

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-20/0975
of 9 April 2021

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

Anchorage systems "TigaSAFE"

Product family
to which the construction product belongs

anchor devices on concrete

Manufacturer

TigaSAFE GmbH
Derndorferberg 2
4501 NEUHOFEN/KREMS
ÖSTERREICH

Manufacturing plant

Plant 1
Plant 2

This European Technical Assessment
contains

24 pages including 20 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 331072-00-0601

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Specific part

1 Technical description of the product

The subject of this assessment are anchor points for protecting persons (operators) working at heights against a fall. The fall protection systems are made of stainless steel 1.4301 / 1.4307. It is fastened to reinforced normal concrete (cracked or uncracked), strength classes C20/25 to C50/60 and pre-stressed concrete with strength class C45/55 to C50/60 according to EN 206. The fall protection systems are fastened to the concrete with the different fasteners which can be seen in the annexes.

This ETA includes the products listed in the following Table 1:

Table 1: Products of this ETA

Annex No.	Trade Name (Product of this ETA)	Fastener
2 and 6	ESL B/B-S/HD-B/H/S/S-KP/T	Screw anchor Hilti HUS-HR 8x65 or Screw anchor Würth W-BS/A4 8x65
3 and 7	ZSL B/B-S/HD-B/H/S/S-KP/T	Screw anchor Hilti HUS-HR 8x65 or Screw anchor Würth W-BS/A4 8x65
4 and 8	ESM III-B/B-S/HD-B/H	Screw anchor Hilti HUS-HR 8x65 or Screw anchor Würth W-BS/A4 8x65
5 and 9	ZSM III-B/B-S/HD-B/H	Screw anchor Hilti HUS-HR 8x65 or Screw anchor Würth W-BS/A4 8x65
10	TigaSAFE HIT	Expansion anchor Hilti HST3-R M16x115 or Expansion anchor Würth W-FAZ Pro/A4 M16

The components and the system setup of the product are given in Annex (1-10).

2 Specification of the intended use in accordance with the applicable European Assessment Document 33-1072-01-0601

The fall protection systems listed in Table 1 is used to protect operators working at height (max. 4 persons), by arresting them in a fall. The operators attach themselves to the eye using e.g. ropes and karabiners. In the case of a fall the fall protection systems listed in Table prevent the fall and resulting physical damage assuming the correct usage by the operator. The fall protection systems listed in Table are designed for use in all areas of industry, construction and maintenance.

The intended use of the fall protection systems listed in Table 1 is the attachment to flat roofs or other flat surfaces (e.g. concrete walls) made of concrete. The force applied should usually be perpendicular (90° ± 5 %) to the fastener. Another load direction is possible if this is specified in the annexes intended only when the direction of force still applies at a 90° angle to the fastening axis.

The performances given in Section 3 are only valid if the of the products listed in Table 1 are used in compliance with the specifications and conditions given in Annexes 1 - 10.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the products listed in Table 1 of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

3.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Static loading	Annexes 2-10
Dynamic loading	Annexes 2-10
Check of deformation capacity in case of constraining forces	Annexes 2-10
Durability	No performance assessed

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

In accordance with EAD No. 331072-01-0601, the applicable European legal act is: Decision (EU) 2018/771.

The system to be applied is: 1+

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 9 April 2021 by Deutsches Institut für Bautechnik

Dr.-Ing. Ronald Schwuchow
Head of Section

beglaubigt:
Hahn

This ETA includes the product variants listed in Table 1:

Table 1: Product variants included in this ETA

Annex	Tradename (Product in this ETA)	Fastener	Substructure
2	ESL B/B-S/HD-B/H/S/S-KP/T	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced concrete C20/25 to C50/60 ^a (cracked and uncracked)
3	ZSL B/B-S/HD-B/H/S/S-KP/T	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced concrete C20/25 to C50/60 ^a (cracked and uncracked)
4	ESM III-B/B-S/HD-B/H	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced concrete C20/25 to C50/60 ^a (cracked and uncracked)
5	ZSM III-B/B-S/HD-B/H	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced concrete C20/25 to C50/60 ^a (cracked and uncracked)
6	ESL B/B-S/HD-B/H/S/S-KP/T	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced hollow-core slabs of concrete C45/55 to C50/60 ^a
7	ZSL B/B-S/HD-B/H/S/S-KP/T	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced hollow-core slabs of concrete C45/55 to C50/60 ^a
8	ESM III-B/B-S/HD-B/H	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced hollow-core slabs of concrete C45/55 to C50/60 ^a
9	ZSM III-B/B-S/HD-B/H	Screw anchor Hilti HUS-HR 8x65 ^b or Würth W-BS/A4 8x65 ^d	Reinforced hollow-core slabs of concrete C45/55 to C50/60 ^a
10	TigaSAFE HIT	Expansion anchor Hilti HST3-R M16x115 ^c or Würth W-FAZ Pro/A4 M16 ^e	Reinforced concrete C20/25 to C50/60 ^a (cracked and uncracked)

Annexes 2 to 10 show the components and the system structure of the products.

