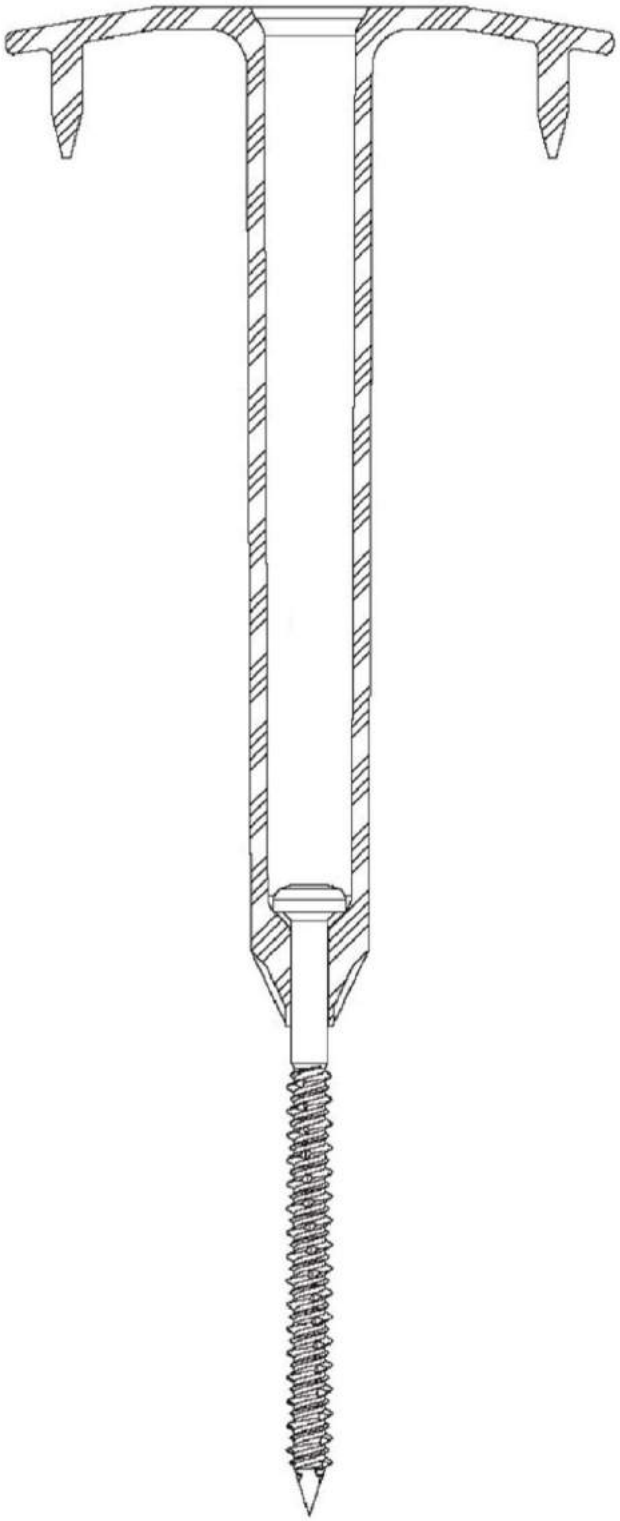
Combination 32

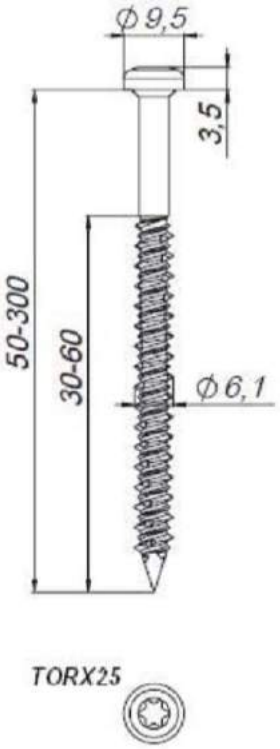
Mount: GOW
Fastener: WBT

Annex 32

Deutsches Institut für Bautechnik DIBt







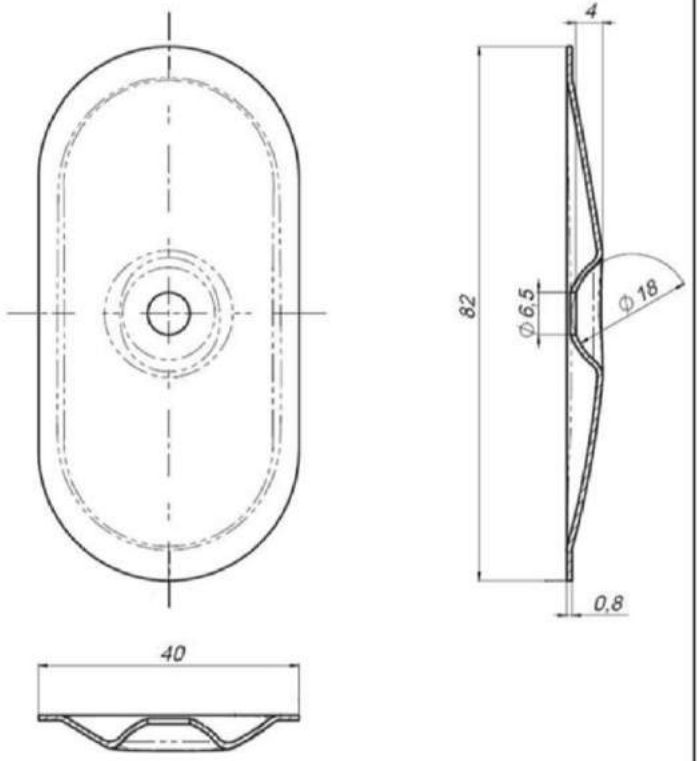
KOELNER **Flat Roof Fasteners**

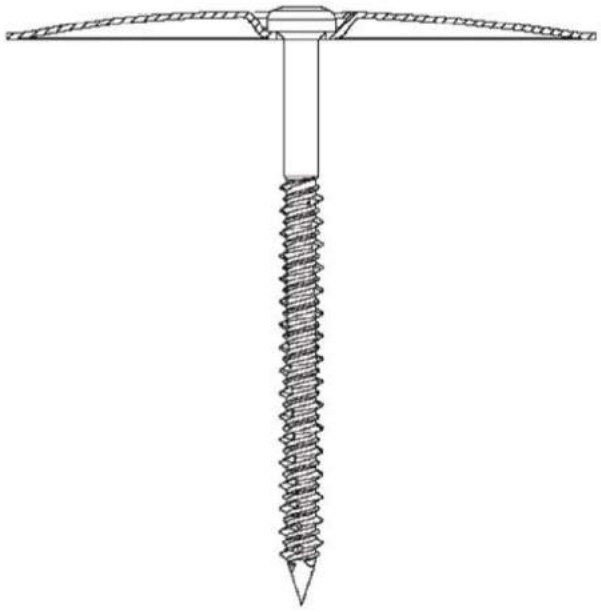
Combination 33

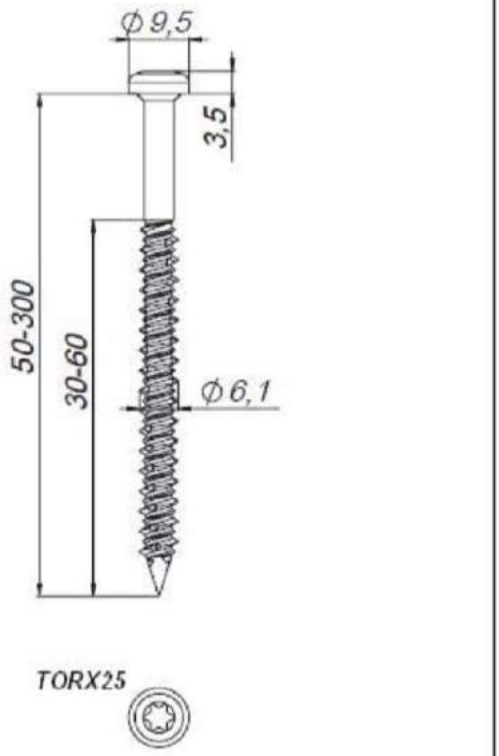
Mount: GOW-PLUS
Fastener: WBT

Annex 33

Deutsches Institut für Bautechnik DIBt







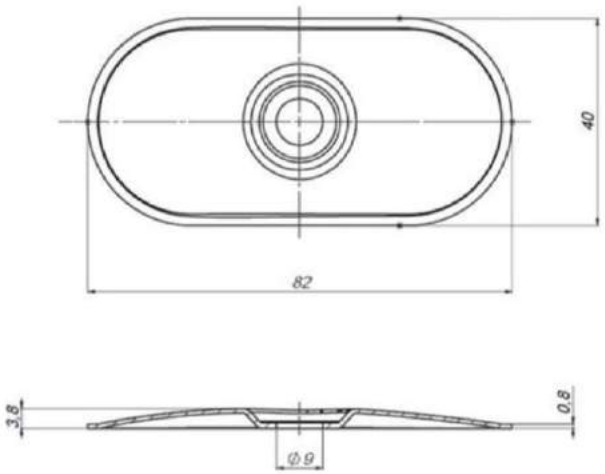
KOELNER **Flat Roof Fasteners**

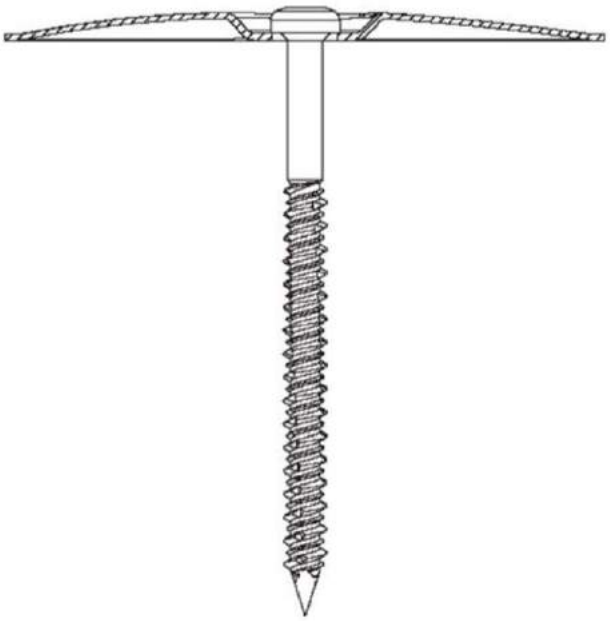
Combination 34

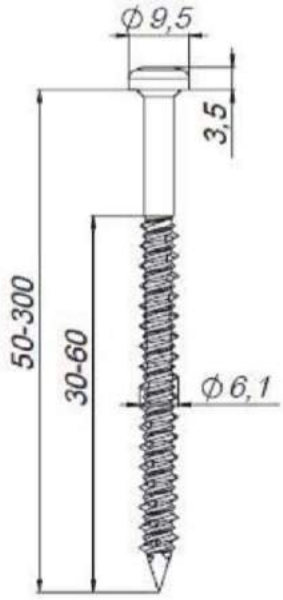
