

Public-law institution jointly founded by the federal states and the Federation

**European Technical Assessment Body
for construction products**



European Technical Assessment

**ETA-08/0033
of 22 July 2025**

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

Zahn Flat Roof Fasteners

Product family
to which the construction product belongs

Fasteners for flexible roof waterproofing systems

Manufacturer

Harald Zahn GmbH
Ludwig-Wagner-Str. 10
69168 Wiesloch
DEUTSCHLAND

Manufacturing plant

Factories of Harald Zahn GmbH

This European Technical Assessment
contains

291 pages including 286 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

EAD 030351-00-0402

This version replaces

ETA-08/0033 issued on 15 August 2022

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This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No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 coated carbon or stainless steel and a steel bar or a washer made of metal or plastic materials (polyamide). The washers without integrated sleeve are made of coated steel or plastic materials.

The washers made of plastic materials partially have a formed or adaptable sleeve. In conjunction with the steel bar a sleeve, which has a collar, will each be inserted into a hole prepared in the bar's ground and sits with its collar on the bar's ground.

The sleeve is designed either as a hollow shaft receiving the screw, from whose shaft tip the screw emerges or as an anchor sleeve expandable by the screw. Such a dowel sleeve can also be adapted to the sleeve formed as a hollow shaft. Likewise, a dowel sleeve may be formed as a cavity anchor.

The washer with sleeve can be composited from individual components beyond.

The plastic washers are probably provided with additional sealing washers.

The fasteners shall correspond to the information given in Annexes 1 to 235 of this ETA.

The material properties, dimensions and tolerances not indicated in Annexes 1 to 235 shall correspond to the information laid down in the technical information¹ 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 EAD 030351-00-0402. The possible substructures are steel decks, concrete, aerated and light weight concrete, timber, thin plates of steel or aluminium and sandwich panels.

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 EAD 030351-00-0402 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 attestation of conformity procedure 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 Annexes 236.01 to .15
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 height > 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 thickness and strengths of the materials listed in the tables of characteristic tensile loads (Annexes 236.01 to .15) are minimum requirements. The values given are also applicable for materials with higher thickness and strengths. The values of axial loading shown in Annexes 236.01 to .15 were determined by axial loading tests according to EAD 030351-00-0402. A site pull-out test is recommended if the required property of the substrate defined within Annexes 236.01 to .15 is unknown or doubtful.

The fasteners are deemed to satisfy the requirements of EAD 030351-00-0402 concerning unwinding. This was evaluated on the basis of the existing field experience of the manufacturer.

The durability requirements of EAD 030351-00-0402 (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 and polyamide components of the fasteners.

All coated carbon steel components resisted to 15 cycles of the test procedure described in EAD 030351-00-0402 (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 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 EAD 030351-00-0402 the applicable European legal act is: 1998/143/EC.

The system to be applied is: 2+

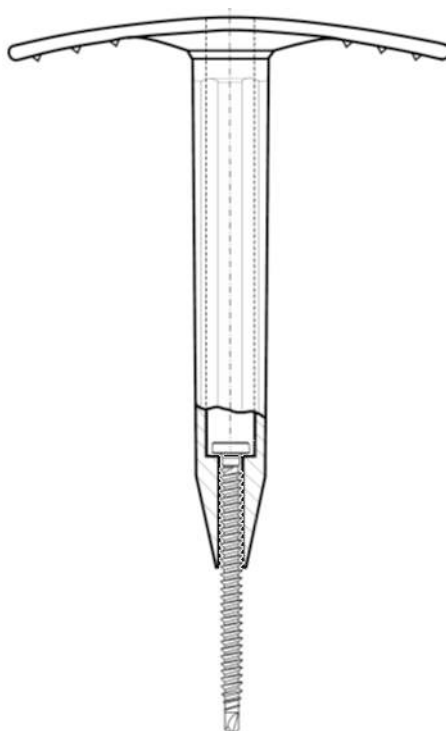
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

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

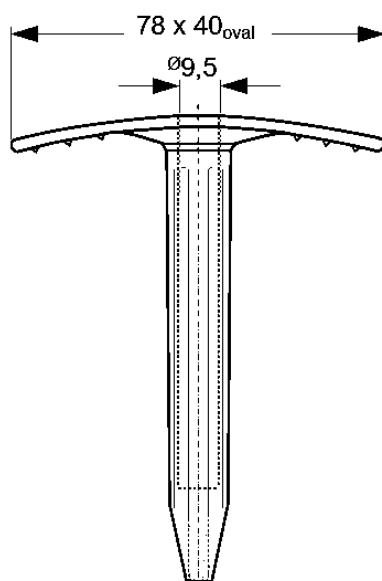
Issued in Berlin on 22 July 2025 by Deutsches Institut für Bautechnik

Andreas Schult
Head of Section

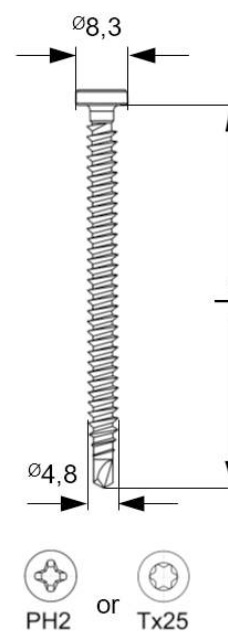
beglaubigt:
Reimuth



Zahn ZKSH oval



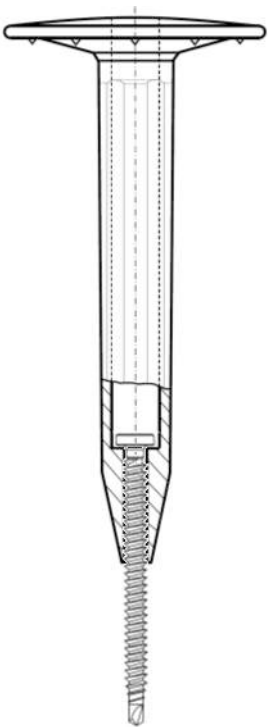
Zahn ZDBK 4,8 x L



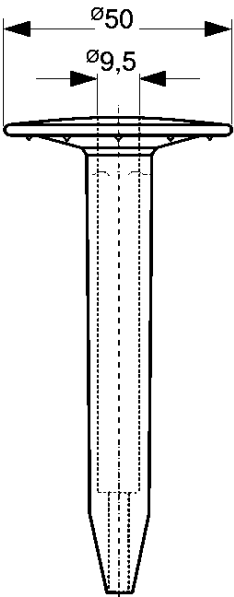
Zahn Flat Roof Fasteners

Combination 1
ZKSK
consisting of ZDBK / ZKSH oval

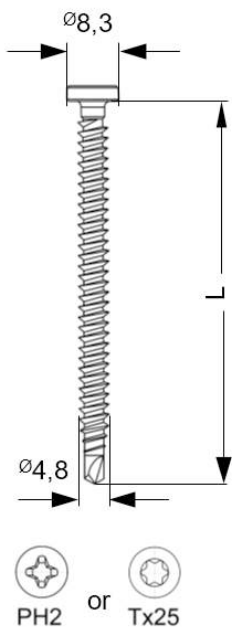
Annex 1



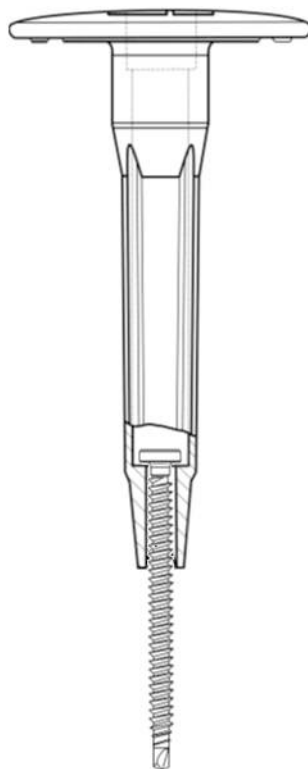
Zahn ZKSH round



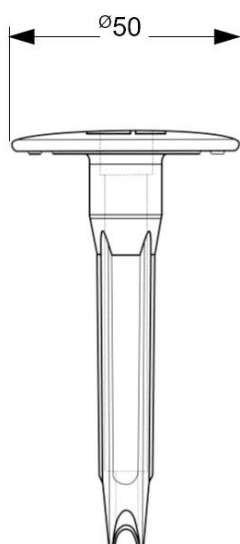
Zahn ZDBK 4,8 x L



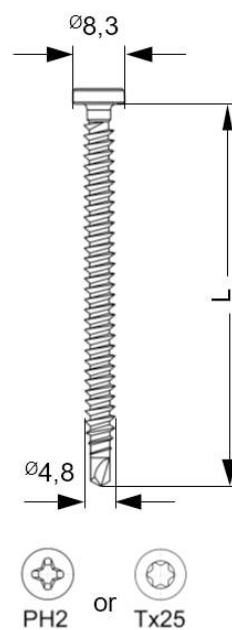
Zahn Flat Roof Fasteners	Annex 2
Combination 2 ZKSK-R consisting of ZDBK / ZKSH round	



Zahn ZKSH-Rplus with pile tip



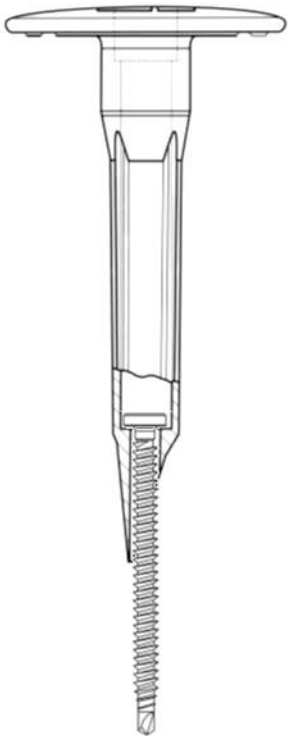
Zahn ZDBK 4,8 x L



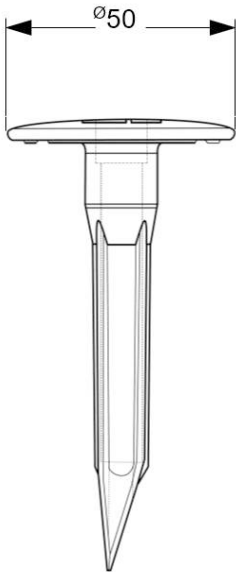
Zahn Flat Roof Fasteners

Combination 3
ZKSK-Rplus with pile tip
consisting of ZDBK / ZKSH-Rplus with pile tip

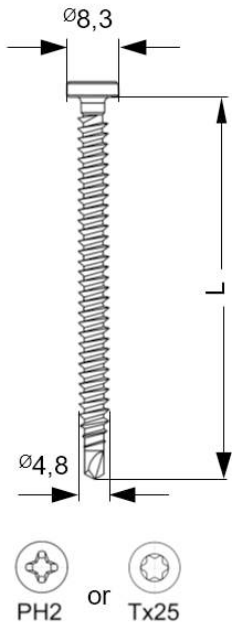
Annex 3



Zahn ZKSH-Rplus



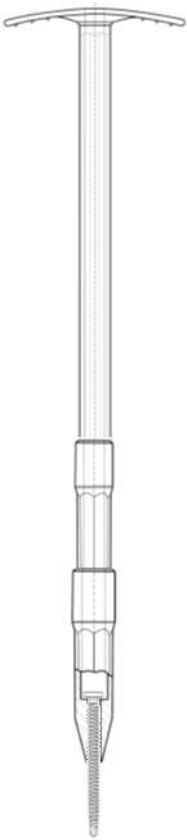
Zahn ZDBK 4,8 x L



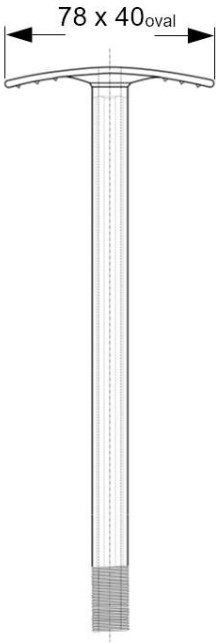
Zahn Flat Roof Fasteners

Combination 4
ZKSK-Rplus
consisting of ZDBK / ZKSH-Rplus

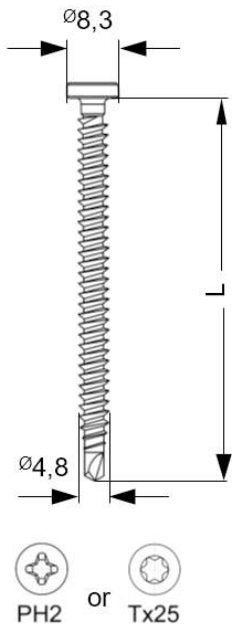
Annex 4



Zahn ZKSH oval module 4,8



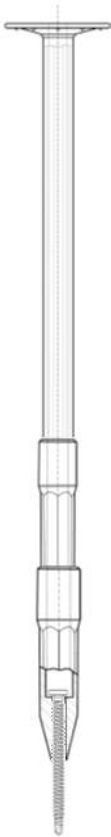
Zahn ZDBK 4,8 x L



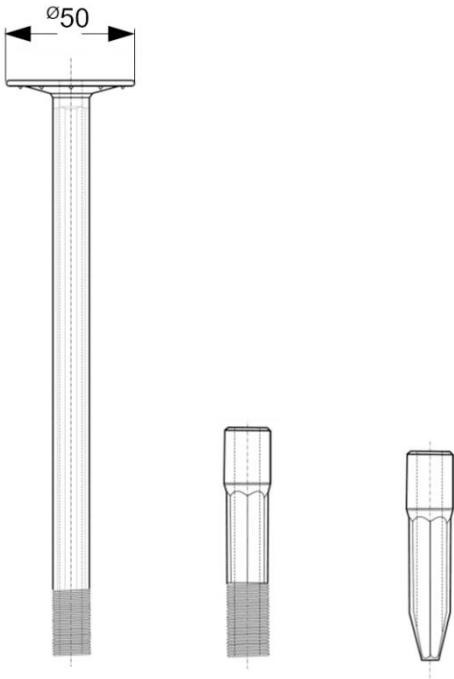
Zahn Flat Roof Fasteners

Combination 5
ZKSK module
consisting of ZDBK/ZKSH oval module 4,8 with module middle piece and spike 4,8

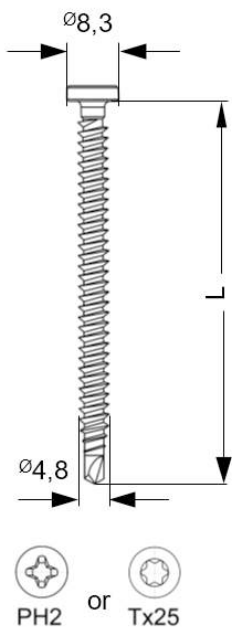
Annex 5



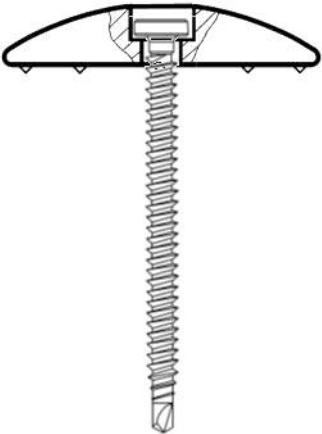
Zahn ZKSH round module 4,8



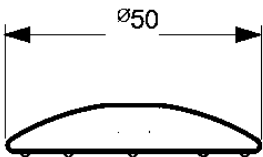
Zahn ZDBK 4,8 x L



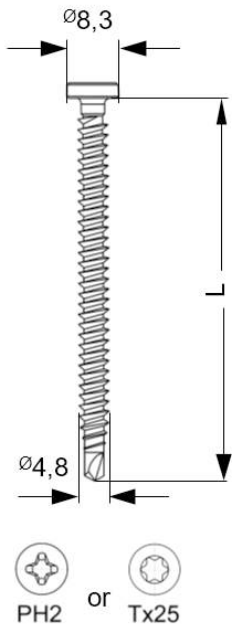
Zahn Flat Roof Fasteners	Annex 6
Combination 6 ZKSK-R-module consisting of ZDBK / ZKSH round module 4,8 with module middle piece and spike 4,8	



Zahn ZTSK 4,8



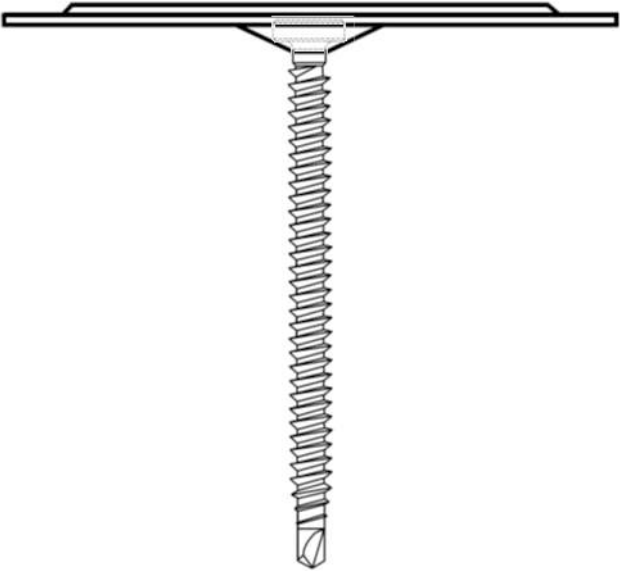
Zahn ZDBK 4,8 x L



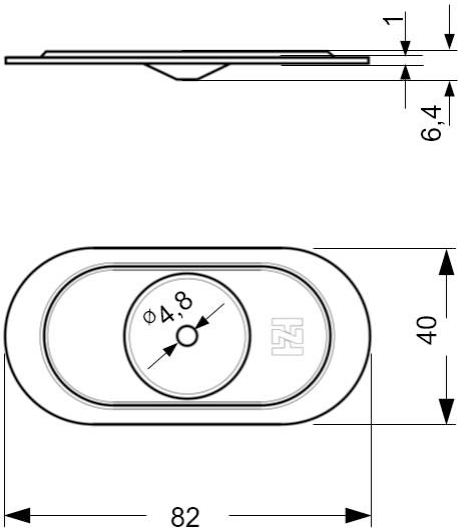
Zahn Flat Roof Fasteners

Combination 7
ZTSK trapeze
consisting of ZDBK / ZTSK 4,8

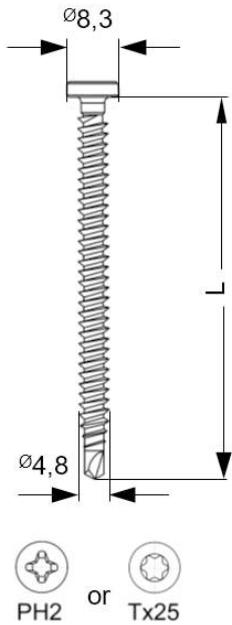
Annex 7



Zahn ZLVT 0001



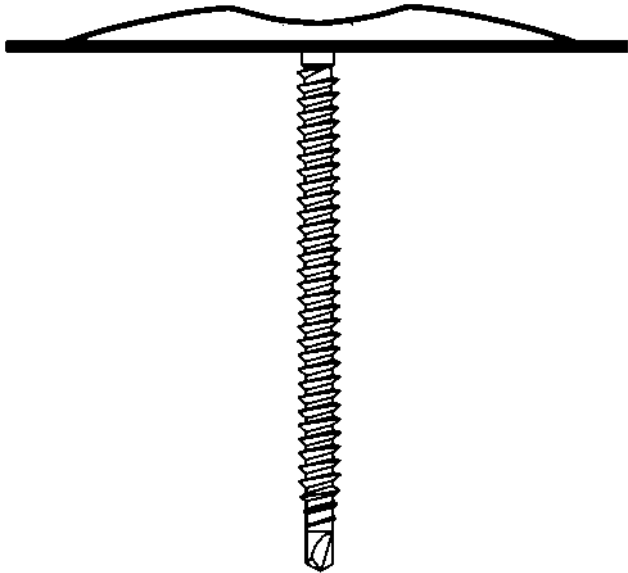
Zahn ZDBK 4,8 x L



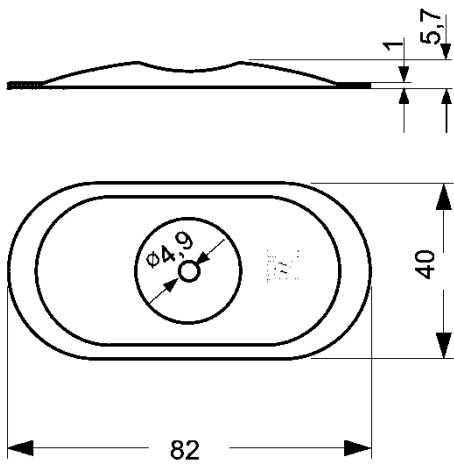
Zahn Flat Roof Fasteners

Combination 8
ZDBK / ZLVT 0001

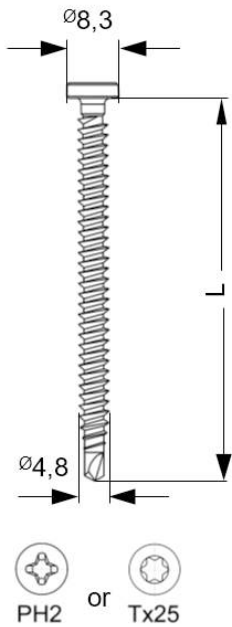
Annex 8



Zahn ZLVT 0005



Zahn ZDBK 4,8 x L



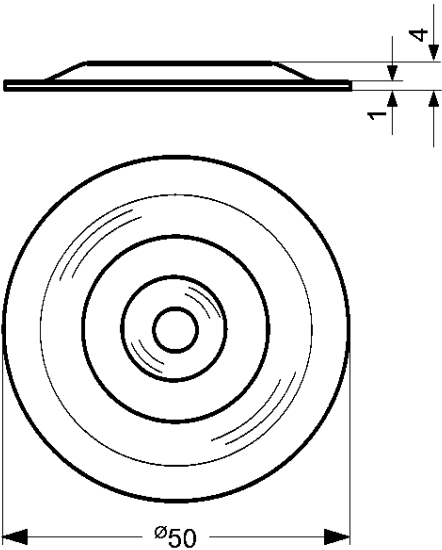
Zahn Flat Roof Fasteners

Combination 9
ZDBK / ZLVT 0005

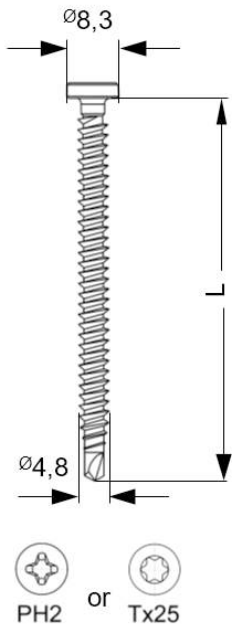
Annex 9



Zahn ZLVT 0015



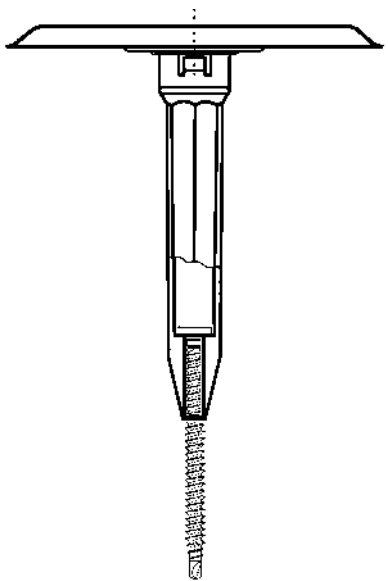
Zahn ZDBK 4,8 x L



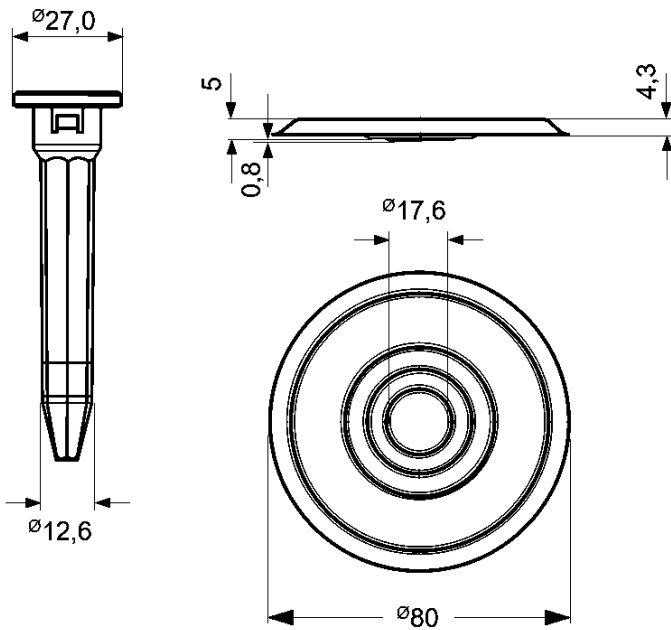
Zahn Flat Roof Fasteners

Combination 10
ZDBK / ZLVT 0015

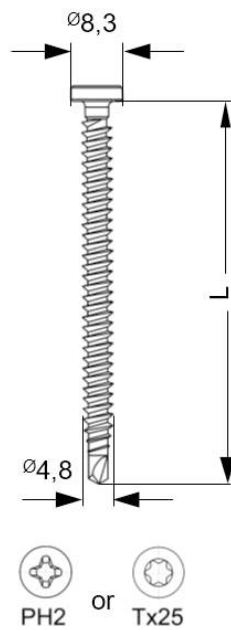
Annex 10



Zahn ZCTS-pipe 4,8 and ZCTS-plate



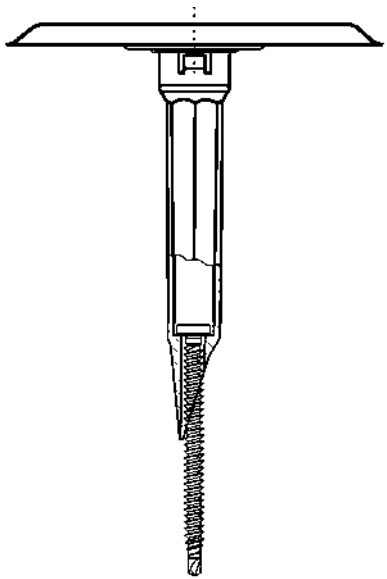
Zahn ZDBK 4,8 x L



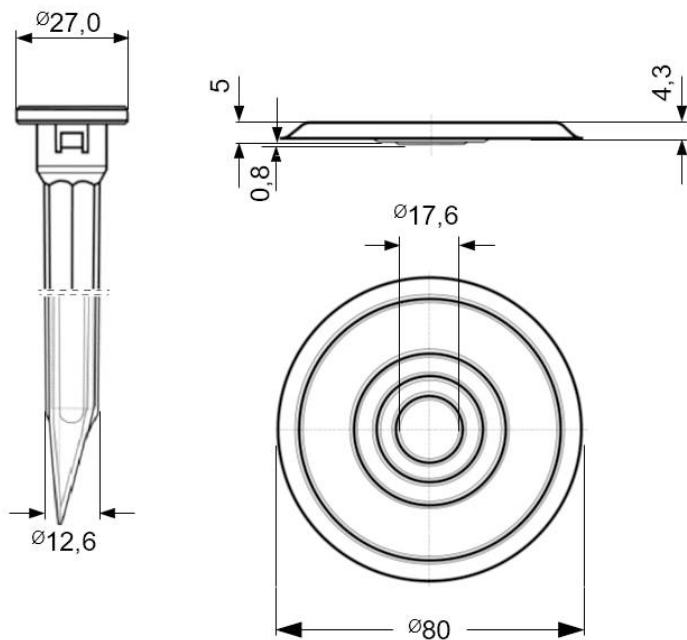
Zahn Flat Roof Fasteners

Annex 10a

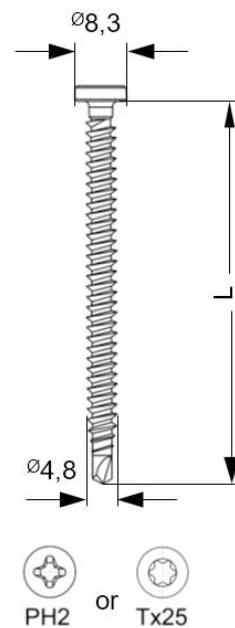
Combination 10a
ZCTS trapeze
consisting of ZDBK / ZCTS-pipe 4,8 and ZCTS-plate



Zahn ZCTSplus-pipe 4,8 and ZCTS-plate



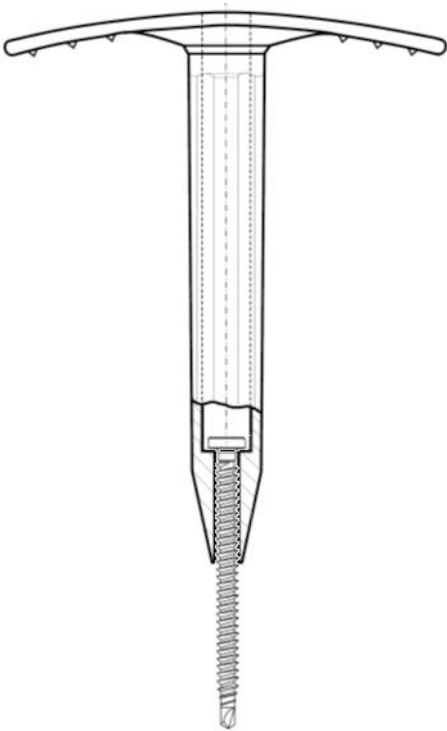
Zahn ZDBK 4,8 x L



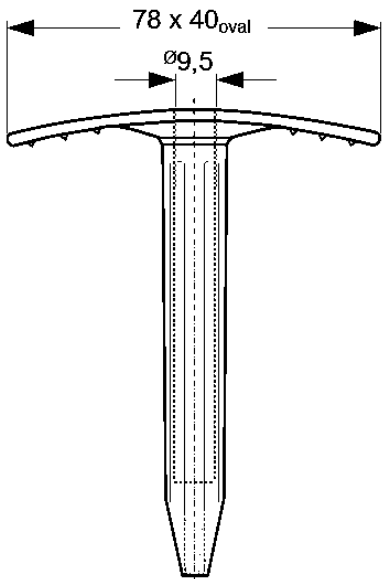
Zahn Flat Roof Fasteners

Combination 10b
ZCTSplus trapeze
consisting of ZDBK / ZCTSplus pipe 4,8 and ZCTS-plate

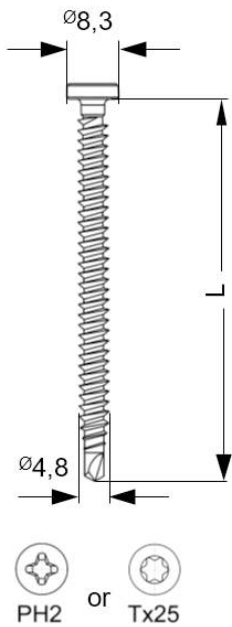
Annex 10b



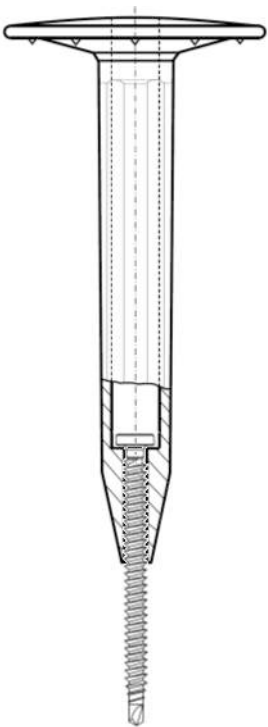
Zahn ZKSH oval



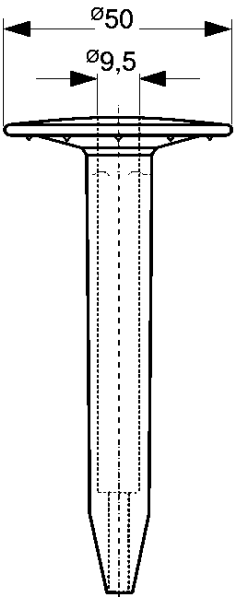
Zahn ZDBK-E 4,8 x L



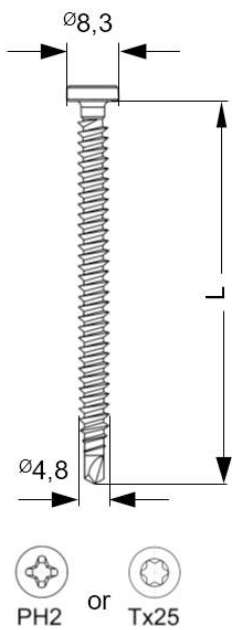
Zahn Flat Roof Fasteners	Annex 11
Combination 11 ZKSK-E consisting of ZDBK-E / ZKSH oval	



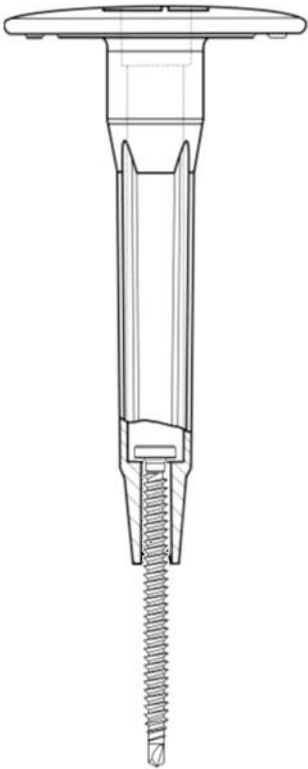
Zahn ZKSH round



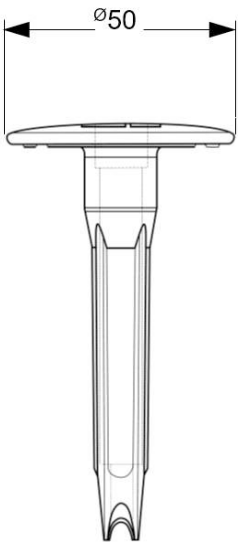
Zahn ZDBK-E 4,8 x L



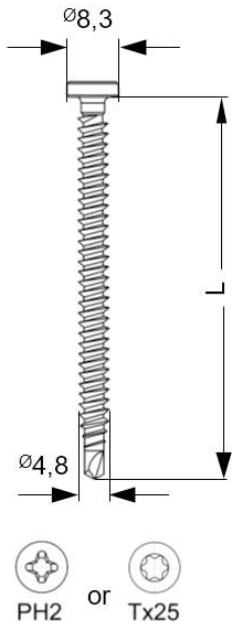
Zahn Flat Roof Fasteners	Annex 12
Combination 12 ZKSK-E/R consisting of ZDBK-E / ZKSH round	



Zahn ZKSH-Rplus with pile tip



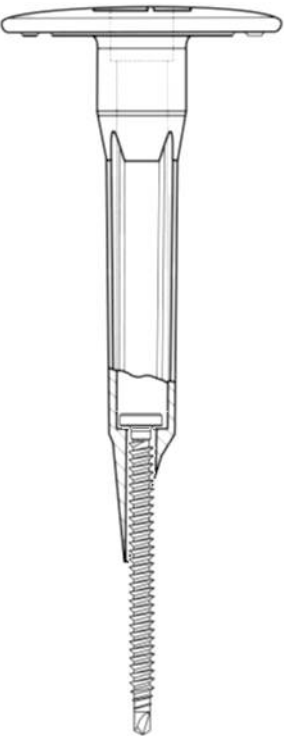
Zahn ZDBK-E 4,8 x L



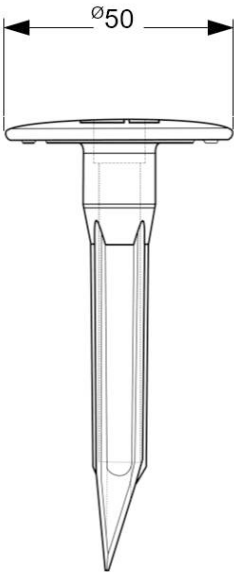
Zahn Flat Roof Fasteners

Annex 13

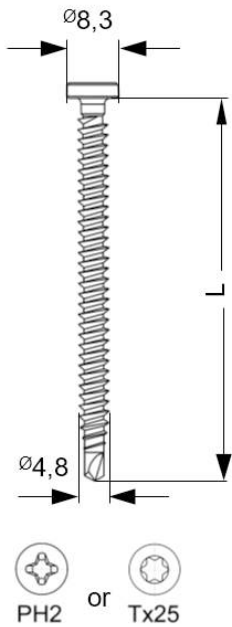
Combination 13
ZKSK-E/Rplus with pile tip
consisting of ZDBK-E / ZKSH-Rplus with pile tip



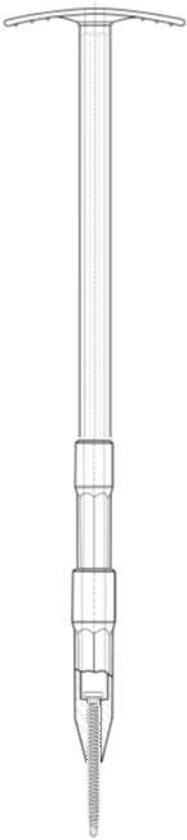
Zahn ZKSH-Rplus



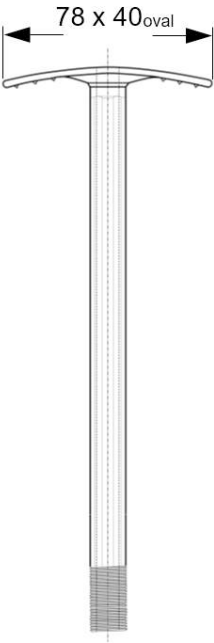
Zahn ZDBK-E 4,8 x L



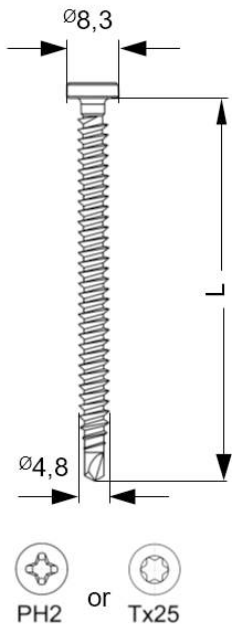
Zahn Flat Roof Fasteners	Annex 14
Combination 14 ZKSK-E/Rplus consisting of ZDBK-E / ZKSH-Rplus	



Zahn ZKSH oval module 4,8



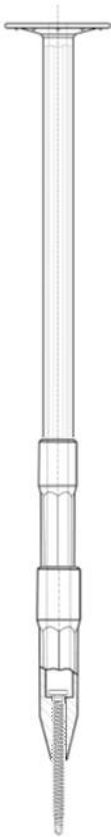
Zahn ZDBK-E 4,8 x L



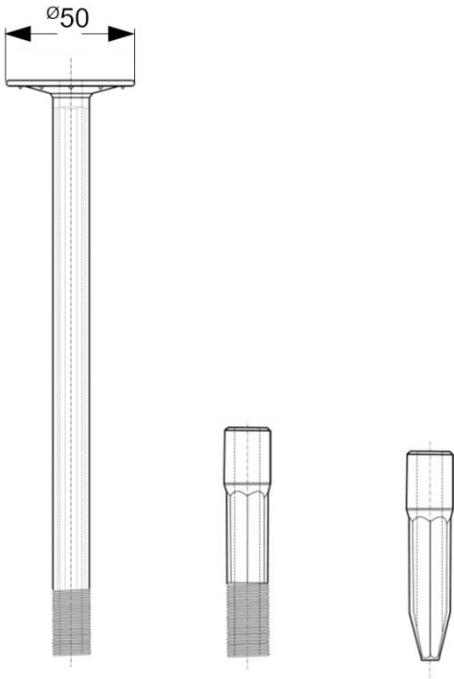
Zahn Flat Roof Fasteners

Combination 15
ZKSK-E-module
consisting of ZDBK-E / ZKSH oval module 4,8 with module middle piece and spike 4,8

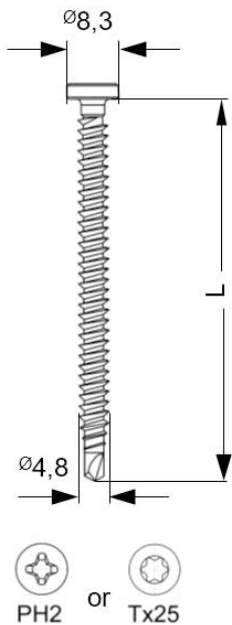
Annex 15



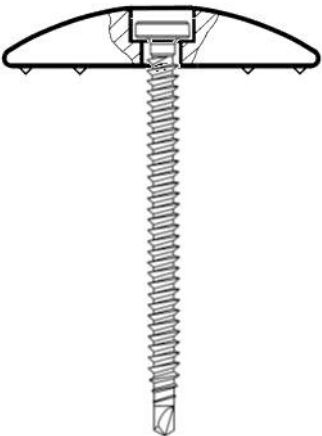
Zahn ZKSH round module 4,8



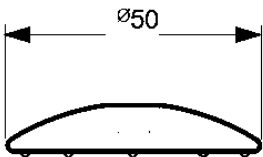
Zahn ZDBK-E 4,8 x L



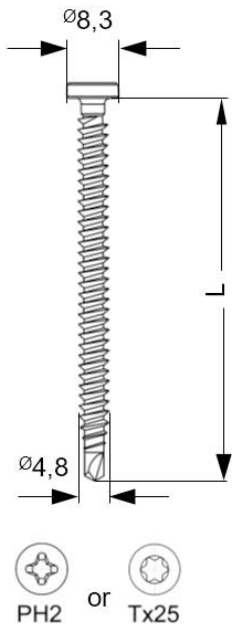
Zahn Flat Roof Fasteners	Annex 16
Combination 16 ZKSK-E/R-module consisting of ZDBK-E/ZKSH round module 4,8 with module middle piece and spike 4,8	



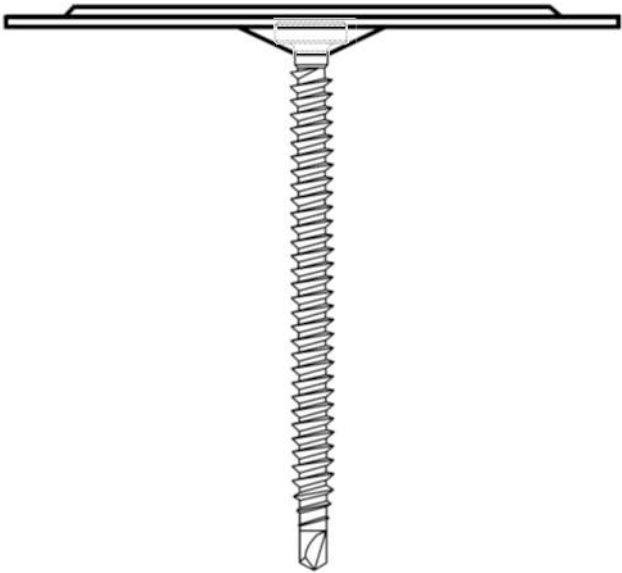
Zahn ZTSK 4,8



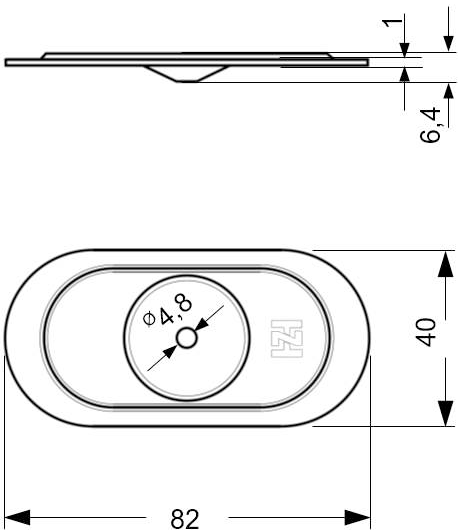
Zahn ZDBK-E 4,8 x L



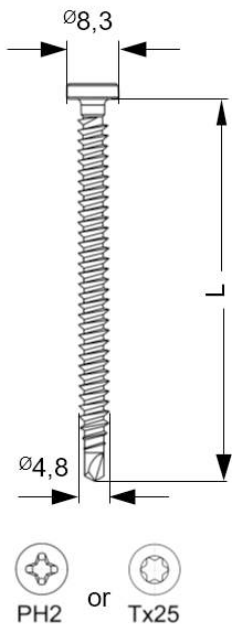
Zahn Flat Roof Fasteners	Annex 17
Combination 17 ZTSK-E trapeze consisting of ZDBK-E / ZTSK 4,8	



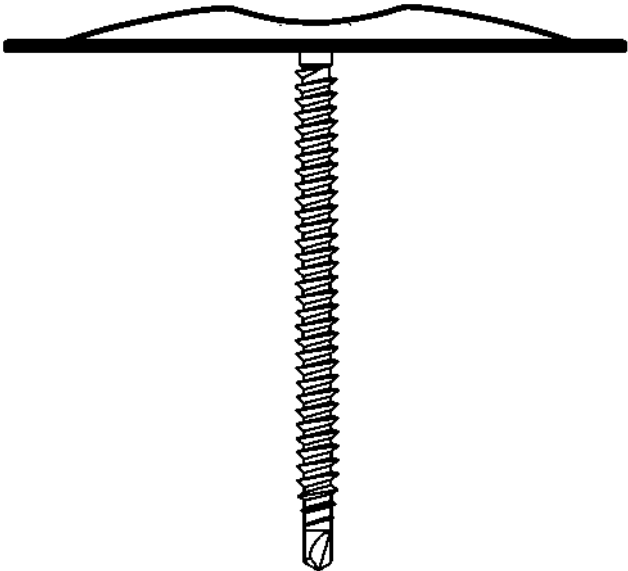
Zahn ZLVT 0001



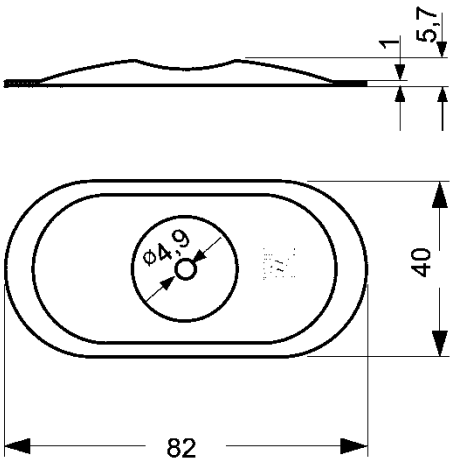
Zahn ZDBK-E 4,8 x L



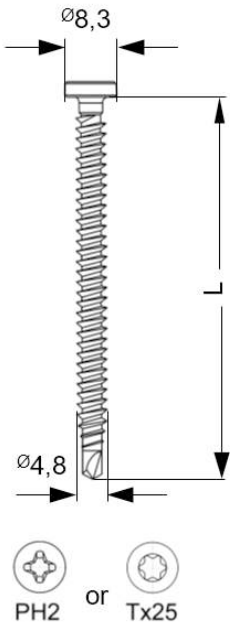
Zahn Flat Roof Fasteners	Annex 18
Combination 18 ZDBK-E / ZLVT 0001	



Zahn ZLVT 0005



Zahn ZDBK-E 4,8 x L



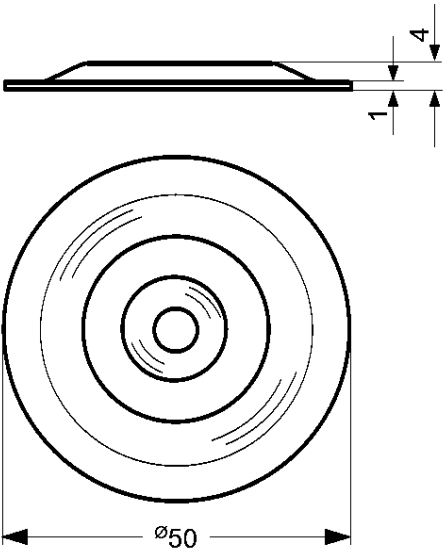
Zahn Flat Roof Fasteners

Combination 19
ZDBK-E / ZLVT 0005

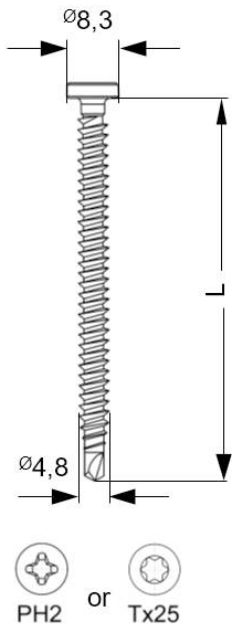
Annex 19



Zahn ZLVT 0015



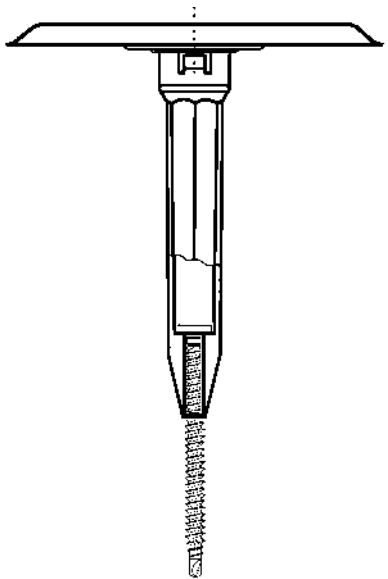
Zahn ZDBK-E 4,8 x L



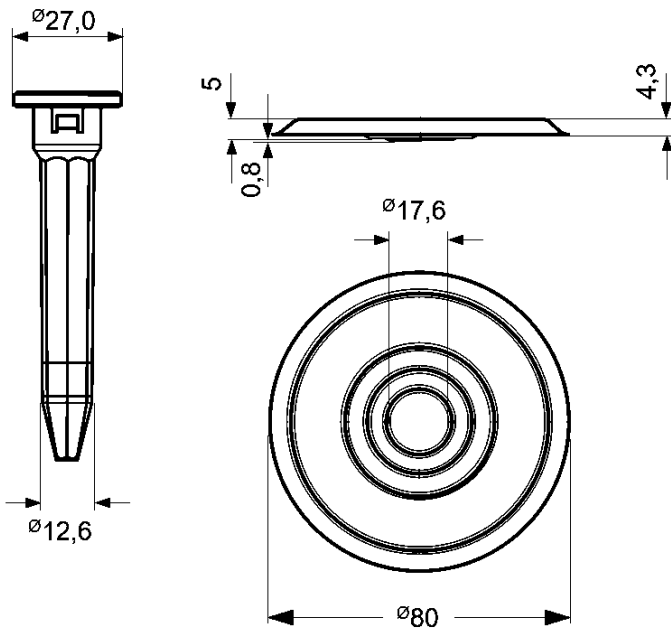
Zahn Flat Roof Fasteners

Combination 20
ZDBK-E / ZLVT 0015

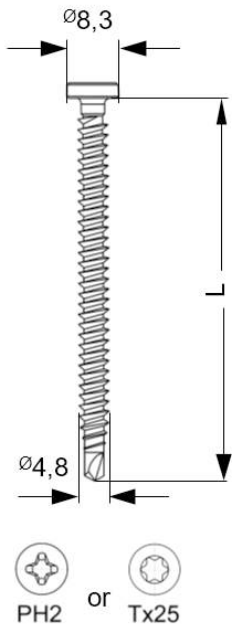
Annex 20



Zahn ZCTS-pipe 4,8 and ZCTS-plate



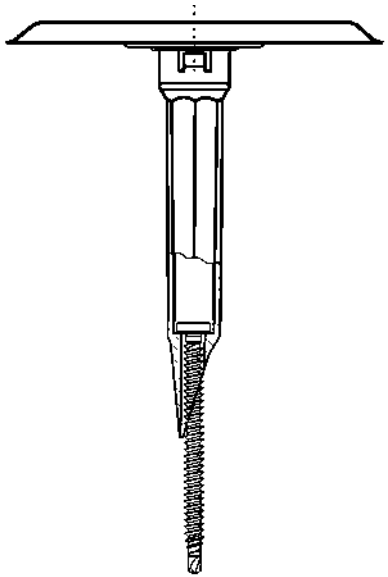
Zahn ZDBK-E 4,8 x L



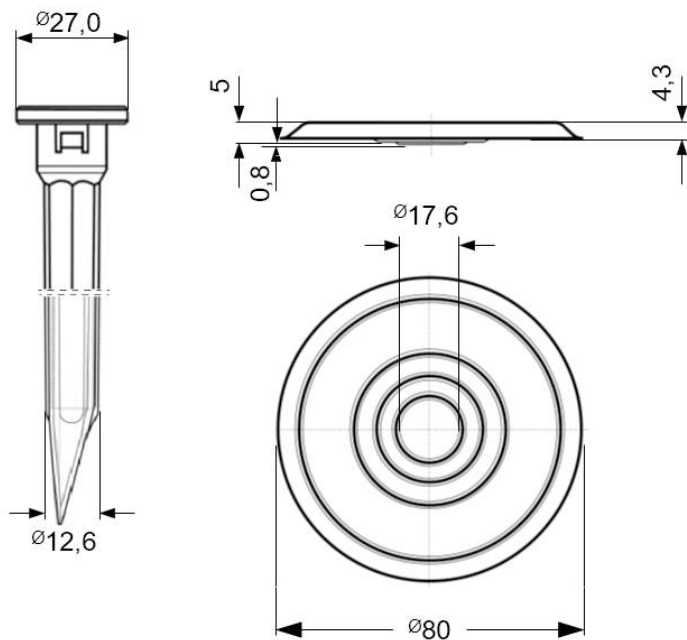
Zahn Flat Roof Fasteners

Combination 20a
ZCTS-E trapeze
consisting of ZDBK-E / ZCTS-pipe 4,8 and ZCTS-plate

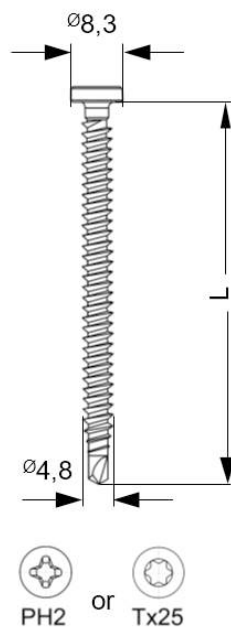
Annex 20a



Zahn ZCTSplus-pipe 4,8 and ZCTS-plate



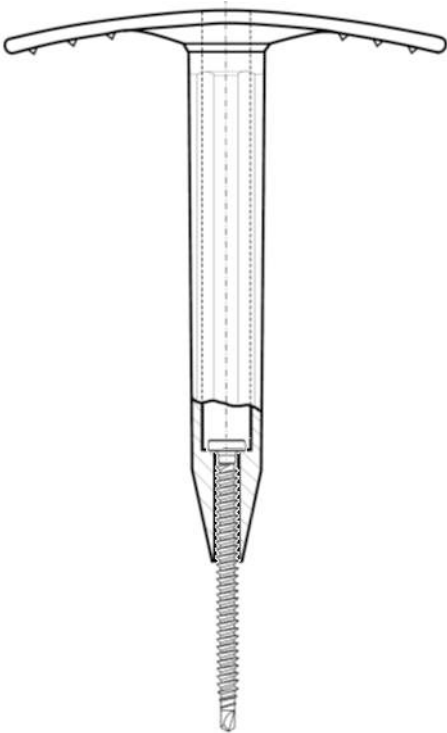
Zahn ZDBK-E 4,8 x L



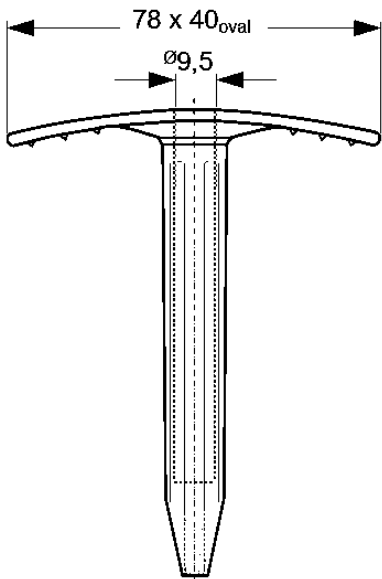
Zahn Flat Roof Fasteners

Combination 20b
ZCTS-Eplus trapeze
consisting of ZDBK-E / ZCTSplus-pipe 4,8 and ZCTS-plate

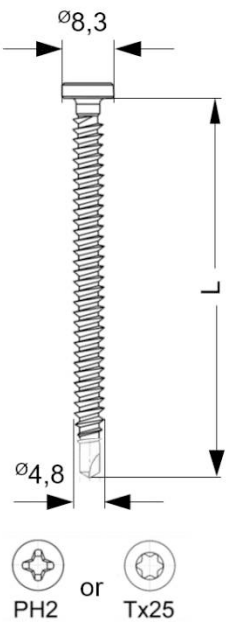
Annex 20b



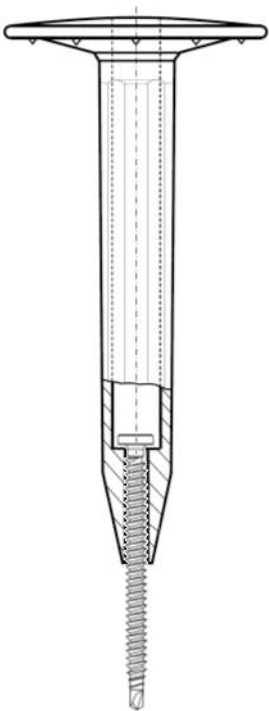
Zahn ZKSH oval



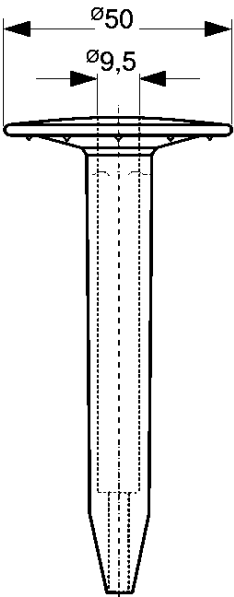
Zahn ZDBK-VB 4,8 x L



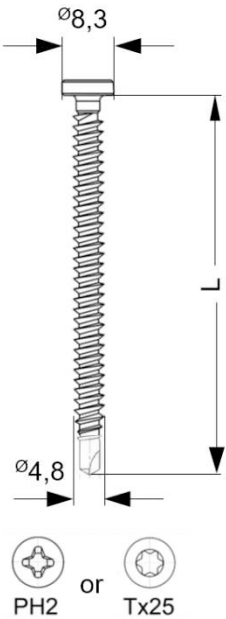
Zahn Flat Roof Fasteners	Annex 21
Combination 21 ZKSK-VB consisting of ZDBK-VB / ZKSH oval	



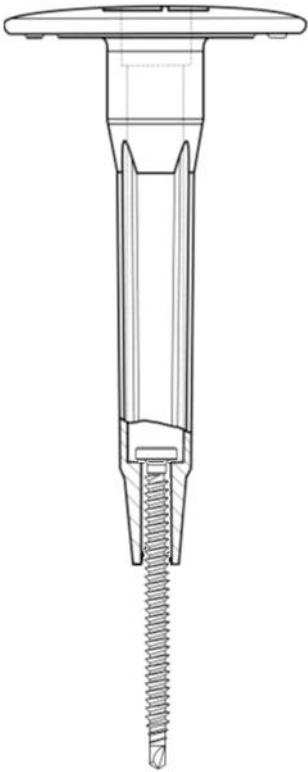
Zahn ZKSH round



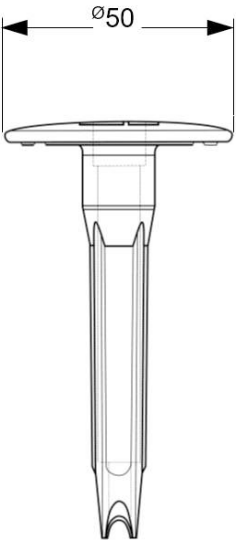
Zahn ZDBK-VB 4,8 x L



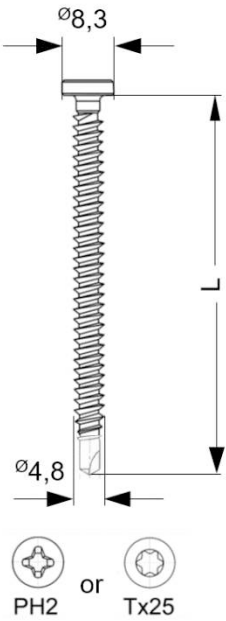
Zahn Flat Roof Fasteners	Annex 22
Combination 22 ZKSK-R/VB consisting of ZDBK-VB / ZKSH round	



Zahn ZKSH-Rplus with pile tip



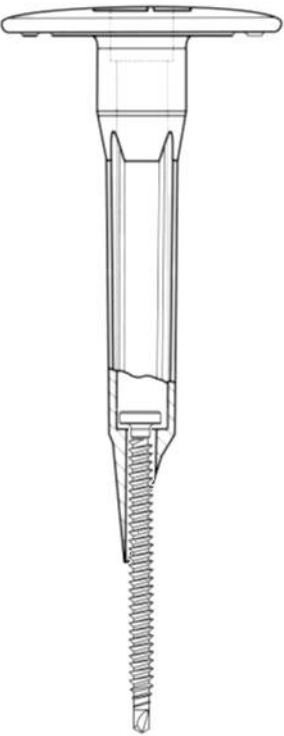
Zahn ZDBK-VB 4,8 x L



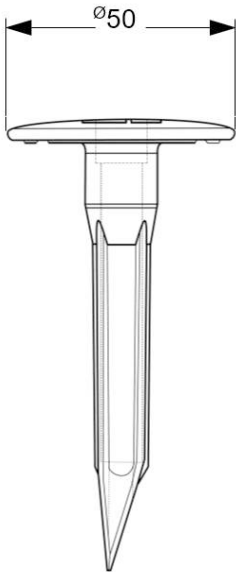
Zahn Flat Roof Fasteners

Combination 23
ZKSK-R/VBplus with pile tip
consisting of ZDBK-VB / ZKSH-Rplus with pile tip

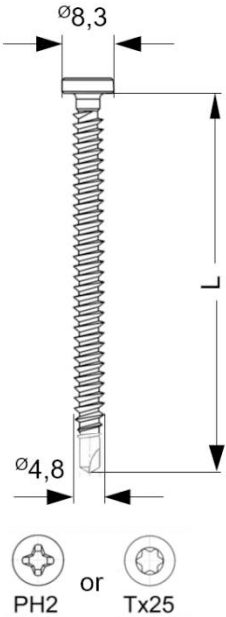
Annex 23



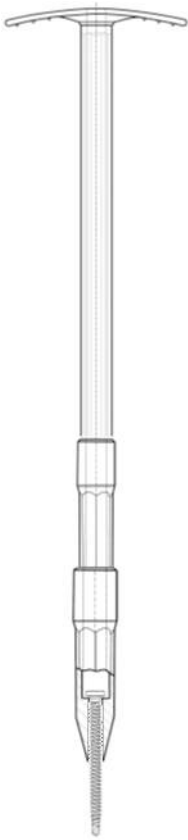
Zahn ZKSH-Rplus



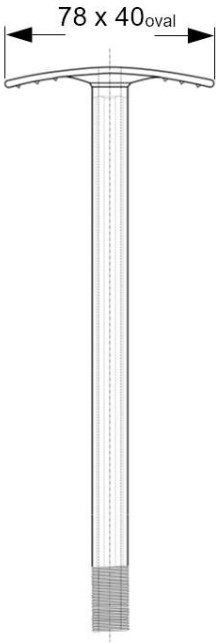
Zahn ZDBK-VB 4,8 x L



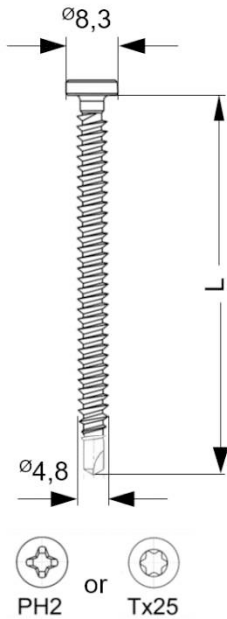
Zahn Flat Roof Fasteners	Annex 24
Combination 24 ZKSK-R/VBplus consisting of ZDBK-VB / ZKSH-Rplus	



Zahn ZKSH oval module 4,8



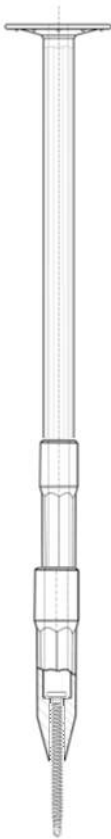
Zahn ZDBK-VB 4,8 x L



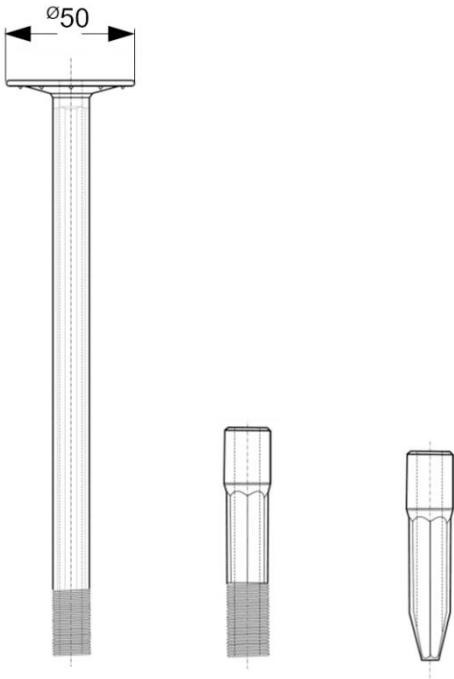
Zahn Flat Roof Fasteners

Combination 25
ZKSK-VB-module
consisting of ZDBK-VB / ZKSH oval module 4,8 with module middle piece and spike 4,8

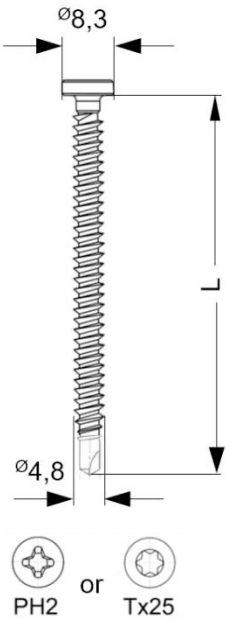
Annex 25



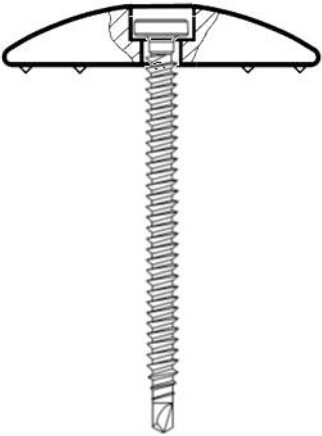
Zahn ZKSH round module 4,8



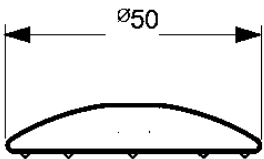
Zahn ZDBK-VB 4,8 x L



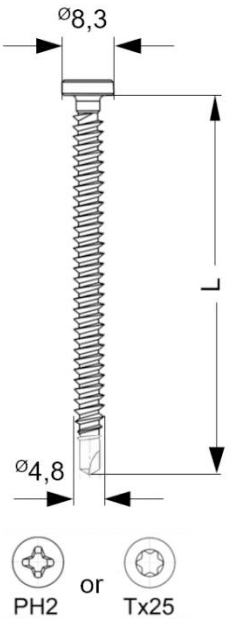
Zahn Flat Roof Fasteners	Annex 26
Combination 26 ZKSK-R/VB-module consisting of ZDBK-VB / ZKSH round module 4,8 with module middle piece and spike 4,8	



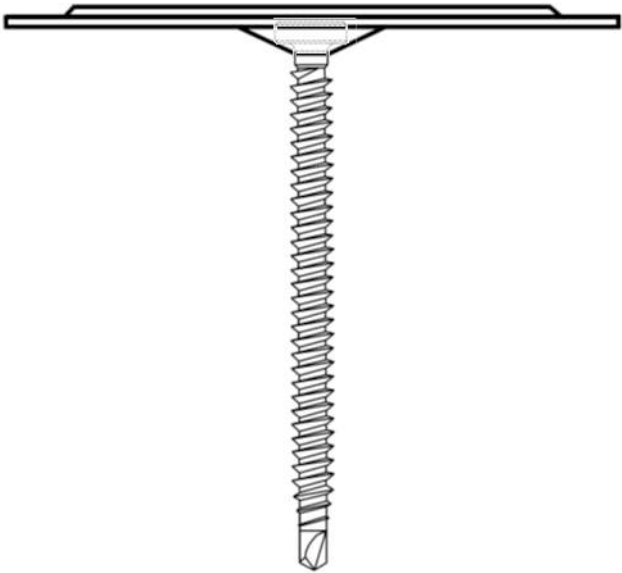
Zahn ZTSK 4,8



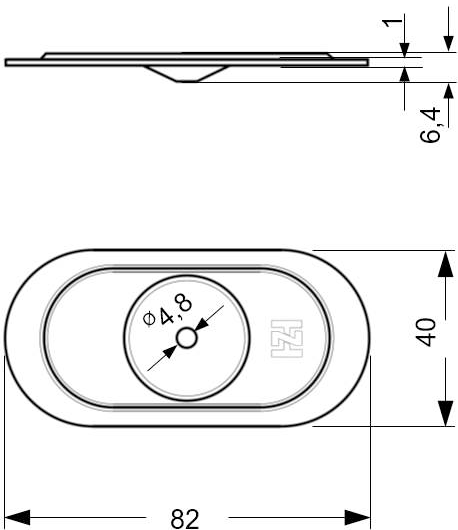
Zahn ZDBK-VB 4,8 x L



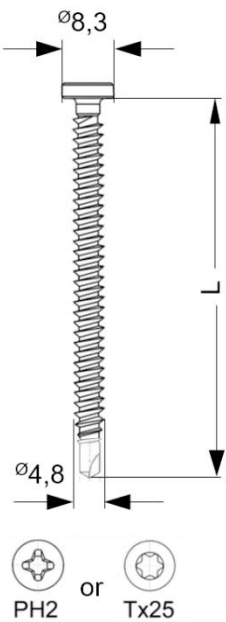
Zahn Flat Roof Fasteners	Annex 27
Combination 27 ZTSK-VB trapeze consisting of ZDBK-VB / ZTSK 4,8	



Zahn ZLVT 0001



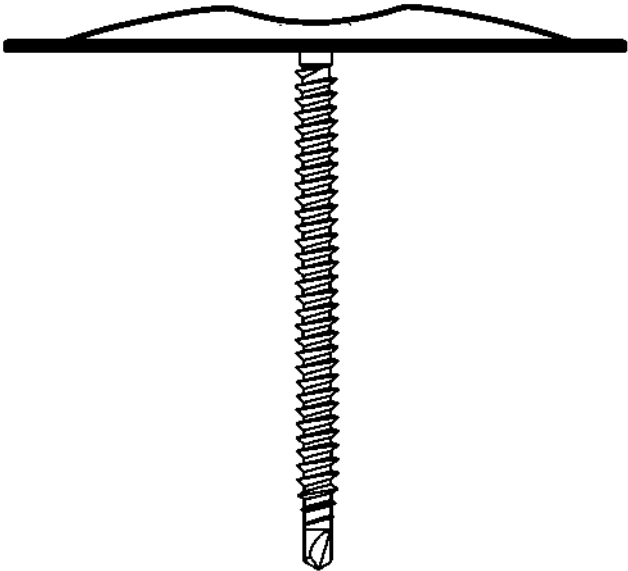
Zahn ZDBK-VB 4,8 x L



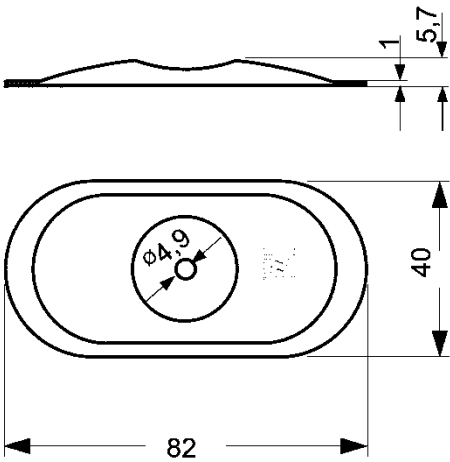
Zahn Flat Roof Fasteners

Combination 28
ZDBK-VB / ZLVT 0001

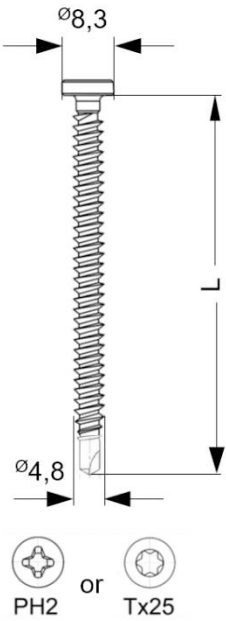
Annex 28



Zahn ZLVT 0005



Zahn ZDBK-VB 4,8 x L



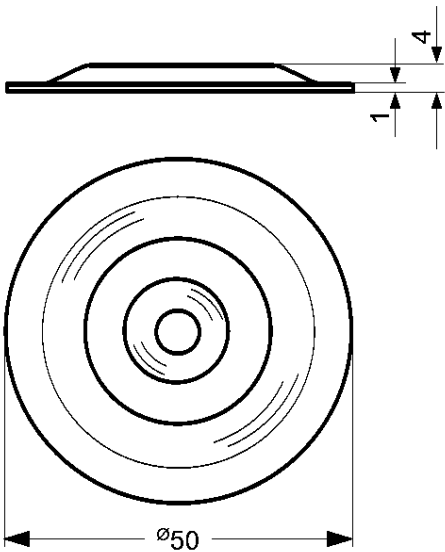
Zahn Flat Roof Fasteners

Combination 29
ZDBK-VB / ZLVT 0005

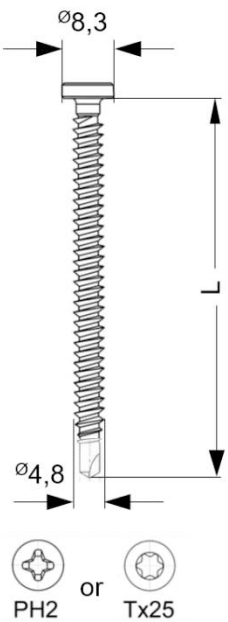
Annex 29



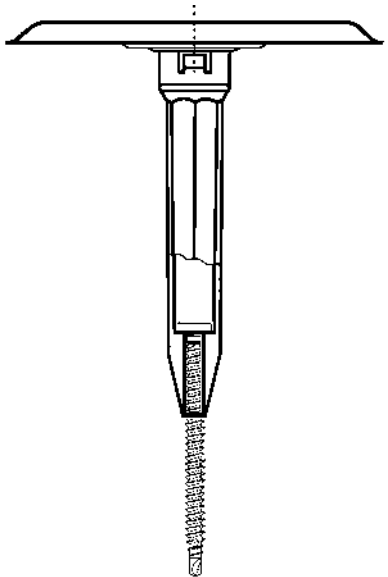
Zahn ZLVT 0015



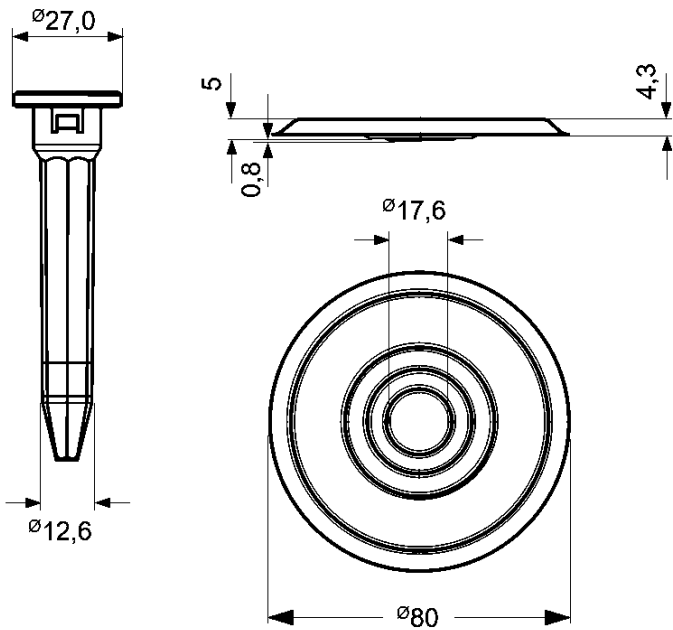
Zahn ZDBK-VB 4,8 x L



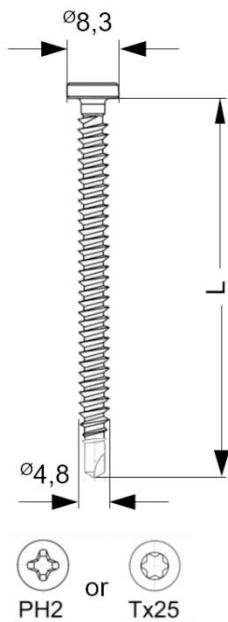
Zahn Flat Roof Fasteners	Annex 30
Combination 30 ZDBK-VB / ZLVT 0015	



Zahn ZCTS-pipe 4,8 and ZCTS-plate



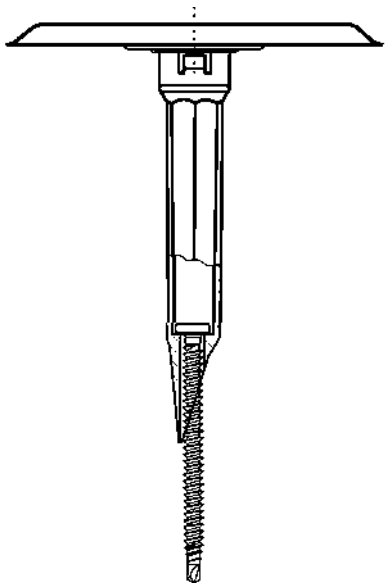
Zahn ZDBK-VB 4,8 x L



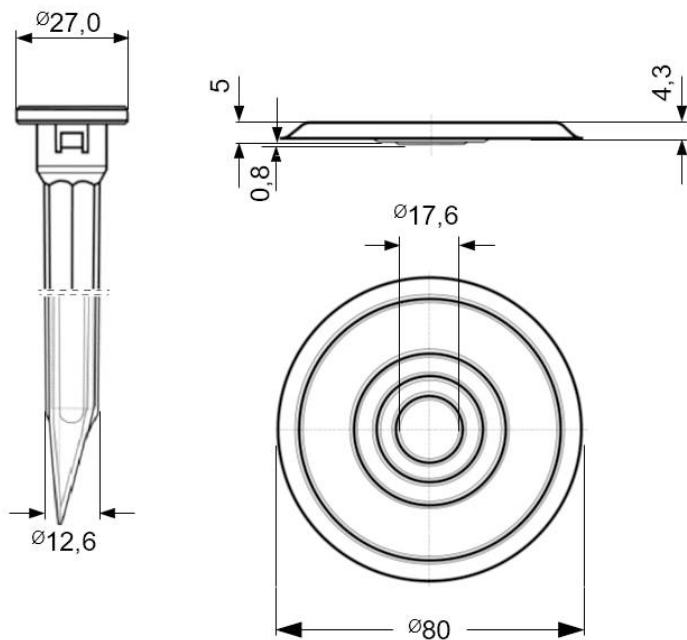
Zahn Flat Roof Fasteners

Combination 30a
ZCTS-VB trapeze
consisting of ZDBK-VB / ZCTS-pipe 4,8 and ZCTS-plate

