

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-15/0464
of 11 January 2018

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Hilti ETICS anchor HTH

Product family
to which the construction product belongs

Screwed-in plastic anchor for fixing of external thermal
insulation composite systems with rendering in concrete
and masonry

Manufacturer

HILTI Corporation
Feldkircherstraße 100
9494 SCHAAN
FÜRSTENTUM LIECHTENSTEIN

Manufacturing plant

Hilti Werke
Hilti manufacturing plant

This European Technical Assessment
contains

15 pages including 3 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

EAD 330196-01-0604

This version replaces

ETA-15/0464 issued on 08 June 2017

European Technical Assessment

ETA-15/0464

English translation prepared by DIBt

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Specific Part

1 Technical description of the product

The Hilti ETICS screwed-in anchor HTH with a helix consist of a plastic part made of virgin polypropylene and an accompanying specific screw of galvanised steel.

The description of the product is given in Annex A.

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

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor 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 and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	See Annex C 1
Edge distances and spacing	See Annex B 3
Displacements	See Annex C 2

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 2

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

In accordance with EAD No. 330196-01-0604, the applicable European legal act is: [97/463/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.

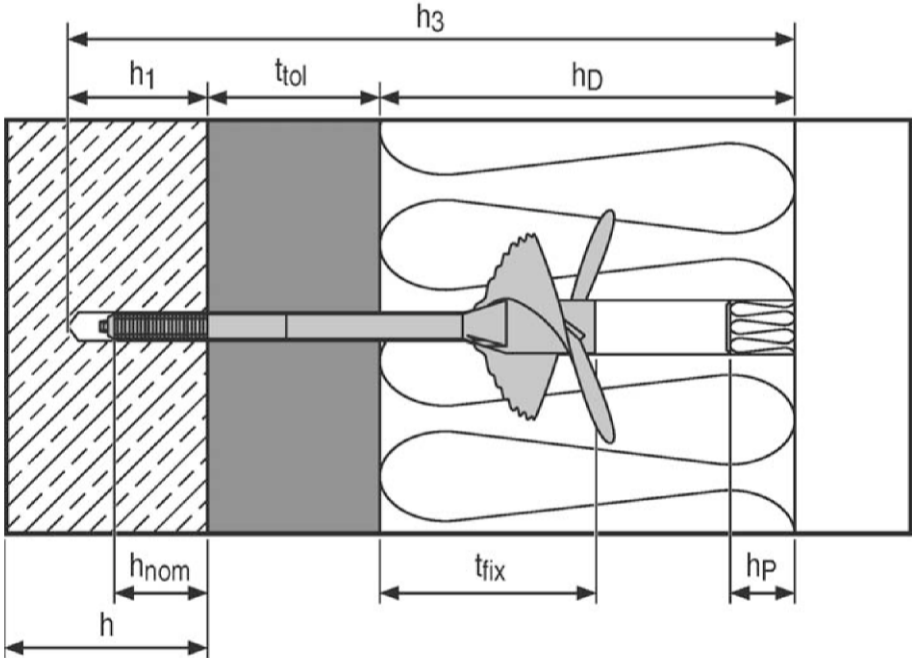
Issued in Berlin on 11 January 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Ziegler

Hilti ETICS anchor HTH

Intended use: Fixing of external thermal insulation composite systems in concrete, masonry, lightweight aggregate concrete and autoclaved aerated concrete



- Legend:
- h = thickness of member (wall)
 - h_1 = depth of drilled hole in base material to deepest point
 - h_3 = total length of borehole from insulation material surface to deepest point
 - h_{nom} = overall plastic anchor embedment depth in the base material
 - h_D = thickness of insulation material
 - h_P = thickness of plug
 - t_{fix} = thickness of fixture
 - t_{tol} = thickness of equalizing layer for compensation of tolerances or non-loadbearing layer