Mount: POW-07-AlZn
Fastener: WBT

Annex 34

Deutsches Institut für Bautechnik DIBt







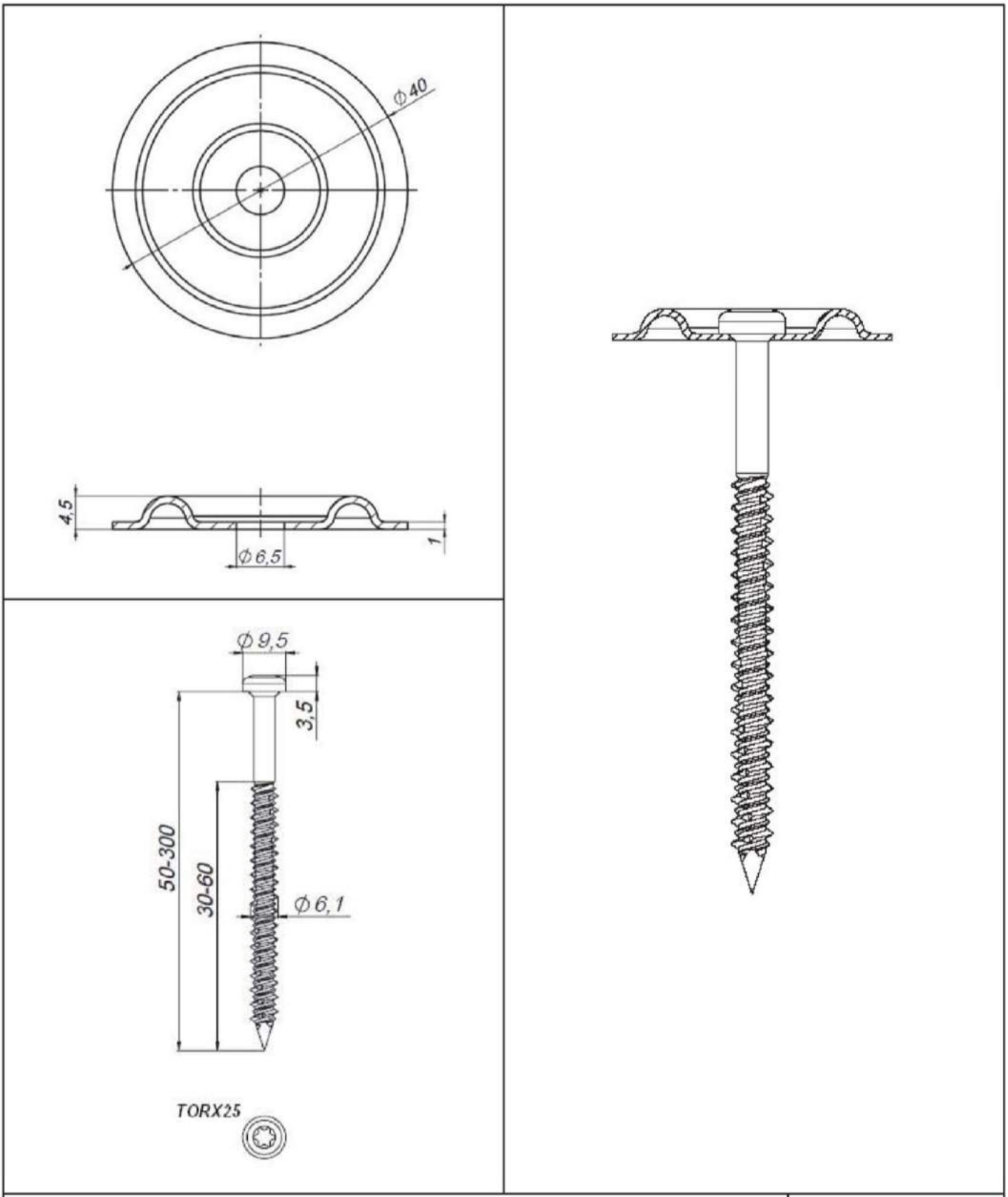
KOELNER **Flat Roof Fasteners**

Combination 35

Mount: POW-09-AlZn
Fastener: WBT

Annex 35

Deutsches Institut für Bautechnik DIBt



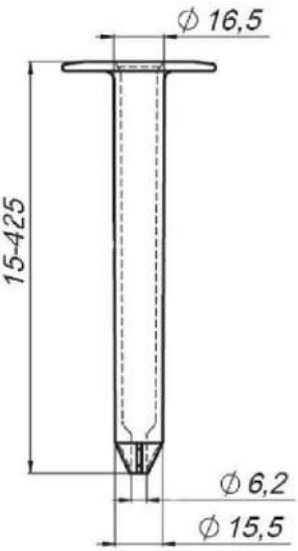
KOELNER **Flat Roof Fasteners**

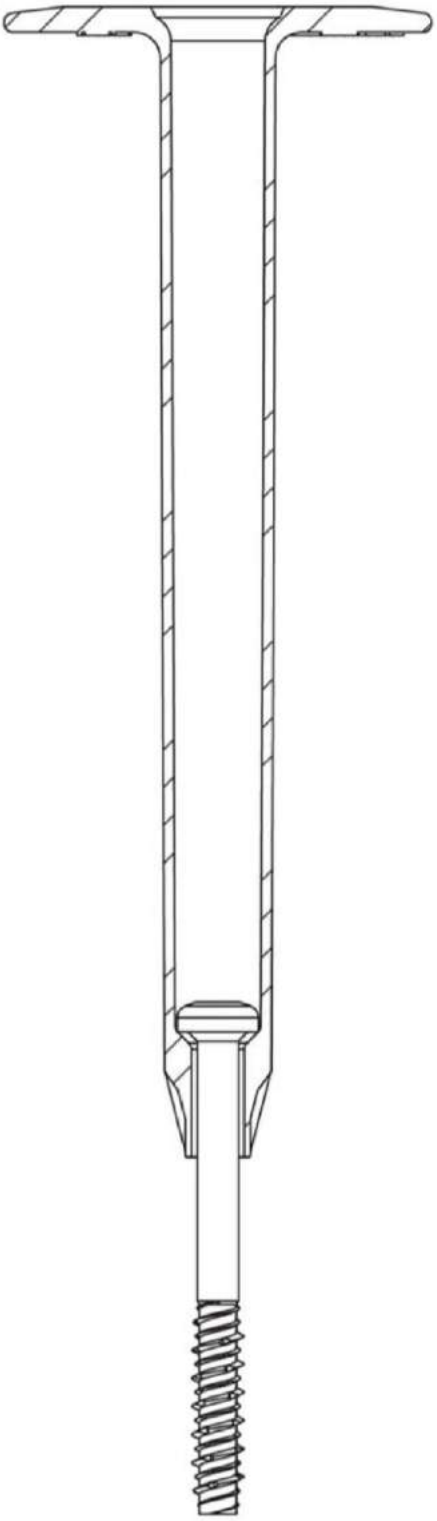
Combination 36

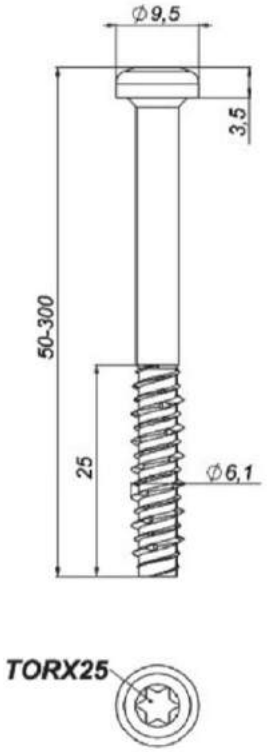
Mount: POK-041-AlZn
Fastener: WBT

Annex 36

Deutsches Institut für Bautechnik DIBt





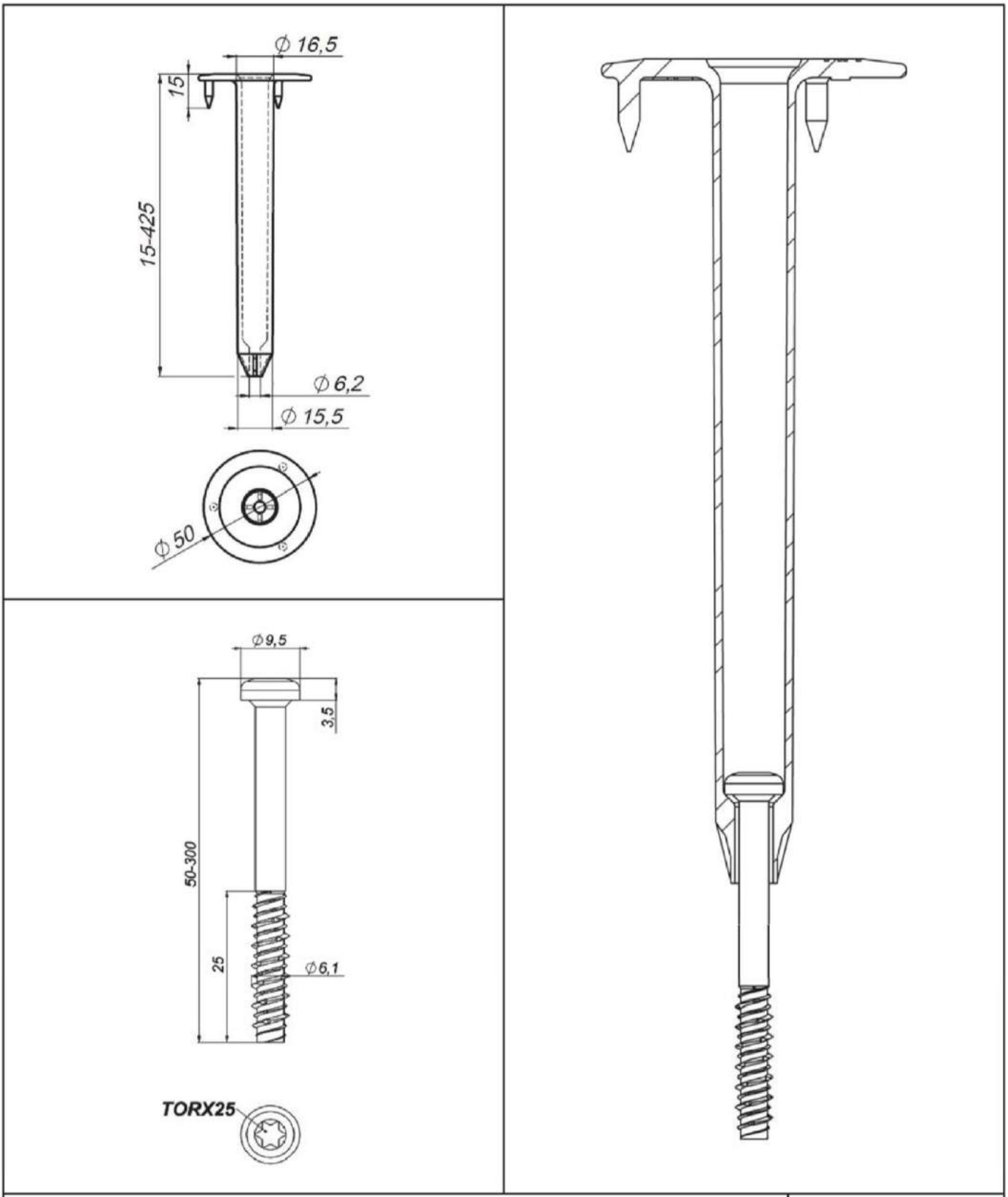


KOELNER **Flat Roof Fasteners**