- ^a EN 206:2013+A1:2016 Concrete – Specifications, performance, production and conformity
- ^b ETA-08/0307 Hilti HUS-HR / HUS-CR screw anchor
- ^c ETA-98/0001 Hilti metal expansion anchor HST, HST-R, HST-HCR, HST3, HST3-R
- ^d ETA-16/0043 Würth Concrete Screw W-BS/S, W-BS/A4, W-BS/HCR, DIBt 29.07.2019
- ^e ETA-20/0229 Würth Fixanchor W-FAZ PRO/S / W-FAZ PRO/A4 / W-FAZ PRO/HCR, DIBt 03.04.2020

Fall Protection Systems „TigaSAFE“

Product Variants

Annex 1.1

Design values of actions

$$F_{Ed} = F_{Ek} \cdot \gamma_F$$

The recommended partial safety factor γ_F is 1.5

The recommended partial safety factor is used in order to determine the corresponding design actions, provided no partial safety factors given in national regulations or national Annexes to EN 1990. That leads to the following values:

Example:

For one user $F_{Ed} = F_{Ek} \cdot \gamma_F = 6 \text{ kN} \cdot 1.5 = 9.0 \text{ kN}$

For two users $F_{Ed} = F_{Ek} \cdot \gamma_F = (6 + 1) \text{ kN} \cdot 1.5 = 10.5 \text{ kN}$

For three users $F_{Ed} = F_{Ek} \cdot \gamma_F = (6 + 2) \text{ kN} \cdot 1.5 = 12.0 \text{ kN}$

For four users $F_{Ed} = F_{Ek} \cdot \gamma_F = (6 + 3) \text{ kN} \cdot 1.5 = 13.5 \text{ kN}$

Table 2: Substructure reinforced concrete C20/25 to C50/60 (cracked and uncracked)

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ESL B/B-S/HD-B/H/S/S-KP/T	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	160

All components can be used in weathered outdoor areas

Regulation for ESL B/B-S/HD-B/H/S/S-KP/T on concrete

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

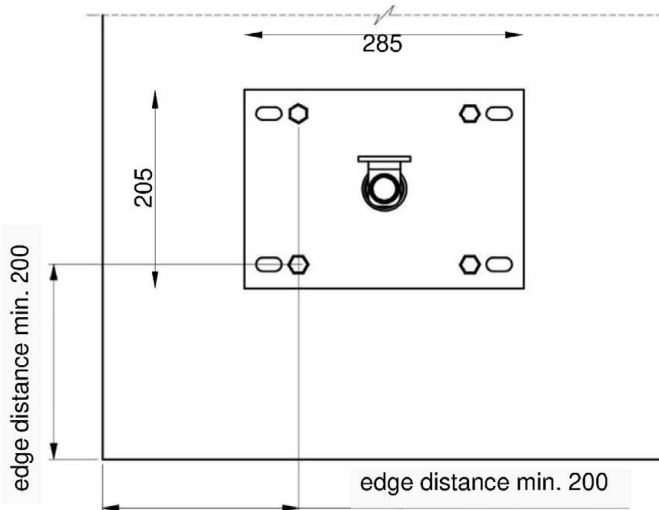
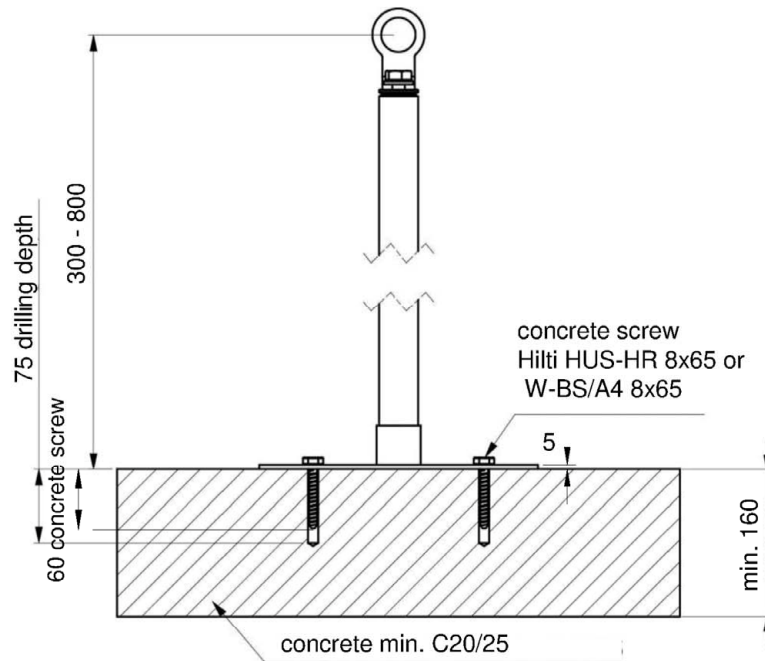
Fall Protection Systems „TigaSAFE“