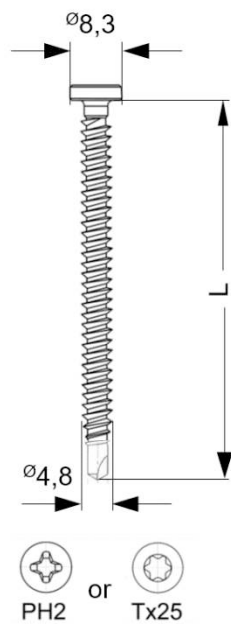
Annex 30a



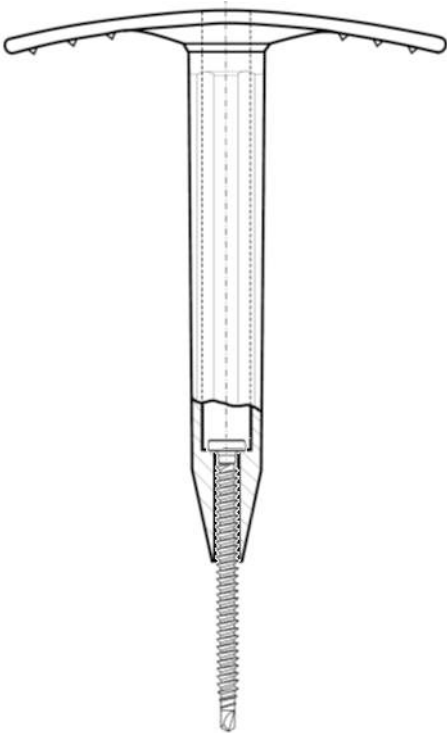
Zahn ZCTSplus-pipe 4,8 and ZCTS-plate



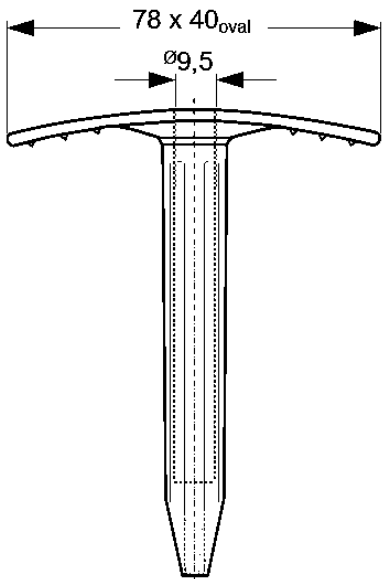
Zahn ZDBK-VB 4,8 x L



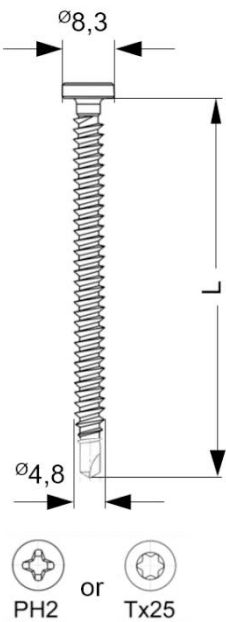
Zahn Flat Roof Fasteners	Annex 30b
Combination 30b ZCTSplus-VB trapeze consisting of ZDBK-VB / ZCTSplus-pipe 4,8 and ZCTS-plate	



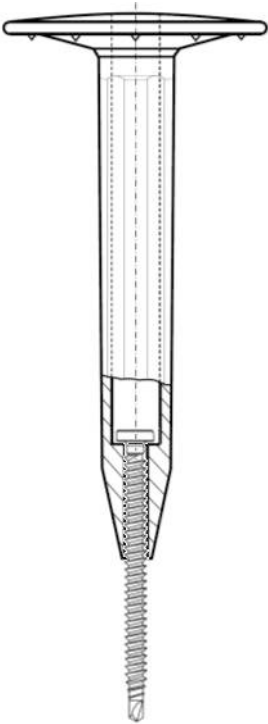
Zahn ZKSH oval



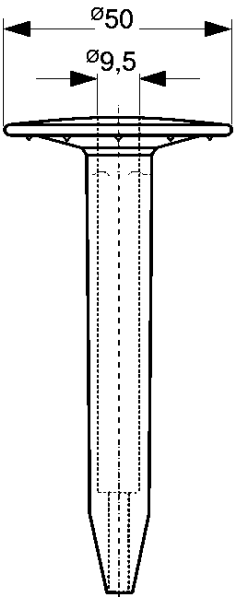
Zahn ZDBK-VB-E 4,8 x L



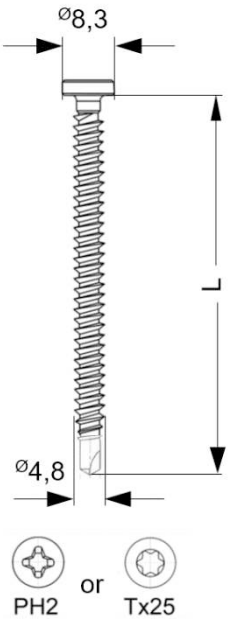
Zahn Flat Roof Fasteners	Annex 31
Combination 31 ZKSK-E/VB consisting of ZDBK-VB-E / ZKSH oval	



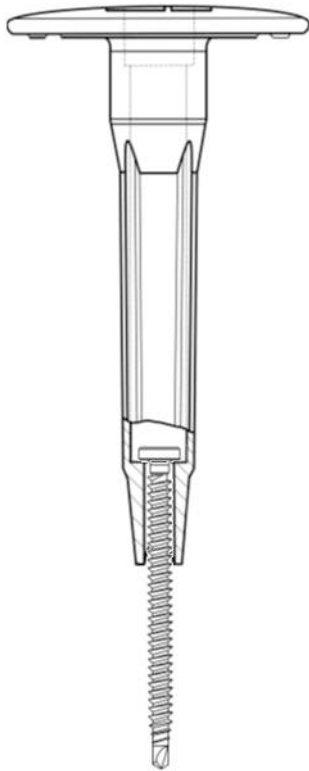
Zahn ZKSH round



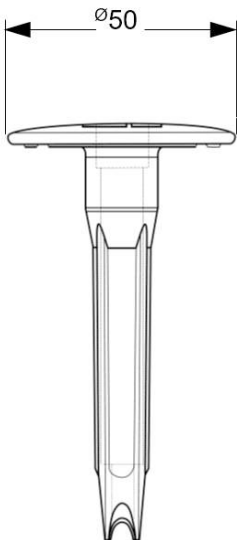
Zahn ZDBK-VB-E 4,8 x L



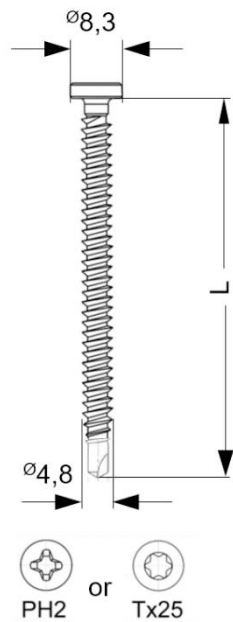
Zahn Flat Roof Fasteners	Annex 32
Combination 32 ZKSK-E/R/VB consisting of ZDBK-VB-E / ZKSH round	



Zahn ZKSH-Rplus with pile tip



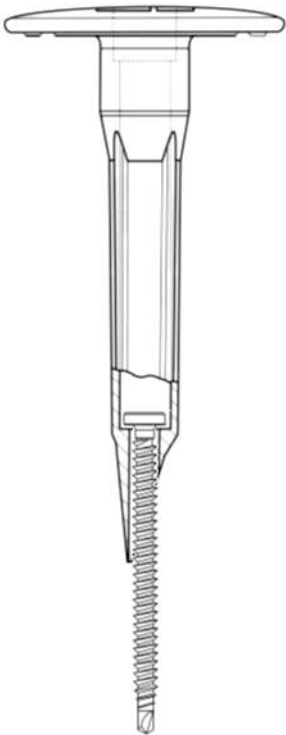
Zahn ZDBK-VB-E 4,8 x L



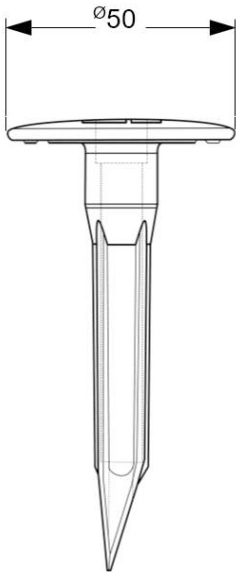
Zahn Flat Roof Fasteners

Combination 33
ZKSK-E/R/VBplus with pile tip
consisting of ZDBK-VB-E / ZKSH-Rplus with pile tip

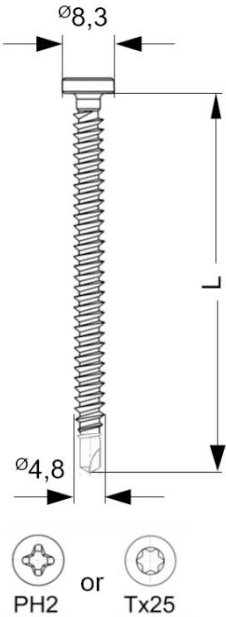
Annex 33



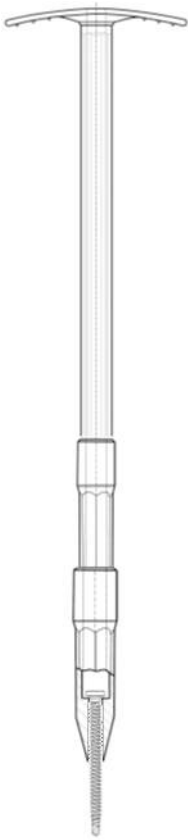
Zahn ZKSH-Rplus



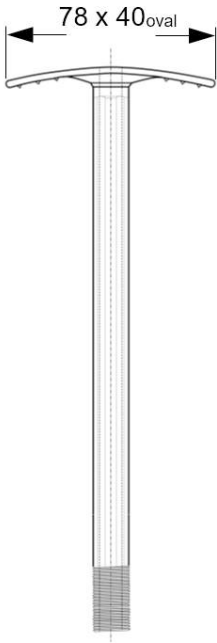
Zahn ZDBK-VB-E 4,8 x L



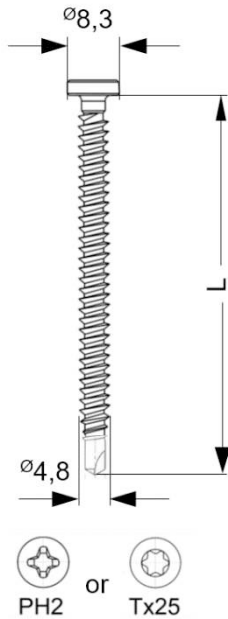
Zahn Flat Roof Fasteners	Annex 34
Combination 34 ZKSK-E/R/VBplus consisting of ZDBK-VB-E / ZKSH-Rplus	



Zahn ZKSH oval module 4,8



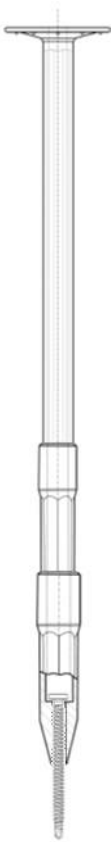
Zahn ZDBK-VB-E 4,8 x L



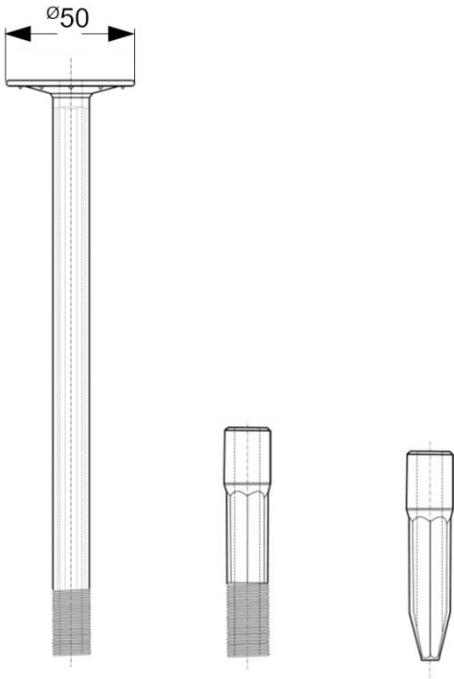
Zahn Flat Roof Fasteners

Combination 35
ZKSK-E/VB-module
consisting of ZDBK-VB-E / ZKSH oval module 4,8 with module middle piece and spike 4,8

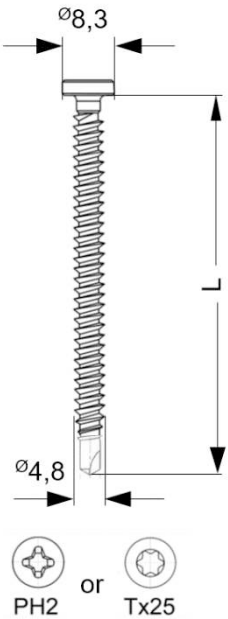
Annex 35



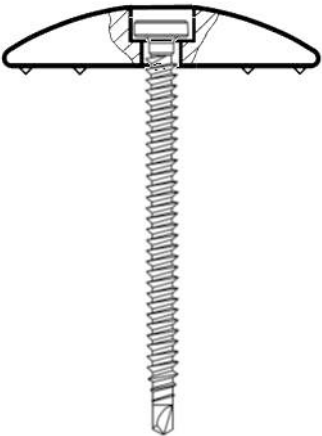
Zahn ZKSH round module 4,8



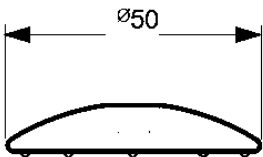
Zahn ZDBK-VB-E 4,8 x L



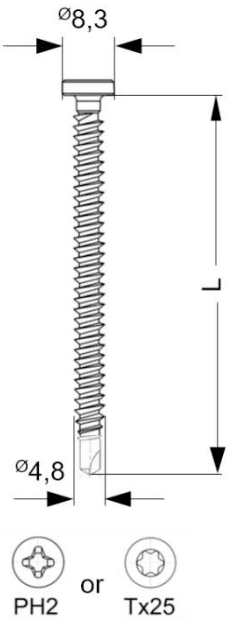
Zahn Flat Roof Fasteners	Annex 36
Combination 36 ZKSK-E/R/VB-module consisting of ZDBK-VB-E / ZKSH round module 4,8 with module middle piece and spike 4.8	



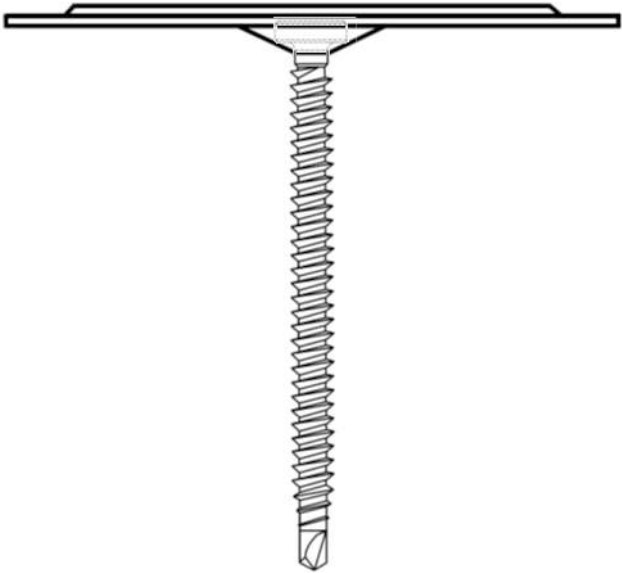
Zahn ZTSK 4,8



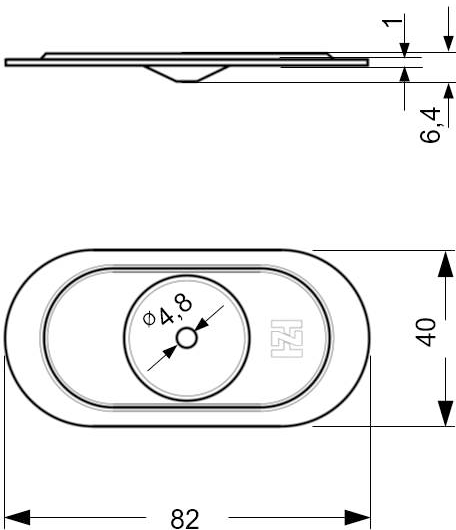
Zahn ZDBK-VB-E 4,8 x L



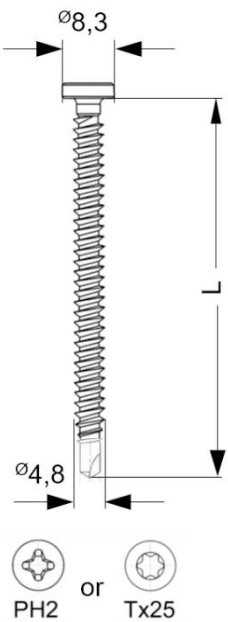
Zahn Flat Roof Fasteners	Annex 37
Combination 37 ZTSK-E/VB trapeze consisting of ZDBK-VB-E / ZTSK 4,8	



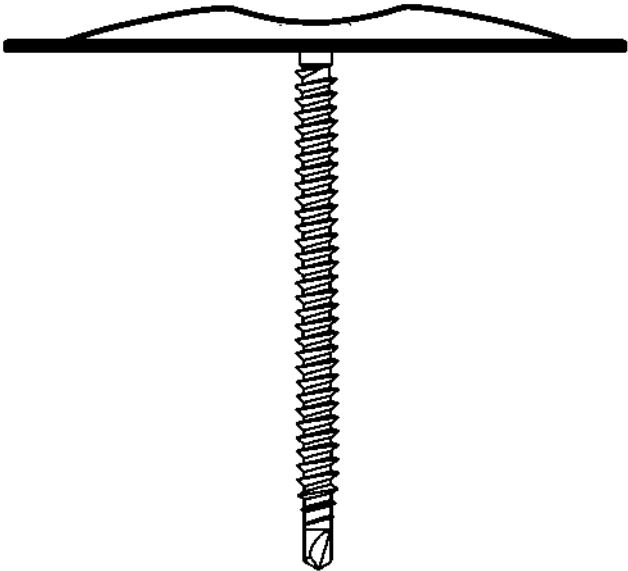
Zahn ZLVT 0001



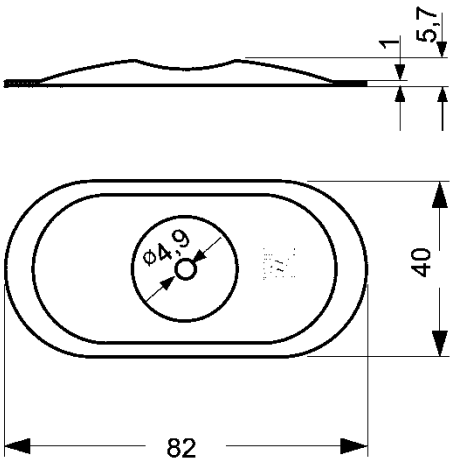
Zahn ZDBK-VB-E 4,8 x L



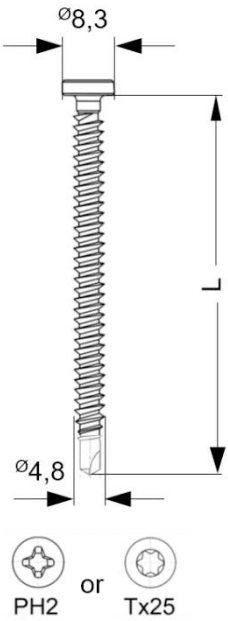
Zahn Flat Roof Fasteners	Annex 38
Combination 38 ZDBK-E/VB / ZLVT 0001	



Zahn ZLVT 0005



Zahn ZDBK-VB-E 4,8 x L



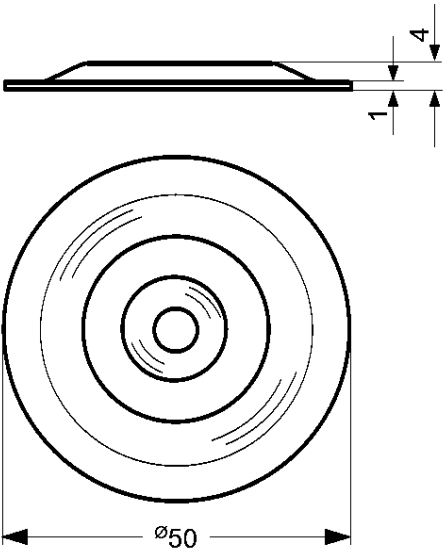
Zahn Flat Roof Fasteners

Combination 39
ZDBK-E/VB / ZLVT 0005

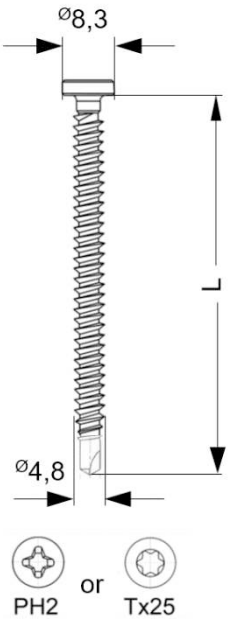
Annex 39



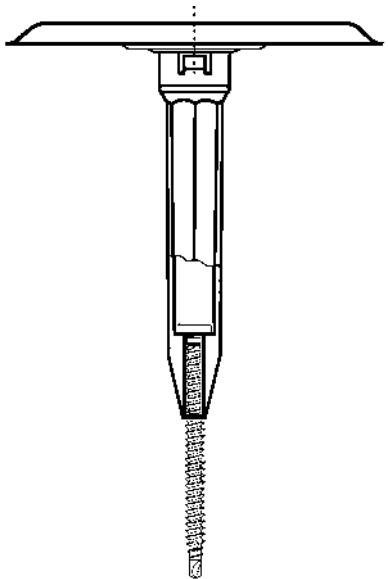
Zahn ZLVT 0015



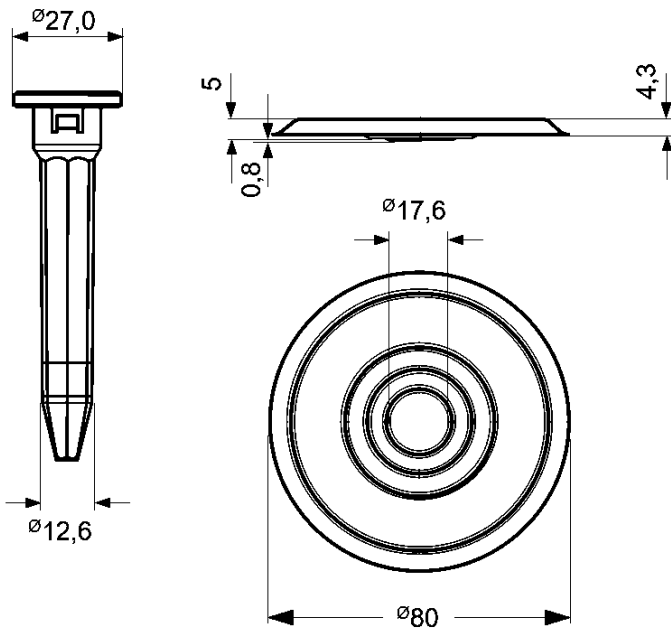
Zahn ZDBK-VB-E 4,8 x L



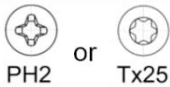
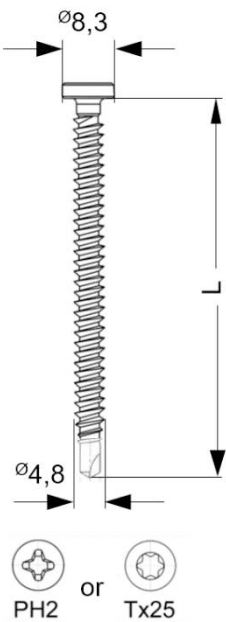
Zahn Flat Roof Fasteners	Annex 40
Combination 40 ZDBK-E/VB / ZLVT 0015	



Zahn ZCTS-pipe 4,8 and ZCTS-plate



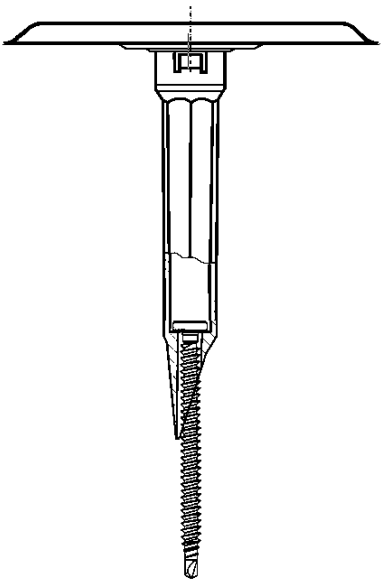
Zahn ZDBK-VB-E 4,8 x L



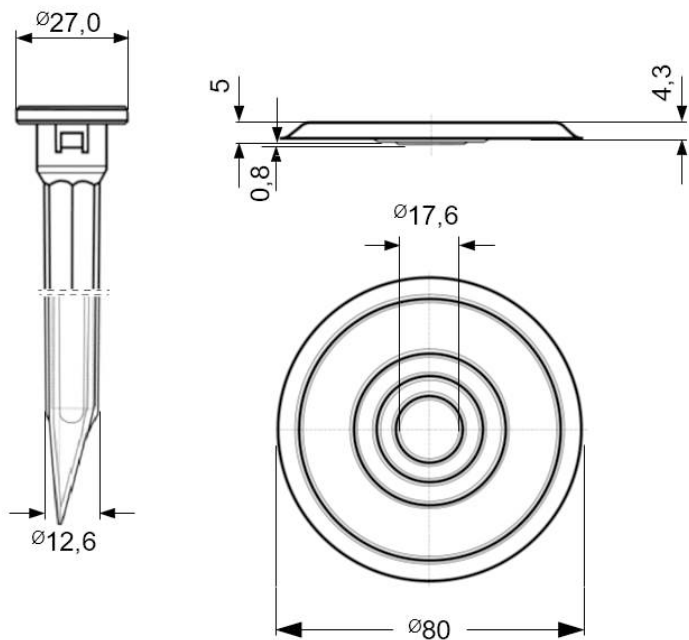
Zahn Flat Roof Fasteners

Combination 40a
ZCTS-E / VB trapeze
consisting of ZDBK-VB-E / ZCTS-pipe 4,8 and ZCTS-plate

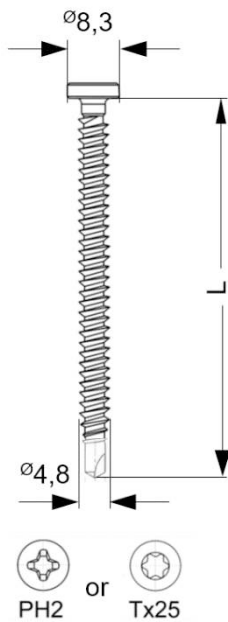
Annex 40a



Zahn ZCTSplus-pipe 4,8 and ZCTS-plate



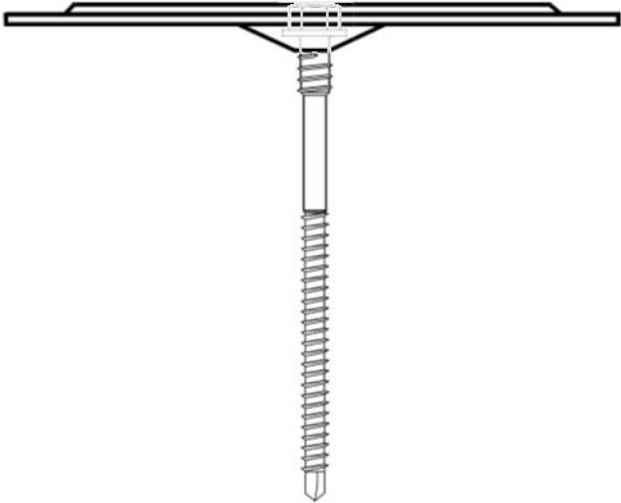
Zahn ZDBK-VB-E 4,8 x L



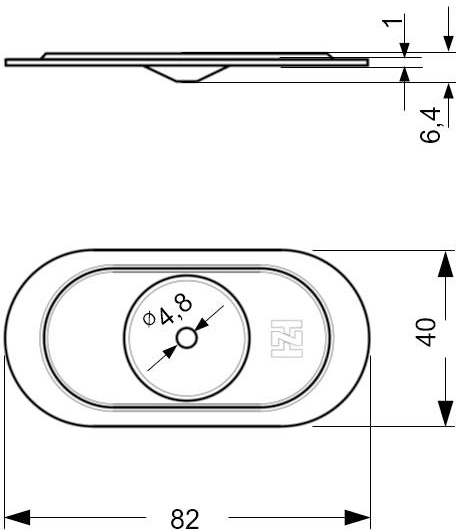
Zahn Flat Roof Fasteners

Combination 40b
ZCTS-Eplus / VB trapeze
consisting of ZDBK-VB-E / ZCTSplus pipe 4,8 and ZCTS-plate

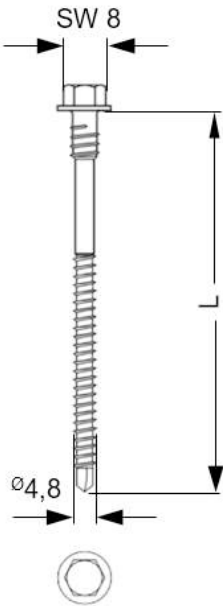
Annex 40b



Zahn ZLVT 0001



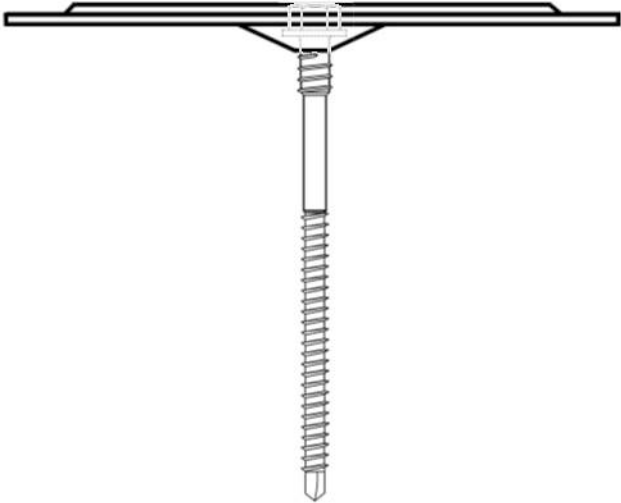
Zahn ZDBS 4,8 x L



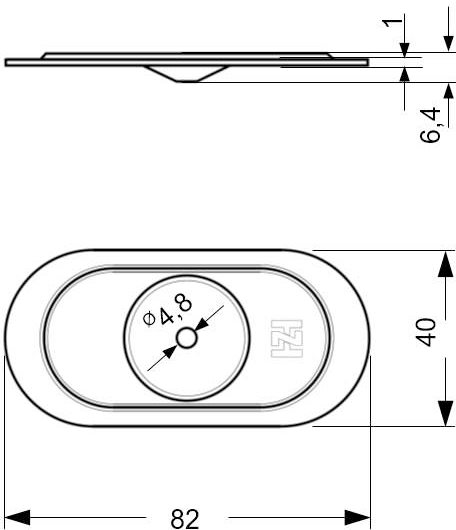
Zahn Flat Roof Fasteners

Combination 41
ZDBS / ZLVT 0001

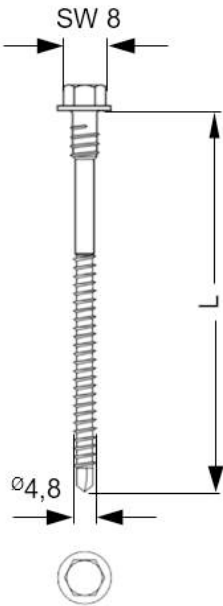
Annex 41



Zahn ZLVT 0001



Zahn ZDBS-VB 4,8 x L



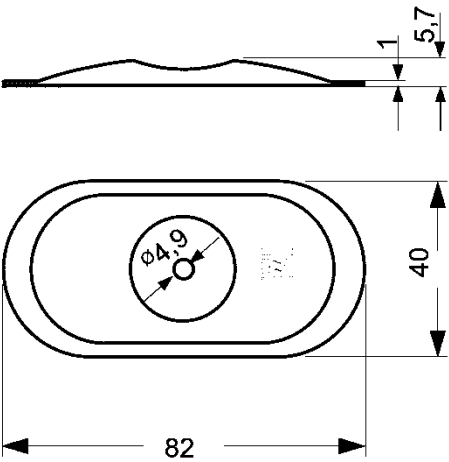
Zahn Flat Roof Fasteners

Combination 41a
ZDBS-VB / ZLVT 0001

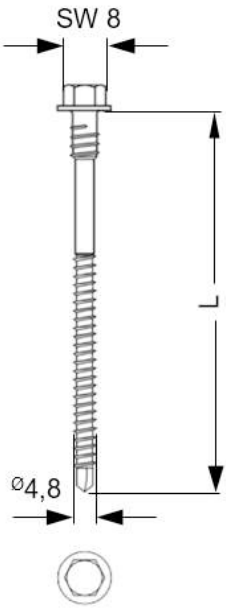
Annex 41a



Zahn ZLVT 0005



Zahn ZDBS 4,8 x L



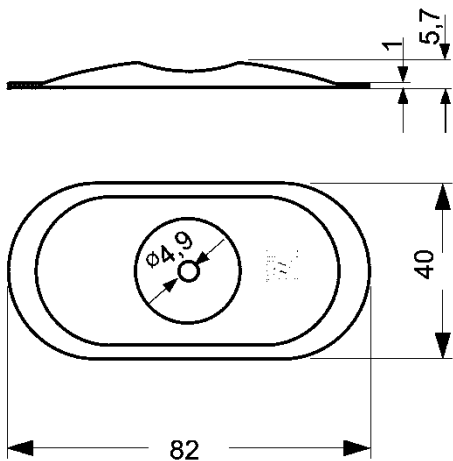
Zahn Flat Roof Fasteners

Combination 42
ZDBS / ZLVT 0005

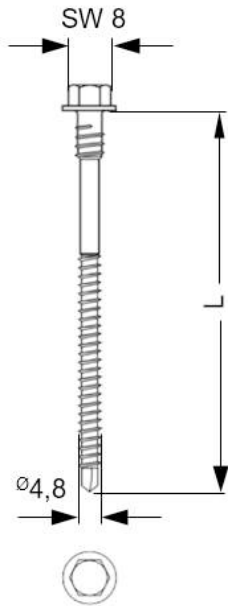
Annex 42



Zahn ZLVT 0005



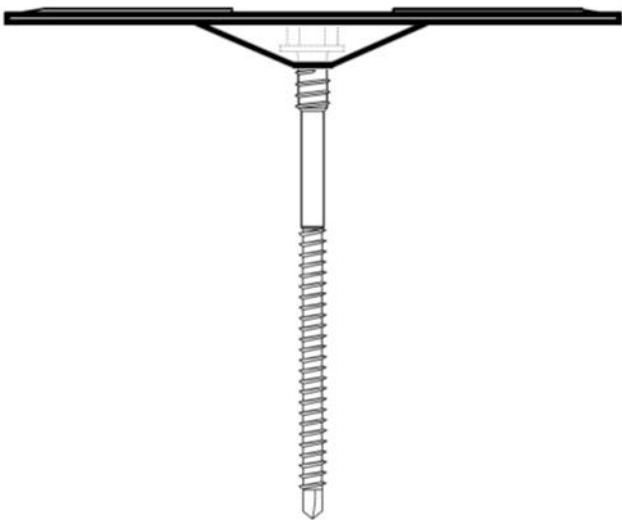
Zahn ZDBS-VB 4,8 x L



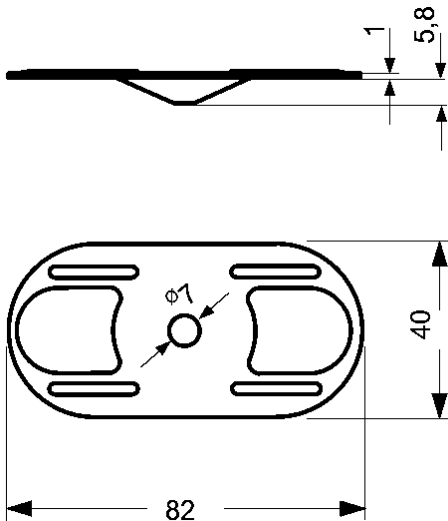
Zahn Flat Roof Fasteners

Combination 42a
ZDBS-VB / ZLVT 0005

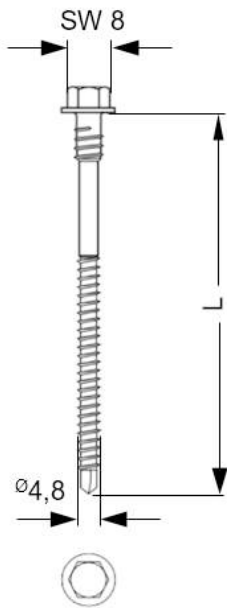
Annex 42a



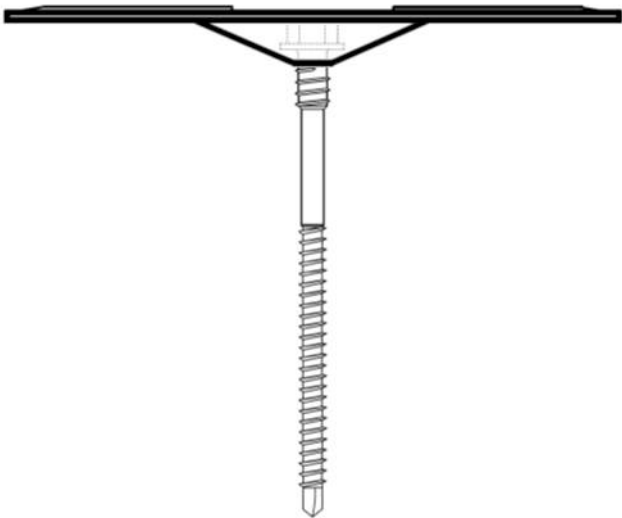
Zahn ZLVT 0012



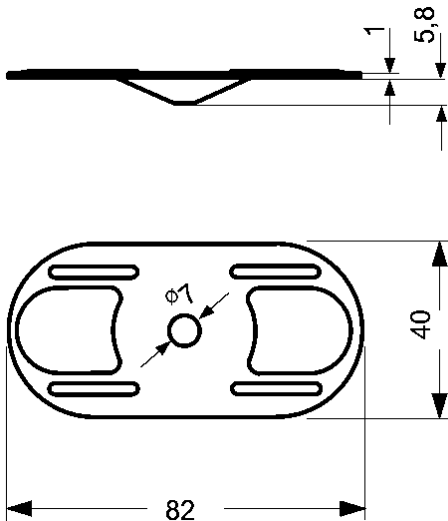
Zahn ZDBS 4,8 x L



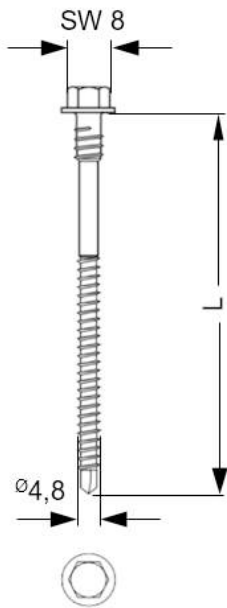
Zahn Flat Roof Fasteners	Annex 43
Combination 43 ZDBS / ZLVT 0012	



Zahn ZLVT 0012



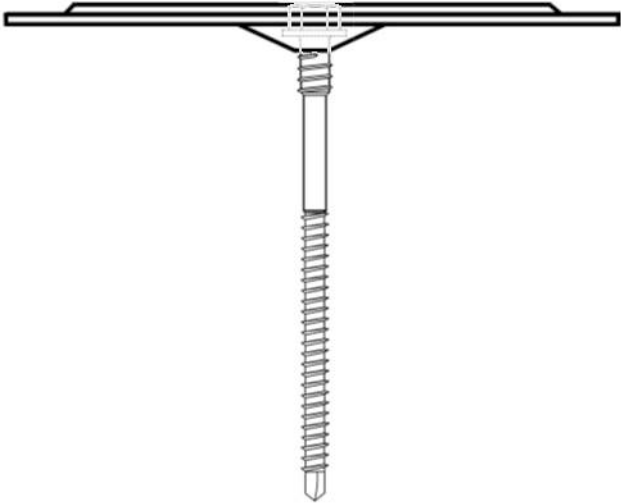
Zahn ZDBS-VB 4,8 x L



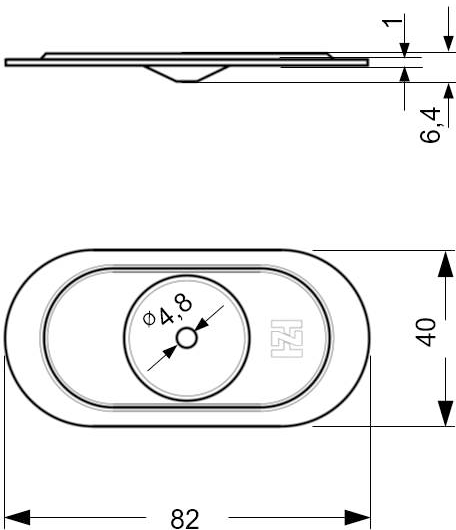
Zahn Flat Roof Fasteners

Combination 43a
ZDBS-VB / ZLVT 0012

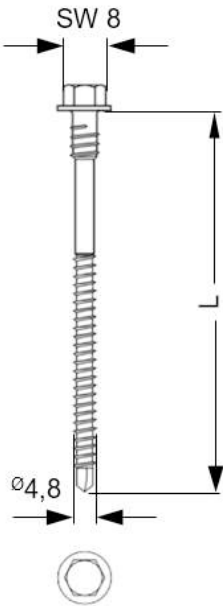
Annex 43a



Zahn ZLVT 0001



Zahn ZDBS-E 4,8 x L



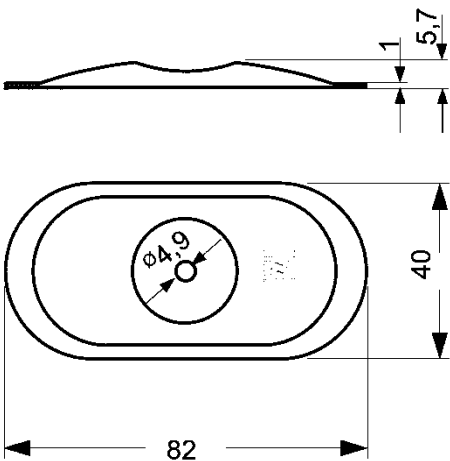
Zahn Flat Roof Fasteners

Combination 44
ZDBS-E / ZLVT 0001

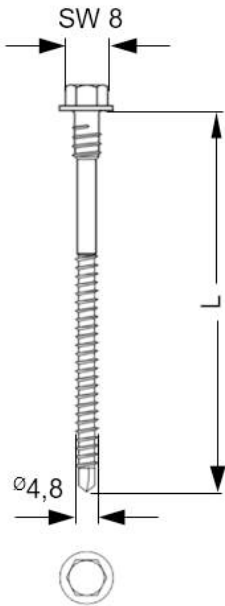
Annex 44



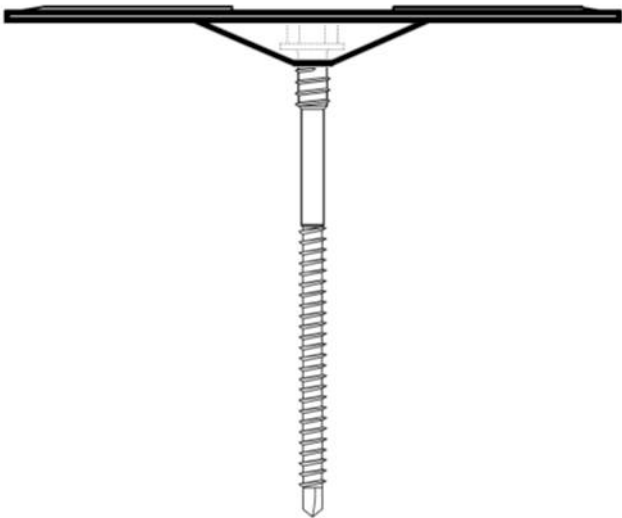
Zahn ZLVT 0005



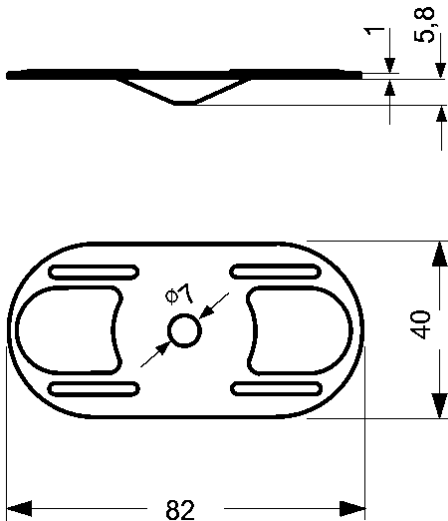
Zahn ZDBS-E 4,8 x L



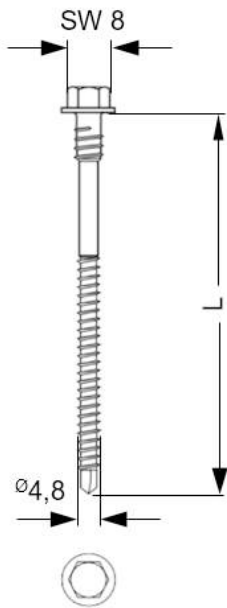
Zahn Flat Roof Fasteners	Annex 45
Combination 45 ZDBS-E / ZLVT 0005	



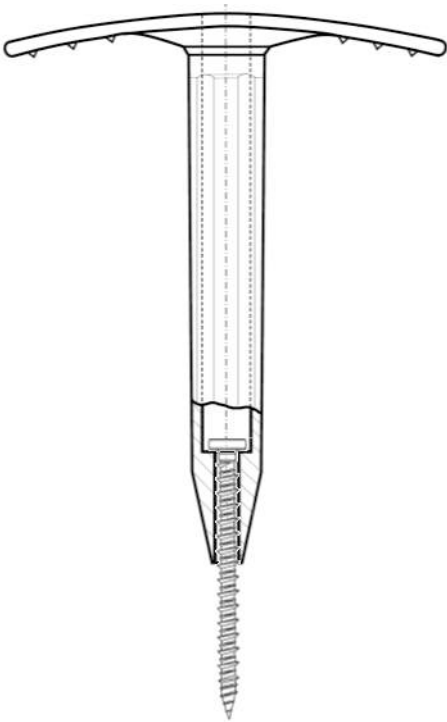
Zahn ZLVT 0012



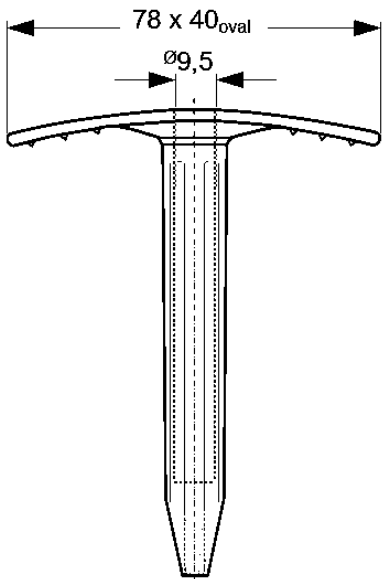
Zahn ZDBS-E 4,8 x L



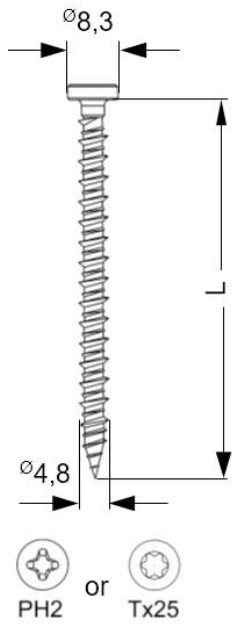
Zahn Flat Roof Fasteners	Annex 46
Combination 46 ZDBS-E / ZLVT 0012	



Zahn ZKSH oval



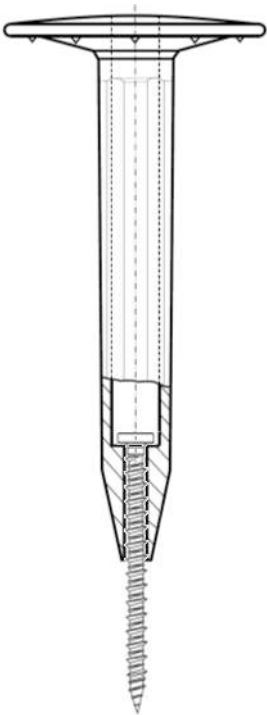
Zahn ZHBK 4,8 x L



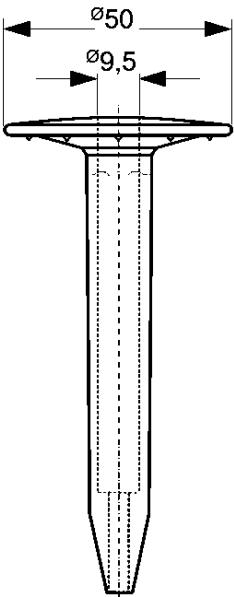
Zahn Flat Roof Fasteners

Combination 47
ZHSK
consisting of ZHBK / ZKSH oval

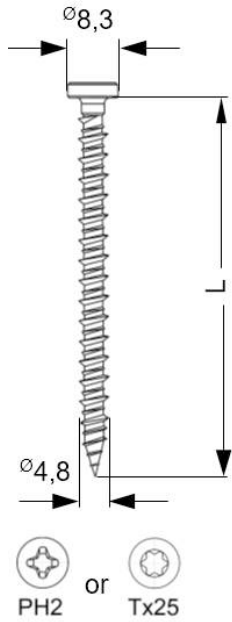
Annex 47



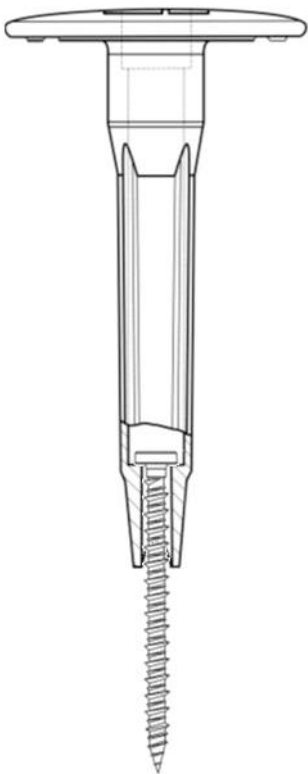
Zahn ZKSH round



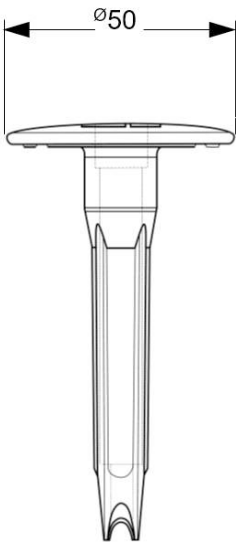
Zahn ZHBK 4,8 x L



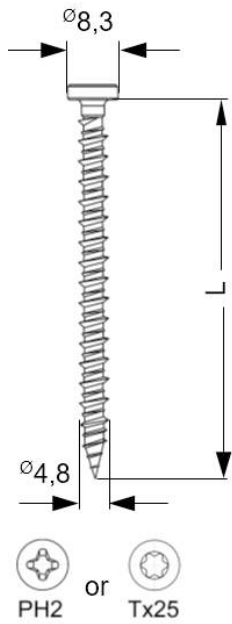
Zahn Flat Roof Fasteners	Annex 48
Combination 48 ZHSK-R consisting of ZHBK / ZKSH round	



Zahn ZKSH-Rplus with pile tip



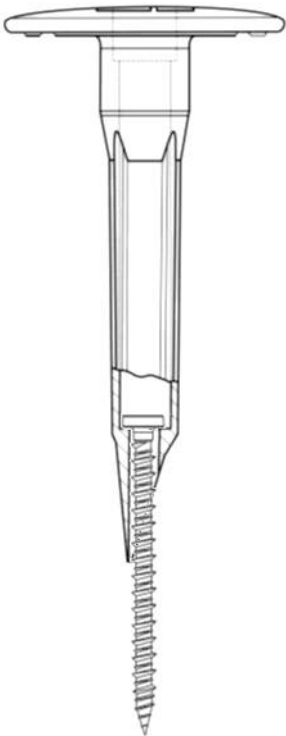
Zahn ZHBK 4,8 x L



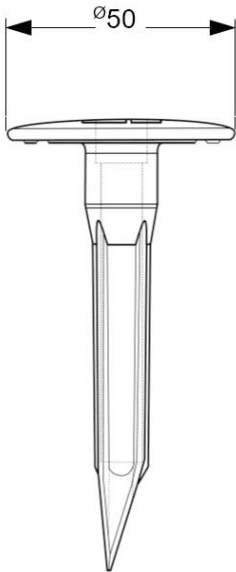
Zahn Flat Roof Fasteners

Combination 49
ZHSK-Rplus with pile tip
consisting of ZHBK / ZKSH-Rplus with pile tip

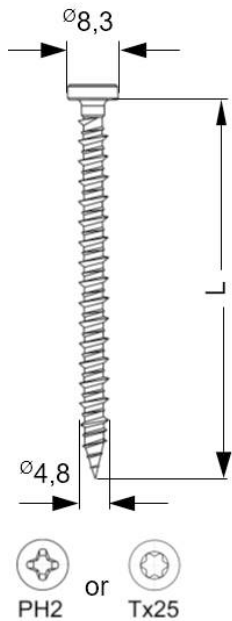
Annex 49



Zahn ZKSH-Rplus



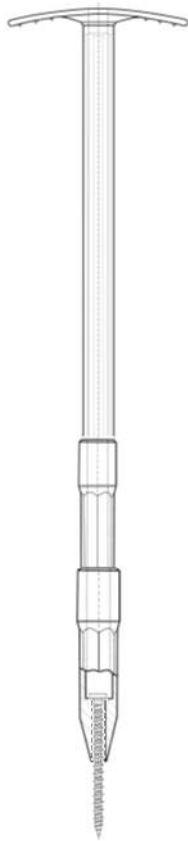
Zahn ZHBK 4,8 x L



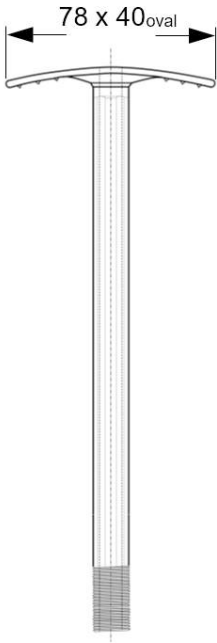
Zahn Flat Roof Fasteners

Annex 50

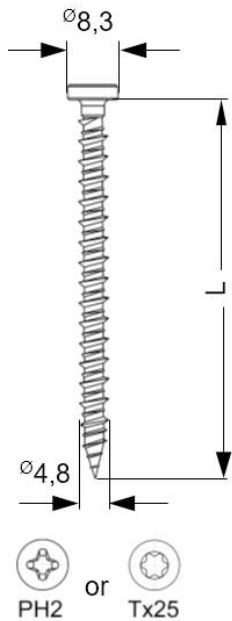
Combination 50
ZHSK-Rplus
consisting of ZHBK / ZKSH-Rplus



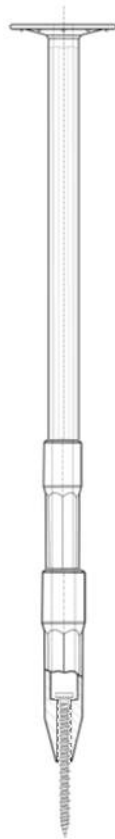
Zahn ZKSH oval module 4,8



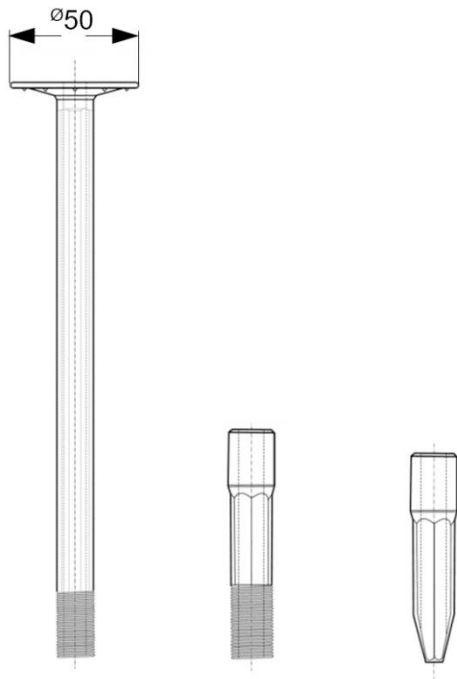
Zahn ZHBK 4,8 x L



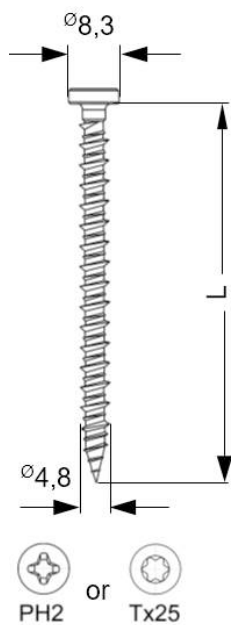
Zahn Flat Roof Fasteners	Annex 51
Combination 51 ZHSK module consisting of ZHBK / ZKSH oval module 4,8 with module middle piece and spike 4,8	



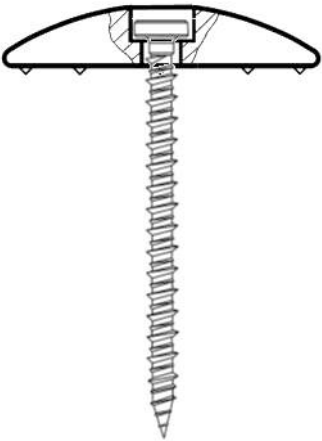
Zahn ZKSH round module 4,8



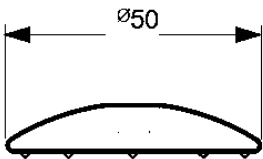
Zahn ZHBK 4,8 x L



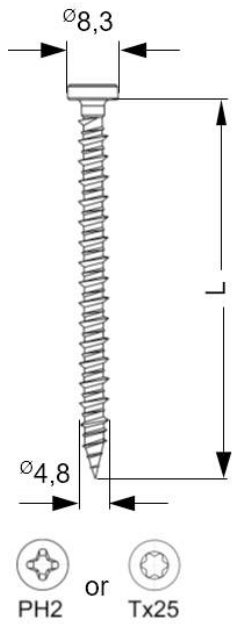
Zahn Flat Roof Fasteners	Annex 52
Combination 52 ZHSK-R-module consisting of ZHBK / ZKSH round with module 4,8 middle piece and spike 4,8	



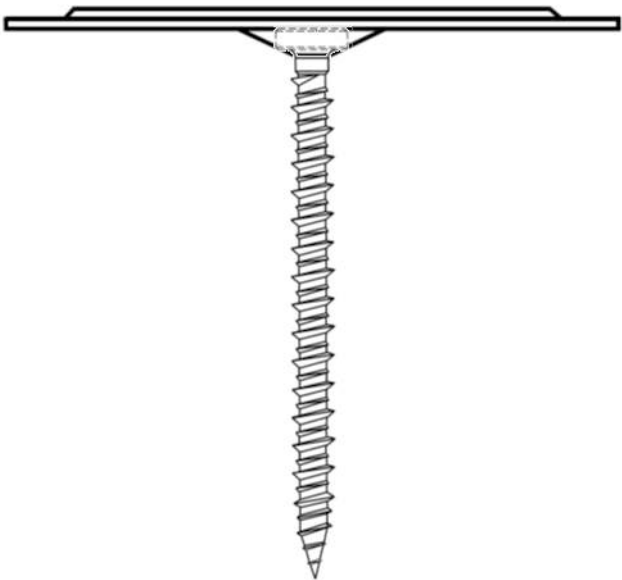
Zahn ZTSK 4,8



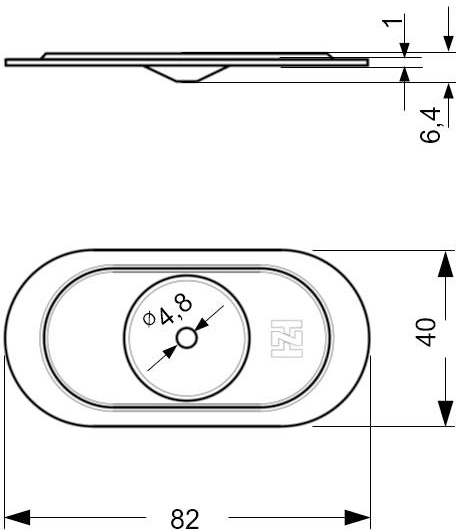
Zahn ZHBK 4,8 x L



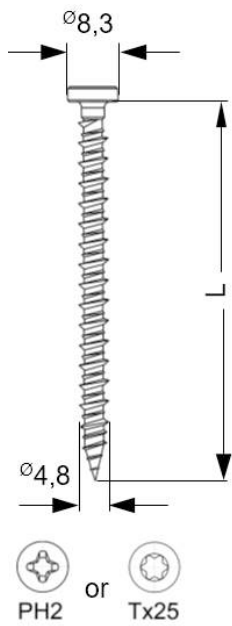
Zahn Flat Roof Fasteners	Annex 53
Combination 53 ZTSK timber consisting of ZHBK / ZTSK 4,8	



Zahn ZLVT 0001



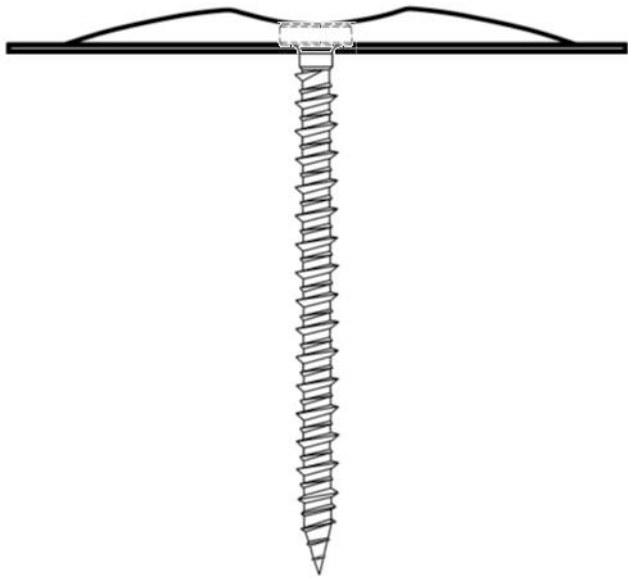
Zahn ZHBK 4,8 x L



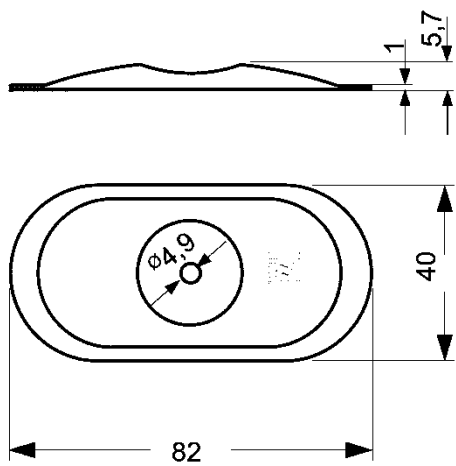
Zahn Flat Roof Fasteners

Combination 54
ZHBK / ZLVT 0001

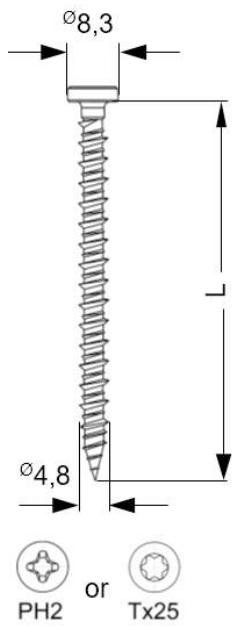
Annex 54



Zahn ZLVT 0005



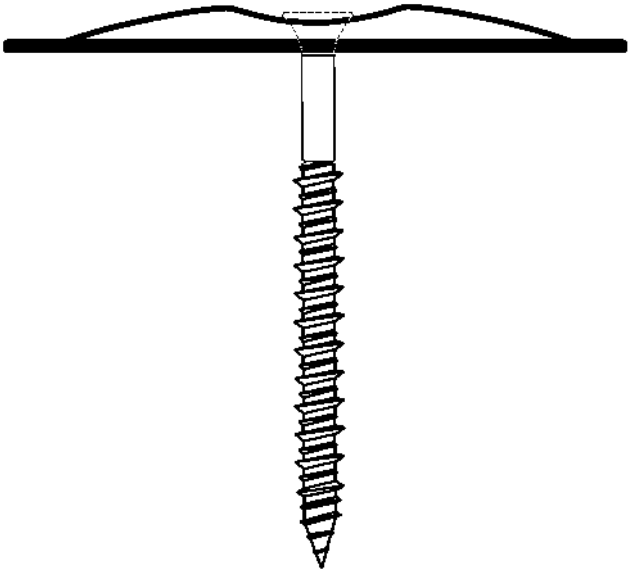
Zahn ZHBK 4,8 x L



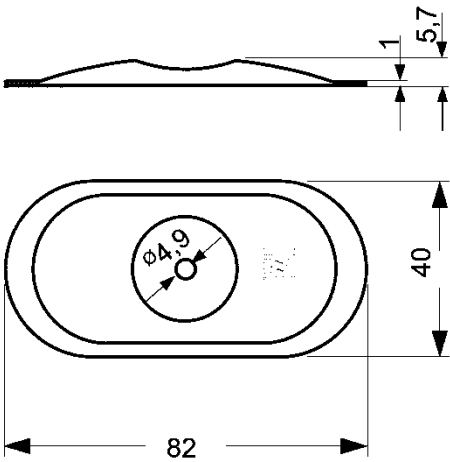
Zahn Flat Roof Fasteners

Combination 55
ZHBK / ZLVT 0005

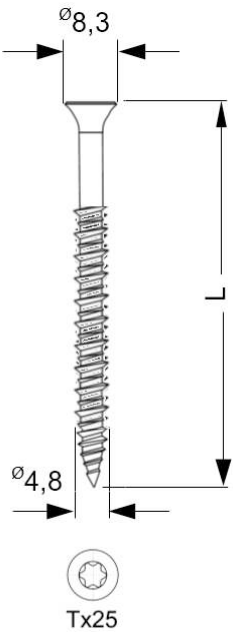
Annex 55



Zahn ZLVT 0005



Zahn ZHBK_{TK} 4,8 x L



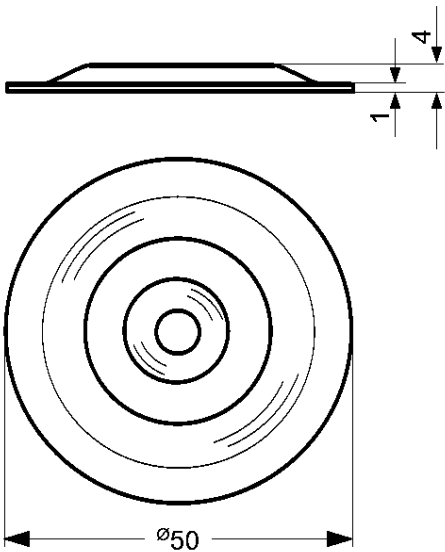
Zahn Flat Roof Fasteners

Combination 55a
ZHBK-TK / ZLVT 0005

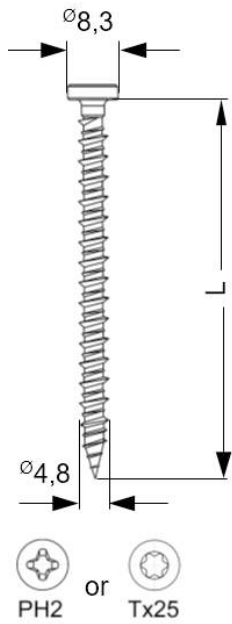
Annex 55a



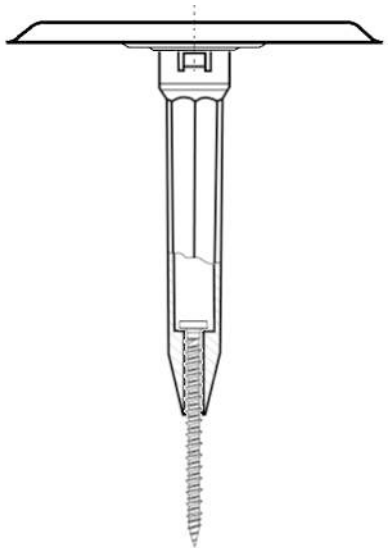
Zahn ZLVT 0015



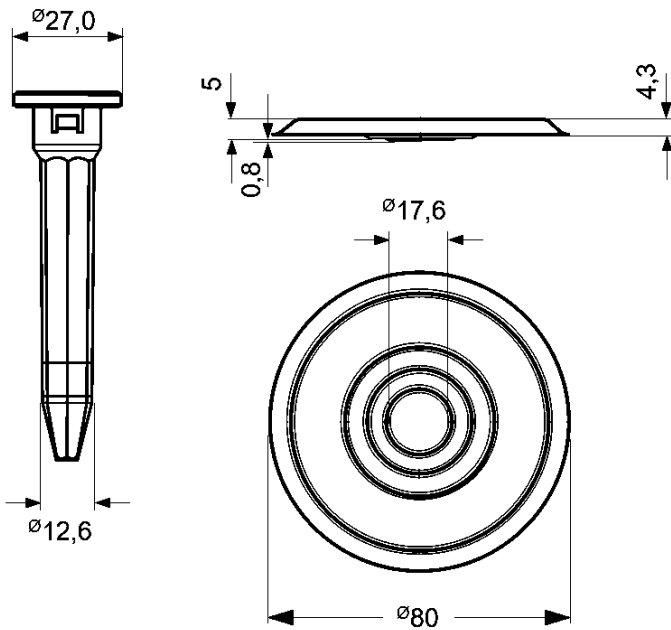
Zahn ZHBK 4,8 x L



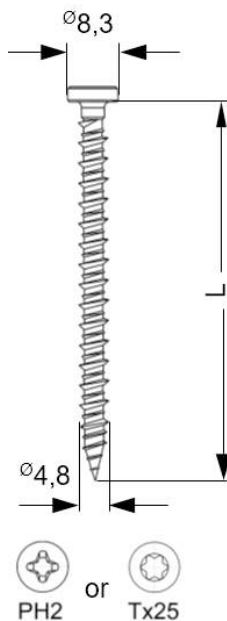
Zahn Flat Roof Fasteners	Annex 56
Combination 56 ZHBK / ZLVT 0015	



Zahn ZCTS-pipe 4,8 and ZCTS-plate



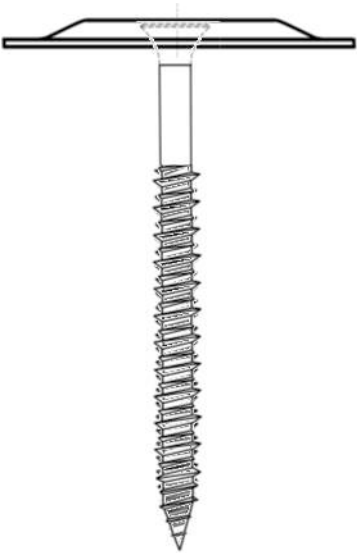
Zahn ZHBK 4,8 x L



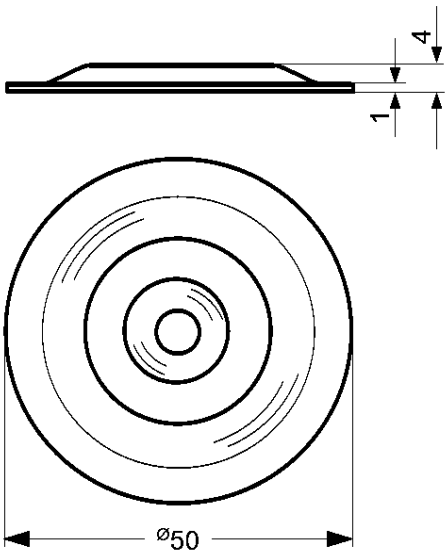
Zahn Flat Roof Fasteners

Combination 56a
ZCTS timber
consisting of ZHBK / ZCTS-pipe 4,8 and ZCTS-plate

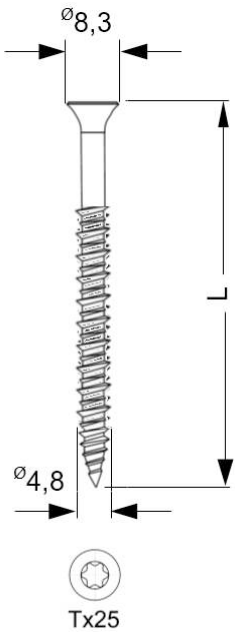
Annex 56a



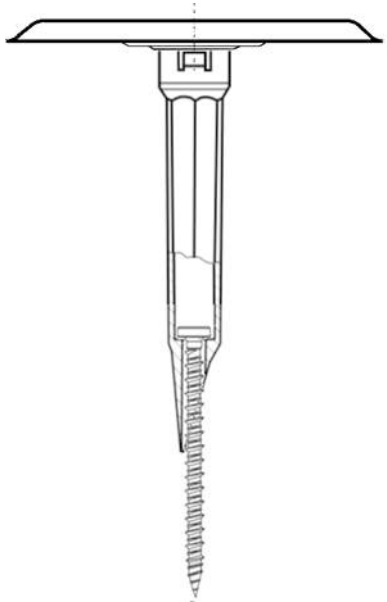
Zahn ZLVT 0015



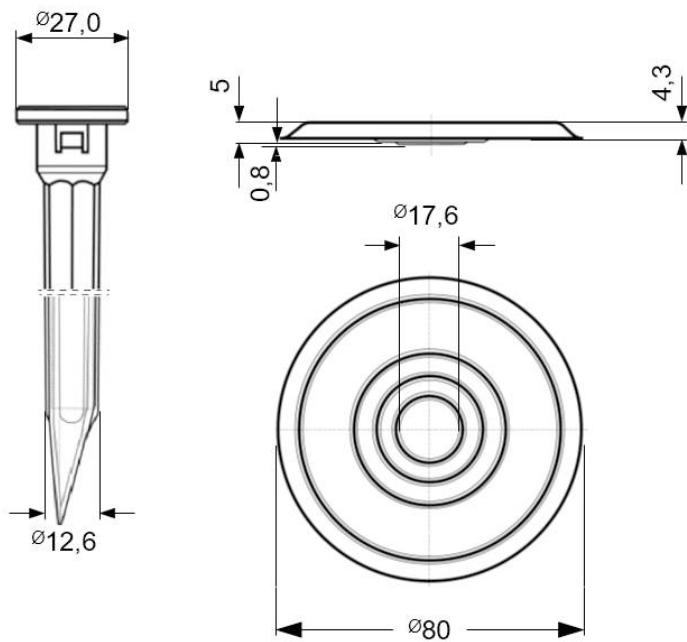
Zahn ZHBK_{TK} 4,8 x L



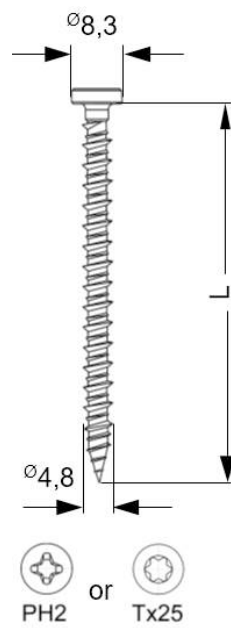
Zahn Flat Roof Fasteners	Annex 56b
Combination 56b ZHBK-TK / ZLVT 0015	



Zahn ZCTSplus-pipe 4,8 and ZCTS-plate



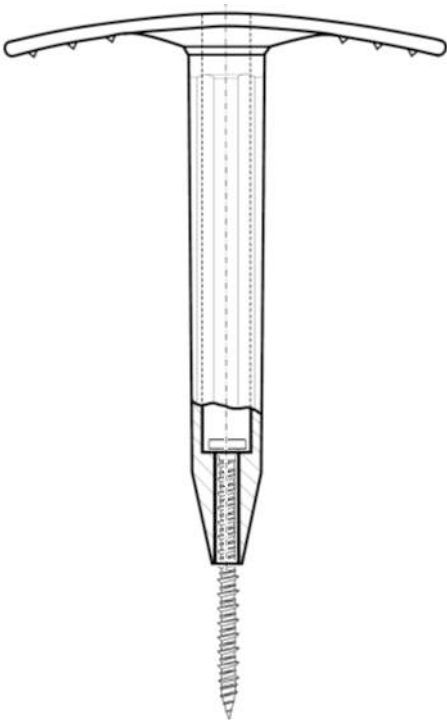
Zahn ZHBK 4,8 x L



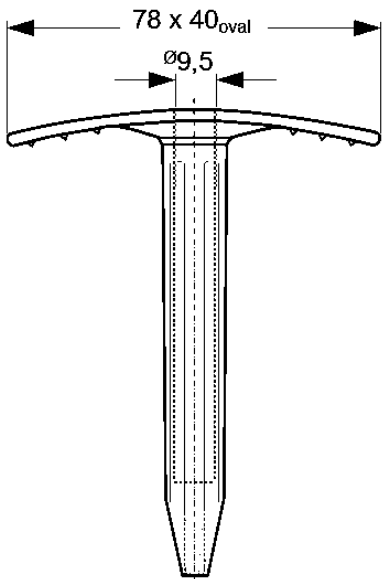
Zahn Flat Roof Fasteners

Combination 56c
ZCTSplus timber
consisting of ZHBK / ZCTSplus pipe 4,8 and ZCTS-plate

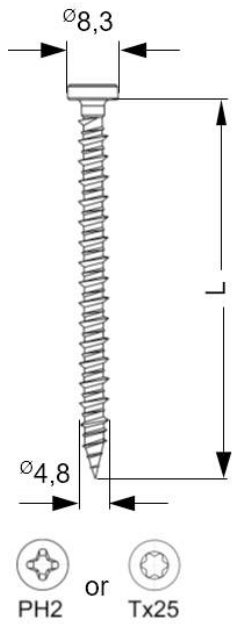
Annex 56c



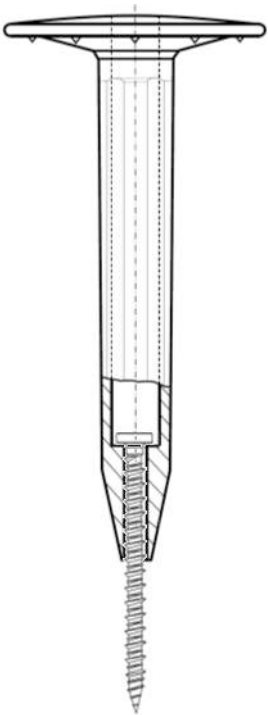
Zahn ZKSH oval



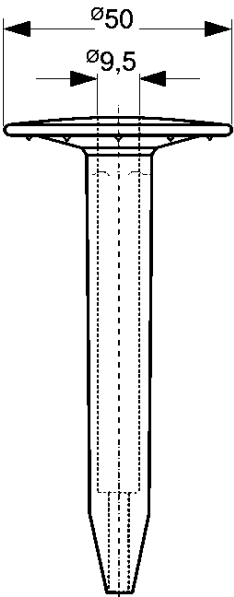
Zahn ZHBK-E 4,8 x L



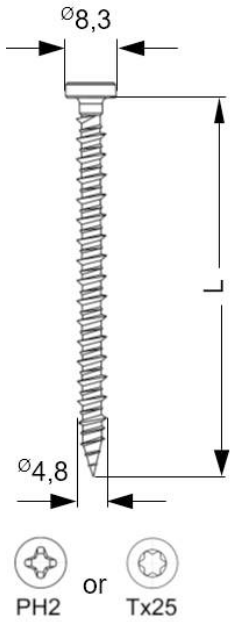
Zahn Flat Roof Fasteners	Annex 57
Combination 57 ZHSK-E consisting of ZHBK-E / ZKSH oval	



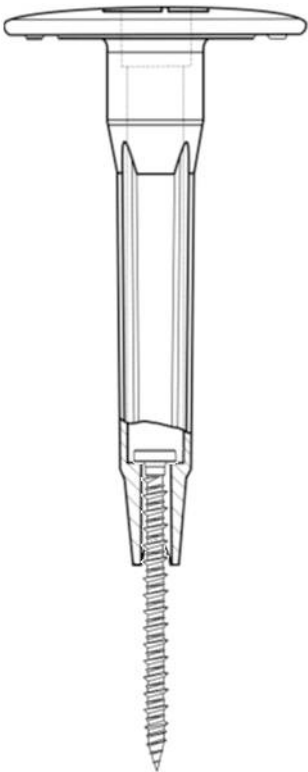
Zahn ZKSH round



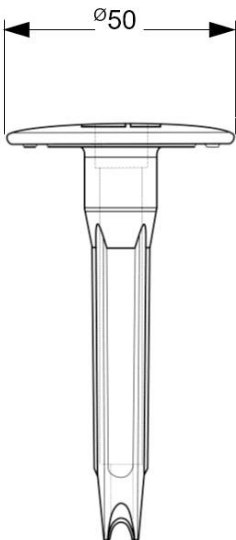
Zahn ZHBK-E 4,8 x L



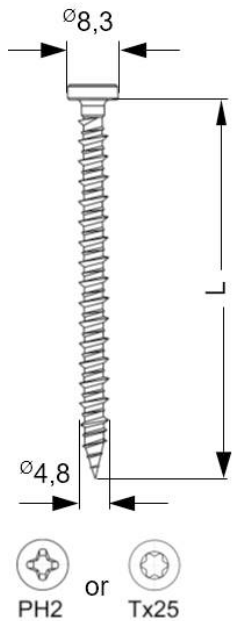
Zahn Flat Roof Fasteners	Annex 58
Combination 58 ZHSK-E/R consisting of ZHBK-E / ZKSH round	