Combination 37

Mount: GOK
Fastener: WBT-A

Annex 37



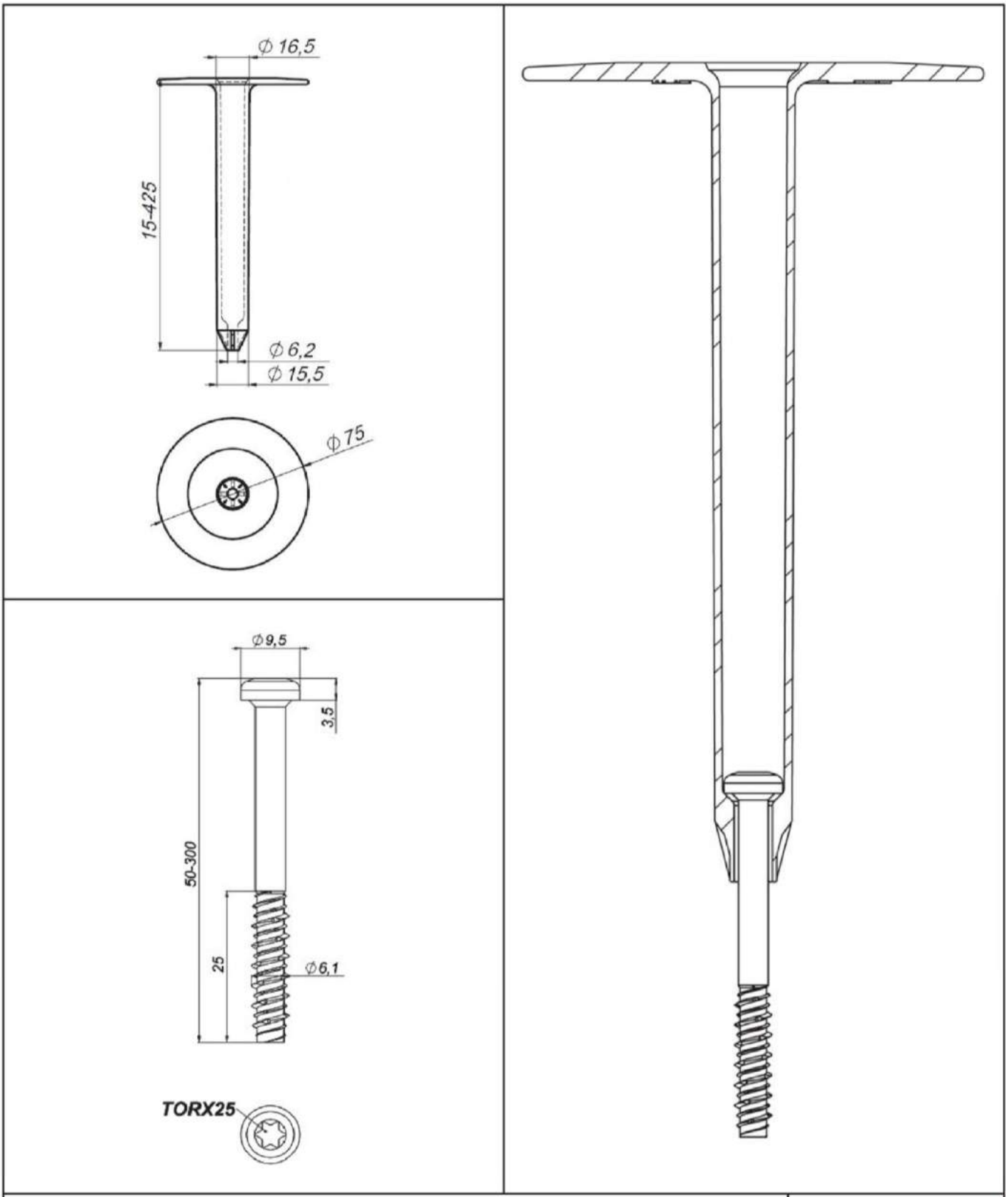
KOELNER **Flat Roof Fasteners**

Combination 38

Mount: GOK-PLUS
Fastener: WBT-A

Annex 38

Deutsches Institut für Bautechnik DIBt



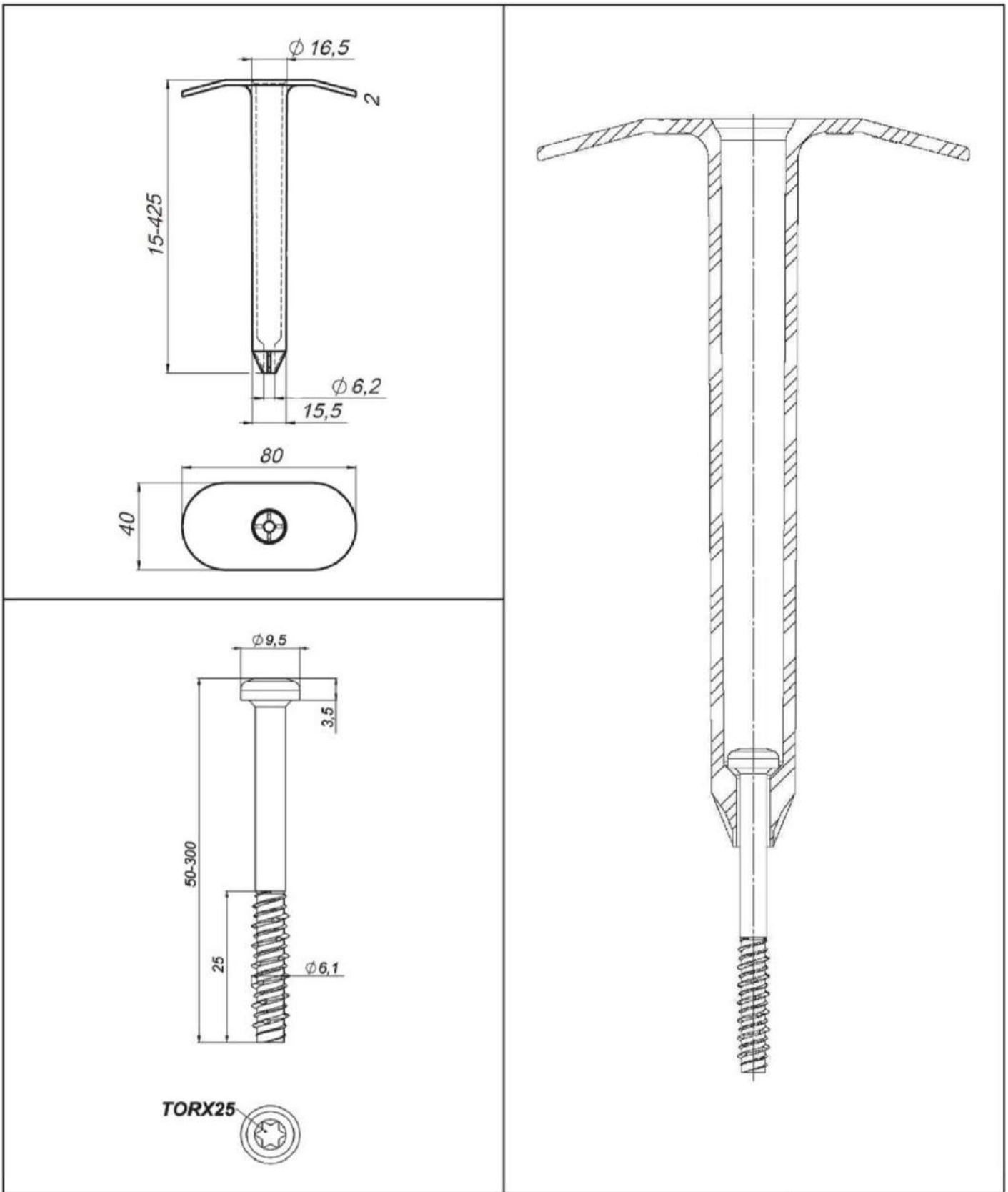
KOELNER **Flat Roof Fasteners**

Combination 39

Mount: GOK75
Fastener: WBT-A

Annex 39

Deutsches Institut für Bautechnik DIBt



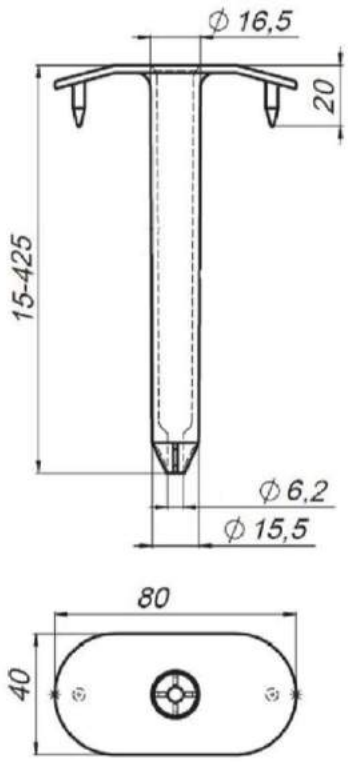
KOELNER **Flat Roof Fasteners**

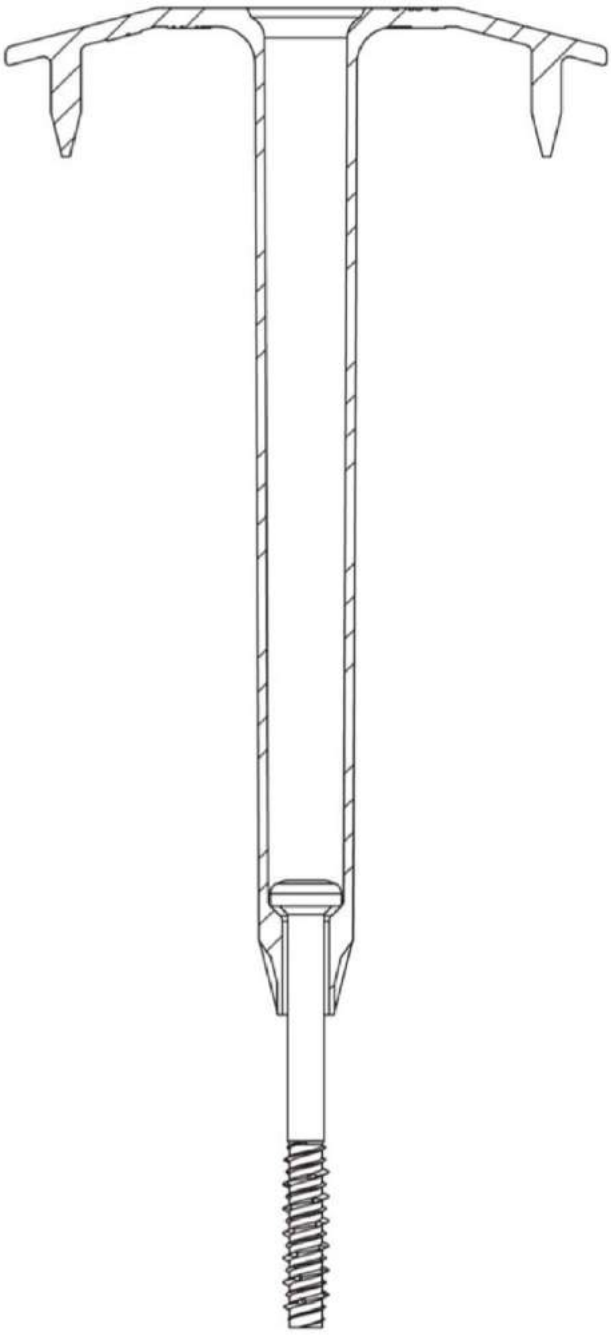
Combination 40

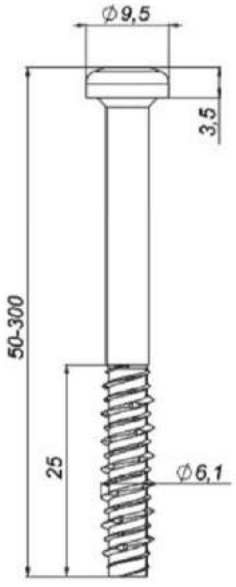
Mount: GOW
Fastener: WBT-A