ESL B/B-S/HD-B/H/S/S-KP/T for cracked and uncracked concrete

Annex 2.1

All dimensions in mm

ESL B/B-S/HD-B/H/S/S-KP/T



Fall Protection Systems „TigaSAFE“

ESL B/B-S/HD-B/H/S/S-KP/T for cracked and uncracked concrete

Annex 2.2

Table 3: Substructure reinforced concrete C20/25 to C50/60 (cracked and uncracked)

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ZSL B/B-S/HD-B/H/S/S-KP/T	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	160

All components can be used in weathered outdoor areas

Regulation for ZSL B/B-S/HD-B/H/S/S-KP/T on concrete

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

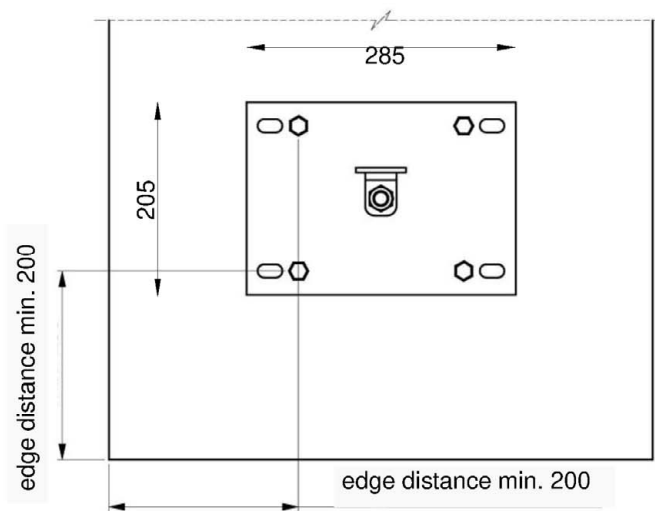
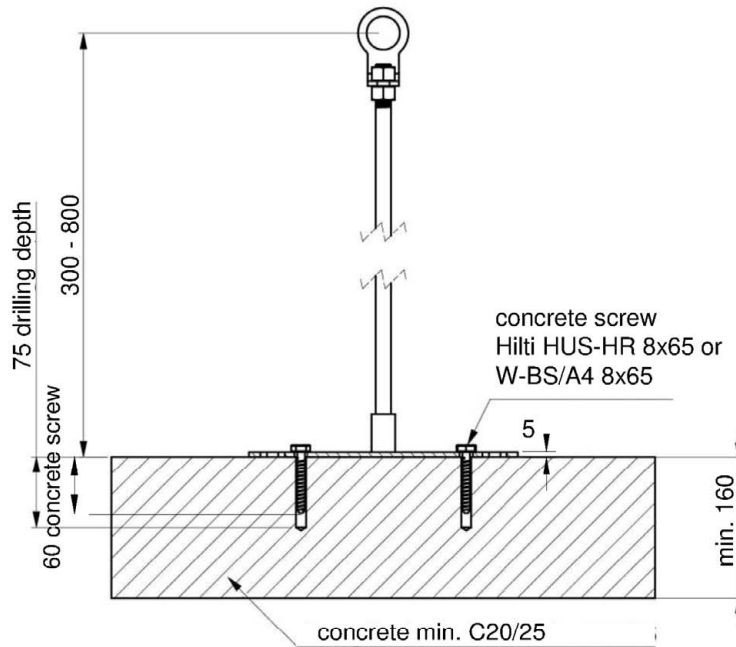
Fall Protection Systems „TigaSAFE“

ZSL B/B-S/HD-B/H/S/S-KP/T for cracked and uncracked concrete

Annex 3.1

All dimensions in mm

ZSL B/B-S/HD-B/H/S/S-KP/T



Fall Protection Systems „TigaSAFE“

ZSL B/B-S/HD-B/H/S/S-KP/T for cracked and uncracked concrete

Annex 3.2

Table 4: Substructure reinforced concrete C20/25 to C50/60 (cracked and uncracked)

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ESM III-B/B-S/HD-B/H	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	160