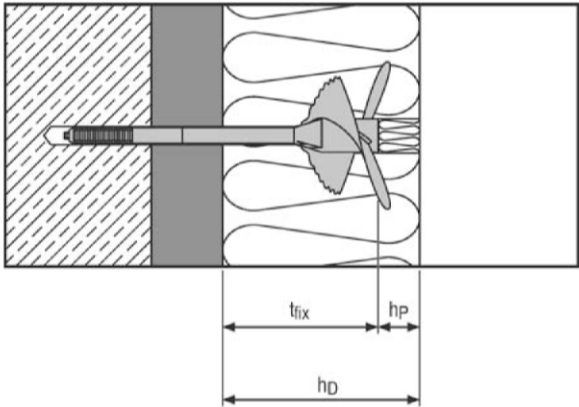
Hilti ETICS anchor HTH

Product description
Installed condition HTH

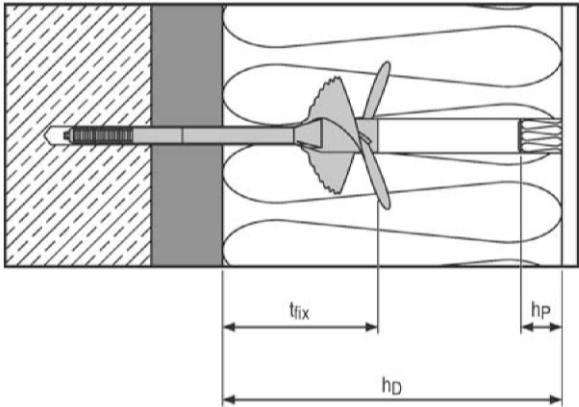
Annex A 1

Use in different insulation material thickness

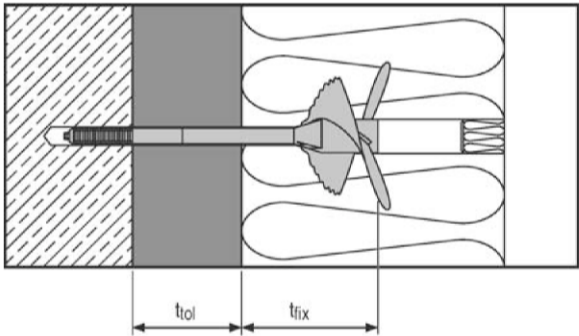
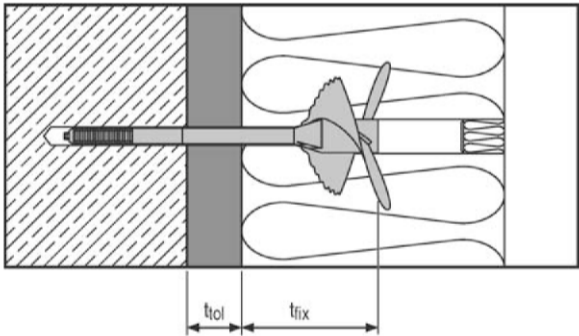
Minimum thickness



Maximum thickness



Use in different thickness of equalizing or non-loadbearing layer



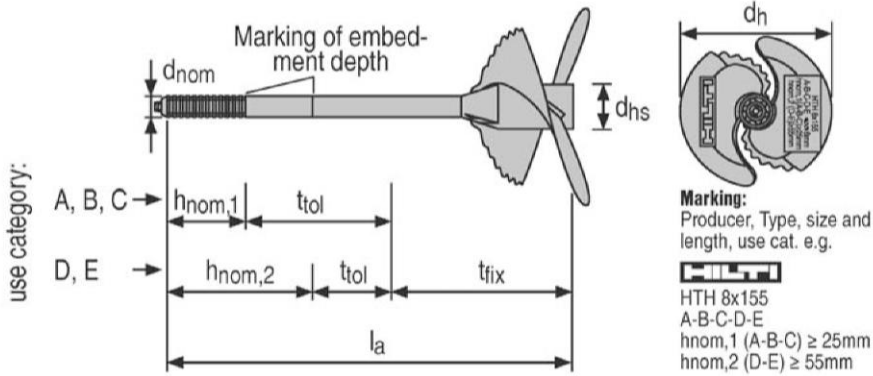
- Legend:**
- h_D = thickness of insulation material
 - h_P = thickness of plug
 - t_{fix} = thickness of fixture
 - t_{tol} = thickness of equalizing layer for compensation of tolerances or non-loadbearing layer