Annex 40

Deutsches Institut für Bautechnik DIBt





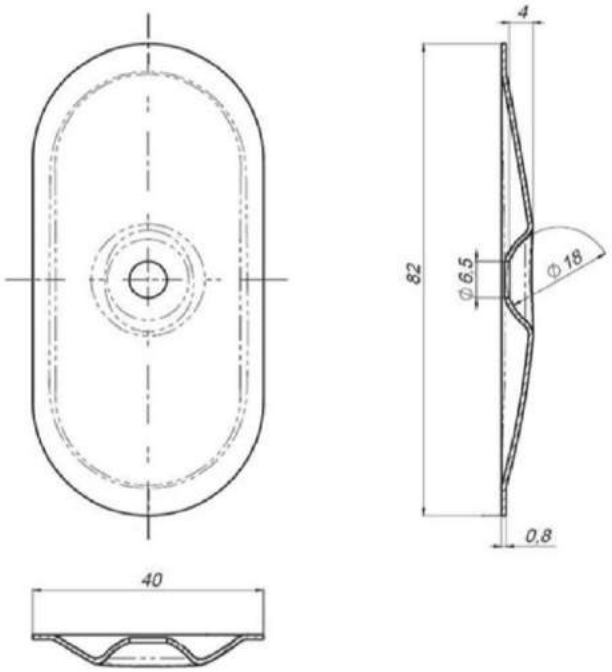


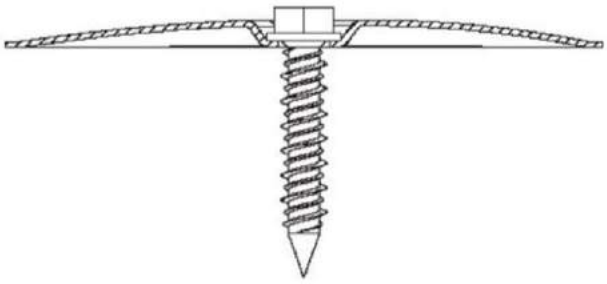
KOELNER **Flat Roof Fasteners**

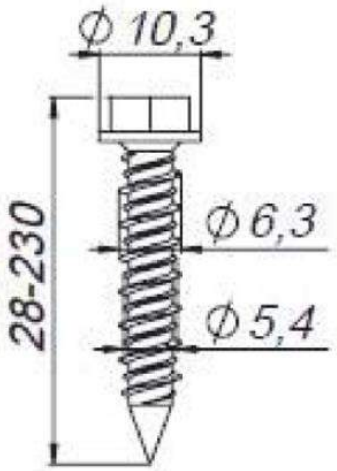
Combination 41

Mount: GOW-PLUS
Fastener: WBT-A

Annex 41







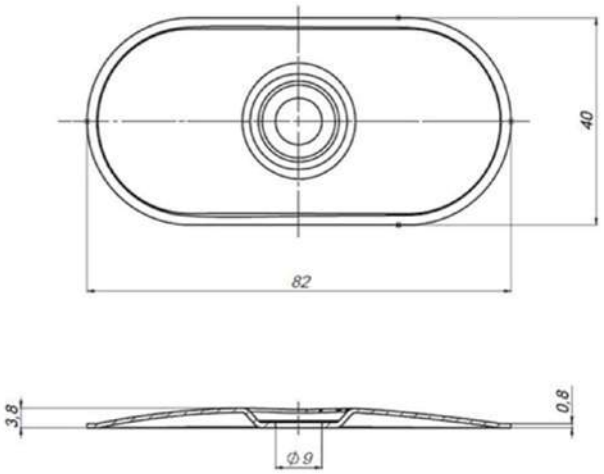
KOELNER **Flat Roof Fasteners**

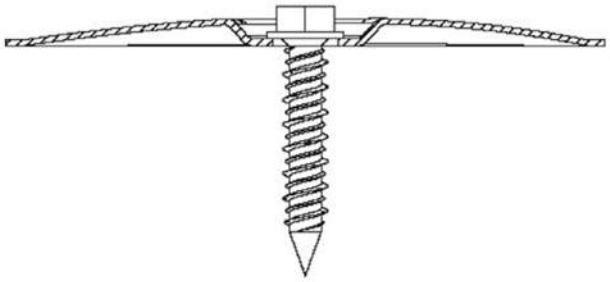
Combination 42

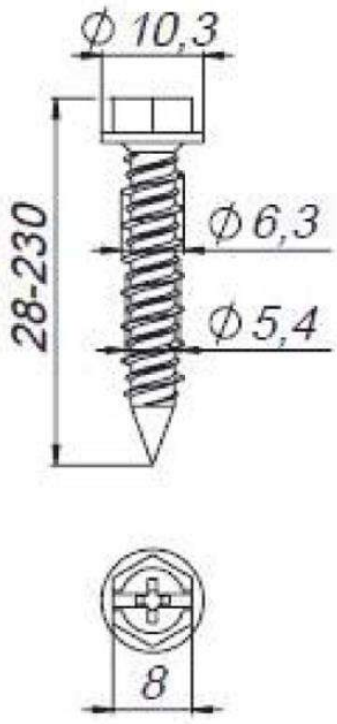
Mount: POW-07-AlZn
Fastener: WCS

Annex 42

Deutsches Institut für Bautechnik DIBt







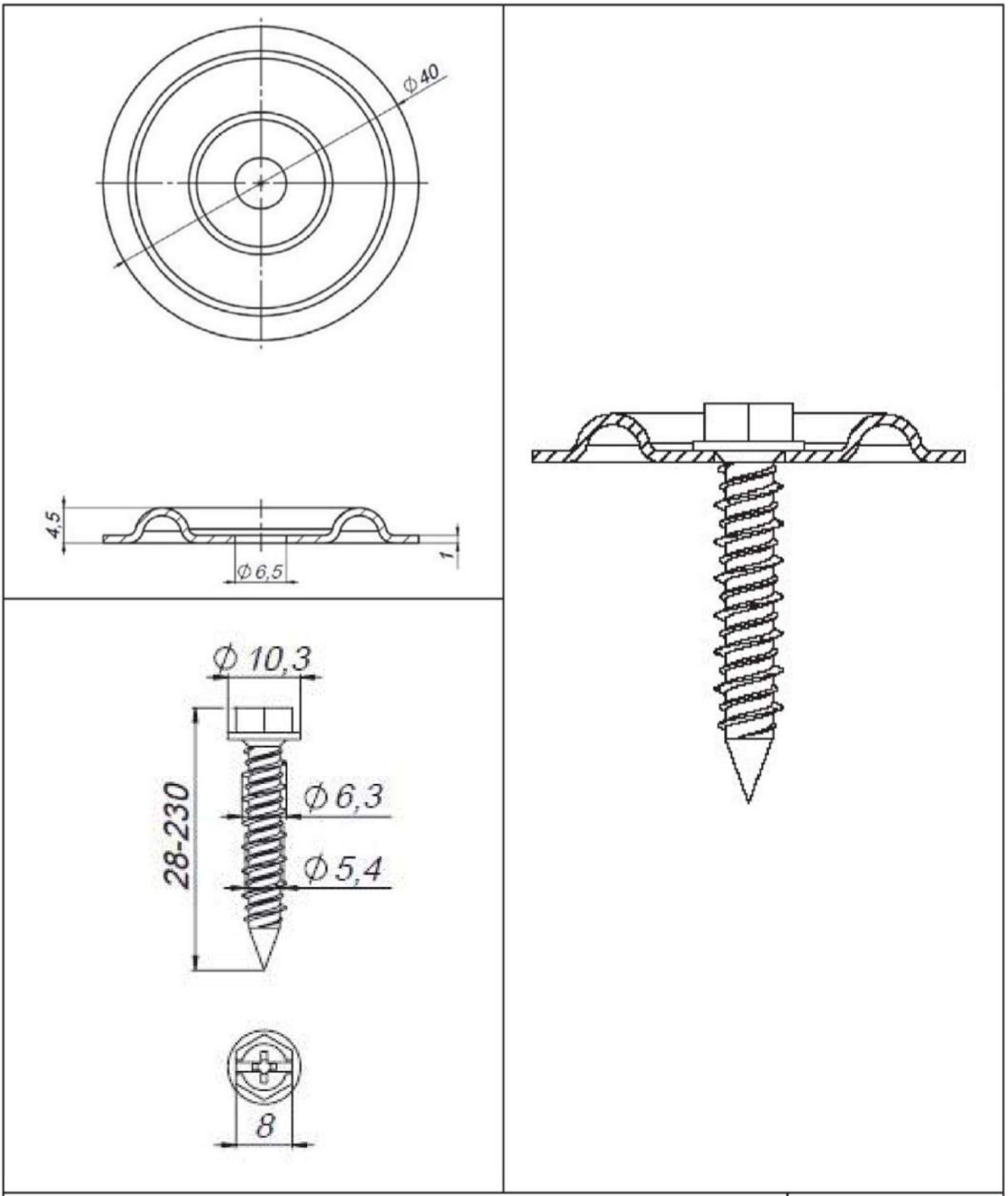