All components can be used in weathered outdoor areas

Regulation for ESM III-B/B-S/HD-B/H on concrete

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

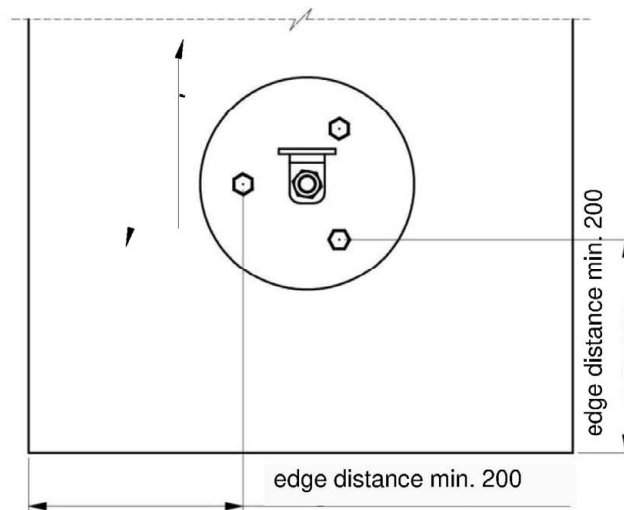
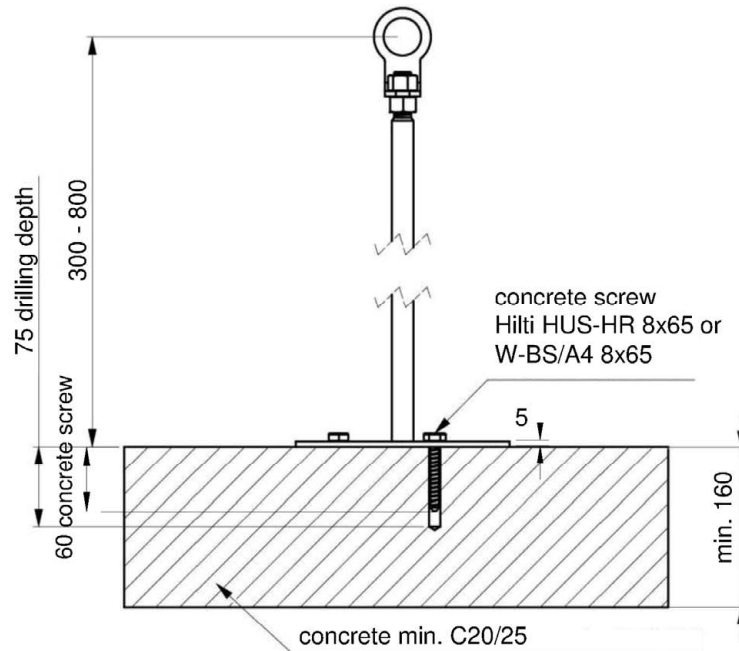
Fall Protection Systems „TigaSAFE“

ESM III-B/B-S/HD-B/H for cracked and uncracked concrete

Annex 4.1

All dimensions in mm

ESM III-B/B-S/HD-B/H



Fall Protection Systems „TigaSAFE“

ESM III-B/B-S/HD-B/H for cracked and uncracked concrete

Annex 4.2

Table 5: Substructure hollow-core slabs C20/25 to C50/60

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ZSM III-B/B-S/HD-B/H	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	30

All components can be used in weathered outdoor areas

Regulation for ZSM III-B/B-S/HD-B/H on concrete

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

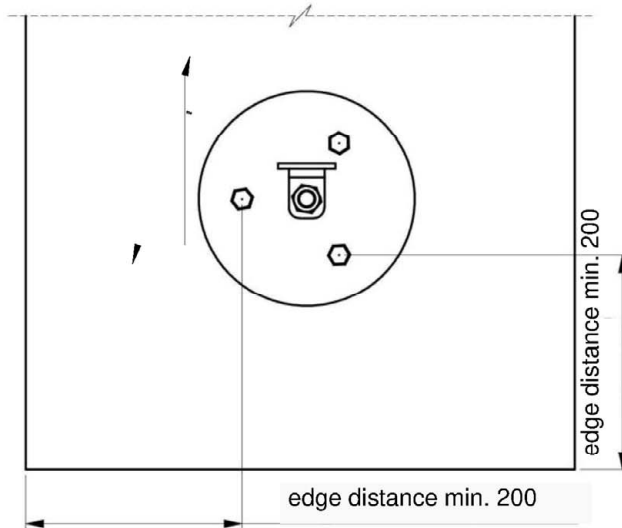
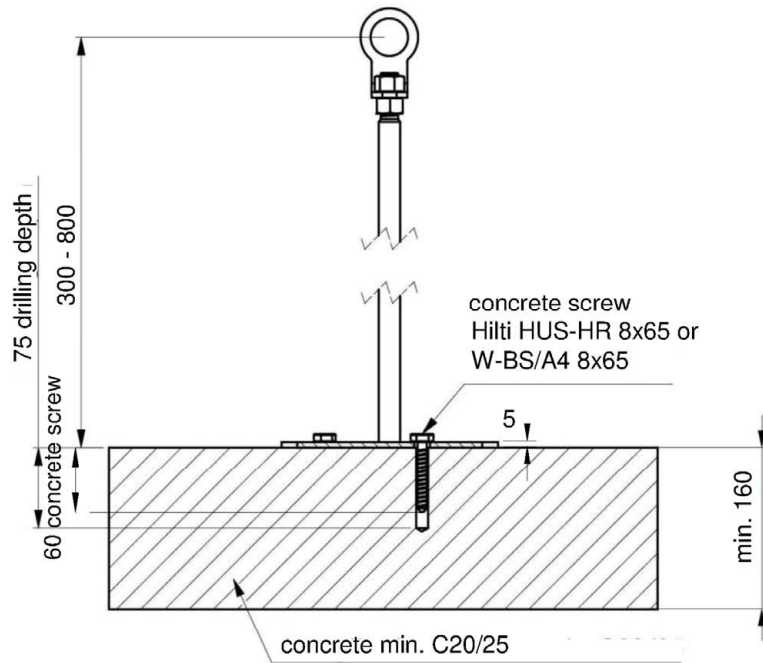
Fall Protection Systems „TigaSAFE“