Zahn ZKSH-Rplus with pile tip



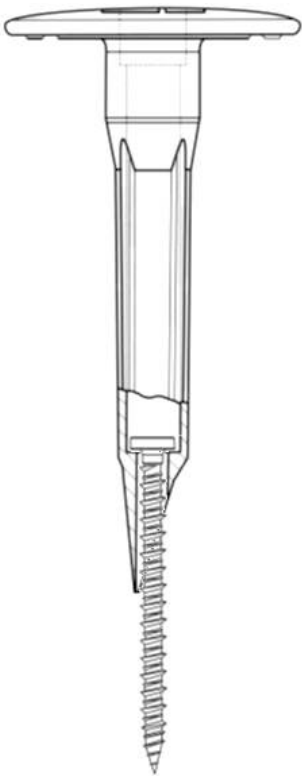
Zahn ZHBK-E 4,8 x L



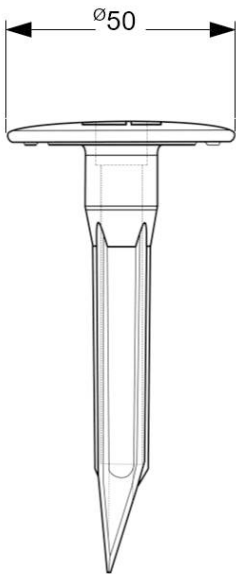
Zahn Flat Roof Fasteners

Combination 59
ZHSK-E/Rplus with pile tip
consisting of ZHBK-E / ZKSH-Rplus with pile tip

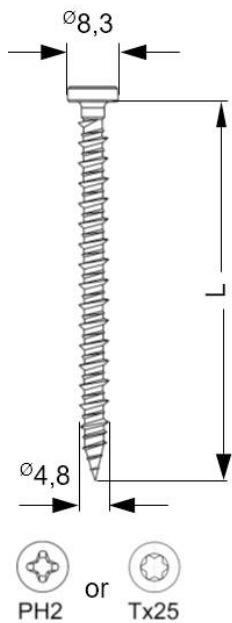
Annex 59



Zahn ZKSH-Rplus



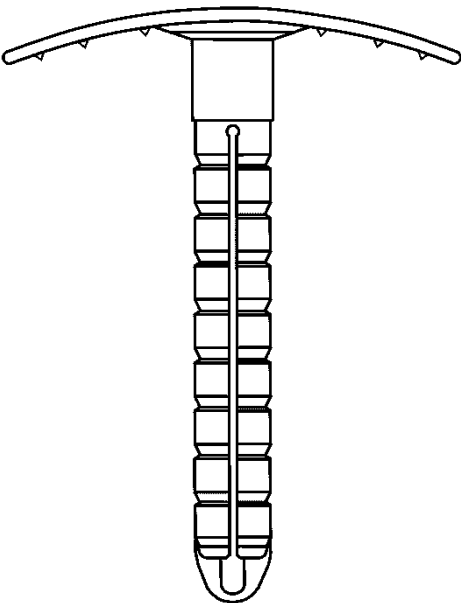
Zahn ZHBK-E 4,8 x L



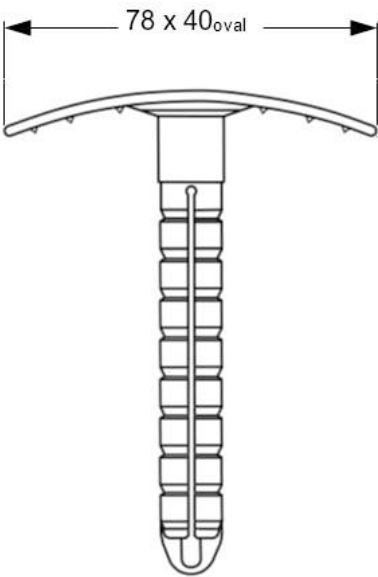
Zahn Flat Roof Fasteners

Combination 60
ZHSK-E/Rplus
consisting of ZHBK-E / ZKSH-Rplus

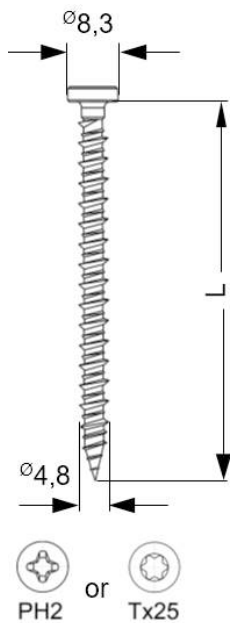
Annex 60



Zahn ZTSD oval



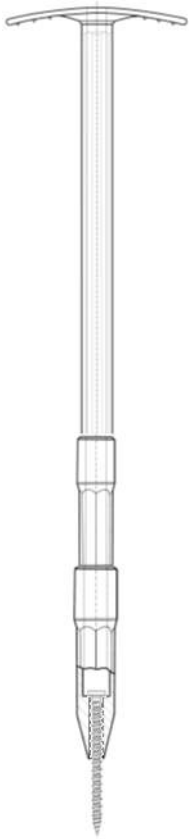
Zahn ZHBK-E 4,8 x L



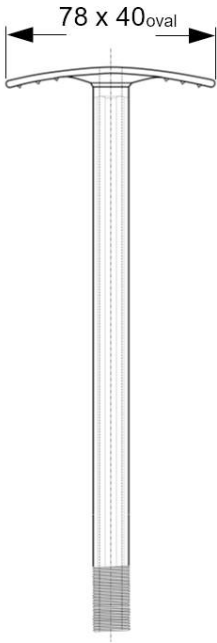
Zahn Flat Roof Fasteners

Combination 60a
ZTSD-E / ZHBK-E
consisting of ZHBK-E / ZTSD oval

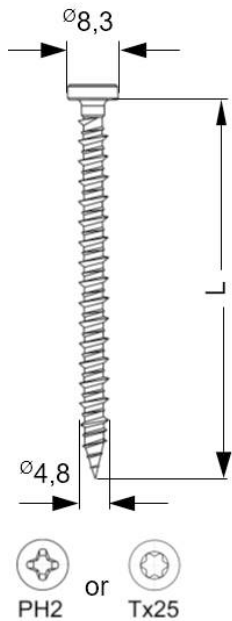
Annex 60a



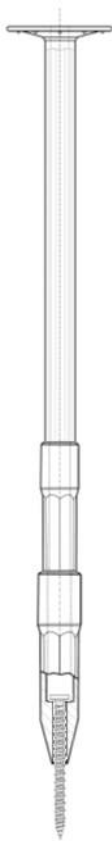
Zahn ZKSH oval module 4,8



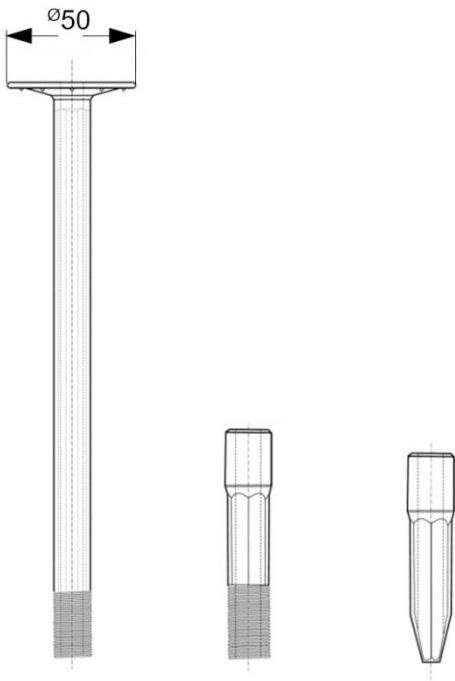
Zahn ZHBK-E 4,8 x L



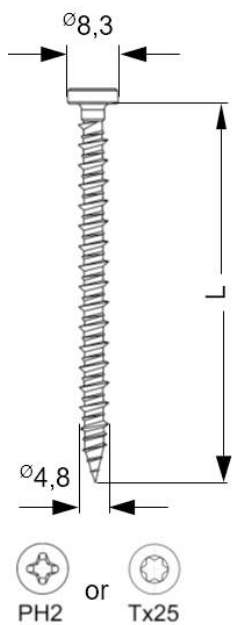
Zahn Flat Roof Fasteners	Annex 61
Combination 61 ZHSK-E-module consisting of ZHBK-E / ZKSH oval module 4,8 with module middle piece and spike 4,8	



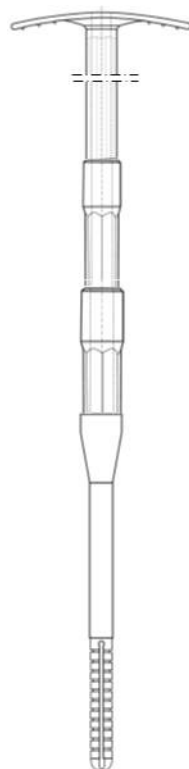
Zahn ZKSH round module 4,8



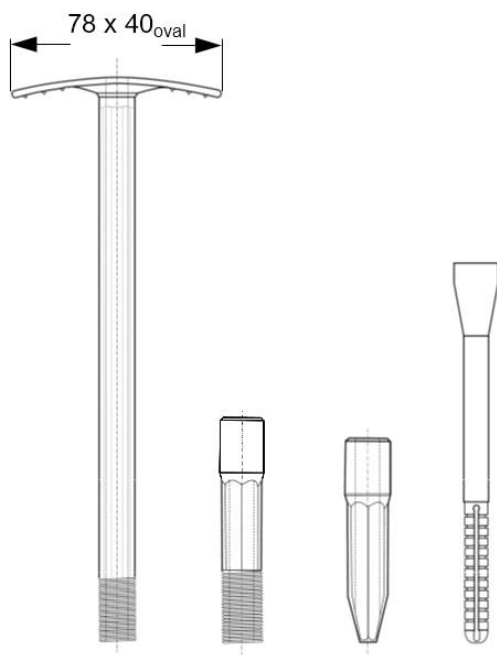
Zahn ZHBK-E 4,8 x L



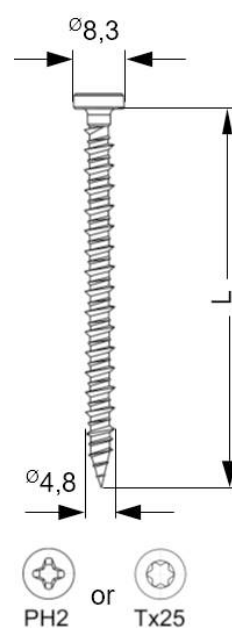
Zahn Flat Roof Fasteners	Annex 62
Combination 62 ZHSK-E/R-module consisting of ZHBK-E/ZKSH round module 4,8 with module middle piece and spike 4,8	



Zahn ZKSH oval module 4,8 with dowel attachment



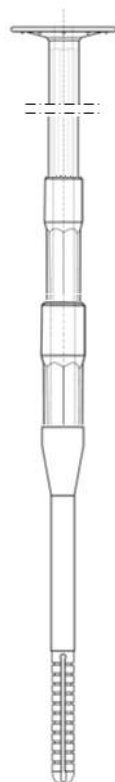
Zahn ZHBK-E 4,8 x L



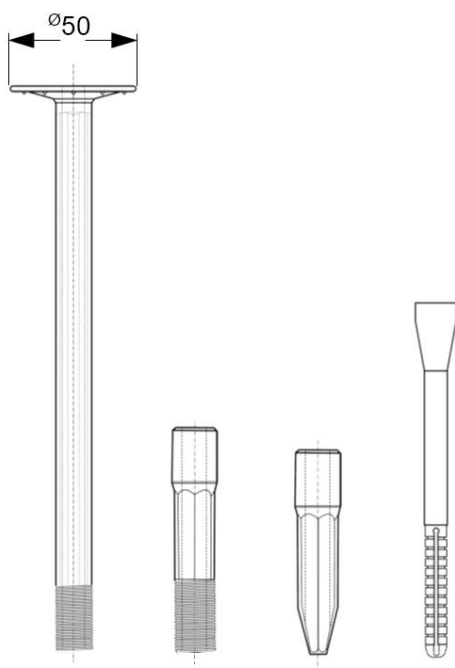
Zahn Flat Roof Fasteners

Combination 63
ZSDK-E-module / ZHBK-E consisting of ZHBK-E / ZKSH oval module 4,8
with module middle piece, spike 4,8 and dowel attachment

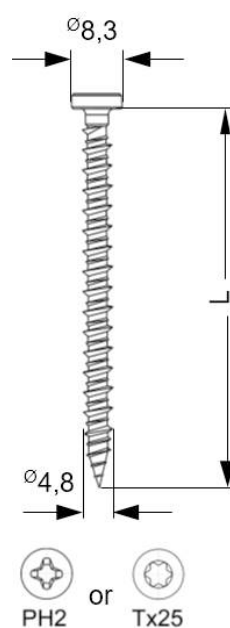
Annex 63



Zahn ZKSH round module 4,8 with dowel attachment



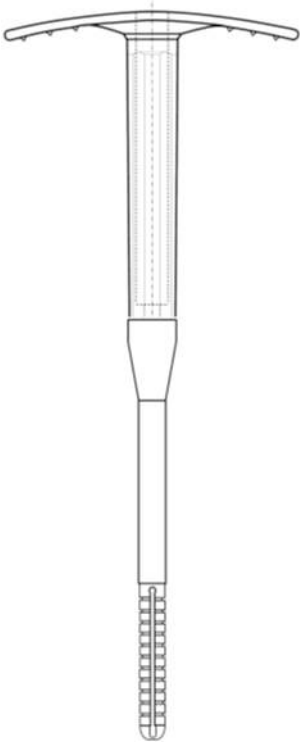
Zahn ZHBK-E 4,8 x L



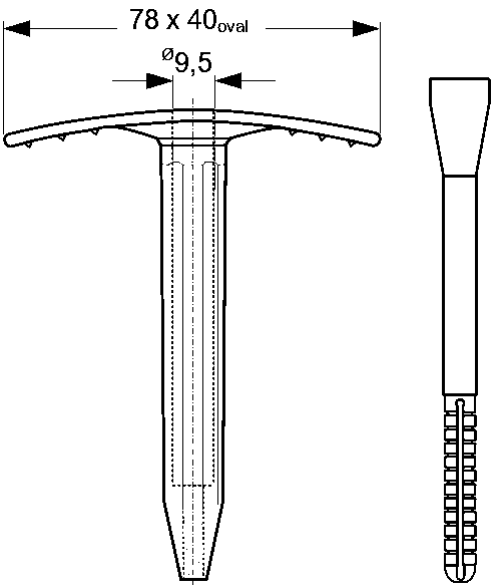
Zahn Flat Roof Fasteners

Combination 64
ZSDK-E/R-module / ZHBK-E consisting of ZHBK-E / ZKSH round module 4,8
with module middle piece, spike 4,8 and dowel attachment

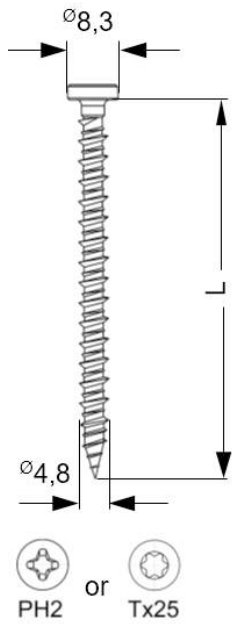
Annex 64



Zahn ZKSH oval with dowel attachment



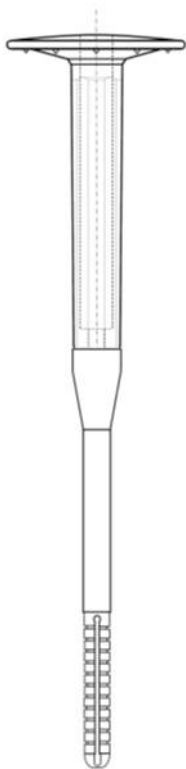
Zahn ZHBK-E 4,8 x L



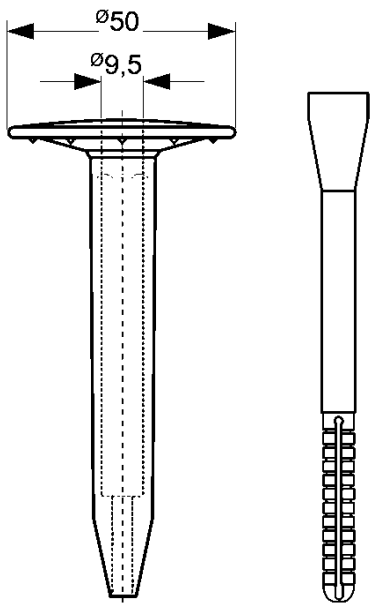
Zahn Flat Roof Fasteners

Annex 65

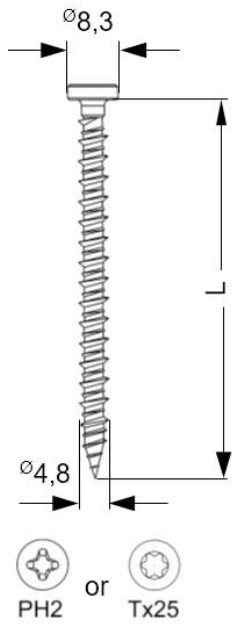
Combination 65
ZSDK-E / ZHBK-E
consisting of ZHBK-E / ZKSH oval with dowel attachment



Zahn ZKSH round with dowel attachment



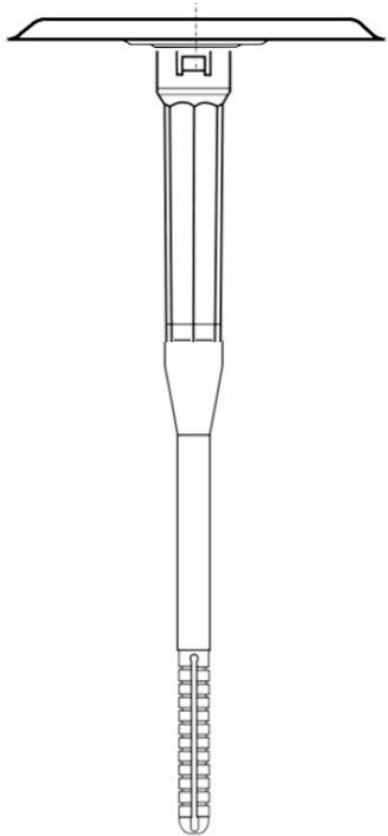
Zahn ZHBK-E 4,8 x L



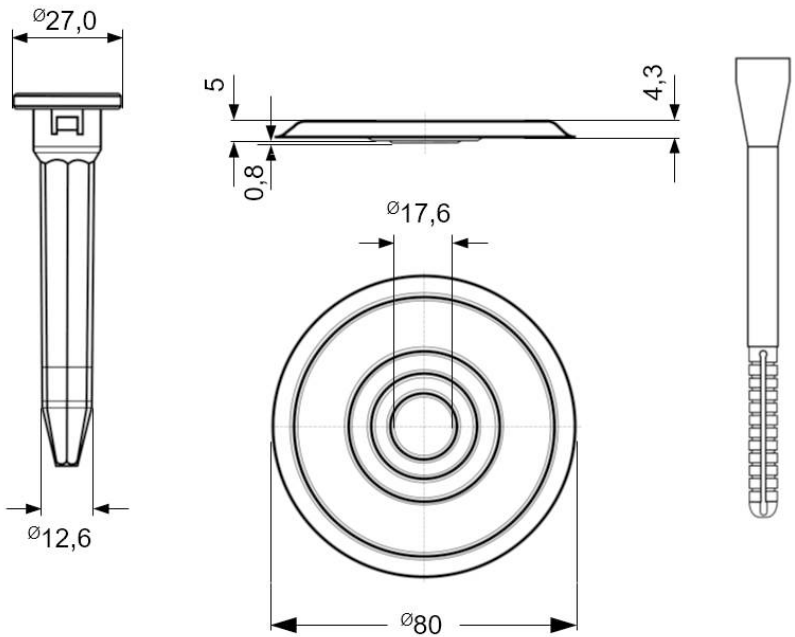
Zahn Flat Roof Fasteners

Annex 66

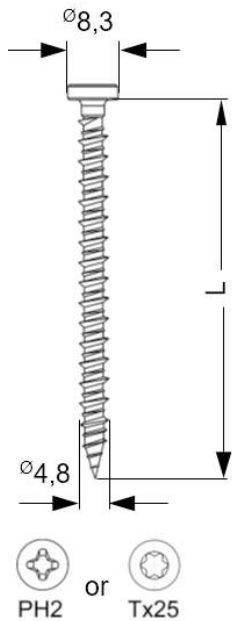
Combination 66
 ZSDK-E/R / ZHBK-E
 consisting of ZHBK-E / ZKSH round with dowel attachment



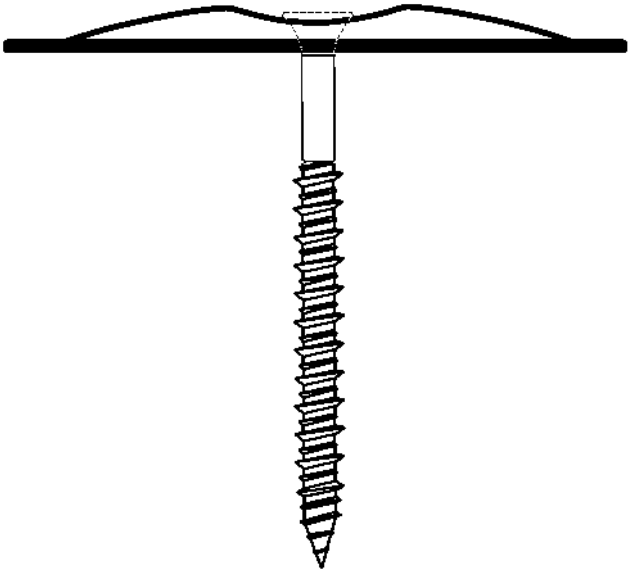
Zahn ZCTS-pipe 4,8 with ZCTS-plate and dowel attachment



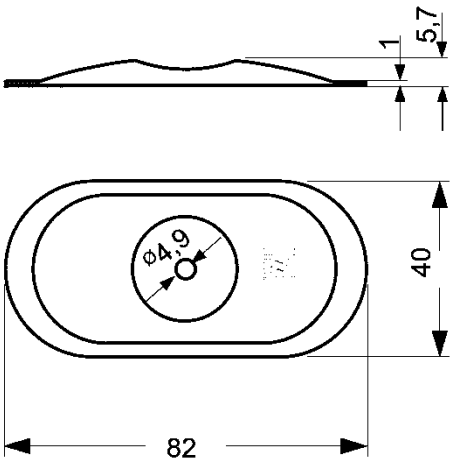
Zahn ZHBK-E 4,8 x L



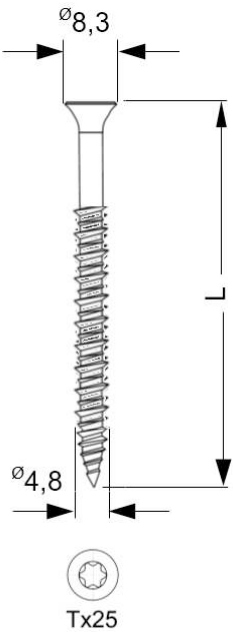
Zahn Flat Roof Fasteners	Annex 66a
Combination 66a ZCTS-E / ZHBK-E concrete consisting of ZHBK-E / ZCTS-pipe 4,8, ZCTS-plate and dowel attachment	



Zahn ZLVT 0005



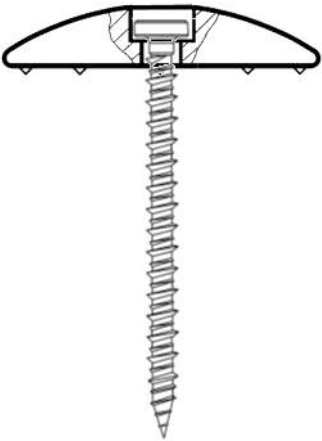
Zahn ZHBK-E_{TK} 4,8 x L



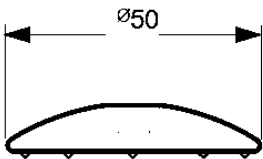
Zahn Flat Roof Fasteners

Combination 66b
ZHBK-E-TK / ZLVT 0005

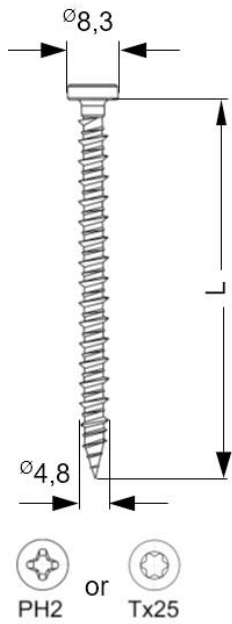
Annex 66b



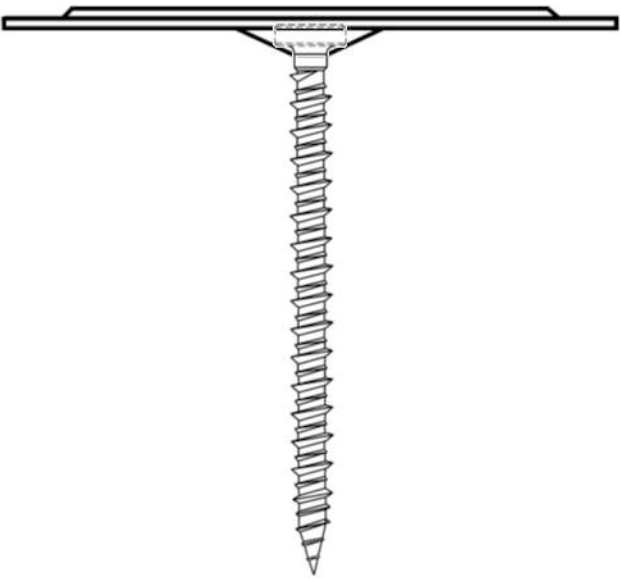
Zahn ZTSK 4,8



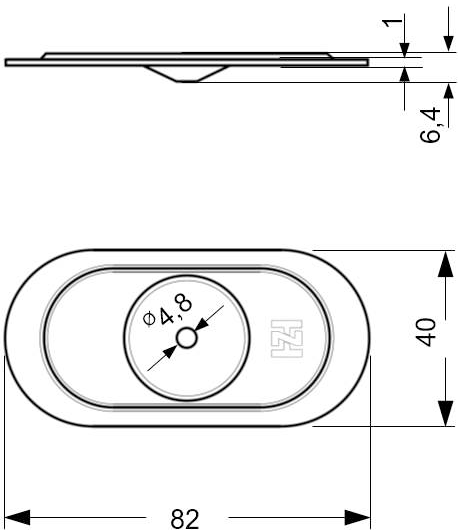
Zahn ZHBK-E 4,8 x L



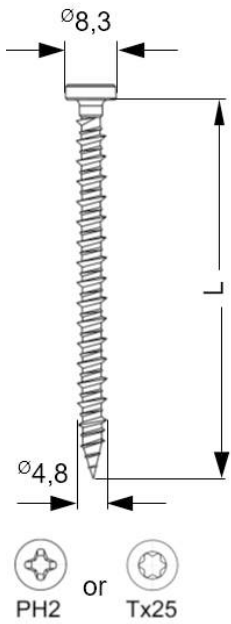
Zahn Flat Roof Fasteners	Annex 67
Combination 67 ZTSK-E-timber consisting of ZHBK-E / ZTSK 4,8	



Zahn ZLVT 0001



Zahn ZHBK-E 4,8 x L



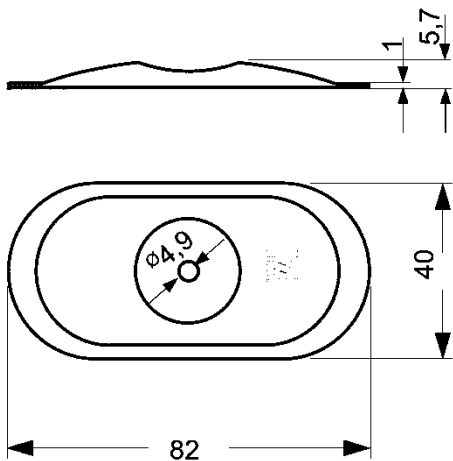
Zahn Flat Roof Fasteners

Combination 68
ZHBK-E / ZLVT 0001

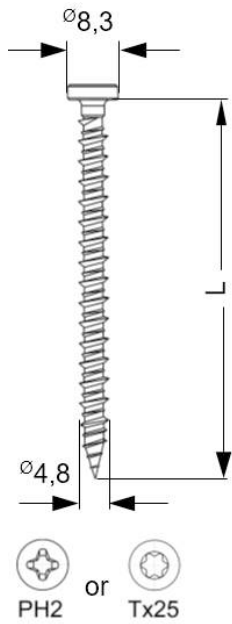
Annex 68



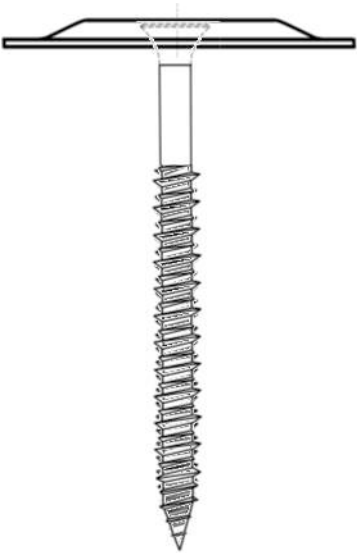
Zahn ZLVT 0005



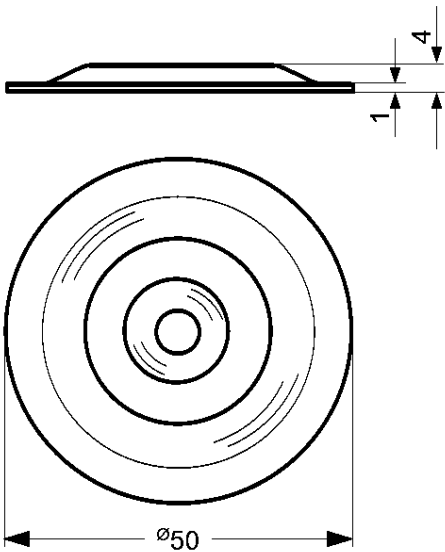
Zahn ZHBK-E 4,8 x L



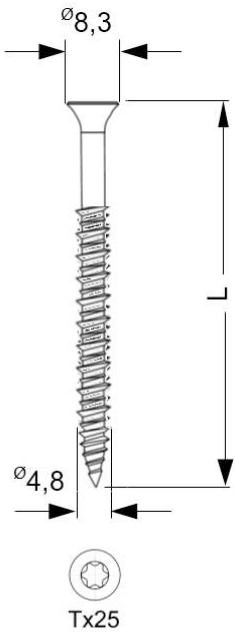
Zahn Flat Roof Fasteners	Annex 69
Combination 69 ZHBK-E / ZLVT 0005	



Zahn ZLVT 0015



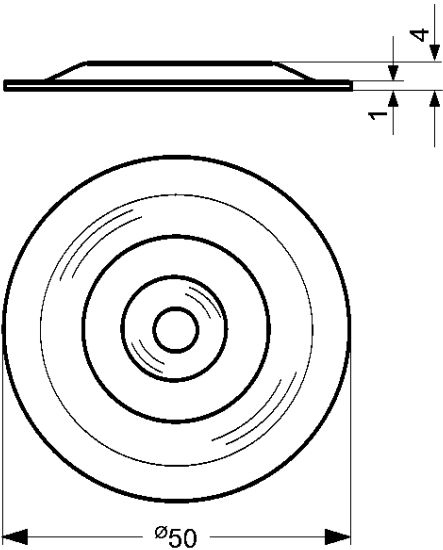
Zahn ZHBK-E_{TK} 4,8 x L



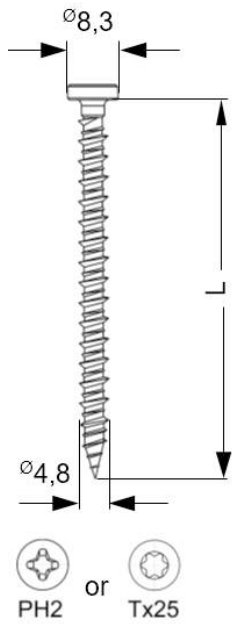
Zahn Flat Roof Fasteners	Annex 69a
Combination 69a ZHBK-E-TK / ZLVT 0015	



Zahn ZLVT 0015



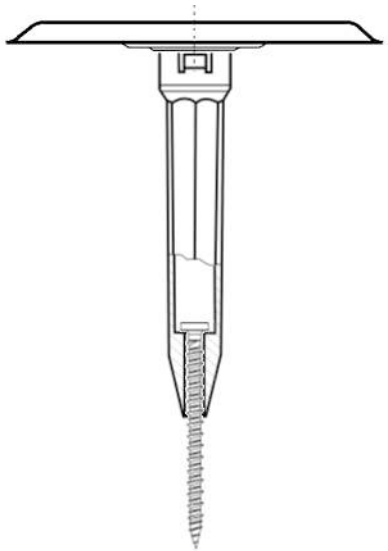
Zahn ZHBK-E 4,8 x L



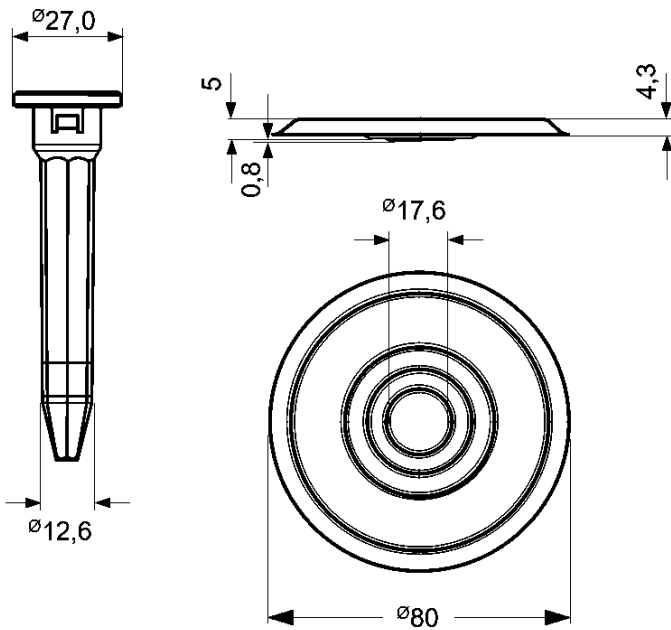
Zahn Flat Roof Fasteners

Combination 70
ZHBK-E / ZLVT 0015

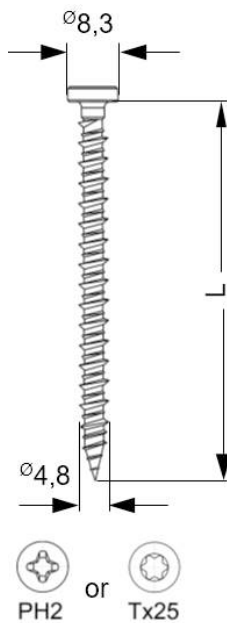
Annex 70



Zahn ZCTS-pipe 4,8 and ZCTS-plate



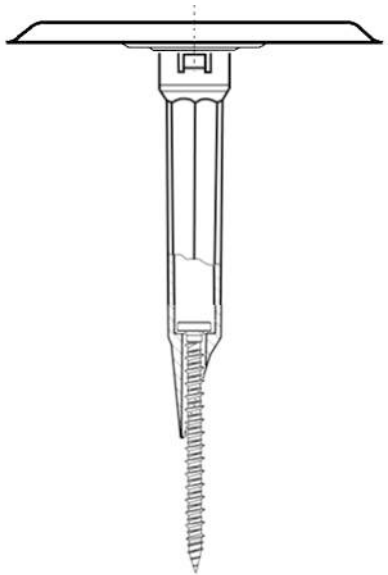
Zahn ZHBK-E 4,8 x L



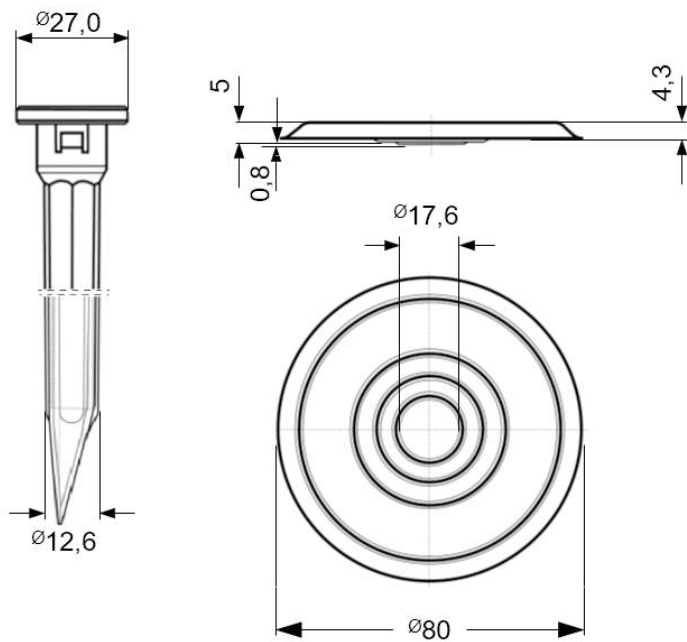
Zahn Flat Roof Fasteners

Annex 70a

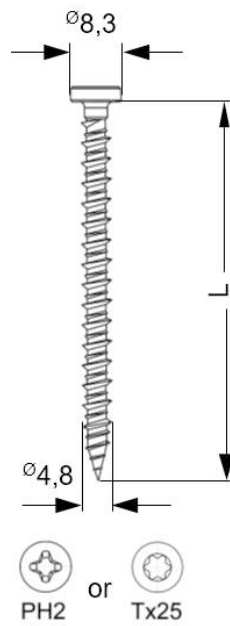
Combination 70a
ZCTS-E timber
consisting of ZHBK-E / ZCTS-pipe 4,8 and ZCTS-plate



Zahn ZCTSplus-pipe 4,8 and ZCTS-plate



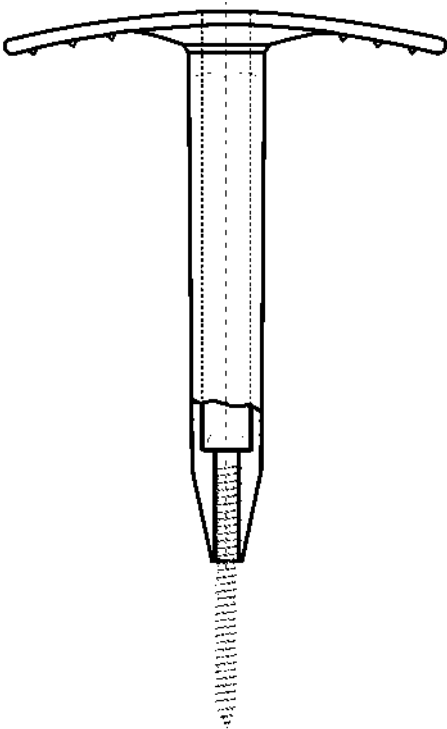
Zahn ZHBK-E 4,8 x L



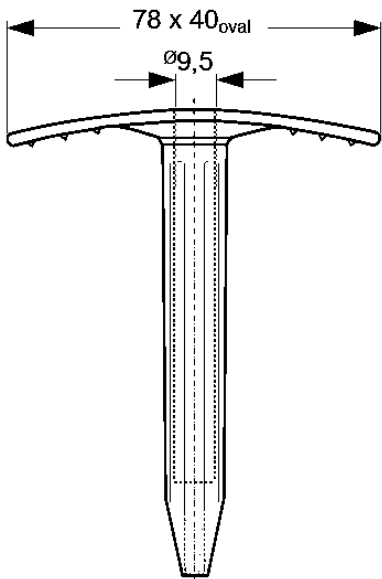
Zahn Flat Roof Fasteners

Annex 70b

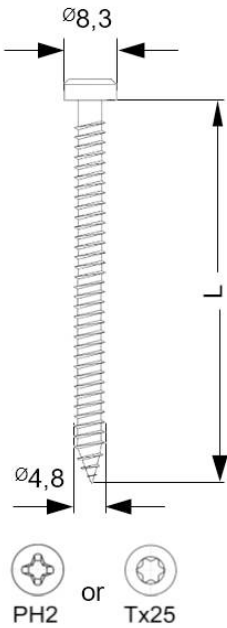
Combination 70b
ZCTS-Eplus timber
consisting of ZHBK-E / ZCTSplus-pipe 4,8 and ZCTS-plate



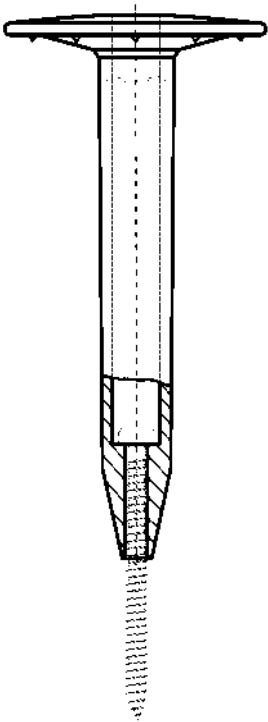
Zahn ZKSH oval



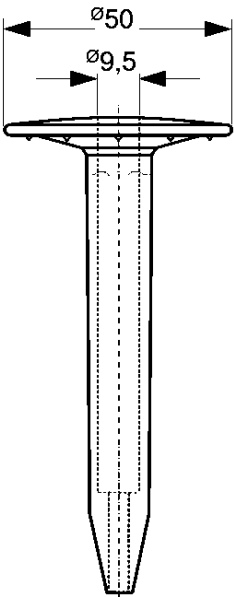
Zahn ZDBK_{dowel} 4,8 x L



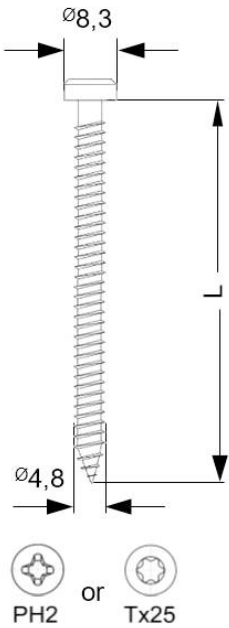
Zahn Flat Roof Fasteners	Annex 71
Combination 71 ZKSK / ZDBK-dowel consisting of ZDBK _{dowel} / ZKSH oval	



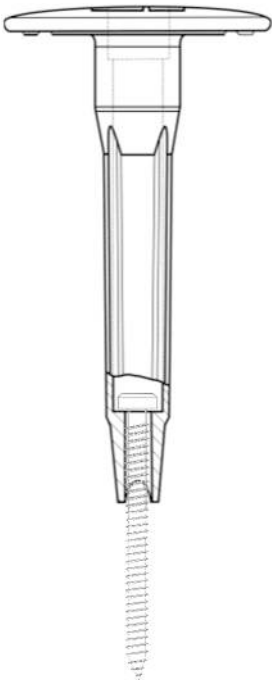
Zahn ZKSH round



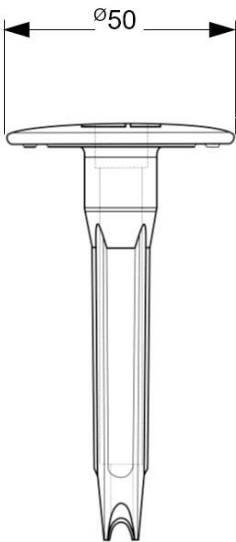
Zahn ZDBK_{dowel} 4,8 x L



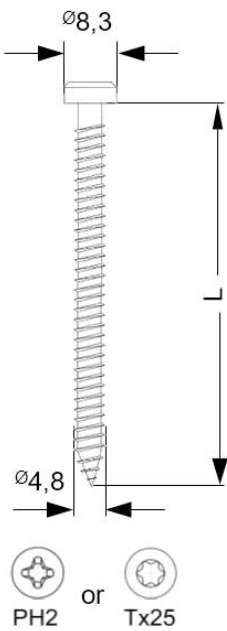
Zahn Flat Roof Fasteners	Annex 72
Combination 72 ZKSK-R / ZDBK-dowel consisting of ZDBK _{dowel} / ZKSH round	



Zahn ZKSH-Rplus with pile tip



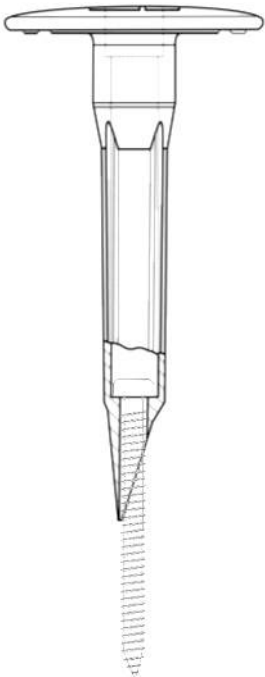
Zahn ZDBK_{dowel} 4,8 x L



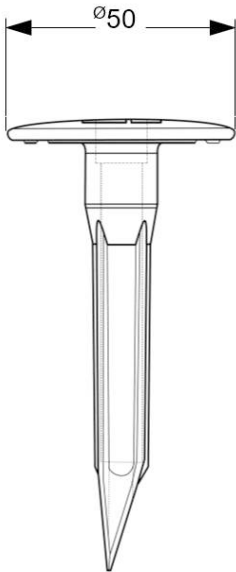
Zahn Flat Roof Fasteners

Combination 73
ZKSK-Rplus / ZDBK-dowel with pile tip
consisting of ZDBK_{dowel} / ZKSH-Rplus with pile tip

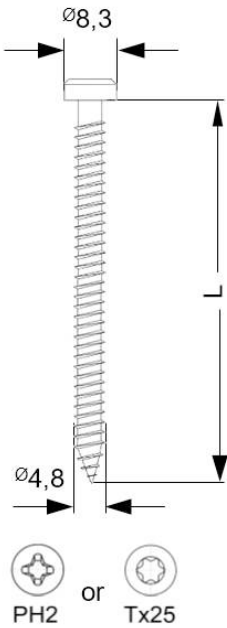
Annex 73



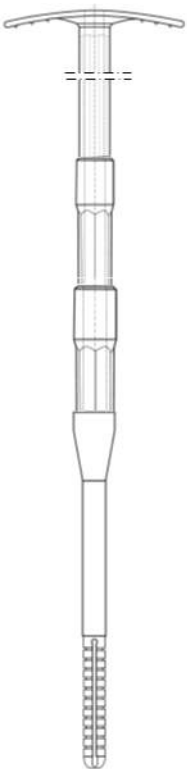
Zahn ZKSH-Rplus



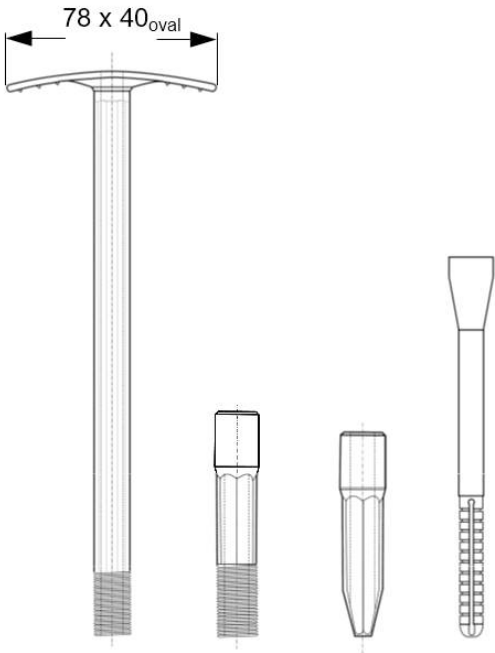
Zahn ZDBK_{dowel} 4,8 x L



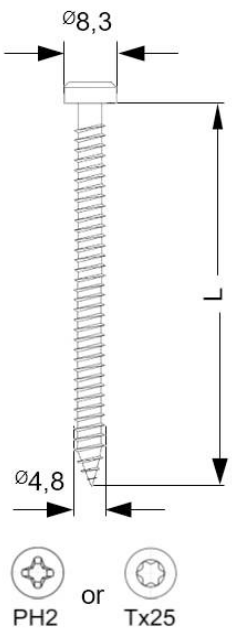
Zahn Flat Roof Fasteners	Annex 74
Combination 74 ZKSK-Rplus / ZDBK-dowel consisting of ZDBK _{dowel} / ZKSH-Rplus	



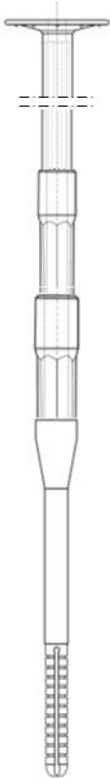
Zahn ZKSH oval module 4,8 with dowel attachment



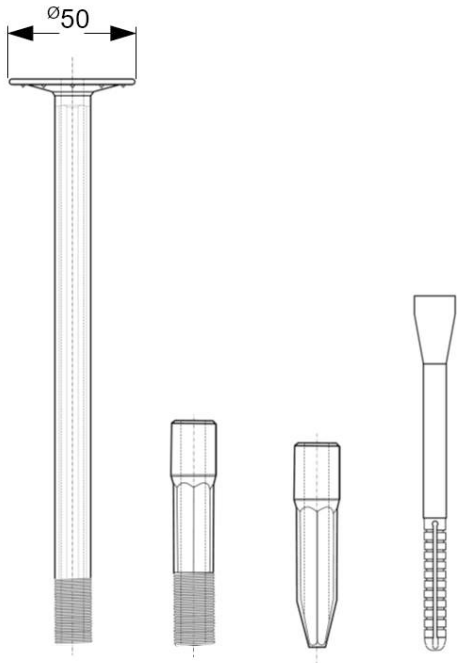
Zahn ZDBK_{dowel} 4,8 x L



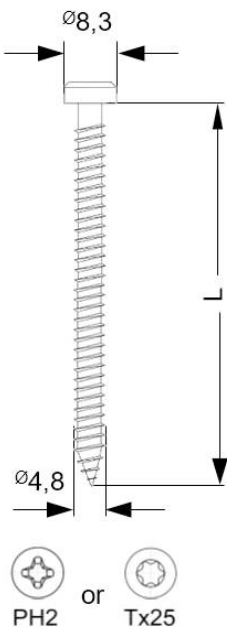
Zahn Flat Roof Fasteners	Annex 75
Combination 75 ZSDK-module / ZDBK-dowel consisting of ZDBK _{dowel} / ZKSH oval module 4,8 with module middle piece, spike 4,8 and dowel attachment	



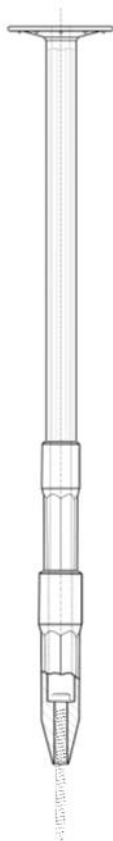
Zahn ZKSH round module 4,8 with dowel attachment



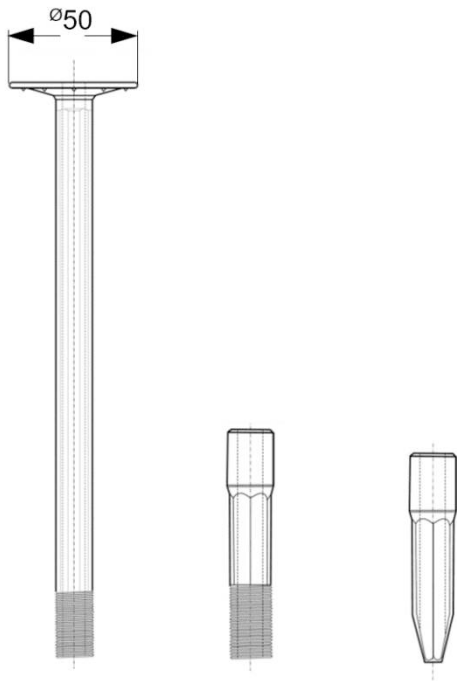
Zahn ZDBK_{dowel} 4,8 x L



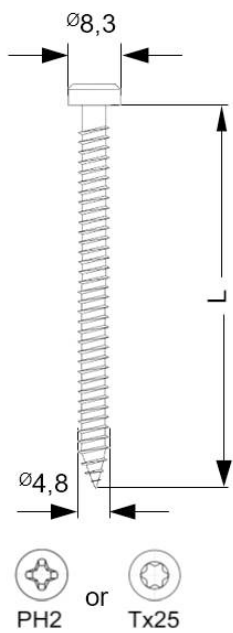
Zahn Flat Roof Fasteners	Annex 76
Combination 76 ZSDK-R-module / ZDBK-dowel consisting of ZDBK _{dowel} / ZKSH round module 4,8 with module middle piece, spike 4,8 and dowel attachment	



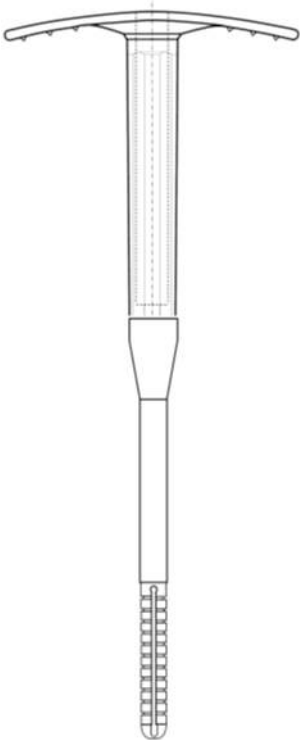
Zahn ZKSH round module 4,8



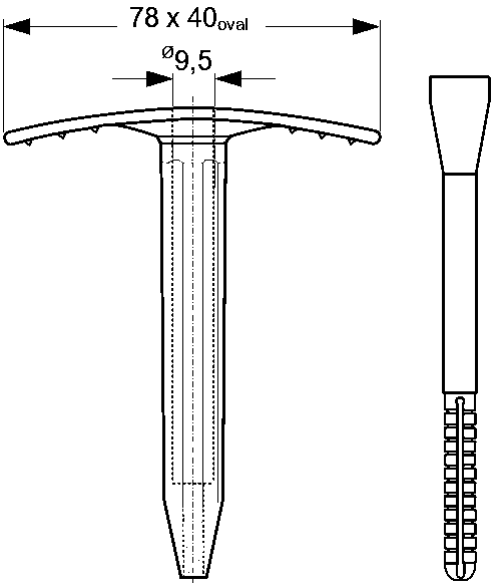
Zahn ZDBK_{dowel} 4,8 x L



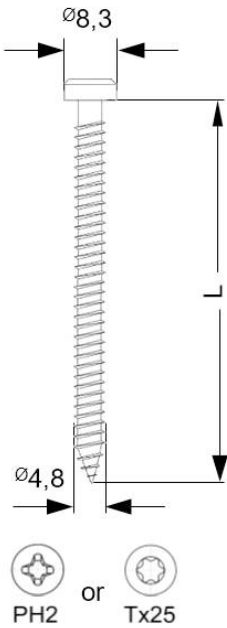
Zahn Flat Roof Fasteners	Annex 76a
Combination 76a ZHSK-R-module / ZDBK-dowel consisting of ZDBK _{dowel} / ZKSH round module 4,8 with module middle piece and spike 4,8	



Zahn ZKSH oval with dowel attachment



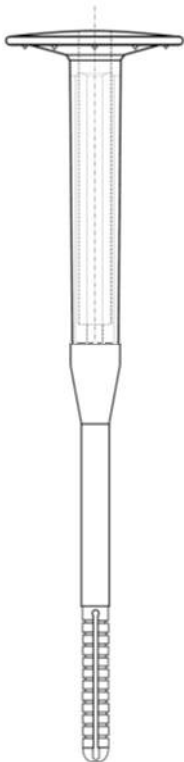
Zahn ZDBK_{dowel} 4,8 x L



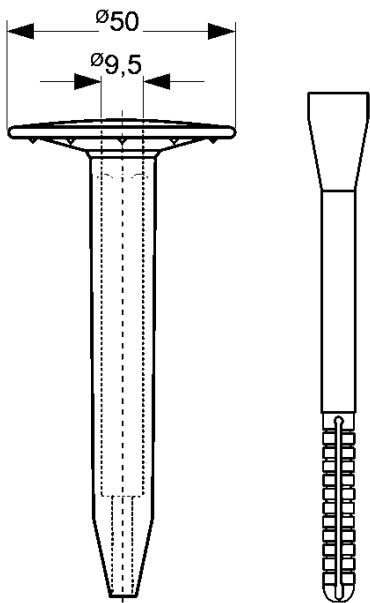
Zahn Flat Roof Fasteners

Combination 77
ZSDK / ZDBK-dowel
consisting of ZDBK_{dowel} / ZKSH oval with dowel attachment

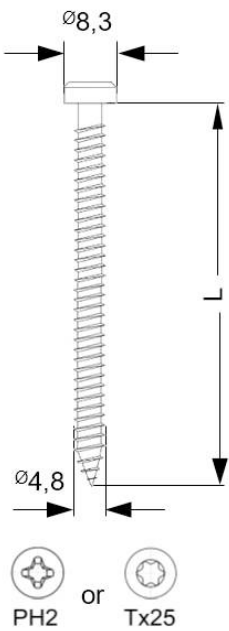
Annex 77



Zahn ZKSH round with dowel attachment



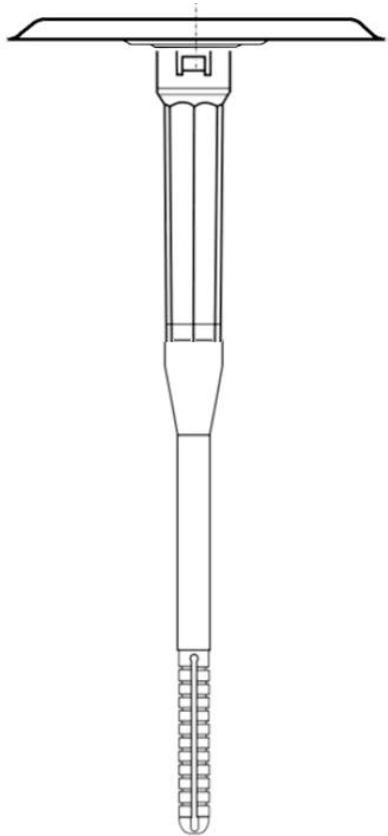
Zahn ZDBK_{dowel} 4,8 x L



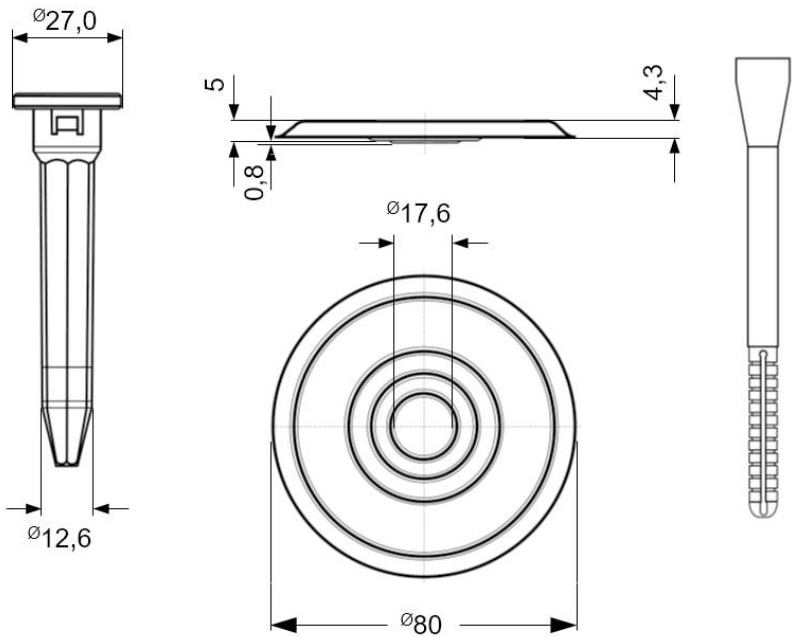
Zahn Flat Roof Fasteners

Combination 78
ZSDK-R / ZDBK-dowel
consisting of ZDBK_{dowel} / ZKSH round with dowel attachment

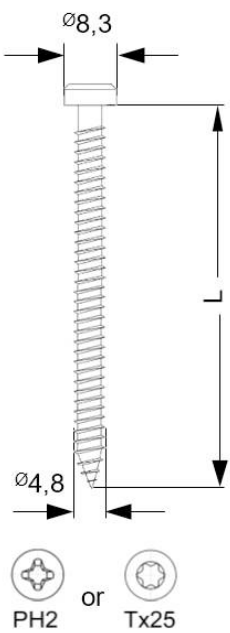
Annex 78



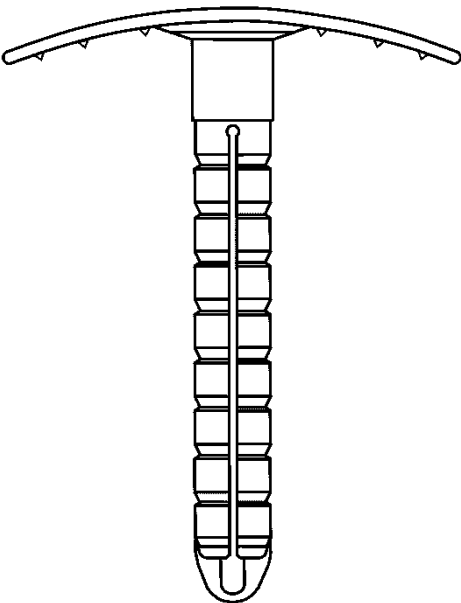
Zahn ZCTS-pipe 4,8 with ZCTS-plate and dowel attachment



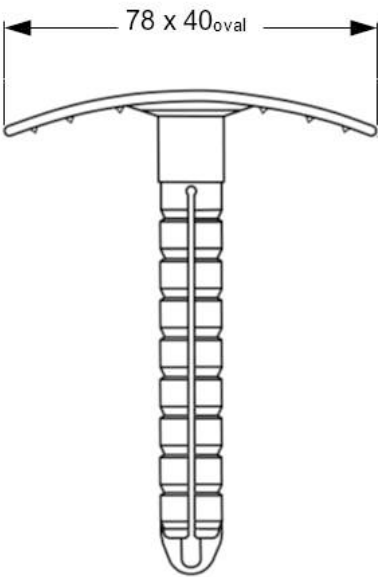
Zahn ZDBK_{dowel} 4,8 x L



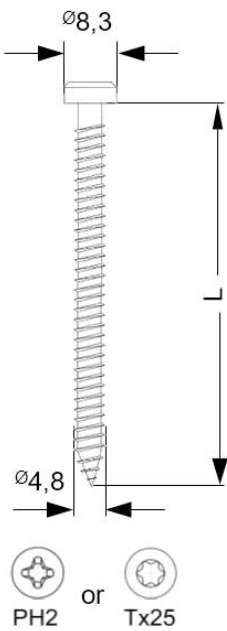
Zahn Flat Roof Fasteners	Annex 78a
Combination 78a ZCTS / ZDBK-dowel-concrete consisting of ZDBK _{dowel} / ZCTS-pipe 4,8, ZCTS-plate and dowel attachment	



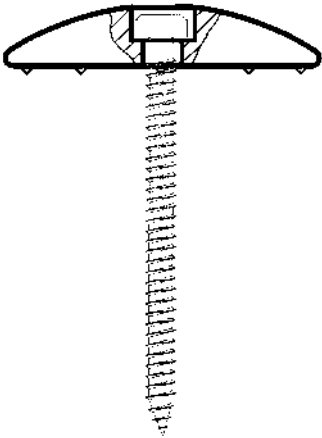
Zahn ZTSD oval



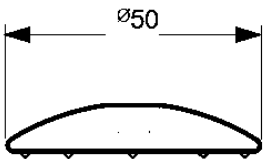
Zahn ZDBK_{dowel} 4,8 x L



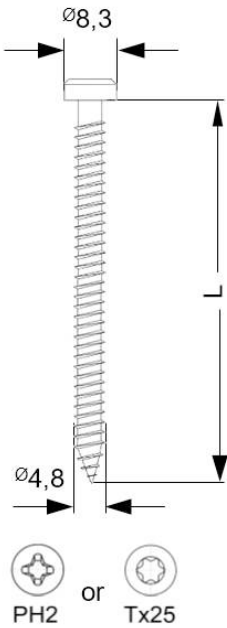
Zahn Flat Roof Fasteners	Annex 79
Combination 79 ZTSD / ZDBK-dowel consisting of ZDBK _{dowel} / ZTSD oval	



Zahn ZTSK 4,8



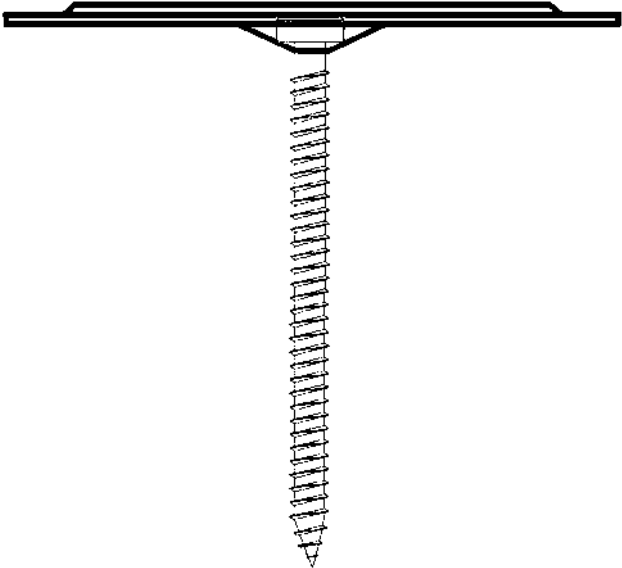
Zahn ZDBK_{dowel} 4,8 x L



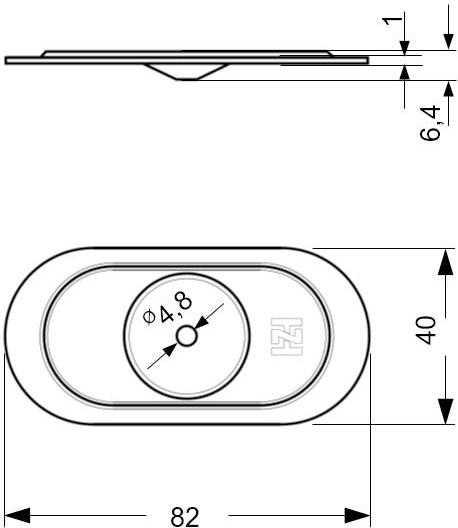
Zahn Flat Roof Fasteners

Combination 80
ZTSK / ZDBK-dowel
consisting of ZDBK_{dowel} / ZTSK 4,8

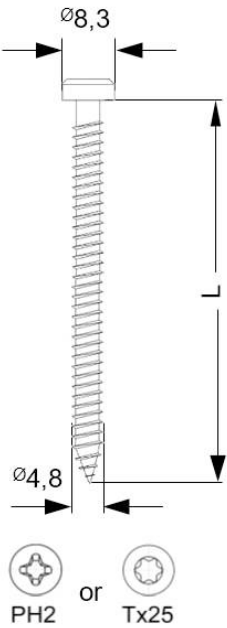
Annex 80



Zahn ZLVT 0001



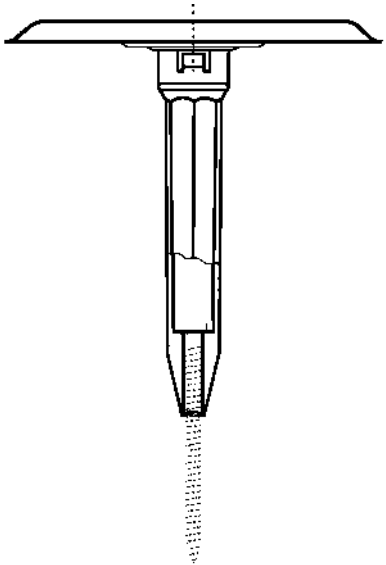
Zahn ZDBK_{dowel} 4,8 x L



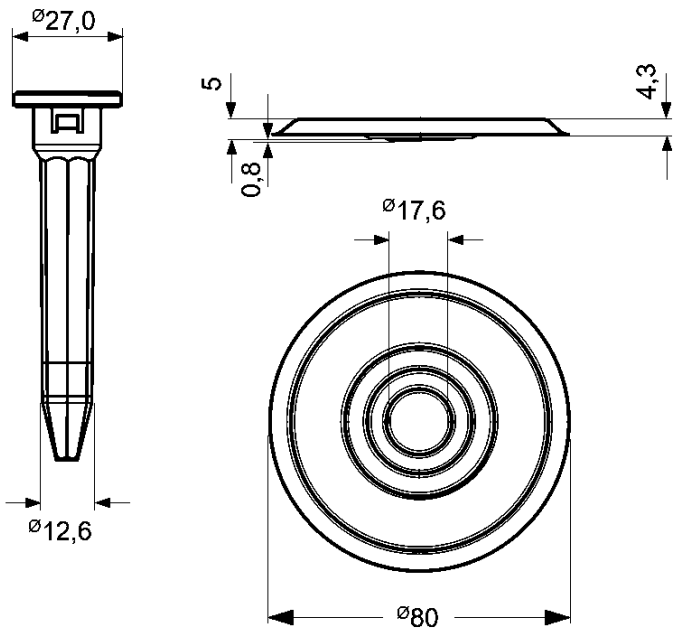
Zahn Flat Roof Fasteners

Combination 81
ZDBK-dowel / ZLVT 0001

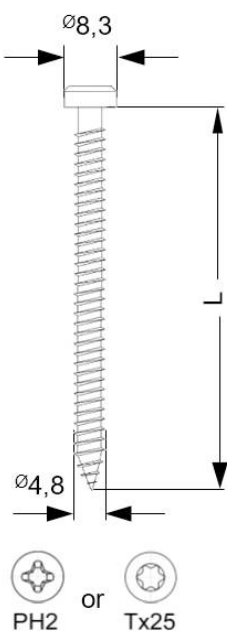
Annex 81



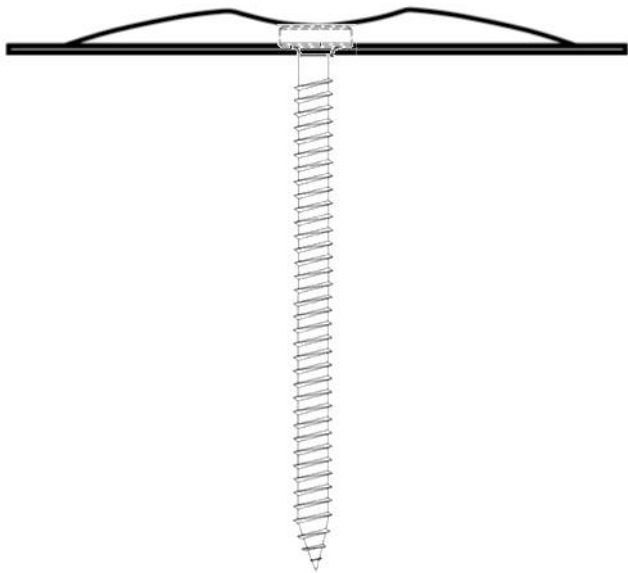
Zahn ZCTS-pipe 4,8 and ZCTS-plate



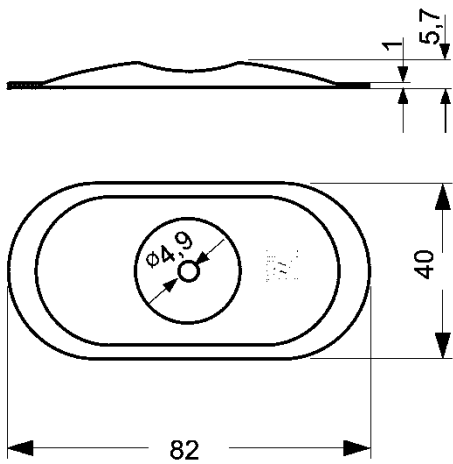
Zahn ZDBK_{dowel} 4,8 x L



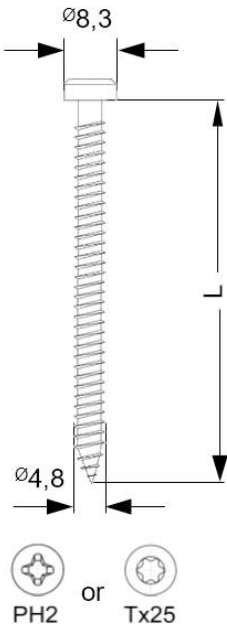
Zahn Flat Roof Fasteners	Annex 81a
Combination 81a ZCTS / ZDBK-dowel consisting of ZDBK _{dowel} / ZCTS-pipe 4,8 and ZCTS-plate	



Zahn ZLVT 0005



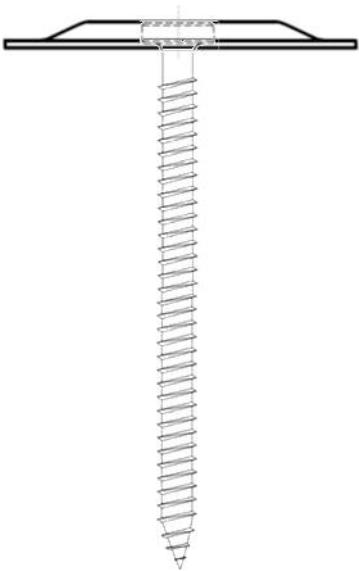
Zahn ZDBK_{dowel} 4,8 x L



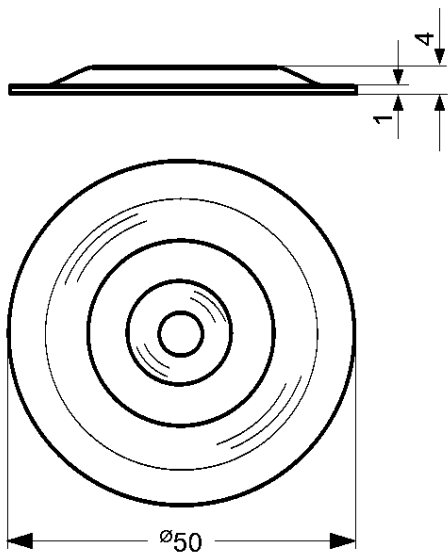
Zahn Flat Roof Fasteners

Combination 81b
ZDBK-dowel / ZLVT 0005

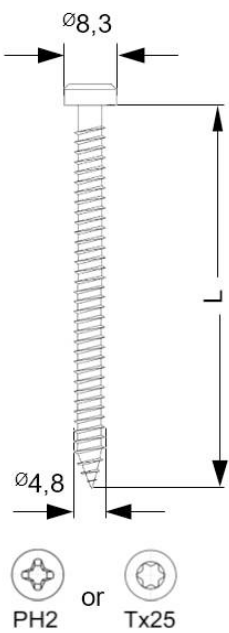
Annex 81b



Zahn ZLVT 0015



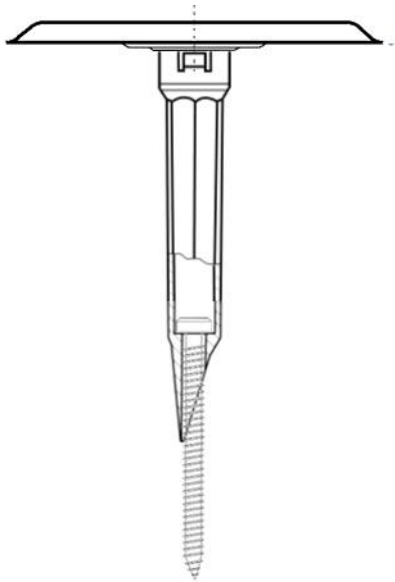
Zahn ZDBK_{dowel} 4,8 x L



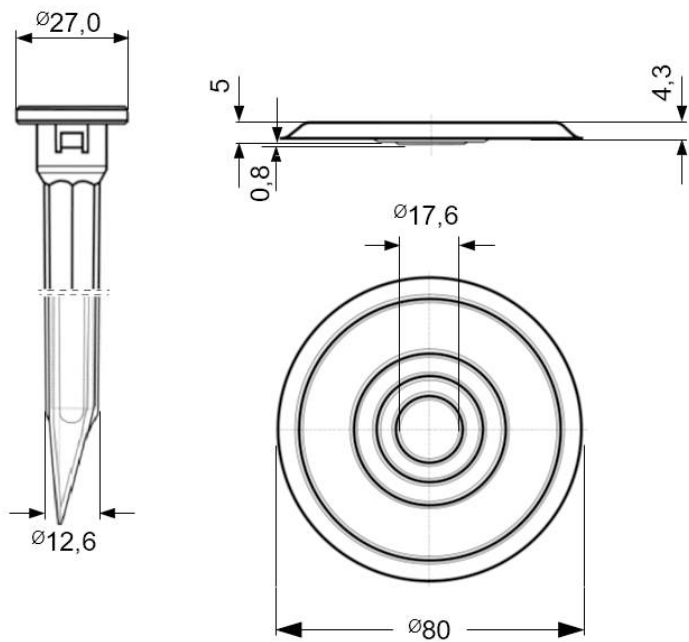
Zahn Flat Roof Fasteners

Combination 81c
ZDBK-dowel / ZLVT 0015

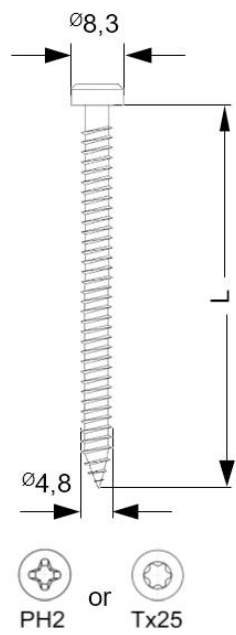
Annex 81c



Zahn ZCTSplus-pipe 4,8 and ZCTS-plate



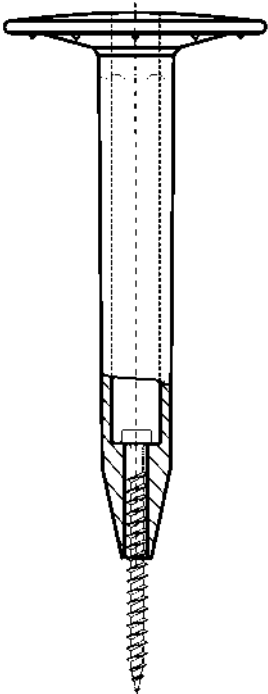
Zahn ZDBK_{dowel} 4,8 x L



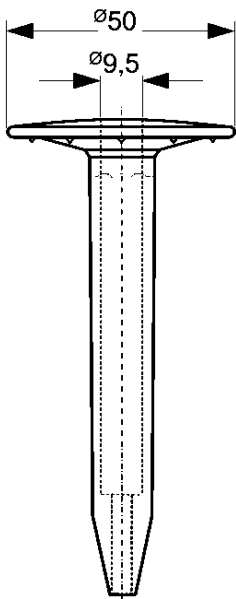
Zahn Flat Roof Fasteners

Combination 81d
ZCTSplus / ZDBK-dowel
consisting of ZDBK_{dowel} / ZCTSplus pipe 4,8 and ZCTS-plate

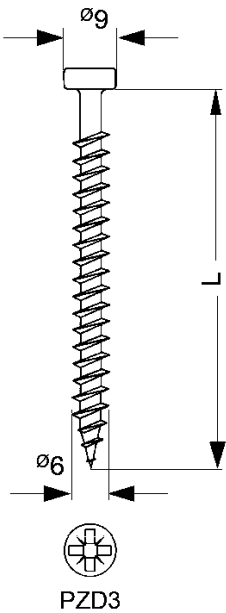
Annex 81d



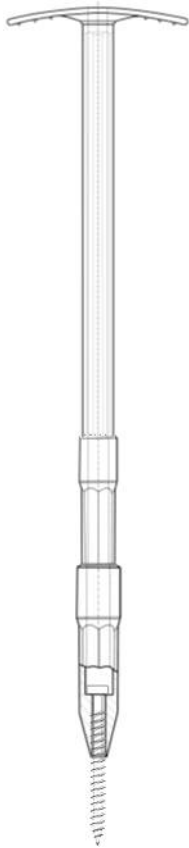
Zahn ZKSH gray / round



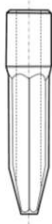
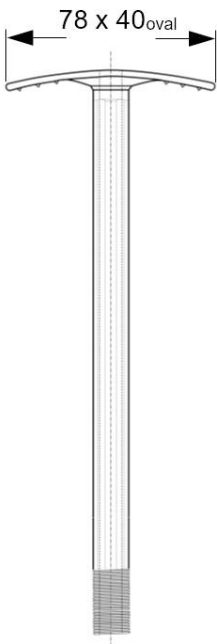
Zahn ZGBK-E 6,0 x L