KOELNER **Flat Roof Fasteners**

Combination 43

Mount: POW-09-AlZn
Fastener: WCS

Annex 43

Deutsches Institut für Bautechnik DIBt



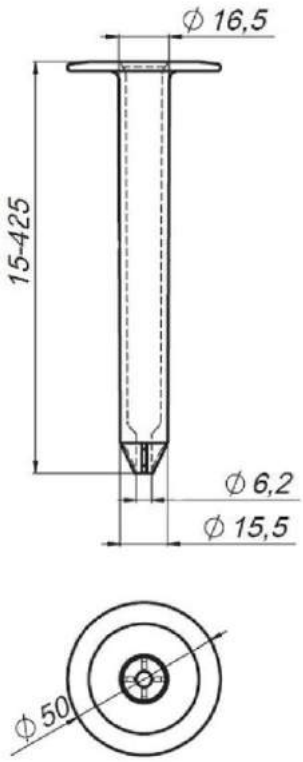
KOELNER **Flat Roof Fasteners**

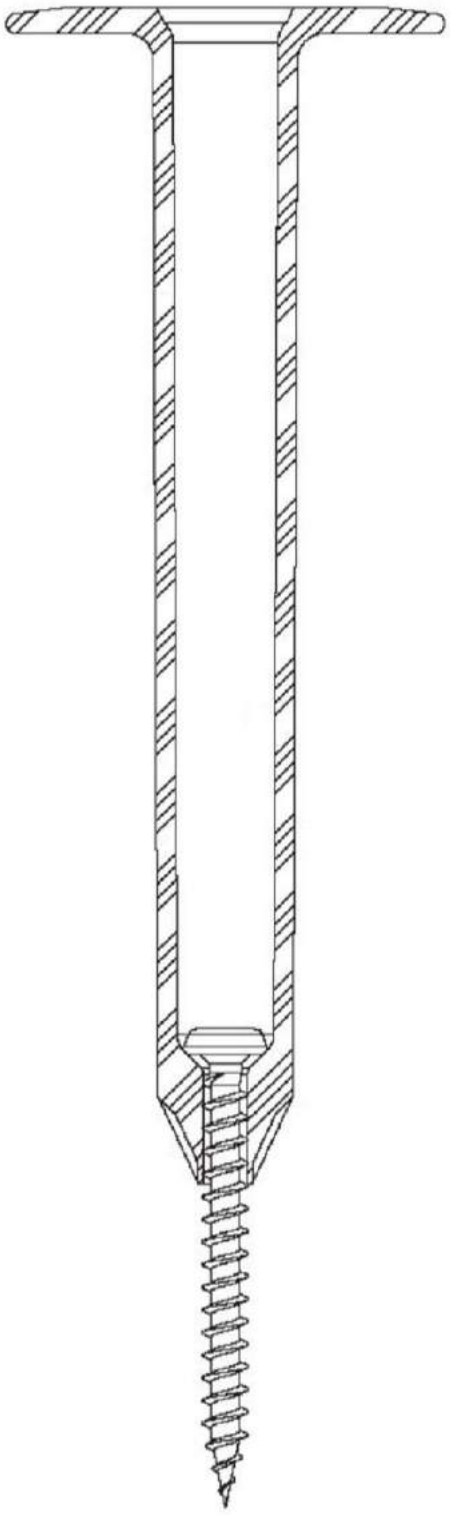
Combination 44

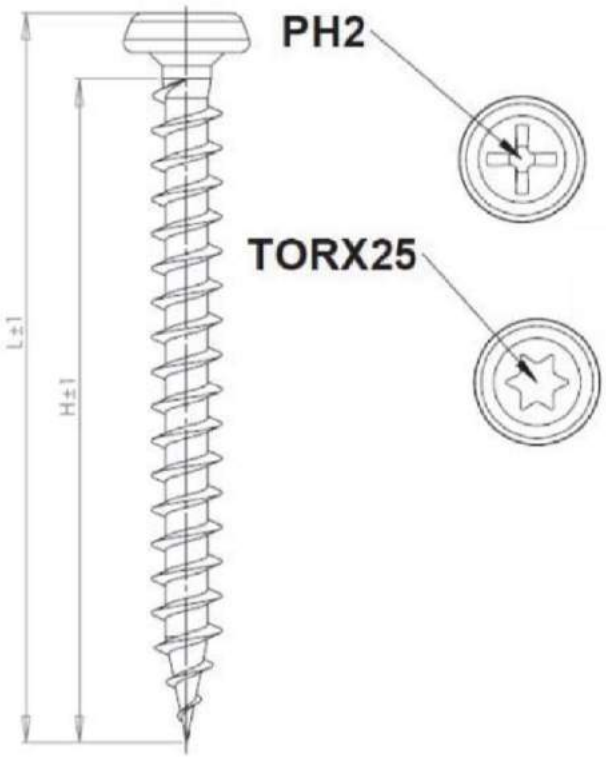
Mount: POK-041-AlZn
Fastener: WCS

Annex 44

Deutsches Institut für Bautechnik DIBt







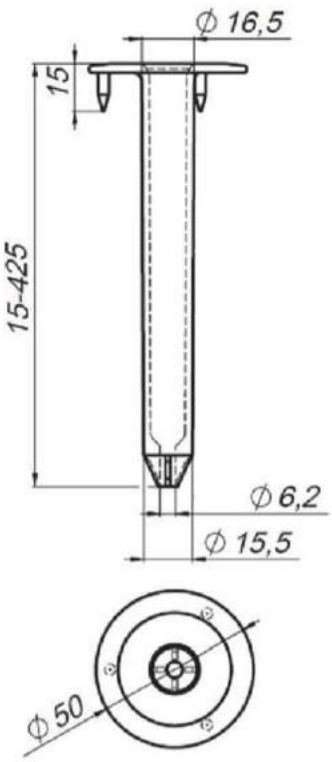
KOELNER **Flat Roof Fasteners**

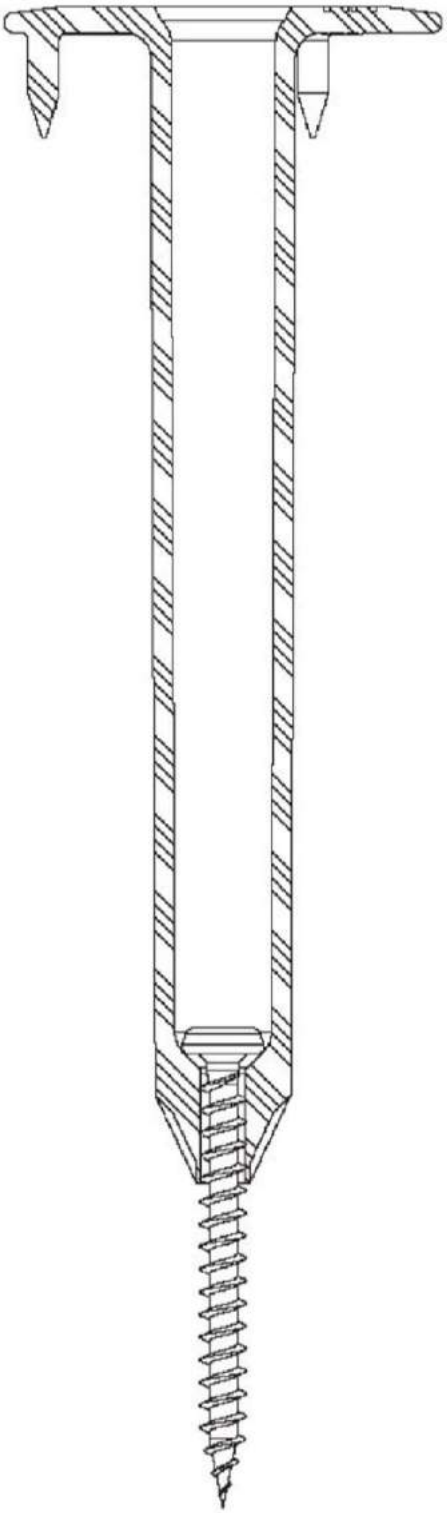
Combination 45

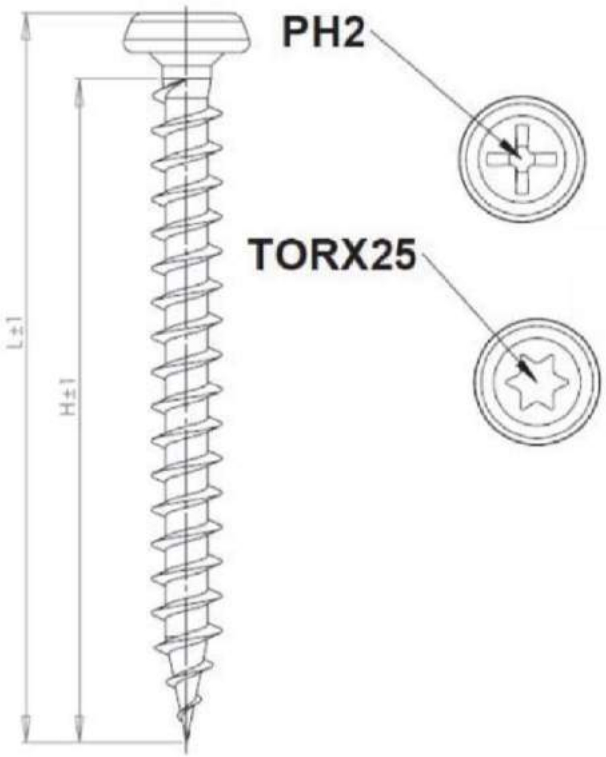
Mount: GOK
Fastener: WW (PH2- or Torx25-Drive)