ZSM III-B/B-S/HD-B/H for hollow-core slabs

Annex 5.1

All dimensions in mm

ZSM III-B/B-S/HD-B/H



Fall Protection Systems „TigaSAFE“

ZSM III-B/B-S/HD-B/H for cracked and uncracked concrete

Annex 5.2

Table 6: Substructure hollow-core slabs C20/25 to C50/60

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ESL B/B-S/HD-B/H/S/S-KP/T	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	40

All components can be used in weathered outdoor areas

Regulation for ESL B/B-S/HD-B/H/S/S-KP/T on hollow-core slabs

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

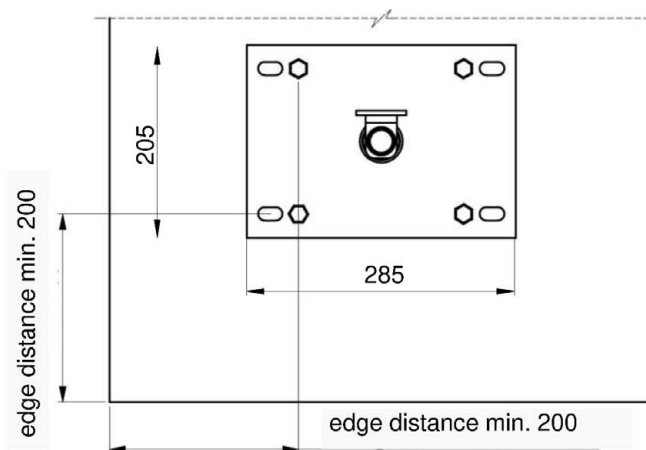
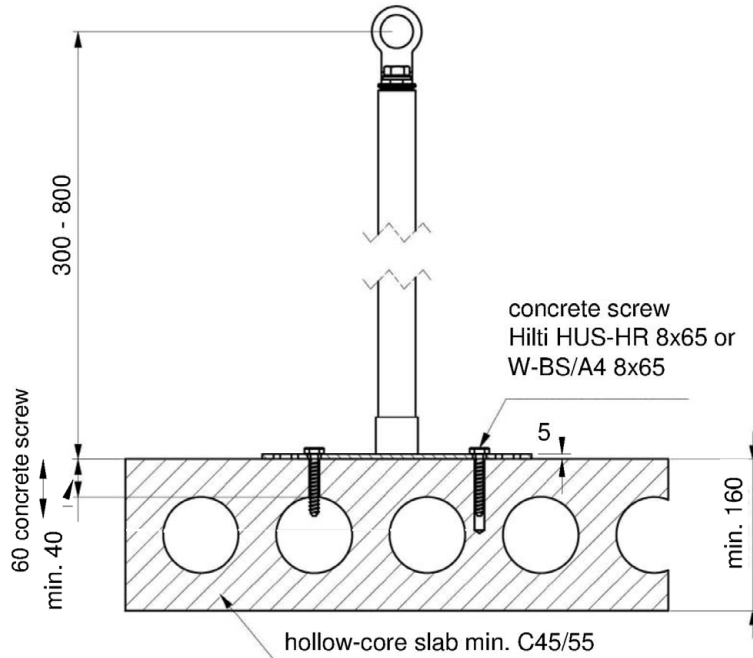
Fall Protection Systems „TigaSAFE“

ESL B/B-S/HD-B/H/S/S-KP/T for hollow-core slabs

Annex 6.1

All dimensions in mm

ESL B/B-S/HD-B/H/S/S-KP/T



Fall Protection Systems „TigaSAFE“

ESL B/B-S/HD-B/H/S/S-KP/T for hollow-core slabs

Annex 6.2

Table 7: Substructure hollow-core slabs C20/25 to C50/60

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ZSL B/B-S/HD-B/H/S/S-KP/T	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	40