Hilti ETICS anchor HTH

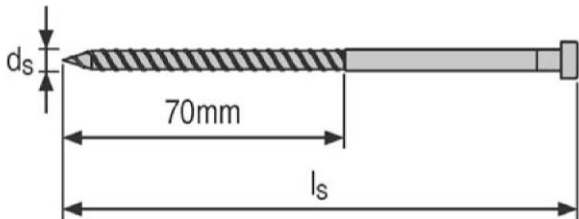
Product description
Different installed conditions

Annex A 2

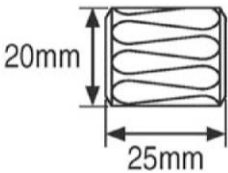
Anchor sleeve HTH



Screw for HTH



Plug for HTH



Note: PU-Foam with specifications according to Table A4 can be used alternatively

Hilti ETICS anchor HTH

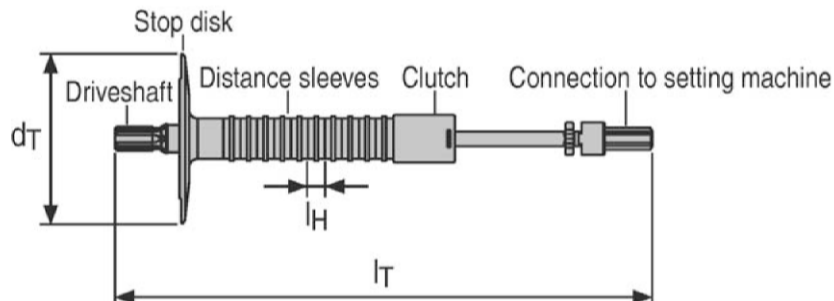
Product description

Dimensions and marking of HTH anchor sleeve, expansion element and plug

Annex A 3

Setting tools

Setting tool D8-SW 1 or setting tool D8-SW 2



Setting tool HTH-SW 1 or setting tool HTH-SW 2

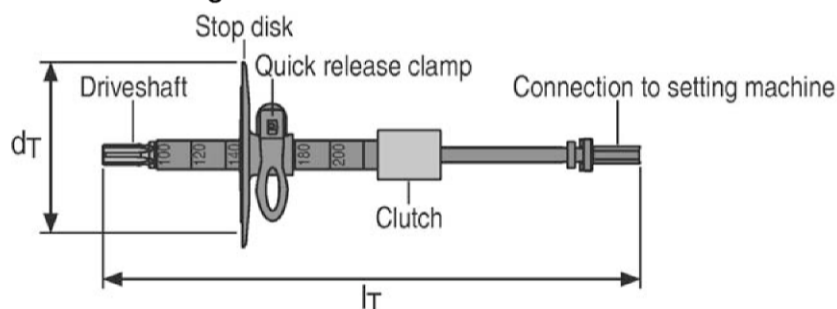


Table A1 Dimensions for setting tool types D8-SW 1 and D8-SW 2

Setting tool type		D8-SW 1	D8-SW 2
Diameter of disk	d_T [mm]	100	
Length of the tool	l_T [mm]	310	477
Length of distance sleeve (insulation thickness increment)	l_H [mm]	10	
Applicable insulation thickness	$h_{D,min}$ [mm]	100 ¹⁾	200
	$h_{D,max}$ [mm]	200	360

¹⁾ This value applies for $t_{fix} = 80$ mm (for $t_{fix} = 110$ mm: $h_{D,min} = 130$ mm).

Table A2 Dimensions for setting tool types HTH-SW 1 and HTH-SW 2

Setting tool type		HTH-SW 1	HTH-SW 2
Diameter of disk	d_T [mm]	100	
Length of the tool	l_T [mm]	310	477
Applicable insulation thickness	$h_{D,min}$ [mm]	100 ¹⁾	200
	increment [mm]	10	
	$h_{D,max}$ [mm]	200	360

¹⁾ This value applies for $t_{fix} = 80$ mm (for $t_{fix} = 110$ mm: $h_{D,min} = 130$ mm).