Annex 45

Deutsches Institut für Bautechnik DIBt





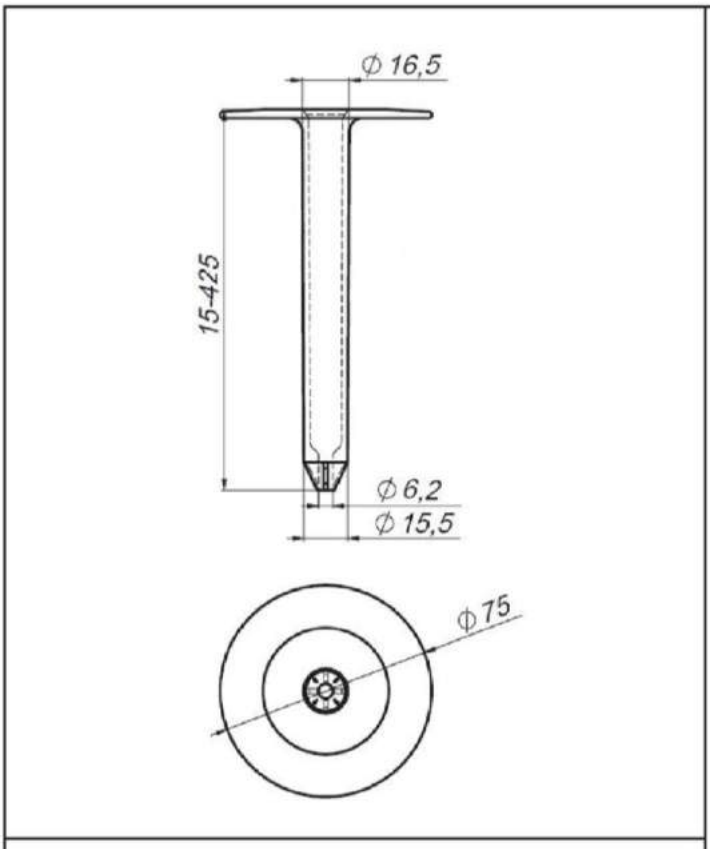


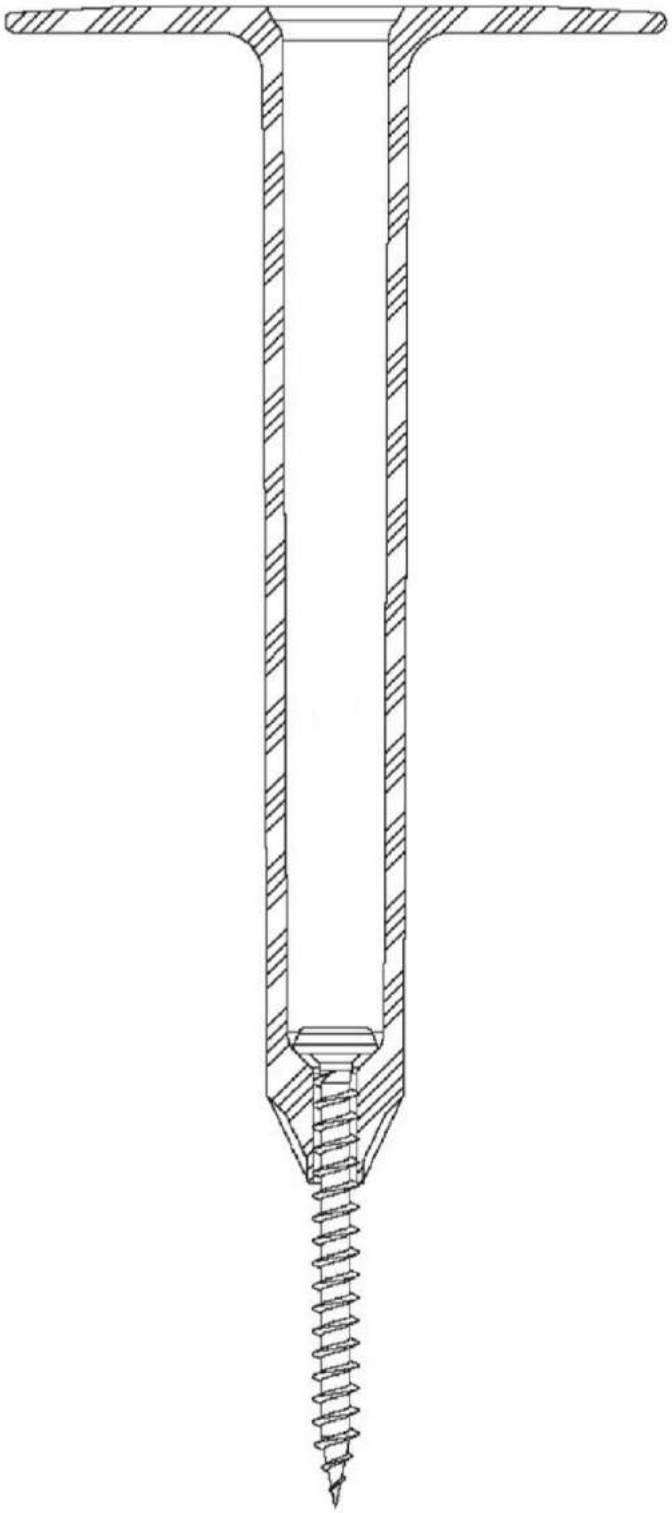
KOELNER **Flat Roof Fasteners**

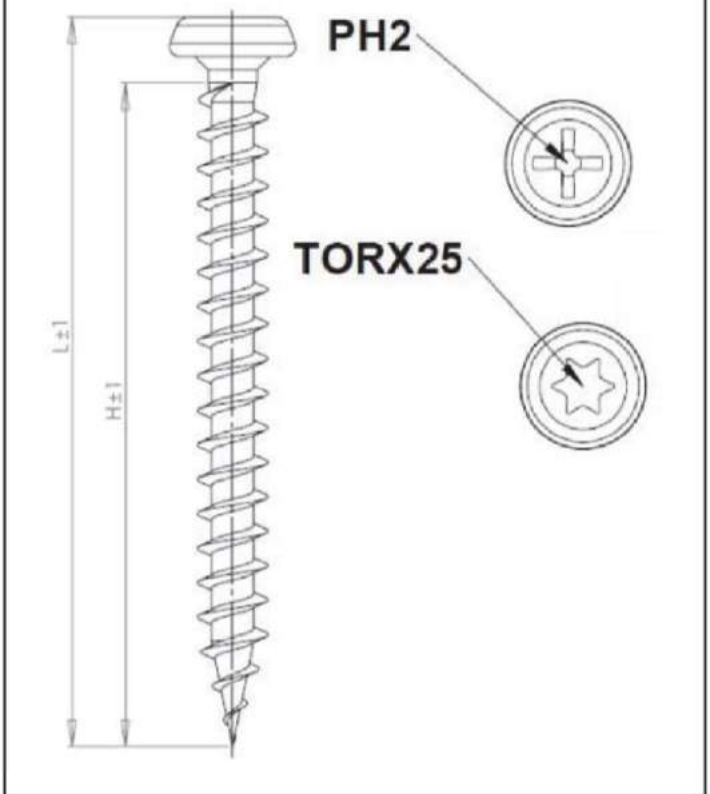
Combination 46

Mount: GOK-PLUS
Fastener: WW (PH2- or Torx25-Drive)

Annex 46







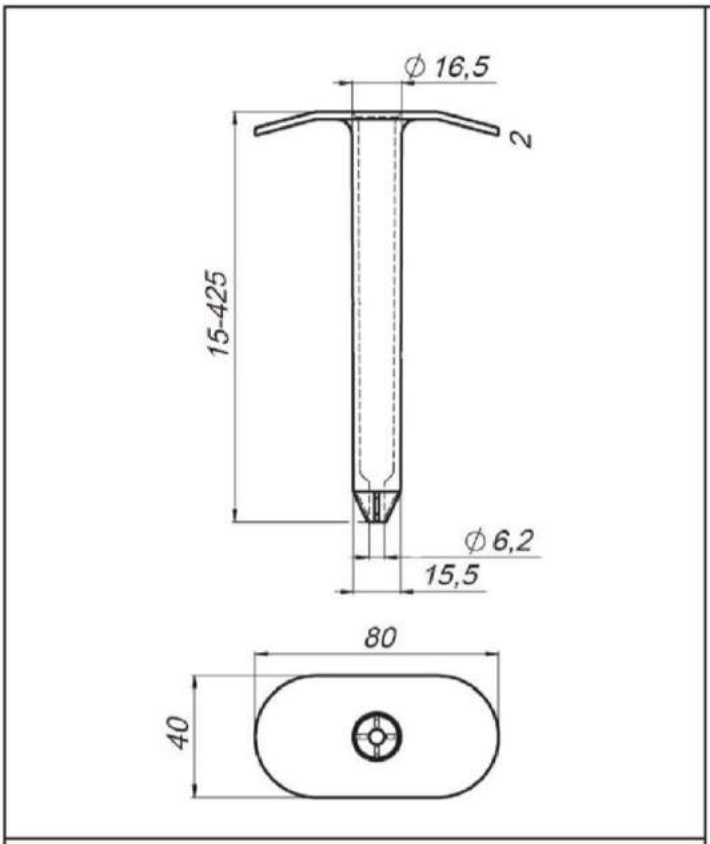
KOELNER **Flat Roof Fasteners**

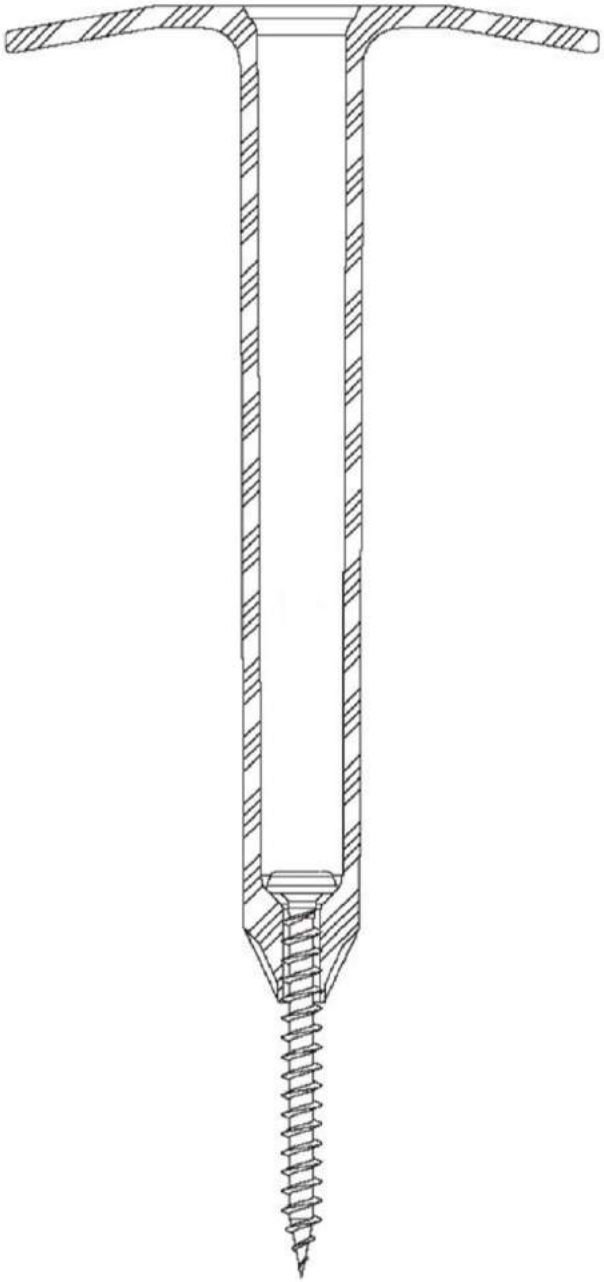
Combination 47

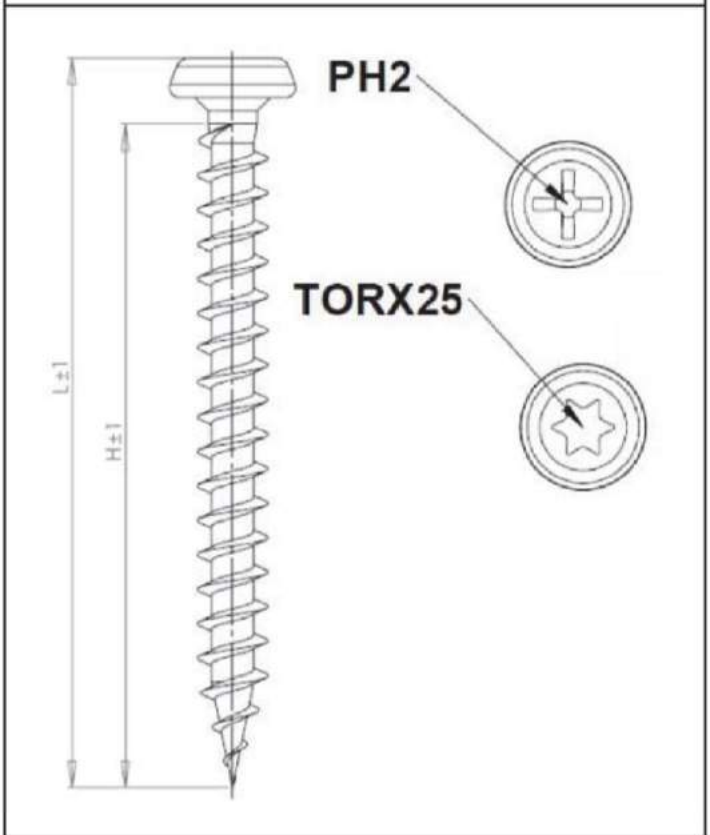
Mount: GOK75
Fastener: WW (PH2- or Torx25-Drive)