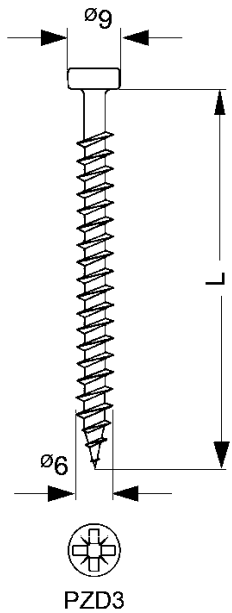
Zahn Flat Roof Fasteners	Annex 82
Combination 82 ZKGK-E/R consisting of ZGBK-E / ZKSH gray / round	



Zahn ZKSH oval module 6,0



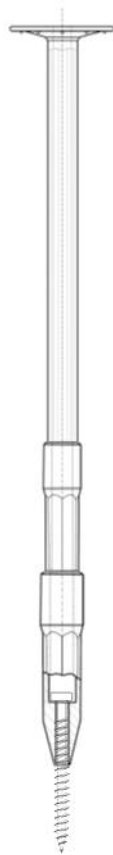
Zahn ZGBK-E 6,0 x L



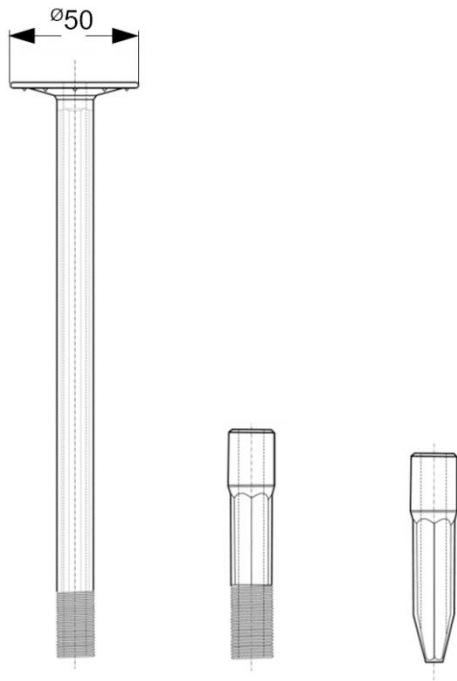
Zahn Flat Roof Fasteners

Combination 83
ZKGK-E-module
consisting of ZGBK-E / ZKSH oval module 6,0 with module middle piece and spike 6,0

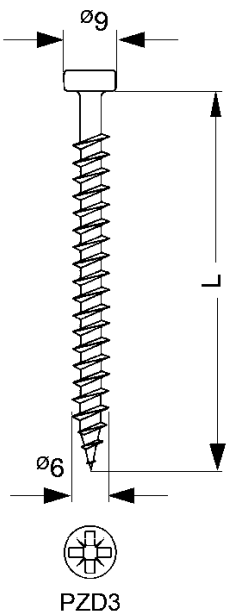
Annex 83



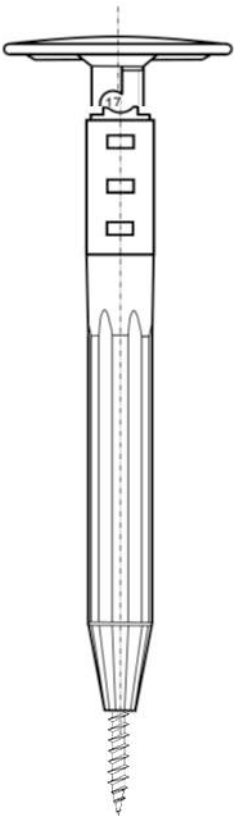
Zahn ZKSH round module 6,0



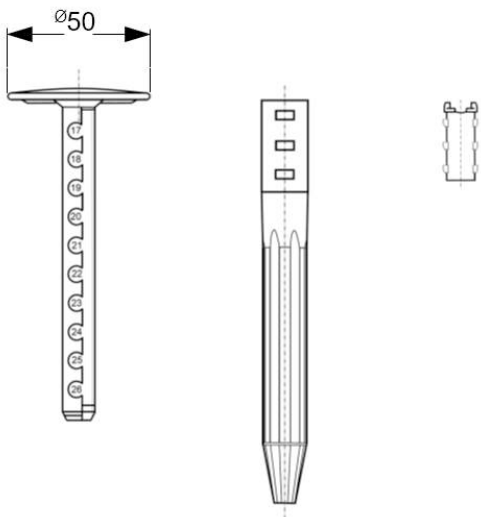
Zahn ZGBK-E 6,0 x L



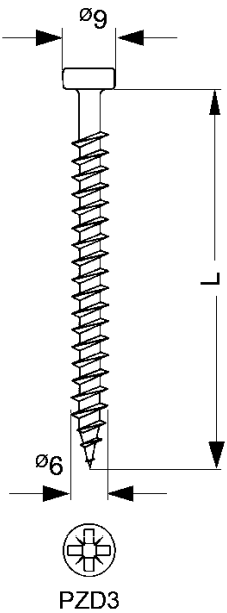
Zahn Flat Roof Fasteners	Annex 84
Combination 84 ZKGK-E/R-module consisting of ZGBK-E / ZKSH round module 6,0 with module middle piece and spike 6,0	



Zahn ZHVM



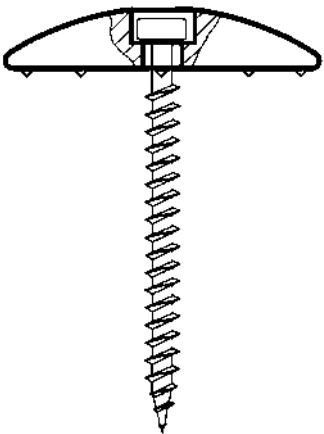
Zahn ZGBK-E 6,0 x L



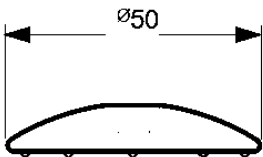
Zahn Flat Roof Fasteners

Annex 85

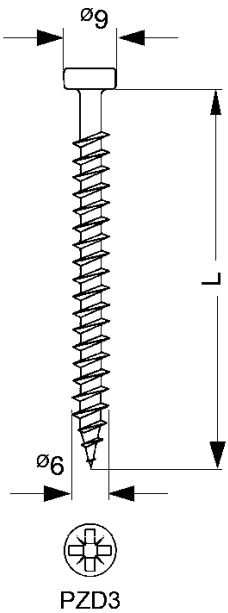
Combination 85
ZHVM-E PB-direct
consisting of ZGBK-E / ZHVM with headboard, shaft and locking sleeve



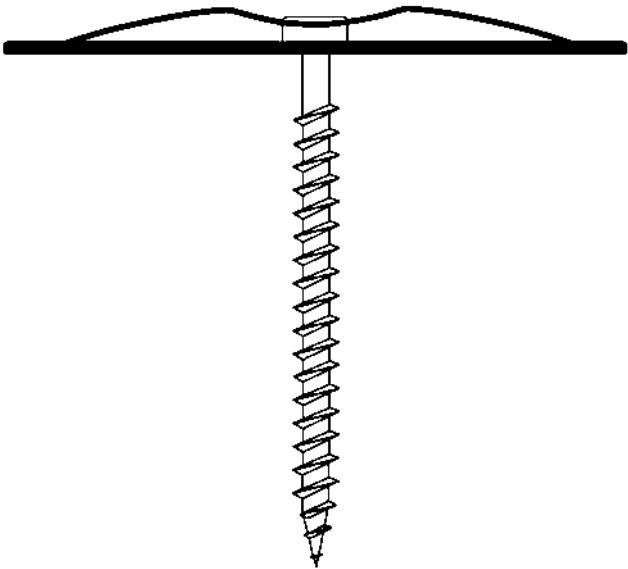
Zahn ZTSK 6,0



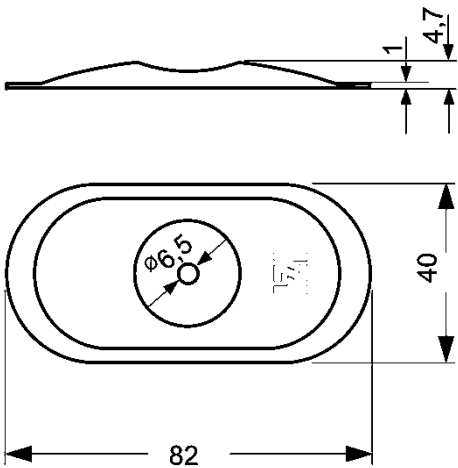
Zahn ZGBK-E 6,0 x L



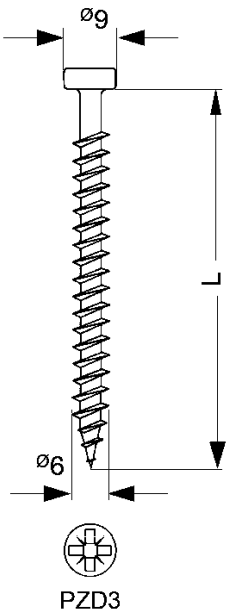
Zahn Flat Roof Fasteners	Annex 86
Combination 86 ZTSK-E PB-direct consisting of ZGBK-E / ZTSK 6,0	



Zahn ZLVT 0008



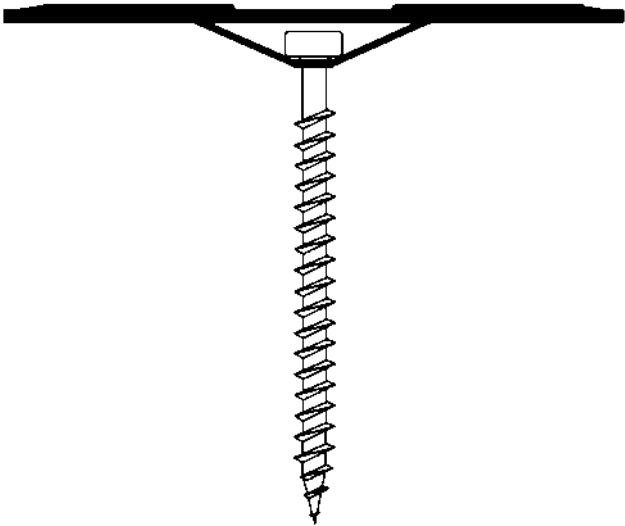
Zahn ZGBK-E 6,0 x L



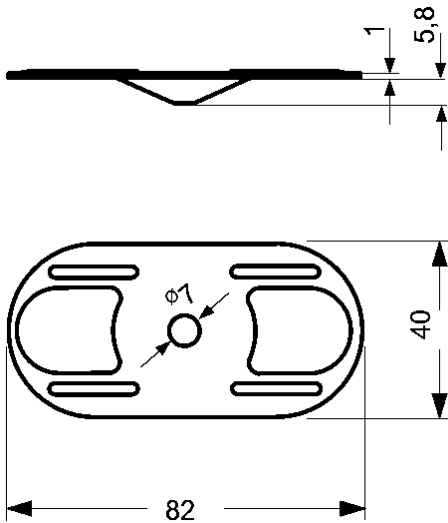
Zahn Flat Roof Fasteners

Combination 87
ZGBK-E / ZLVT 0008

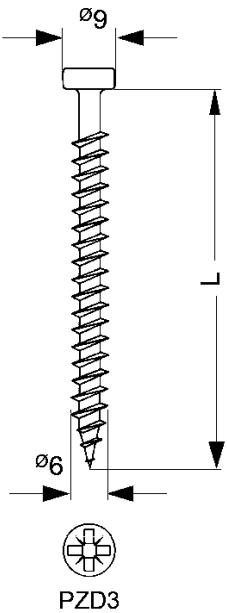
Annex 87



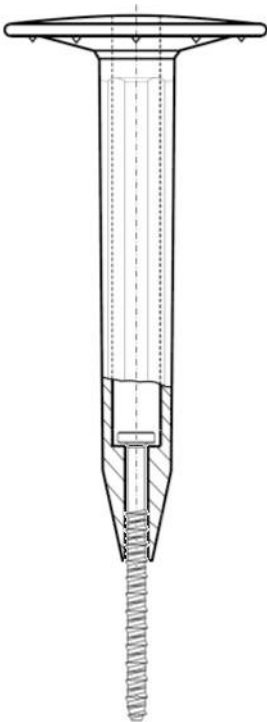
Zahn ZLVT 0012



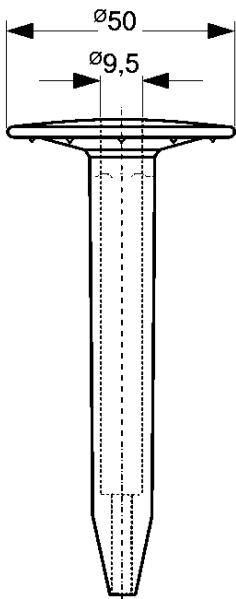
Zahn ZGBK-E 6,0 x L



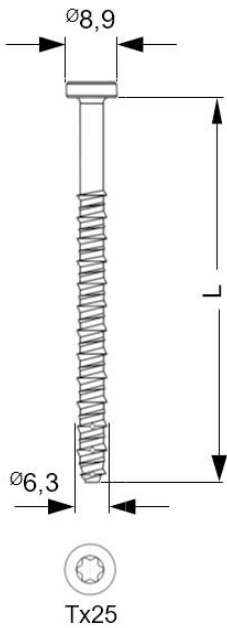
Zahn Flat Roof Fasteners	Annex 88
Combination 88 ZGBK-E / ZLVT 0012	



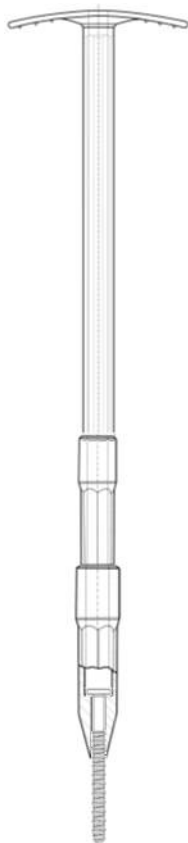
Zahn ZKSH gray / round



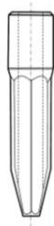
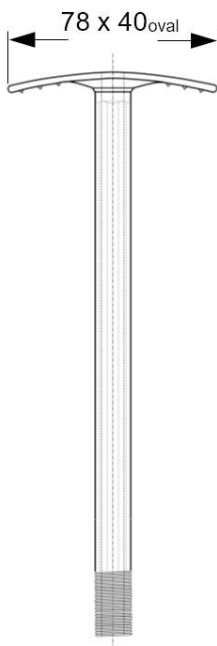
Zahn ZBST 6,3 x L



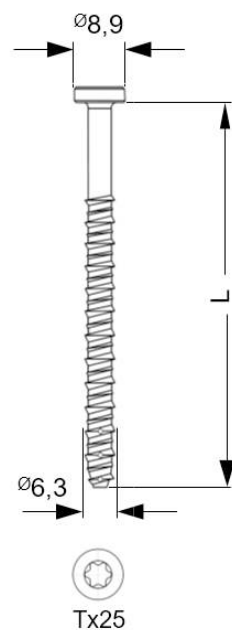
Zahn Flat Roof Fasteners	Annex 89
Combination 89 ZBSK-R consisting of ZBST / ZKSH gray / round	



Zahn ZKSH oval module 6,0



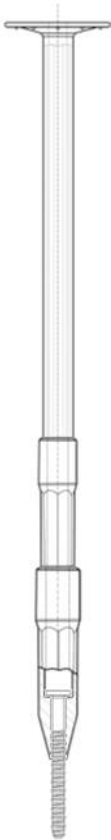
Zahn ZBST 6,3 x L



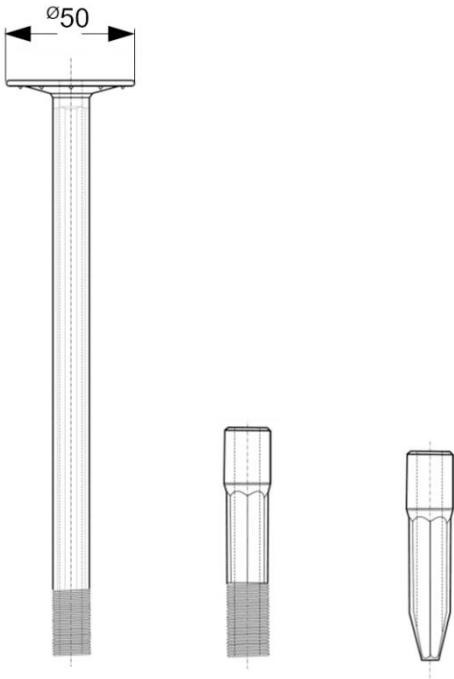
Zahn Flat Roof Fasteners

Combination 90
ZBSK-module
consisting of ZBST / ZKSH oval module 6,0 with module middle piece and spike 6,0

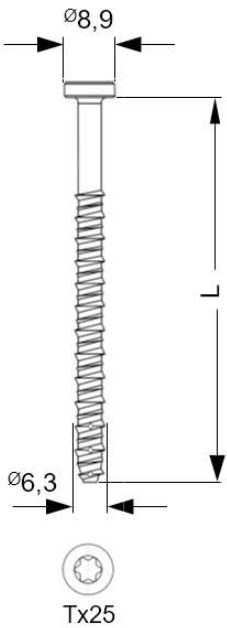
Annex 90



Zahn ZKSH round module 6,0



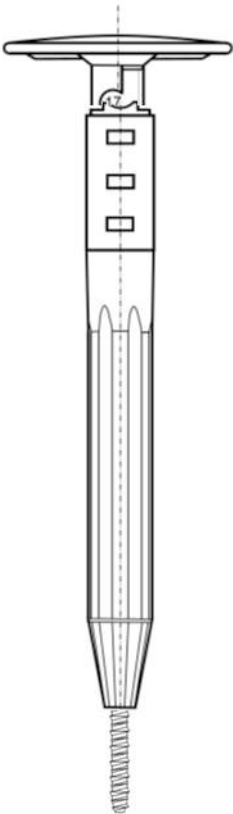
Zahn ZBST 6,3 x L



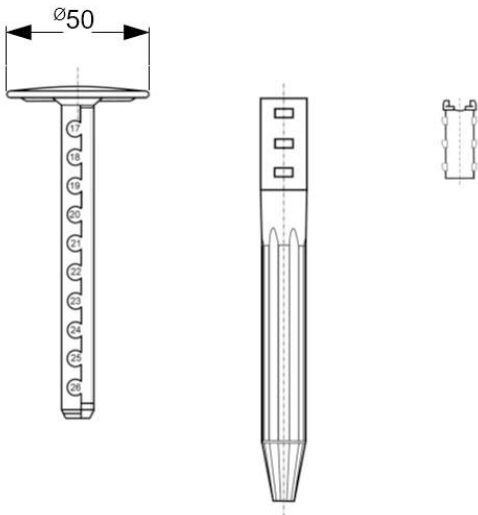
Zahn Flat Roof Fasteners

Annex 91

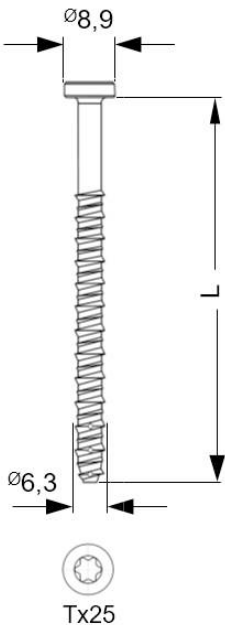
Combination 91
ZBSK-R-module
consisting of ZBST / ZKSH round module 6,0 with module middle piece and spike 6,0



Zahn ZHVM



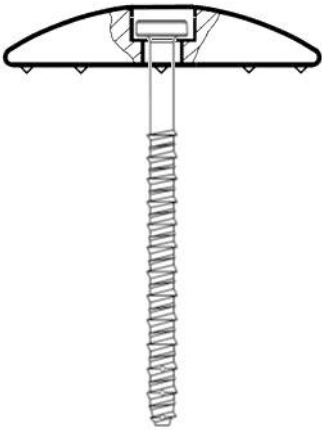
Zahn ZBST 6,3 x L



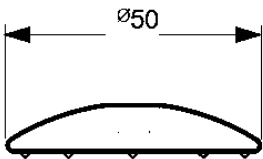
Zahn Flat Roof Fasteners

Combination 92
 ZHVM-concrete-direct
 consisting of ZBST / ZHVM with headboard, shaft and locking sleeve

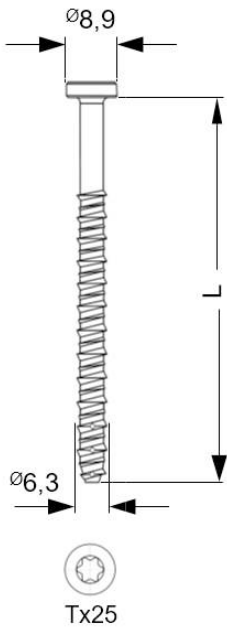
Annex 92



Zahn ZTSK 6,0



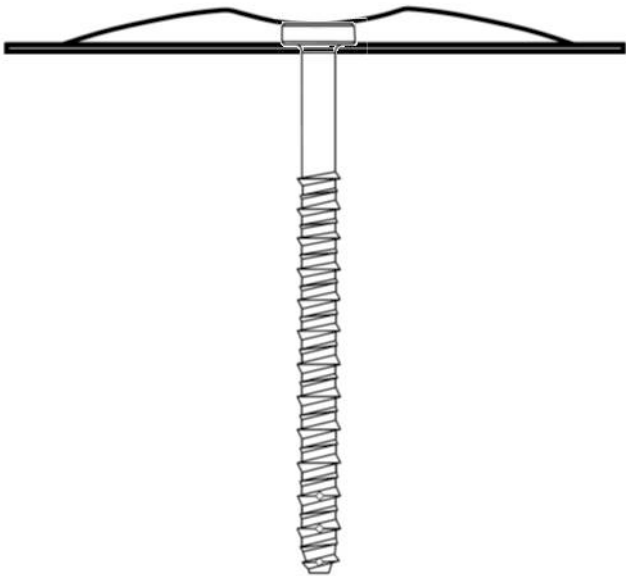
Zahn ZBST 6,3 x L



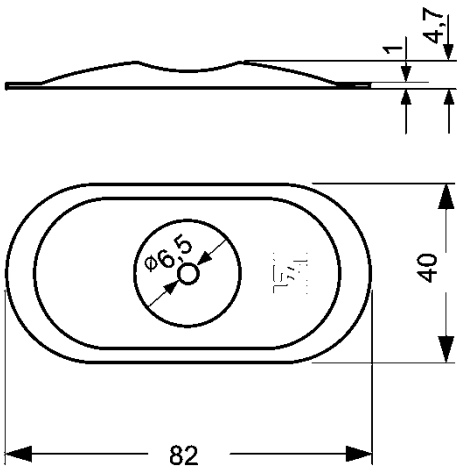
Zahn Flat Roof Fasteners

Combination 93
ZTSK-concrete-direct
consisting of ZBST / ZTSK 6,0

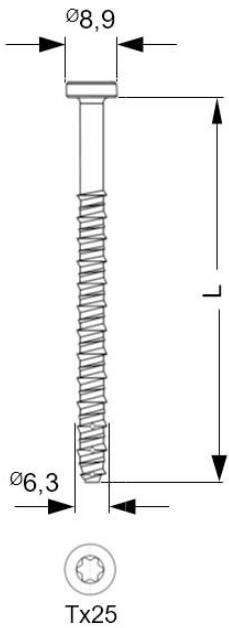
Annex 93



Zahn ZLVT 0008



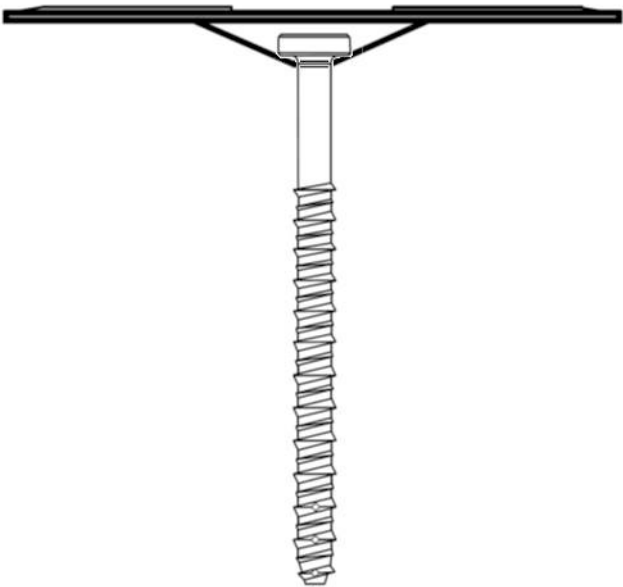
Zahn ZBST 6,3 x L



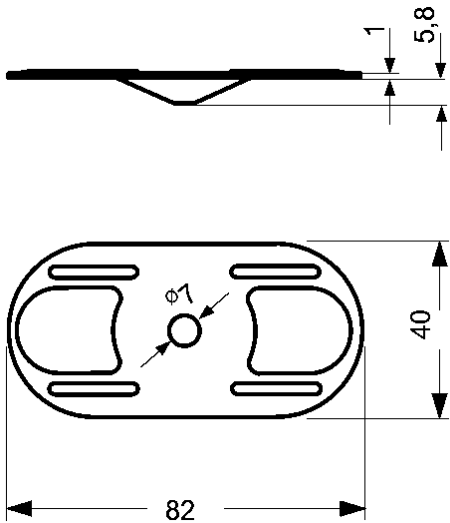
Zahn Flat Roof Fasteners

Combination 94
ZBST / ZLVT 0008

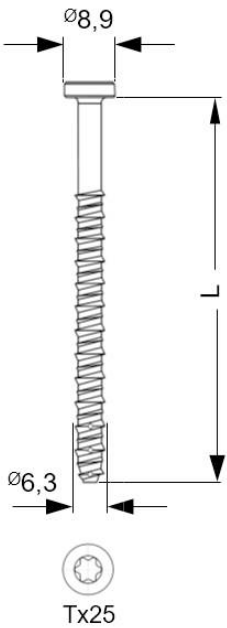
Annex 94



Zahn ZLVT 0012



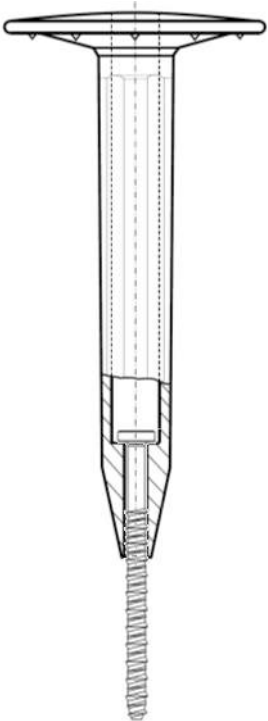
Zahn ZBST 6,3 x L



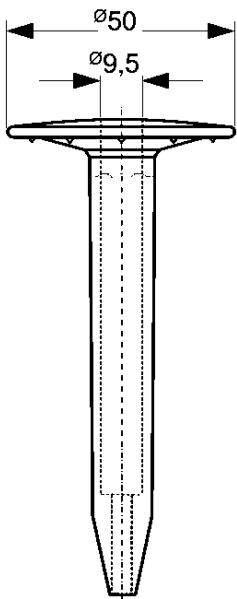
Zahn Flat Roof Fasteners

Combination 95
ZBST / ZLVT 0012

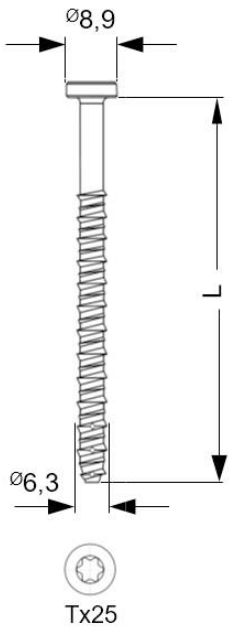
Annex 95



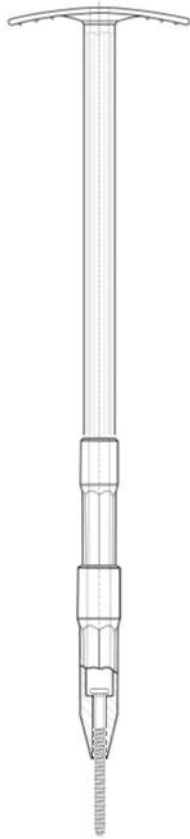
Zahn ZKSH gray / round



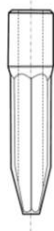
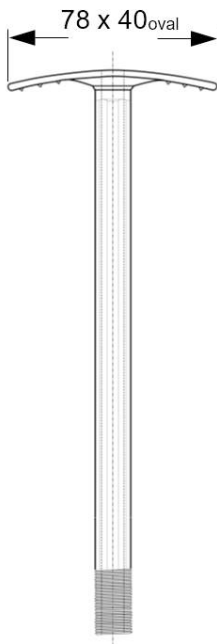
Zahn ZBST-E 6,3 x L



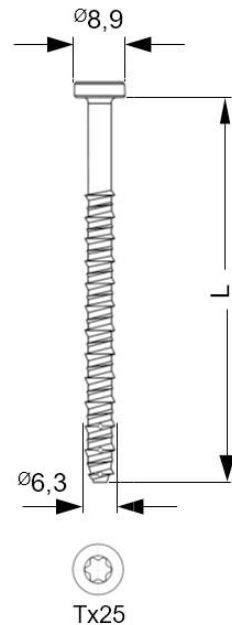
Zahn Flat Roof Fasteners	Annex 96
Combination 96 ZBSK-E/R consisting of ZBST-E / ZKSH gray / round	



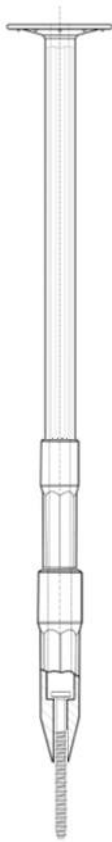
Zahn ZKSH oval module 6,0



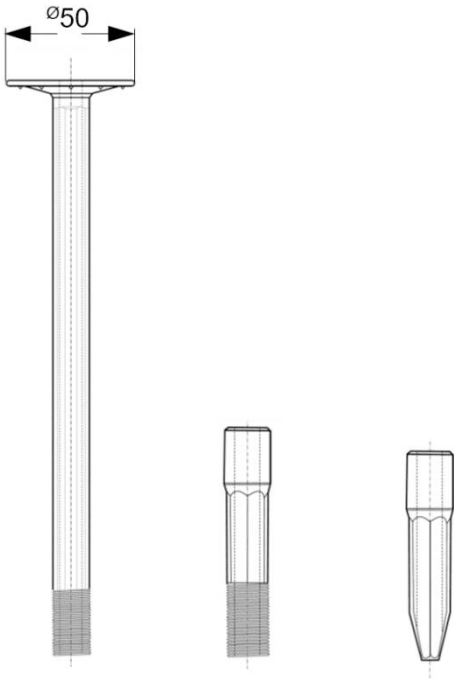
Zahn ZBST-E 6,3 x L



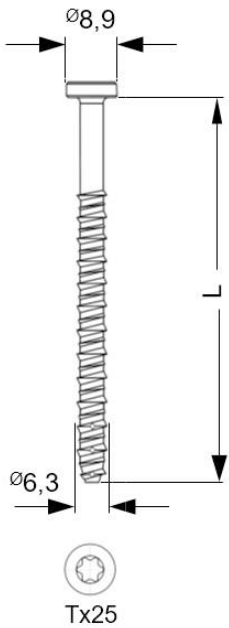
Zahn Flat Roof Fasteners	Annex 97
Combination 97 ZBSK-E-module consisting of ZBST-E / ZKSH oval module 6,0 with module middle piece and spike 6,0	



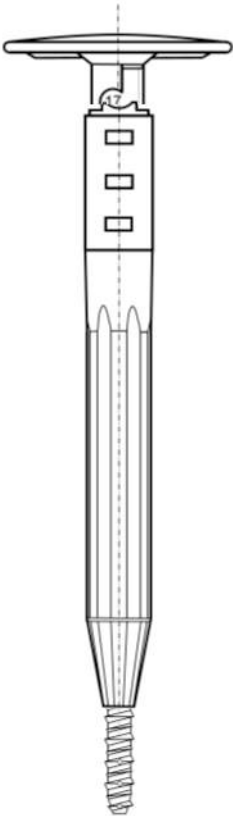
Zahn ZKSH round module 6,0



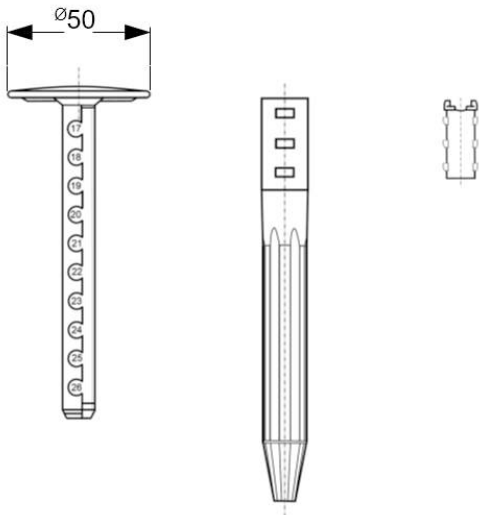
Zahn ZBST-E 6,3 x L



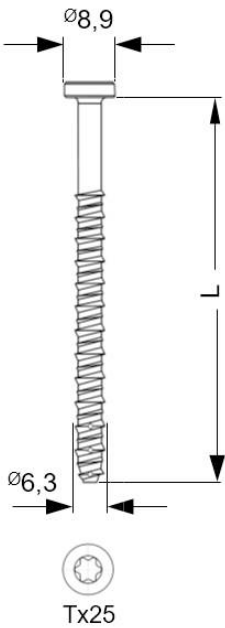
Zahn Flat Roof Fasteners	Annex 98
Combination 98 ZBSK-E/R-module consisting of ZBST-E / ZKSH round module 6,0 with module middle piece and spike 6,0	



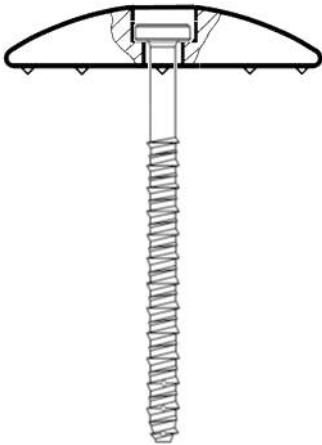
Zahn ZHVM



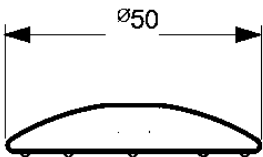
Zahn ZBST-E 6,3 x L



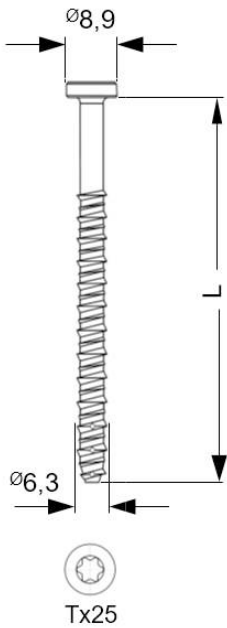
Zahn Flat Roof Fasteners	Annex 99
Combination 99 ZHVM-E-concrete-direct consisting of ZBST-E / ZHVM with headboard, shaft and locking sleeve	



Zahn ZTSK 6,0



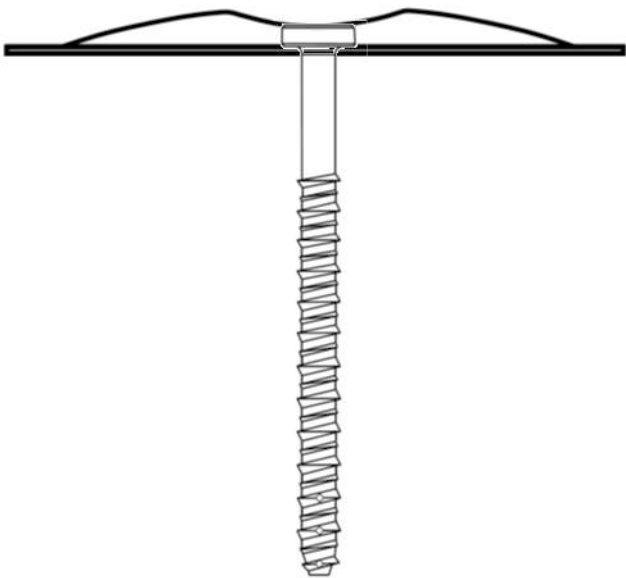
Zahn ZBST-E 6,3 x L



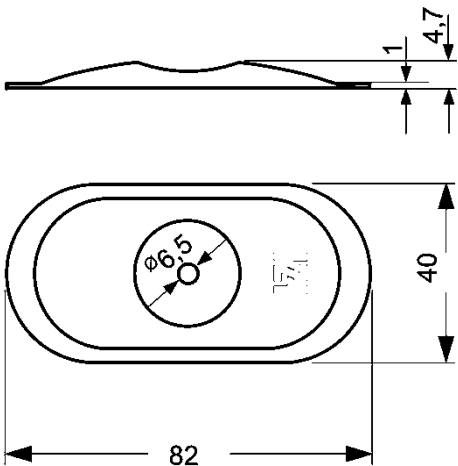
Zahn Flat Roof Fasteners

Combination 100
ZTSK-E-concrete-direct
consisting of ZBST-E / ZTSK 6,0

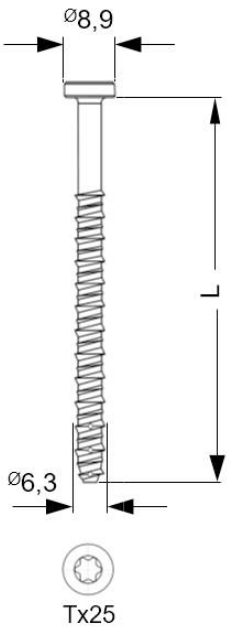
Annex 100



Zahn ZLVT 0008



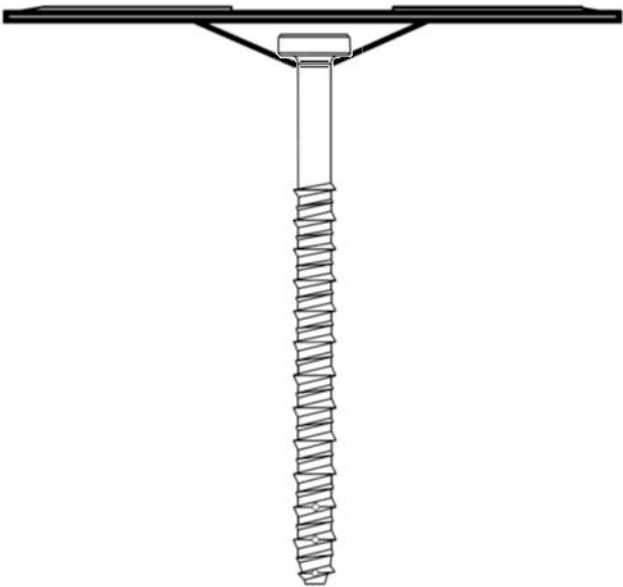
Zahn ZBST-E 6,3 x L



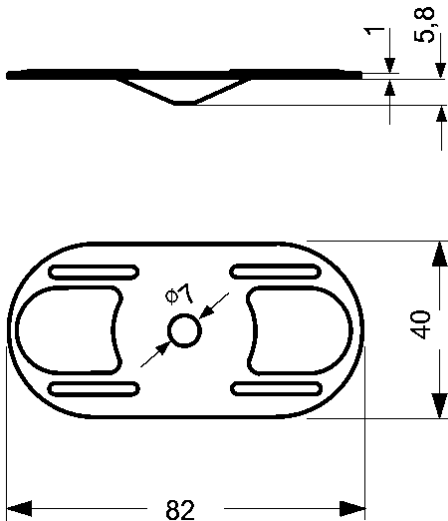
Zahn Flat Roof Fasteners

Combination 101
ZBST-E / ZLVT 0008

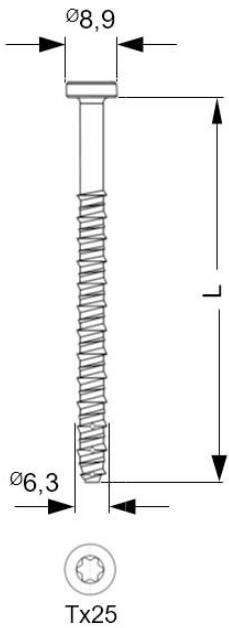
Annex 101



Zahn ZLVT 0012



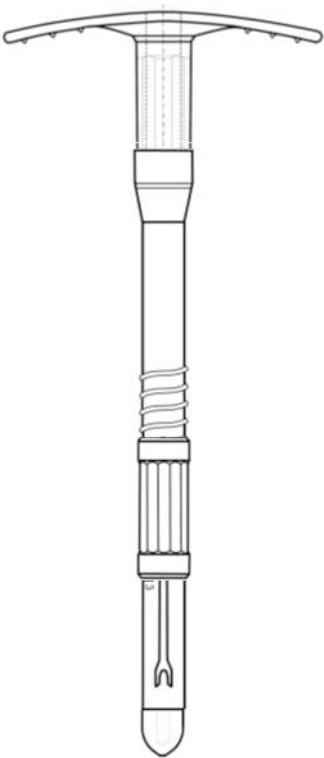
Zahn ZBST-E 6,3 x L



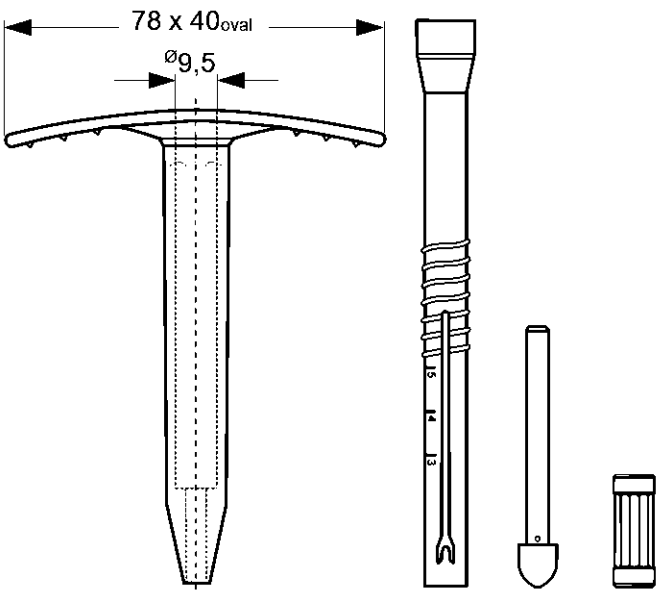
Zahn Flat Roof Fasteners

Combination 102
ZBST-E / ZLVT 0012

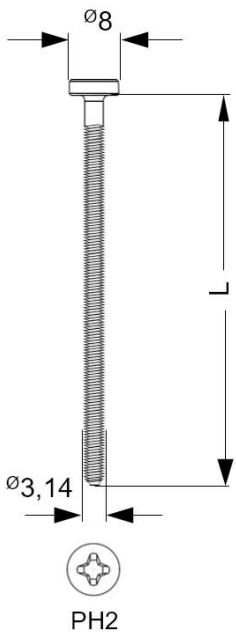
Annex 102



Zahn ZKSH oval with expanding dowel attachment



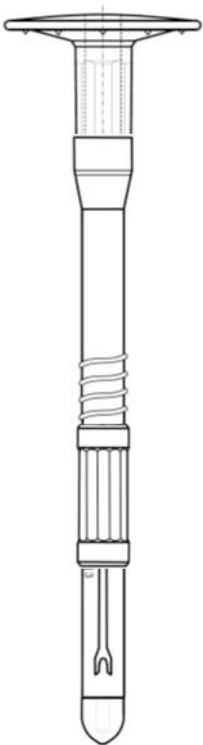
Zahn metric screw-E 3,14 x L



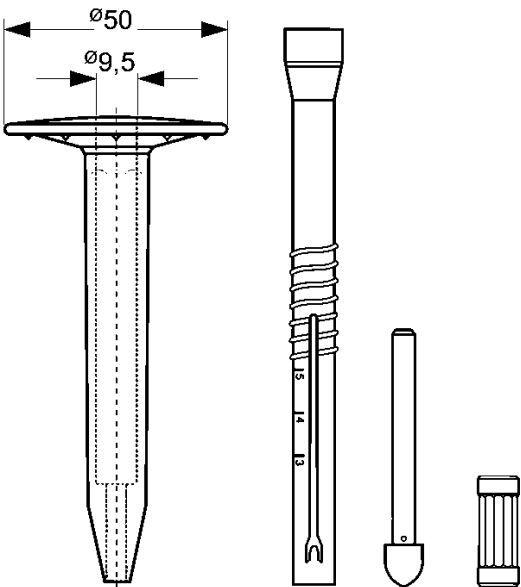
Zahn Flat Roof Fasteners

Combination 103
ZHRD
consisting of metric screw-E / ZKSH oval with expanding dowel attachment

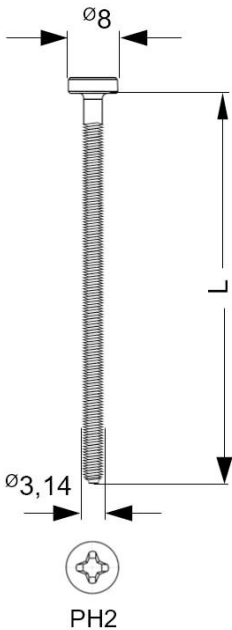
Annex 103



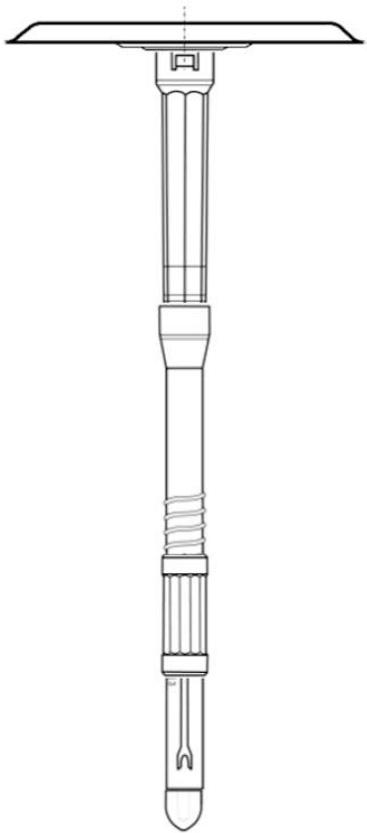
Zahn ZKSH round with expanding dowel attachment



Zahn metric screw-E 3,14 x L

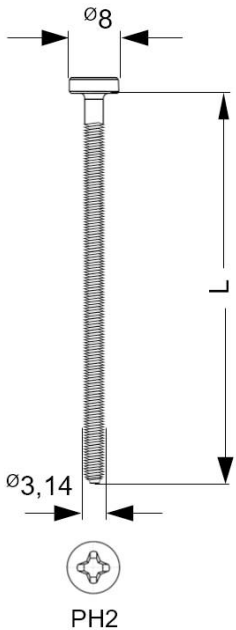
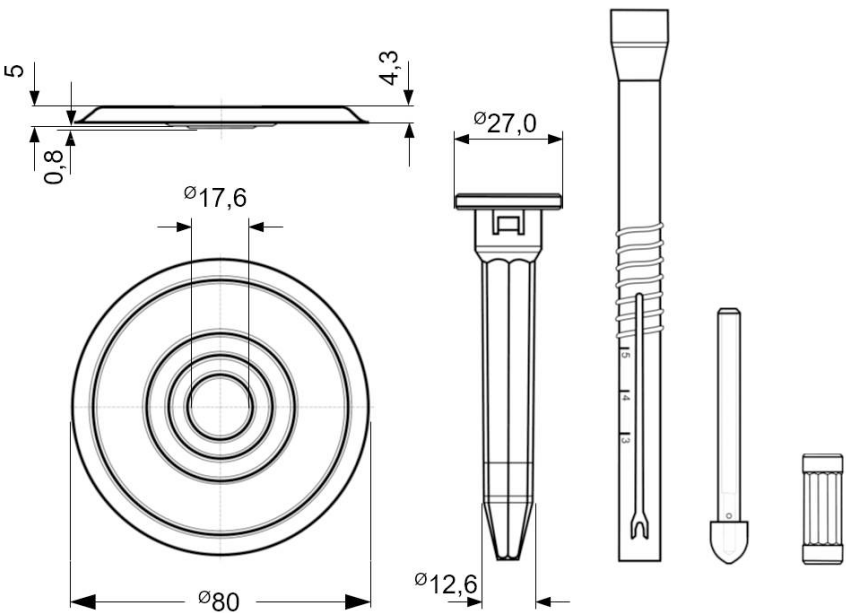


Zahn Flat Roof Fasteners	Annex 104
Combination 104 ZHRD-R consisting of metric screw-E / ZKSH round with expanding dowel attachment	



Zahn ZCTS-pipe 4,8 with ZCTS-plate with expanding dowel attachment

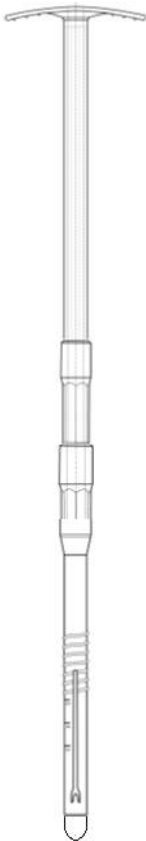
Zahn metric screw-E 3,14 x L



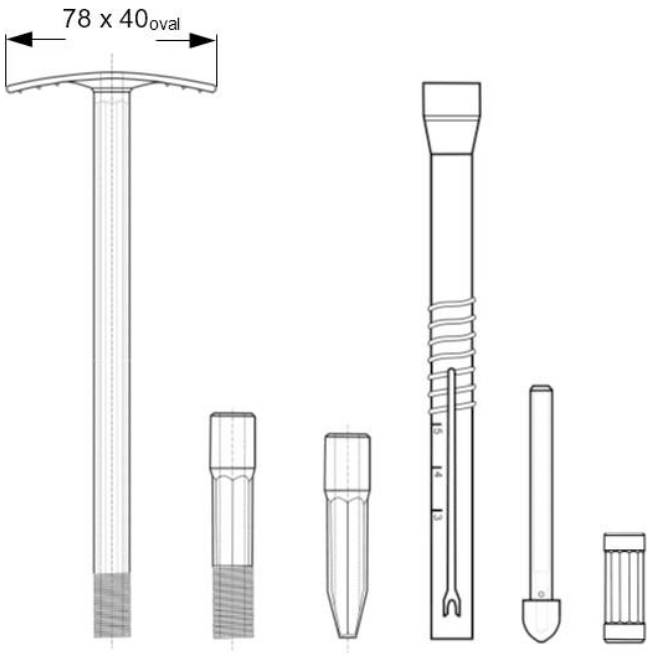
Zahn Flat Roof Fasteners

Combination 104a
ZCTS with expanding dowel attachment
consisting of metric screw-E / ZCTS-pipe, ZCTS-plate and expanding dowel attachment

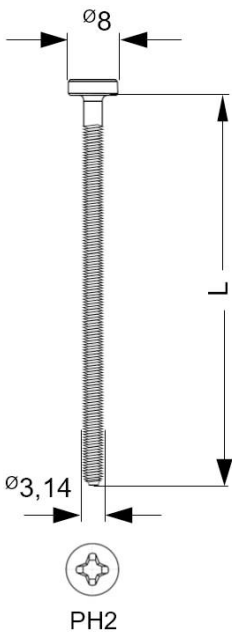
Annex 104a



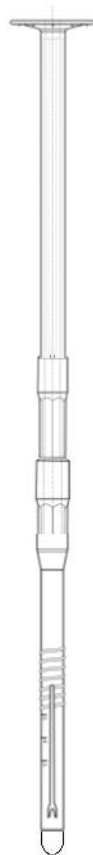
Zahn ZKSH oval module 4,8 with expanding dowel attachment



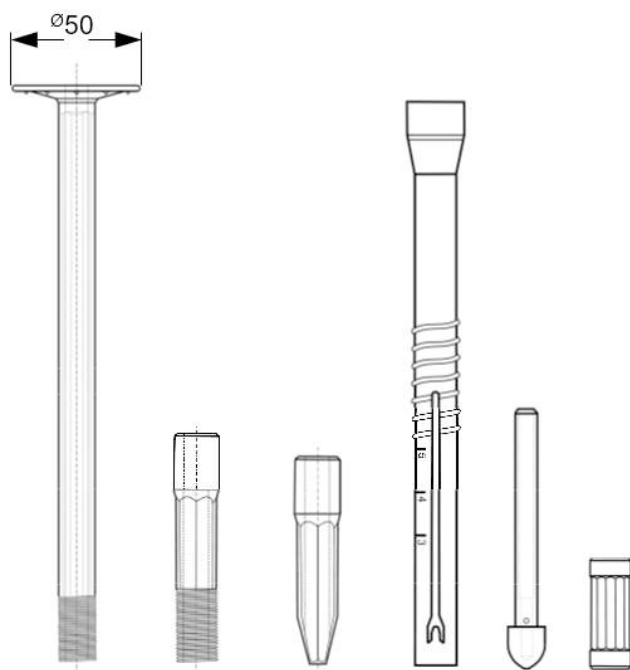
Zahn metric screw-E 3,14 x L



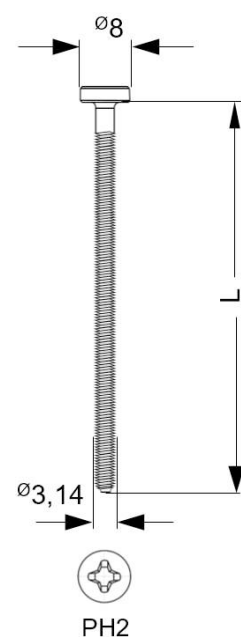
Zahn Flat Roof Fasteners	Annex 105
Combination 105 ZHRD on module oval 4,8 consisting of metric screw-E / ZKSH oval module 4.8 with middle piece, spike 4,8 and expanding dowel attachment	



Zahn ZKSH round module 4,8 with expanding dowel attachment



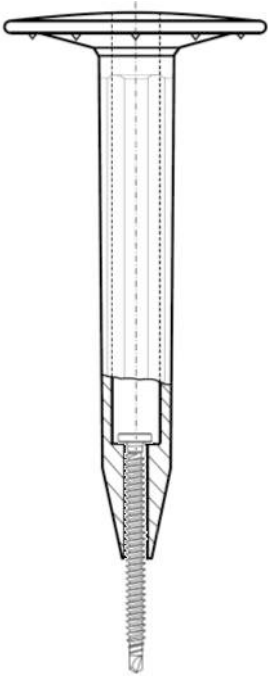
Zahn metric screw-E 3,14 x L



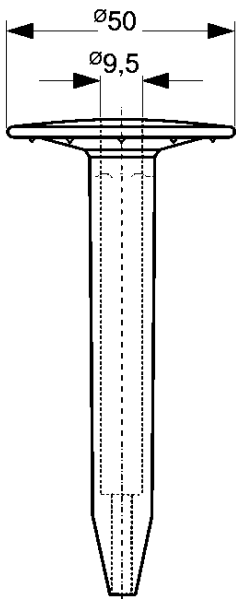
Zahn Flat Roof Fasteners

Combination 106
ZHRD-R on module round 4,8 consisting of metric screw-E / ZKSH round module 4,8
with middle piece, spike 4,8 and expanding dowel attachment

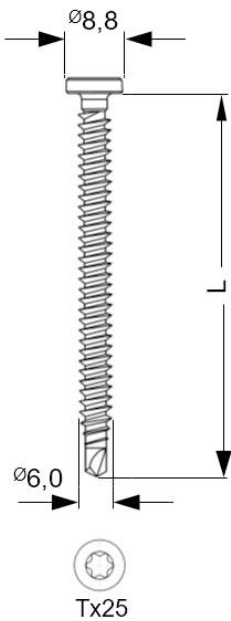
Annex 106



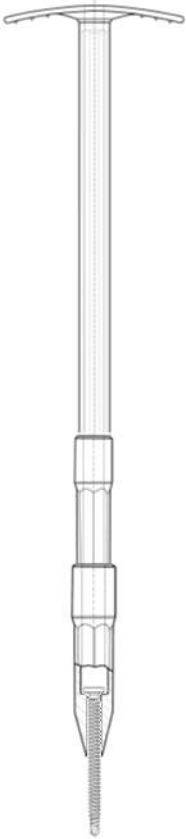
Zahn ZKSH gray / round



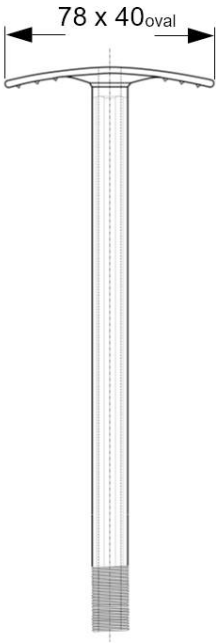
Zahn ZMDS 6,0 x L



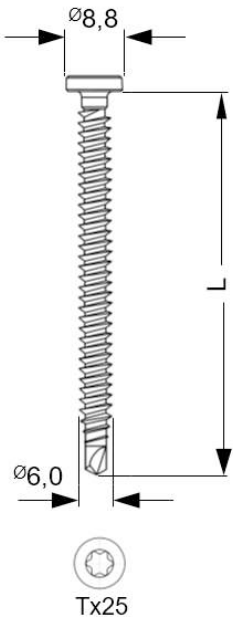
Zahn Flat Roof Fasteners	Annex 107
Combination 107 ZMDS-R consisting of ZMDS / ZKSH gray / round	



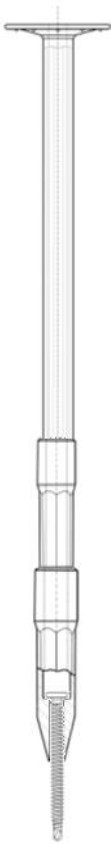
Zahn ZKSH oval module 6,0



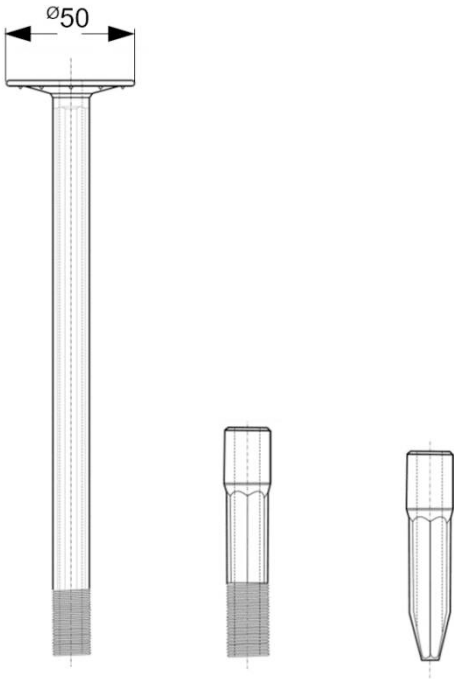
Zahn ZMDS 6,0 x L



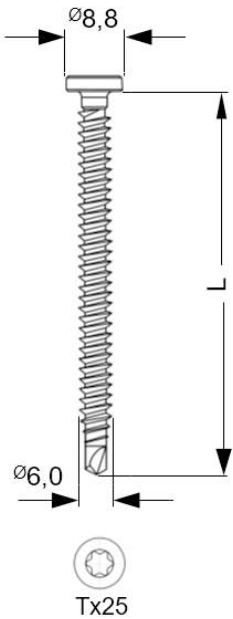
Zahn Flat Roof Fasteners	Annex 108
Combination 108 ZMDS-module consisting of ZMDS / ZKSH oval module 6,0 with module middle piece and spike 6,0	



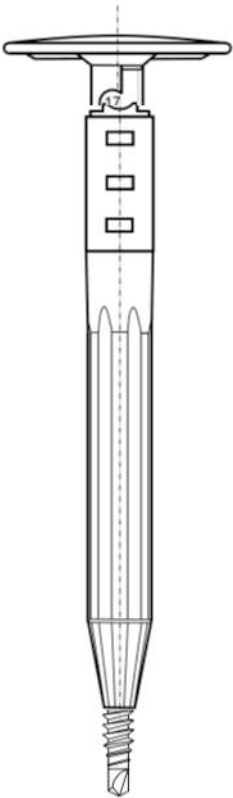
Zahn ZKSH round module 6,0



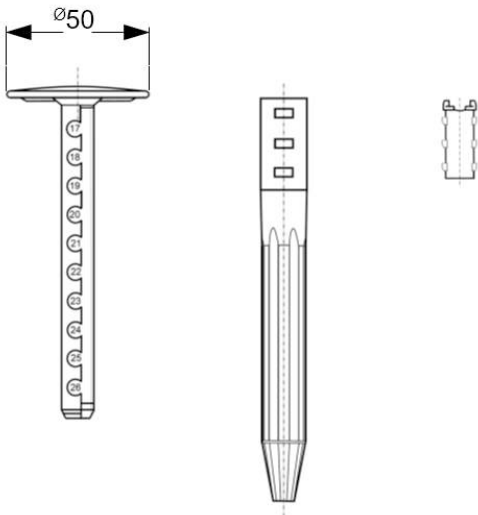
Zahn ZMDS 6,0 x L



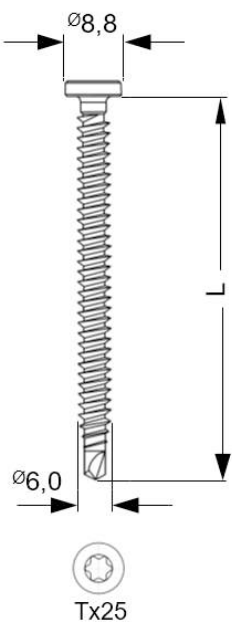
Zahn Flat Roof Fasteners	Annex 109
Combination 109 ZMDS-R-module consisting of ZMDS / ZKSH round module 6,0 with module middle piece and spike 6,0	



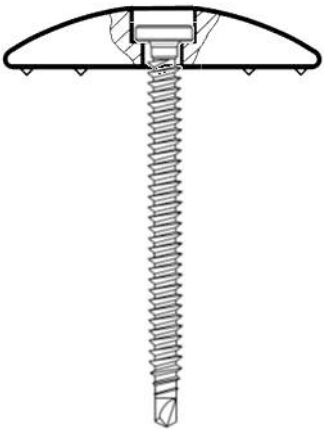
Zahn ZHVM



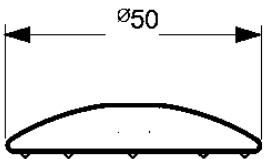
Zahn ZMDS 6,0 x L



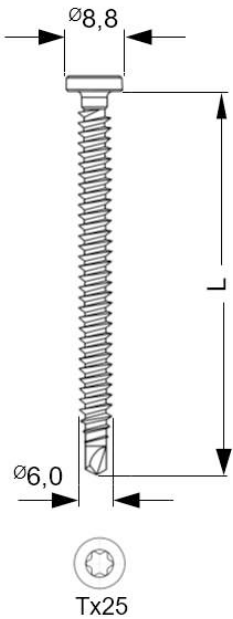
Zahn Flat Roof Fasteners	Annex 110
Combination 110 ZHVM-multi consisting of ZMDS / ZHVM with headboard, shaft and locking sleeve	



Zahn ZTSK 6,0



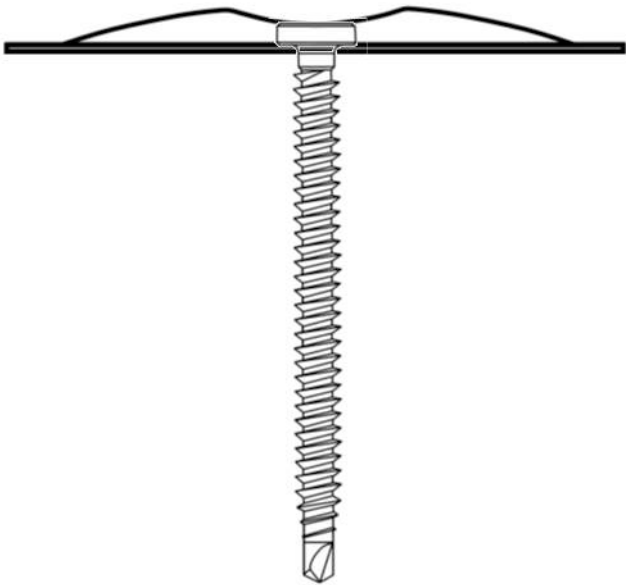
Zahn ZMDS 6,0 x L



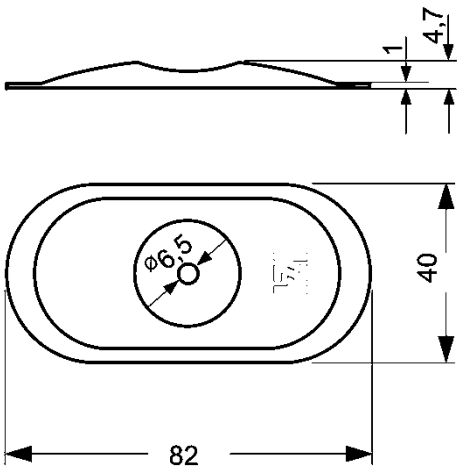
Zahn Flat Roof Fasteners

Combination 111
ZTSK-multi
consisting of ZMDS / ZTSK 6,0

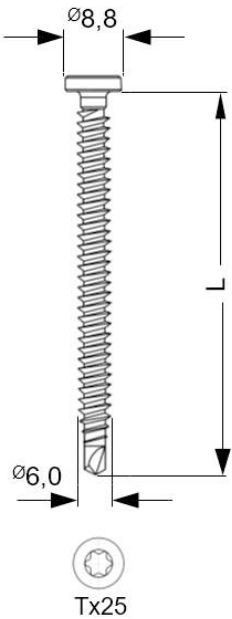
Annex 111



Zahn ZLVT 0008



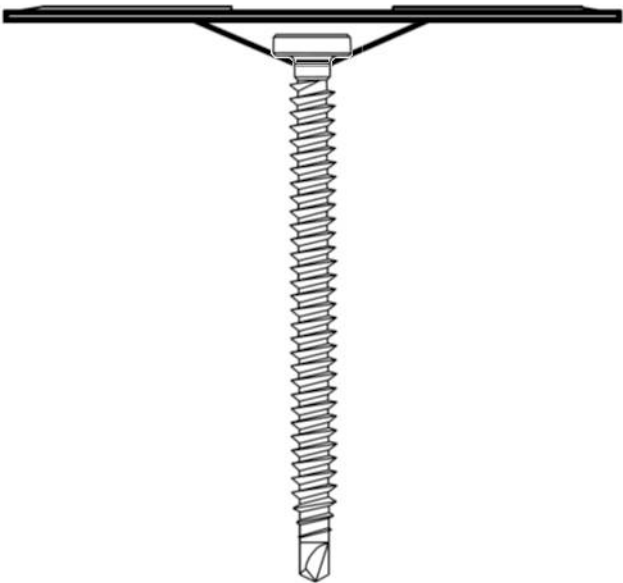
Zahn ZMDS 6,0 x L



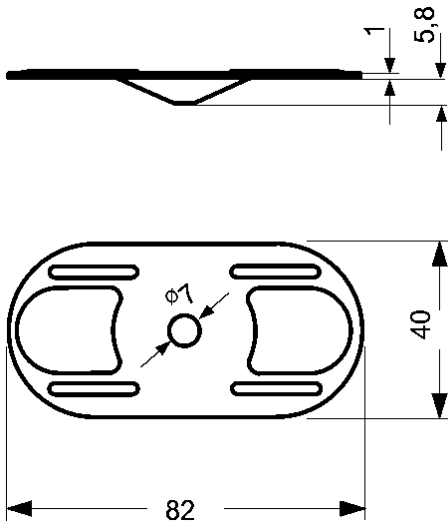
Zahn Flat Roof Fasteners

Combination 112
ZMDS / ZLVT 0008

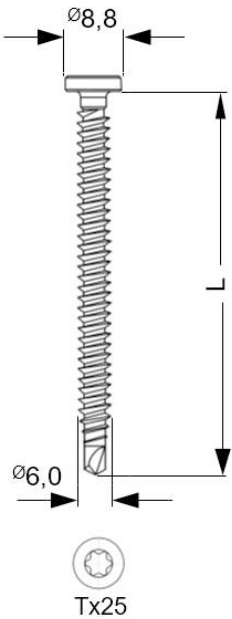
Annex 112



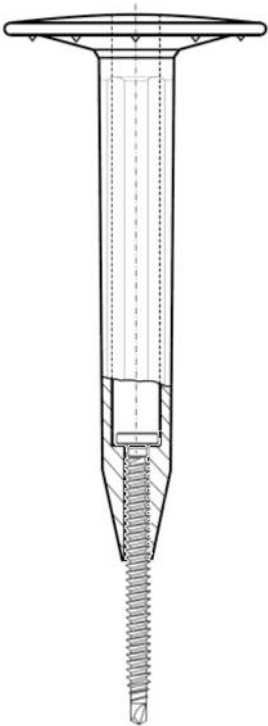
Zahn ZLVT 0012



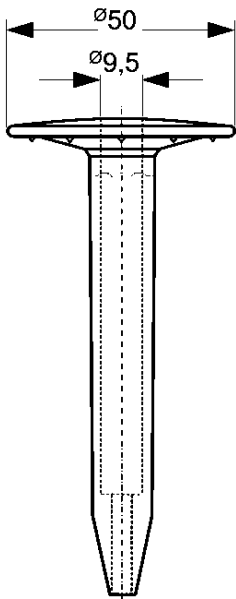
Zahn ZMDS 6,0 x L



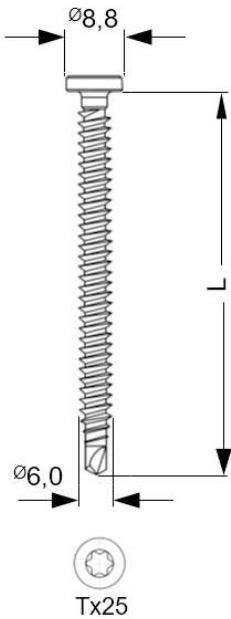
Zahn Flat Roof Fasteners	Annex 113
Combination 113 ZMDS / ZLVT 0012	



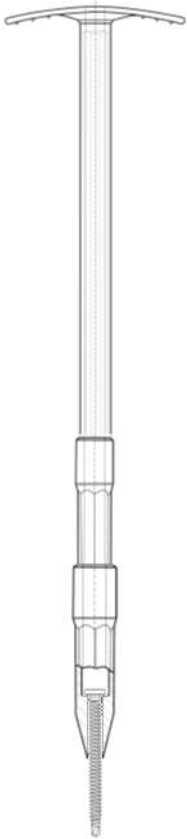
Zahn ZKSH gray / round



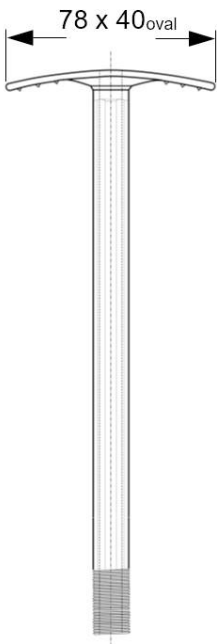
Zahn ZMDS-E 6,0 x L



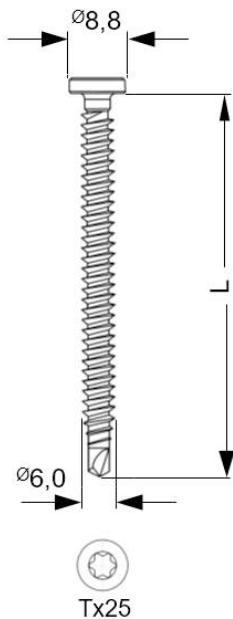
Zahn Flat Roof Fasteners	Annex 114
Combination 114 ZMDS-E/R consisting of ZMDS-E / ZKSH gray / round	



Zahn ZKSH oval module 6,0



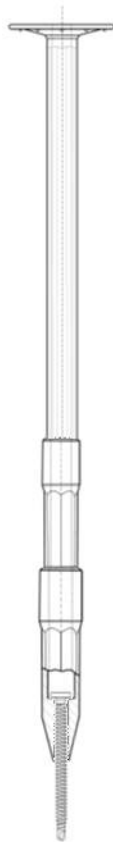
Zahn ZMDS-E 6,0 x L



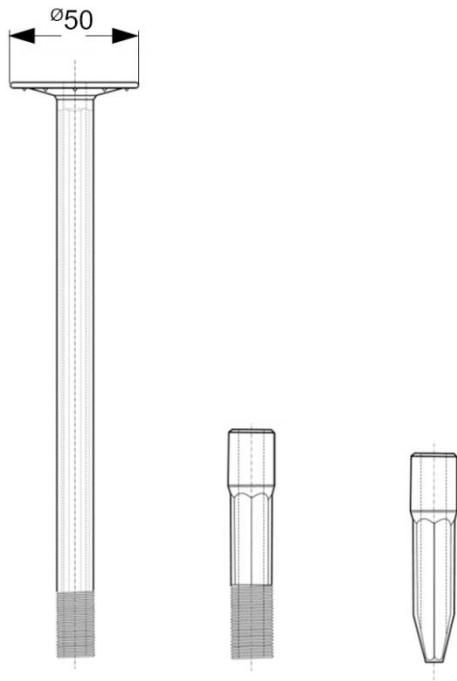
Zahn Flat Roof Fasteners

Annex 115

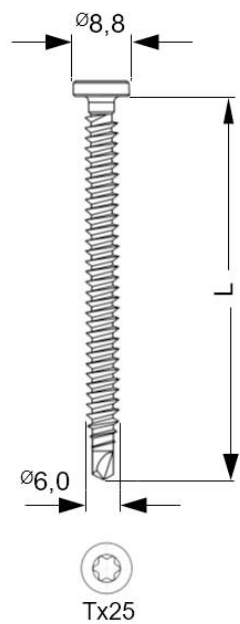
Combination 115
ZMDS-E-module
consisting of ZMDS-E / ZKSH oval module 6,0 with module middle piece and spike 6,0



Zahn ZKSH round module 6,0

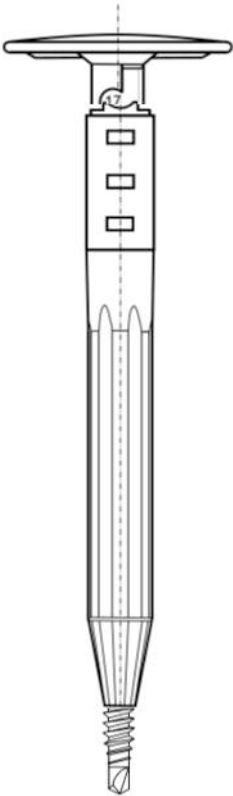


Zahn ZMDS-E 6,0 x L

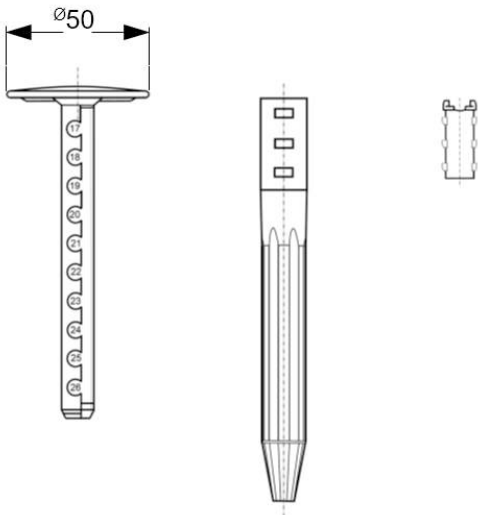


Zahn Flat Roof Fasteners	Annex 116
Combination 116 ZMDS-E/R-module consisting of ZMDS-E / ZKSH round module 6,0 with module middle piece and spike 6,0	

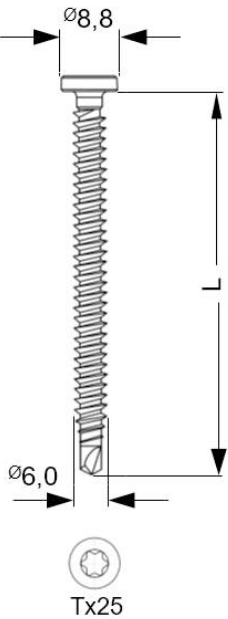
0



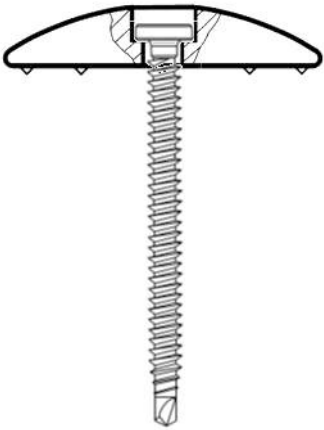
Zahn ZHVM



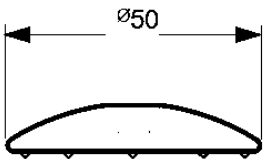
Zahn ZMDS-E 6,0 x L



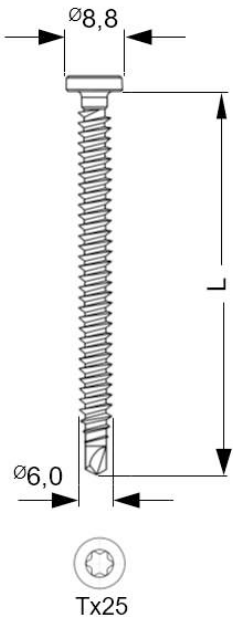
Zahn Flat Roof Fasteners	Annex 117
Combination 117 ZHVM-E-multi consisting of ZMDS-E / ZHVM with headboard, shaft and locking sleeve	



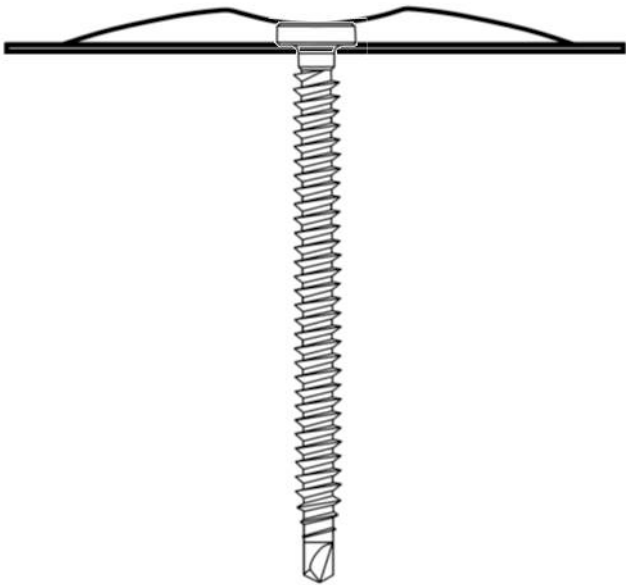
Zahn ZTSK 6,0



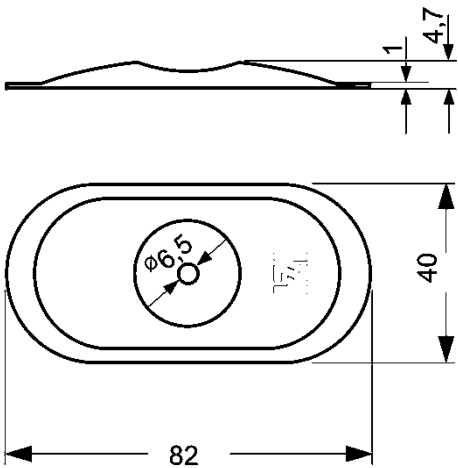
Zahn ZMDS-E 6,0 x L



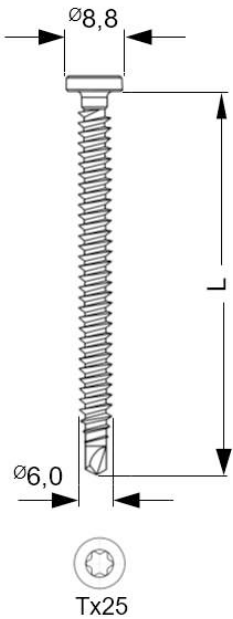
Zahn Flat Roof Fasteners	Annex 118
Combination 118 ZTSK-E-multi consisting of ZMDS-E / ZTSK 6,0	