Hilti ETICS anchor HTH

Product description Setting tools

Annex A 4

Table A3 Anchor types and dimensions of HTH

Anchor type			HTH 8x125	HTH 8x155	HTH 8x215
Plastic sleeve	Sleeve diameter	d_{nom} [mm]	8		
	Length of sleeve	ℓ_a [mm]	125	155	215
	Diameter of helix centre	d_{hs} [mm]	17		
	Diameter of helix	d_h [mm]	75		
Special screw	Screw diameter	d_s [mm]	5,35		
	Length of screw	ℓ_s [mm]	94	124	184

Table A4 Materials of HTH

Element	Material
Anchor sleeve	virgin Polypropylene, colour: black
Screw	Steel, galvanised $\geq 5 \mu\text{m}$, $f_{yk} = 480 \text{ N/mm}^2$, $f_{uk} = 600 \text{ N/mm}^2$
Plug	EPS or mineral Wool
PU-Foam	Polyurethane, thermal conductivity $\leq 0,045 \text{ W/(m}\cdot\text{K)}$ Remark: use of foam only in accordance with ETICS system suppliers

Hilti ETICS anchor HTH

Product description
Dimensions and Materials

Annex A 5

Specifications of intended use

Anchorage subject to:

- The anchor may only be used for transmission of wind suction loads and shall not be used for the transmission of dead loads of the thermal insulation composite system.

Base materials:

- Normal weight concrete (use category A) according to Annex C 1
- Solid masonry (use category B), according to Annex C 1
- Hollow or perforated masonry (use category C), according to Annex C 1
- Lightweight aggregate concrete (use category D), according to Annex C 1
- Autoclaved aerated concrete (use category E), according to Annex C 1
- For other base materials of the use categories A, B, C, D or E the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051 edition December 2016.

Temperature Range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)

Design:

- The anchorages are designed under the responsibility of an engineer experienced in anchorages and masonry work with the partial safety factors $\gamma_M = 2,0$ and $\gamma_F = 1,5$, if there are no other national regulations.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of thermal insulation composite systems.

Installation:

- Hole drilling by the drill modes according to Annex C 1
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site
- Installation temperature from 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks.

Hilti ETICS anchor HTH

Intended use
Specifications

Annex B 1

Table B1 Installation parameters for use in concrete and solid masonry (use category A, B)

Anchor type		HTH 8x125	HTH 8x155	HTH 8x215	
Drill hole diameter	$d_0 = [\text{mm}]$	8			
Cutting diameter of drill bit	$d_{\text{cut}} \leq [\text{mm}]$	8,45			
Minimum depth of drilled hole to deepest point	$h_1 \geq [\text{mm}]$	45			
Overall plastic anchor embedment depth in the base material	$h_{\text{nom},1} \geq [\text{mm}]$	25			
Thickness of fixture	$t_{\text{fix}} = [\text{mm}]$	80	80	80	110
Thickness of equalizing layer for compensation of tolerances or non-loadbearing layer	$t_{\text{tol,min}} = [\text{mm}]$	0	0	50	20
	$t_{\text{tol,max}} = [\text{mm}]$	20	50	110 ¹⁾	80 ¹⁾
Total length of borehole	$h_3 \geq [\text{mm}]$	h_D+65	h_D+95	h_D+155	h_D+125

¹⁾ If $t_{\text{tol},\text{max}}$ exceeds 50 mm it has to be ensured that the material t_{tol} has enough capability to carry the dead load of the ETICS. This can be considered as given if t_{tol} consists of plaster, old insulation or shells of jacket blocks.