Annex 47

Deutsches Institut für Bautechnik DIBt







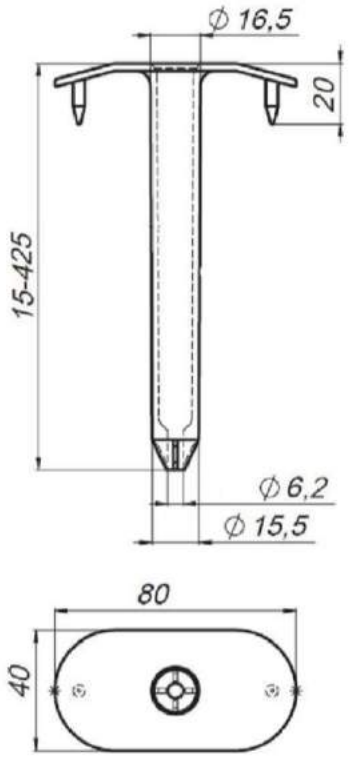
KOELNER **Flat Roof Fasteners**

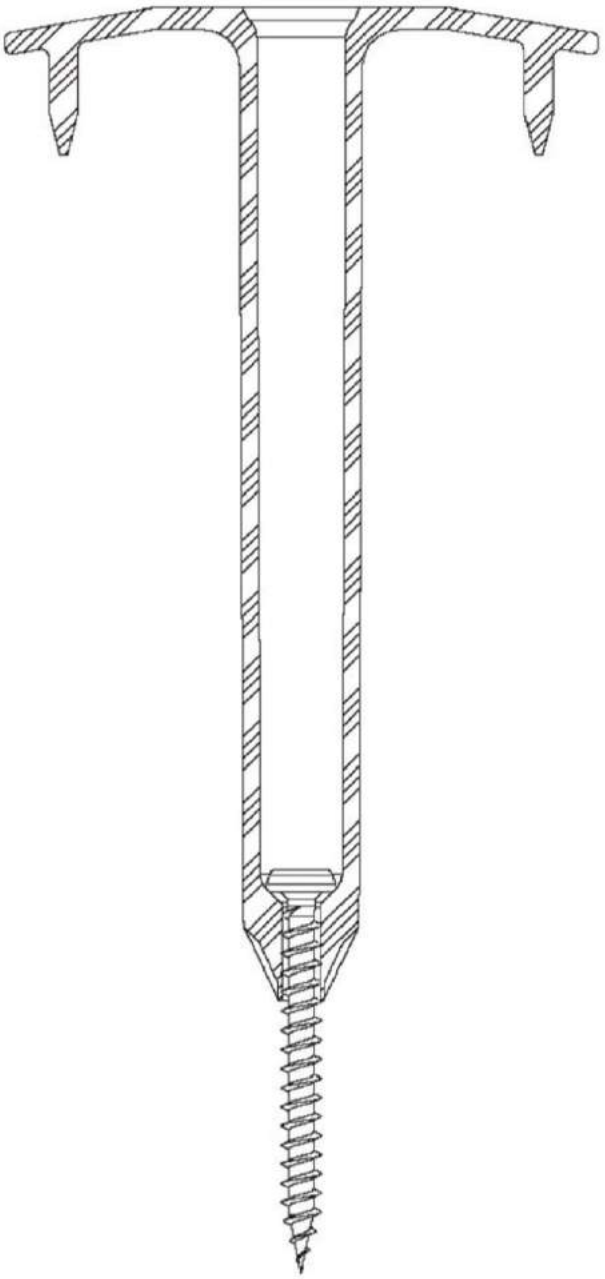
Combination 48

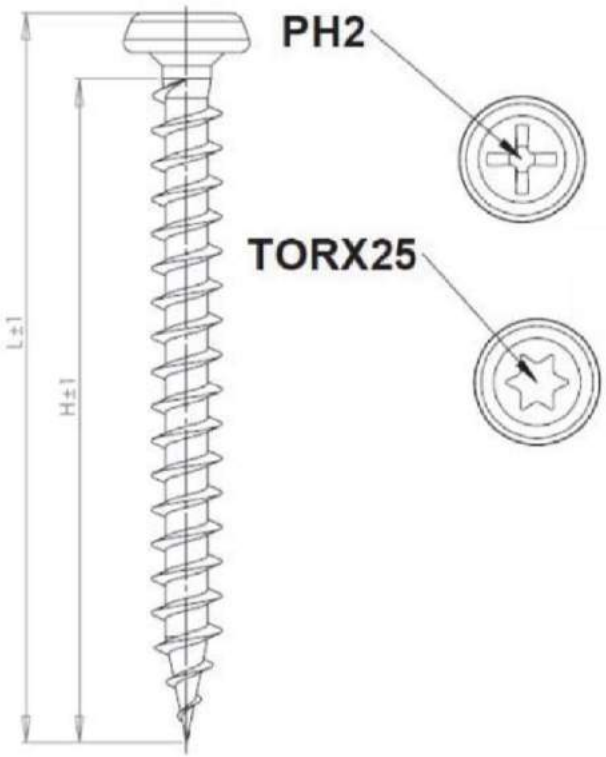
Mount: GOW
Fastener: WW (PH2- or Torx25-Drive)

Annex 48

Deutsches Institut für Bautechnik DIBt





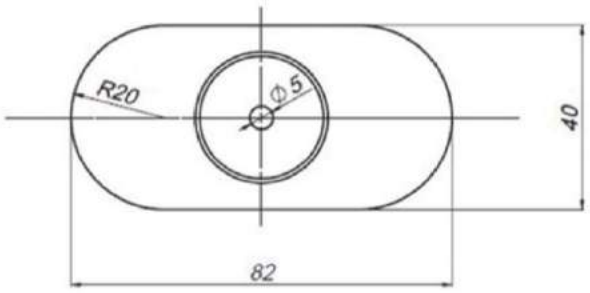


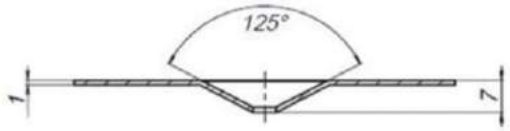
KOELNER **Flat Roof Fasteners**

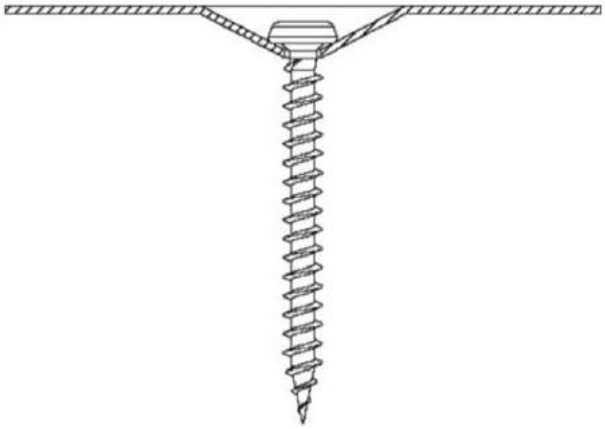
Combination 49

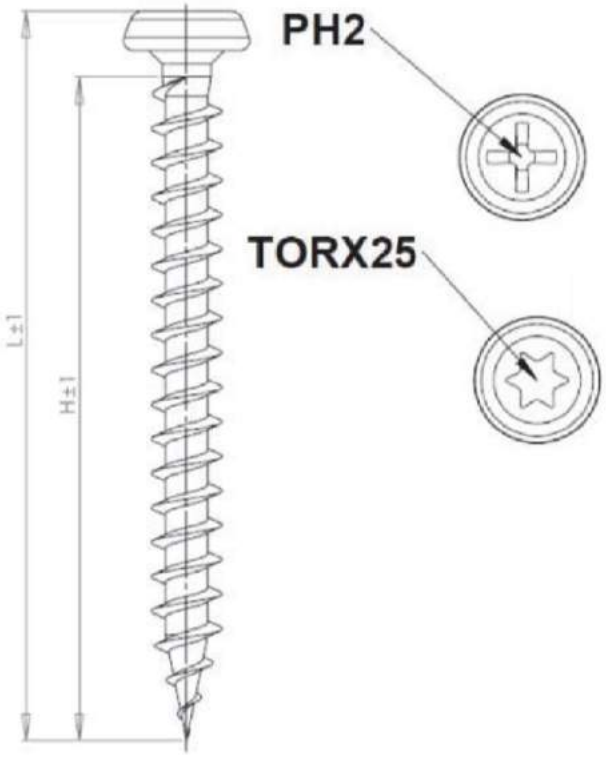
Mount: GOW-PLUS
Fastener: WW (PH2- or Torx25-Drive)

Annex 49









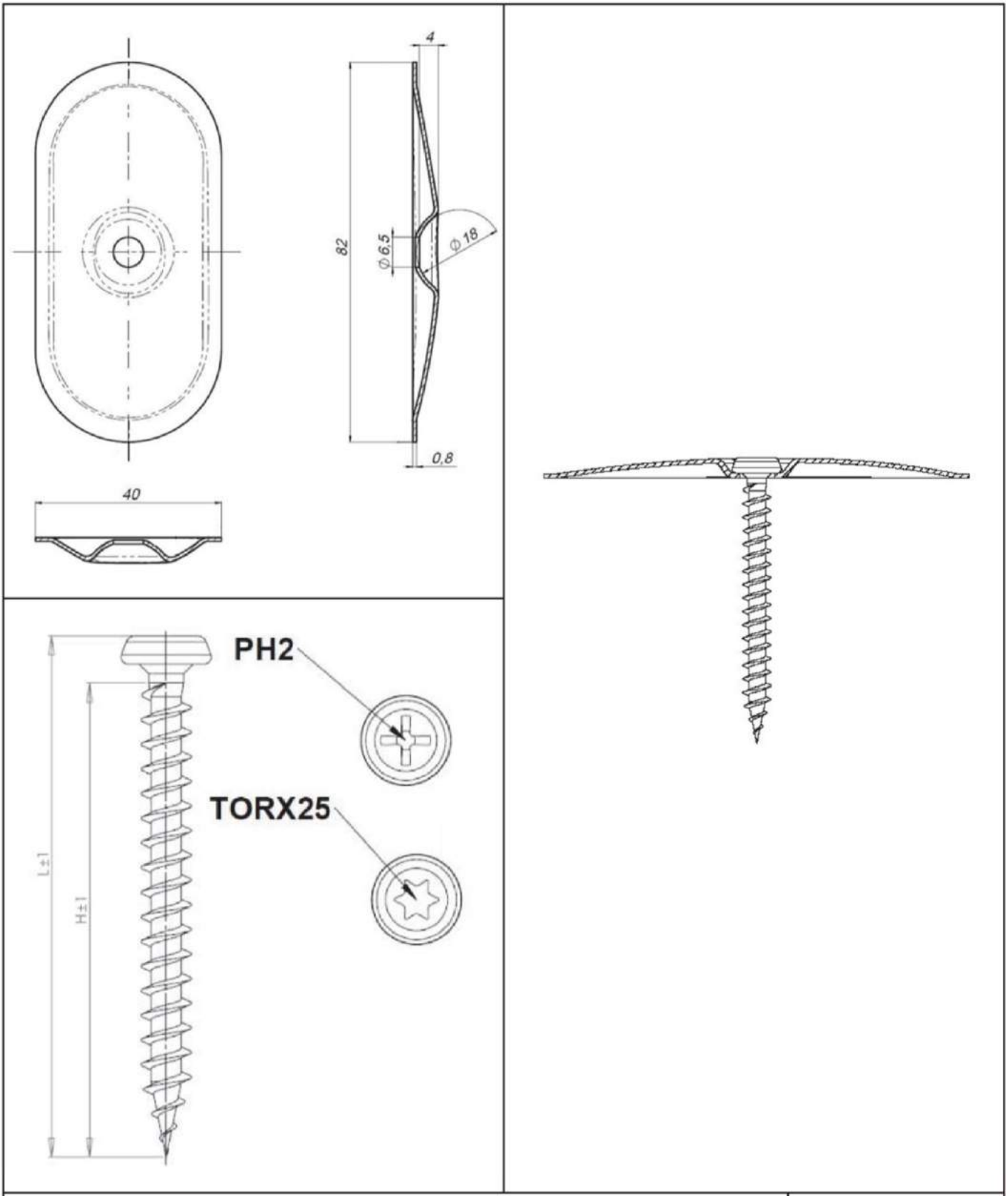
KOELNER **Flat Roof Fasteners**

Combination 50

Mount: POW-05-AlZn
Fastener: WW (PH2- or Torx25-Drive)