All components can be used in weathered outdoor areas

Regulation for ZSL B/B-S/HD-B/H/S/S-KP/T hollow-core slabs

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

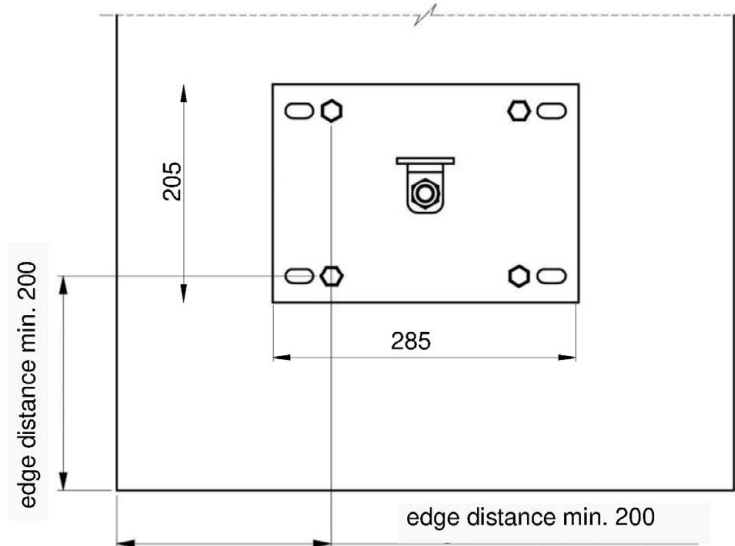
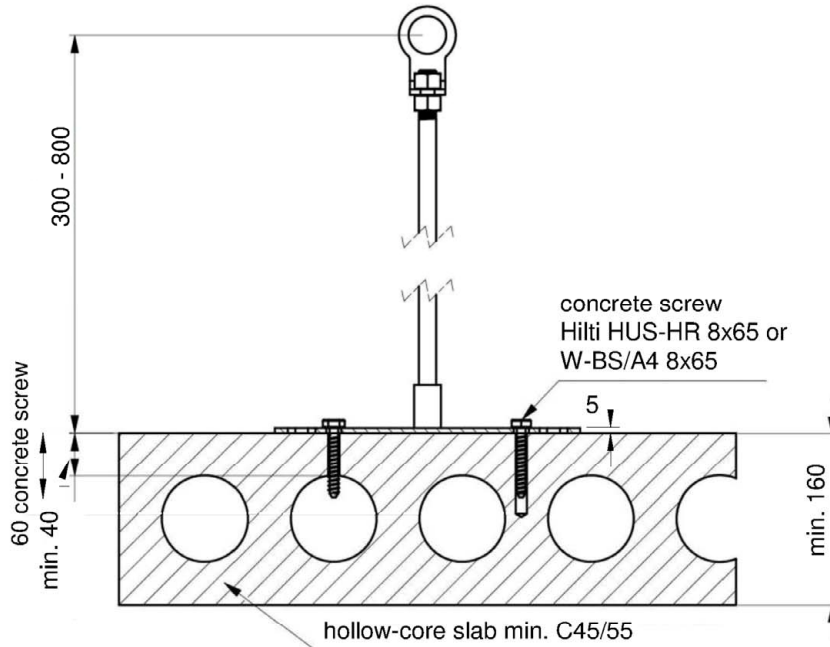
Fall Protection Systems „TigaSAFE“

ZSL B/B-S/HD-B/H/S/S-KP/T for hollow-core slabs

Annex 7.1

All dimensions in mm

ZSL B/B-S/HD-B/H/S/S-KP/T



Fall Protection Systems „TigaSAFE“

ZSL B/B-S/HD-B/H/S/S-KP/T for hollow-core slabs

Annex 7.2

Table 8: Substructure hollow-core slabs C20/25 to C50/60

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ESM III-B/B-S/HD-B/H	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	40