Table B2 Installation parameters for use in thin concrete members (e.g. weather resistant skin of external wall panels) and hollow masonry (use category C)

Anchor type		HTH 8x125	HTH 8x155	HTH 8x215	
Drill hole diameter	$d_0 = [\text{mm}]$	8			
Cutting diameter of drill bit	$d_{\text{cut}} \leq [\text{mm}]$	8,45			
Minimum depth of drilled hole to deepest point	$h_1 \geq [\text{mm}]$	45			
Overall plastic anchor embedment depth in the base material	$h_{\text{nom},1} \geq [\text{mm}]$	25			
Thickness of fixture	$t_{\text{fix}} = [\text{mm}]$	80	80	80	110
Thickness of equalizing layer for compensation of tolerances or non-loadbearing layer	$t_{\text{tol,min}} = [\text{mm}]$	0	20 ¹⁾	80 ¹⁾	50 ¹⁾
	$t_{\text{tol,max}} = [\text{mm}]$	20	50	110 ²⁾	80 ²⁾
Total length of borehole	$h_3 \geq [\text{mm}]$	h_D+65	h_D+95	h_D+155	h_D+125

¹⁾ $t_{\text{tol},\text{min}}$ may be lower if the anchor performance is tested on site.

²⁾ If $t_{\text{tol},\text{max}}$ exceeds 50 mm it has to be ensured that the material t_{tol} has enough capability to carry the dead load of the ETICS. This can be considered as given if t_{tol} consists of plaster, old insulation or shells of jacket blocks.

Hilti ETICS anchor HTH

Intended use

Installation parameters – use categories A, B, C

Annex B 2

Table B3 Installation parameters for use in lightweight aggregate concrete and autoclaved aerated concrete (use category D, E)

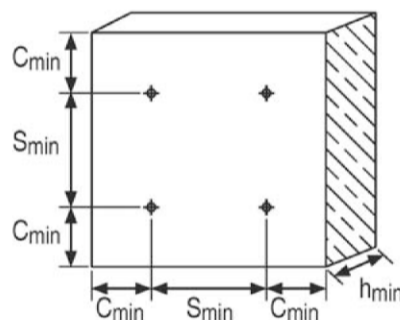
Anchor type		HTH 8x125	HTH 8x155	HTH 8x215	
Drill hole diameter	$d_0 = [\text{mm}]$	-	8		
Cutting diameter of drill bit	$d_{\text{cut}} \leq [\text{mm}]$		8,45		
Minimum depth of drilled hole to deepest point	$h_1 \geq [\text{mm}]$		75		
Overall plastic anchor embedment depth in the base material	$h_{\text{nom},2} \geq [\text{mm}]$		55		
Thickness of fixture	$t_{\text{fix}} = [\text{mm}]$		80	80	110
Thickness of equalizing layer for compensation of tolerances or non-loadbearing layer	$t_{\text{tol,min}} = [\text{mm}]$		0	0	0
	$t_{\text{tol,max}} = [\text{mm}]$		20	80 ¹⁾	50
Total length of borehole	$h_3 \geq [\text{mm}]$			h_D+95	h_D+155

¹⁾ If $t_{\text{tol},\text{max}}$ exceeds 50 mm it has to be ensured that the material t_{tol} has enough capability to carry the dead load of the ETICS. This can be considered as given if t_{tol} consists of plaster, old insulation or shells of jacket blocks.

Table B4 Minimum thickness of base material, edge distance and anchor spacing

			HTH
Minimum thickness of the base material	concrete, masonry, lightweight aggregate concrete and autoclaved aerated concrete	h_{\min} [mm]	100
	thin concrete members (e.g. weather resistant skin of external wall panels)	h_{\min} [mm]	40
Minimum allowable spacing		s_{\min} [mm]	100
Minimum allowable edge distance		c_{\min} [mm]	100