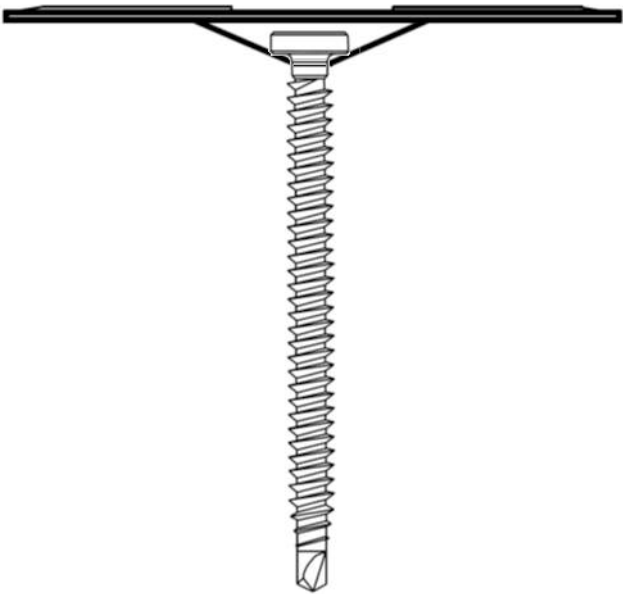
Zahn ZLVT 0008



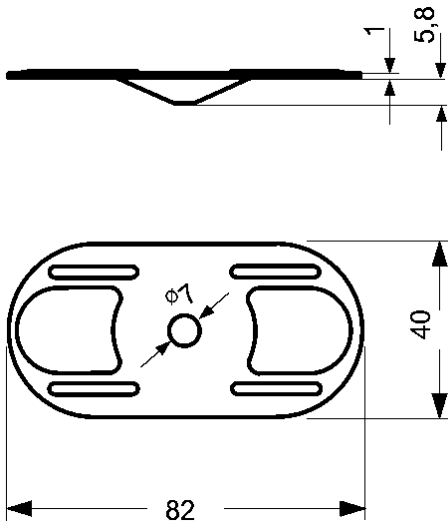
Zahn ZMDS-E 6,0 x L



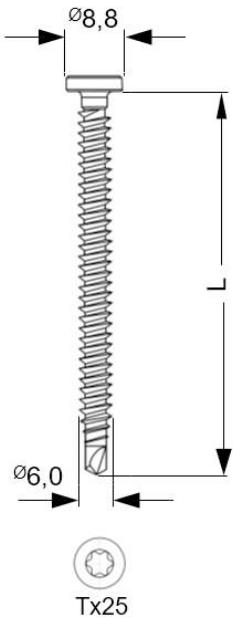
Zahn Flat Roof Fasteners	Annex 119
Combination 119 ZMDS-E / ZLVT 0008	



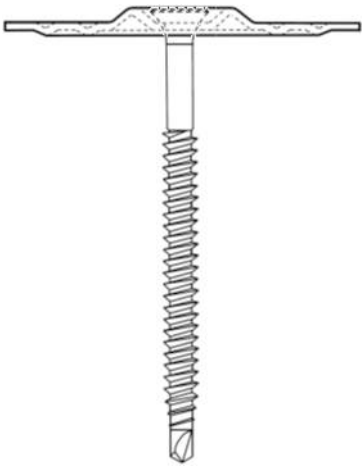
Zahn ZLVT 0012



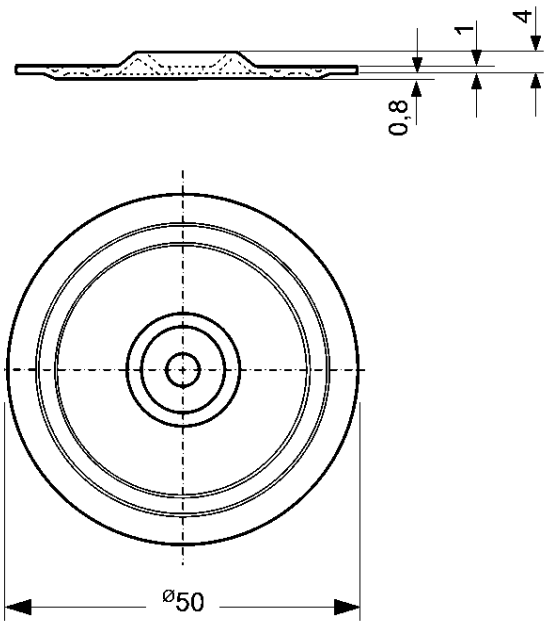
Zahn ZMDS-E 6,0 x L



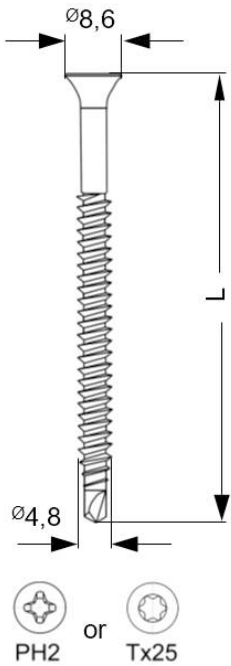
Zahn Flat Roof Fasteners	Annex 120
Combination 120 ZMDS-E / ZLVT 0012	



Zahn ZLVT 0016



Zahn ZDBK-TK 4,8 x L



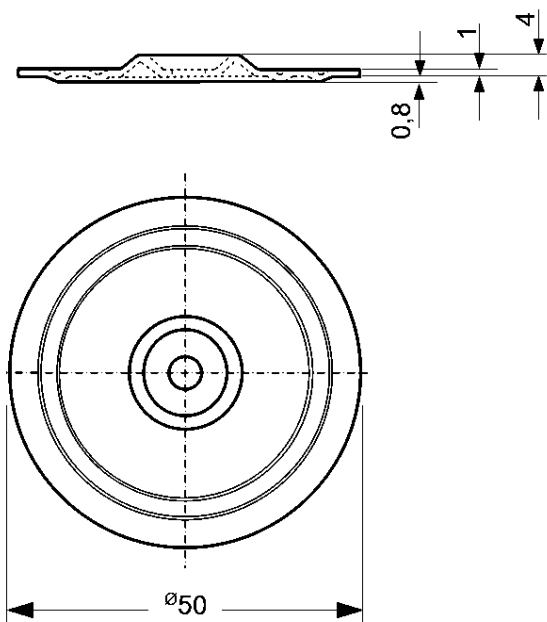
Zahn Flat Roof Fasteners

Combination 121
ZDBK-TK / ZLVT 0016

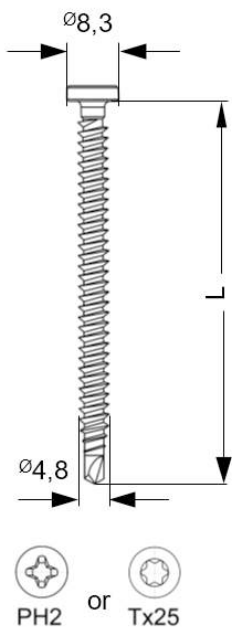
Annex 121



Zahn ZLVT 0016



Zahn ZDBK 4,8 x L



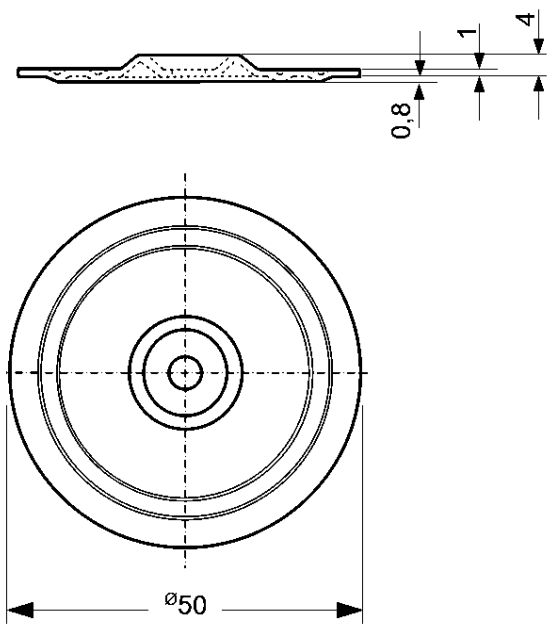
Zahn Flat Roof Fasteners

Combination 121a
ZDBK / ZLVT 0016

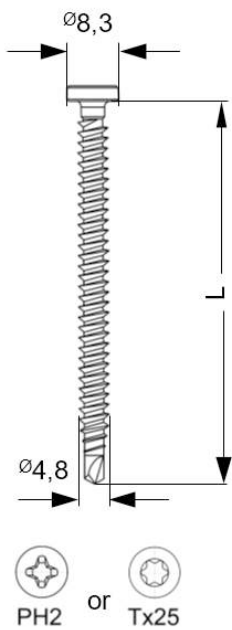
Annex 121a



Zahn ZLVT 0016



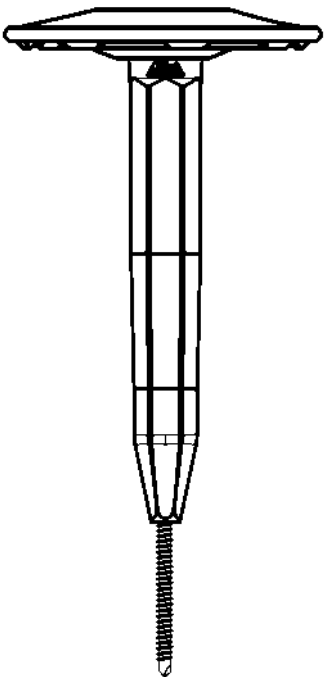
Zahn ZDBK-E 4,8 x L



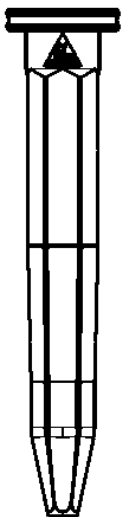
Zahn Flat Roof Fasteners

Combination 121b
ZDBK-E / ZLVT 0016

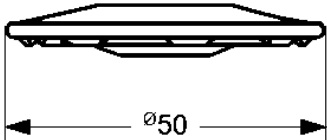
Annex 121b



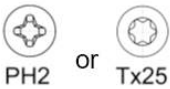
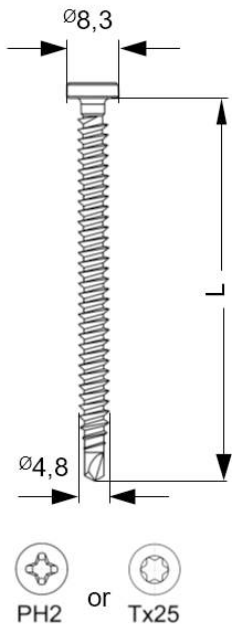
ZSSB 4,8



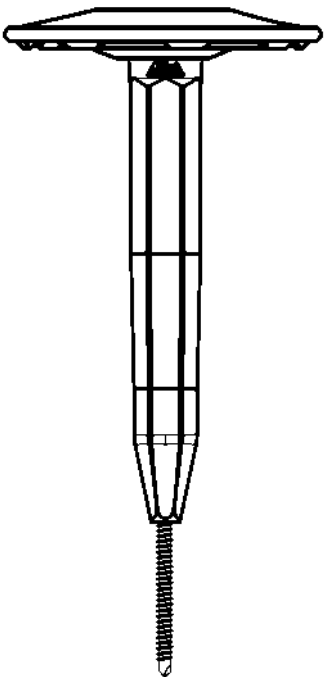
clickplate



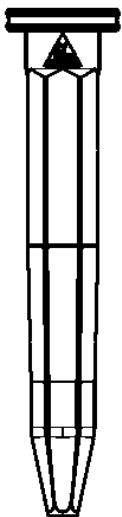
Zahn ZDBK 4,8 x L



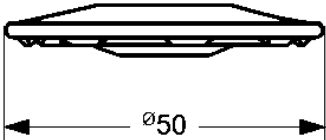
Zahn Flat Roof Fasteners	Annex 122
Combination 122 ZSSB / clickplate / ZDBK trapeze	



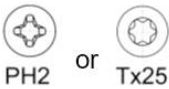
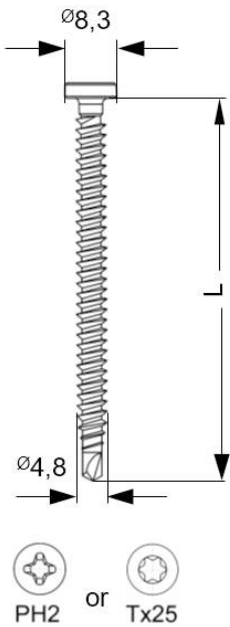
ZSSB 4,8



clickplate



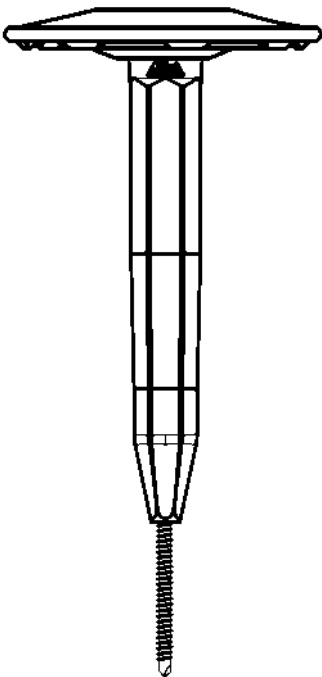
Zahn ZDBK-E 4,8 x L



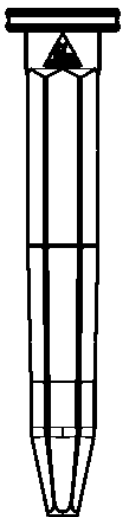
Zahn Flat Roof Fasteners

Combination 123
ZSSB / clickplate / ZDBK-E trapeze

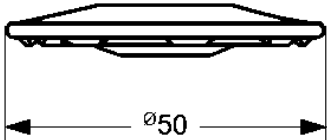
Annex 123



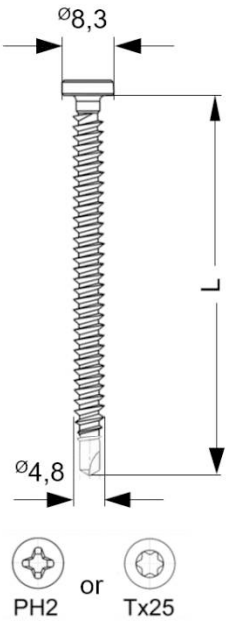
ZSSB 4,8



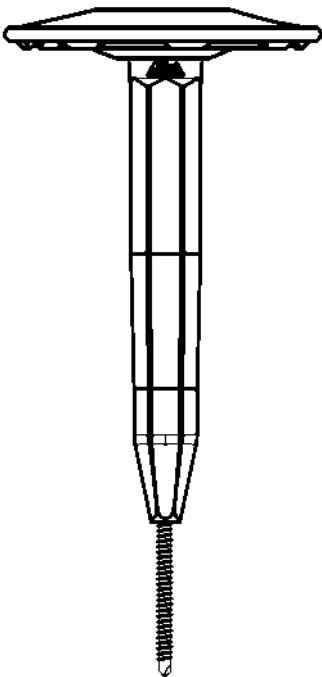
clickplate



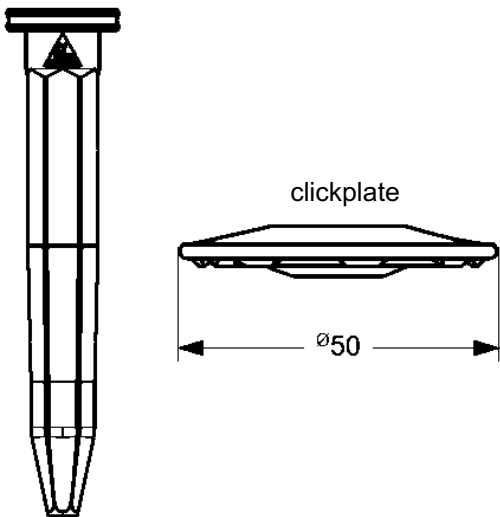
Zahn ZDBK-VB 4,8 x L



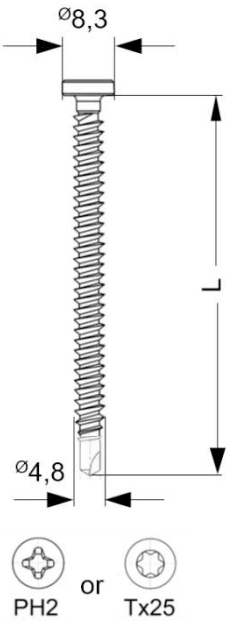
Zahn Flat Roof Fasteners	Annex 124
Combination 124 ZSSB / clickplate / ZDBK-VB trapeze	



ZSSB 4,8



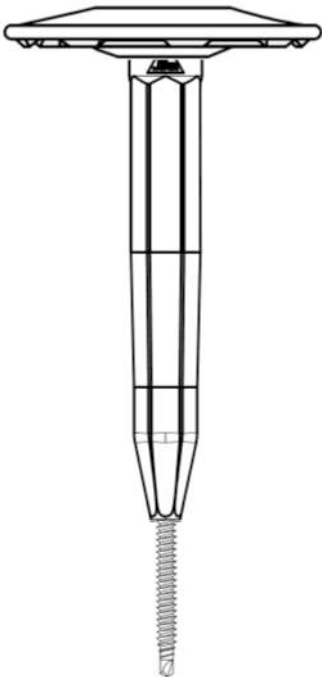
Zahn ZDBK-VB-E 4,8 x L



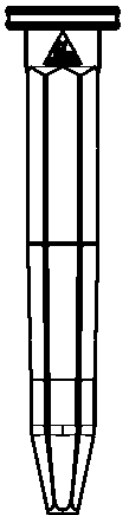
Zahn Flat Roof Fasteners

Combination 125
ZSSB / clickplate / ZDBK-VB-E trapeze

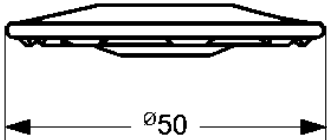
Annex 125



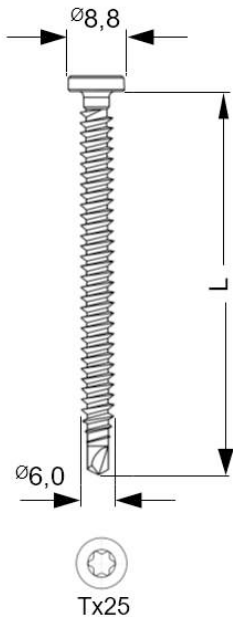
ZSSB 6,0



clickplate



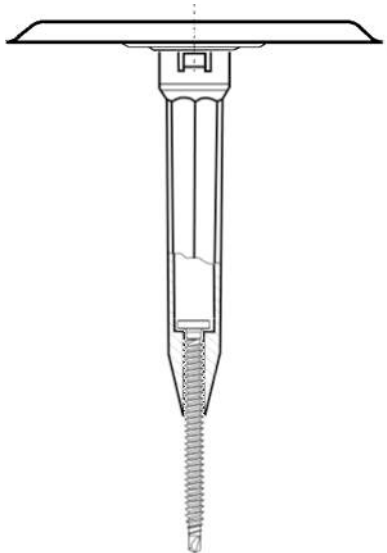
Zahn ZMDS 6,0 x L



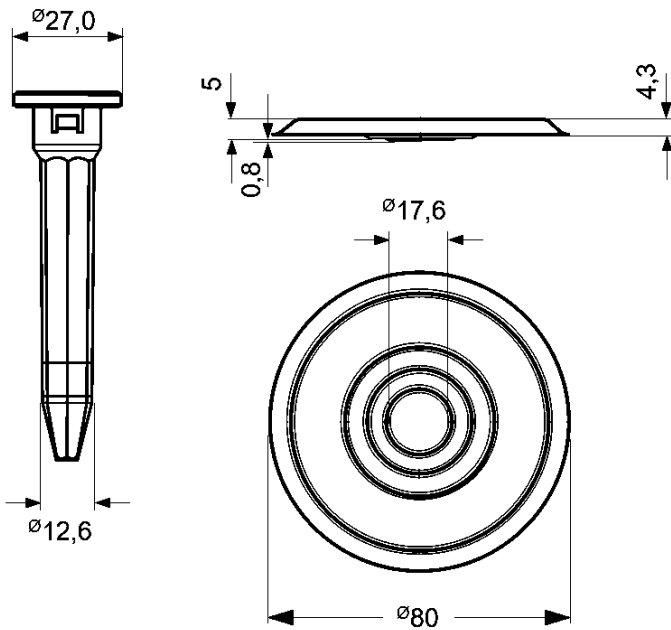
Zahn Flat Roof Fasteners

Combination 126
ZSSB / clickplate / ZMDS

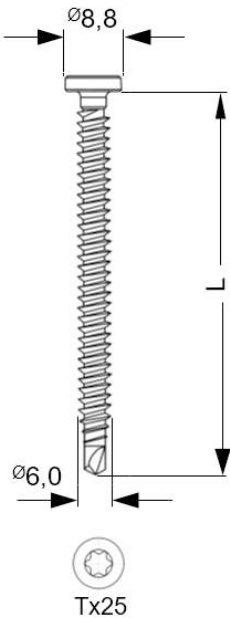
Annex 126



Zahn ZCTS-pipe 6,0 and ZCTS-plate



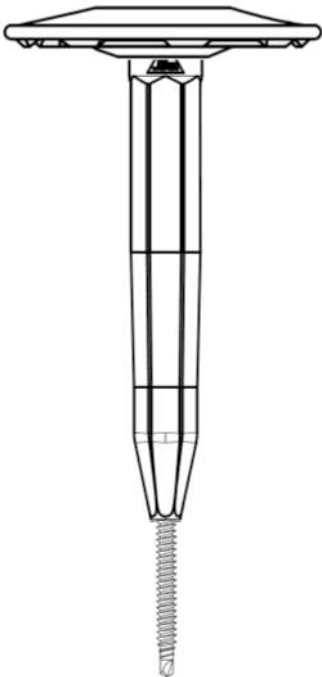
Zahn ZMDS 6,0 x L



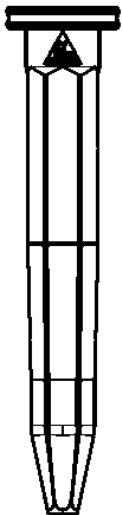
Zahn Flat Roof Fasteners

Combination 126a
ZCTS / ZMDS
consisting of ZMDS / ZCTS-pipe 6,0 and ZCTS-plate

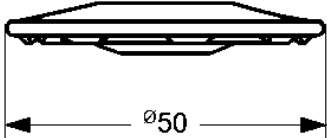
Annex 126a



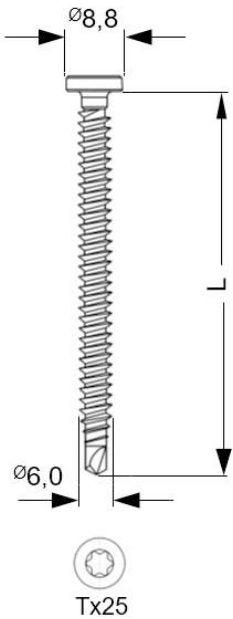
ZSSB 6,0



clickplate



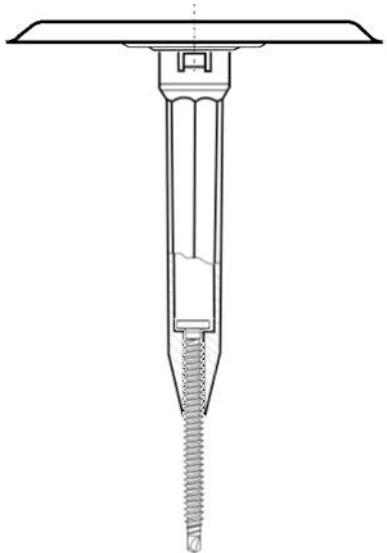
Zahn ZMDS-E 6,0 x L



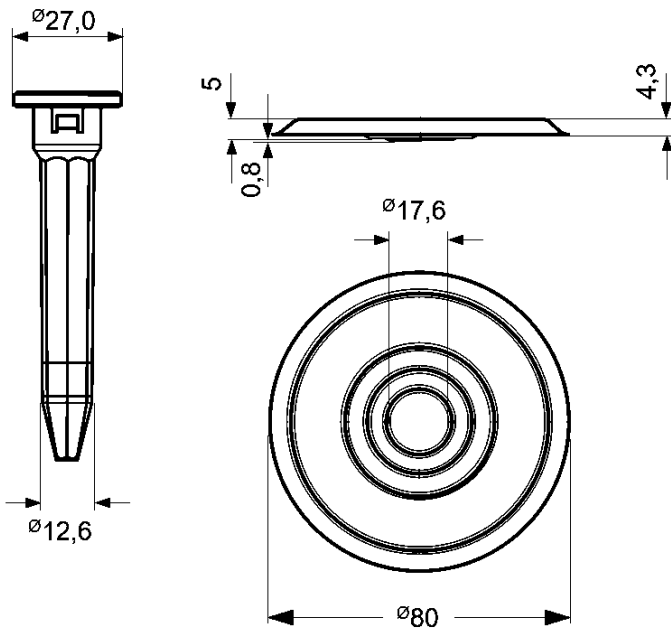
Zahn Flat Roof Fasteners

Combination 127
ZSSB / clickplate / ZMDS-E

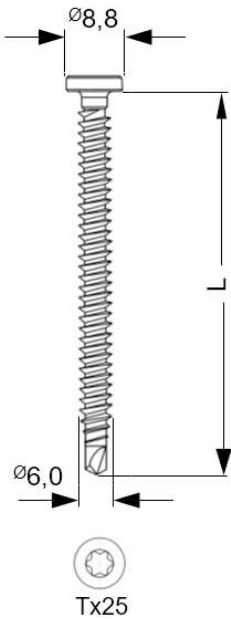
Annex 127



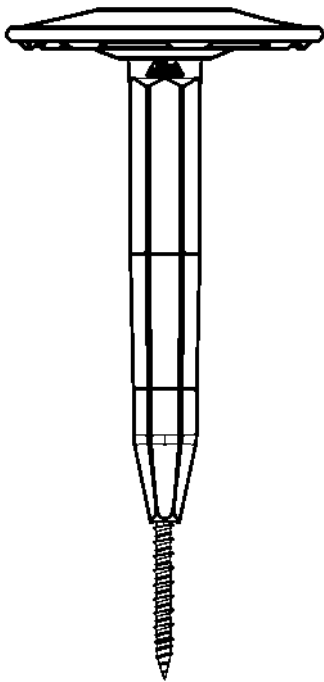
Zahn ZCTS-pipe 6,0 and ZCTS-plate



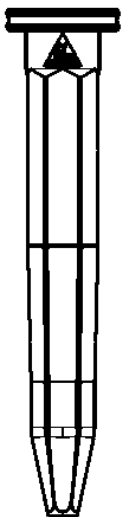
Zahn ZMDS-E 6,0 x L



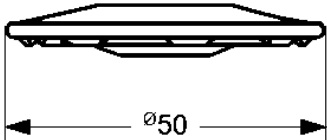
Zahn Flat Roof Fasteners	Annex 127a
Combination 127a ZCTS-E / ZMDS-E consisting of ZMDS-E / ZCTS-pipe 6,0 and ZCTS-plate	



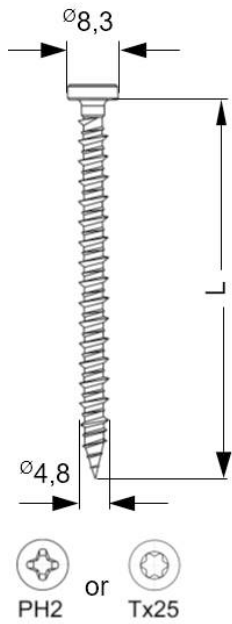
ZSSB 4,8



clickplate



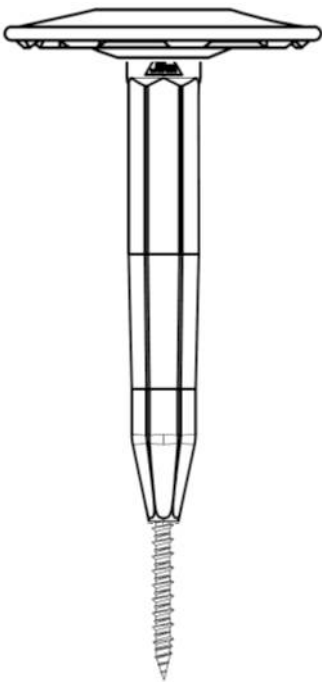
Zahn ZHBK 4,8 x L



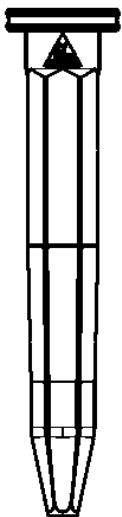
Zahn Flat Roof Fasteners

Combination 128
ZSSB / clickplate / ZHBK timber

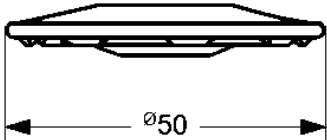
Annex 128



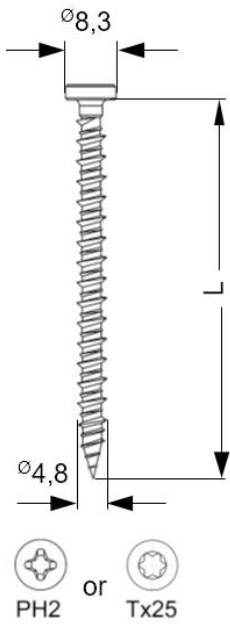
ZSSB 4,8



clickplate



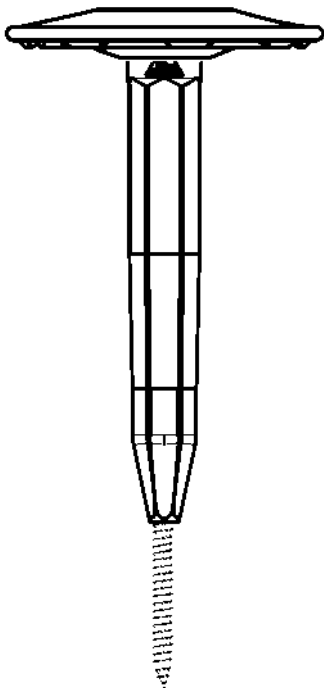
Zahn ZHBK-E 4,8 x L



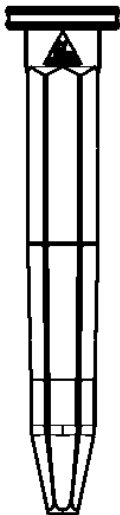
Zahn Flat Roof Fasteners

Combination 129
ZSSB / clickplate / ZHBK-E-timber

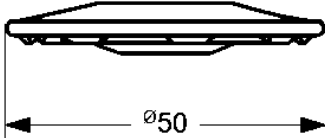
Annex 129



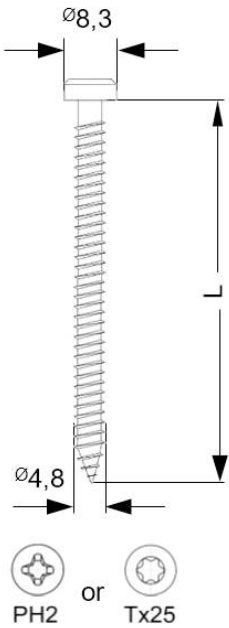
ZSSB 4,8



clickplate



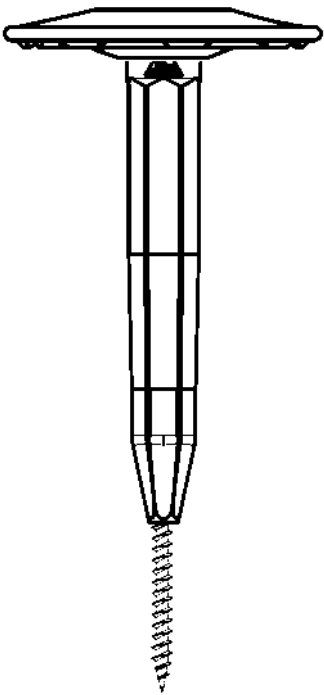
Zahn ZDBK_{dowel} 4,8 x L



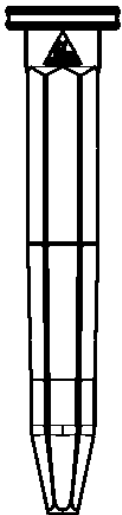
Zahn Flat Roof Fasteners

Combination 130
ZSSB / clickplate / ZDBK-dowel

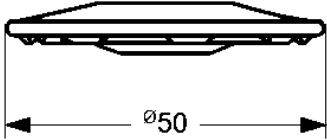
Annex 130



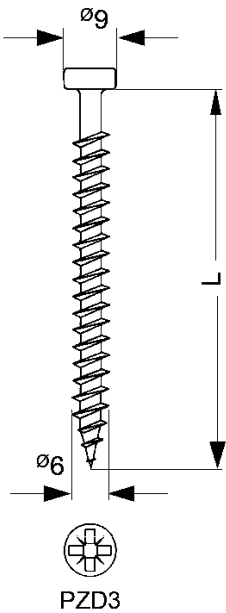
ZSSB 6,0



clickplate



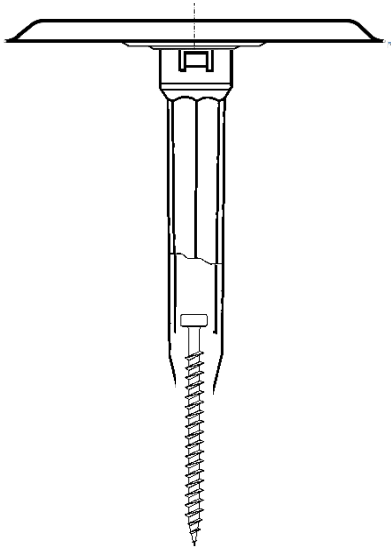
Zahn ZGBK-E 6,0 x L



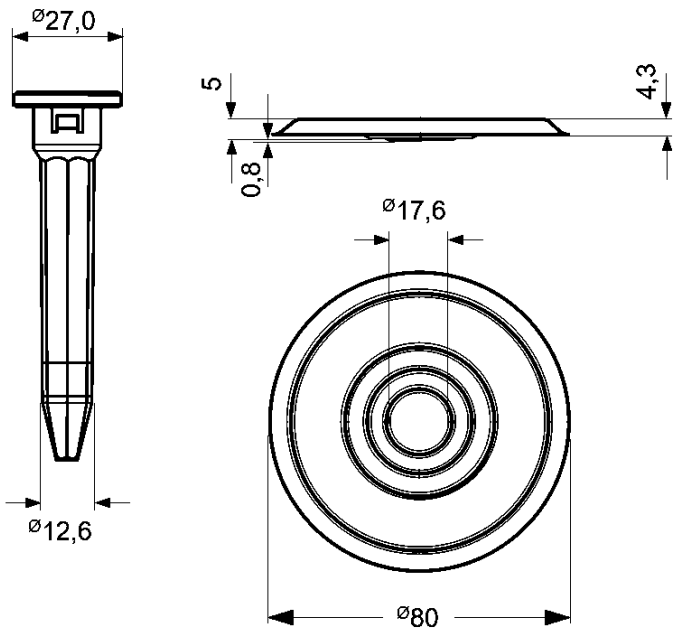
Zahn Flat Roof Fasteners

Combination 131
ZSSB / clickplate / ZGBK-E PB-direct

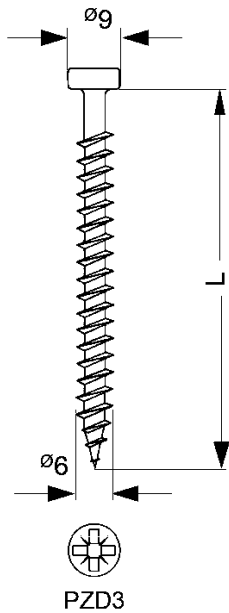
Annex 131



Zahn ZCTS-pipe 6,0 and ZCTS-plate



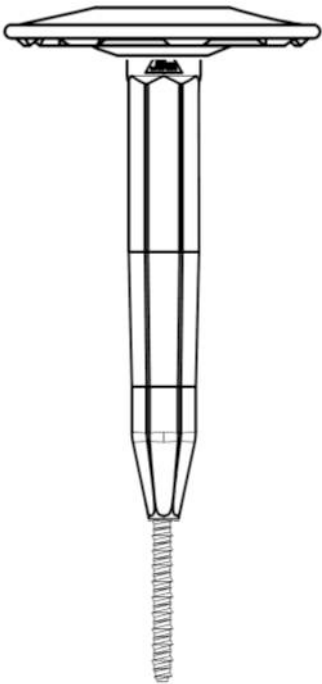
Zahn ZGBK-E 6,0 x L



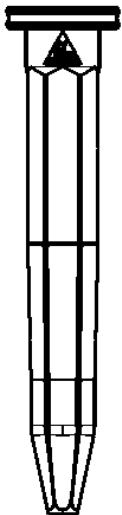
Zahn Flat Roof Fasteners

Combination 131a
ZCTS PB-direct / ZGBK-E
consisting of ZGBK-E / ZCTS-pipe 6,0 and ZCTS-plate

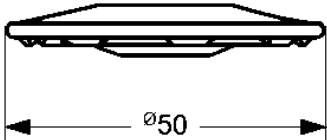
Annex 131a



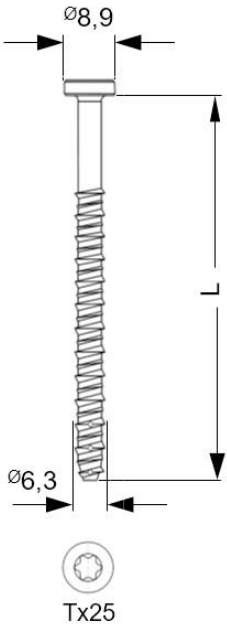
ZSSB 6,0



clickplate



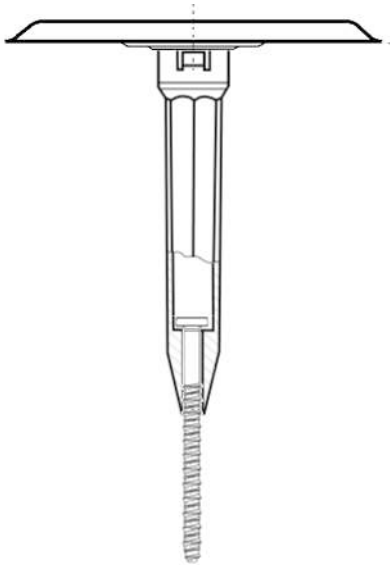
Zahn ZBST 6,3 x L



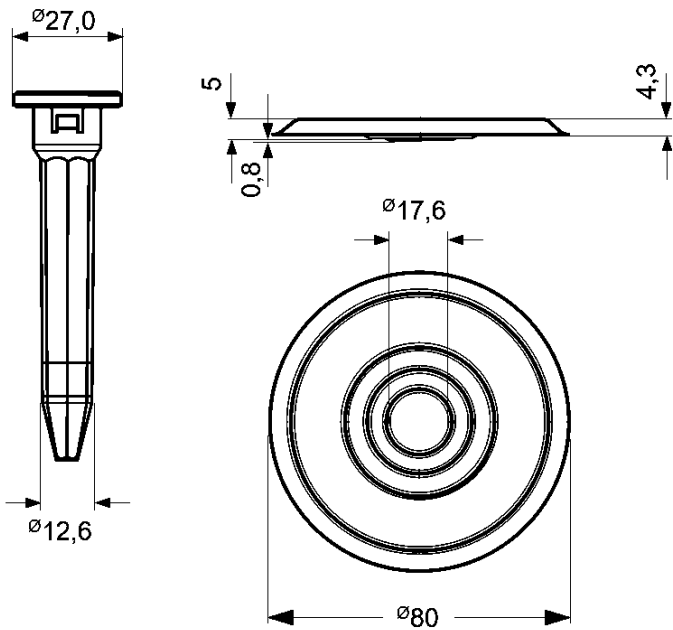
Zahn Flat Roof Fasteners

Annex 132

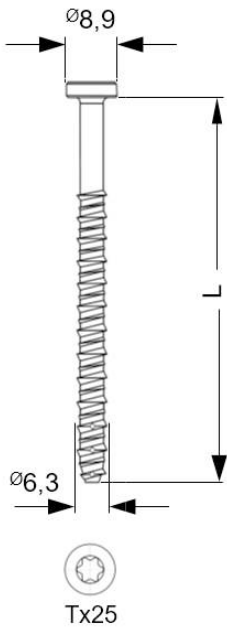
Combination 132
ZSSB / clickplate / ZBST concrete-direct



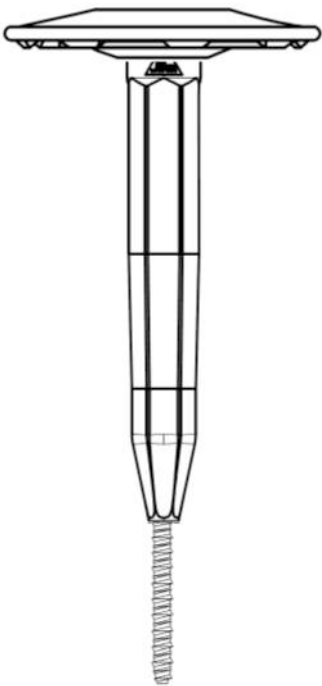
Zahn ZCTS-pipe 6,0 and ZCTS-plate



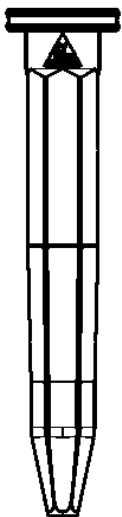
Zahn ZBST 6,3 x L



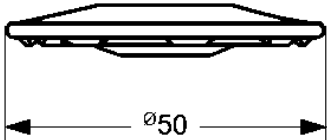
Zahn Flat Roof Fasteners	Annex 132a
Combination 132a ZCTS concrete-direct / ZBST 6,3 consisting of ZBST 6,3 / ZCTS-pipe 6,0 and ZCTS-plate	



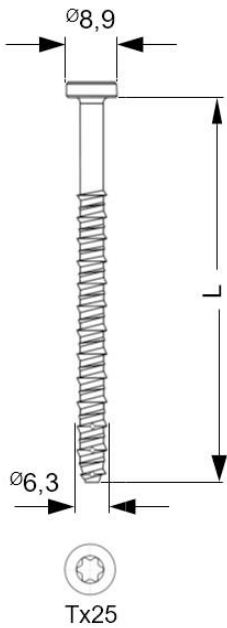
ZSSB 6,0



clickplate



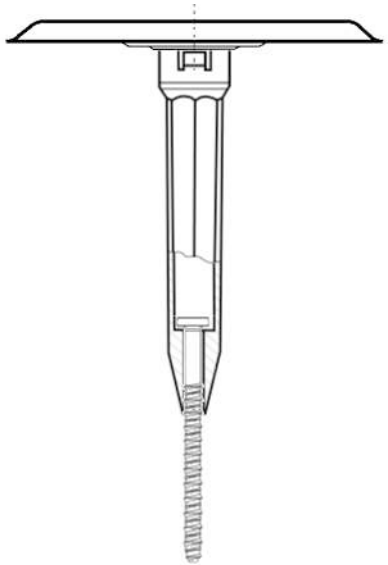
Zahn ZBST-E 6,3 x L



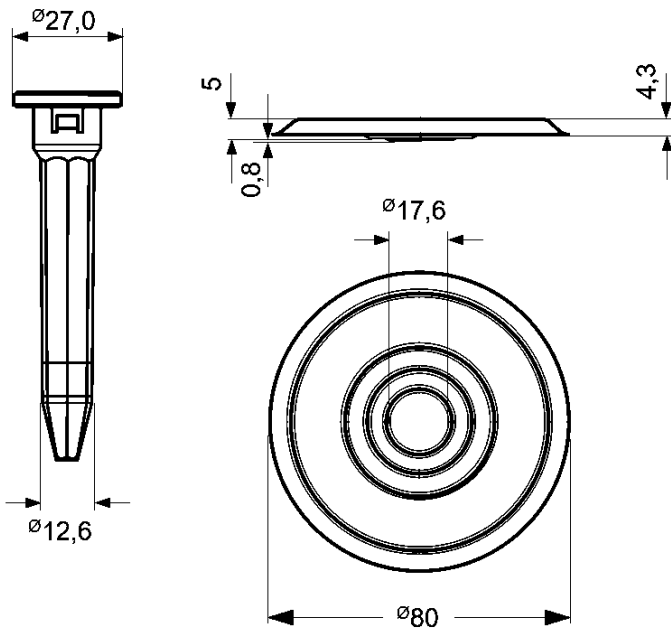
Zahn Flat Roof Fasteners

Annex 133

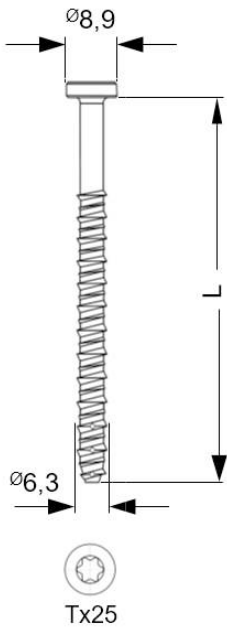
Combination 133
ZSSB / clickplate / ZBST-E concrete-direct



Zahn ZCTS-pipe 6,0 and ZCTS-plate



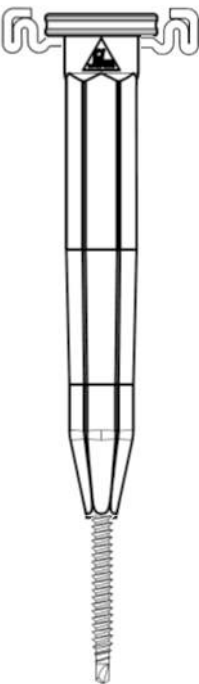
Zahn ZBST-E 6,3 x L



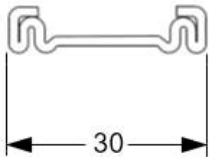
Zahn Flat Roof Fasteners

Combination 133a
ZCTS-E concrete-direct / ZBST-E
consisting of ZBST-E 6,3 / ZCTS-pipe 6,0 and ZCTS-plate

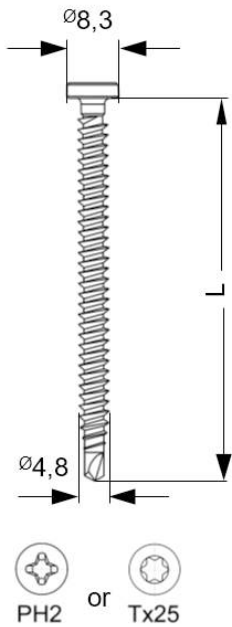
Annex 133a



Zahn ZSSB-pipe 4,8 with bar



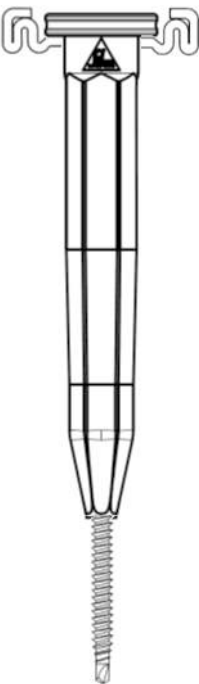
Zahn ZDBK 4,8 x L



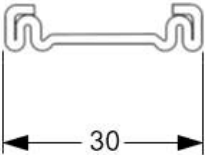
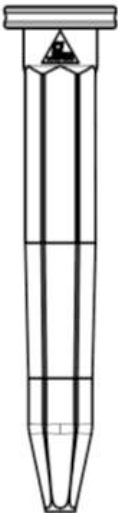
Zahn Flat Roof Fasteners

Combination 134
ZSSB trapeze
consisting of ZDBK / ZSSB-pipe 4,8 and bar

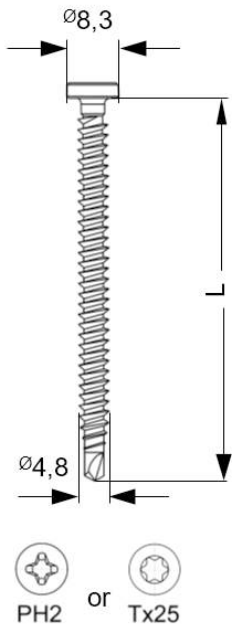
Annex 134



Zahn ZSSB-pipe 4,8 with bar



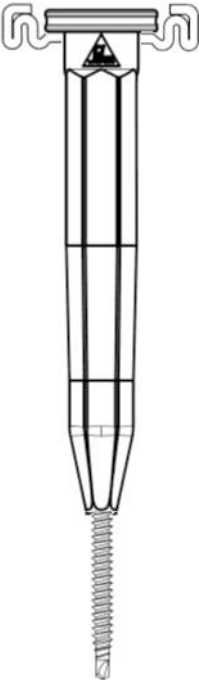
Zahn ZDBK-E 4,8 x L



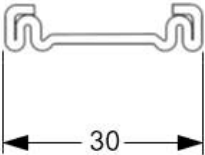
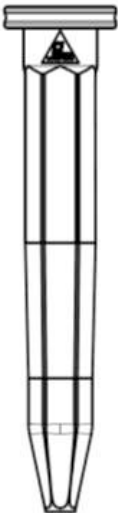
Zahn Flat Roof Fasteners

Combination 135
ZSSB-E trapeze
consisting of ZDBK-E / ZSSB-pipe 4,8 and bar

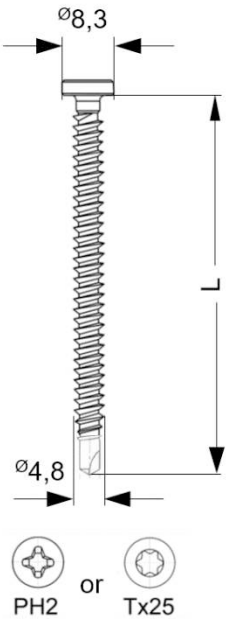
Annex 135



Zahn ZSSB-pipe 4,8 with bar



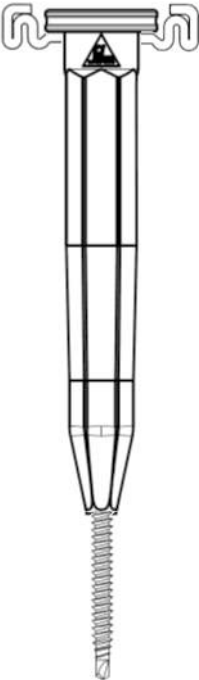
Zahn ZDBK-VB 4,8 x L



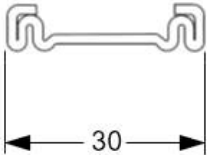
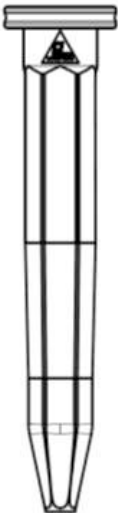
Zahn Flat Roof Fasteners

Combination 136
ZSSB-VB trapeze
consisting of ZDBK-VB / ZSSB-pipe 4,8 and bar

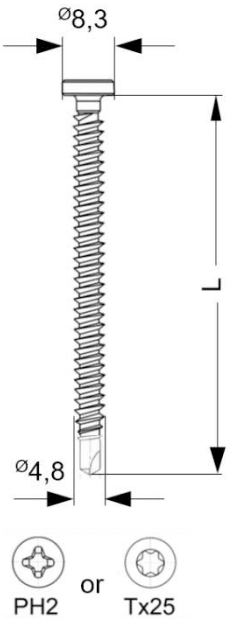
Annex 136



Zahn ZSSB-pipe 4,8 with bar



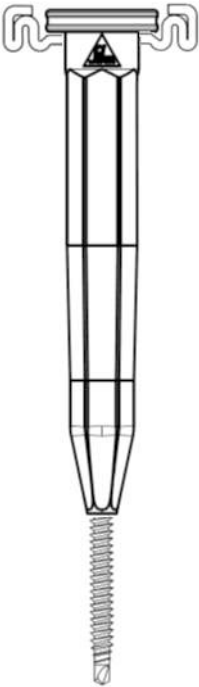
Zahn ZDBK-VB-E 4,8 x L



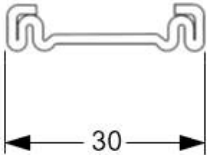
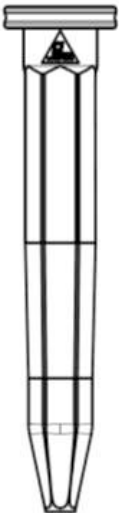
Zahn Flat Roof Fasteners

Combination 137
ZSSB-E-VB trapeze
consisting of ZDBK-VB-E / ZSSB-pipe 4,8 and bar

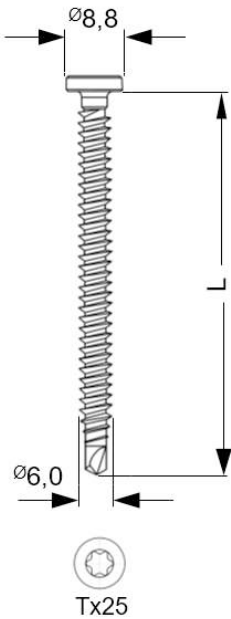
Annex 137



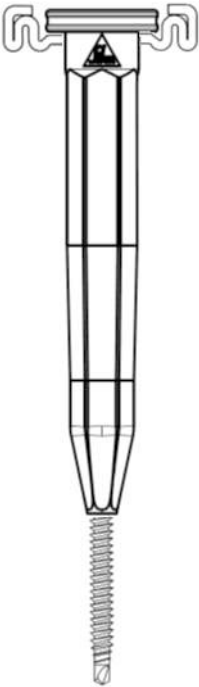
Zahn ZSSB-pipe 6,0 with bar



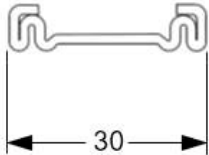
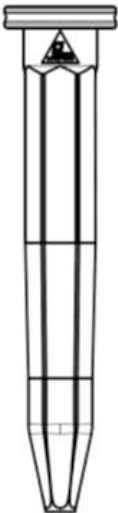
Zahn ZMDS 6,0 x L



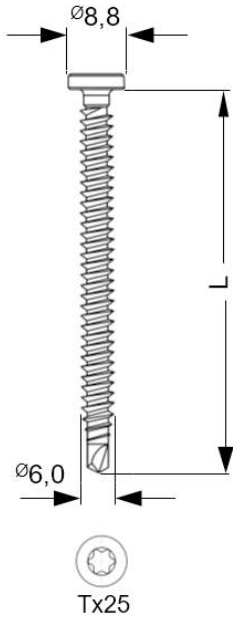
Zahn Flat Roof Fasteners	Annex 138
Combination 138 ZSSB multi consisting of ZMDS / ZSSB-pipe 6,0 and bar	



Zahn ZSSB-pipe 6,0 with bar



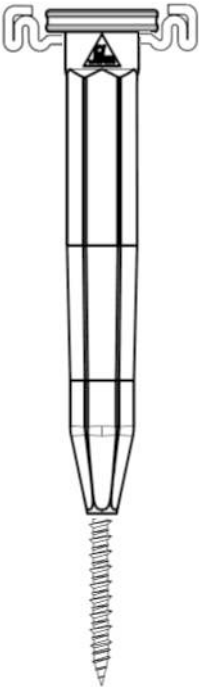
Zahn ZMDS-E 6,0 x L



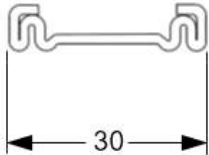
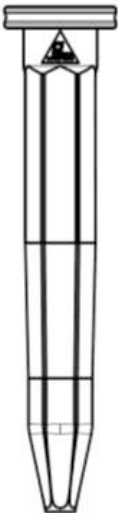
Zahn Flat Roof Fasteners

Combination 139
ZSSB-multi-E
consisting of ZMDS-E / ZSSB-pipe 6,0 and bar

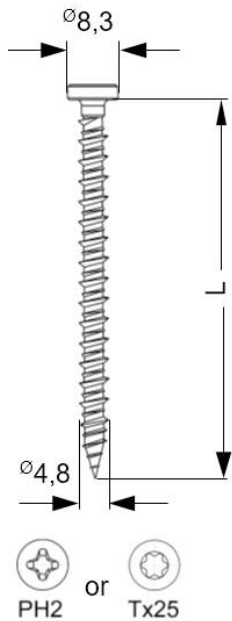
Annex 139



Zahn ZSSB-pipe 4,8 with bar



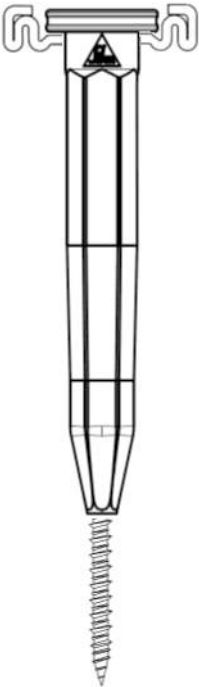
Zahn ZHBK 4,8 x L



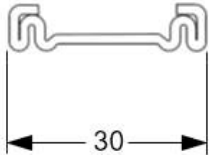
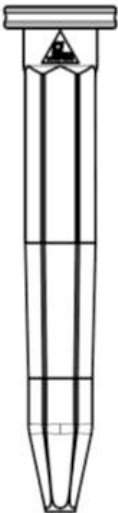
Zahn Flat Roof Fasteners

Combination 140
ZSSB-timber
consisting of ZHBK / ZSSB-pipe 4,8 and bar

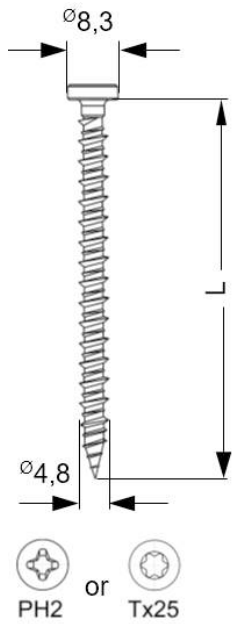
Annex 140



Zahn ZSSB-pipe 4,8 with bar



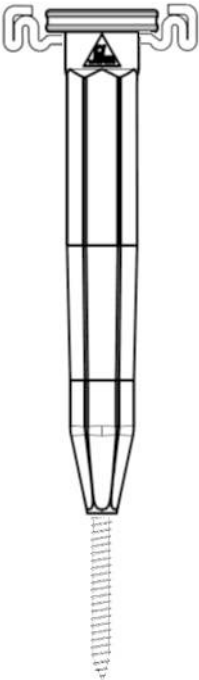
Zahn ZHBK-E 4,8 x L



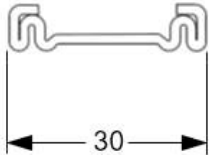
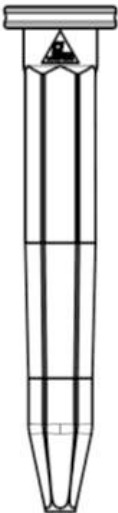
Zahn Flat Roof Fasteners

Combination 141
ZSSB-E-timber
consisting of ZHBK-E / ZSSB-pipe 4,8 and bar

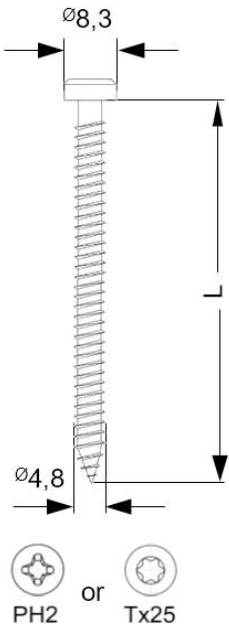
Annex 141



Zahn ZSSB-pipe 4,8 with bar



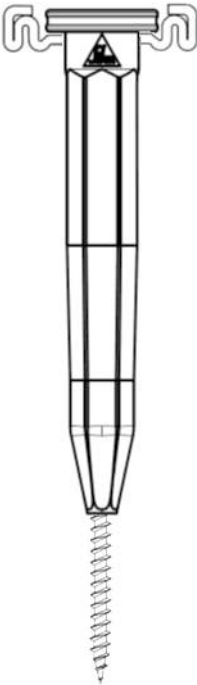
Zahn ZDBK_{dowel} 4,8 x L



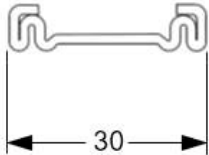
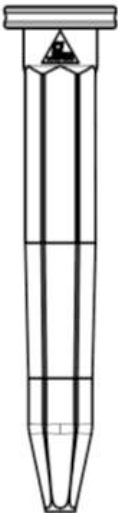
Zahn Flat Roof Fasteners

Combination 142
ZSSB-ZDBK-dowel
consisting of ZDBK_{dowel} / ZSSB-pipe 4,8 and bar

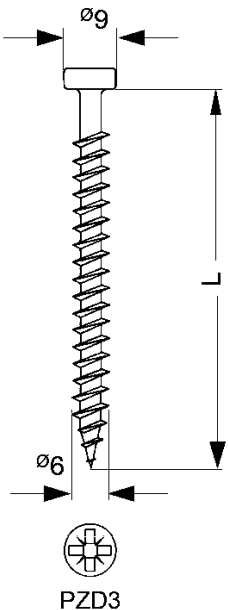
Annex 142



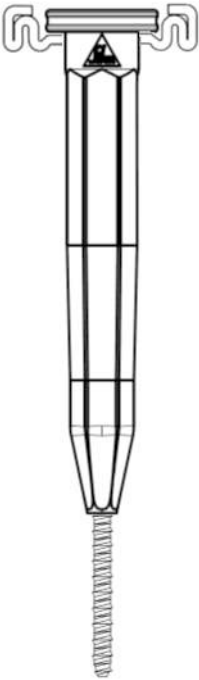
Zahn ZSSB-pipe 6,0 with bar



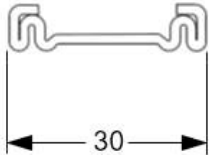
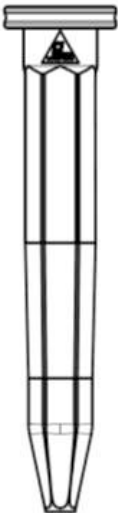
Zahn ZGBK-E 6,0 x L



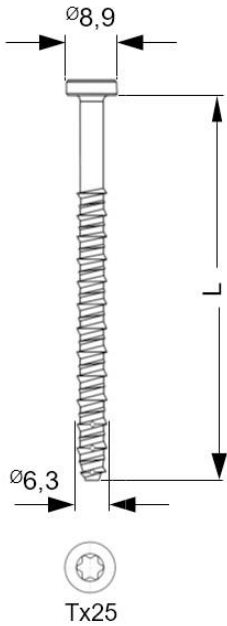
Zahn Flat Roof Fasteners	Annex 143
Combination 143 ZSSB-PB direct consisting of ZGBK-E / ZSSB-pipe 6,0 and bar	



Zahn ZSSB-pipe 6,0 with bar



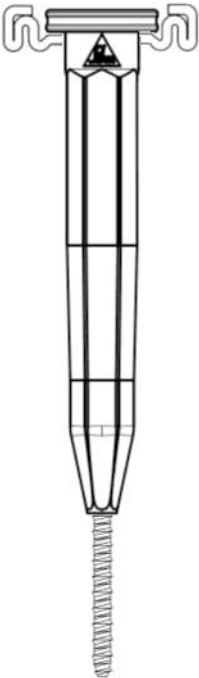
Zahn ZBST 6,3 x L



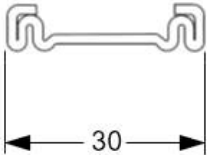
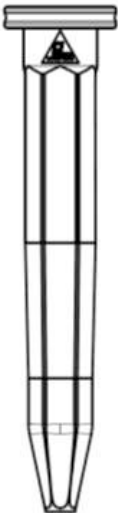
Zahn Flat Roof Fasteners

Combination 144
ZSSB-concrete-direct
consisting of ZBST / ZSSB-pipe 6,0 and bar

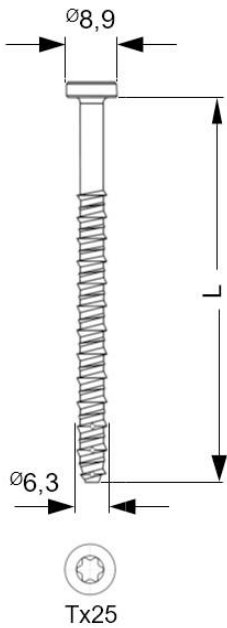
Annex 144



Zahn ZSSB-pipe 6,0 with bar



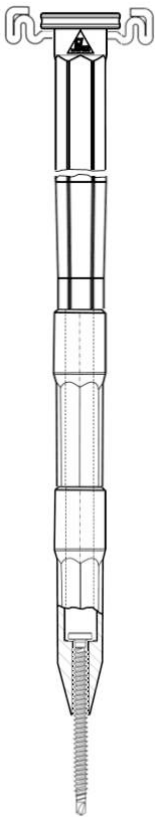
Zahn ZBST-E 6,3 x L



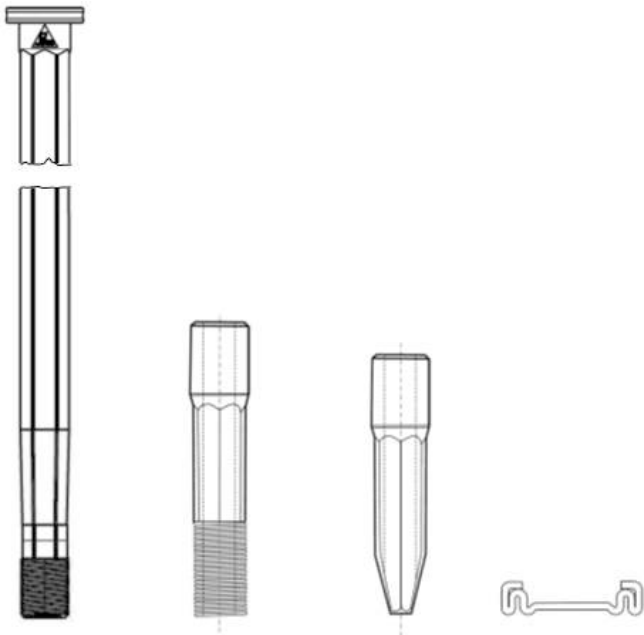
Zahn Flat Roof Fasteners

Combination 145
ZSSB-E-concrete-direct
consisting of ZBST-E / ZSSB-pipe 6,0 and bar

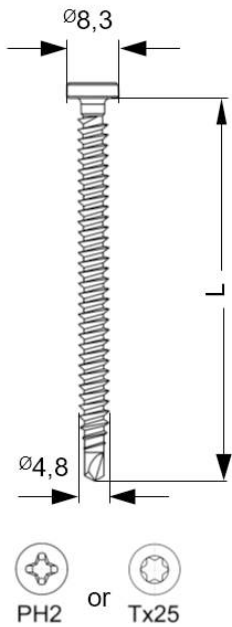
Annex 145



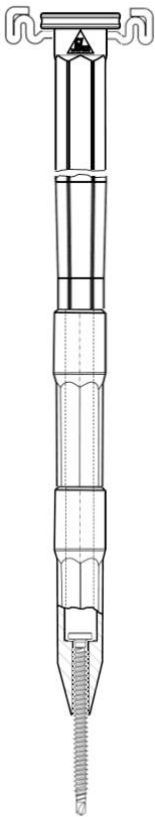
Zahn ZSSB-module-pipe with module 4,8 and bar



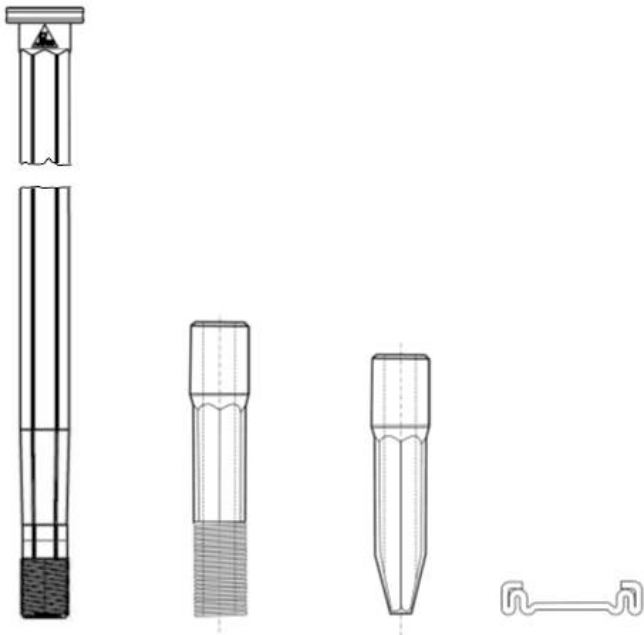
Zahn ZDBK 4,8 x L



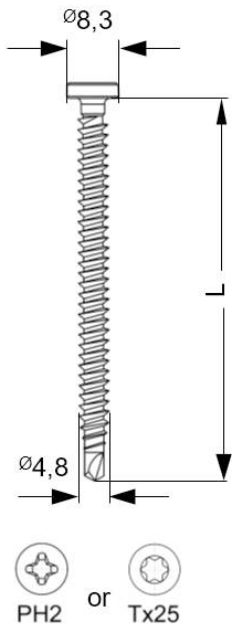
Zahn Flat Roof Fasteners	Annex 146
Combination 146 ZSSB-module trapeze consisting of ZDBK / ZSSB-module-pipe, module middle piece, module spike 4,8 and ZSSB bar	



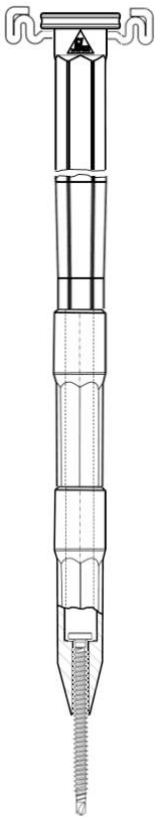
Zahn ZSSB-module-pipe with module 4,8 and bar



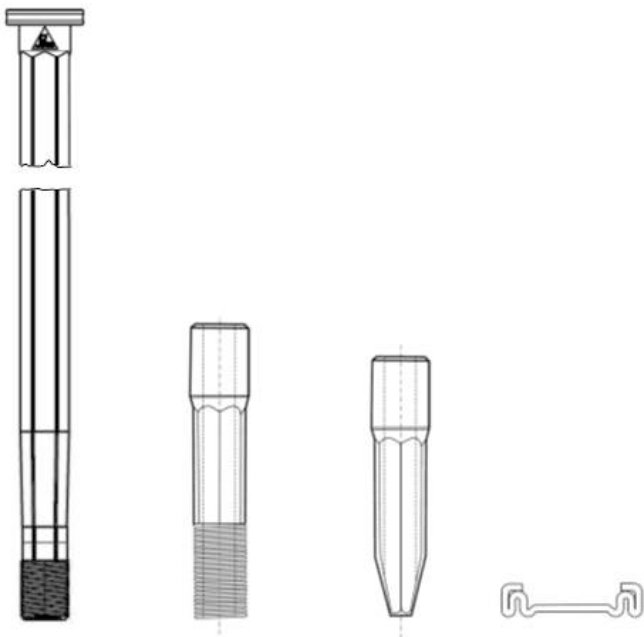
Zahn ZDBK-E 4,8 x L



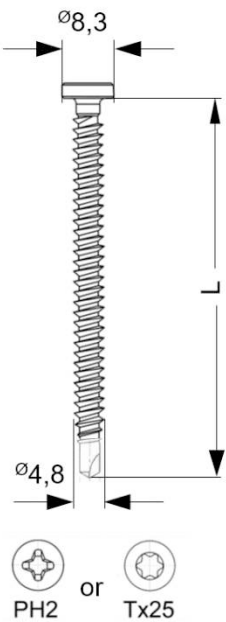
Zahn Flat Roof Fasteners	Annex 147
Combination 147 ZSSB-E-module trapeze consisting of ZDBK-E / ZSSB-module-pipe, module middle piece, module spike 4,8 and ZSSB bar	



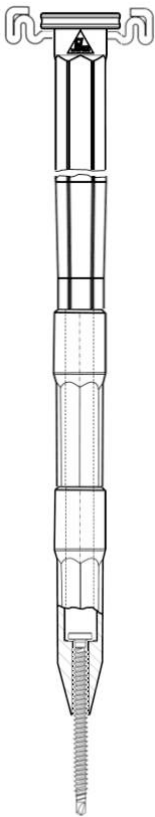
Zahn ZSSB-module-pipe with module 4,8 and bar



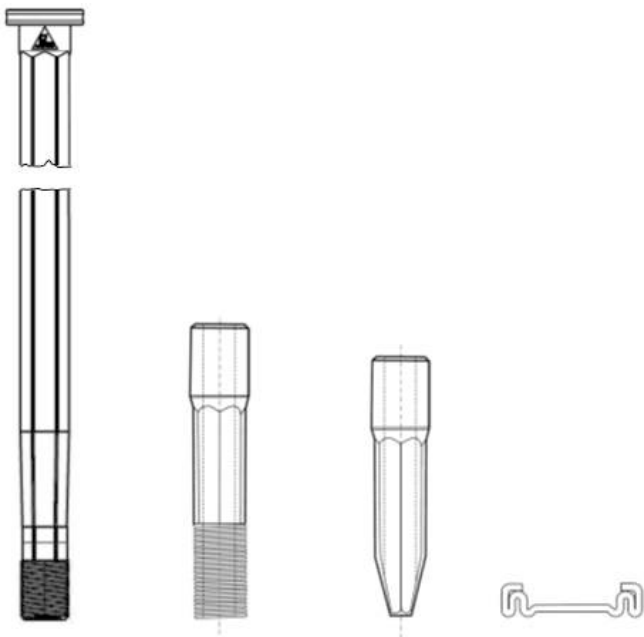
Zahn ZDBK-VB 4,8 x L



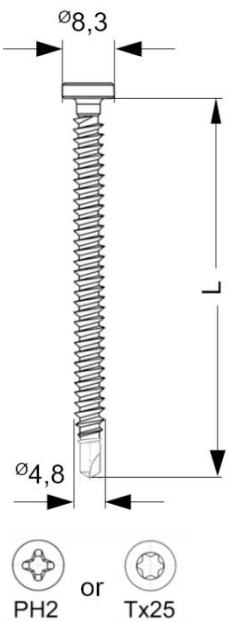
Zahn Flat Roof Fasteners	Annex 148
Combination 148 ZSSB-VB-module trapeze consisting of ZDBK-VB / ZSSB-module-pipe, module middle piece, module spike 4,8 and ZSSB bar	



Zahn ZSSB-module-pipe with module 4,8 and bar



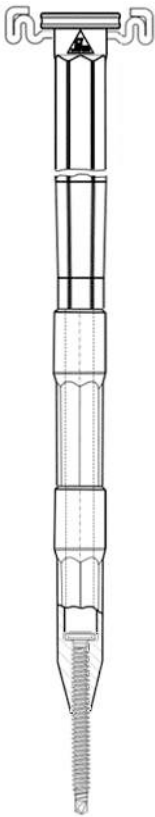
Zahn ZDBK-VB-E 4,8 x L



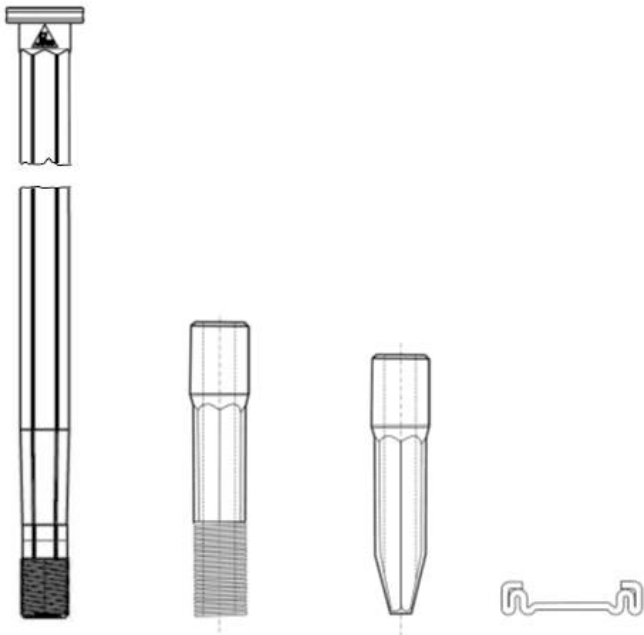
Zahn Flat Roof Fasteners

Combination 149
ZSSB-E-VB-module trapeze consisting of ZDBK-VB-E / ZSSB-module-pipe,
module middle piece, module spike 4,8 and ZSSB bar

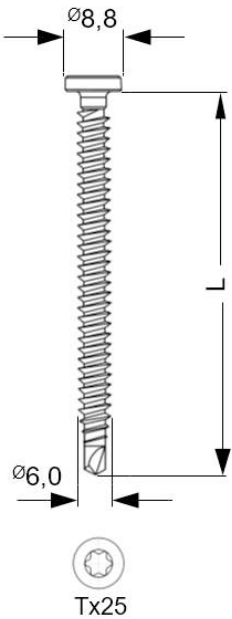
Annex 149



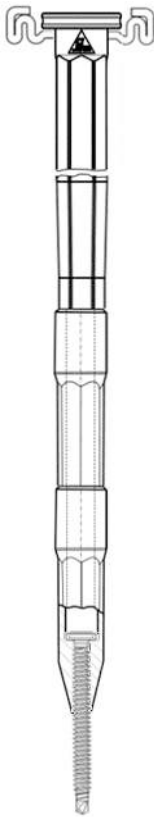
Zahn ZSSB-module-pipe with module 6,0 and bar



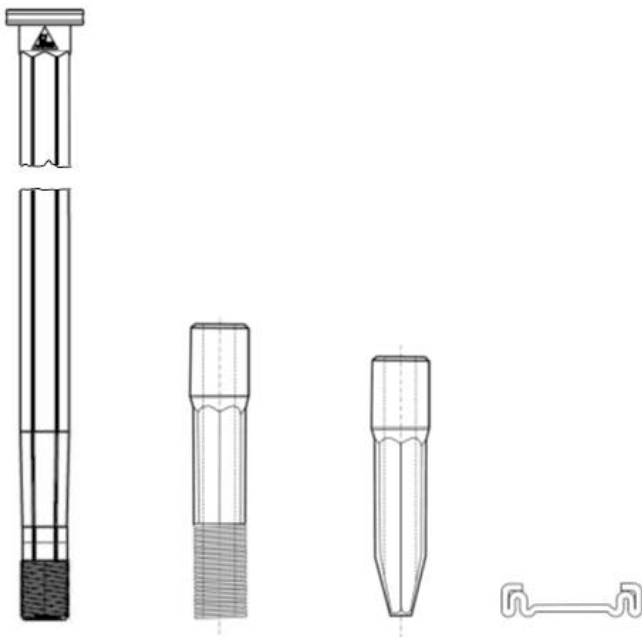
Zahn ZMDS 6,0 x L



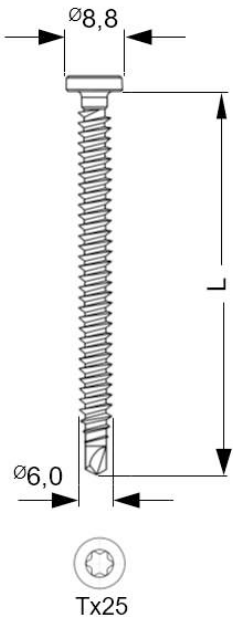
Zahn Flat Roof Fasteners	Annex 150
Combination 150 ZSSB-multi-module consisting of ZMDS / ZSSB-module-pipe, module middle piece, module spike 6,0 and ZSSB bar	