All components can be used in weathered outdoor areas

Regulation for ESM III-B/B-S/HD-B/H hollow-core slabs

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

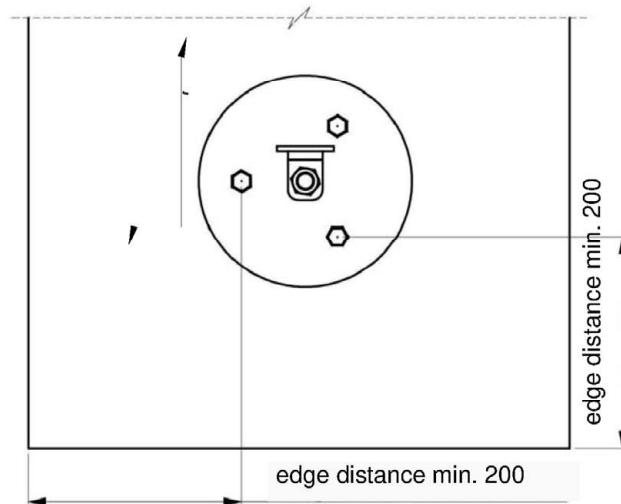
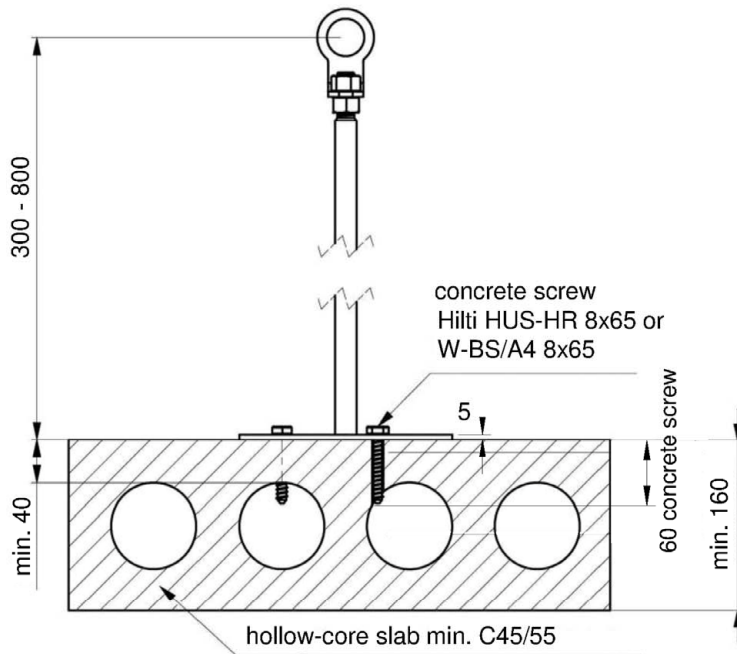
Fall Protection Systems „TigaSAFE“

ESM III-B/B-S/HD-B/H for hollow-core slabs

Annex 8.1

All dimensions in mm

ESM III-B/B-S/HD-B/H



Fall Protection Systems „TigaSAFE“

ESM III-B/B-S/HD-B/H for hollow-core slabs

Annex 8.2

Table 9: Substructure hollow-core slabs C20/25 to C50/60

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
ZSM III-B/B-S/HD-B/H	300 - 800	Screw anchor Hilti HUS-HR 8x65 or Würth W-BS/A4 8x65	200	40

All components can be used in weathered outdoor areas

Regulation for ZSM III-B/B-S/HD-B/H on hollow-core slabs

The concrete substructure is to be pre-drilled with a drill diameter of 8 mm and a drill hole depth of ≥ 80 mm.
The installation is carried out with an impact wrench.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{23,0 \text{ kN}}{1.5} = 15.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

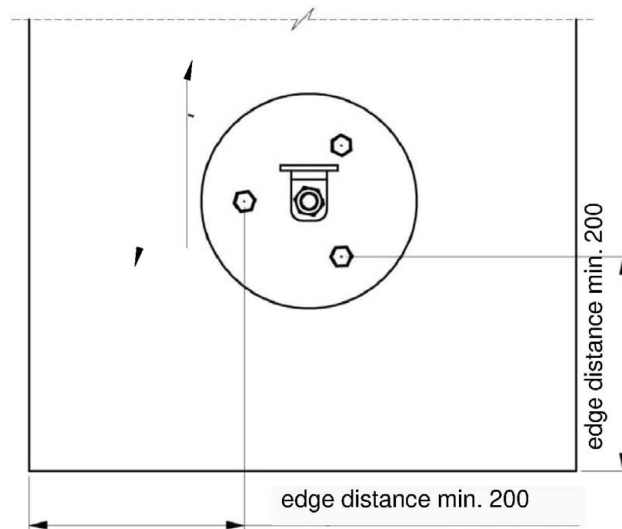
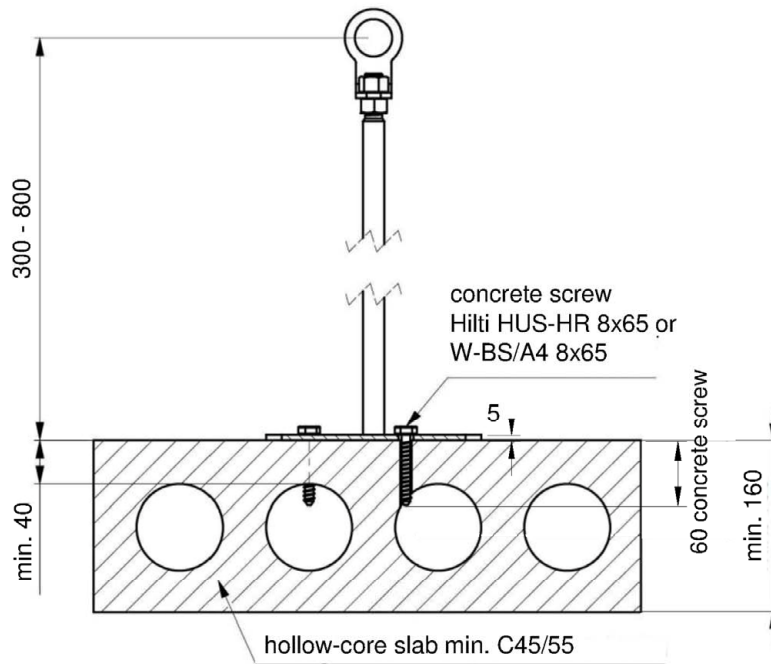
Fall Protection Systems „TigaSAFE“