Scheme of minimum thickness of base material, edge distances and anchor spacings



Hilti ETICS anchor HTH

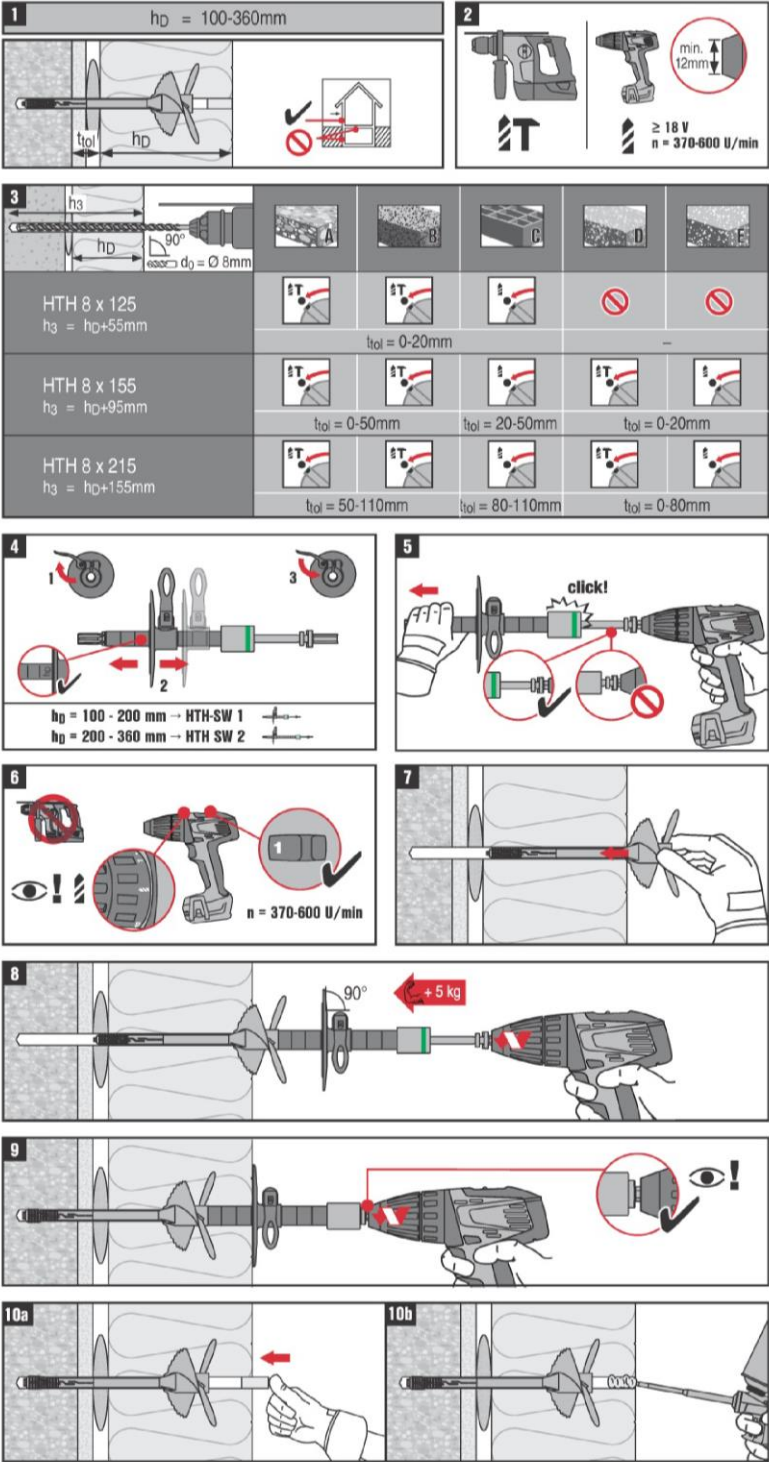
Intended use

Installation parameters – use categories D, E

Minimum thickness of base material, distances and spacings

Annex B 3

Installation instruction of HTH



Hilti ETICS anchor HTH

Intended use
Installation instruction for HTH

Annex B 4

Table C1 Characteristic resistance to tension loads N_{Rk} in concrete, masonry, lightweight aggregate concrete and autoclaved aerated concrete for single anchor