Zahn ZSSB-module-pipe with module 6,0 and bar



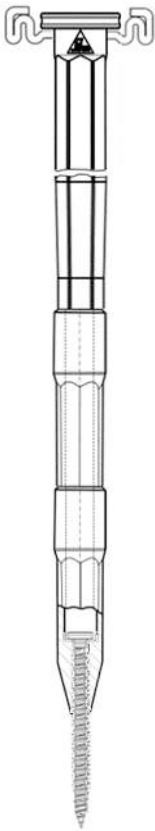
Zahn ZMDS-E 6,0 x L



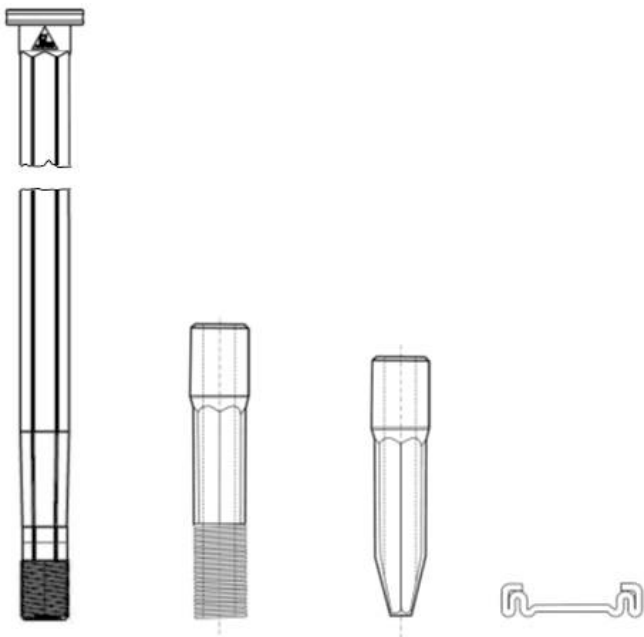
Zahn Flat Roof Fasteners

Combination 151
ZSSB-multi-E module consisting of ZMDS-E / ZSSB-module-pipe,
module middle piece, module spike 6,0 and ZSSB bar

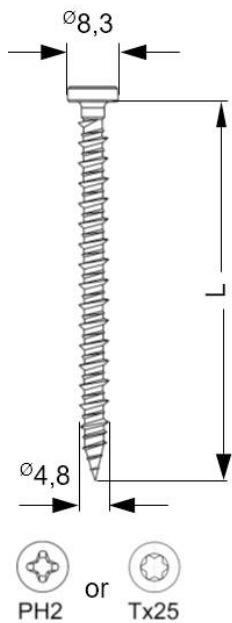
Annex 151



Zahn ZSSB-module-pipe with module 4,8 and bar



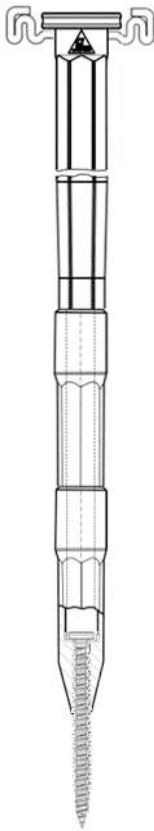
Zahn ZHBK 4,8 x L



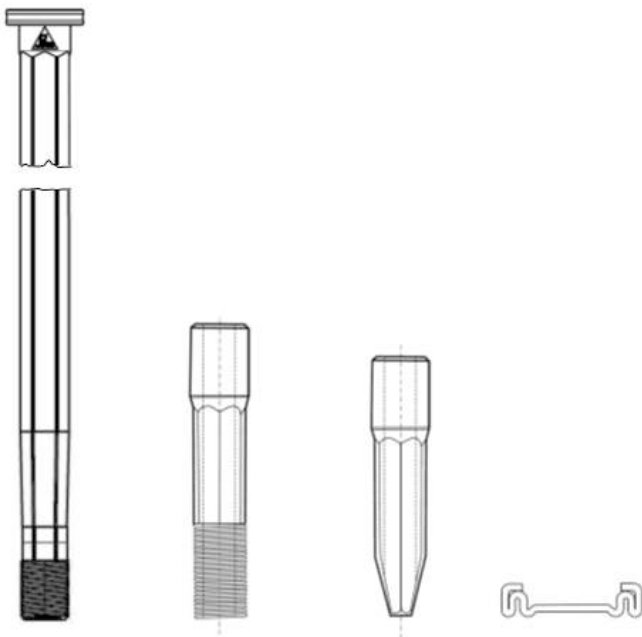
Zahn Flat Roof Fasteners

Combination 152
ZSSB-module timber consisting of ZHBK / ZSSB-module-pipe,
module middle piece, module spike 4,8 and ZSSB bar

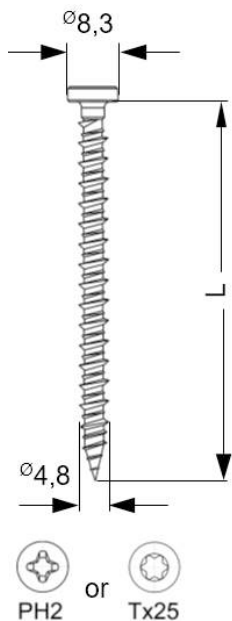
Annex 152



Zahn ZSSB-module-pipe with module 4,8 and bar



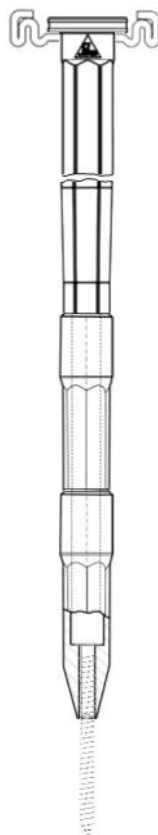
Zahn ZHBK-E 4,8 x L



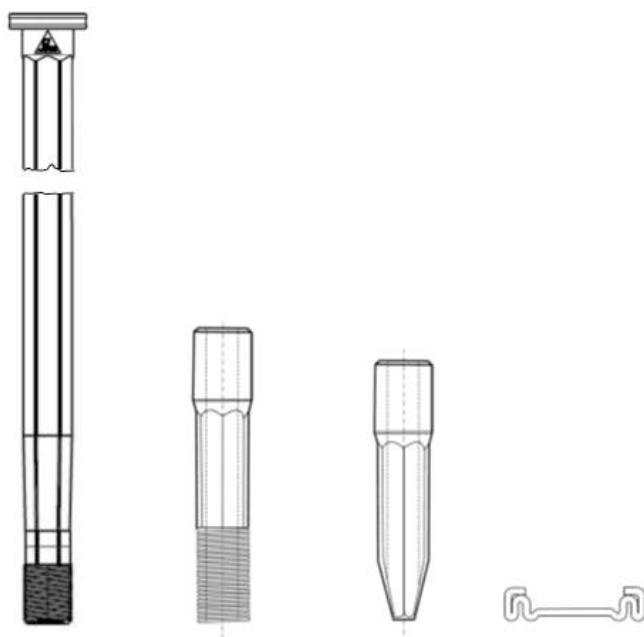
Zahn Flat Roof Fasteners

Combination 153
ZSSB-E-module timber consisting of ZHBK-E / ZSSB-module-pipe,
module middle piece, module spike 4,8 and ZSSB bar

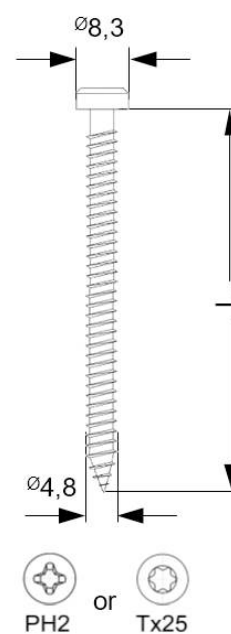
Annex 153



Zahn ZSSB-module-pipe with module 4,8 and bar



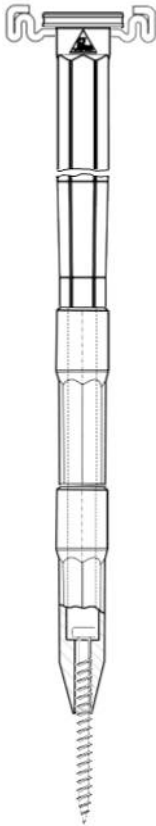
Zahn ZDBK_{dowel} 4,8 x L



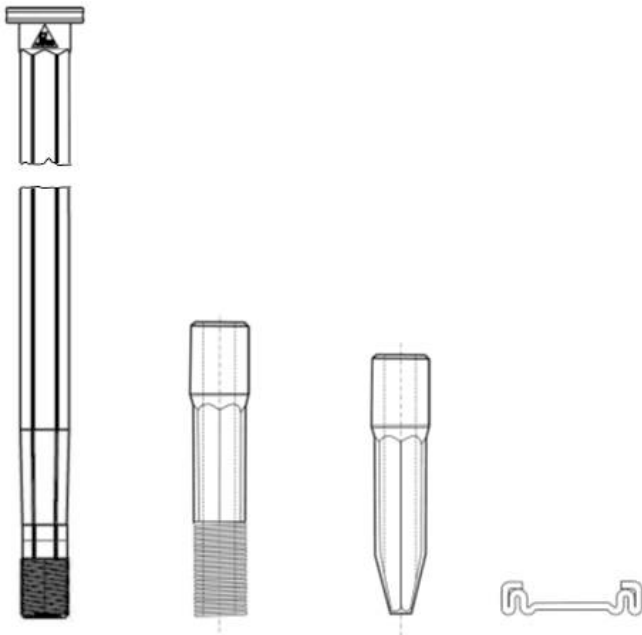
Zahn Flat Roof Fasteners

Combination 154
ZSSB-module ZDBK-dowel consisting of ZDBK_{dowel} / ZSSB-module-pipe,
module middle piece, module spike 4,8 and ZSSB bar

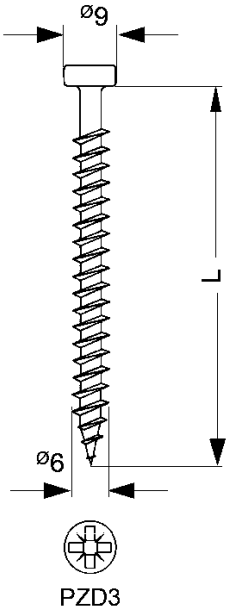
Annex 154



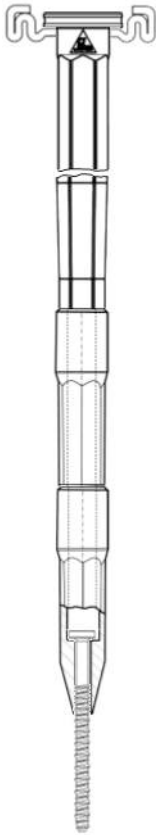
Zahn ZSSB-module-pipe with module 6,0 and bar



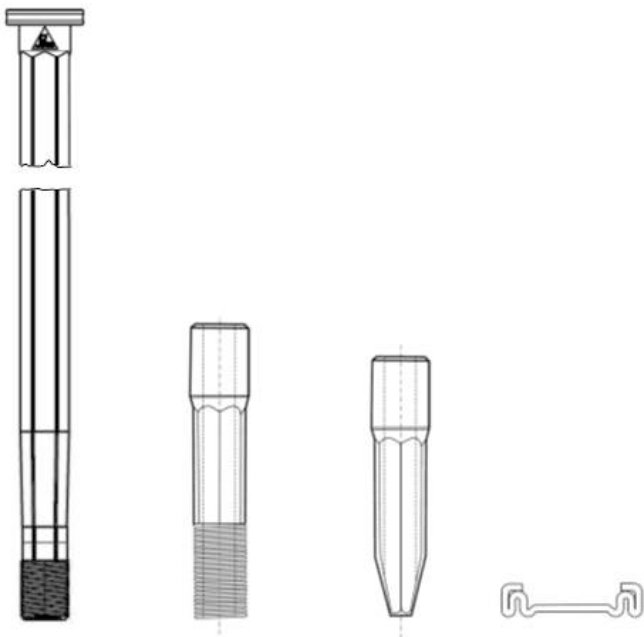
Zahn ZGBK-E 6,0 x L



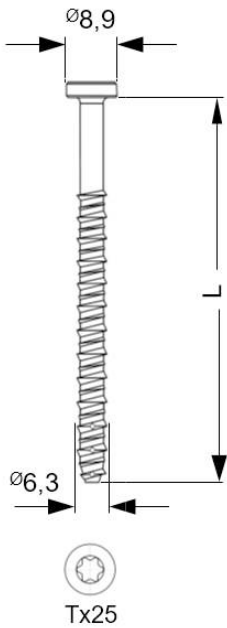
Zahn Flat Roof Fasteners	Annex 155
Combination 155 ZSSB-module PB-direct consisting of ZGBK-E / ZSSB-module-pipe, module middle piece, module spike 6,0 and ZSSB bar	



Zahn ZSSB-module-pipe with module 6,0 and bar



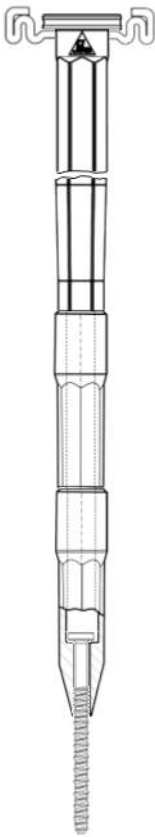
Zahn ZBST 6,3 x L



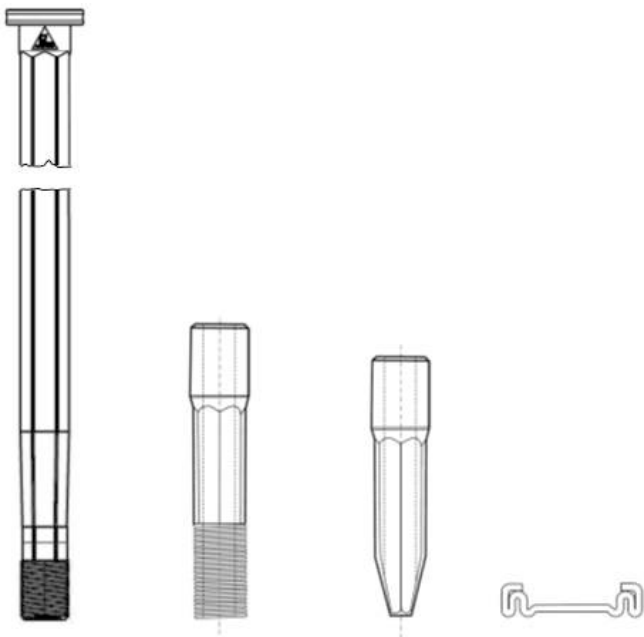
Zahn Flat Roof Fasteners

Combination 156
ZSSB-module concrete-direct consisting of ZBST / ZSSB-module-pipe,
module middle piece, module spike 6,0 and ZSSB bar

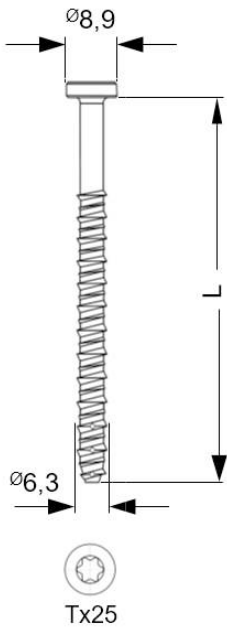
Annex 156



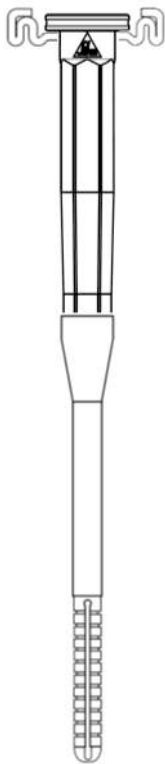
Zahn ZSSB-module-pipe with module 6,0 and bar



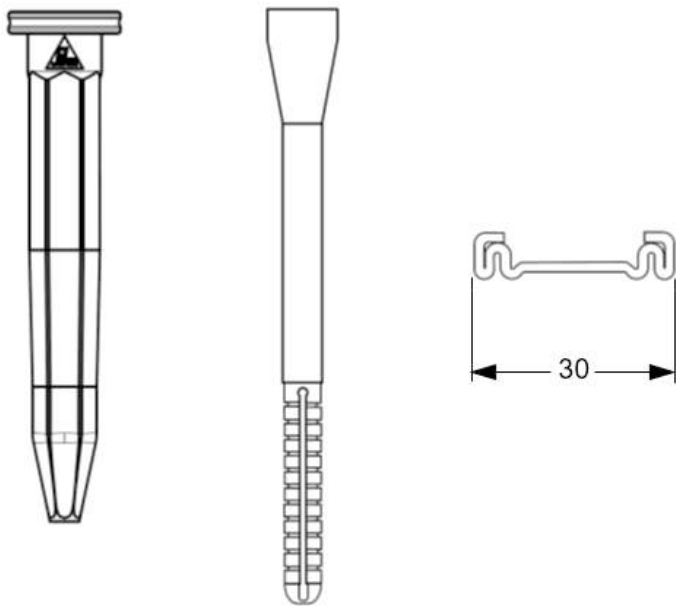
Zahn ZBST-E 6,3 x L



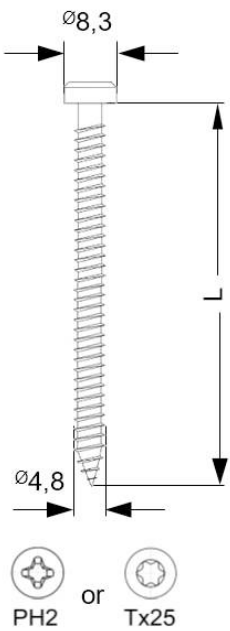
Zahn Flat Roof Fasteners	Annex 157
Combination 157 ZSSB-E-module concrete-direct consisting of ZBST-E / ZSSB-module-pipe, module middle piece, module spike 6,0 and ZSSB bar	



Zahn ZSSB-pipe 4,8 dowel attachment with bar



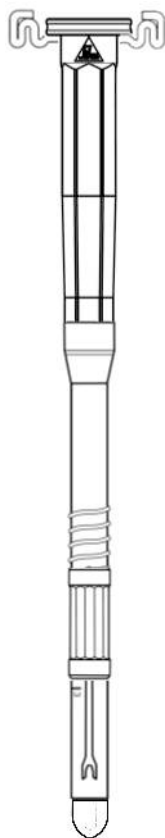
Zahn ZDBK_{dowel} 4,8 x L



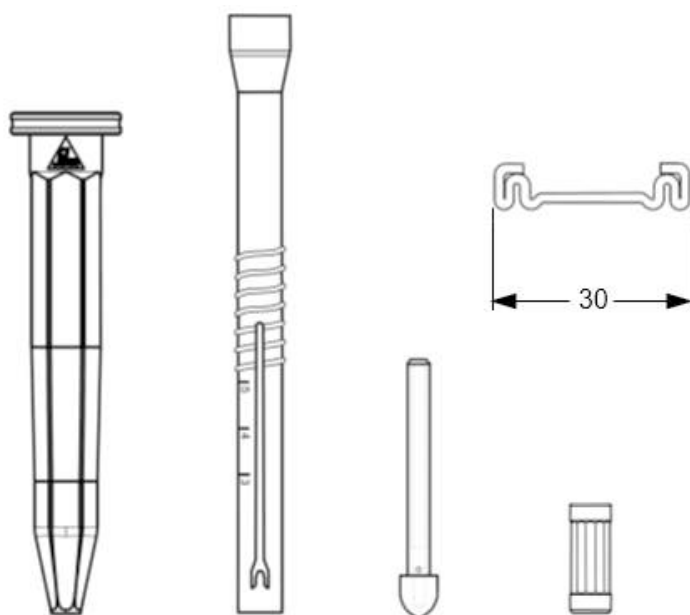
Zahn Flat Roof Fasteners

Combination 158
ZSSB-ZDBK-dowel concrete
consisting of ZDBK_{dowel} / ZSSB-pipe 4,8, ZSSB bar and dowel attachment

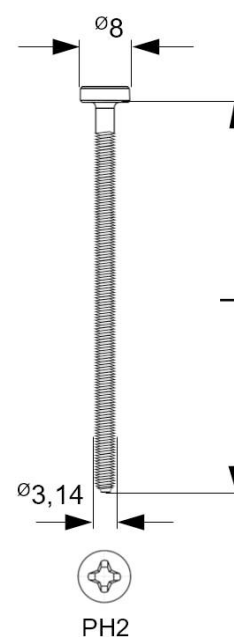
Annex 158



Zahn ZSSB-pipe 4,8 with expanding dowel attachment and bar



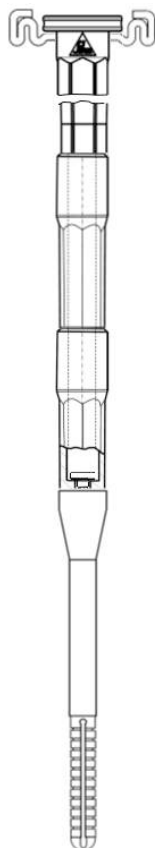
Zahn metric screw-E 3,14 x L



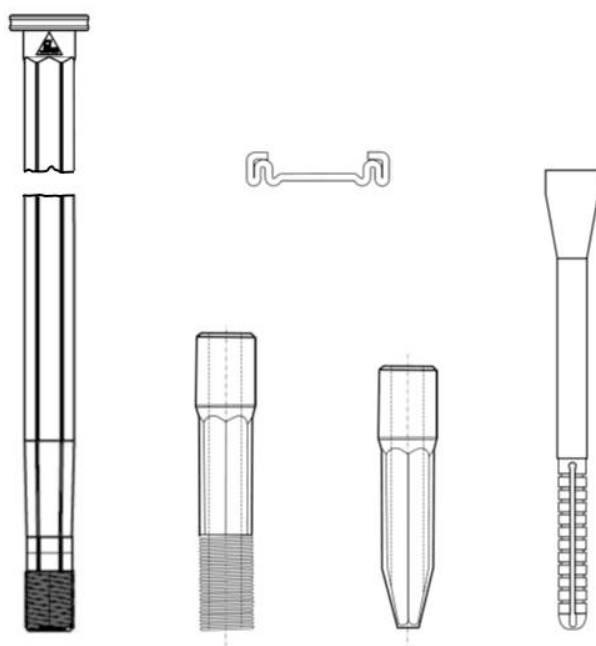
Zahn Flat Roof Fasteners

Combination 159
ZSSB-ZHRD consisting of metric screw-E / ZSSB-pipe 4,8, ZSSB bar
and expanding dowel attachment

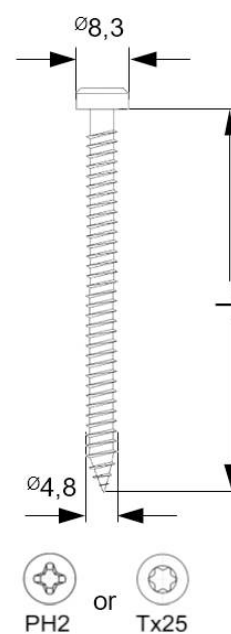
Annex 159



Zahn ZSSB-module-pipe 4,8 with module, dowel attachment and bar



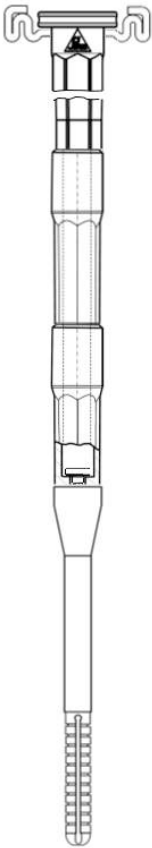
Zahn ZDBK_{dowel} 4,8 x L



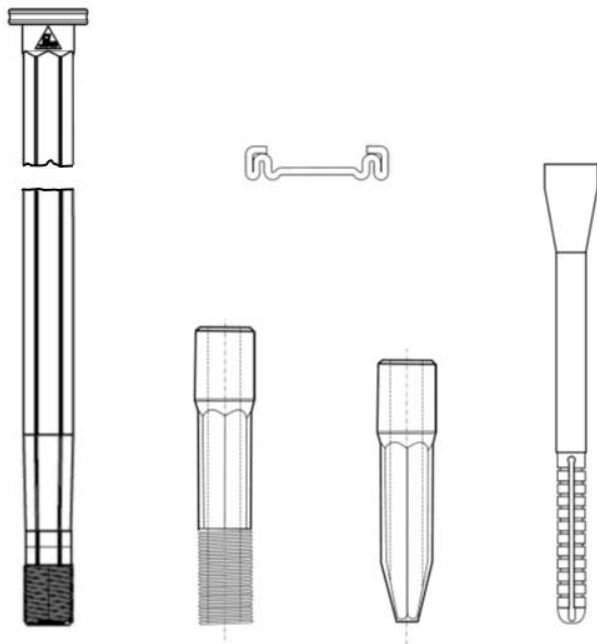
Zahn Flat Roof Fasteners

Combination 160
ZSSB-module-ZDBK-dowel concrete consisting of ZDBK_{dowel} / ZSSB-module-pipe,
-middle piece, -spike 4,8, dowel attachment and ZSSB bar

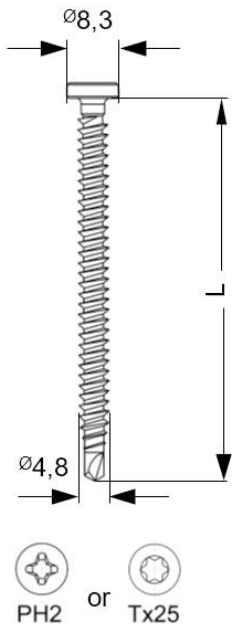
Annex 160



Zahn ZSSB-module-pipe 4,8 with module, dowel attachment and bar



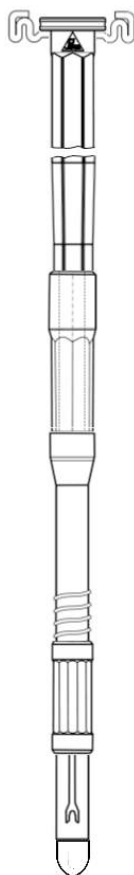
Zahn ZDBK-E 4,8 x L



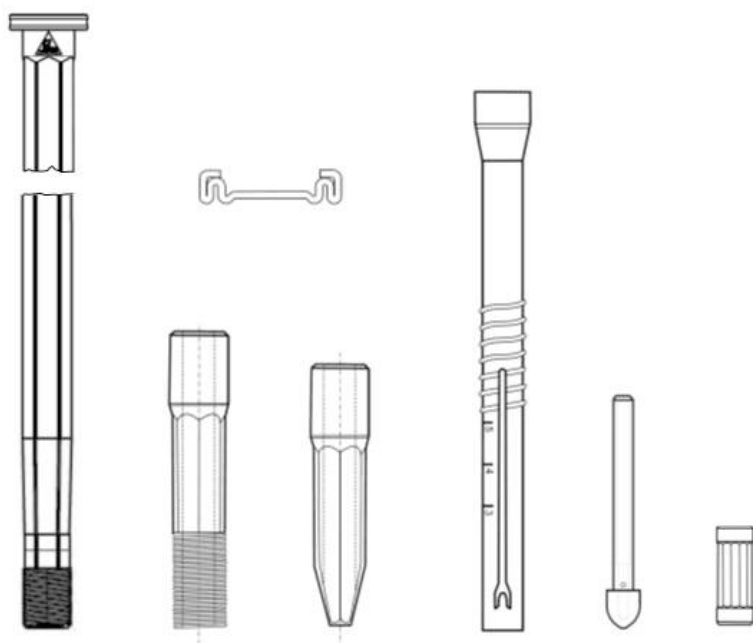
Zahn Flat Roof Fasteners

Annex 161

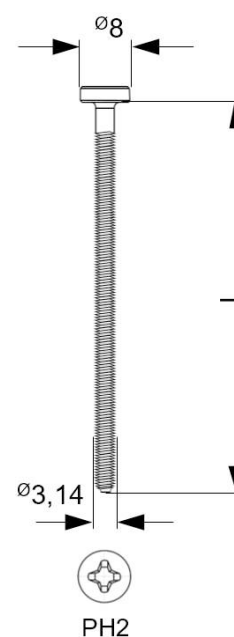
Combination 161
ZSSB-E-module concrete consisting of ZDBK-E / ZSSB-module-pipe,
-middle piece, -spike 4,8, dowel attachment and ZSSB bar



Zahn ZSSB-module-pipe 4,8 with module,
expanding dowel attachment and bar



Zahn metric screw-E 3,14 x L



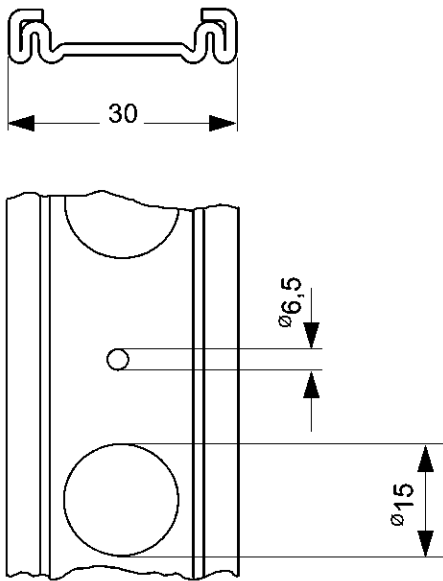
Zahn Flat Roof Fasteners

Combination 162
ZSSB-ZHRD-module consisting of metric screw-E / ZSSB-module-pipe,
-middle piece, -spike 4,8, ZSSB bar and expanding dowel attachment

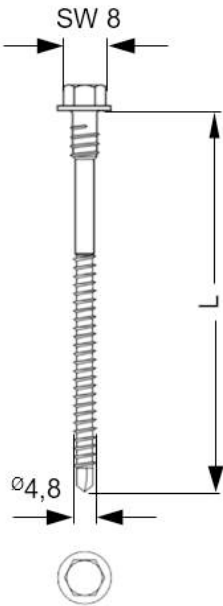
Annex 162



ZSSB bar



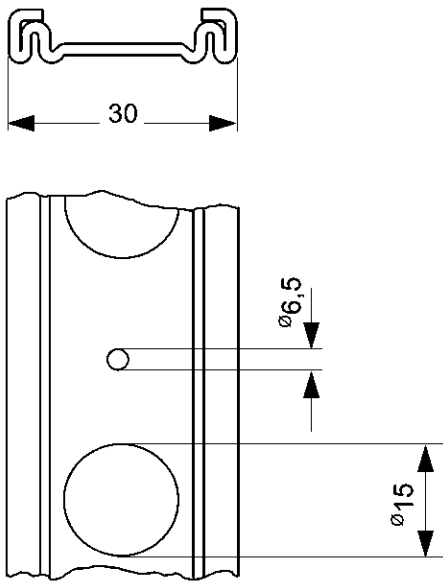
Zahn ZDBS 4,8 x L



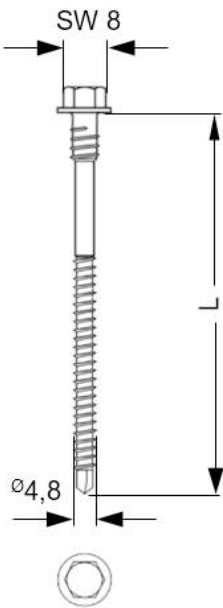
Zahn Flat Roof Fasteners	Annex 163
Combination 163 Sarnabar / ZDBS	



ZSSB bar



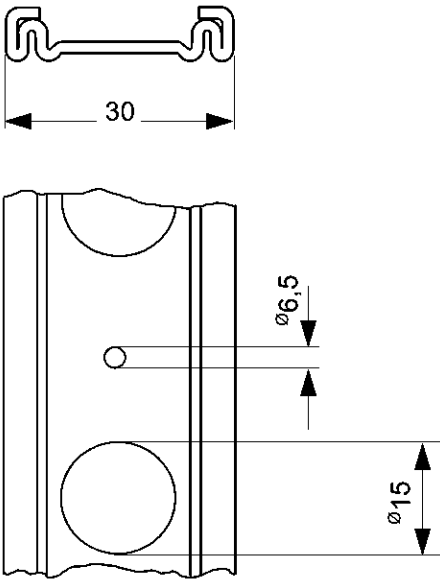
Zahn ZDBS-VB 4,8 x L



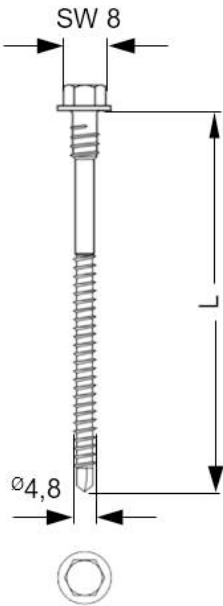
Zahn Flat Roof Fasteners	Annex 163a
Combination 163a Sarnabar / ZDBS-VB	



ZSSB bar



Zahn ZDBS-E 4,8 x L



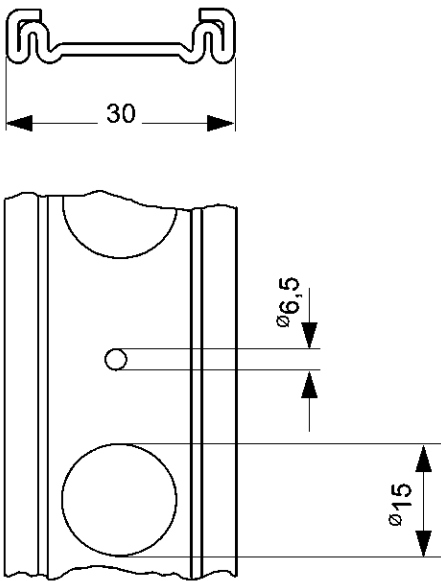
Zahn Flat Roof Fasteners

Combination 164
Sarnabar / ZDBS-E

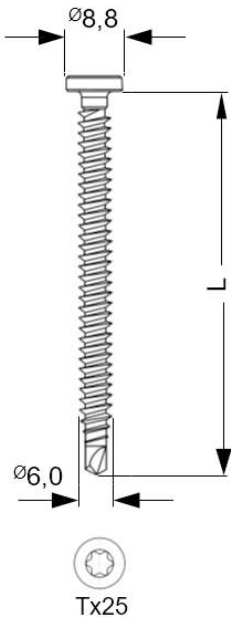
Annex 164



ZSSB bar



Zahn ZMDS 6,0 x L



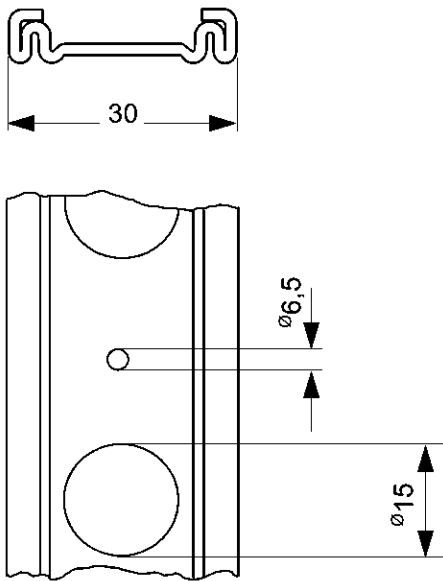
Zahn Flat Roof Fasteners

Combination 165
 Sarnabar / ZMDS

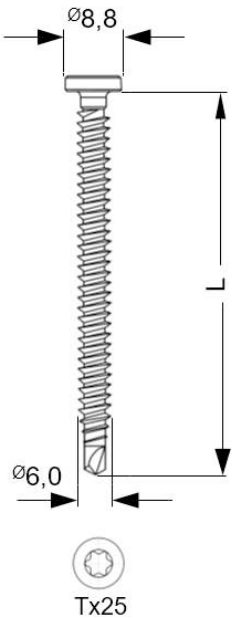
Annex 165



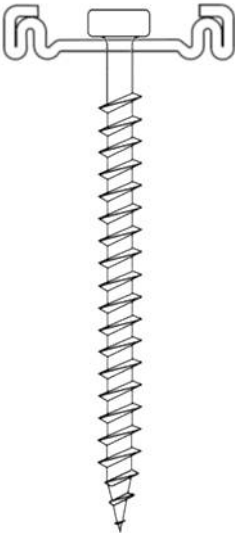
ZSSB bar



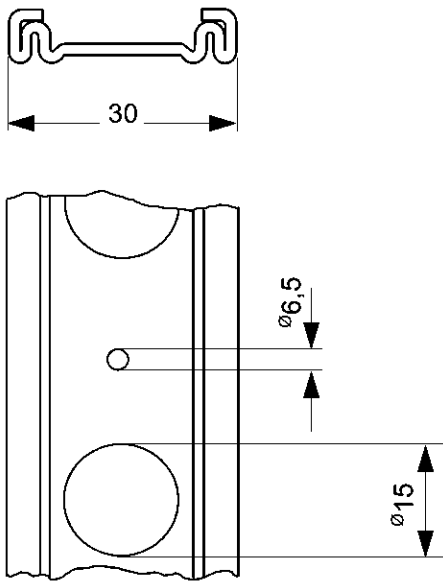
Zahn ZMDS-E 6,0 x L



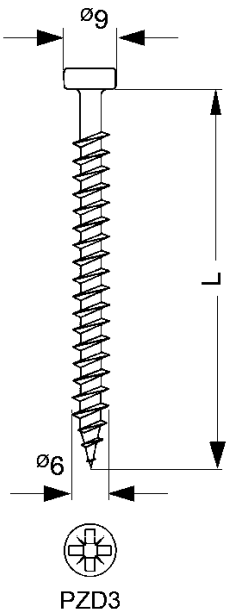
Zahn Flat Roof Fasteners	Annex 166
Combination 166 Sarnabar / ZMDS-E	



ZSSB bar



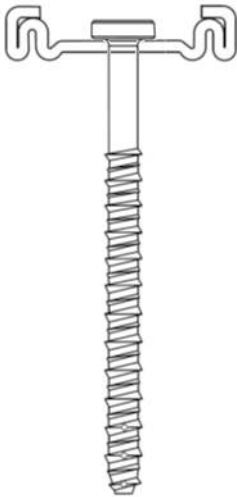
Zahn ZGBK-E 6,0 x L



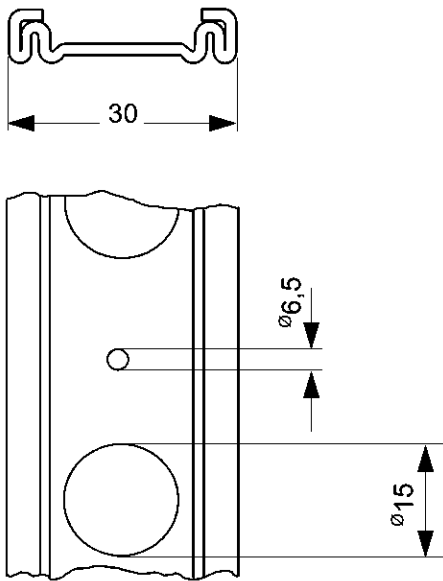
Zahn Flat Roof Fasteners

Combination 167
Sarnabar / ZGBK-E

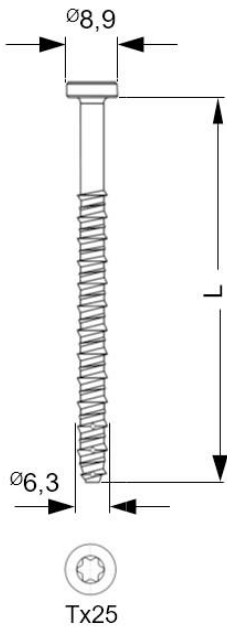
Annex 167



ZSSB bar



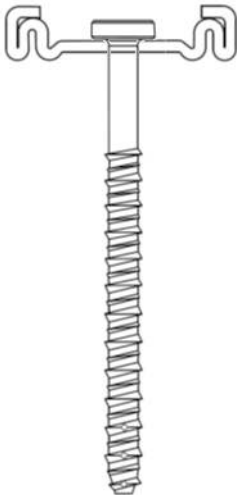
Zahn ZBST 6,3 x L



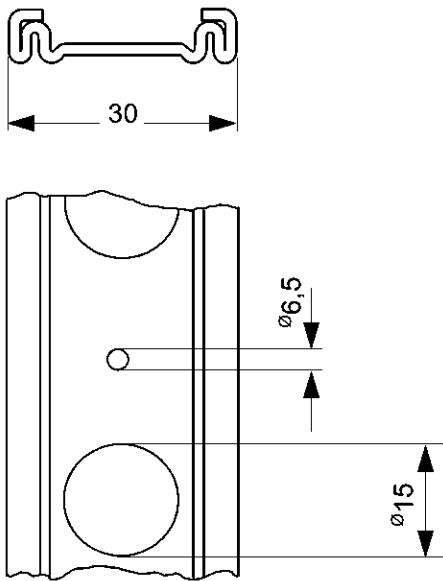
Zahn Flat Roof Fasteners

Combination 168
Sarnabar / ZBST

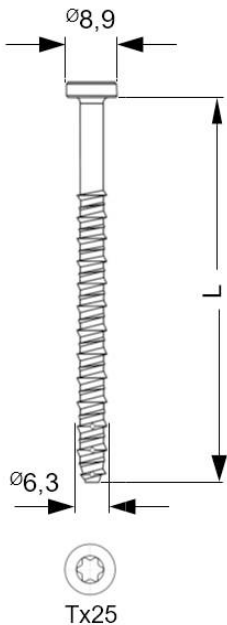
Annex 168



ZSSB bar



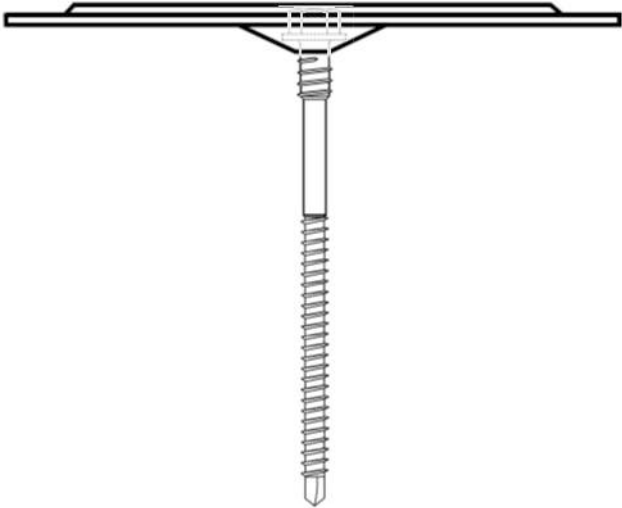
Zahn ZBST-E 6,3 x L



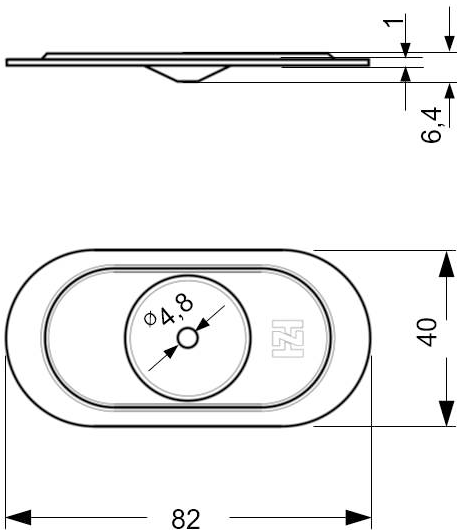
Zahn Flat Roof Fasteners

Combination 169
Sarnabar / ZBST-E

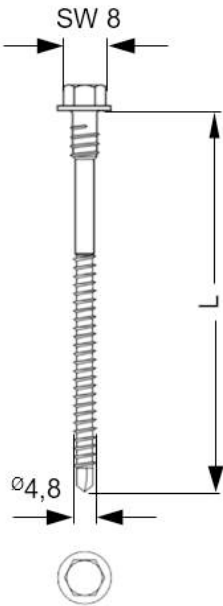
Annex 169



Zahn ZLVT 0001



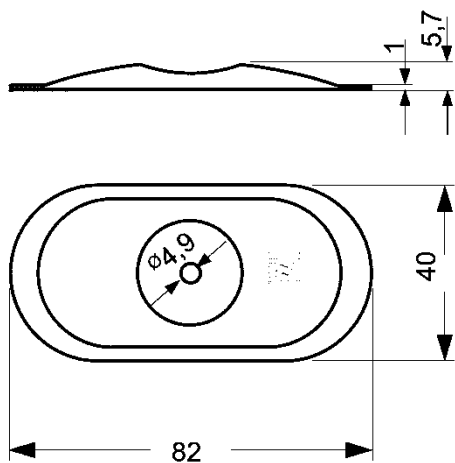
Zahn ZDBS₁ 4,8 x L



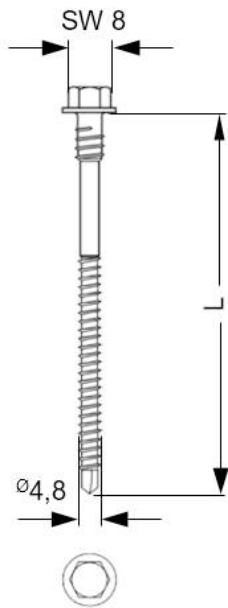
Zahn Flat Roof Fasteners	Annex 170
Combination 170 ZDBS-1 / ZLVT 0001	



Zahn ZLVT 0005



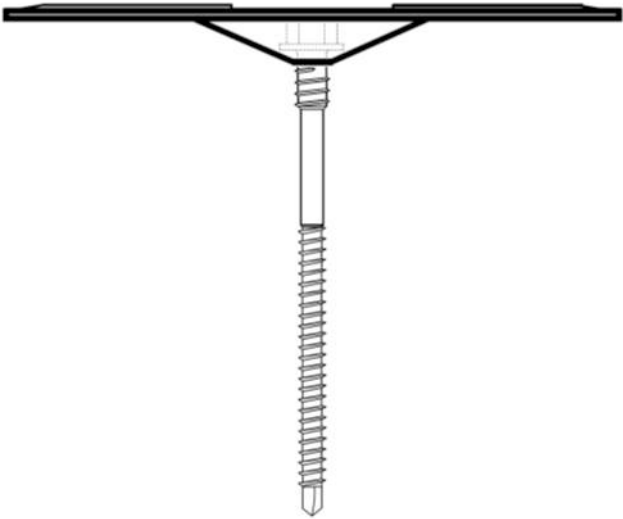
Zahn ZDBS₁ 4,8 x L



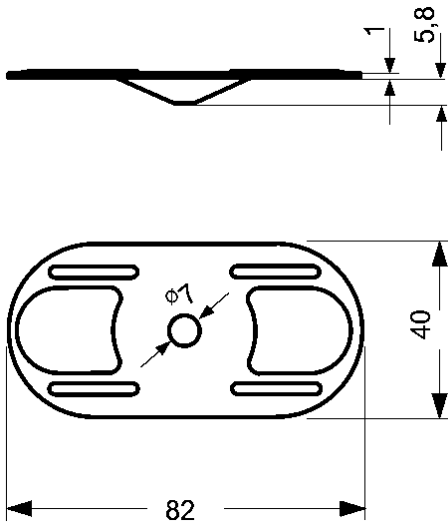
Zahn Flat Roof Fasteners

Combination 171
ZDBS-1 / ZLVT 0005

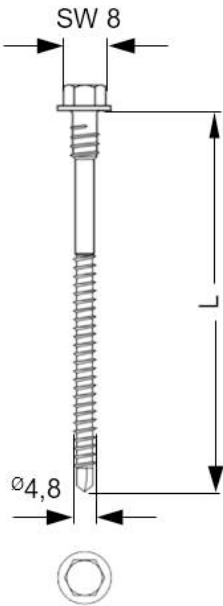
Annex 171



Zahn ZLVT 0012



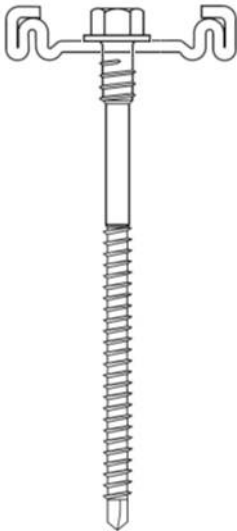
Zahn ZDBS₁ 4,8 x L



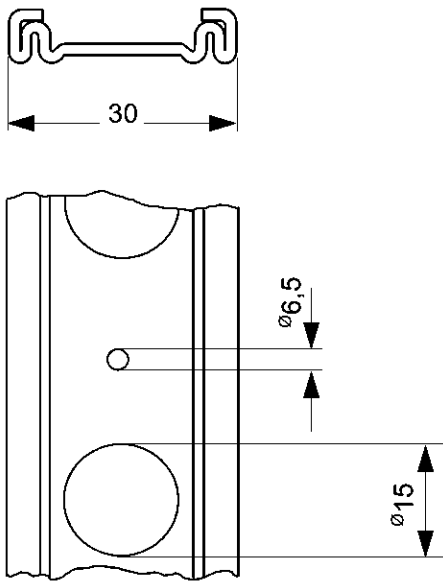
Zahn Flat Roof Fasteners

Combination 172
ZDBS-1 / ZLVT 0012

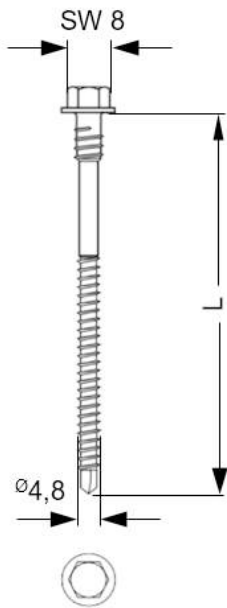
Annex 172



ZSSB bar



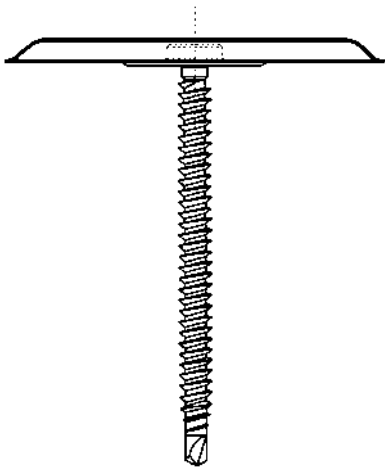
Zahn ZDBS₁ 4,8 x L



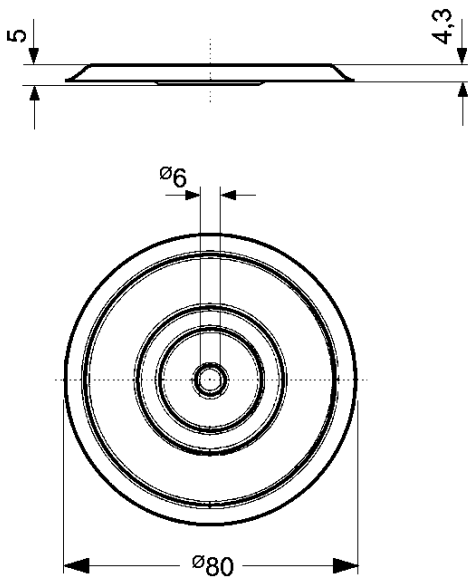
Zahn Flat Roof Fasteners

Combination 173
Sarnabar / ZSSB-1

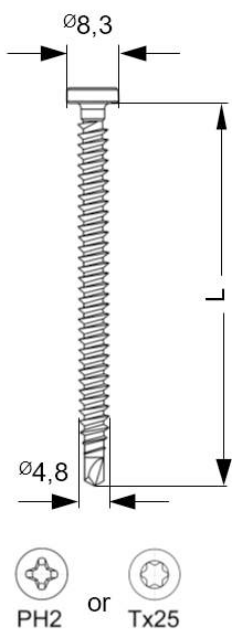
Annex 173



Zahn ZCTS₁-plate



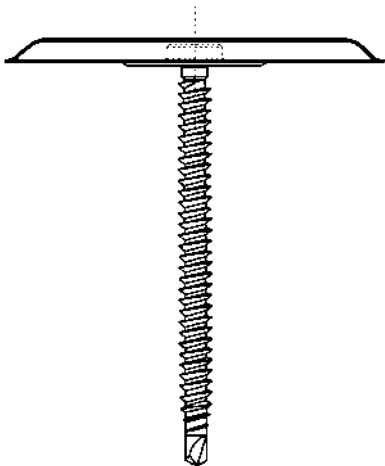
Zahn ZDBK 4,8 x L



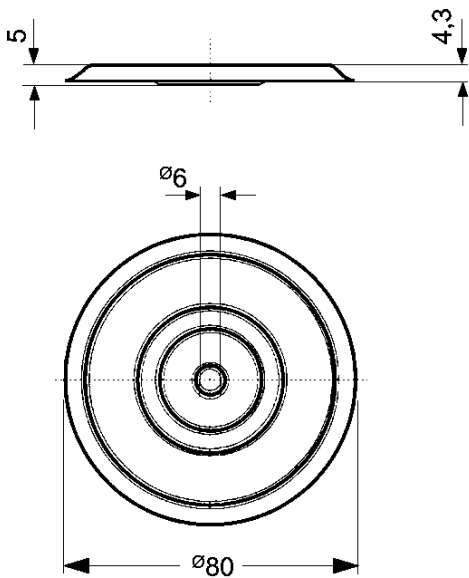
Zahn Flat Roof Fasteners

Combination 174
ZCTS-1 trapeze
consisting of ZDBK and ZCTS-1-plate

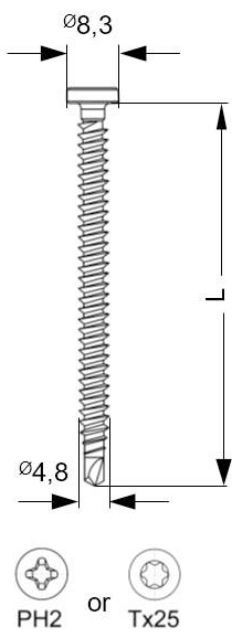
Annex 174



Zahn ZCTS₁-plate



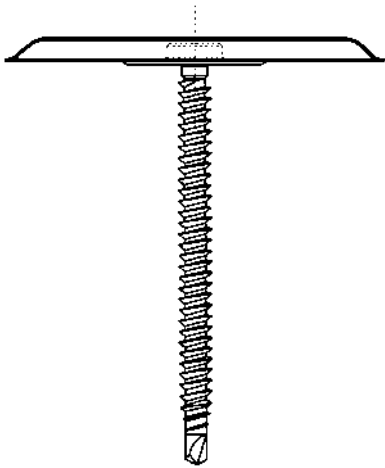
Zahn ZDBK-E 4,8 x L



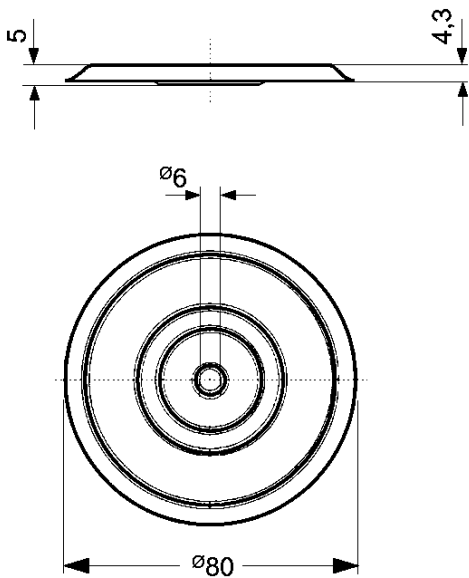
Zahn Flat Roof Fasteners

Annex 175

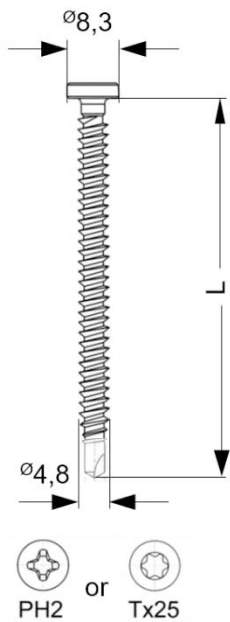
Combination 175
ZCTS-1-E trapeze
consisting of ZDBK-E and ZCTS-1-plate



Zahn ZCTS₁-plate



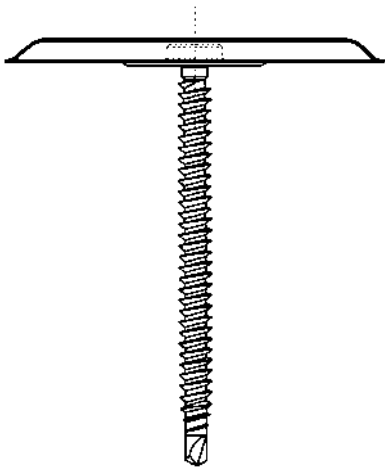
Zahn ZDBK-VB 4,8 x L



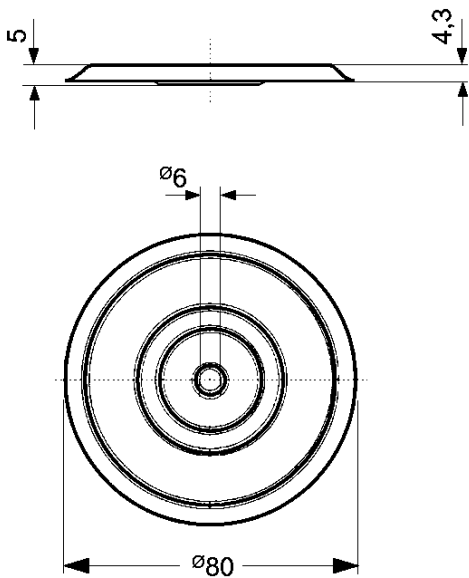
Zahn Flat Roof Fasteners

Annex 176

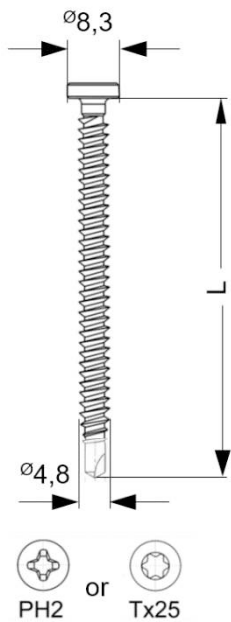
Combination 176
ZCTS-1-VB trapeze
consisting of ZDBK-VB and ZCTS-1-plate



Zahn ZCTS₁-plate



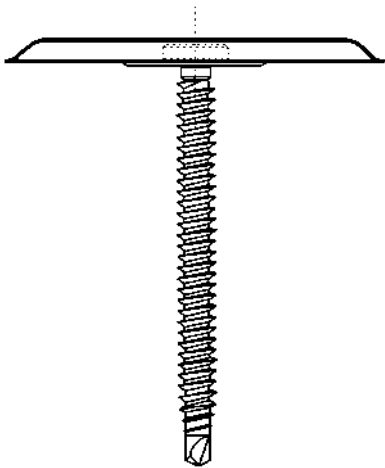
Zahn ZDBK-VB-E 4,8 x L



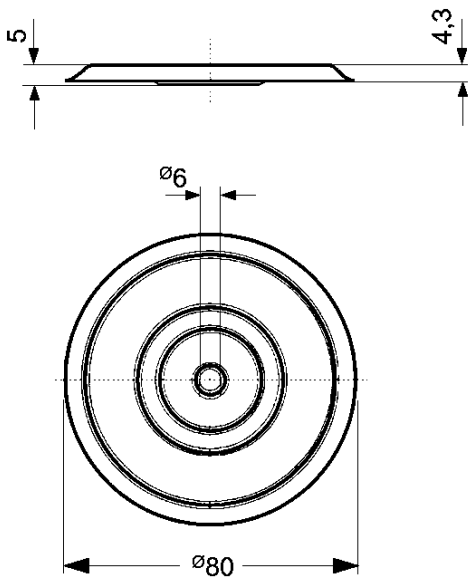
Zahn Flat Roof Fasteners

Combination 177
ZCTS-1-E/VB trapeze
consisting of ZDBK-VB-E and ZCTS-1-plate

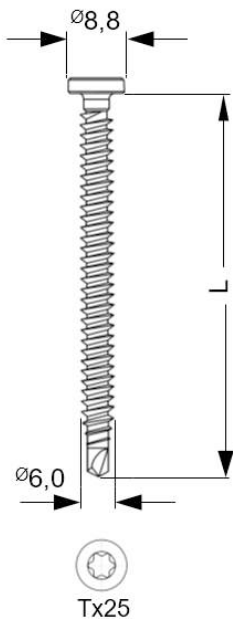
Annex 177



Zahn ZCTS₁-plate



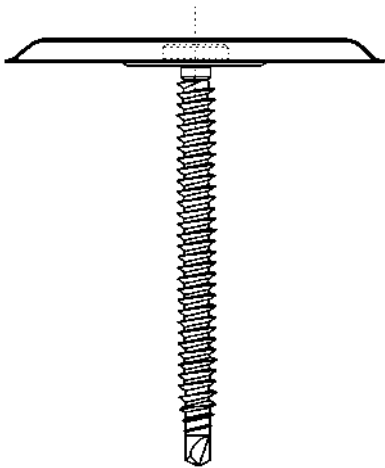
Zahn ZMDS 6,0 x L



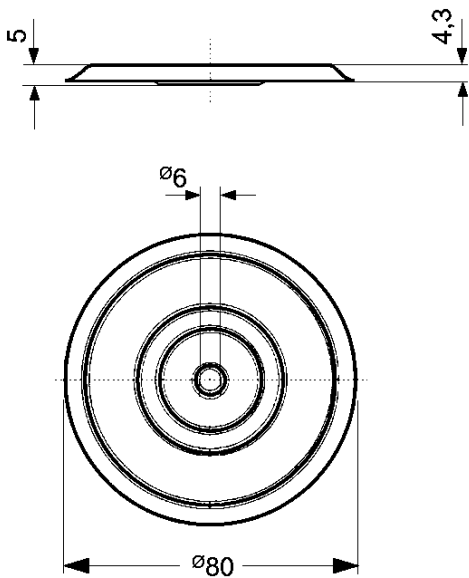
Zahn Flat Roof Fasteners

Annex 178

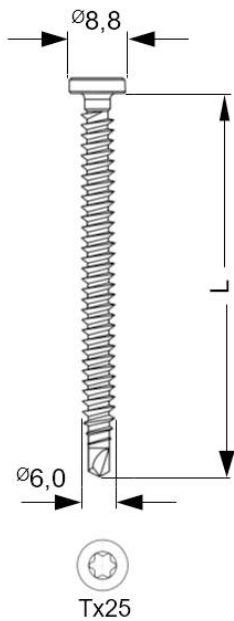
Combination 178
ZCTS-1-multi
consisting of ZMDS and ZCTS-1-plate



Zahn ZCTS₁-plate



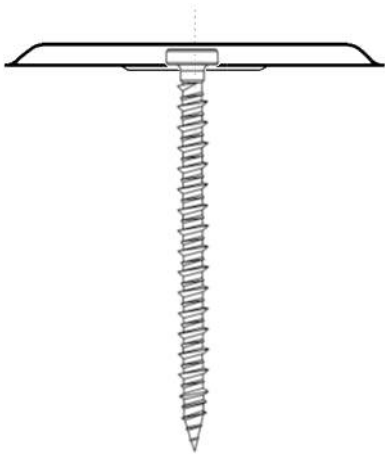
Zahn ZMDS-E 6,0 x L



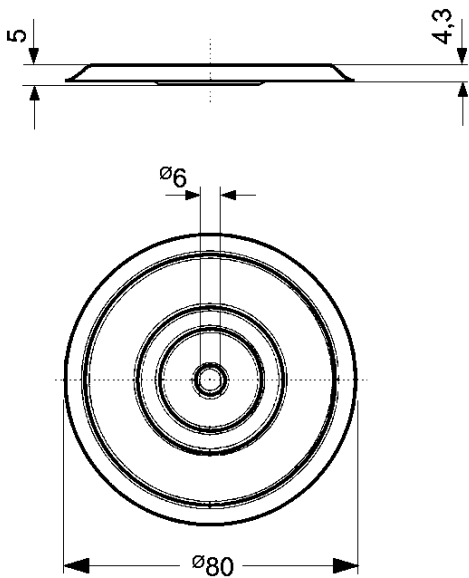
Zahn Flat Roof Fasteners

Combination 179
ZCTS-1-multi-E
consisting of ZMDS-E and ZCTS-1-plate

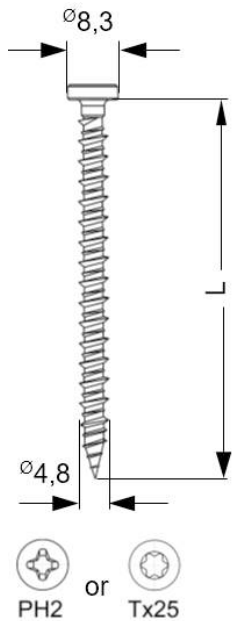
Annex 179



Zahn ZCTS₁-plate



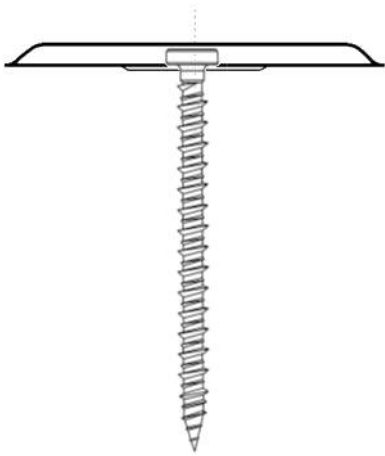
Zahn ZHBK 4,8 x L



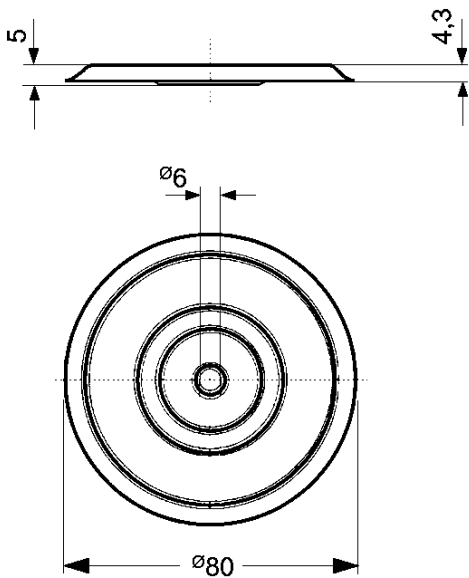
Zahn Flat Roof Fasteners

Combination 180
ZCTS-1 timber
consisting of ZHBK and ZCTS-1-plate

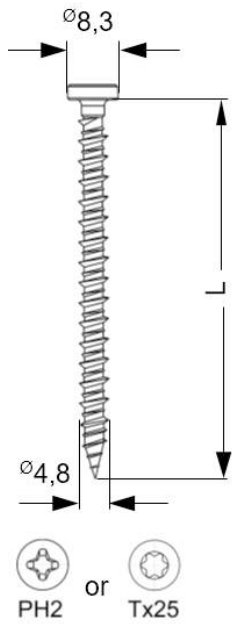
Annex 180



Zahn ZCTS₁-plate



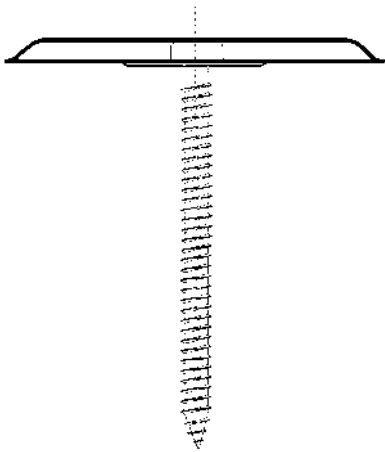
Zahn ZHBK-E 4,8 x L



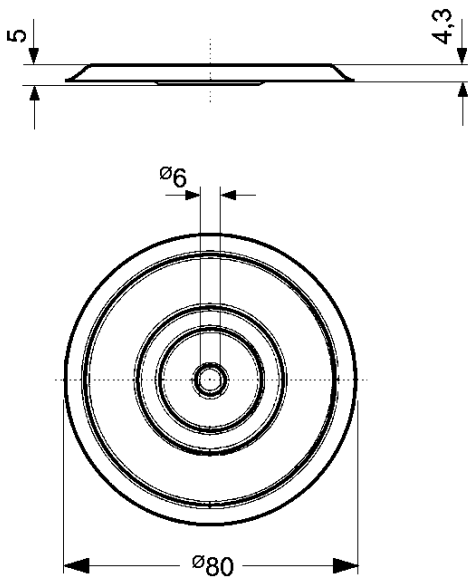
Zahn Flat Roof Fasteners

Annex 181

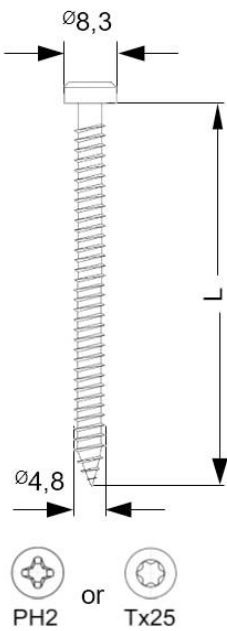
Combination 181
ZCTS-1-E timber
consisting of ZHBK-E and ZCTS-1-plate



Zahn ZCTS₁-plate



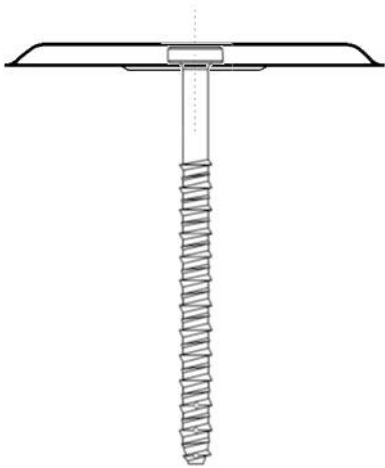
Zahn ZDBK_{dowel} 4,8 x L



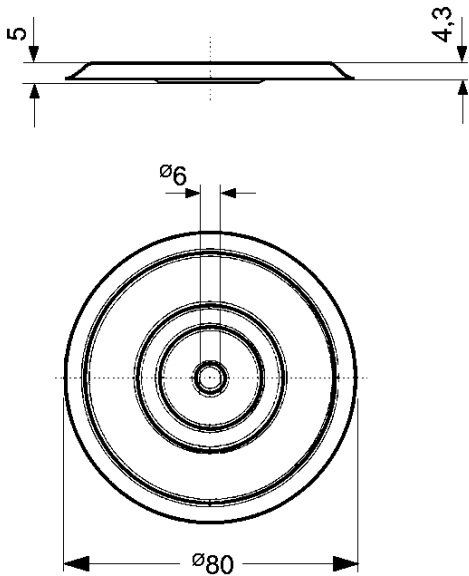
Zahn Flat Roof Fasteners

Combination 182
ZCTS-1-dowel
consisting of ZDBK_{dowel} and ZCTS-1-plate

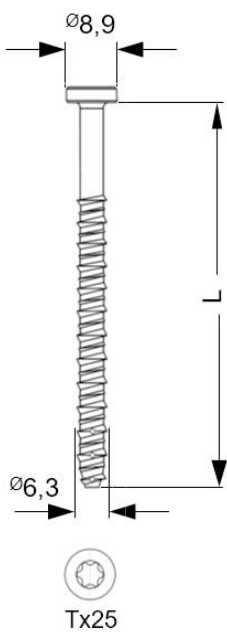
Annex 182



Zahn ZCTS₁-plate



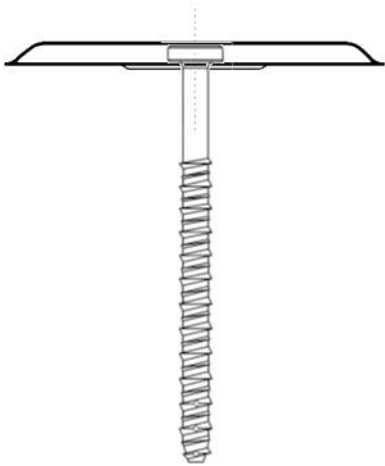
Zahn ZBST 6,3 x L



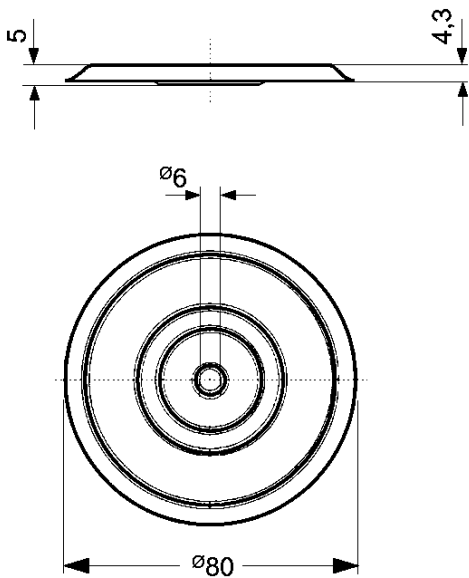
Zahn Flat Roof Fasteners

Combination 183
ZCTS-1 concrete-direct
consisting of ZBST 6,3 and ZCTS-1-plate

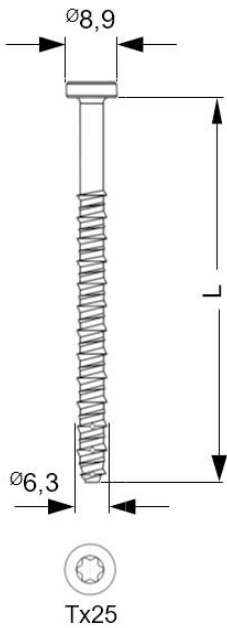
Annex 183



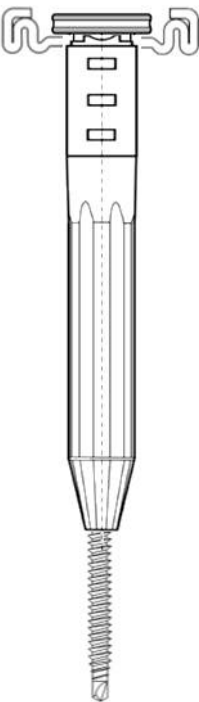
Zahn ZCTS₁-plate



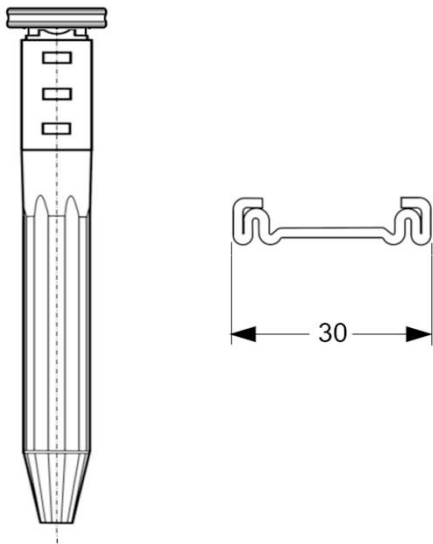
Zahn ZBST-E 6,3 x L



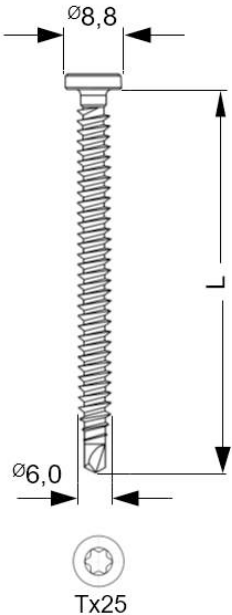
Zahn Flat Roof Fasteners	Annex 184
Combination 184 ZCTS-1-E concrete consisting of ZBST-E 6,3 and ZCTS-1-plate	



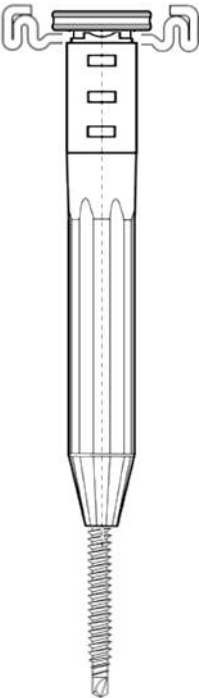
Zahn HVM₁ and bar



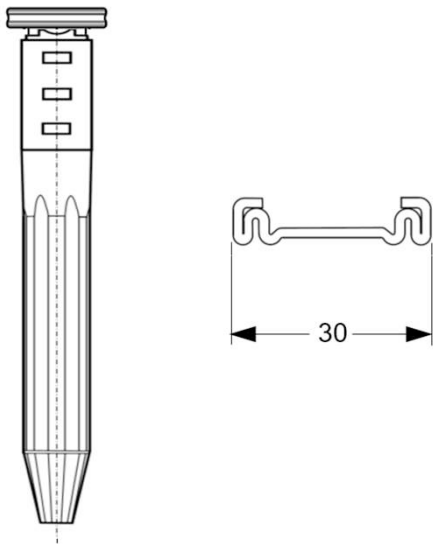
Zahn ZMDS 6,0 x L



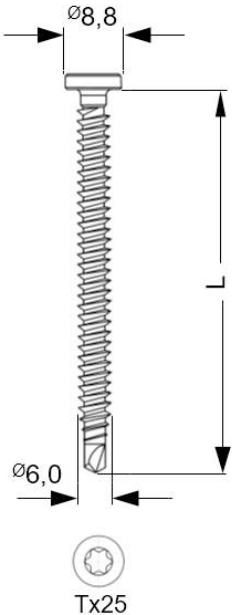
Zahn Flat Roof Fasteners	Annex 185
Combination 185 ZSSB-HVM-1-multi consisting of ZMDS / HVM-1 headboard, shaft and locking sleeve and bar	



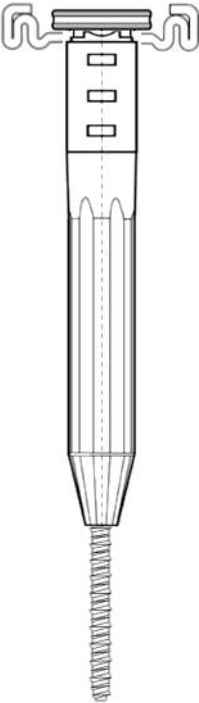
Zahn HVM₁ and bar



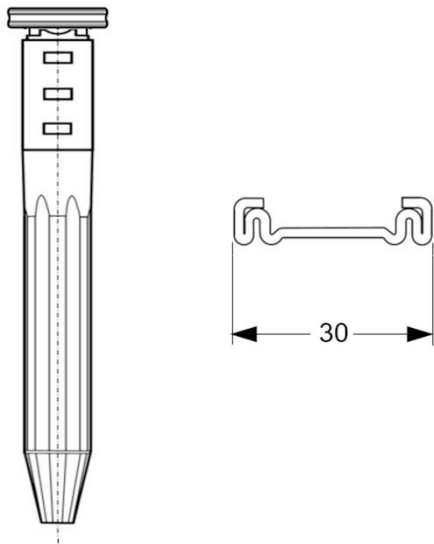
Zahn ZMDS-E 6,0 x L



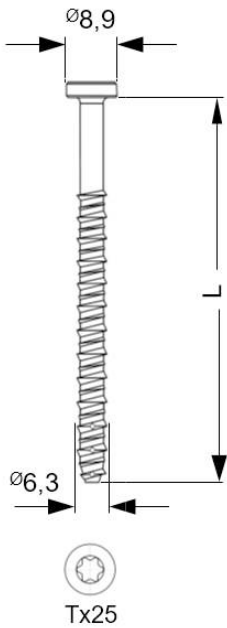
Zahn Flat Roof Fasteners	Annex 186
Combination 186 ZSSB-HVM-1-multi-E consisting of ZMDS-E / HVM-1 headboard, shaft and locking sleeve and bar	



Zahn HVM₁ and bar



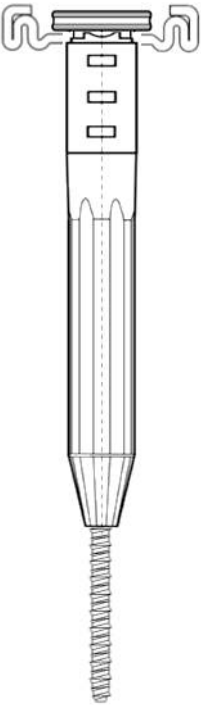
Zahn ZBST 6,3 x L



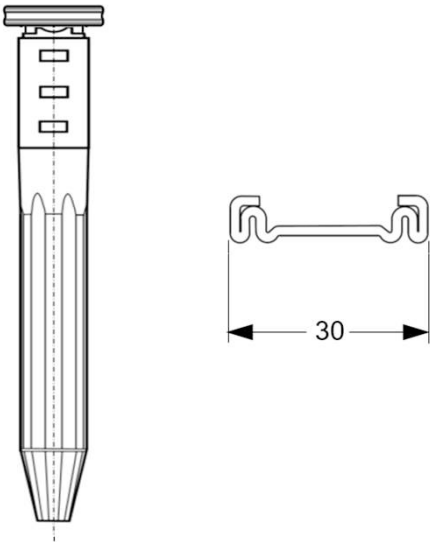
Zahn Flat Roof Fasteners

Combination 187
ZSSB-HVM-1 concrete-direct
consisting of ZBST / HVM-1 headboard, shaft and locking sleeve and bar