Annex 50

Deutsches Institut für Bautechnik DIBt

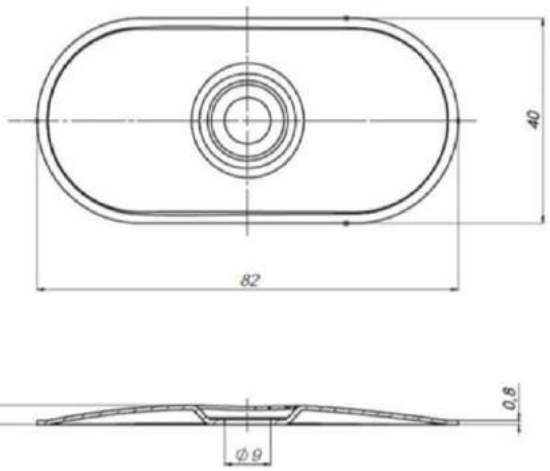


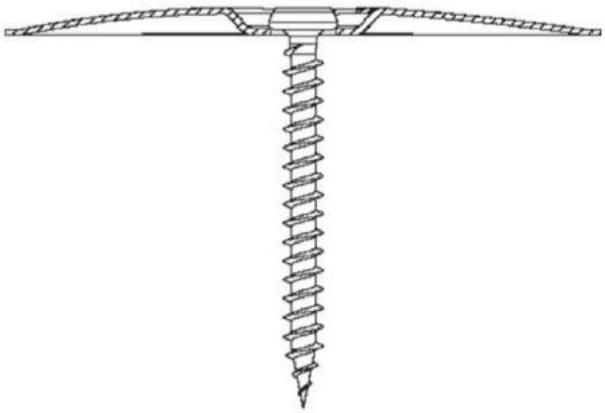
KOELNER **Flat Roof Fasteners**

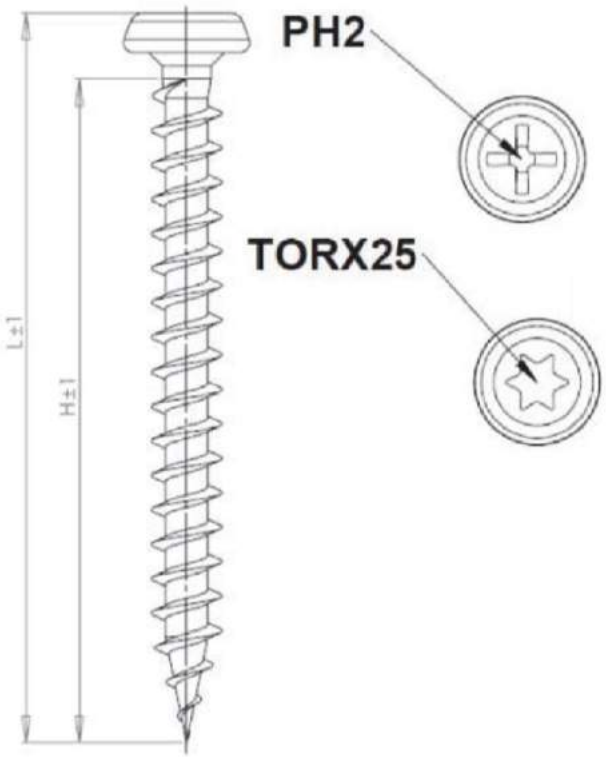
Combination 51

Mount: POW-07-AlZn
Fastener: WW (PH2- or Torx25-Drive)

Annex 51







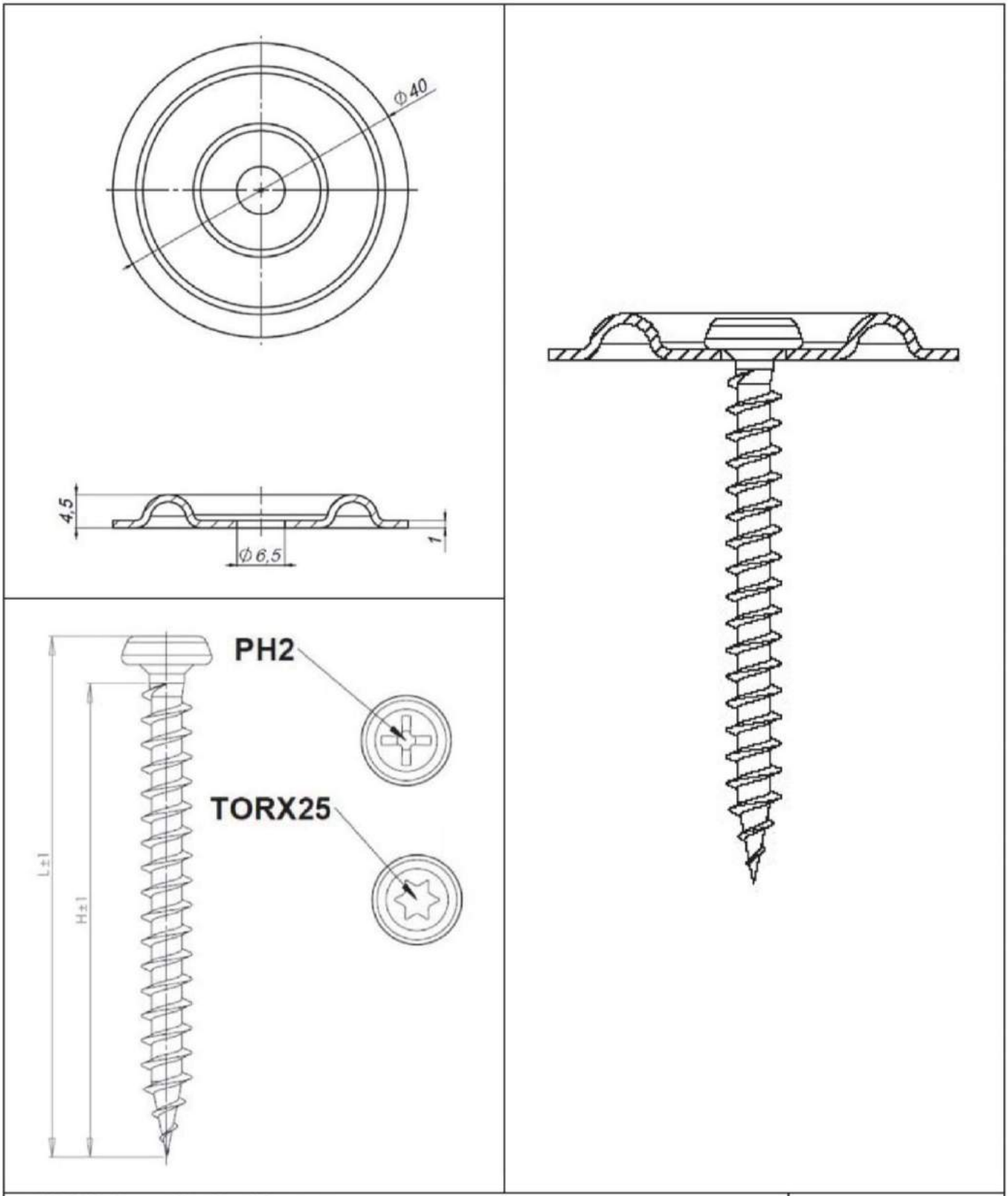
KOELNER **Flat Roof Fasteners**

Combination 52

Mount: POW-09-AlZn
Fastener: WW (PH2- or Torx25-Drive)

Annex 52

Deutsches Institut für Bautechnik DIBt



KOELNER **Flat Roof Fasteners**

Combination 53

Mount: POK-041-AlZn
Fastener: WW (PH2- or Torx25-Drive)

Annex 53

No.	Screw	Mount	Metal sheetings [1] 0,50	0,63	0,75	0,88	1,00	1,25	1,50	Structural Timber [2]	Plywood [3]	OSB [4]	Concrete [5] Light-concrete [6]
1	WX (T25 / PH2)	GOK	–	0,76	1,01	1,28	1,53	1,66	1,66	—	—	—	—
2		GOK-PLUS											
3		GOK75						1,73	1,73				
4		GOW						1,71	1,71				
5		GOW-PLUS											
6		POW-05-AlZn						2,05	2,57				
7		POW-07-AlZn											
8		POK-041-AlZn											
9	WB	POW-05-AlZn	—	0,68	0,96	1,25	1,53	2,10	2,68	—	—	—	—
10		POW-07-AlZn											
11		POW-09-AlZn											
12		POK-041-AlZn											
13	WO (T25 / PH2)	GOK	0,40	0,68	0,93	1,20	1,45	1,66	1,66	1,45	1,57	1,08	—
14		GOK-PLUS											
15		GOK75						1,73	1,73				
16		GOW						1,71	1,71				
17		GOW-PLUS											
18		POW-05-AlZn						1,97	2,50				
19		POW-07-AlZn											
20		POK-041-AlZn											
21	WO (T25 / PH2) with Dowel K08	GOK	—	—	—	—	—	—	—	—	—	—	1,66
22		GOK-PLUS											
23		GOK75											1,73
24		GOW											1,71
25		GOW-PLUS											
26		POW-05-AlZn											1,97
27		POW-07-AlZn											
28		POK-041-AlZn											
29	WBT	GOK	—	—	—	—	—	—	—	1,59	1,47	0,98	1,66
30		GOK-PLUS											
31		GOK75											1,73
32		GOW											1,71
33		GOW-PLUS											
34		POW-07-AlZn											5,04
35		POW-09-AlZn											4,29
36		POK-041-AlZn											3,84
37	WBT-A	GOK	—	—	—	—	—	—	—	—	—	—	1,66
38		GOK-PLUS											
39		GOK75											1,73
40		GOW											1,71
41		GOW-PLUS											
42	WCS	POW-07-AlZn	—	—	—	—	—	—	—	—	—	—	4,71
43		POW-09-AlZn											4,29
44		POK-041-AlZn											3,84
45	WW	GOK	—	—	—	—	—	—	—	1,66	1,66	1,32	—
46		GOK-PLUS											
47		GOK75								1,73			
48		GOW								1,71			
49		GOW-PLUS											
50		POW-05-AlZn								1,79			
51		POW-07-AlZn											
52		POW-09-AlZn											
53		POK-041-AlZn											

[1] Steel S280GD - EN 10346,
[2] Structural Timber / C24 - EN 338,
[3] Plywood - EN 12369-2,
[4] OSB/3 - EN 12369-1,
[5] Concrete C25/30 - EN 206-1,
[6] Lightconcrete C12/15 - EN 206-1,

nominal thickness t_N in mm
ρ_{min} = 350kg/m³, effective embedment depth (penetration length of threaded part) $l_{ef} \geq 24$mm
ρ_{min} = 400kg/m³, effective embedment depth (penetration length of threaded part) $l_{ef} \geq 20$mm
ρ_{min} = 550kg/m³, effective embedment depth (penetration length of threaded part) $l_{ef} \geq 18$mm
for WO with K08, d_{pd} = Ø8,0mm and $l_{ef} \geq 40$mm, for WBT / WBT-A / WCS, d_{pd} = Ø5,0mm and $l_{ef} \geq 30$mm
for WO with K08, d_{pd} = Ø8,0mm and $l_{ef} \geq 40$mm, for WBT / WBT-A / WCS, d_{pd} = Ø5,0mm and $l_{ef} \geq 30$mm

KOELNER Flat Roof Fasteners

Annex 54

Characteristic Values of Axial Load Resistance in kN