Base material	Use cat 4)	Bulk density class ρ [kg/dm ³]	Compressive strength class f_b [N/mm ²]	Remarks	Drill method	N_{Rk} [kN]
Concrete C12/15 – C50/60 EN 206-1:2000	A	-	-	-	hammer	1,2
Thin concrete members (e.g. weather resistant skins of external wall panels) C16/20 – C50/60, EN 206- 1:2000	A	-	-	Thickness of the thin skin $h \geq 40\text{mm}$	hammer	1,2
Clay brick, Mz e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	B	2,0	20	Cross section reduced up to 15% by perforation vertically to the resting area	hammer	1,2
Sand-lime solid brick, KS e.g. according to DIN V 106:2005-10 / EN 771-2:2011	B	2,0	20	Cross section reduced up to 15% by perforation vertically to the resting area	hammer	1,2
Vertically perforated clay brick, Hlz, e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	C	1,2	12	Cross section reduced > 15% and $\leq 50\%$ by perforation vertically to the resting area ¹⁾	rotary	1,2
Vertically perforated clay brick, Hlz, e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	C	0,8	12	Cross section reduced > 15% and $\leq 50\%$ by perforation vertically to the resting area ²⁾ , net density $\geq 1,5 \text{ kg/dm}^3$	rotary	0,6
Vertically perforated sand-lime brick, KSL, e.g. according to DIN V 106:2005-10 / EN 771-2:2011	C	1,4	12	Cross section reduced > 15% and $\leq 50\%$ by perforation vertically to the resting area ³⁾	rotary	1,2
Lightweight aggregate concrete, LAC, e.g. according to EN 1520:2011 EN 771-3:2011	D	0,9	2 4	-	hammer	0,6 1,2
Autoclaved aerated concrete, AAC, e.g. according to EN 771-4:2011	E	0,5	4	-	rotary	0,9

¹⁾ The value applies only for outer web thickness $\geq 12 \text{ mm}$

²⁾ The value applies only for outer web thickness $\geq 9 \text{ mm}$

³⁾ The value applies only for outer web thickness $\geq 23 \text{ mm}$

⁴⁾ Different installation parameters for use categories A, B, C and use categories D, E and thin concrete members to be considered (see Annex B 2 and B 3)

Otherwise the characteristic resistance shall be determined by job-site pull-out tests

Hilti ETICS anchor HTH

Performance
Characteristic resistance

Annex C 1

Table C2 Point thermal transmittance acc. EOTA Technical Report TR 025:2016-05

Anchor type	Insulation thickness h_D [mm]	Nominal value of point thermal transmittance χ [W/K]	
		Hole filled with EPS plug	Hole filled with PUR spray foam
HTH 125 HTH 155 HTH 215 $t_{fix}=80\text{mm}$	$100 \leq h_D \leq 150$	0,001	0,001
	$150 < h_D \leq 360$	0,000	0,000
HTH 155 HTH 215 $t_{fix}=110\text{mm}$	$130 \leq h_D \leq 150$	0,001	0,001
	$150 < h_D \leq 360$	0,001	0,001

Table C3 Displacements

Base material	Bulk density class ρ [kg/dm ³]	Compressive strength class f_b [N/mm ²]	Tension load N [kN]	$\delta_m(N)$ [mm]
Concrete, C12/15 – C50/60 (EN 206-1:2000)	-	-	0,40	< 0,6
Thin concrete members, C16/20 – C50/60 (EN 206-1:2000)	-	-	0,40	< 0,5
Clay brick, Mz (DIN 105-100:2012-01 / EN 771-1:2011)	2,0	20	0,40	< 0,5
Sand-lime solid brick, KS (DIN V 106:2005-10 / EN 771-2:2011)	2,0	20	0,40	< 0,5
Vertically perforated clay brick, HLz (DIN 105-100:2012-01 / EN 771-1:2011)	1,2	12	0,40	< 0,5
Vertically perforated clay brick, HLz net density $\geq 1,5 \text{ kg/dm}^3$ (DIN 105-100:2012-01 / EN 771-1:2011)	0,8	12	0,20	< 0,2
Vertically perforated sand-lime brick, KSL (DIN V 106:2005-10 / EN 771-2:2011)	1,4	12	0,40	< 0,5
Lightweight aggregate concrete, LAC (EN 1520:2011 / EN 771-3:2011)	0,9	2 4	0,20 0,40	< 0,5 < 0,5
Autoclaved aerated concrete, AAC (EN 771-4:2011)	0,5	4	0,30	< 0,7

Hilti ETICS anchor HTH

Performance

Point thermal transmittance and displacements

Annex C 2