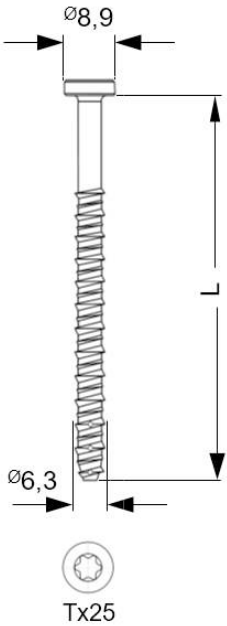
Annex 187



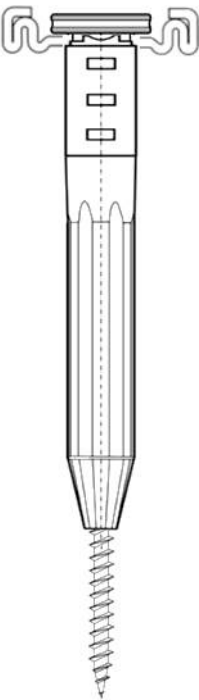
Zahn HVM₁ and bar



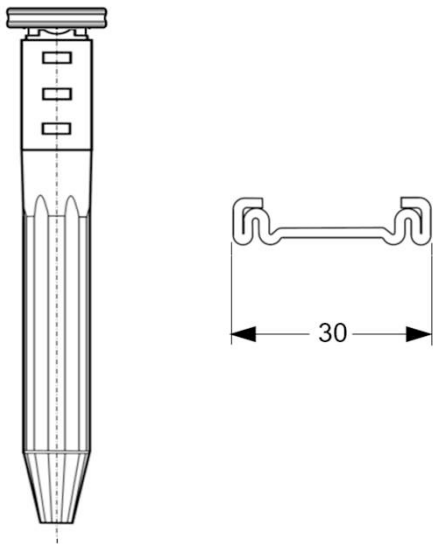
Zahn ZBST-E 6,3 x L



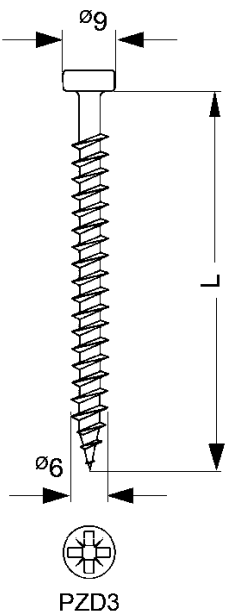
Zahn Flat Roof Fasteners	Annex 188
Combination 188 ZSSB-HVM-1-E concrete-direct consisting of ZBST-E / HVM-1 headboard, shaft and locking sleeve and bar	



Zahn HVM₁ and bar



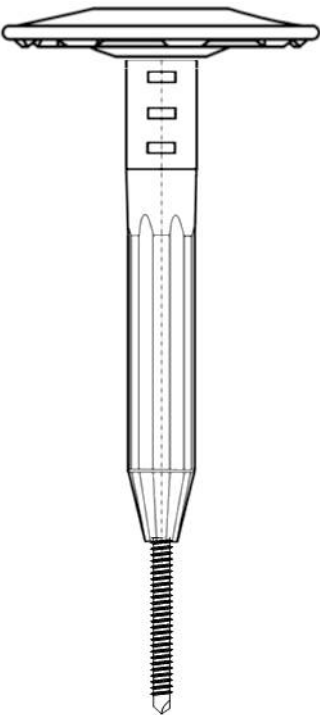
Zahn ZGBK-E 6,0 x L



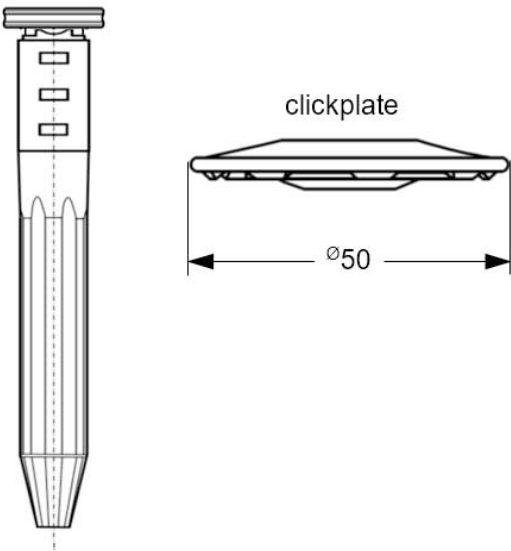
Zahn Flat Roof Fasteners

Combination 189
ZSSB-HVM-1 PB-direct
consisting of ZGBK-E / HVM-1 headboard, shaft and locking sleeve and bar

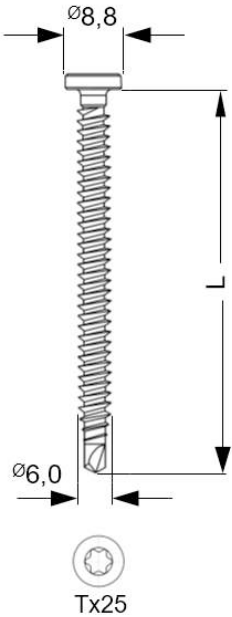
Annex 189



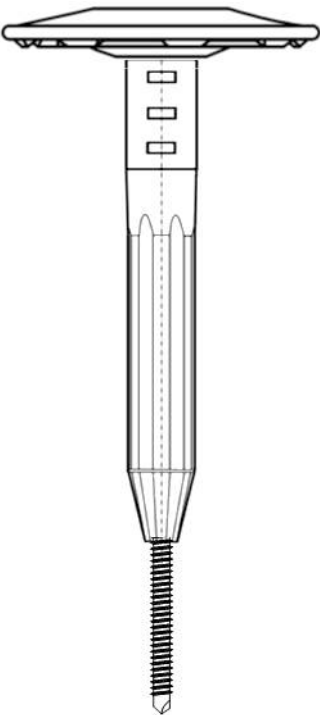
Zahn HVM₁ and clickplate



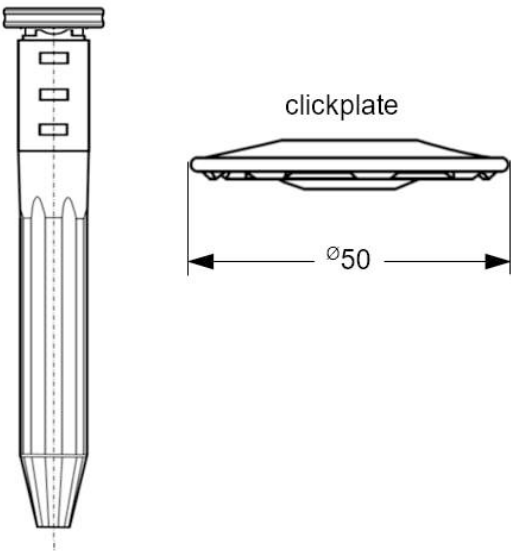
Zahn ZMDS 6,0 x L



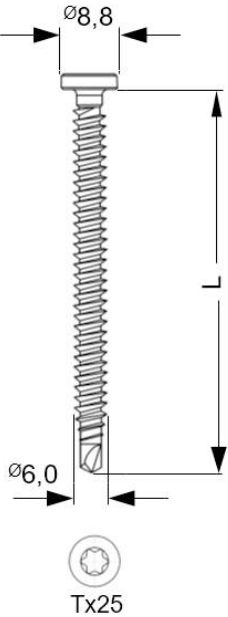
Zahn Flat Roof Fasteners	Annex 190
Combination 190 ZSSB / clickplate / HVM-1-multi consisting of ZMDS / HVM-1 headboard, shaft and locking sleeve and clickplate	



Zahn HVM₁ and clickplate



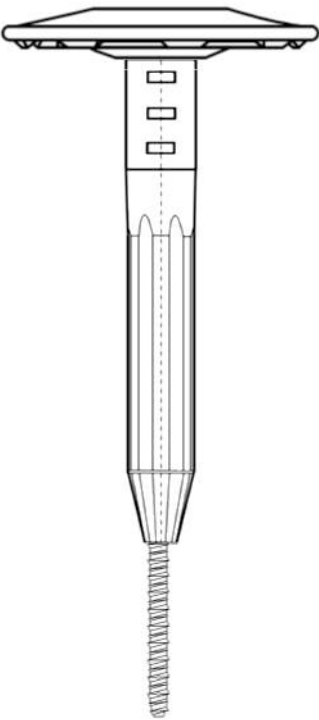
Zahn ZMDS-E 6,0 x L



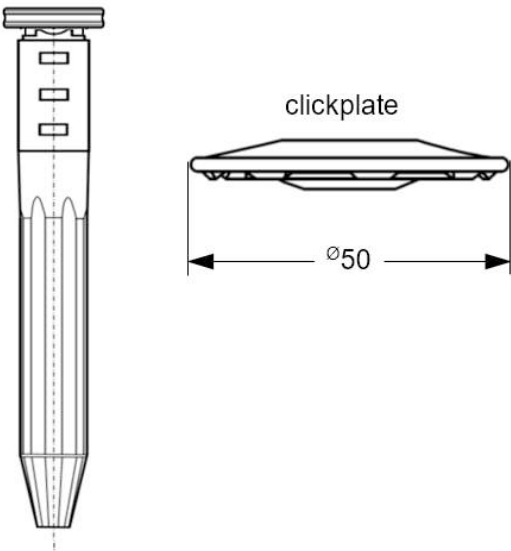
Zahn Flat Roof Fasteners

Combination 191
ZSSB / clickplate / HVM-1-multi-E
consisting of ZMDS-E / HVM-1 headboard, shaft and locking sleeve and clickplate

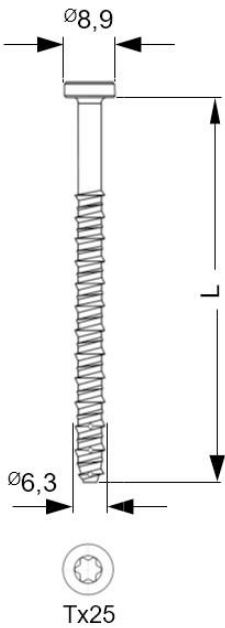
Annex 191



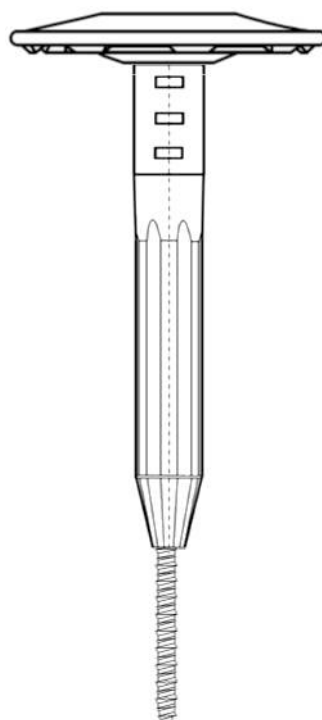
Zahn HVM₁ and clickplate



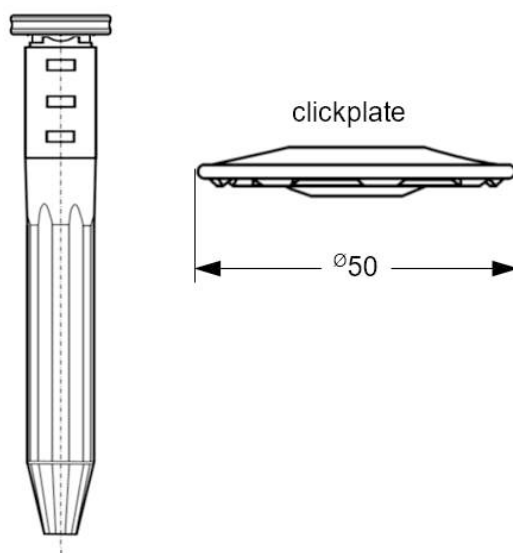
Zahn ZBST 6,3 x L



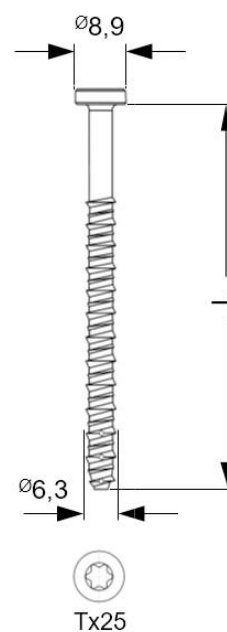
Zahn Flat Roof Fasteners	Annex 192
Combination 192 ZSSB / clickplate / HVM-1 concrete-direct consisting of ZBST / HVM-1 headboard, shaft and locking sleeve and clickplate	



Zahn HVM₁ and clickplate



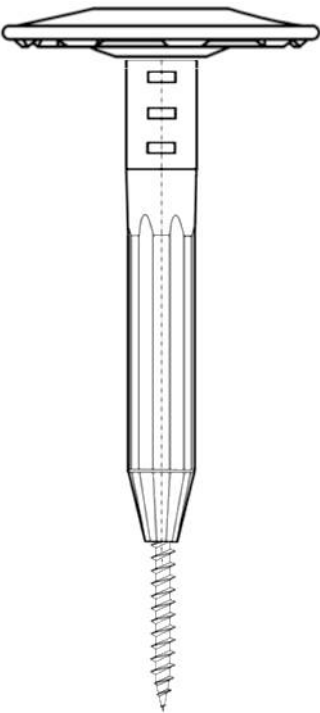
Zahn ZBST-E 6,3 x L



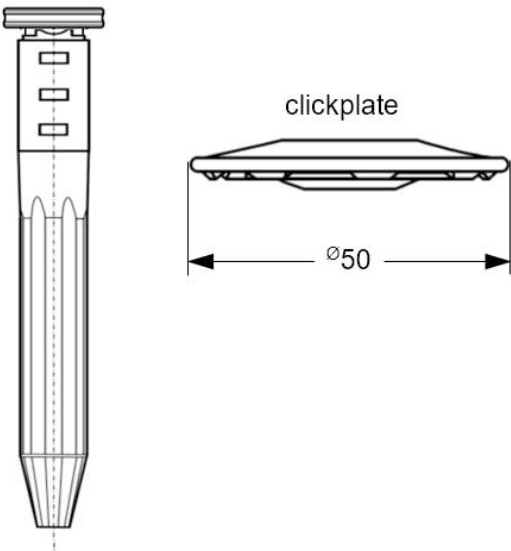
Zahn Flat Roof Fasteners

Combination 193
ZSSB / clickplate / HVM-1-E concrete-direct
consisting of ZBST-E / HVM-1 headboard, shaft and locking sleeve and clickplate

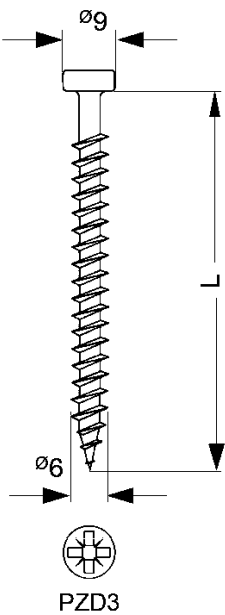
Annex 193



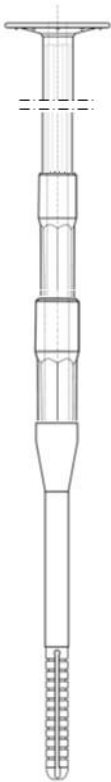
Zahn HVM₁ and clickplate



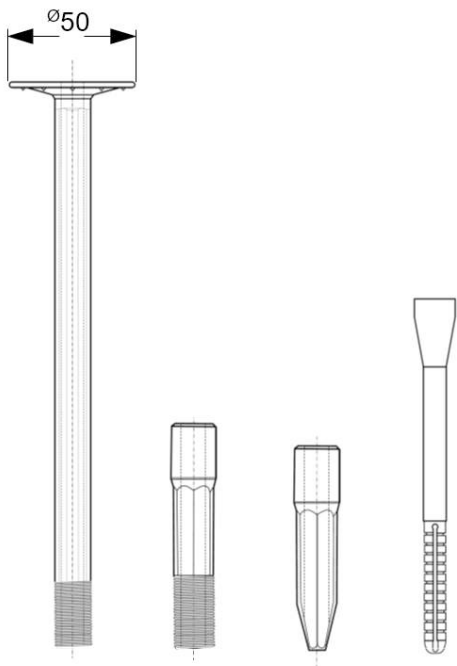
Zahn ZGBK-E 6,0 x L



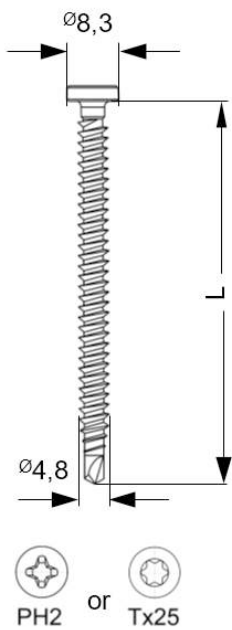
Zahn Flat Roof Fasteners	Annex 194
Combination 194 ZSSB / clickplate / HVM-1-E PB-direct consisting of ZGBK-E / HVM-1 headboard, shaft and locking sleeve and clickplate	



Zahn ZKSH round module 4,8 with dowel attachment

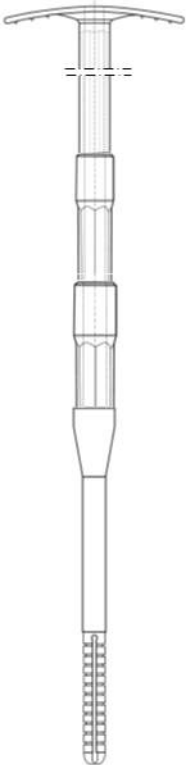


Zahn ZDBK 4,8 x L

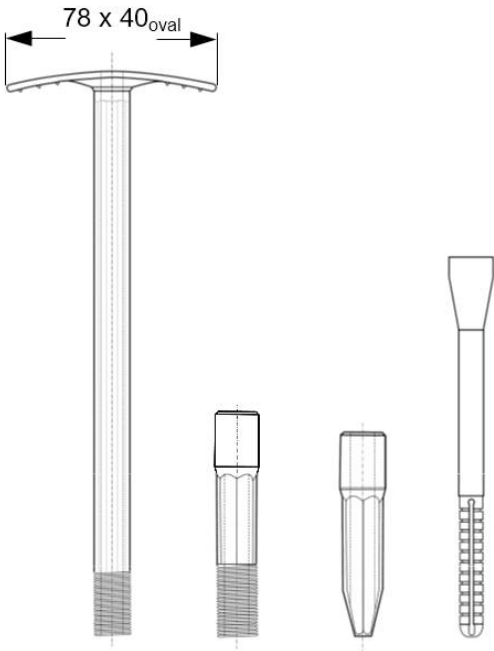


Zahn Flat Roof Fasteners	
Combination 195 ZSDK-R-module / ZDBK consisting of ZDBK / ZKSH round module with module middle piece, spike 4,8 and dowel attachment	

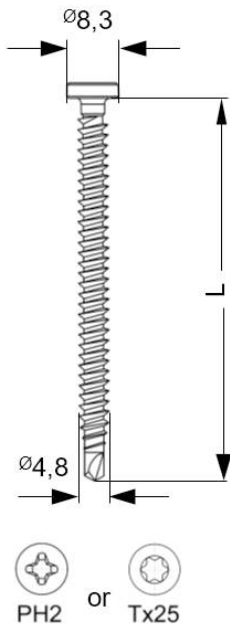
Annex 195



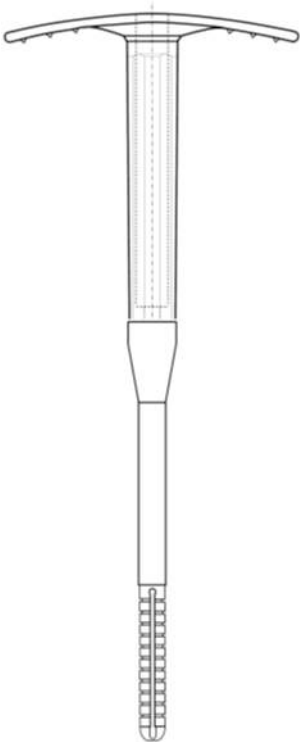
Zahn ZKSH oval module 4,8 with dowel attachment



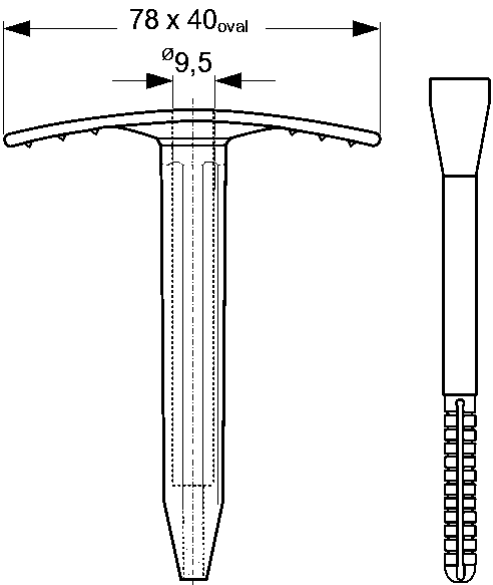
Zahn ZDBK 4,8 x L



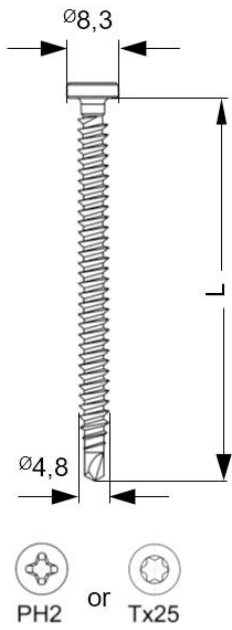
Zahn Flat Roof Fasteners	Annex 196
Combination 196 ZSDK-module / ZDBK consisting of ZDBK / ZKSH oval module with module middle piece, spike 4,8 and dowel attachment	



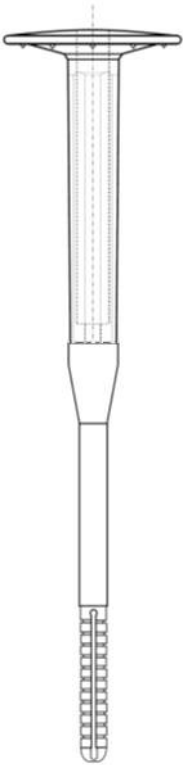
Zahn ZKSH oval with dowel attachment



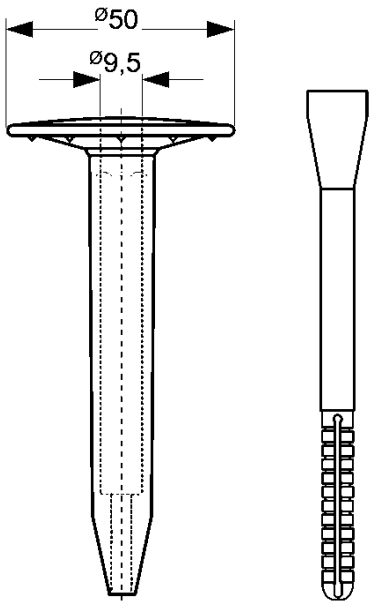
Zahn ZDBK 4,8 x L



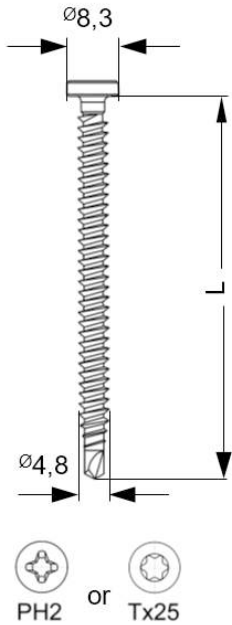
Zahn Flat Roof Fasteners	Annex 197
Combination 197 ZSDK / ZDBK consisting of ZDBK / ZKSH oval with dowel attachment	



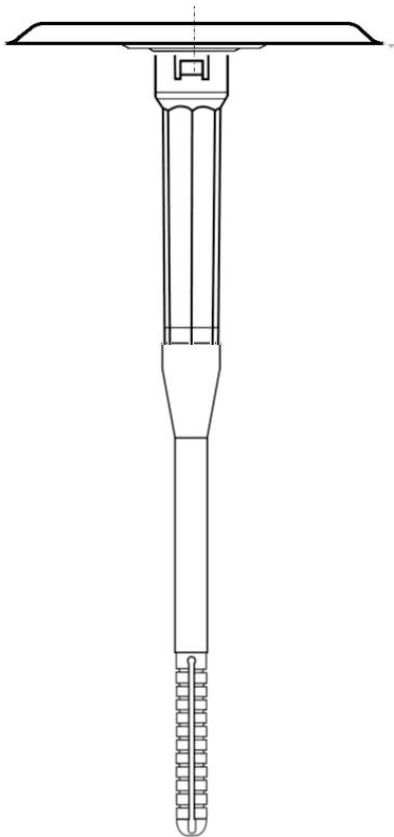
Zahn ZKSH round with dowel attachment



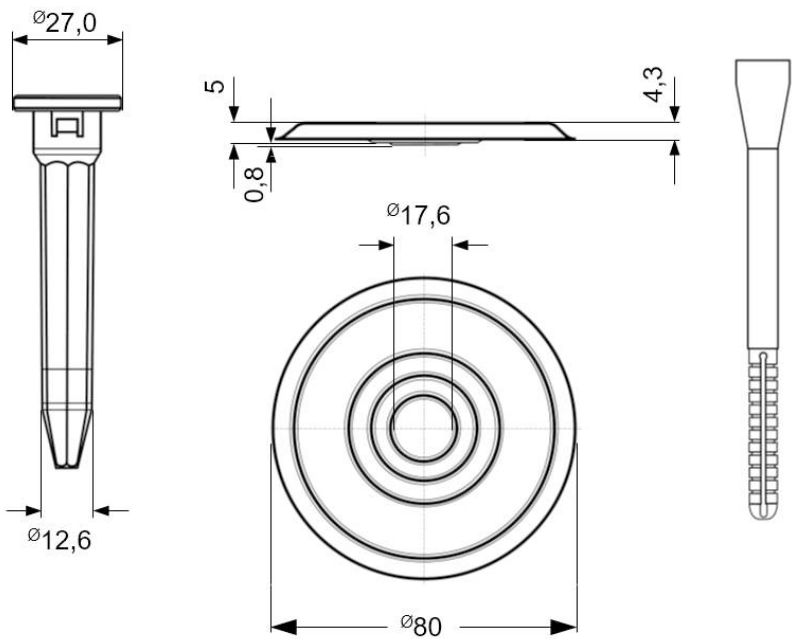
Zahn ZDBK 4,8 x L



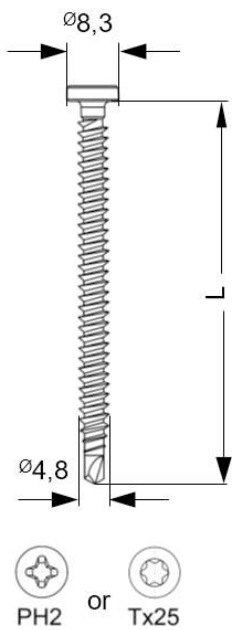
Zahn Flat Roof Fasteners	Annex 198
Combination 198 ZSDK-R / ZDBK consisting of ZDBK / ZKSH round with dowel attachment	



Zahn ZCTS-pipe 4,8 with ZCTS-plate and dowel attachment



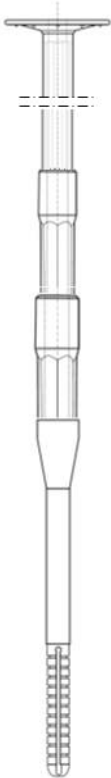
Zahn ZDBK 4,8 x L



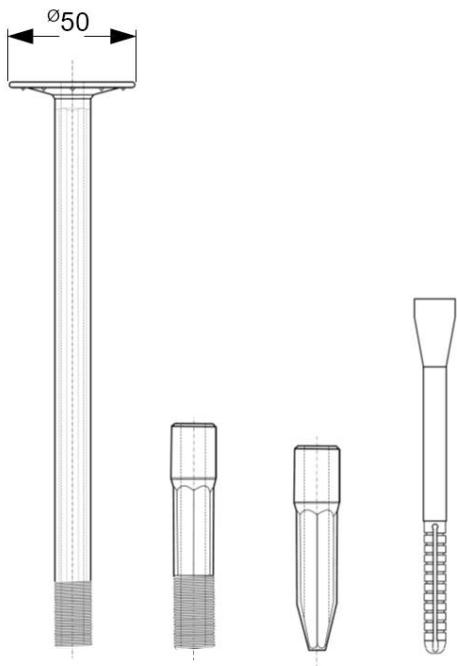
Zahn Flat Roof Fasteners

Annex 199

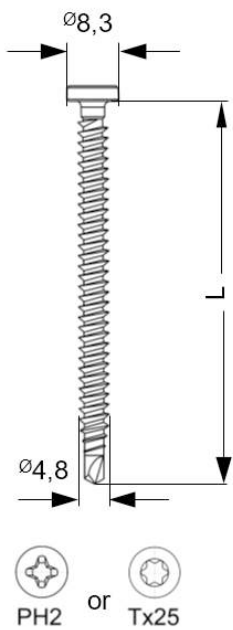
Combination 199
ZCTS / ZDBK concrete
consisting of ZDBK / ZCTS-pipe 4,8, ZCTS-plate



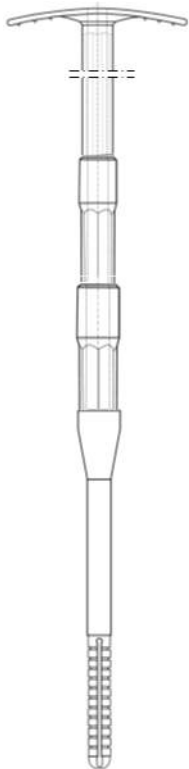
Zahn ZKSH round module 4,8 with dowel attachment



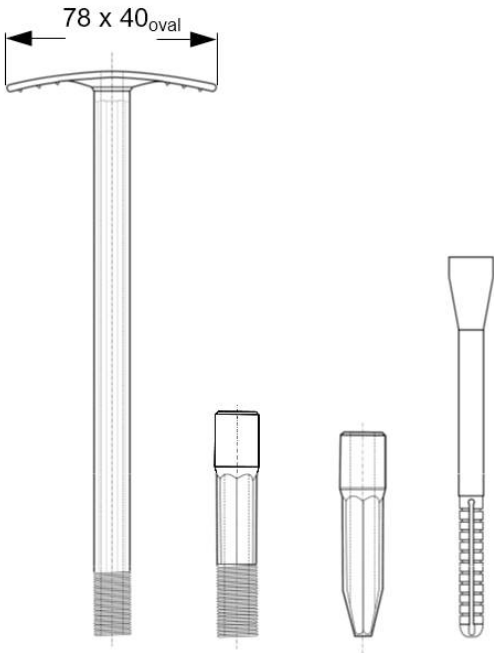
Zahn ZDBK-E 4,8 x L



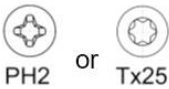
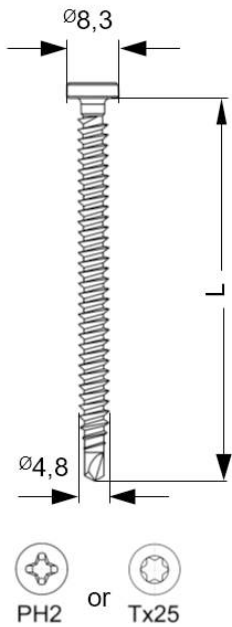
Zahn Flat Roof Fasteners	Annex 200
Combination 200 ZSDK-E / R-module / ZDBK-E consisting of ZDBK-E / ZKSH round module with module middle piece, spike 4,8 and dowel attachment	



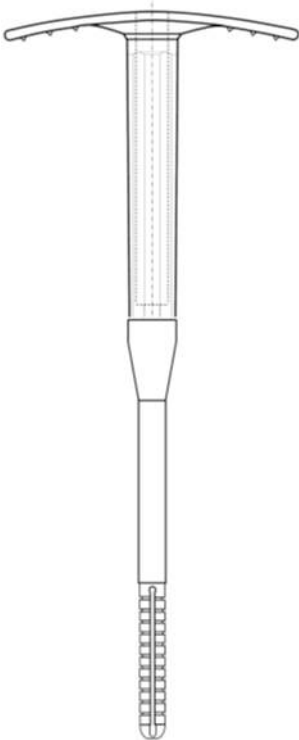
Zahn ZKSH oval module 4,8 with dowel attachment



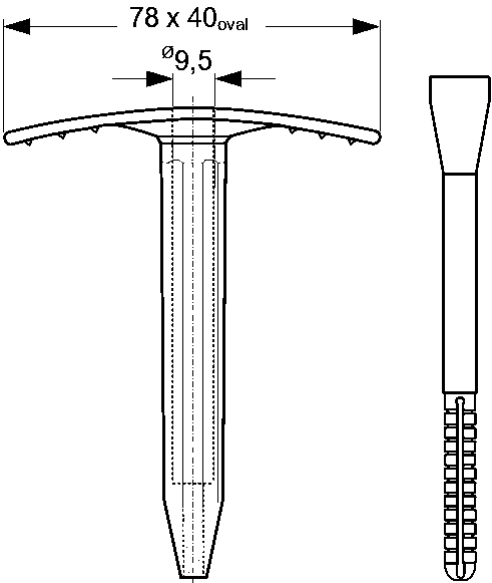
Zahn ZDBK-E 4,8 x L



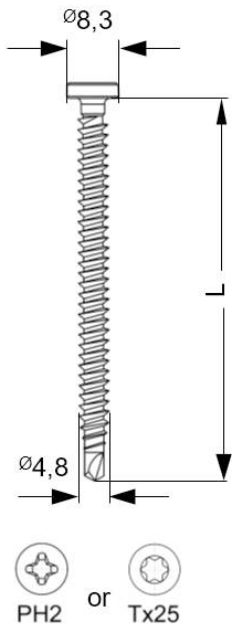
Zahn Flat Roof Fasteners	Annex 201
Combination 201 ZSDK-E module / ZDBK-E consisting of ZDBK-E / ZKSH oval module with module middle piece, spike 4,8 and dowel attachment	



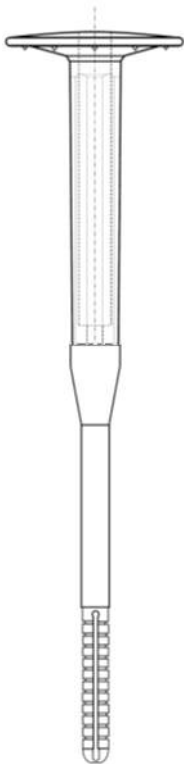
Zahn ZKSH oval with dowel attachment



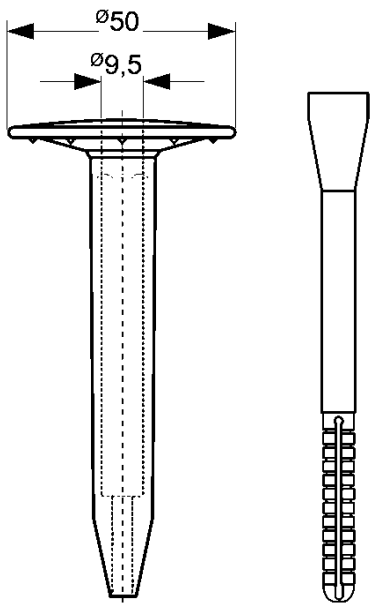
Zahn ZDBK-E 4,8 x L



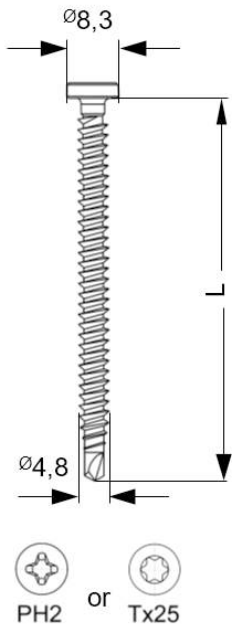
Zahn Flat Roof Fasteners	Annex 202
Combination 202 ZSDK-E / ZDBK-E consisting of ZDBK-E / ZKSH oval with dowel attachment	



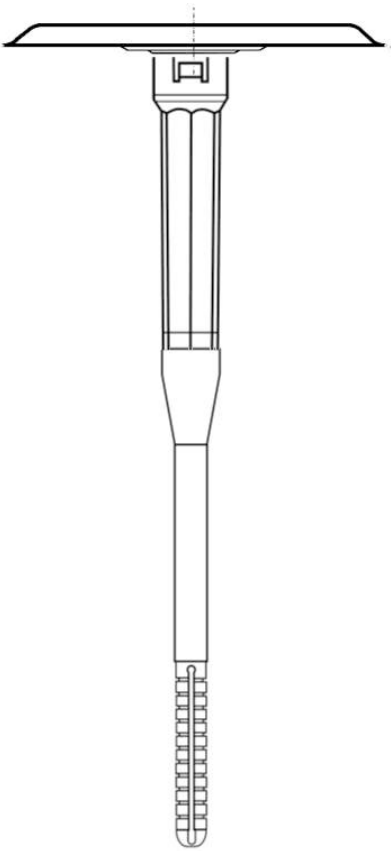
Zahn ZKSH round with dowel attachment



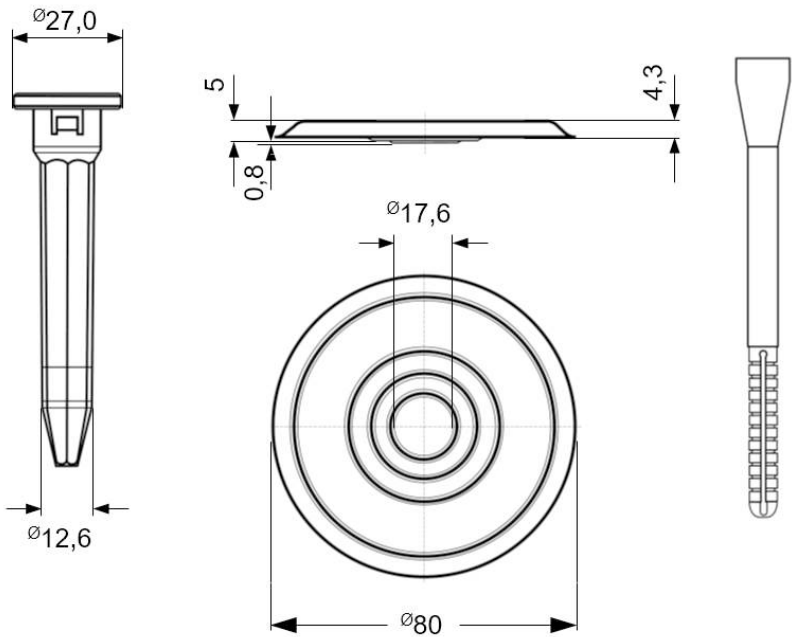
Zahn ZDBK-E 4,8 x L



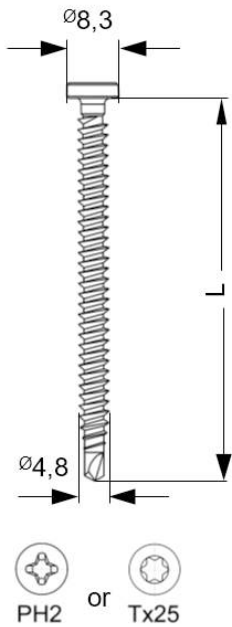
Zahn Flat Roof Fasteners	Annex 203
Combination 203 ZSDK-E / R / ZDBK-E consisting of ZDBK-E / ZKSH round with dowel attachment	



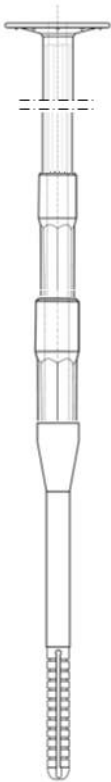
Zahn ZCTS-pipe 4,8 with ZCTS-plate and dowel attachment



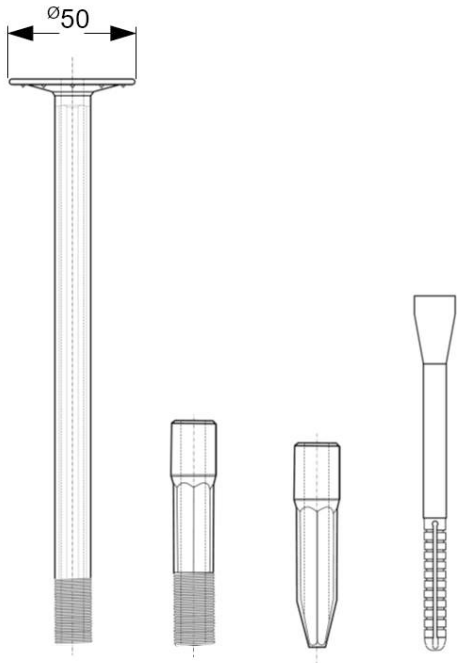
Zahn ZDBK-E 4,8 x L



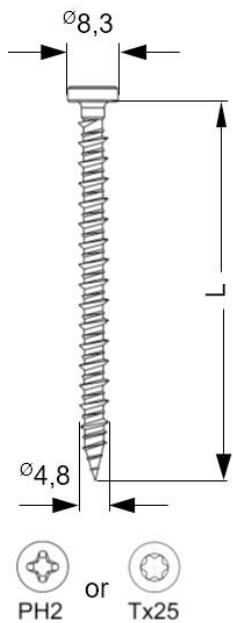
Zahn Flat Roof Fasteners	Annex 204
Combination 204 ZCTS-E / ZDBK-E concrete consisting of ZDBK-E / ZCTS-pipe 4,8, ZCTS-plate and dowel attachment	



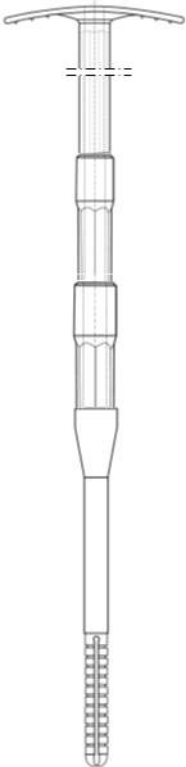
Zahn ZKSH round module 4,8 with dowel attachment



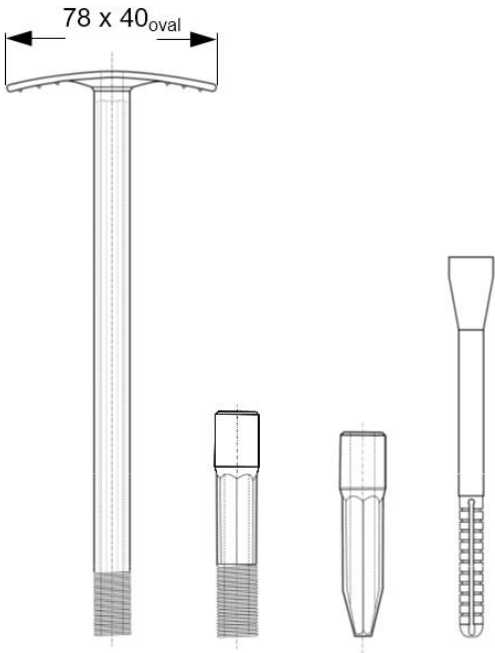
Zahn ZHBK 4,8 x L



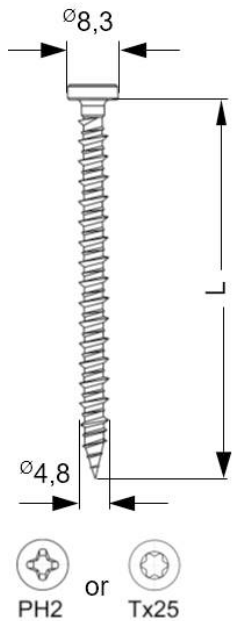
Zahn Flat Roof Fasteners	Annex 205
Combination 205 ZSDK-R-module / ZHBK consisting of ZHBK / ZKSH round module with module middle piece,spike 4,8 and dowel attachment	



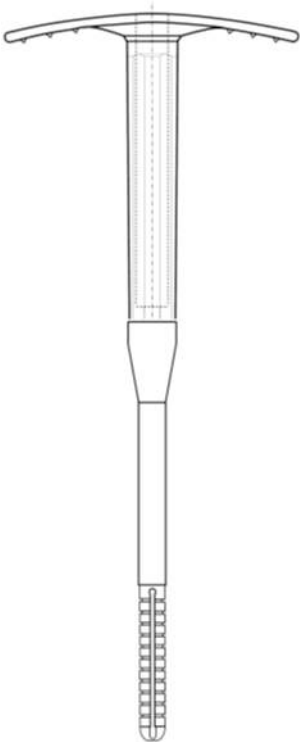
Zahn ZKSH oval module 4,8 with dowel attachment



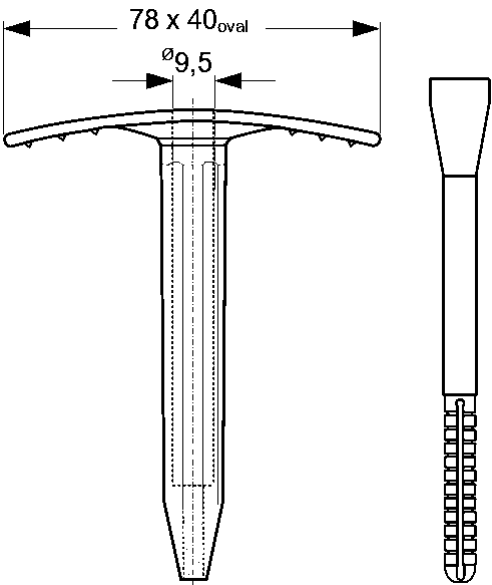
Zahn ZHBK 4,8 x L



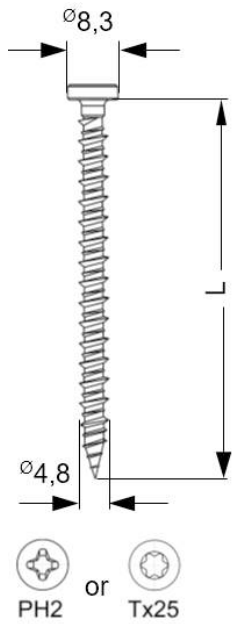
Zahn Flat Roof Fasteners	Annex 206
Combination 206 ZSDK-module / ZHBK consisting of ZHBK / ZKSH oval module with module middle piece, spike 4,8 and dowel attachment	



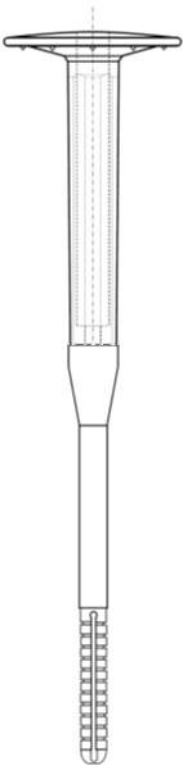
Zahn ZKSH oval with dowel attachment



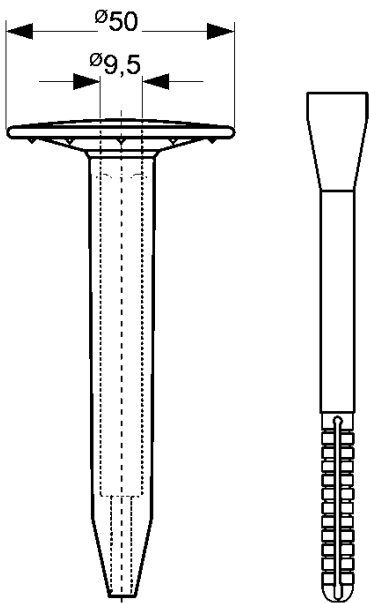
Zahn ZHBK 4,8 x L



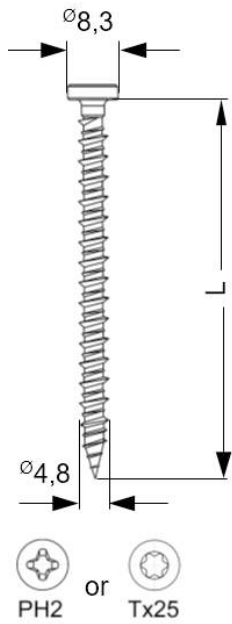
Zahn Flat Roof Fasteners	Annex 207
Combination 207 ZSDK / ZHSK consisting of ZHBK / ZKSH oval with dowel attachment	



Zahn ZKSH round with dowel attachment



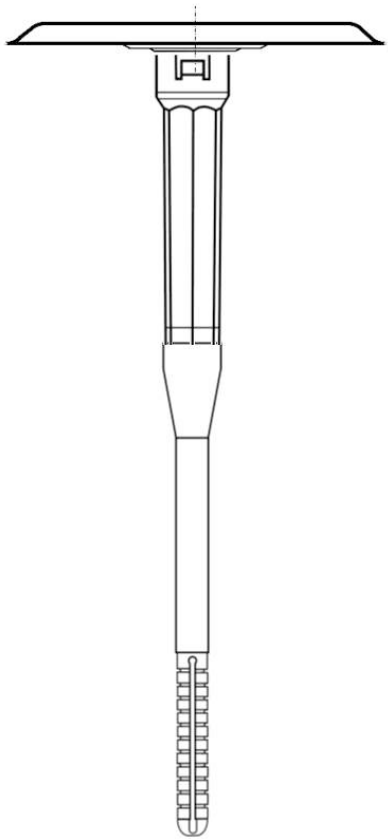
Zahn ZHBK 4,8 x L



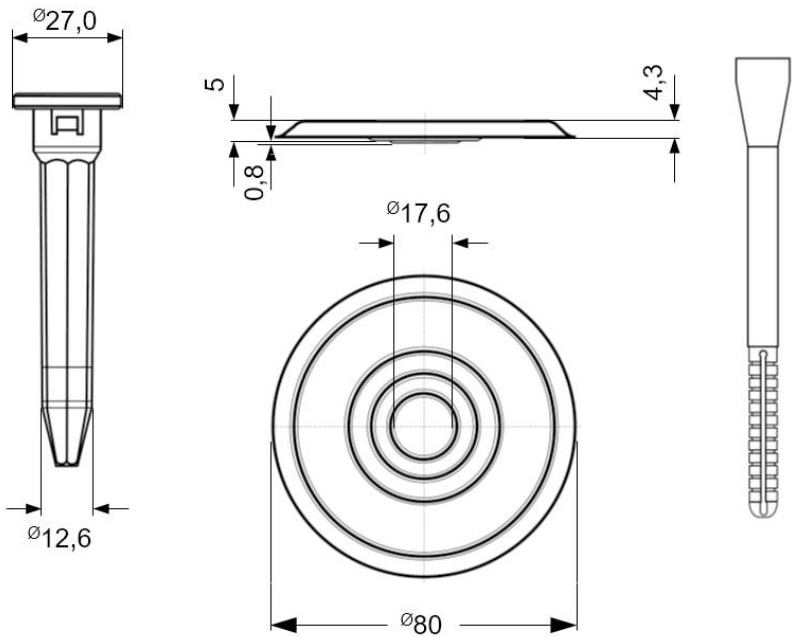
Zahn Flat Roof Fasteners

Annex 208

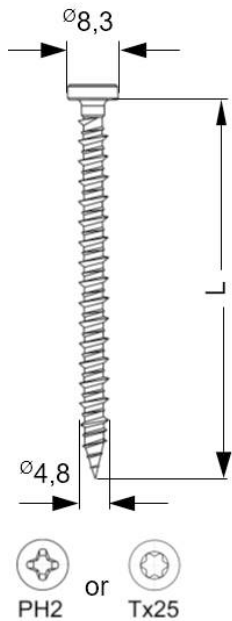
Combination 208
ZSDK-R / ZHBK
consisting of ZHBK / ZKSH round with dowel attachment



Zahn ZCTS-pipe 4,8 with ZCTS-plate and dowel attachment



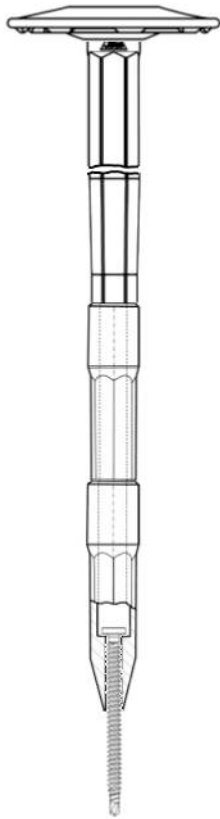
Zahn ZHBK 4,8 x L



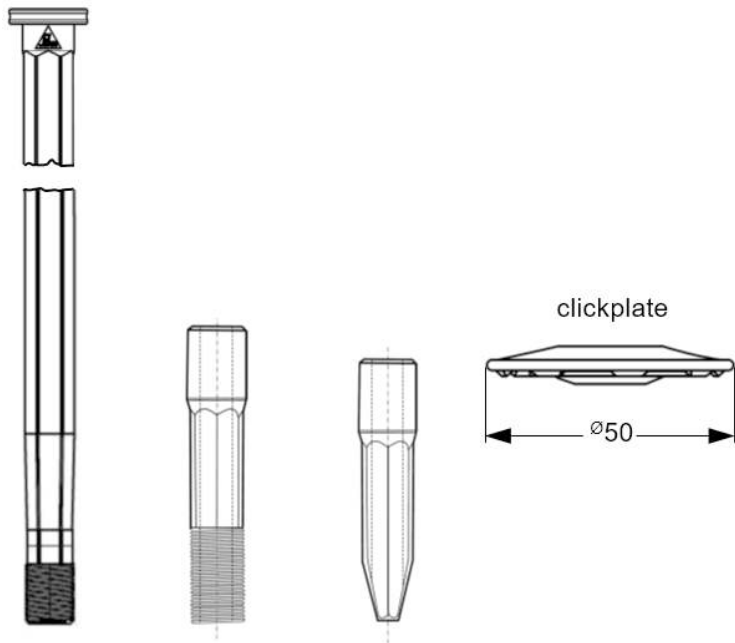
Zahn Flat Roof Fasteners

Annex 209

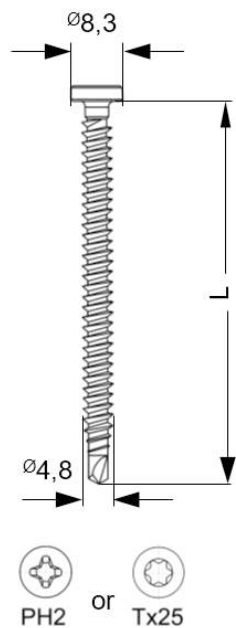
Combination 209
ZCTS / ZHBK concrete
consisting of ZHBK / ZCTS-pipe 4,8, ZCTS-plate and dowel attachment



Zahn ZSSB-module-pipe 4,8 with module and clickplate



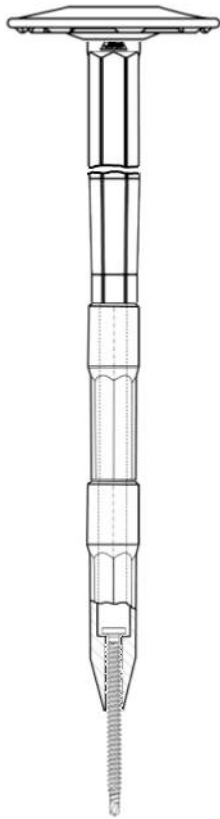
Zahn ZDBK 4,8 x L



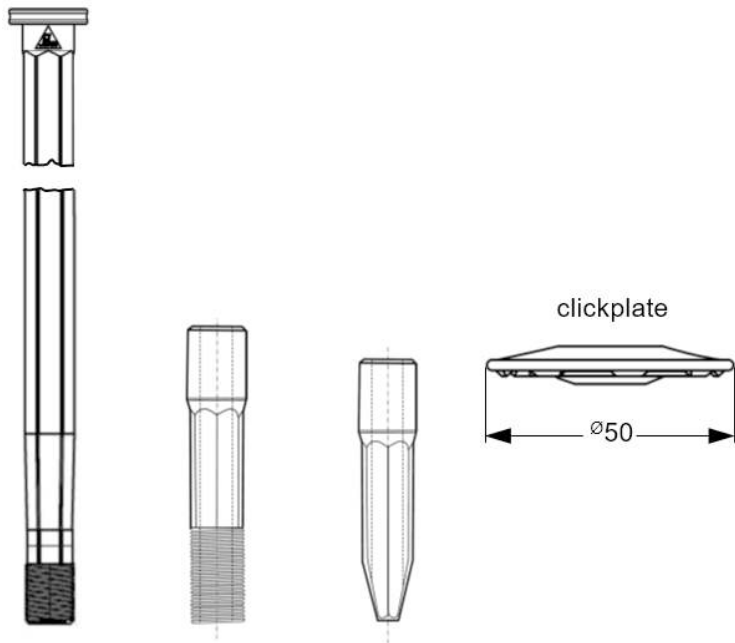
Zahn Flat Roof Fasteners

Combination 210
ZSSB-module / clickplate / ZDBK
consisting of ZDBK / ZSSB-module-pipe, module middle piece, spike 4,8 and clickplate

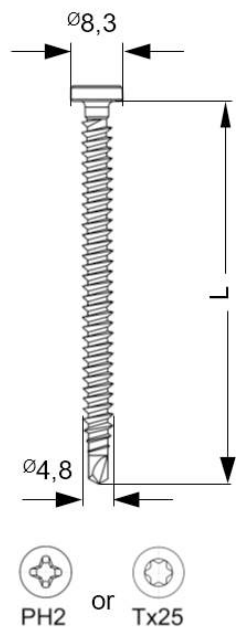
Annex 210



Zahn ZSSB-module-pipe 4,8 with module and clickplate



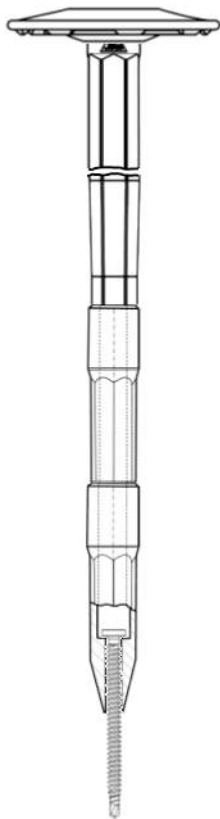
Zahn ZDBK-E 4,8 x L



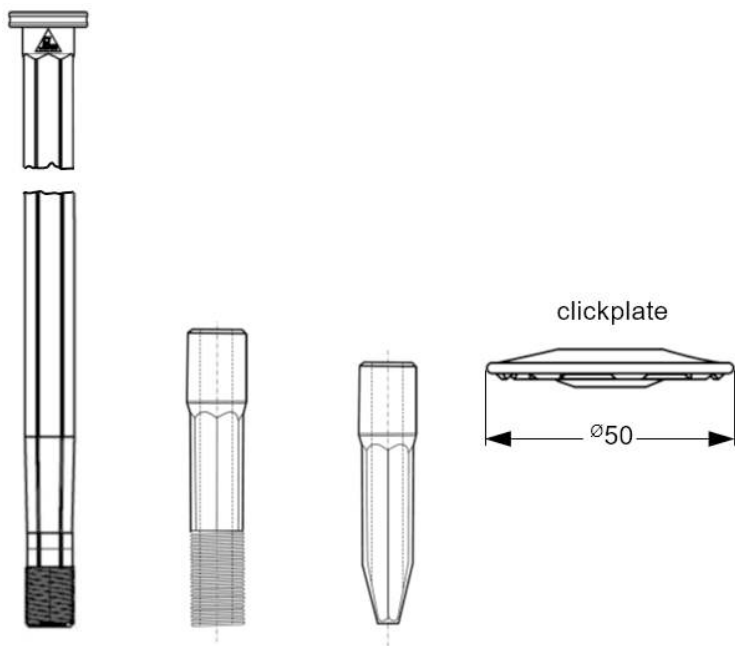
Zahn Flat Roof Fasteners

Combination 211
ZSSB-E-module / clickplate / ZDBK-E
consisting of ZDBK-E / ZSSB-module-pipe, module middle piece, spike 4,8 and clickplate

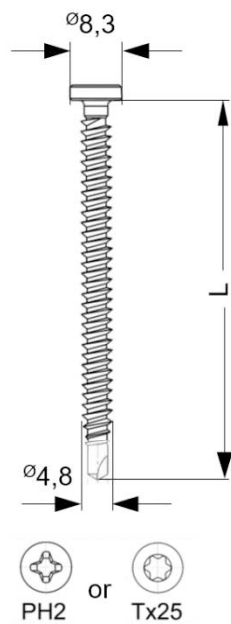
Annex 211



Zahn ZSSB-module-pipe 4,8 with module and clickplate



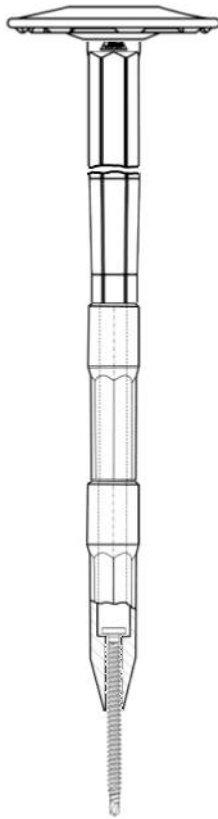
Zahn ZDBK-VB 4,8 x L



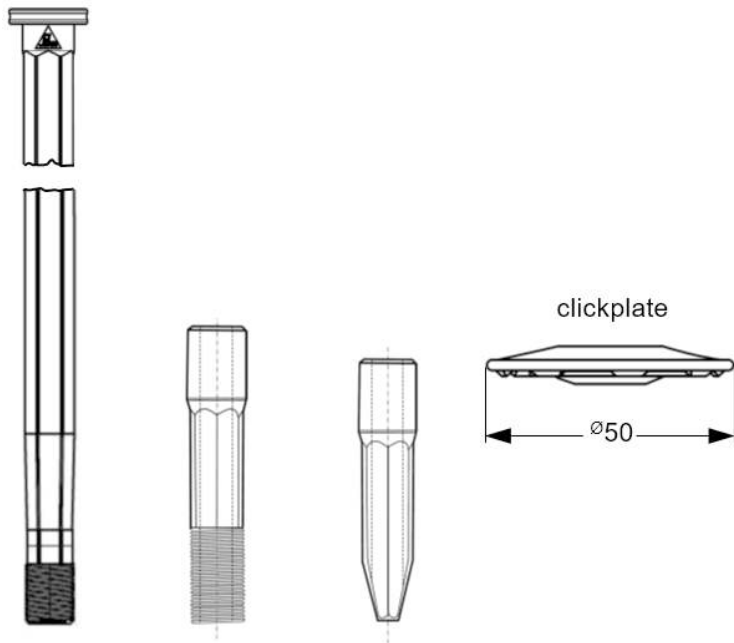
Zahn Flat Roof Fasteners

Annex 212

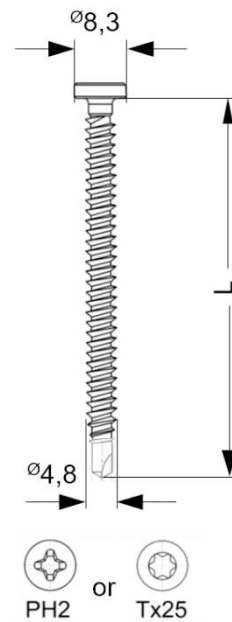
Combination 212
ZSSB-module / clickplate / ZDBK-VB
consisting of ZDBK-VB / ZSSB-module-pipe, module middle piece, spike 4,8 and clickplate



Zahn ZSSB-module-pipe 4,8 with module and clickplate



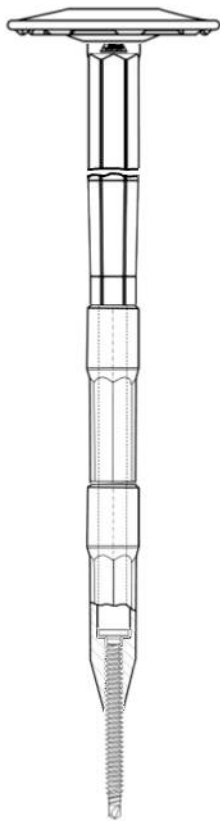
Zahn ZDBK-VB-E 4,8 x L



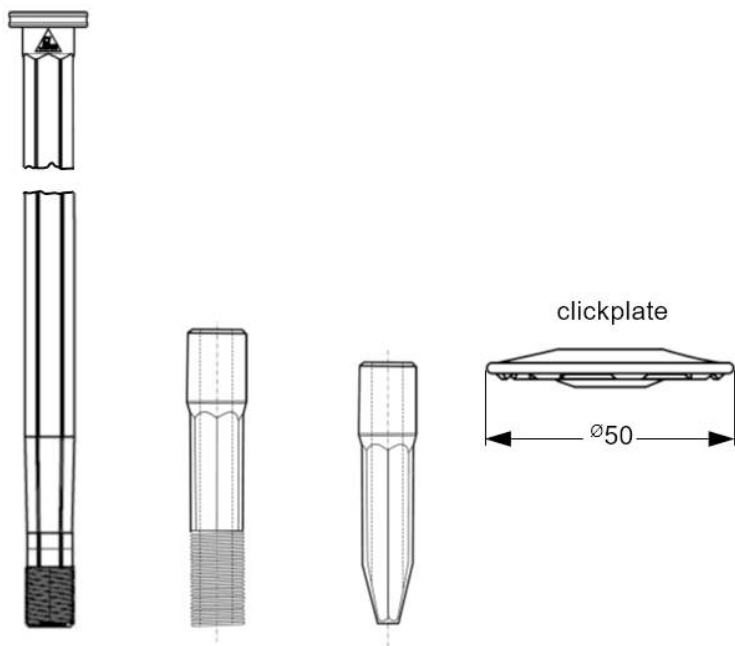
Zahn Flat Roof Fasteners

Combination 213
ZSSB-module / clickplate / ZDBK-E / VB consisting of
ZDBK-E / VB / ZSSB-module-pipe, module middle piece, spike 4,8 and clickplate

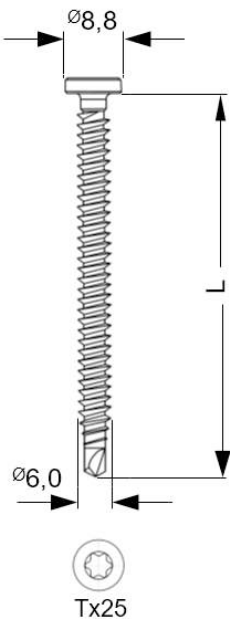
Annex 213



Zahn ZSSB-module-pipe 6,0 with module and clickplate



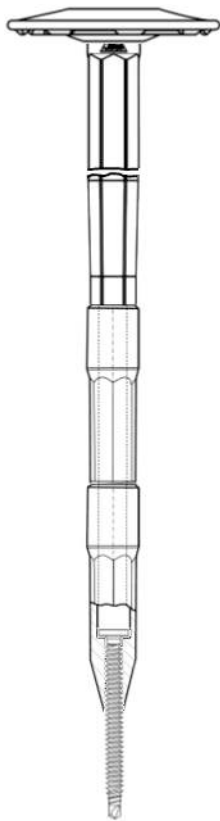
Zahn ZMDS 6,0 x L



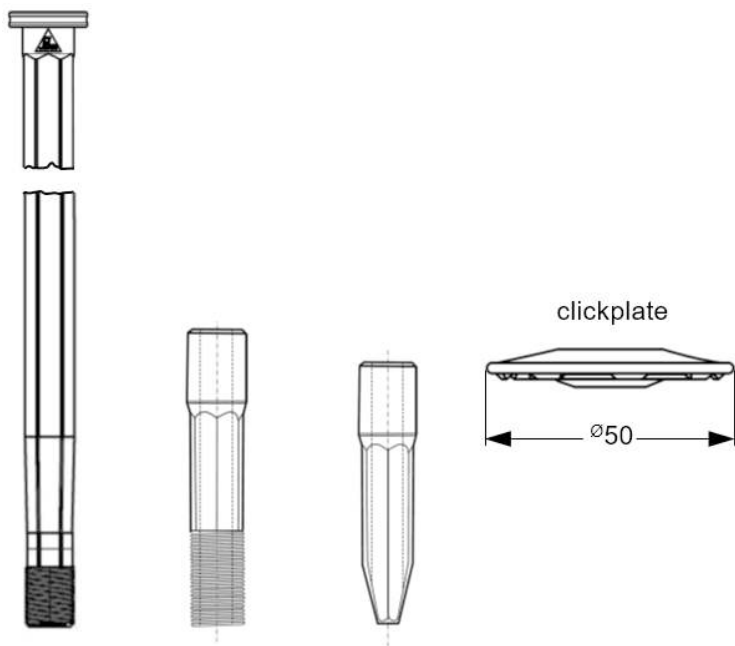
Zahn Flat Roof Fasteners

Annex 214

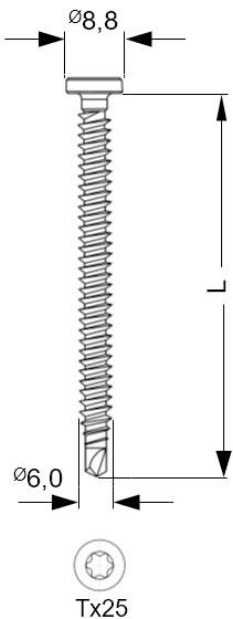
Combination 214
ZSSB-module / clickplate / ZMDS
consisting of ZMDS / ZSSB-module-pipe, module middle piece, spike 6,0 and clickplate



Zahn ZSSB-module-pipe 6,0 with module and clickplate



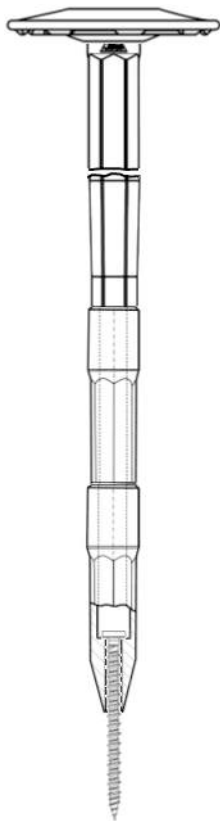
Zahn ZMDS-E 6,0 x L



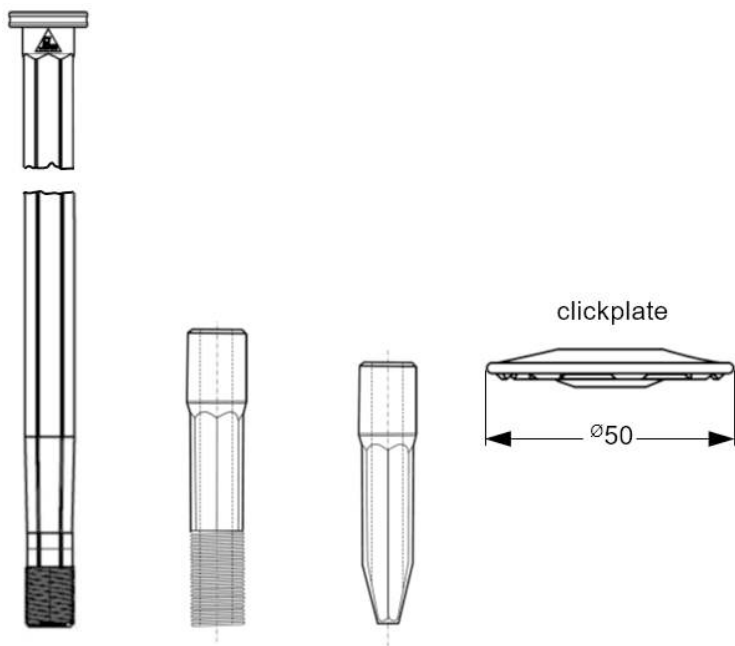
Zahn Flat Roof Fasteners

Annex 215

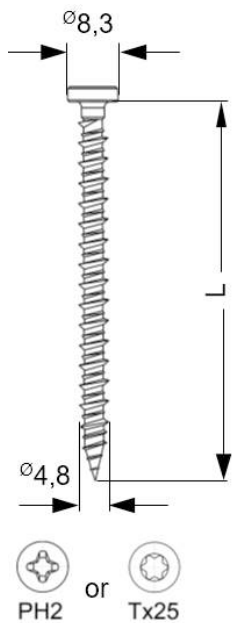
Combination 215
ZSSB-module / clickplate / ZMDS-E
consisting of ZMDS-E / ZSSB-module-pipe, module middle piece, spike 6,0 and clickplate



Zahn ZSSB-module-pipe 4,8 with module and clickplate



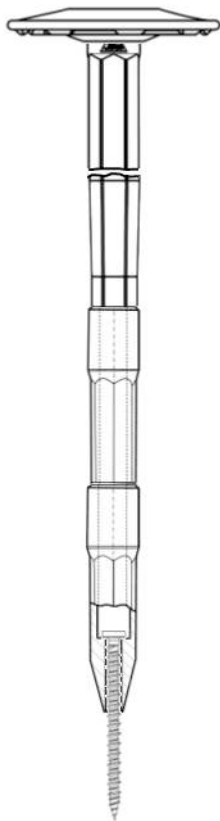
Zahn ZHBK 4,8 x L



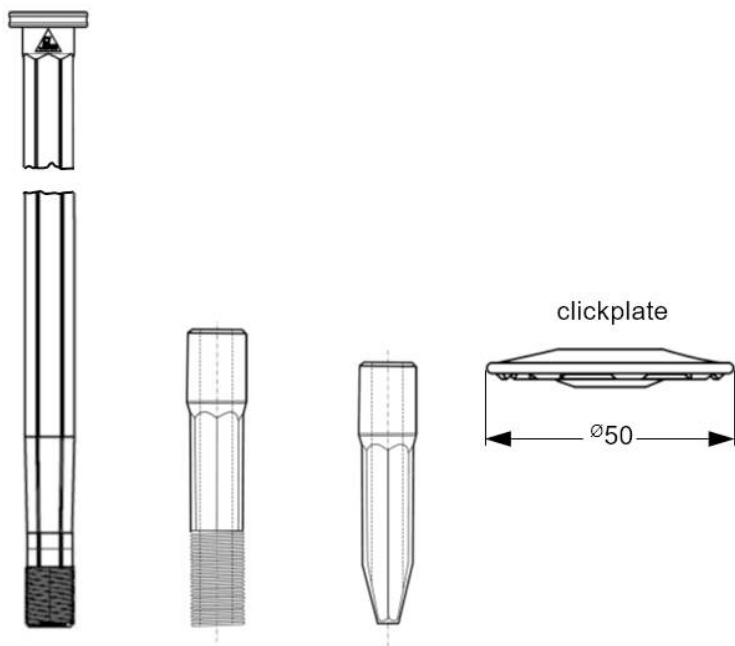
Zahn Flat Roof Fasteners

Annex 216

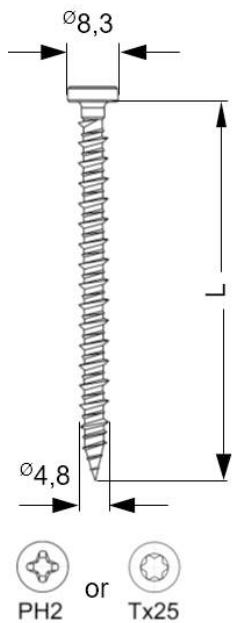
Combination 216
ZSSB-module / clickplate / ZHBK
consisting of ZHBK / ZSSB-module-pipe, module middle piece, spike 4,8 and clickplate



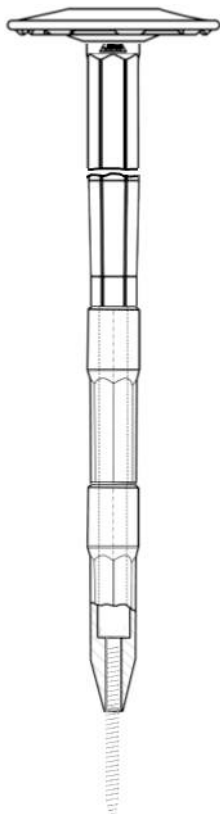
Zahn ZSSB-module-pipe 4,8 with module and clickplate



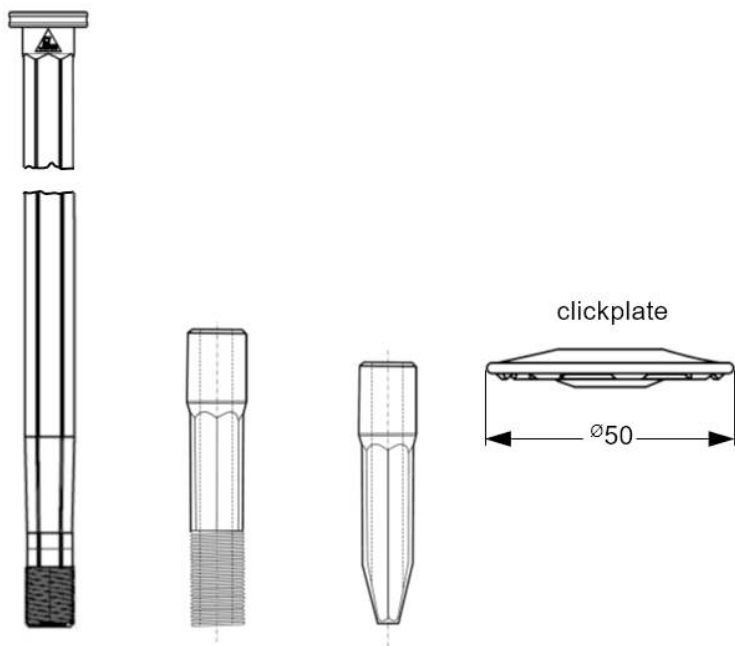
Zahn ZHBK-E 4,8 x L



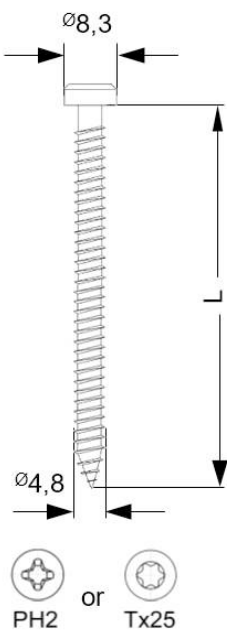
Zahn Flat Roof Fasteners	Annex 217
Combination 217 ZSSB-module / clickplate / ZHBK-E consisting of ZHBK-E / ZSSB-module-pipe, module middle piece, spike 4,8 and clickplate	



Zahn ZSSB-module-pipe 4,8 with module and clickplate



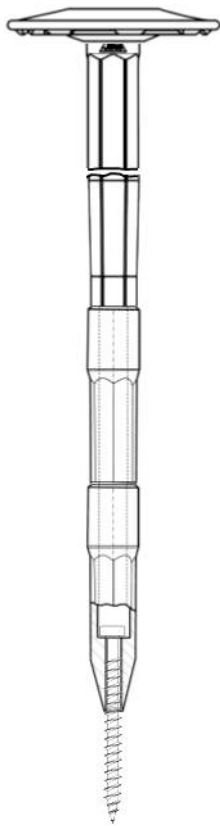
Zahn ZDBK_{dowel} 4,8 x L



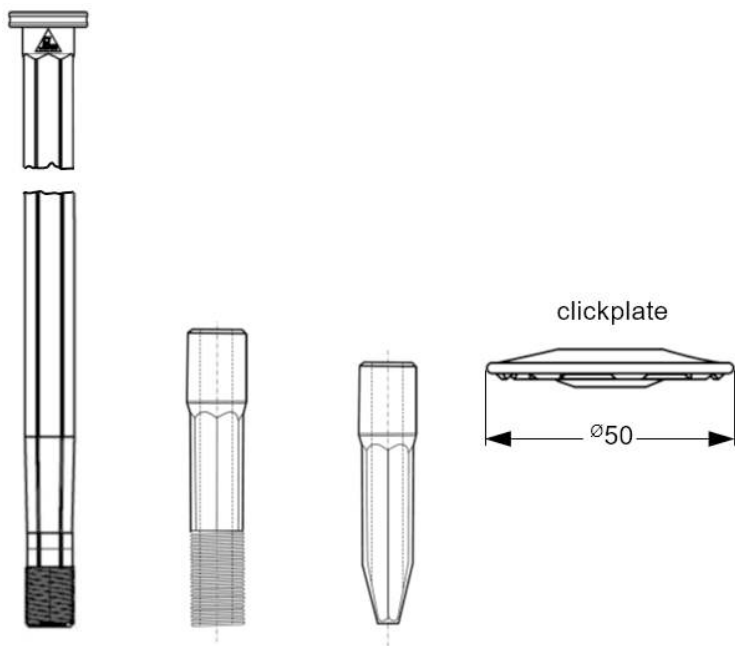
Zahn Flat Roof Fasteners

Combination 218
ZSSB-module / clickplate / ZDBK-dowel consisting of
ZDBK_{dowel} / ZSSB-module-pipe, module middle piece, spike 4,8 and clickplate