ZSM III-B/B-S/HD-B/H for hollow-core slabs

Annex 9.1

All dimensions in mm

ZSM III-B/B-S/HD-B/H



Fall Protection Systems „TigaSAFE“

ZSM III-B/B-S/HD-B/H for hollow-core slabs

Annex 9.2

Table 10: Substructure reinforced concrete C20/25 to C50/60 (cracked and uncracked)

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substructure thickness h_{min} [mm]
TigaSAFE HIT	300 - 800	Expansion anchor Hilti HST3-R M16x115 or Würth W-FAZ Pro/A4 M16	250	160

All components can be used in weathered outdoor areas

Regulation for TigaSAFE HIT on concrete

The concrete substructure is to be pre-drilled with a drill diameter of 16 mm and a drill hole depth of ≥ 110 mm. The installation is carried out with a torque moment of 110 Nm for the concrete anchor and 20 Nm for the safety nut.

The installation of all connecting elements and concrete anchors has to be performed with an exterminated torque wrench. The concrete anchors shall not be loaded until the required torque moment has been applied.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{24,4 \text{ kN}}{1.5} = 16.3 \text{ kN}$$

The recommended partial safety factor γ_M is 1.5, provided no partial safety factor is given in national regulations or national Annexes to EN 1992.

Dynamic loading / design resistance

Four users

Deformation capacity

≤ 10 mm at 0.7 kN

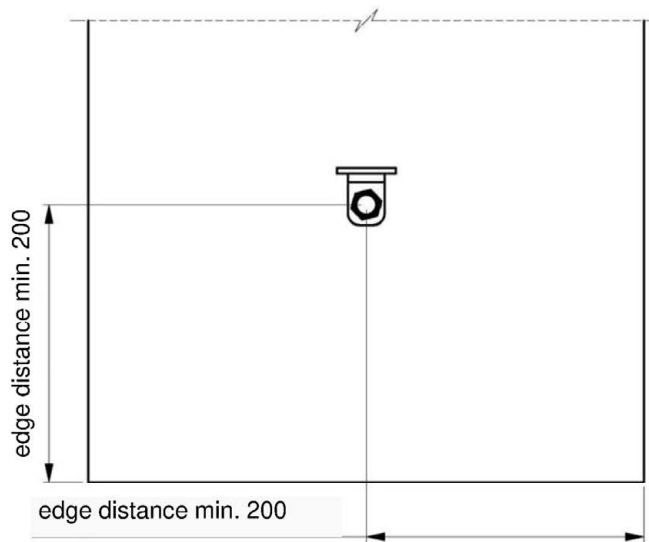
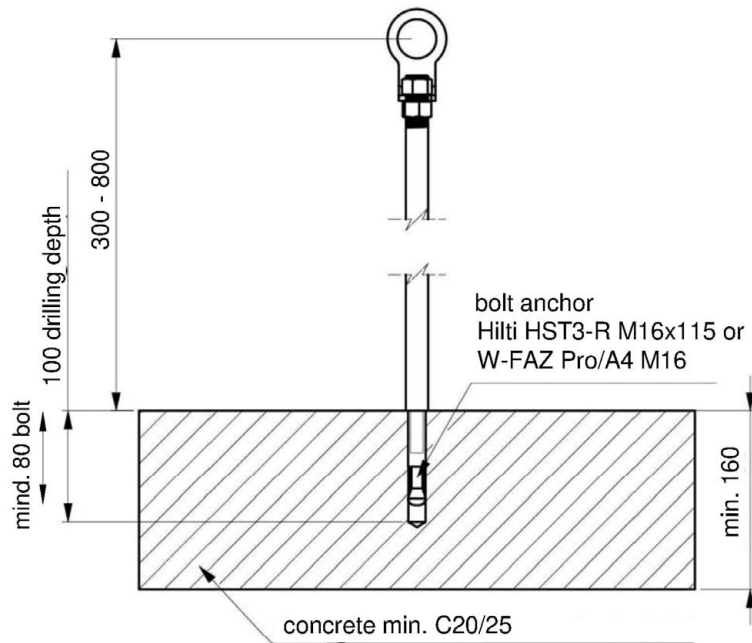
Fall Protection Systems „TigaSAFE“

TigaSAFE HIT for cracked and uncracked concrete

Annex 10.1

All dimensions in mm

TigaSAFE HIT



Fall Protection Systems „TigaSAFE“

TigaSAFE HIT for cracked and uncracked concrete

Annex 10.2