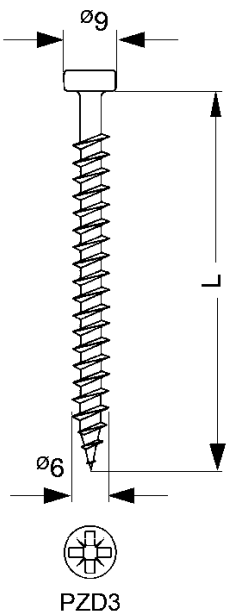
Annex 218



Zahn ZSSB-module-pipe 6,0 with module and clickplate



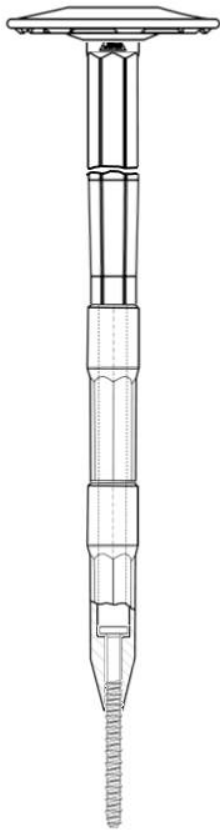
Zahn ZGBK-E 6,0 x L



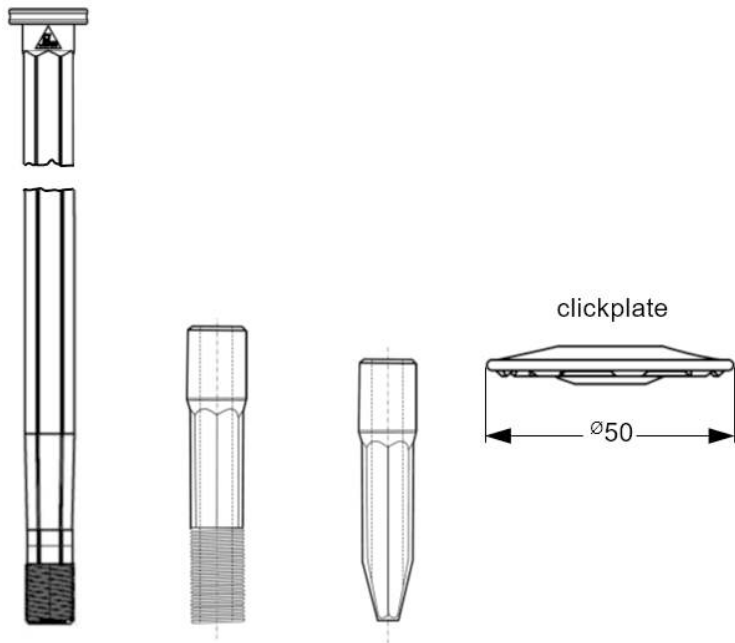
Zahn Flat Roof Fasteners

Combination 219
ZSSB-module / clickplate / ZGBK-E
consisting of ZGBK-E / ZSSB-module-pipe, module middle piece, spike 6,0 and clickplate

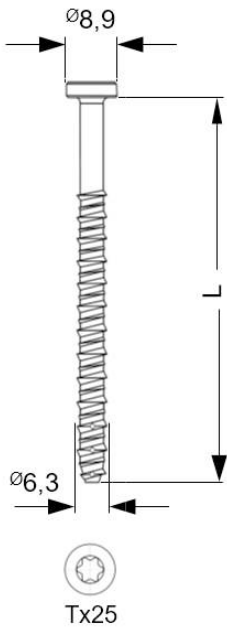
Annex 219



Zahn ZSSB-module-pipe 6,0 with module and clickplate



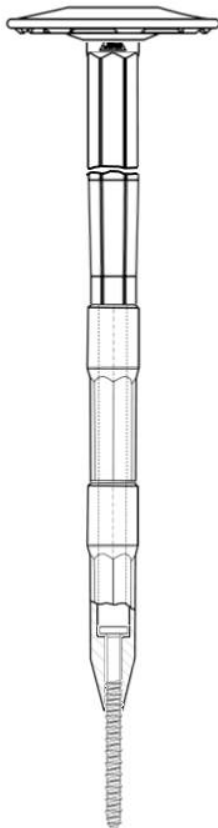
Zahn ZBST 6,3 x L



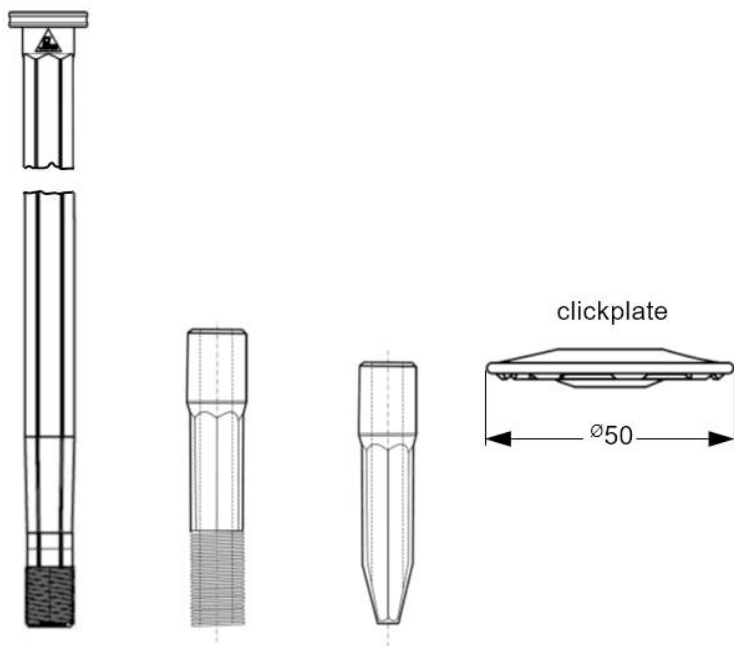
Zahn Flat Roof Fasteners

Annex 220

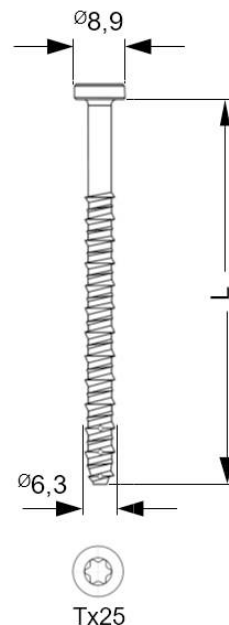
Combination 220
ZSSB-module / clickplate / ZBST
consisting of ZBST / ZSSB-module-pipe, module middle piece, spike 6,0 and clickplate



Zahn ZSSB-module-pipe 6,0 with module and clickplate

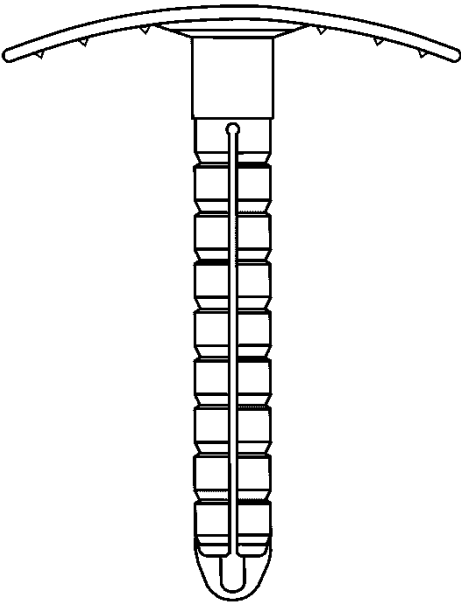


Zahn ZBST-E 6,3 x L

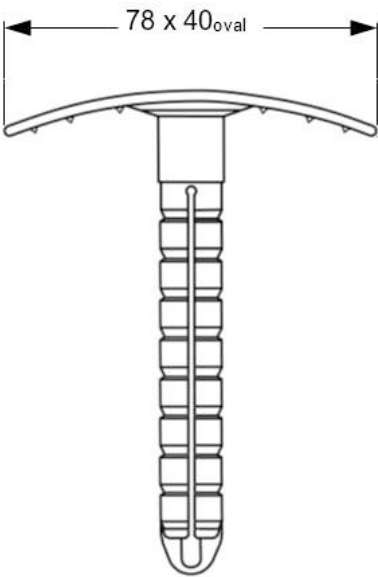


Zahn Flat Roof Fasteners
Combination 221 ZSSB-module / clickplate / ZBST-E consisting of ZBST-E / ZSSB-module-pipe, module middle piece, spike 6,0 and clickplate

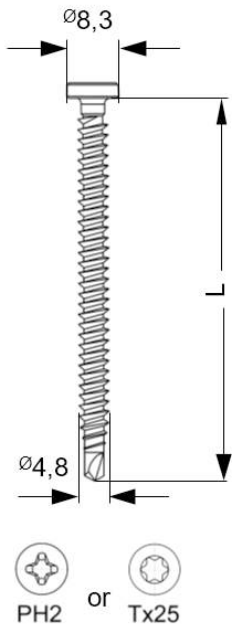
Annex 221



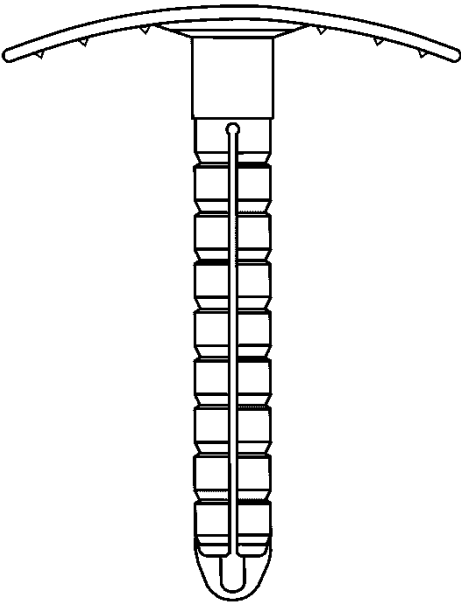
Zahn ZTSD oval



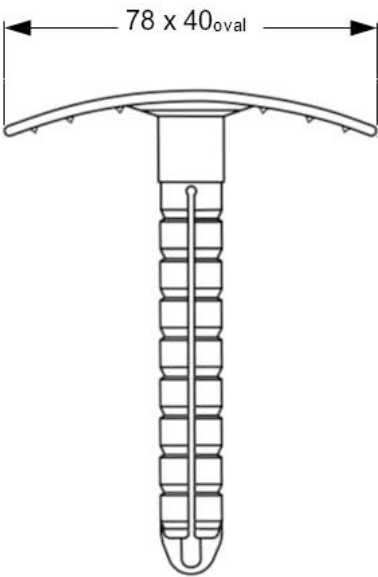
Zahn ZDBK 4,8 x L



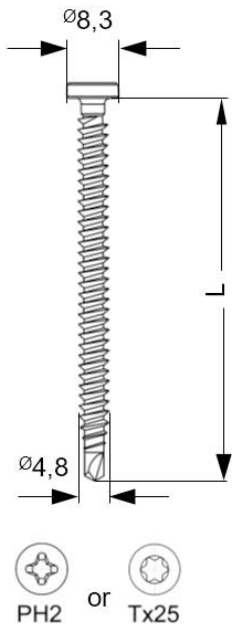
Zahn Flat Roof Fasteners	Annex 222
Combination 222 ZTSD / ZDBK consisting of ZDBK / ZTSD oval	



Zahn ZTSD oval



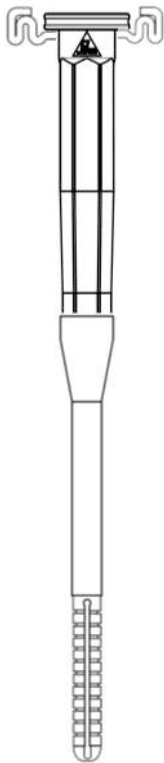
Zahn ZDBK-E 4,8 x L



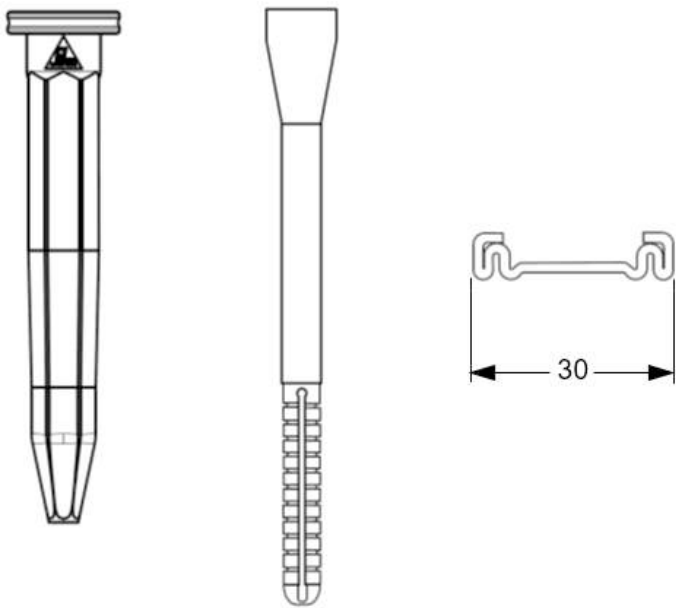
Zahn Flat Roof Fasteners

Combination 223
ZTSD-E / ZDBK-E
consisting of ZDBK-E / ZTSD oval

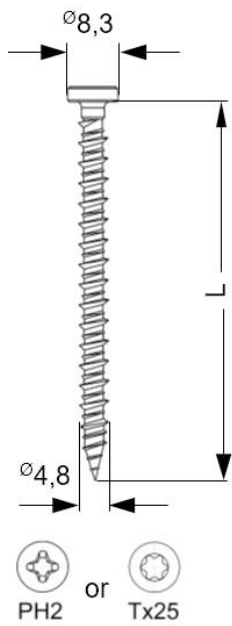
Annex 223



Zahn ZSSB-pipe 4,8 dowel attachment and bar



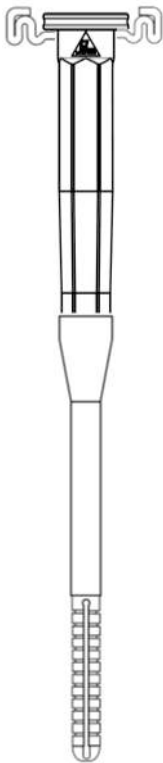
Zahn ZHBK-E 4,8 x L



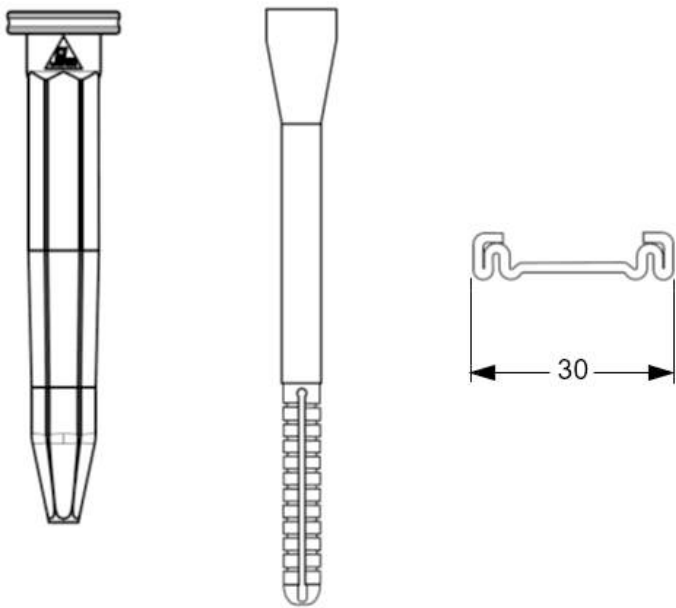
Zahn Flat Roof Fasteners

Combination 224
ZSSB-ZHBK-E concrete
consisting of ZHBK-E / ZSSB-pipe 4,8, ZSSB bar and dowel attachment

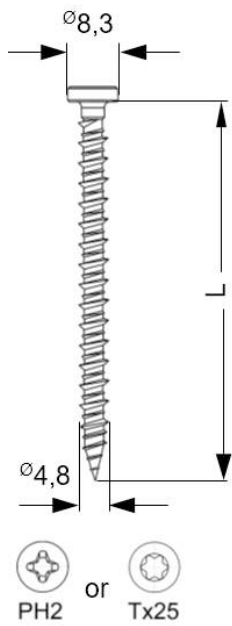
Annex 224



Zahn ZSSB-pipe 4,8 dowel attachment and bar



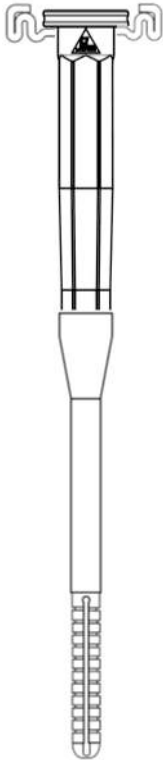
Zahn ZHBK 4,8 x L



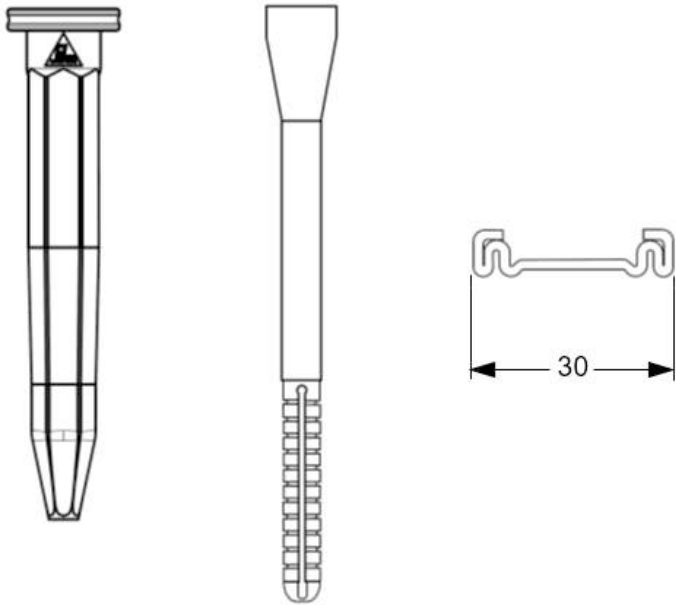
Zahn Flat Roof Fasteners

Combination 225
ZSSB-ZHBK concrete
consisting of ZHBK / ZSSB-pipe 4,8, ZSSB bar and dowel attachment

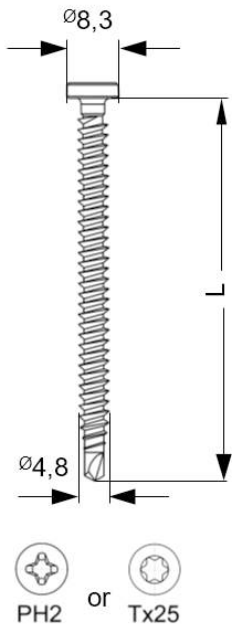
Annex 225



Zahn ZSSB-pipe 4,8 dowel attachment and bar



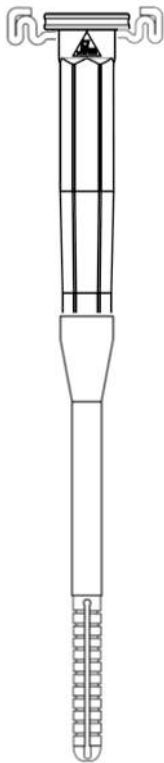
Zahn ZDBK 4,8 x L



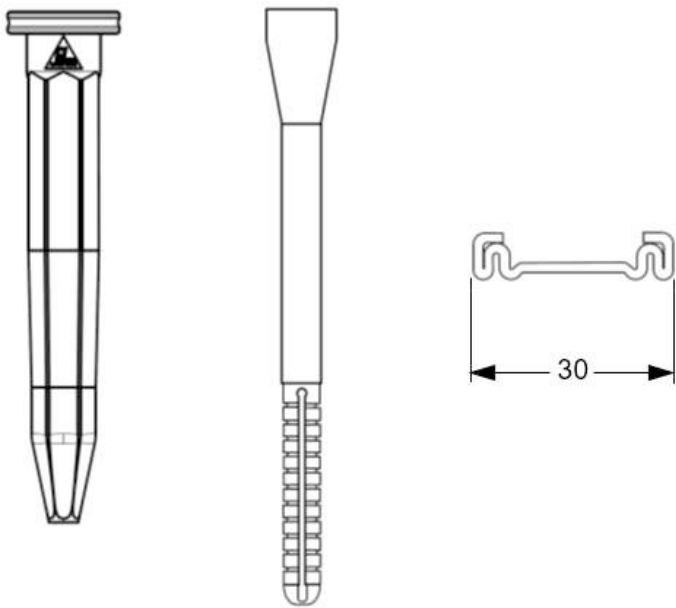
Zahn Flat Roof Fasteners

Combination 226
ZSSB-ZDBK concrete
consisting of ZDBK / ZSSB-pipe 4,8, ZSSB bar and dowel attachment

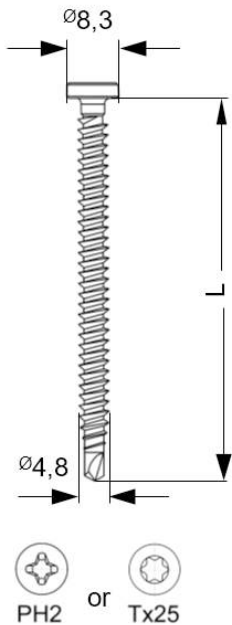
Annex 226



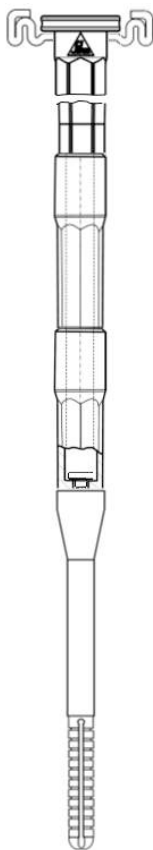
Zahn ZSSB-pipe 4,8 dowel attachment and bar



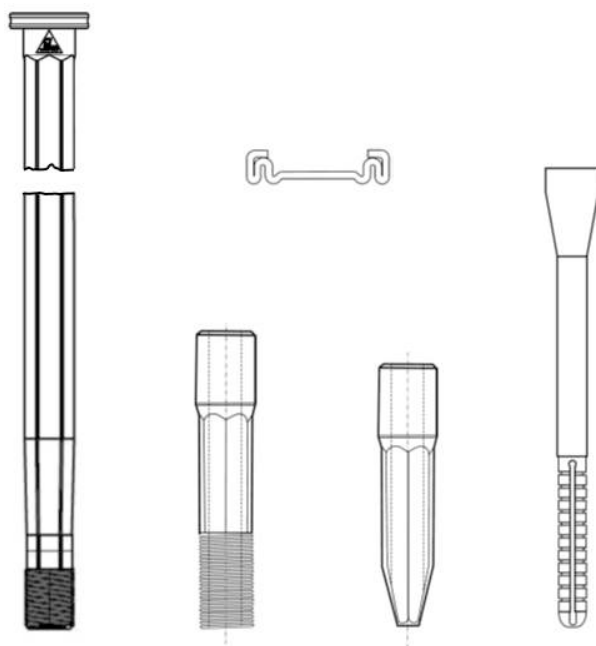
Zahn ZDBK-E 4,8 x L



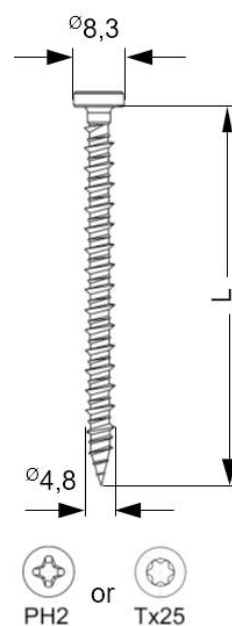
Zahn Flat Roof Fasteners	Annex 227
Combination 227 ZSSB-ZDBK-E concrete consisting of ZDBK-E / ZSSB-pipe 4,8, ZSSB bar and dowel attachment	



Zahn ZSSB-module-pipe 4,8 with module, dowel attachment and bar



Zahn ZHBK-E 4,8 x L

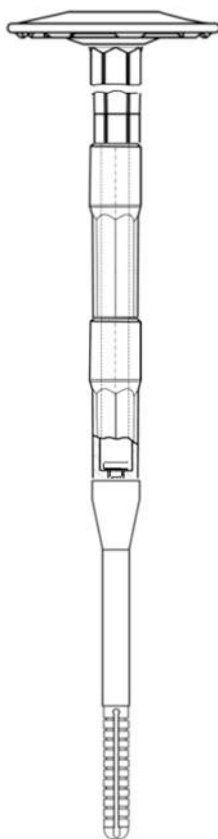


Zahn Flat Roof Fasteners

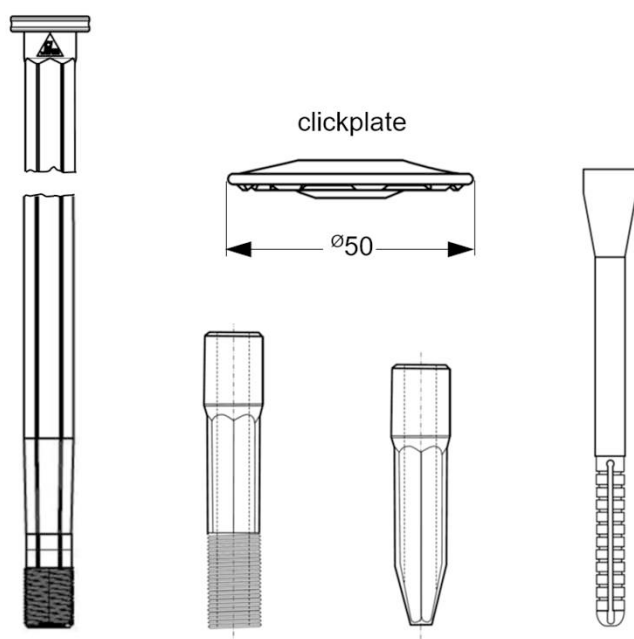
Combination 228

ZSSB-module / ZHBK-E concrete consisting of ZHBK-E / ZSSB-module-pipe, module middle piece, module spike 4,8, dowel attachment and ZSSB bar

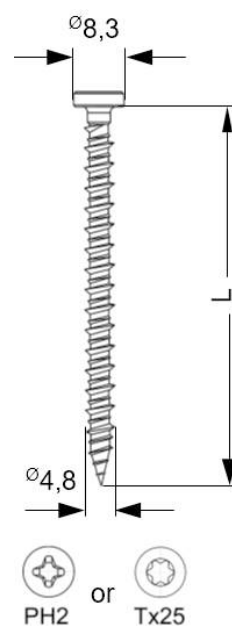
Annex 228



Zahn ZSSB-module-pipe 4,8 with module, dowel attachment and clickplate



Zahn ZHBK-E 4,8 x L

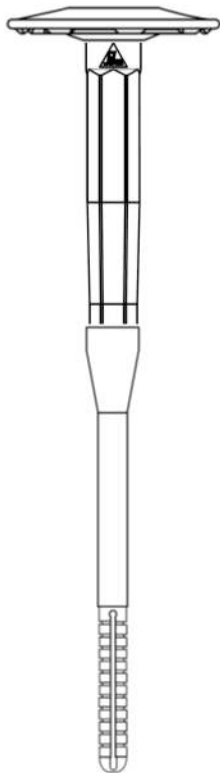


Zahn Flat Roof Fasteners

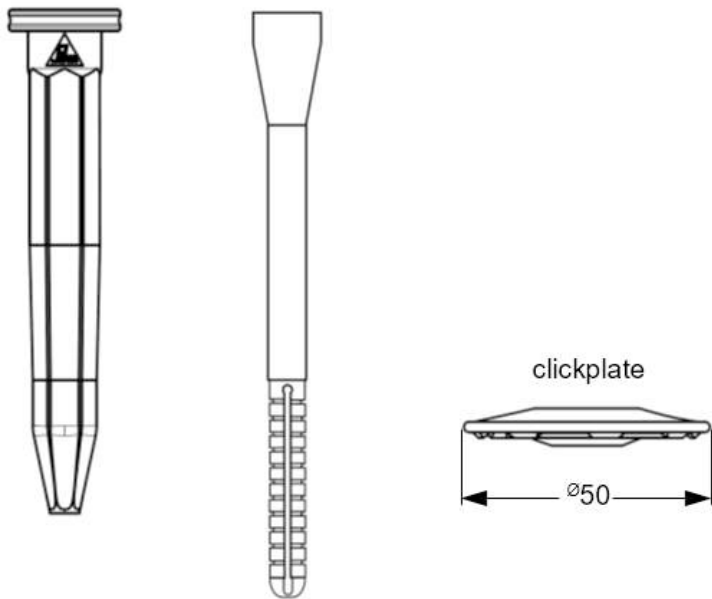
Combination 229

ZSSB-module / clickplate / ZHBK-E concrete consisting of ZHBK-E / ZSSB-module-pipe, module middle piece, module spike 4,8, dowel attachment and clickplate

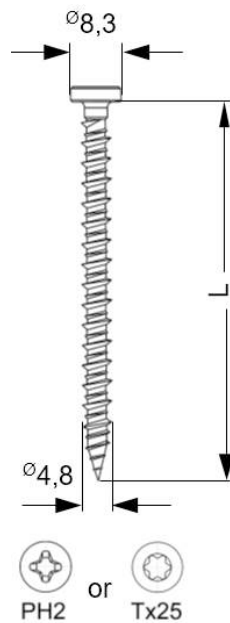
Annex 229



Zahn ZSSB-pipe 4,8 dowel attachment and clickplate



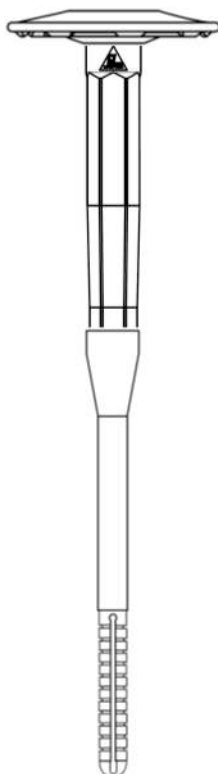
Zahn ZHBK-E 4,8 x L



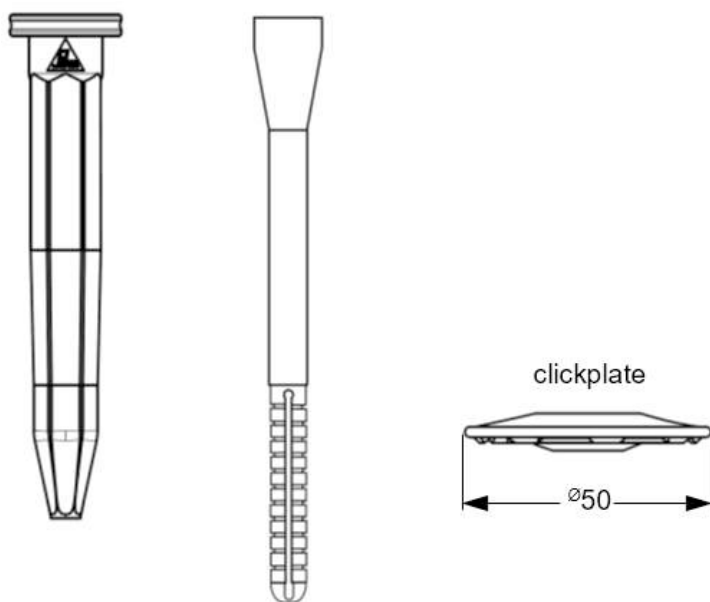
Zahn Flat Roof Fasteners

Annex 230

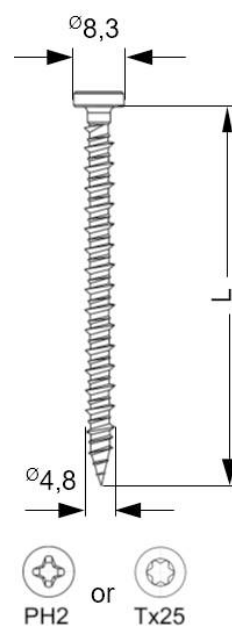
Combination 230
ZSSB / clickplate / ZHBK-E concrete
consisting of ZHBK-E / ZSSB-pipe 4,8, clickplate and dowel attachment



Zahn ZSSB-pipe 4,8 dowel attachment and clickplate



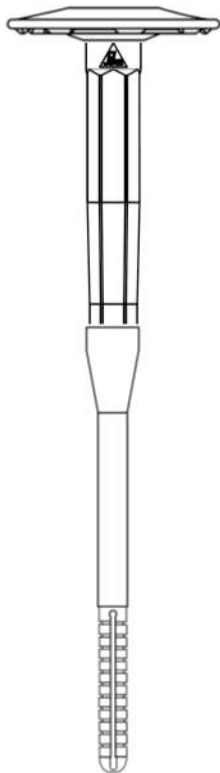
Zahn ZHBK 4,8 x L



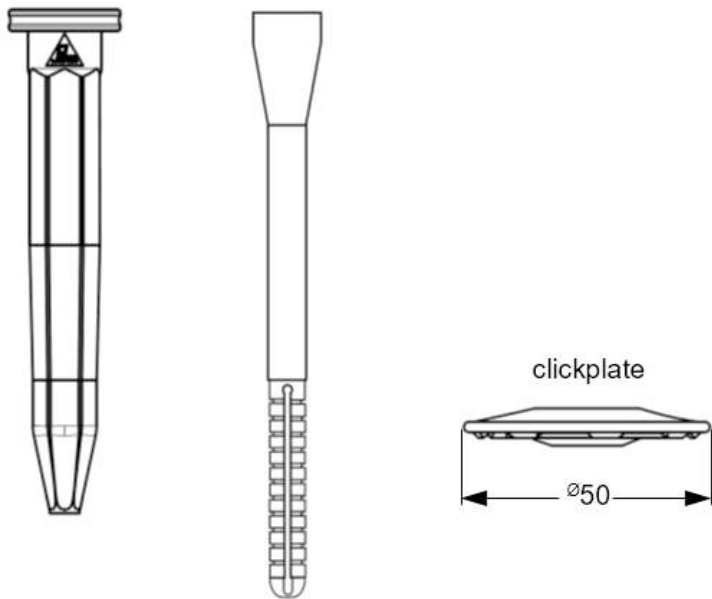
Zahn Flat Roof Fasteners

Combination 231
ZSSB / clickplate / ZHBK concrete
consisting of ZHBK / ZSSB-pipe 4,8, clickplate and dowel attachment

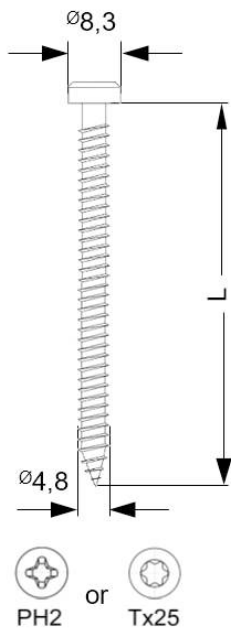
Annex 231



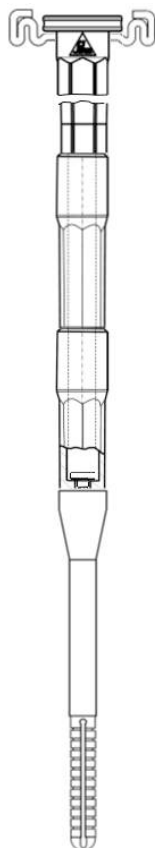
Zahn ZSSB-pipe 4,8 dowel attachment and clickplate



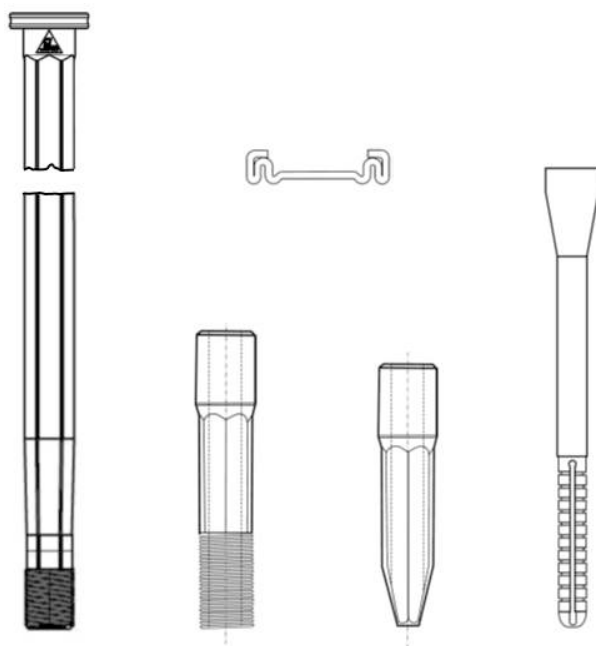
Zahn ZDBK_{dowel} 4,8 x L



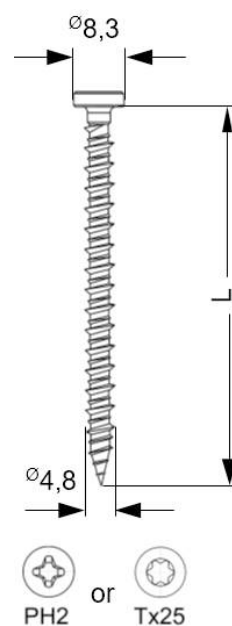
Zahn Flat Roof Fasteners	Annex 232
Combination 232 ZSSB / clickplate / ZDBK-dowel consisting of ZDBK _{dowel} / ZSSB-pipe 4,8, clickplate and dowel attachment	



Zahn ZSSB-module-pipe 4,8 with module, dowel attachment and bar



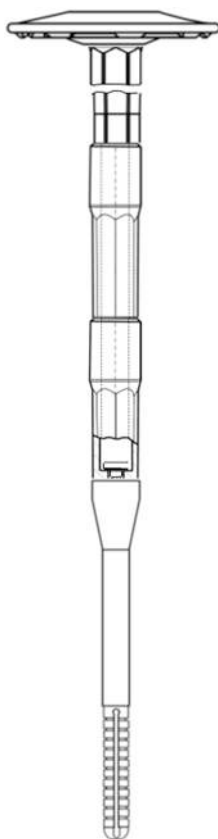
Zahn ZHBK 4,8 x L



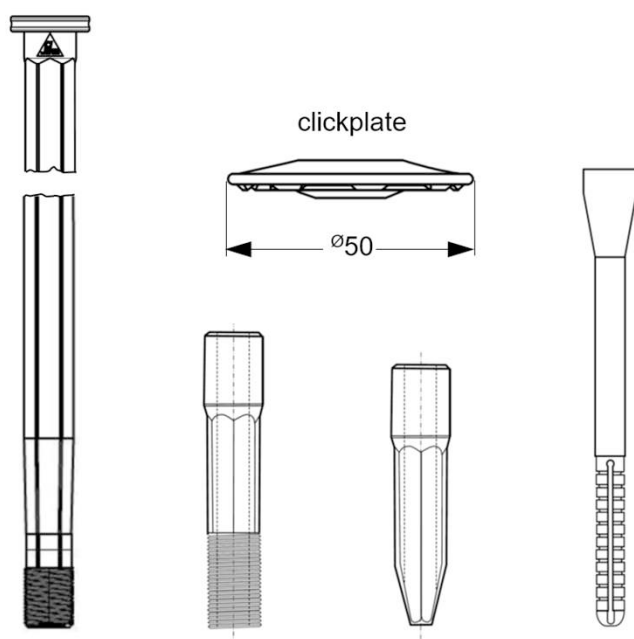
Zahn Flat Roof Fasteners

Combination 233
ZSSB-module / ZHBK concrete consisting of ZHBK / ZSSB-module-pipe,
module middle piece, module spike 4,8, dowel attachment and ZSSB bar

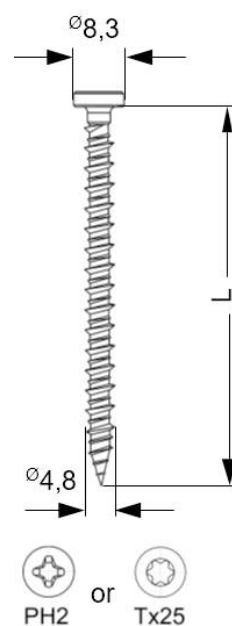
Annex 233



Zahn ZSSB-module-pipe 4,8 with module, dowel attachment and clickplate



Zahn ZHBK 4,8 x L

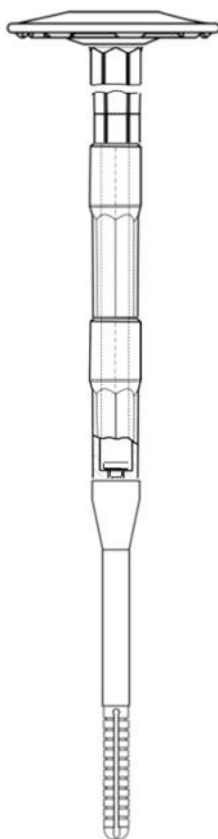


Zahn Flat Roof Fasteners

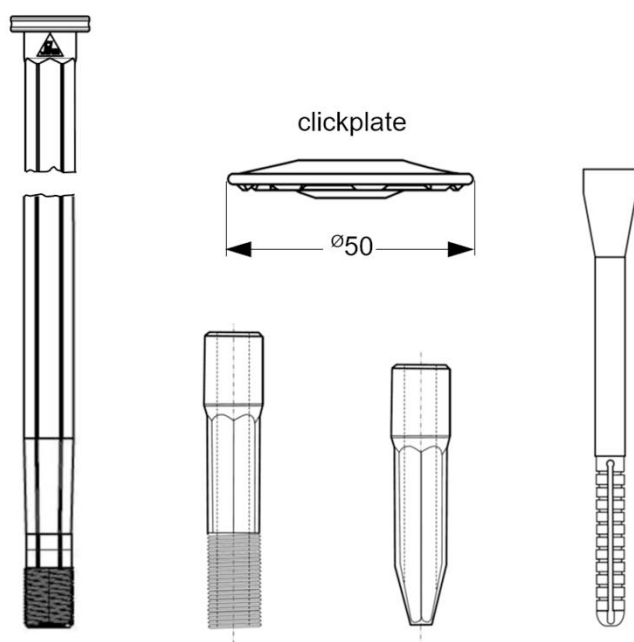
Combination 234

ZSSB-module / clickplate / ZHBK concrete consisting of ZHBK / ZSSB-module-pipe, module middle piece, module spike 4,8, dowel attachment and clickplate

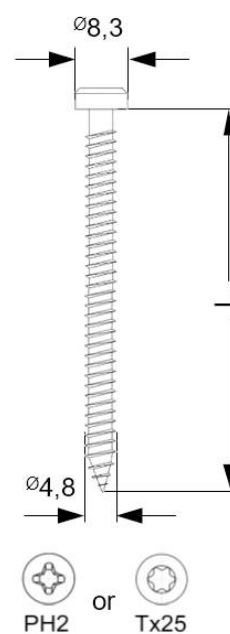
Annex 234



Zahn ZSSB-module-pipe 4,8 with module, dowel attachment and clickplate



Zahn ZDBK_{dowel} 4,8 x L



Zahn Flat Roof Fasteners

Combination 235
ZSSB-module / clickplate / ZDBK-dowel concrete consisting of ZDBK_{dowel} / ZSSB-module-pipe, module middle piece, module spike 4,8, dowel attachment and clickplate

Annex 235

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure								
		Steelsheet					Timber ^{*)}			
		S320GD - EN 10346					C24	OSB3	P5	Ply-wood
		t [mm] ≥					t [mm] ≥			
		0,50	0,60	0,70	0,75	1,50	22	18	19	19
1	ZKSK	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
2	ZKSK-R	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
3	ZKSK-Rplus with pile tip	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
4	ZKSK-Rplus	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
5	ZKSK module	0,75	0,77	1,02	1,16	-	-	-	-	-
6	ZKSK-R-module	0,75	0,77	1,02	1,16	-	1,04	0,98	0,97	1,16
7	ZTSK trapeze	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
8	ZDBK / ZLVT 0001	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
9	ZDBK / ZLVT 0005	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
10	ZDBK / ZLVT 0015	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,37
10a	ZCTS trapeze	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
10b	ZCTSplus trapeze	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
11	ZKSK-E	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
12	ZKSK-E/R	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
13	ZKSK-E/Rplus with pile tip	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
14	ZKSK-E/Rplus	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
15	ZKSK-E-module	0,75	0,77	1,02	1,16	-	1,04	0,98	0,97	1,16
16	ZKSK-E/R-module	0,75	0,77	1,02	1,16	-	1,04	0,98	0,97	1,16
17	ZTSK-E trapeze	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
18	ZDBK-E / ZLVT 0001	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
19	ZDBK-E / ZLVT 0005	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
20	ZDBK-E / ZLVT 0015	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,37
20a	ZCTS-E trapeze	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60
20b	ZCTS-Eplus trapeze	0,75	0,77	1,02	1,19	-	1,04	0,98	0,97	1,60

*) C24 EN 338 $\rho_{min} = 350\text{kg/m}^3$
 OSB3 EN 300 $\rho_{min} = 550\text{kg/m}^3$
 Particleboard / P5 EN 312 $\rho_{min} = 500\text{kg/m}^3$
 Plywood EN 636 $\rho_{min} = 400\text{kg/m}^3$
 For timber substructures thickness "t" also represents the minimum of effective embedment depth
 (= penetration length of threaded part)

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.01

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure				
		Steelsheet				
		S320GD - EN 10346				
		t [mm] ≥				
		0,50	0,60	0,70	0,75	1,50
21	ZKSK-VB	-	-	-	-	2,15
22	ZKSK-R/VB	-	-	-	-	1,91
23	ZKSK-R/VBplus with pile tip	-	-	-	-	2,28
24	ZKSK-R/VB/plus	-	-	-	-	2,28
25	ZKSK-VB-module	-	-	-	-	1,16
26	ZKSK-R/VB-module	-	-	-	-	1,16
27	ZTSK-VB trapeze	-	-	-	-	1,62
28	ZDBK-VB / ZLVT 0001	-	-	-	-	2,28
29	ZDBK-VB / ZLVT 0005	-	-	-	-	2,13
30	ZDBK-VB / ZLVT 0015	-	-	-	-	1,37
30a	ZCTS-VB trapeze	-	-	-	-	1,91
30b	ZCTSplus-VB trapeze	-	-	-	-	2,28
31	ZKSK-E/VB	-	-	-	-	2,15
32	ZKSK-E/R/VB	-	-	-	-	1,91
33	ZKSK-E/R/VBplus with pile tip	-	-	-	-	2,28
34	ZKSK-E/R/VBplus	-	-	-	-	2,28
35	ZKSK-E/VB-module	-	-	-	-	1,16
36	ZKSK-E/R/VB-module	-	-	-	-	1,16
37	ZTSK-E / VB trapeze	-	-	-	-	1,62
38	ZDBK-E/VB / ZLVT 0001	-	-	-	-	2,28
39	ZDBK-E/VB / ZLVT 0005	-	-	-	-	2,13
40	ZDBK-E/VB / ZLVT 0015	-	-	-	-	1,37
40a	ZCTS-E / VB trapeze	-	-	-	-	1,91
40b	ZCTS-Eplus / VB trapeze	-	-	-	-	2,28

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.02

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure									
		Steelsheet					Timber ^{*)}				
		S320GD - EN 10346					C24	OSB3	P5	Ply-wood	
		t [mm] ≥					t [mm] ≥				
		0,50	0,60	0,70	0,75	1,50	22	18	19	19	
41	ZDBS / ZLVT 0001	0,75	0,77	1,02	1,19	-	1,04	1,21	0,97	2,34	
41a	ZDBS-VB / ZLVT 0001	-	-	-	-	2,28	-	-	-	-	
42	ZDBS / ZLVT 0005	0,75	0,77	1,02	1,19	-	1,04	1,21	0,97	2,34	
42a	ZDBS-VB / ZLVT 0005	-	-	-	-	2,28	-	-	-	-	
43	ZDBS / ZLVT 0012	0,75	0,77	1,02	1,19	-	1,04	1,21	0,97	2,34	
43a	ZDBS-VB / ZLVT 0012	-	-	-	-	2,28	-	-	-	-	
44	ZDBS-E / ZLVT 0001	0,75	0,77	1,02	1,19	-	1,04	1,21	0,97	2,34	
45	ZDBS-E / ZLVT 0005	0,75	0,77	1,02	1,19	-	1,04	1,21	0,97	2,34	
46	ZDBS-E / ZLVT 0012	0,75	0,77	1,02	1,19	-	1,04	1,21	0,97	2,34	
47	ZHSK	-	-	-	-	-	1,60	1,18	1,51	1,25	
48	ZHSK-R	-	-	-	-	-	1,60	1,18	1,51	1,25	
49	ZHSK-Rplus with pile tip	-	-	-	-	-	1,60	1,18	1,51	1,25	
50	ZHSK-Rplus	-	-	-	-	-	1,60	1,18	1,51	1,25	
51	ZHSK module	-	-	-	-	-	1,16	1,16	1,16	1,16	
52	ZHSK-R-module	-	-	-	-	-	1,16	1,16	1,16	1,16	
53	ZTSK timber	-	-	-	-	-	1,58	1,18	1,51	1,25	
54	ZHBK / ZLVT 0001	-	-	-	-	-	1,60	1,18	1,51	1,25	
55	ZHBK / ZLVT 0005	-	-	-	-	-	1,60	1,18	1,51	1,25	
55a	ZHBK-TK / ZLVT 0005	-	-	-	-	-	1,47	1,18	1,47	1,25	
56	ZHBK / ZLVT 0015	-	-	-	-	-	1,38	1,18	1,38	1,25	
56a	ZCTS timber	-	-	-	-	-	1,60	1,18	1,51	1,25	
56b	ZHBK-TK / ZLVT 0015	-	-	-	-	-	1,47	1,18	1,47	1,25	
56c	ZCTSplus timber	-	-	-	-	-	1,60	1,18	1,51	1,25	
66b	ZHBK-E-TK / ZLVT 0005	-	-	-	-	-	1,47	1,18	1,47	1,25	
69a	ZHBK-E-TK / ZLVT 0015	-	-	-	-	-	1,47	1,18	1,47	1,25	

*) C24 EN 338 $\rho_{min} = 350\text{kg/m}^3$
 OSB3 EN 300 $\rho_{min} = 550\text{kg/m}^3$
 Particleboard / P5 EN 312 $\rho_{min} = 500\text{kg/m}^3$
 Plywood EN 636 $\rho_{min} = 400\text{kg/m}^3$
 For timber substructures thickness "t" also represents the minimum of effective embedment depth
 (= penetration length of threaded part)

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.03

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure											
		Steelsheet					Aluminium		Timber ^{*)}				
		S320GD - EN 10346					EN 485, t ≥ 0,5mm R _m [N/mm²] ≥		C24	OSB3	P5	Ply-wood	
		t [mm] ≥							t [mm] ≥				
		0,50	0,60	0,70	0,75	1,50	165	215	22	18	19	19	
57	ZHSK-E	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
58	ZHSK-E/R	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
59	ZHSK-E/Rplus with pile tip	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
60	ZHSK-E/Rplus	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
61	ZHSK-E-module	-	-	-	-	-	-	-	1,16	1,16	1,16	1,16	
62	ZHSK-E/R-module	-	-	-	-	-	-	-	1,16	1,16	1,16	1,16	
67	ZTSK-E-timber	-	-	-	-	-	-	-	1,58	1,18	1,51	1,25	
68	ZHBK-E / ZLVT 0001	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
69	ZHBK-E / ZLVT 0005	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
70	ZHBK-E / ZLVT 0015	-	-	-	-	-	-	-	1,38	1,18	1,38	1,25	
70a	ZCTS-E timber	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
70b	ZCTS-Eplus timber	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
71	ZKSK / ZDBK-dowel	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
72	ZKSK-R / ZDBK-dowel	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
73	ZKSK-Rplus / ZDBK-dowel with... ^{**))}	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
74	ZKSK-Rplus / ZDBK-dowel	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
76a	ZHSK-R-module / ZDBK-dowel	0,90	0,90	1,16	1,16	-	0,34	0,44	0,95	1,16	0,98	1,16	
80	ZTSK / ZDBK-dowel	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
81	ZDBK-dowel / ZLVT 0001	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
81a	ZCTS / ZDBK-dowel	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
81b	ZDBK-dowel / ZLVT 0005	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
81c	ZDBK-dowel / ZLVT 0015	0,90	0,90	1,23	1,37	-	0,34	0,44	0,95	1,16	0,98	1,21	
81d	ZCTSplus / ZDBK-dowel	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
*) C24 EN 338 ρ _{min} = 350kg/m³ OSB3 EN 300 ρ _{min} = 550kg/m³ Particleboard / P5 EN 312 ρ _{min} = 500kg/m³ Plywood EN 636 ρ _{min} = 400kg/m³ For timber substructures thickness "t" also represents the minimum of effective embedmend depth (= penetration length of threaded part)													
**) Full name to be found on annex page													

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.04

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure											
		Steelsheet					Aluminium		Timber*)				
		S320GD - EN 10346					EN 485, t ≥ 0,5mm R _m [N/mm²] ≥		C24	OSB3	P5	Ply- wood	
		t [mm] ≥							t [mm] ≥				
		0,50	0,60	0,70	0,75	1,50	165	215	22	18	19	19	
121	ZDBK-TK / ZLVT 0016	0,75	0,77	1,02	1,22	-	-	-	-	-	-	-	
121a	ZDBK / ZLVT 0016	0,75	0,77	1,02	1,19	-	-	-	-	-	-	-	
121b	ZDBK-E / ZLVT 0016	0,75	0,77	1,02	1,19	-	-	-	-	-	-	-	
122	ZSSB / clickplate / ZDBK trapeze	0,75	0,77	1,02	1,19	-	-	-	1,04	0,98	0,97	1,60	
123	ZSSB / clickplate / ZDBK-E trapeze	0,75	0,77	1,02	1,19	-	-	-	1,04	0,98	0,97	1,60	
124	ZSSB / clickplate / ZDBK-VB trapeze	-	-	-	-	2,28	-	-	-	-	-	-	
125	ZSSB / clickplate / ZDBK-VB-E tr..**)	-	-	-	-	2,28	-	-	-	-	-	-	
128	ZSSB / clickplate / ZHBK timber	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
129	ZSSB / clickplate / ZHBK-E-timber	-	-	-	-	-	-	-	1,60	1,18	1,51	1,25	
130	ZSSB / clickplate / ZDBK-dowel	0,90	0,90	1,23	1,47	-	0,34	0,44	0,95	1,16	0,98	1,21	
134	ZSSB trapeze	0,75	0,77	1,02	1,19	-	-	-	1,04	0,98	0,97	1,41	
135	ZSSB-E trapeze	0,75	0,77	1,02	1,19	-	-	-	1,04	0,98	0,97	1,41	
136	ZSSB-VB trapeze	-	-	-	-	1,41	-	-	-	-	-	-	
137	ZSSB-E-VB trapeze	-	-	-	-	1,41	-	-	-	-	-	-	
140	ZSSB-timber	-	-	-	-	-	-	-	1,41	1,18	1,41	1,25	
141	ZSSB-E-timber	-	-	-	-	-	-	-	1,41	1,18	1,41	1,25	
142	ZSSB-ZDBK-dowel	0,90	0,90	1,23	1,41	-	0,34	0,44	0,95	1,16	0,98	1,21	
146	ZSSB-module trapeze	0,75	0,77	1,02	1,16	-	-	-	1,04	0,98	0,97	1,16	
147	ZSSB-E-module trapeze	0,75	0,77	1,02	1,16	-	-	-	1,04	0,98	0,97	1,16	
148	ZSSB-VB-module trapeze	-	-	-	-	1,16	-	-	-	-	-	-	
149	ZSSB-E-VB-module trapeze	-	-	-	-	1,16	-	-	-	-	-	-	
*) C24 EN 338 ρ _{min} = 350kg/m³ OSB3 EN 300 ρ _{min} = 550kg/m³ Particleboard / P5 EN 312 ρ _{min} = 500kg/m³ Plywood EN 636 ρ _{min} = 400kg/m³ For timber substructures thickness "t" also represents the minimum of effective embedmend depth (= penetration length of threaded part)													
**) Full name to be found on annex page													

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.05

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure											
		Steelsheet					Aluminium		Timber ^{*)}				
		S320GD - EN 10346					EN 485, t ≥ 0,5mm R _m [N/mm²] ≥		C24	OSB3	P5	Ply-wood	
		t [mm] ≥							t [mm] ≥				
		0,50	0,60	0,70	0,75	1,50	165	215	22	18	19	19	
152	ZSSB-module timber	-	-	-	-	-	-	-	1,16	1,16	1,16	1,16	
153	ZSSB-E-module timber	-	-	-	-	-	-	-	1,16	1,16	1,16	1,16	
154	ZSSB-module ZDBK-dowel	0,90	0,90	1,16	1,16	-	0,34	0,44	0,95	1,16	0,98	1,16	
163	Sarnabar / ZDBS	0,75	0,77	1,02	1,19	-	-	-	1,04	1,21	0,97	2,34	
163a	Sarnabar / ZDBS-VB	-	-	-	-	2,28	-	-	-	-	-	-	
164	Sarnabar / ZDBS-E	0,75	0,77	1,02	1,19	-	-	-	1,04	1,21	0,97	2,34	
170	ZDBS-1 / ZLVT 0001	0,85	0,93	1,24	1,45	-	-	-	1,04	1,21	0,97	2,34	
171	ZDBS-1 / ZLVT 0005	0,85	0,93	1,24	1,45	-	-	-	1,04	1,21	0,97	2,34	
172	ZDBS-1 / ZLVT 0012	0,85	0,93	1,24	1,45	-	-	-	1,04	1,21	0,97	2,34	
173	Sarnabar / ZSSB-1	0,85	0,93	1,24	1,45	-	-	-	1,04	1,21	0,97	2,34	
174	ZCTS-1 trapeze	0,75	0,77	1,02	1,19	-	-	-	1,04	0,98	0,97	1,43	
175	ZCTS-1-E trapeze	0,75	0,77	1,02	1,19	-	-	-	1,04	0,98	0,97	1,43	
176	ZCTS-1-VB trapeze	-	-	-	-	1,43	-	-	-	-	-	-	
177	ZCTS-1-E/VB trapeze	-	-	-	-	1,43	-	-	-	-	-	-	
180	ZCTS-1 timber	-	-	-	-	-	-	-	1,43	1,18	1,43	1,25	
181	ZCTS-1-E timber	-	-	-	-	-	-	-	1,43	1,18	1,43	1,25	
182	ZCTS-1-dowel	0,90	0,90	1,23	1,43	-	0,34	0,44	0,95	1,16	0,98	1,21	
210	ZSSB-module / clickplate / ZDBK	0,75	0,77	1,02	1,16	-	-	-	1,04	1,16	0,97	1,16	
211	ZSSB-E-mod../ click../ ZDBK-E.. ^{*)}	0,75	0,77	1,02	1,16	-			1,04	1,16	0,97	1,16	
212	ZSSB-module / clickplate / ZDBK-VB	-	-	-	-	1,16			-	-	-	-	
213	ZSSB-mod../ click../ ZDBK-E / VB.. ^{*)}	-	-	-	-	1,16			-	-	-	-	
216	ZSSB-module / clickplate / ZHBK	-	-	-	-	-	-	-	1,16	1,16	1,16	1,16	
217	ZSSB-module / clickplate / ZHBK-E	-	-	-	-	-	-	-	1,16	1,16	1,16	1,16	
218	ZSSB-mod../ click../ ZDBK-dowel.. ^{*)}	0,90	0,90	1,16	1,16	-	0,34	0,44	0,95	1,16	0,98	1,16	
^{*)} C24 EN 338 ρ _{min} = 350kg/m³ OSB3 EN 300 ρ _{min} = 550kg/m³ Particleboard / P5 EN 312 ρ _{min} = 500kg/m³ Plywood EN 636 ρ _{min} = 400kg/m³ For timber substructures thickness "t" also represents the minimum of effective embedmend depth (= penetration length of threaded part)													
^{**) Full name to be found on annex page}													

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.06

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure									
		Timber ^{*)}					Aerated ^{**)} Concrete EN 12602		Pumice ^{3*)} EN 1520 LAC...		
		C24	OSB3	P5	Ply- wood						
		t [mm] ≥									
		22	18	19	19		3,5	4,5	...2a	...2b	
82	ZKGK-E/R	1,31	1,08	1,17	1,83		1,02	1,59	0,54	1,00	
83	ZKGK-E-module	1,16	1,08	1,16	1,16		1,02	1,16	0,54	1,00	
84	ZKGK-E/R-module	1,16	1,08	1,16	1,16		1,02	1,16	0,54	1,00	
85	ZHVM-E PB-direct	1,31	1,08	1,17	1,61		1,02	1,59	0,54	1,00	
86	ZTSK-E PB-direct	1,31	1,08	1,17	1,33		1,02	1,33	0,54	1,00	
87	ZGBK-E / ZLVT 0008	1,31	1,08	1,17	1,34		1,02	1,34	0,54	1,00	
88	ZGBK-E / ZLVT 0012	1,28	1,08	1,17	1,28		1,02	1,28	0,54	1,00	
131	ZSSB / click../ ZGBK-E PB-direct.. ^{4*)}	1,31	1,08	1,17	1,85		1,02	1,59	0,54	1,00	
131a	ZCTS PB-direct / ZGBK-E	1,31	1,08	1,17	1,41		1,02	1,41	0,54	1,00	
143	ZSSB-PB direct	1,31	1,08	1,17	1,41		1,02	1,41	0,54	1,00	
155	ZSSB-module PB-direct	1,16	1,08	1,16	1,16		1,02	1,16	0,54	1,00	
167	Sarnabar / ZGBK-E	1,31	1,08	1,17	2,58		1,02	1,59	0,54	1,00	
189	ZSSB-HVM-1 PB-direct	1,31	1,08	1,17	1,89		1,02	1,59	0,54	1,00	
194	ZSSB / click../ HVM-1-E PB-di.. ^{4*)}	1,31	1,08	1,17	1,89		1,02	1,59	0,54	1,00	
219	ZSSB-module / clickplate / ZGBK-E	1,16	1,08	1,16	1,16		1,02	1,16	0,54	1,00	
							min. setting depth = 60,0mm				

*) C24 EN 338 $\rho_{min} = 350\text{kg/m}^3$
 OSB3 EN 300 $\rho_{min} = 550\text{kg/m}^3$
 Particleboard / P5 EN 312 $\rho_{min} = 500\text{kg/m}^3$
 Plywood EN 636 $\rho_{min} = 400\text{kg/m}^3$
 For timber substructures thickness "t" also represents the minimum of effective embedment depth
 (= penetration length of threaded part)

**) 3,5: AAC 3,5 $\rho_{class} = 500$
 4,5: AAC 4,5 $\rho_{class} = 600$

3*) 2a: LAC 2 $\rho_{class} = 0,5$
 2b: LAC 2 $\rho_{class} = 1,0$

4*) Full name to be found on annex page

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.07

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure								
			Concrete EN 206-1		Aerated ^{**}) Concrete EN 12602		Pumice ^{3*)} EN 1520 LAC...			
			C12/15	C25/30	3,5	4,5	...2a	...2b		
75	ZSDK-module / ZDBK-dowel		1,03	1,16	0,81	1,16	0,56	1,04		
76	ZSDK-R-module / ZDBK-dowel		1,03	1,16	0,81	1,16	0,56	1,04		
77	ZSDK / ZDBK-dowel		1,03	1,46	0,81	1,21	0,56	1,04		
78	ZSDK-R / ZDBK-dowel		1,03	1,46	0,81	1,21	0,56	1,04		
78a	ZCTS / ZDBK-dowel-concrete		1,03	1,46	0,81	1,21	0,56	1,04		
79	ZTSD / ZDBK-dowel		0,95	1,34	0,46	0,69	0,54	0,99		
222	ZTSD / ZDBK		0,95	1,34	0,46	0,69	0,54	0,99		
223	ZTSD-E / ZDBK-E		0,95	1,34	0,46	0,69	0,54	0,99		
			pre-drill Ø = 8,0mm							
			min. setting depth							
			40mm		60mm					
**) 3,5: AAC 3,5 ρ _{class} = 500										
4,5: AAC 4,5 ρ _{class} = 600										
3*) 2a: LAC 2 ρ _{class} = 0,5										
2b: LAC 2 ρ _{class} = 1,0										

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.08

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure					
			Concrete EN 206-1				
			C12/15	C25/30	C12/15	C25/30	
			pre-drill Ø = 5,0mm				
			min. setting depth				
			40mm				
96	ZBSK-E/R		1,60	1,85	-	-	
97	ZBSK-E-module		1,16	1,16	-	-	
98	ZBSK-E/R-module		1,16	1,16	-	-	
99	ZHVM-E-concrete-direct		1,60	1,61	-	-	
100	ZTSK-E-concrete-direct		1,41	1,41	-	-	
101	ZBST-E / ZLVT 0008		1,60	1,71	-	-	
102	ZBST-E / ZLVT 0012		1,60	1,67	-	-	
133	ZSSB / click../ ZBST-E conc-dir..*)		1,60	1,85	-	-	
133a	ZCTS-E concrete-direct / ZBST-E		1,41	1,41	-	-	
145	ZSSB-E-concrete-direct		1,41	1,41	-	-	
157	ZSSB-E-module concrete-direct		1,16	1,16	-	-	
169	Sarnabar / ZBST-E		1,60	2,26	-	-	
			min. setting depth				
			30mm		20mm**)		
89	ZBSK-R		1,60	1,85	1,49	1,85	
90	ZBSK-module		1,16	1,16	1,16	1,16	
91	ZBSK-R-module		1,16	1,16	1,16	1,16	
92	ZHVM-concrete-direct		1,60	1,61	1,49	1,61	
93	ZTSK-concrete-direct		1,41	1,41	1,41	1,41	
94	ZBST / ZLVT 0008		1,60	1,71	1,49	1,71	
95	ZBST / ZLVT 0012		1,60	1,67	1,49	1,67	
132	ZSSB / click../ ZBST conc-dir..*)		1,60	1,85	1,49	1,85	
132a	ZCTS concrete-direct / ZBST 6,3		1,41	1,41	1,41	1,41	
144	ZSSB-concrete-direct		1,41	1,41	1,41	1,41	
156	ZSSB-module concrete-direct		1,16	1,16	1,16	1,16	
168	Sarnabar / ZBST		1,60	2,26	1,49	2,16	

*) Full name to be found on annex page

**) It must be ensured that the concrete has a high surface quality as well as a reduced maximum grain size of less than 16mm.
The application is limited to precast elements with cavities.

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.09

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure					
			Concrete EN 206-1				
			C12/15	C25/30	C12/15	C25/30	
		pre-drill Ø = 5,0mm					
		min. setting depth					
		40mm					
184	ZCTS-1-E concrete		1,43	1,43	-	-	
188	ZSSB-HVM-1-E concrete-direct		1,60	1,89	-	-	
193	ZSSB / click../ HVM-1-E conc-dir..*)		1,60	1,89	-	-	
221	ZSSB-module / clickplate / ZBST-E		1,16	1,16	-	-	
		min. setting depth					
		30mm		20mm**)			
183	ZCTS-1 concrete-direct		1,43	1,43	1,43	1,43	
187	ZSSB-HVM-1 concrete-direct		1,60	1,89	1,49	1,89	
192	ZSSB / click../ HVM-1 conc-dir..*)		1,60	1,89	1,49	1,89	
220	ZSSB-module / clickplate / ZBST		1,16	1,16	1,16	1,16	
*) Full name to be found on annex page							
**) It must be ensured that the concrete has a high surface quality as well as a reduced maximum grain size of less than 16mm. The application is limited to precast elements with cavities.							

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.10

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure							
			Concrete EN 206-1		Aerated ^{**} Concrete EN 12602		Pumice ^{3*)} EN 1520 LAC...		
			C12/15	C25/30	3,5	4,5	...2a	...2b	
63	ZSDK-E-module / ZHBK-E		1,16	1,16	0,87	1,12	-	0,37	
64	ZSDK-E/R-module / ZHBK-E		1,16	1,16	0,87	1,12	-	0,37	
65	ZSDK-E / ZHBK-E		1,48	1,48	0,87	1,12	-	0,37	
66	ZSDK-E/R / ZHBK-E		1,48	1,48	0,87	1,12	-	0,37	
66a	ZCTS-E / ZHBK-E concrete		1,48	1,48	0,87	1,12	-	0,37	
60a	ZTSD-E / ZHBK-E		0,89	0,89	0,52	0,67	-	0,22	
158	ZSSB-ZDBK-dowel concrete		1,03	1,41	0,81	1,21	0,56	1,04	
160	ZSSB-module-ZDBK-dowel concrete		1,03	1,16	0,81	1,16	0,56	1,04	
161	ZSSB-E-module concrete		1,03	1,16	0,81	1,16	0,56	1,04	
195	ZSDK-R-module / ZDBK		1,03	1,16	0,81	1,16	0,56	1,04	
196	ZSDK-module / ZDBK		1,03	1,16	0,81	1,16	0,56	1,04	
197	ZSDK / ZDBK		1,03	1,46	0,81	1,21	0,56	1,04	
198	ZSDK-R / ZDBK		1,03	1,46	0,81	1,21	0,56	1,04	
199	ZCTS / ZDBK concrete		1,03	1,46	0,81	1,21	0,56	1,04	
			pre-drill Ø = 8,0mm						
			min. setting depth						
			40mm		60mm				
**) 3,5: AAC 3,5 ρ_{class} = 500 4,5: AAC 4,5 ρ_{class} = 600									
3*) 2a: LAC 2 ρ_{class} = 0,5 2b: LAC 2 ρ_{class} = 1,0									

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.11

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure							
			Concrete EN 206-1		Aerated ^{**)} Concrete EN 12602		Pumice ^{3*)} EN 1520 LAC...		
			C12/15	C25/30	3,5	4,5	...2a	...2b	
200	ZSDK-E / R-module / ZDBK-E		1,03	1,16	0,81	1,16	0,56	1,04	
201	ZSDK-E module / ZDBK-E		1,03	1,16	0,81	1,16	0,56	1,04	
202	ZSDK-E / ZDBK-E		1,03	1,46	0,81	1,21	0,56	1,04	
203	ZSDK-E / R / ZDBK-E		1,03	1,46	0,81	1,21	0,56	1,04	
204	ZCTS-E / ZDBK-E concrete		1,03	1,46	0,81	1,21	0,56	1,04	
205	ZSDK-R-module / ZHBK		1,16	1,16	0,87	1,12	-	0,37	
206	ZSDK-module / ZHBK		1,16	1,16	0,87	1,12	-	0,37	
207	ZSDK / ZHSK		1,48	1,48	0,87	1,12	-	0,37	
208	ZSDK-R / ZHBK		1,48	1,48	0,87	1,12	-	0,37	
209	ZCTS / ZHBK concrete		1,48	1,48	0,87	1,12	-	0,37	
224	ZSSB-ZHBK-E concrete		1,41	1,41	0,87	1,12	-	0,37	
225	ZSSB-ZHBK concrete		1,41	1,41	0,87	1,12	-	0,37	
226	ZSSB-ZDBK concrete		1,03	1,16	0,81	1,16	0,56	1,04	
227	ZSSB-ZDBK-E concrete		1,03	1,16	0,81	1,16	0,56	1,04	
228	ZSSB-module / ZHBK-E concrete		1,16	1,16	0,87	1,12	-	0,37	
229	ZSSB-mod../clíc../ ZHBK-E conc.. ^{*)}		1,16	1,16	0,87	1,12	-	0,37	
230	ZSSB / clickplate / ZHBK-E concrete		1,48	1,48	0,87	1,12	-	0,37	
231	ZSSB / clickplate / ZHBK concrete		1,16	1,16	0,87	1,12	-	0,37	
232	ZSSB / clickplate / ZDBK-dowel		1,03	1,16	0,81	1,16	0,56	1,04	
233	ZSSB-module / ZHBK concrete		1,16	1,16	0,87	1,12	-	0,37	
234	ZSSB-mod../clíc../ ZHBK conc.. ^{*)}		1,16	1,16	0,87	1,12	-	0,37	
235	ZSSB-mod../clíc../ ZDBK-dow conc.. ^{*)}		1,03	1,16	0,81	1,16	0,56	1,04	
			pre-drill Ø = 8,0mm						
			min. setting depth						
			40mm		60mm				
*) Full name to be found on annex page									
**) 3,5: AAC 3,5 ρ _{class} = 500 4,5: AAC 4,5 ρ _{class} = 600									
3*) 2a: LAC 2 ρ _{class} = 0,5 2b: LAC 2 ρ _{class} = 1,0									

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.12

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure																
		Steelsheet					Aluminium		Pumice ^{3*)} EN 1520 LAC...									
		S280GD - EN 10346					EN 485, t ≥ 0,5mm R _m [N/mm²] ≥											
		t [mm] ≥																
		0,50	0,60	0,70	0,75	1,50	165	215	...2a	...2b								
103	ZHRD	1,02	-	-	-	-	0,42	0,55	0,56	1,02								
104	ZHRD-R	1,02	-	-	-	-	0,42	0,55	0,56	1,02								
104a	ZCTS with expand.. dowel attach.. ^{*)}	1,02	-	-	-	-	0,42	0,55	0,56	1,02								
105	ZHRD on module oval 4,8	1,02	-	-	-	-	0,42	0,55	0,56	1,02								
106	ZHRD-R on module round 4,8	1,02	-	-	-	-	0,42	0,55	0,56	1,02								
159	ZSSB-ZHRD	1,02	-	-	-	-	0,42	0,55	0,56	1,02								
162	ZSSB-ZHRD-module	1,02	-	-	-	-	0,42	0,55	0,56	1,02								
		min. setting depth ^{**)} = 30,0mm pre-drill Ø = 10,0mm							min. setting depth	pre- drill Ø								
									[mm]	[mm]								
									80,0	10,0								
*) Full name to be found on annex page																		
**) The min. setting depth corresponds to the projection of the non-knotted spreader area under the underside of the roof substrate.																		
3*) 2a: LAC 2 ρ _{class} = 0,5 2b: LAC 2 ρ _{class} = 1,0																		

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.13

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure											
		Steelsheet				Timber ^{*)}				Concrete EN 206-1			
		S320GD - EN 10346				C24	OSB3	P5	Ply-wood				
		t [mm] ≥				t [mm] ≥							
		0,60	0,70	0,75	1,50	22	18	19	19				
										pre-drill Ø = 5,0mm			
										min. setting depth			
										40mm			
114	ZMDS-E/R	-	-	1,68	-	1,85	0,95	1,25	1,85	1,51	1,51		
115	ZMDS-E-module	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16		
116	ZMDS-E/R-module	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16		
117	ZHVM-E-multi	-	-	1,61	-	1,61	0,95	1,25	1,61	1,51	1,51		
118	ZTSK-E-multi	-	-	1,41	-	1,41	0,95	1,25	1,41	1,41	1,41		
119	ZMDS-E / ZLVT 0008	-	-	1,68	-	1,71	0,95	1,25	1,71	1,51	1,51		
120	ZMDS-E / ZLVT 0012	-	-	1,67	-	1,67	0,95	1,25	1,67	1,51	1,51		
										min. setting depth			
										30mm		20mm ^{**)}	
107	ZMDS-R	-	-	1,68	-	1,85	0,95	1,25	1,85	1,51	1,51	0,33	0,48
108	ZMDS-module	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16	0,33	0,48
109	ZMDS-R-module	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16	0,33	0,48
110	ZHVM-multi	-	-	1,61	-	1,61	0,95	1,25	1,61	1,51	1,51	0,33	0,48
111	ZTSK-multi	-	-	1,41	-	1,41	0,95	1,25	1,41	1,41	1,41	0,33	0,48
112	ZMDS / ZLVT 0008	-	-	1,68	-	1,71	0,95	1,25	1,71	1,51	1,51	0,33	0,48
113	ZMDS / ZLVT 0012	-	-	1,67	-	1,67	0,95	1,25	1,67	1,51	1,51	0,33	0,48
126	ZSSB / clickplate / ZMDS	-	-	1,68	-	1,85	0,95	1,25	1,85	1,51	1,51	0,33	0,48
126a	ZCTS / ZMDS	-	-	1,41	-	1,41	0,95	1,25	1,41	1,41	1,41	0,33	0,48
^{*)} C24 EN 338 ρ _{min} = 350kg/m ³ OSB3 EN 300 ρ _{min} = 550kg/m ³ Particleboard / P5 EN 312 ρ _{min} = 500kg/m ³ Plywood EN 636 ρ _{min} = 400kg/m ³ For timber substructures thickness "t" also represents the minimum of effective embedmend depth (= penetration length of threaded part)													
^{**)} It must be ensured that the concrete has a high surface quality as well as a reduced maximum grain size of less than 16mm. The application is limited to precast elements with cavities.													

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.14

Characteristic Axial Load Resistance N_{Rk} [kN]

Annex	Zahn Flat Roof Fasteners	Substructure											
		Steelsheet				Timber ^{*)}				Concrete EN 206-1			
		S320GD - EN 10346				C24	OSB3	P5	Ply-wood				
		t [mm] ≥				t [mm] ≥							
		0,60	0,70	0,75	1,50	22	18	19	19				
										pre-drill Ø = 5,0mm			
										min. setting depth			
										40mm			
127	ZSSB / clickplate / ZMDS-E	-	-	1,68	-	1,85	0,95	1,25	1,85	1,51	1,51		
127a	ZCTS-E / ZMDS-E	-	-	1,41	-	1,41	0,95	1,25	1,41	1,41	1,41		
139	ZSSB-multi-E	-	-	1,41	-	1,41	0,95	1,25	1,41	1,41	1,41		
151	ZSSB-multi-E module	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16		
166	Sarnabar / ZMDS-E	-	-	1,68	-	2,20	0,95	1,25	1,93	1,51	1,51		
179	ZCTS-1-multi-E	-	-	1,43	-	1,43	0,95	1,25	1,43	1,43	1,43		
186	ZSSB-HVM-1-multi-E	-	-	1,68	-	1,89	0,95	1,25	1,89	1,51	1,51		
191	ZSSB / clickplate / HVM-1-multi-E	-	-	1,68	-	1,89	0,95	1,25	1,89	1,51	1,51		
215	ZSSB-module / clickplate / ZMDS-E	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16		
										min. setting depth			
										30mm		20mm ^{**)}	
138	ZSSB multi	-	-	1,41	-	1,41	0,95	1,25	1,41	1,41	1,41	0,33	0,48
150	ZSSB-multi-module	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16	0,33	0,48
165	Sarnabar / ZMDS	-	-	1,68	-	2,20	0,95	1,25	1,93	1,51	1,51	0,33	0,48
178	ZCTS-1-multi	-	-	1,43	-	1,43	0,95	1,25	1,43	1,43	1,43	0,33	0,48
185	ZSSB-HVM-1-multi	-	-	1,68	-	1,89	0,95	1,25	1,89	1,51	1,51	0,33	0,48
190	ZSSB / clickplate / HVM-1-multi	-	-	1,68	-	1,89	0,95	1,25	1,89	1,51	1,51	0,33	0,48
214	ZSSB-module / clickplate / ZMDS	-	-	1,16	-	1,16	0,95	1,16	1,16	1,16	1,16	0,33	0,48
^{*)} C24 EN 338 ρ _{min} = 350kg/m ³ OSB3 EN 300 ρ _{min} = 550kg/m ³ Particleboard / P5 EN 312 ρ _{min} = 500kg/m ³ Plywood EN 636 ρ _{min} = 400kg/m ³ For timber substructures thickness "t" also represents the minimum of effective embedmend depth (= penetration length of threaded part)													
^{**)} It must be ensured that the concrete has a high surface quality as well as a reduced maximum grain size of less than 16mm. The application is limited to precast elements with cavities.													

Zahn Flat Roof Fasteners

Characteristic Axial Load Resistance

Annex 236.15